REQUEST FOR PROPOSAL (RFP)
FULL AND OPEN COMPETITION

RICHMOND INNER HARBOR FY26 MAINTENANCE DREDGING PROJECT

CONTRA COSTA COUNTY, CALIFORNIA

SOLICITATION NO. W912P726RA020

US ARMY CORPS OF ENGINEERS
San Francisco District

SOLICITATION

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NOTE: SECTIONS 00 21 00 AND 00 22 00 ARE INCLUDED FOR SOLICITATION PURPOSES ONLY. THESE SECTIONS WILL BE REMOVED, MAINTAINED IN THE CONTRACT FILE AND NOT MADE PART OF THE CONTRACT. SECTION 00 45 00, AS COMPLETED BY AWARDEE, IS INCORPORATED INTO ANY RESULTANT CONTRACT BY REFERENCE. AMENDMENTS ARE INCORPORATED INTO THE RESULTANT CONTRACT. SUBCONTRACTING PLAN (IF REQUIRED) BECOMES AN ATTACHMENT TO AND A MATERIAL PART OF THE CONTRACT.

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SOLICITATION, OFFER, AND AWARD

(Construction, Alteration, or Repair)

1. SOLICITATION NUMBER	2. TYPE OF SOLICITATION	3. DATE ISSUED	PAGE OF PAGES
W912P726RA020	☐ SEALED BID (IFB) INVITATION FOR BID ☒ NEGOTIATED (RFP) REQUEST FOR PROPOSAL	15 JUL 2026	

IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.

4. CONTRACT NUMBER	5. REQUISITION/PURCHASE REQUEST NUMBER	6. PROJECT NUMBER
		000

7. ISSUED BY	CODE	8. ADDRESS OFFER TO
W075 ENDIST SAN FRAN KO CONTRACTING DIVISION, 450 GOLDEN GATE AVENUE SAN FRANCISCO, CA 94102-3406 UNITED STATES LISA IP, EMAIL: LISA.I.IP@USACE.ARMY.MIL TELEPHONE: 415-503-6877	W912P7	

9. FOR INFORMATION CALL:	a. NAME	b. TELEPHONE NUMBER *(Include area code) (NO COLLECT CALLS)*
	LISA IP	415-503-6877

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NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid and "bidder".

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS *(Title, identifying number, date)*

PROJECT TITLE: RICHMOND INNER HARBOR FY26 MAINTENANCE DREDGING
PROJECT LOCATION: CONTRA COSTA COUNTY, CA

WORK INCLUDES ANNUAL MAINTENANCE DREDGING OF THE RICHMOND INNER HARBOR TO -37-FT (MLLW) PLUS 1 FOOT OF PAID OVERDEPTH AND TRANSPORTING OF THE DREDGED MATERIAL PER THE REQUIREMENTS IN SPECIFICATION. MATERIAL TO BE DREDGED FROM REACHES 1 THROUGH 14 IS SUITABLE AND SHALL BE TAKEN FOR PLACEMENT AT MONTEZUMA WETLANDS SITE. CONTRACTOR SHALL REFER TO THE DMMO SUITABILITY DETERMINATION ATTACHED AT THE END OF THE SPECIFICATIONS PACKAGE. SAMPLE AREAS 1 THROUGH 4 CORRESPOND TO REACHES 1 THROUGH 10 WHILE SAMPLE AREAS 5 AND 6 CORRESPOND TO REACHES 11 THROUGH 14.

ESTIMATED COST RANGE IS BETWEEN $10,000,000 AND $25,000,000.

QUESTIONS RELATING TO THIS SOLICITATION AND TECHNICAL INQUIRIES WILL BE SUBMITTED VIA EMAIL TO THE ASSIGNED CONTRACT SPECIALIST. INQUIRIES MUST BE RECEIVED NO LATER THAN 14 CALENDAR DAYS PRIOR TO PROPOSAL DUE DATE.

11. The contractor shall begin performance within 1 calendar days and complete it within 114 calendar days after receiving

☐ award, ☒ notice to proceed. This performance period is ☒ mandatory ☐ negotiable. ***(See*** section 00 73 00 ***).***

12a. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? *(If "YES", indicate within how many calendar days after award in Item 12b.)*	12b. CALENDAR DAYS
☒ YES ☐ NO	5

13. ADDITIONAL SOLICITATION REQUIREMENTS:

a. Sealed offers in original and _____ copies to perform the work required are due at the place specified in Item 8 by 11:30 AM ***(hour)*** local time 14 AUG 2026 (date). If this is a sealed bid solicitation, offers will be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

b. An offer guarantee ☒ is, ☐ is not required.

c. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.

d. Offers providing less than 60 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

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OFFER *(Must be fully completed by offeror)*

14. NAME AND ADDRESS OF OFFEROR *(Include ZIP Code)*	15. TELEPHONE NUMBER *(Include area code)*
	16. REMITTANCE ADDRESS *(Include only if different than Item 14.)*
CODE FACILITY CODE	

17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within _____ calendar days after the date offers are due. *(Insert any number equal to or greater than the minimum requirement stated in Item 13d. Failure to insert any number means the offeror accepts the minimum in Item 13d.)*

AMOUNTS ▶

18. The offeror agrees to furnish any required performance and payment bonds.

19. ACKNOWLEDGMENT OF AMENDMENTS
(The offeror acknowledges receipt of amendments to the solicitation -- give number and date of each)

AMENDMENT NUMBER										
DATE										

20a. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER *(Type or print)*	20b. SIGNATURE	20c. OFFER DATE

AWARD *(To be completed by Government)*

21. ITEMS ACCEPTED:

22. AMOUNT	23. ACCOUNTING AND APPROPRIATION DATA

24. SUBMIT INVOICES TO ADDRESS SHOWN IN *(4 copies unless otherwise specified)* ▶ ITEM	25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO THE UNITED STATES CODE AT ☐ 10 U.S.C. 3204(a) ( ) ☐ 41 U.S.C. 3304(a) ( )
26. ADMINISTERED BY	27. PAYMENT WILL BE MADE BY

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

☐ 28. NEGOTIATED AGREEMENT *(Contractor is required to sign this document and return _____ copies to issuing office.)* Contractor agrees to furnish and deliver all items or perform all work requirements identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications incorporated by reference in or attached to this contract.	☐ 29. AWARD *(Contractor is not required to sign this document.)* Your offer on this solicitation is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.
30a. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN *(Type or print)*	31a. NAME OF CONTRACTING OFFICER *(Type or print)*
30b. SIGNATURE / 30c. DATE	31b. UNITED STATES OF AMERICA BY / 31c. DATE

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CONTINUATION OF STANDARD FORM 1442

BLOCK 20D:

(1) IF THE OFFEROR IS A JOINT VENTURE, EACH PARTICIPANT IN THE JOINT VENTURE MUST COMPLETE THE FOLLOWING:

_____	_____	_____
Company Name	Signature	Title
_____	_____	_____
Company Name	Signature	Title
_____	_____	_____
Company Name	Signature	Title

NOTE: If a corporation is participating as a member of a Joint Venture, the certificate below must also be completed and signed.

CORPORATION AUTHORIZATION TO PARTICIPATE IN JOINT VENTURE CERTIFICATE

I, _____(insert name), certify that I am the Secretary of the corporation named as a participant in a Joint Venture on this offer; that _____(insert name), who signed said offer on behalf of the corporation,was then _____(insert title) of said corporation; that the signature thereto is genuine; that said contract was duly signed, sealed and attested for and in behalf of said corporation by authority of its governing body; and that the corporation is authorized to participate in the Joint Venture on this offer.

_____
(Name of Corporation)

_____
(Secretary)

(2) IF THE OFFEROR IS A PARTNERSHIP, LIST FULL NAME OF ALL PARTNERS BELOW. SIGNATURES BY ALL PARTNERS HERE SIGNIFY THAT THE INDIVIDUAL WHO SIGNED THE OFFER IN BLOCK 20B HAS THE AUTHORITY TO BIND THE PARTNERSHIP.

_____	_____
Name	Signature
_____	_____
Name	Signature
_____	_____
Name	Signature

(3) IF THE OFFEROR IS A CORPORATION, THE OFFER SHALL BE SIGNED IN THE CORPORATE NAME FOLLOWED BY THE WORD "BY" AND THE SIGNATURE OF THE PERSON AUTHORIZED TO SIGN THE OFFER IN BLOCK 20B. PROVIDE PROOF THAT THE PERSON SIGNING FOR THE CORPORATION HAS THE AUTHORITY TO BIND THE CORPORATION BY COMPLETING THE FOLLOWING CERTIFICATE:

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CONTINUATION OF STANDARD FORM 1442

CORPORATION AUTHORIZATION CERTIFICATE

I, _____(insert name), certify that I am the Secretary of the corporation named as offeror in the within offer; that _____(insert name), who signed said offer on behalf of the corporation, was then _____(insert title) of said corporation, that the signature thereto is genuine; that said contract was duly signed, sealed and attested for in behalf of said corporation by authority of its governing body.

_____
(Name of Corporation)

_____
(Secretary)

(4) IF THE OFFEROR IS AN INDIVIDUAL DOING BUSINESS AS A FIRM, THE OFFER SHALL BE SIGNED BY THAT INDIVIDUAL IN BLOCK 20B FOLLOWED BY THE WORDS "AN INDIVIDUAL DOING BUSINESS AS _____ (INSERT NAME OF FIRM).

(5) WHEN AN AGENT SIGNS THE OFFER, PROVIDE PROOF OF THE AGENT'S AUTHORITY TO BIND THE PRINCIPAL.

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SECTION 00 10 00

PRICING SCHEDULE

RICHMOND INNER HARBOR FY26 MAINTENANCE DREDGING

Contract Line Item No.(CLIN)	Description of Supplies and Services	*Quantity	Unit	Unit Price($)	Amount($)
0001	Mobilization and Demobilization	1	Job (JA)		
0002	Dredging Reach 1 to -37-ft MLLW plus 1-foot of paid Over-depth with delivery to the Government furnished Montezuma Wetland Offloader	34,100	CUBIC YARD (CY)		
0003	Dredging Reach 2 to -37-ft MLLW plus 1-foot of paid Over-depth with delivery to the Government furnished Montezuma Wetland Offloader	33,400	CUBIC YARD (CY)		
0004	Dredging Reach 3 to -37-ft MLLW plus 1-foot of paid Over-depth with delivery to the Government furnished Montezuma Wetland Offloader	21,000	CUBIC YARD (CY)		
0005	Dredging Reach 4 to -37-ft MLLW plus 1-foot of paid Over-depth with delivery to the Government furnished Montezuma Wetland Offloader	29,300	CUBIC YARD (CY)		
0006	Dredging Reach 5 to -37-ft MLLW plus 1-foot of paid Over-depth with delivery to the Government furnished Montezuma Wetland Offloader. Includes light monitoring associated with eelgrass	35,800	CUBIC YARD (CY)		
0007	Dredging Reach 6 to -37-ft MLLW plus 1-foot of paid Over-depth with delivery to the Government furnished Montezuma Wetland Offloader. Includes light monitoring associated with eelgrass	34,600	CUBIC YARD (CY)		

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0008	Dredging Reach 7 to -37-ft MLLW plus 1-foot of paid Over-depth with delivery to the Government furnished Montezuma Wetland Offloader. Includes light monitoring associated with eelgrass	29,100	CUBIC YARD (CY)		
0009	Dredging Reach 8 to -37-ft MLLW plus 1-foot of paid Over-depth with delivery to the Government furnished Montezuma Wetland Offloader. Includes light monitoring associated with eelgrass	18,900	CUBIC YARD (CY)		
0010	Dredging Reach 9 to -37-ft MLLW plus 1-foot of paid Over-depth with delivery to the Government furnished Montezuma Wetland Offloader. Includes light monitoring associated with eelgrass	19,000	CUBIC YARD (CY)		
0011	Dredging Reach 10 to -37-ft MLLW plus 1-foot of paid Over-depth with delivery to the Government furnished Montezuma Wetland Offloader	8,000	CUBIC YARD (CY)		
0012	Dredging Reach 11 to -37-ft MLLW plus 1-foot of paid Over-depth with delivery to the Government furnished Montezuma Wetland Offloader. Includes light monitoring associated with eelgrass	13,600	CUBIC YARD (CY)		
0013	Dredging Reach 12 to -37-ft MLLW plus 1-foot of paid Over-depth with delivery to the Government furnished Montezuma Wetland Offloader. Includes light monitoring associated with eelgrass	4,800	CUBIC YARD (CY)		

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0014	Dredging Reach 13 to -37-ft MLLW plus 1-foot of paid Over-depth with delivery to the Government furnished Montezuma Wetland Offloader. Includes light monitoring associated with eelgrass	15,900	CUBIC YARD (CY)		
0015	Dredging Reach 14 to -37-ft MLLW plus 1-foot of paid Over-depth with delivery to the Government furnished Montezuma Wetland Offloader	4,200	CUBIC YARD (CY)		
	Total (Item 0001 through 0015)	**301,700 CY + 1 Job**			

*** - ALL QUANTITIES ARE ESTIMATES. SEE Variation in Estimated Quantity, SECTION 00 73 00 (GENERAL CONDITION) OF THE CONTRACT.**

IMPORTANT NOTES:

1 . The term "Job", which appears on the Pricing Schedule (Section 00 01 00) under "Unit" for Proposal Item No. 0001 shall be considered as a Lump Sum. The Variation in Estimated Quantities contract clause, FAR 52.211-18, shall not apply to Proposal Item No. 0001.

2 . BASIS of AWARD: The contract will be awarded in accordance with subsection 2 of section 00 22 00 "Supplementary Conditions".

3 . The Government reserves the right to direct the Contractor to place dredged material at an environmentally acceptable alternate disposal site in accordance with the Change Clause FAR 52.243-4.

4 . The Contractor shall furnish all plant, labor, material, equipment, etc., necessary to perform all work in strict accordance with the terms and conditions set forth in the contract to include all attachments thereto.

5 . Dredge material placement shall meet the requirements in specification Section 01 11 00 SUMMARY OF WORK.

End of Document

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DREDGING PLANT AND EQUIPMENT SCHEDULE

Available Plant to be Used

No.	Type	Capacity	Manufacturer	Age and Condition	Location	Overall Dimensions
Dredges:						
Scows:						
Tugboats:						
Quantity Measurement Equipment:						
Quality Control:						
DDLS:						

1. In preparing the above tabulation the bidder shall insert the following information under the appropriate heading, using a separate line for each major item and an additional page if necessary.

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a. Number. For dredges give identifying number or name.

b. Type. Under this heading give description as follows: For clamshell dredge show bucket capacity in in-situ cubic yards, for clamshell and/or pipe-line dredges show inside diameter of intake and discharge pipe, horsepower of pump engine, and type of power; for hopper dredges show capacity at overflow, number of dredge pumps, suction pipe size, propulsion type and horsepower, dredge length O/A and beam O/A.

c. Capacity. Under this heading, state the estimated capacity of the plant in cubic yards per month when working materials similar to those which it is anticipated will be encountered in the performance of the work for clamshell, hopper, pipeline, and scow.

d. Overall Dimensions. State overall length and beam.

e. DDLS. List the DDLS equipment and number of each that will be used in accordance with Appendix 5 of the specifications.

2. List two dredging projects with location, dates of completion, and name of project owner:

(a)

(b)

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SECTION 00 21 00
INSTRUCTIONS, CONDITIONS AND NOTICES TO
OFFERORS AND EVALUATION CRITERIA FOR AWARD

1 .1 GENERAL

The work includes maintenance dredging of the Richmond Inner Harbor to -37-ft (MLLW) plus 1 foot of paid overdepth and transporting of the dredged material per the requirements in specification Section 00 10 00 PRICING SCHEDULE and 01 11 00 SUMMARY OF WORK. Material to be dredged from Reaches 1 through 14 is suitable and shall be taken for placement at Montezuma Wetlands site. Contractor shall refer to the DMMO Suitability Determination attached at the end of the specifications package. Sample areas 1 through 4 correspond to Reaches 1 through 10 while sample areas 5 and 6 correspond to Reaches 11 through 14.

This requirement is for full and open competition and will be awarded as a single Firm-Fixed Price (FFP) contract.

1.2 PROPOSAL EXPENSES AND PRE-CONTRACT COSTS

This Request for Proposal (RFP) does not commit the Government to pay, as a direct charge, any costs incurred in the preparation and submission of a proposal.

1.3 ACCURACY IN PROPOSAL

Proposal must set forth full, accurate, and complete information as required by this RFP (including attachments). The penalty for making false statements is prescribed in 18 U.S.C. 1001.

1.4 PROPOSAL QUESTIONS

Questions relating to this solicitation and technical inquiries will be submitted via email to the assigned contract specialist, Lisa Ip via email at Lisa.I.Ip@usace.army.mil.

Please include the solicitation number, the project title, and location of the project together with company name, email address, and telephone number in your correspondence. Inquiries must be received no later than 14 calendar days prior to the proposal's due date.

Answers to pertinent questions will be posted on PIEE (https://piee.eb.mil) and System for Award Management website (sam.gov). Changes to the solicitation will be made by amendment only (SF30), which will also be posted to PIEE and SAM.

1.5 COPIES OF SOLICITATION DOCUMENTS AND AMENDMENTS

Copies of the solicitation are available by INTERNET ACCESS ONLY. All solicitation documents will be posted to https://piee.eb.mil/ and sam.gov.

All amendments will be posted to https://piee.eb.mil/ and sam.gov. It shall be the contractor's responsibility to check the website for any amendments. The offeror shall submit in the proposal all requested information specified in this section of RFP.

1.6 PROPOSAL FORMAT AND SUBMITTAL REQUIREMENT
See 3.2 General Proposal Preparation located in Section 00 22 00 Supplementary Instruction.

1.7 SPECIAL INSTRUCTIONS FORSUBMITTING YOUR PROPOSAL:

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Note: All prospective Offerors must be registered in the System for Award Management (SAM - www.SAM.gov) and the Procurement Integrated Enterprise Environment (PIEE) website to be able to view and download solicitation information, and to submit offers.

Solicitation documents, plans, and specifications are only available to be download from PIEE, which may be accessed at https://wawf.eb.mil OR https://piee.eb.mil OR https://piee.eb.mil/xhtml/unauth/ home/login.xhtml.

Offers MUST BE submitted electronically through the PIEE website. The Government is not responsible for any loss of internet connectivity or for an offeror's inability to access the documents posted at the referenced website. All offerors are advised that this project may be delayed, cancelled or revised at any time during the solicitation, selection, evaluation, and/or final award process.

Registration should be completed one (1) week prior to the anticipated solicitation release date. USACE will not notify Offerors of any changes to the solicitation; Offerors must monitor PIEE and SAM for the solicitation to be posted, and for any posted changes or amendments.

See attachments "PIEE Solicitation Module Vendor Access Instructions", "SOP PIEE Proposal Manager Offeror", and "SOP PIEE Posting Offer" for instructions on getting access to the PIEE Solicitation Module and submitting Offeror proposals.

It is the responsibility of all Offerors to ensure their proposal submissions are complete, inclusive of the price schedule, acknowledge of amendments, bid guarantee, and all additional information requested through this advertisement.

1.8 OTHER DELIVERY METHODS

Telegraphic, Facsimile, emailed, HAND DELIVERED, MAILED, or comparable delivery methods of the Proposal Package are not acceptable.

Proposal may only be modified or withdrawn by electronic means through PIEE. A notice to modify or withdraw a proposal sent via PIEE must be received in PIEE no later than the due date and time.

1.9 PERFORMANCE AND PAYMENT BONDS

The offeror will, furnish performance and payment bonds within the time established in the contract in accordance with FAR 52.228-15 DEV located in Section 00 72 00. The offeror will provide the bonds to Lisa Ip at lisa.i.ip@usace.army.mil and Nairi Freeman at nairi.freeman@usace.army.mil.

2.0 INDIVIDUAL SURETIES IN SUPPORT OF BONDS

An offeror utilizing individual sureties in support of a bid bond shall include a Standard Form (SF) 28 (Affidavit of Individual Surety), accompanied by a pledge of acceptable assets from each person acting as an individual surety, and include these with the SF 24 (Bid Bond), and the proposal itself (see clause titled "Pledges of Assets," FAR 52.228-11 DEVIATION 2020 O0016).

Pledges of acceptable assets shall be in the form of (1) evidence of an escrow account and/or (2) a recorded lien on real estate.

Failure to provide required documentation described herein may cause the offeror to be deemed "unacceptable".

2.1 BID GUARANTEE FORM AND AMOUNT

See Tab 5 Offer Guarantee Form and Amount; located in Section 00 22 00 Supplementary Instructions

2.2 CONTRACTOR RESPONSIBILITY, PRE-AWARD SURVEY

See Tab 6 Contractor Responsibility, Pre-Award Survey Information; located in Section 0022 00-

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Supplementary Instructions

2.3 PREPARATION OF SUBCONTRACTING PLAN (SEP 2004)

a) See FAR 52.219-9, Small Business Subcontracting Plan, and DFARS 252.219-7996 DEV 2026-O0037, Small Business Subcontracting Plan (DOD Contracts), incorporated by reference into this contract in Section 00 70 00 and 00 72 00.

b) The Small Business Subcontracting Plan is not required from the low offeror until after the selection of the lowest offeror; it is not required as part of the proposal package. After the selection of offeror, if the selected offeror fails to submit an acceptable plan within the time prescribed by the Contracting Officer, the offeror will be ineligible for award.

c) Contact Contracting Officer with questions on the Small Business Subcontracting Plan requirements.

d) The acceptable Small Business Subcontracting Plan will be incorporated into and made a material part of the contract. The Corps of Engineers high encourages all offerors to meet the recommended subcontracting goals as follows:

Small Businesses 20%
Small, Disadvantaged Businesses 10.0%
Women-Owned Small Businesses 5.0%
HUBZone Small Business 2.0%
Service Disabled Veteran Owned Small Business 1.3%

The goals are calculated as a percentage of the TOTAL SUBCONTRACTING DOLLARS, NOT THE TOTAL CONTRACT AMOUNT.

2.4 PERIOD OF PERFORMANCE (PoP):

The PoP for the base contract is 114 days.

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Section 00 21 00 - Instructions

FAR Provisions Incorporated by Reference

Number	Title	Effective Date	Alternate Deviation	Variation Effective Date
52.204-7	System for Award Management-Registration. (Deviation 2026-O0038)	2026-02		
52.214-34	Submission of Offers in the English Language.	1991-04		
52.214-35	Submission of Offers in U.S. Currency.	1991-04		
52.215-1	Instructions to Offerors-Competitive Acquisition. (Deviation 2026-O0038)	2026-02		
52.222-5	Construction Wage Rate Requirements-Secondary Site of the Work. (Deviation 2026-O0038)	2026-02		
52.233-2	Service of Protest. (Deviation 2026-O0038)	2026-02		

DFARS Provisions Incorporated by Reference

Number	Title	Effective Date	Alternate Deviation	Variation Effective Date
252.204-7024	Notice on the Use of the Supplier	2023-03		

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	Performance Risk System.	
252.215-7013	Supplies and Services Provided by Nontraditional Defense Contractors.	2023-01

FAR Provisions Incorporated by Full Text

Number	Title	Effective Date	Alternate Deviation	Variation Effective Date
52.216-1	Type of Contract. (Deviation 2026-O0038)	2026-02		

Type of Contract (Feb 2026) (Deviation 2026-O0038)

The Government contemplates award of a firm fixed price contract resulting from this solicitation.

(End of provision)

52.228-1	Bid Guarantee.	1996-09

Bid Guarantee (Sept 1996)

(a) Failure to furnish a bid guarantee in the proper form and amount, by the time set for opening of bids, may be cause for rejection of the bid.

(b) The bidder shall furnish a bid guarantee in the form of a firm commitment, *e.g.,* bid bond supported by good and sufficient surety or sureties acceptable to the Government, postal money order, certified check, cashier's check, irrevocable letter of credit, or, under Treasury Department regulations, certain bonds or notes of the United States. The Contracting Officer will return bid guarantees, other than bid bonds-

(1) To unsuccessful bidders as soon as practicable after the opening of bids; and

(2) To the successful bidder upon execution of contractual documents and bonds (including any necessary coinsurance or reinsurance agreements), as required by the bid as accepted.

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(c) The amount of the bid guarantee shall be twenty (20) percent of the bid price or $ 3,000,000.00, whichever is less.

(d) If the successful bidder, upon acceptance of its bid by the Government within the period specified for acceptance, fails to execute all contractual documents or furnish executed bond(s) within 10 days after receipt of the forms by the bidder, the Contracting Officer may terminate the contract for default.

(e) In the event the contract is terminated for default, the bidder is liable for any cost of acquiring the work that exceeds the amount of its bid, and the bid guarantee is available to offset the difference.

(End of clause)

52.252-1	Solicitation Provisions Incorporated by Reference.	1998-02

Solicitation Provisions Incorporated by Reference (Feb 1998)

This solicitation incorporates one or more solicitation provisions by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at this/these address(es):

https://acquisition.gov/far-overhaul

(End of provision)

52.252-3	Alterations in Solicitation.	1984-04

Alterations in Solicitation (Apr 1984)

Portions of this solicitation are altered as follows:

252.204-7998 Alt A

52.215-1 Alt 1

52.225-12 Alt II

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(End of clause)

52.252-5	Authorized Deviations in Provisions.	2020-11

Authorized Deviations in Provisions (Nov 2020)

(a) The use in this solicitation of any Federal Acquisition Regulation (48 CFR Chapter 1) provision with an authorized deviation is indicated by the addition of "(DEVIATION)" after the date of the provision.

(b) The use in this solicitation of any Defense Federal Acquisition Regulation Supplement (48 CFR Chapter2) provision with an authorized deviation is indicated by the addition of "(DEVIATION)" after the name of the regulation.

(End of provision)

DFARS Provisions Incorporated by Full Text

Number	Title	Effective Date	Alternate Deviation	Variation Effective Date
252.215-7012	Requirements for Submission of Proposals via Electronic Media.	2018-01		

REQUIREMENTS FOR SUBMISSION OF PROPOSALS VIA ELECTRONIC MEDIA (JAN 2018)

The Offeror shall submit the cost portion of the proposal via the following electronic media: *PIEE*

(End of provision)

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Section 00 22 00 – Supplementary Instruction

GENERAL SUBMISSION REQUIREMENTS AND INSTRUCTIONS, EVALUATION STANDARDS FOR CONTRACT AWARD

1. OVERVIEW

Proposals received in response to this solicitation for the Richmond Inner Harbor FY26 Maintenance Dredging Project, Contra Costa County, California will be evaluated using the Lowest Price Technically Acceptable method of selecting the contractor offering best value to the Government, as explained below.

2. BASIS OF AWARD

2.1. ELIGIBILITY FOR CONTRACT AWARD

In accordance with the requirements of Federal Acquisition Regulation (FAR) Part 9, no contract shall be entered into unless the Contracting Officer ensures that all requirements of law, executive orders, regulations, and all other applicable procedures, including clearances and approvals, have been met. This includes the FAR requirement that no award shall be made unless the contracting officer makes an affirmative determination of responsibility of the prospective awardee. To be determined responsible, a contractor must meet the general standards in FAR Part 9 and any special standards set forth in this solicitation.

2.2. SOURCE SELECTION USING THE LOWEST-PRICE, TECHNICALLY-ACCEPABLE (LPTA) METHOD

The Government shall evaluate all proposals. The contract will be awarded to this offeror upon a determination of responsibility by the Contracting Officer (see paragraph 2.1, above).

3. GENERAL SUBMISSION REQUIREMENTS AND INSTRUCTIONS

For purposes of this RFP, an “Offeror” may include a group of two or more entities that have formed a “contractor team arrangement”. In the case of entities that have formed a contractor team arrangement, the experience and performance history of any member of the team, whether or not gained while working with the other member(s) of the currently-proposed contractor team arrangement, may be presented in the Offeror’s proposal.

In the case of contractor team arrangements involving a prime contractor and subcontractor(s), where the prime contractor submits the proposal in response to this RFP, the prime contractor must have completed at least one of the projects submitted in fulfillment of Factor 1 of this RFP. If information about a subcontractor is submitted, the

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Government will review the information on the presumption that this subcontractor will perform similar work in the construction of this project, should award be made to the respective offeror. No such awardee may substitute another subcontractor without the Government's prior written approval.

Similarly, an Offeror that relies on the performance history of a member or members of a proposed contractor team arrangement will be expected to maintain that arrangement during performance of any contract awarded to that Offeror under this RFP. As a part of its proposal, the Offeror must provide a contractor team agreement signed by all parties, identifying the legal name(s) of all entities and describing the nature of each entity's relationship (teaming/partnering, joint venture, etc.) and its proposed role in performance of this contract. Past Performance information of other than the Offeror will not be considered without the team agreement. In the case of joint ventures, at least one project will be submitted from each member to demonstrate past experience. This documentation must be provided in the applicable section of the Offeror's proposal.

3.1 Media, Page Size, Margins, Fonts, and Page Limitations.

Submit only electronic files as specifically stated in this section. Do not submit excess information, to include audio-visual materials, electronic media, etc. Do not include links to information on websites in lieu of incorporating the information physically into the proposal. Except where another size is specifically authorized for a submission, use only 8 1/2" x 11" electronic pages. Use at least 1-inch margins; except headers and footers may be outside the 1-inch margins. Do not justify the right margin. Ensure that all text and graphics are clearly legible. Do not use a font size smaller than 10-point font, and do not use unusual font styles such as script, or condensed fonts. Pages furnished for organizational purposes only, such as a "Table of Contents" or divider tabs, are excluded from page limitations.

3.2 Conditional Offers.

Do not include exceptions to the terms and conditions of the solicitation in either the technical or price proposal volumes. Inclusion of any company terms and conditions that conflict with the terms and conditions of the solicitation may result in a determination that the offer is unacceptable and thus ineligible for award. Resolve questions about the terms and conditions or technical requirements of the solicitation prior to submission of your offer; see "Special Instructions for Submitting Your Proposal", located in Section 00 21 00.

3.3 Restrictions on Offeror-Provided Information.

Proposals shall not contain classified data. "Confidential" projects may be submitted to demonstrate capability as long as all of the information required for evaluation as specified

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herein can be provided to the Government as part of the offeror's technical proposal. Offerors that include data in their proposals that they do not want disclosed or used except for evaluation purposes, must redact the data in accordance with FAR 52.215-1, Instructions to Offerors - Competitive Acquisition.

4 GENERAL PROPOSAL PREPARATION.

The proposal shall be submitted as summarized below.

(1) Volume I – Technical Volume
  (a) Factor 1: Past Performance
  (b) Factor 2: Availability of Equipment
(2) Volume II – Price Volume
  (a) Proposal Cover Sheet
  (b) Standard Form (SF)1442, to include acknowledgement of Amendments, and Joint Venture Agreement (if applicable)
  (c) Price Schedule
  (d) Annual Representations and Certifications
  (e) Offer Guarantee
  (f) Pre-Award Survey Information

Each offeror must submit a proposal consisting of a "technical" volume, and a "price" volume. The two volumes must be submitted as separate volumes. Both volumes must be received no later than the date and time specified in Block 13 of SF 1442, or as amended in the SF 30. The information in the two volumes is evaluated separately and independently. Do not cross-reference material between the non-price and price volumes.

4.1 Marking of Proposal Volumes.

Name the technical volume as the "Technical Volume" and name the price volume as the "Price Volume", and include the project title and location, solicitation number, name and address of the offeror on the title page of each volume. Offerors must include a table of contents for each proposal volume.

4.2 TECHNICAL VOLUME

The Technical proposal must be submitted as one complete PDF electronic document.

4.2.1. Format, Content and Tabs for the Technical Volume:

There is a fifteen (15) page limit for the overall technical proposal; however, there may be limits imposed at the tab level. Organize your technical proposal as indicated below. The tabs directly correlate to the technical evaluation factors. Although the Government may use information obtained from any source in its evaluation of the technical

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proposal, the Government is not obligated to search for or to consider information that belongs under a specific tab in an offeror's proposal but is actually elsewhere in the proposal. Limit proposal submittals to the information specified; excess information will not be evaluated.

The term "tabs" means searchable PDF bookmarks.

4.2.2 Tab 1 of the Technical Proposal: Factor 1 Past Performance

4.2.2.1 Submission Requirements

The Offeror shall provide past performance information on dredging projects within the last three (3) years. Experience and Capability, using the Contractor Performance Assessment Reporting System (CPARS) for any past federal projects submitted, and other sources for non-federal projects.

If CPARS evaluations are not available, the Offeror shall submit a Past Performance Questionnaire (PPQ) for each project. Offerors should follow-up with clients/references to ensure timely submittal of questionnaires. Completed PPQs should be submitted as part of the offeror's proposal. If the Offeror is unable to obtain a completed PPQ before the proposal closing date, the Offeror shall complete and submit the first page of the PPQ, which provides contract and reference contact information for the project(s). The Offeror shall ensure correct phone numbers and email addresses are provided for each point of contact. Completed PPQs may also be submitted by the preparer directly to the Contract Specialist (lisa.i.ip@usace.army.mil) and Contracting Officer (nairi.freeman@usace.army.mil) via email prior to the RFP closing date.

The Government may review and consider information obtained from other sources, e.g., CPARS information using CAGE/Unique Entity ID of the teaming arrangement, Federal Awardee Performance and Integrity Information System (FAPIIS), Electronic Subcontract Reporting System (eSRS), etc.

While the Government may elect to consider data from other sources, the burden of providing detailed, current, accurate and complete past performance information rests with the Offeror.

Each example project must start on a new page and there is no page limitation for CPARS and PPQ's submission. Pass Performance will not count against the page limitation for this volume.

4.2.2.2 Evaluation Criteria:

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The past performance evaluation is an assessment of the offeror's ability to successfully perform this requirement based on the offeror's record of relevant past projects, and the documented level of satisfaction of each project owner after completion of construction.

Past Performance will be determined relevant if a submitted project is similar in size, scope, and complexity to this requirement.

How well the offeror performed the prior contracts submitted under Factor 1 will be evaluated by reviewing CPARS evaluations, completed PPQ forms and other information available to the Government.

*NOTE: If an offeror does not have a record of relevant past performance or information on past performance is not available or so sparse that no meaningful past performance rating can be reasonably assigned, the offeror may not be evaluated favorably or unfavorably on past performance (IAW FAR 15.202(c)(1)). A neutral rating shall be considered acceptable.

Each Offeror shall be assigned one of the two ratings listed below.

Acceptable - Based on the offeror's performance record, the Government has a reasonable expectation that the offeror will successfully perform the required effort, or the offeror's performance record is unknown *(See note above).

Unacceptable - Based on the offeror's performance record, the Government does not have a reasonable expectation that the offeror will be able to successfully perform the required effort

4.2.3. Tab 2 of the Technical Volume: Factor 2 – Availability of Equipment

4.2.3.1 Availability of Equipment – Evaluation Factor

The Offeror shall provide a projected timeline and supporting narrative detailing the availability of equipment. The narrative shall be task-oriented, clearly indicating the number of calendar days following pre-construction submittals and mobilization— assumed to occur approximately 30 calendar days after Notice to Proceed (NTP)—by which dredging activities are to commence and be completed.

The narrative shall also include a summary of any failures and/or successes related to equipment availability on the last five dredging projects.

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Constraints:

The Offeror must demonstrate the capability and flexibility of equipment availability to meet the proposed contract completion period. The narrative shall clearly identify any known or anticipated constraints, such as:

- Equipment or labor availability
- Weather impacts
- Other logistical or operational limitations

4.2.3.2 Submission Requirements Evaluation Criteria:

The Government will evaluate the Offeror's Availability of Equipment narrative to assess the likelihood that equipment will be provided in a timely and effective manner to ensure successful completion of the project within the specified period of performance.

Narratives that clearly demonstrate the Offeror's ability to complete dredging within 114 calendar days from Notice to Proceed (NTP), along with a general understanding of potential factors that could impact availability (e.g., labor, weather, logistics), will be considered acceptable.

Proposals that indicate equipment availability or project completion beyond 114 calendar days after NTP will be rated Unacceptable under this factor.

A proposal will be rated as Unacceptable if it does not meet the definition of Acceptable.

Technical Acceptable/Unacceptable Ratings:

- Acceptable - Proposal meets the minimum requirements of the solicitation
- Unacceptable - Proposal does not meet the minimum requirements of the solicitation

4.3. PRICE VOLUME.

4.3.1 FORMAT, CONTENTS, AND LIST OF TABS FOR THE PRICE PROPOSAL

This should be a separate file from the technical proposal. There are no page limits for the price proposal; however, responses should be focused, providing required information only. Organize your price proposal as indicated below.

Tab 1: Proposal Cover Sheet.

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As required by FAR 52.215-1(c)(2)(i)-(v), the proposal cover sheet must include the following items:

1. Solicitation Number.

2. The name, address, email, and telephone numbers of the offeror.

3. A statement specifying the extent of agreement with all terms, conditions, and provisions included in the Solicitation and agreement to furnish any or all items upon which prices are offered at the price set opposite each item.

4. Names, titles, e-mail address, and telephone numbers of persons authorized to negotiate on the offeror's behalf with the Government in connection with this solicitation

5. Name, title, and signature of person authorized to sign the proposal. Proposals signed by an agent shall be accompanied by evidence of that agent's authority, unless that evidence has been previously furnished to the issuing office.

Tab 2: SF 1442; Acknowledgement of Amendments; Joint Venture Agreement

The Standard Form (SF) 1442 must be completed by the offeror and duly executed with an original signature by the official(s) identified in the proposal cover sheet as authorized to bind the offeror in accordance with FAR 4.207, which includes Contractor Team Arrangements. Include the offeror's CAGE code in block 14 of the SF 1442, along with the offeror's address. All amendments must be acknowledged in accordance with the instructions on the Standard Form 30, Amendment. If the offeror is a Joint Venture (JV), include a copy of the JV agreement and indicate its status.

Tab 3: Contract Line-Item Number (CLIN) and Pricing Schedule and Dredging Plant and Equipment Schedule

Submit the completed Contract Line-Item Number (CLIN) Schedule on the SF 1442 and provided Price Schedule with the offeror's proposed contract prices inserted in the appropriate spaces. Prices must be provided for all CLINs. Submit the Dredging Plant and Equipment Schedule under Section 00 10 00.

Tab 4: Annual Representations and Certifications

The offeror must have electronically completed the annual representations and certifications on the "System for Award Management" (SAM) website in accordance with DFARS 252.204-7998. The offeror is responsible for ensuring that these on-line Representations and Certifications are updated as necessary to reflect changes, but at least annually to ensure that they are kept current, accurate and complete.

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Tab 5: Offer Guarantee Form and Amount

The offeror shall furnish a separate bid guarantee in accordance with the solicitation provision titled "Bid Guarantee", FAR 52.228-1. In accordance with FAR 28.101-2 (b) the bid guarantee amount shall be at least 20 percent of the "proposed price" but shall not exceed $3 million. When the penal sum is expressed as a percentage, a maximum dollar limitation may be stated.

In accordance with FAR 28.106-1, a Standard Form (SF) 24 shall be used for the bid bond.

In accordance with FAR 28.202(a) (1), corporate sureties utilized must appear on the list contained in the Department of Treasury Circular 570 titled, "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and Acceptable Reinsuring Companies."

Contractor shall provide written confirmation that the Contracting Specialist may contact the bonding company to confirm the bond agreement's legitimacy.

Tab 6: Contractor Responsibility, Pre-Award Survey Information

To determine a contractor's responsibility for purposes of contract award in accordance with FAR Part 9, the contractor is required to provide a statement regarding previous experience and past performance in performing comparable work, information related to the business organization, financial resources, and/or plant to be used in performing the work (see Attachment 2, Pre-award Survey). The Government will request this information from the eligible contractor after receipt of offer if they have not had a contract with the San Francisco District within the last twelve months and the Government will set a due date for its submission.

(a) If required to determine that a prospective contractor is responsible, the offeror must:

1) Demonstrate that they have adequate financial resources to perform the contract or the ability to obtain them.

2) Be able to comply with the required or proposed delivery or perform schedule, taking into consideration all existing commercial and governmental business commitments.

3) Have a satisfactory performance record. In making the determination of responsibility, the Government Contracting Officer shall consider relevant past performance information. A prospective contractor shall not be determined as

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responsible or not responsible solely based on a lack of relevant performance history except when there are special standards set forth in the solicitation, which applies, to all offerors that must be met in order to receive the award. These special standards may be necessary when unusual expertise or specialized facilities are necessary in the performance of the contract; therefore, in order to be determined as responsible for a particular contract, the offeror must be able to meet those special standards. A prospective contractor that is or recently has been seriously deficient in contract performance shall be presumed to be nonresponsive unless the Contracting Officer determines that the circumstances were beyond the contractor's control or that the contractor has taken appropriate corrective action. Other responsibility considerations by the Contracting Officer will include past efforts by the contractor to apply sufficient tenacity and perseverance to perform acceptably, to meet quality requirements of contracts, and the contractor's past compliance with subcontracting plans (if required) under recent contracts.

4) Have a satisfactory record of integrity and business ethics.

5) Have the necessary organization, experience, accounting and operational controls, and technical skills, or the ability to obtain them (including, as appropriate, such elements as production control procedures, property control systems, quality assurance measures, and safety programs applicable to materials to be produced or services to be performed by the prospective contractor and subcontractors).

6) Have the necessary production, construction, and technical equipment and facilities, or the ability to obtain them.

7) Be otherwise qualified and eligible to receive an award under applicable laws and regulations.

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Section 00 45 00 - Representations and Certifications

FAR Provisions Incorporated by Reference

Number	Title	Effective Date	Alternate Deviation	Variation Effective Date
52.203-11	Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions.	2024-09		
52.229-12	Tax on Certain Foreign Procurements.	2021-02		

DFARS Provisions Incorporated by Reference

Number	Title	Effective Date	Alternate Deviation	Variation Effective Date
252.203-7005	Representation Relating to Compensation of Former DoD Officials.	2022-09		
252.204-7008	Compliance with Safeguarding Covered Defense Information Controls.	2016-10		
252.225-7055	Representation Regarding Business Operations with the Maduro Regime.	2022-05		
252.225-7057	Preaward Disclosure of Employment of Individuals Who Work in the People's Republic of China.	2022-08		

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252.225-7059	Prohibition on Certain Procurements from the Xinjiang Uyghur Autonomous Region-Representation.	2023-06

FAR Provisions Incorporated by Full Text

Number	Title	Effective Date	Alternate Deviation	Variation Effective Date
52.203-2	Certificate of Independent Price Determination.	1985-04		

Certificate of Independent Price Determination (Apr 1985)

(a) The offeror certifies that-

(1) The prices in this offer have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other offeror or competitor relating to-

(i) Those prices;

(ii) The intention to submit an offer; or

(iii) The methods or factors used to calculate the prices offered.

(2) The prices in this offer have not been and will not be knowingly disclosed by the offeror, directly or indirectly, to any other offeror or competitor before bid opening (in the case of a sealed bid solicitation) or contract award (in the case of a negotiated solicitation) unless otherwise required by law; and

(3) No attempt has been made or will be made by the offeror to induce any other concern to submit or not to submit an offer for the purpose of restricting competition.

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(b) Each signature on the offer is considered to be a certification by the signatory that the signatory-

(1) Is the person in the offeror's organization responsible for determining the prices being offered in this bid or proposal, and that the signatory has not participated and will not participate in any action contrary to paragraphs (a)(1) through (a)(3) of this provision; or

(2)

(i) Has been authorized, in writing, to act as agent for the following principals in certifying that those principals have not participated, and will not participate in any action contrary to paragraphs (a)(1) through (a)(3) of this provision ____[insert full name of person(s) in the offeror's organization responsible for determining the prices offered in this bid or proposal, and the title of his or her position in the offeror's organization];

(ii) As an authorized agent, does certify that the principals named in subdivision (b)(2)(i) of this provision have not participated, and will not participate, in any action contrary to paragraphs (a)(1) through (a)(3) of this provision; and

(iii) As an agent, has not personally participated, and will not participate, in any action contrary to paragraphs (a)(1) through (a)(3) of this provision.

(c) If the offeror deletes or modifies subparagraph (a)(2) above, the offeror must furnish with its offer a signed statement setting forth in detail the circumstances of the disclosure.

(End of provision)

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52.204-5	Women-Owned Business (Other Than Small Business).	2014-10

Women-Owned Business (Other Than Small Business) (Oct 2014)

(a) Definition."Women-owned business concern," as used in this provision, means a concern

that is at least 51 percent owned by one or more women; or in the case of any publicly owned business, at least 51 percent of its stock is owned by one or more women; and whose management and daily business operations are controlled by one or more women.

(b) Representation. [Complete only if the offeror is a women-owned business concern and has not represented itself as a small business concern in paragraph (c)(1) of FAR 52.219-1, Small Business Program Representations, of this solicitation.] The offeror represents that it [ ] is a women-owned business concern.

(End of provision)

52.209-2	Prohibition on Contracting With Inverted Domestic Corporations-Representation. (Deviation 2026-O0038)	2026-02

Prohibition on Contracting with Inverted Domestic Corporations-Representation (Feb 2026) (Deviation 2026-O0038)

(a) Definitions. As used in this clause-

Inverted domestic corporation means a foreign incorporated entity that meets the definition of an inverted domestic corporation under 6 U.S.C. 395(b), applied in accordance with the rules and definitions of 6 U.S.C. 395(c).

Subsidiary means an entity in which more than 50 percent of the entity is owned-

(1) Directly by a parent corporation; or

(2) Through another subsidiary of a parent corporation.

(b) Government agencies are not permitted to use appropriated (or otherwise made available) funds for contracts with either an inverted domestic corporation, or a subsidiary of an inverted domestic corporation, unless the exception at 9.108-3(b) applies or the requirement is waived in accordance with the procedures at 9.108-5.

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(c) Representation. The Offeror represents that-

(1) It [ ] is, [ ] is not an inverted domestic corporation; and

(2) It [ ] is, [ ] is not a subsidiary of an inverted domestic corporation.

(End of provision)

52.209-5	Certification Regarding Responsibility Matters. (Deviation 2026-O0038)	2026-02

Certification Regarding Responsibility Matters (Feb 2026) (Deviation 2026-O0038)

(a)

(1) The Offeror certifies, to the best of its knowledge and belief, that-

(i) The Offeror and/or any of its Principals-

(A) Are [ ] are not [ ] presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal agency;

(B) Have [ ] have not [ ], within a three-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) contract or subcontract; violation of Federal or State antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, violating Federal criminal tax laws, or receiving stolen property (if offeror checks "have", the offeror shall also see 52.209-7, if included in this solicitation);

(C) Are [ ] are not [ ] presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in paragraph (a)(1)(i)

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(B) of this provision; and

(D) Have [ ], have not [ ], within a three-year period preceding this offer, been notified of any delinquent Federal taxes in an amount that exceeds the threshold at 9.104-5(a)(2) for which the liability remains unsatisfied. Federal taxes are considered delinquent if both of the following criteria apply:

(1) The tax liability is finally determined. The liability is finally determined if it has been assessed. A liability is not finally determined if a pending administrative or judicial challenge remains. In the case of a judicial challenge to the liability, the liability is not finally determined until all judicial appeal rights have been exhausted.

(2) The taxpayer is delinquent in making payment. A taxpayer is delinquent if the taxpayer has failed to pay the tax liability when full payment was due and required. A taxpayer is not delinquent in cases where enforced collection action is precluded.

(ii) The Offeror has [ ] has not [ ], within a 3-year period preceding this offer, had one or more contracts terminated for default by any Federal agency.

(2) "Principal," for the purposes of this certification, means an officer, director, owner, partner, or a person having primary management or supervisory responsibilities within a business entity (e. g., general manager; plant manager; head of a division or business segment; and similar positions).

(b) The Offeror shall provide immediate written notice to the Contracting Officer if, at any time prior to contract award, the Offeror learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(c) A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award under this solicitation. However, the Government will consider the certification in connection with a determination of the Offeror's responsibility. Failure of the Offeror to furnish a certification or provide such additional information as requested by the Contracting Officer may render the Offeror nonresponsible.

(d) This provision does not require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a). The knowledge and information of an Offeror is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

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(e) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance was placed when making award. If the Government later determines that the Offeror knowingly rendered an erroneous certification, in addition to other remedies available to the Government, the Contracting Officer may terminate the contract resulting from this solicitation for default.

(End of provision)

52.209-7	Information Regarding Responsibility Matters. (Deviation 2026-O0038)	2026-02

Information Regarding Responsibility Matters (Feb 2026) (Deviation 2026-O0038)

(a) Definitions. As used in this provision-

Administrative proceeding means a non-judicial process that is adjudicatory in nature in order to make a determination of fault or liability (e.g., Securities and Exchange Commission Administrative Proceedings, Civilian Board of Contract Appeals Proceedings, and Armed Services Board of Contract Appeals Proceedings). This includes administrative proceedings at the Federal and State level but only in connection with performance of a Federal contract or grant. It does not include agency actions such as contract audits, site visits, corrective plans, or inspection of deliverables.

Federal contracts and grants with total value greater than $10,000,000 means-

(1) The total value of all current, active contracts and grants, including all priced options; and

(2) The total value of all current, active orders including all priced options under indefinite-delivery, indefinite-quantity, 8(a), or requirements contracts (including task and delivery and multiple-award Schedules).

Principal means an officer, director, owner, partner, or a person having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a division or business segment; and similar positions).

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(b) The offeror [ ] has [ ] does not have current active Federal contracts and grants with total value greater than $10,000,000.

(c) If the offeror checked "has" in paragraph (b) of this provision, the offeror represents, by submission of this offer, that the information it has entered in the Federal Awardee Performance and Integrity Information System (FAPIIS) is current, accurate, and complete as of the date of submission of this offer with regard to the following information:

(1) Whether the offeror, and/or any of its principals, has or has not, within the last five years, in connection with the award to or performance by the offeror of a Federal contract or grant, been the subject of a proceeding, at the Federal or State level that resulted in any of the following dispositions:

(i) In a criminal proceeding, a conviction.

(ii) In a civil proceeding, a finding of fault and liability that results in the payment of a monetary fine, penalty, reimbursement, restitution, or damages of $5,000 or more.

(iii) In an administrative proceeding, a finding of fault and liability that results in-

(A) The payment of a monetary fine or penalty of $5,000 or more; or

(B) The payment of a reimbursement, restitution, or damages in excess of $100,000.

(iv) In a criminal, civil, or administrative proceeding, a disposition of the matter by consent or compromise with an acknowledgment of fault by the Contractor if the proceeding could have led to any of the outcomes specified in paragraphs (c)(1)(i), (c)(1)(ii), or (c)(1)(iii) of this provision.

(2) If the offeror has been involved in the last five years in any of the occurrences listed in (c)(1) of this provision, whether the offeror has provided the requested information with regard to each occurrence.

(d) The offeror shall post the information in paragraphs (c)(1)(i) through (c)(1)(iv) of this provision in FAPIIS as required through maintaining an active registration in the System for Award Management, which can be accessed via https://www.sam.gov (see 52.204-7).

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(End of provision)

52.209-11	Representation by Corporations Regarding Delinquent Tax Liability or a Felony Conviction under any Federal Law. (Deviation 2026-O0038)	2026-02

Representation by Corporations Regarding Delinquent Tax Liability or a Felony Conviction under any Federal Law (Feb 2026) (Deviation 2026-O0038)

(a) The Government will not enter into a contract with any corporation that-

(1) Has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability, where the awarding agency is aware of the unpaid tax liability, unless an agency has considered suspension or debarment of the corporation and made a determination that suspension or debarment is not necessary to protect the interests of the Government; or

(2) Was convicted of a felony criminal violation under any Federal law within the preceding 24 months, where the awarding agency is aware of the conviction, unless an agency has considered suspension or debarment of the corporation and made a determination that this action is not necessary to protect the interests of the Government.

(b) The Offeror represents that-

(1) It is [ ] is not [ ] a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability; and

(2) It is [ ] is not [ ] a corporation that was convicted of a felony criminal violation under a Federal law within the preceding 24 months.

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(End of provision)

52.209-13	Violation of Arms Control Treaties or Agreements-Certification. (Deviation 2026-O0038)	2026-02

Violation of Arms Control Treaties or Agreements-Certification (Feb 2026) (Deviation 2026-O0038)

(a) This provision does not apply to acquisitions at or below the simplified acquisition threshold or to acquisitions of commercial products and commercial services as defined in Federal Acquisition Regulation 2.101.

(b) Certification. [Offeror shall check either (1) or (2).]

[ ] (1) The Offeror certifies that-

(i) It does not engage and has not engaged in any activity that contributed to or was a significant factor in the President's or Secretary of State's determination that a foreign country is in violation of its obligations undertaken in any arms control, nonproliferation, or disarmament agreement to which the United States is a party, or is not adhering to its arms control, nonproliferation, or disarmament commitments in which the United States is a participating state. The determinations are described in the most recent unclassified annual report provided to Congress pursuant to section 403 of the Arms Control and Disarmament Act (22 U.S.C. 2593a). The report is available at https://www.state.gov/bureaus-offices/under-secretary-for-arms-control-and-international-security-affairs/bureau-of-arms-control-verification-and-compliance/; and

(ii) No entity owned or controlled by the Offeror has engaged in any activity that contributed to or was a significant factor in the President's or Secretary of State's determination that a foreign country is in violation of its obligations undertaken in any arms control, nonproliferation, or disarmament agreement to which the United States is a party, or is not adhering to its arms control, nonproliferation, or disarmament commitments in which the United States is a participating state. The determinations are described in the most recent unclassified annual

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report provided to Congress pursuant to section 403 of the Arms Control and Disarmament Act (22 U.S.C. 2593a). The report is available at https://www.state.gov/bureaus-offices/under-secretary-for-arms-control-and-international-security-affairs/bureau-of-arms-control-verification-and-compliance/; or

[ ] (2) The Offeror is providing separate information with its offer in accordance with paragraph (d)(2) of this provision.

(c) Procedures for reviewing the annual unclassified report (see paragraph (b)(1) of this provision). For clarity, references to the report in this section refer to the entirety of the annual unclassified report, including any separate reports that are incorporated by reference into the annual unclassified report.

(1) Check the table of contents of the annual unclassified report and the country section headings of the reports incorporated by reference to identify the foreign countries listed there. Determine whether the Offeror or any person owned or controlled by the Offeror may have engaged in any activity related to one or more of such foreign countries.

(2) If such activity might have occurred, review all findings in the report associated with those foreign countries to determine whether or not each such foreign country was determined to be in violation of its obligations undertaken in an arms control, nonproliferation, or disarmament agreement to which the United States is a party, or to be not adhering to its arms control, nonproliferation, or disarmament commitments in which the United States is a participating state. For clarity, in the annual report an explicit certification of non-compliance is equivalent to a determination of violation. However, the following statements in the annual report are not equivalent to a determination of violation:

(i) An inability to certify compliance.

(ii) An inability to conclude compliance.

(iii) A statement about compliance concerns.

(3) If so, determine whether the Offeror or any person owned or controlled by the Offeror has engaged in any activity that contributed to or is a significant factor in the determination in the report that one or more of these foreign countries is in violation of its obligations undertaken in an arms control, nonproliferation, or disarmament agreement to which the United States is a party, or is not adhering to its arms control, nonproliferation, or disarmament commitments in which the United States is a participating state. Review the narrative for any such findings

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reflecting a determination of violation or non-adherence related to those foreign countries in the report, including the finding itself, and to the extent necessary, the conduct giving rise to the compliance or adherence concerns, the analysis of compliance or adherence concerns, and efforts to resolve compliance or adherence concerns.

(4) The Offeror may submit any questions with regard to this report by email to NDAA1290Cert@state.gov. To the extent feasible, the Department of State will respond to such email inquiries within 3 business days.

(d) Do not submit an offer unless-

(1) A certification is provided in paragraph (b)(1) of this provision and submitted with the offer; or

(2) In accordance with paragraph (b)(2) of this provision, the Offeror provides with its offer information that the President of the United States has

(i) Waived application under 22 U.S.C. 2593e(d) or (e); or

(ii) Determined under 22 U.S.C. 2593e(g)(2) that the entity has ceased all activities for which measures were imposed under 22 U.S.C. 2593e(b).

(e) Remedies. The certification in paragraph (b)(1) of this provision is a material representation of fact upon which reliance was placed when making award. If the Government later determines that the Offeror knowingly submitted a false certification, in addition to other remedies available to the Government, such as suspension or debarment, the Contracting Officer may terminate any contract resulting from the false certification.

(End of provision)

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52.219-1	Small Business Program Representations. (Deviation 2026-O0038)	2026-02

Small Business Program Representations (Feb 2026) (Deviation 2026-O0038)

(a) *Definitions*. As used in this provision-

Economically disadvantaged women-owned small business (EDWOSB) concern means a small business concern that is at least 51 percent directly and unconditionally owned by, and the management and daily business operations of which are controlled by, one or more women who are citizens of the United States and who are economically disadvantaged in accordance with 13 CFR part 127, and the concern is certified by SBA or an approved third-party certifier in accordance with 13 CFR 127.300. It automatically qualifies as a women-owned small business concern eligible under the WOSB Program.

HUBZone small business concern means a small business concern that meets the requirements described in 13 CFR 126.200, is certified by the Small Business Administration (SBA) and designated by SBA as a HUBZone small business concern in the Small Business Search (SBS) (13 CFR 126.103).

Service-disabled veteran-owned small business (SDVOSB) concern eligible under the SDVOSB Program means an SDVOSB concern that is designated in the System for Award Management (SAM) as certified by the Small Business Administration (SBA) in accordance with 13 CFR 128.300.

Small business concern-

(1) Means a concern, including its affiliates, that is independently owned and operated, not dominant in its field of operation, and qualified as a small business under the criteria in 13 CFR part 121 and the size standard in paragraph (b) of this provision.

(2) *Affiliates*, as used in this definition, means business concerns, one of whom directly or indirectly controls or has the power to control the others, or a third party or parties control or have the power to control the others. In determining whether affiliation exists, consideration is given to all appropriate factors including common ownership, common management, and contractual relationships. SBA determines affiliation based on the factors set forth at 13 CFR 121.103.

Small disadvantaged business concern means a small business concern that-

(1) Is at least 51 percent unconditionally and directly owned (as defined at 13 CFR 124.105) by one or more socially disadvantaged (as defined at 13 CFR 124.103) and economically disadvantaged (as defined at 13 CFR 124.104) individuals who are citizens of the United States, and

(2) The management and daily business operations of which are controlled (as defined at 13 CFR 124.106) by individuals who meet the criteria in paragraph (1) of this definition.

Women-owned small business (WOSB) concern eligible under the WOSB Program (in accordance with 13 CFR part 127) means a small business concern that is at least 51 percent directly and unconditionally owned by, and the management and daily business operations of

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which are controlled by, one or more women who are citizens of the United States, and the concern is certified by SBA or an approved third-party certifier in accordance with 13 CFR 127.300.

(b)

(1) The North American Industry Classification System (NAICS) code for this acquisition is 237990.

(2) The small business size standard is $37,000,000.00.

(3) The small business size standard for a concern that submits an offer, other than on a construction or service acquisition, but proposes to furnish an end item that it did not itself manufacture, process, or produce (*i.e.*, nonmanufacturer), is 500 employees, or 150 employees for information technology value-added resellers under NAICS code 541519, if the acquisition-

(i) Is set aside for small business and has a value above the simplified acquisition threshold;

(ii) Uses the HUBZone price evaluation preference regardless of dollar value, unless the offeror waives the price evaluation preference; or

(iii) Is an 8(a), HUBZone, service-disabled veteran-owned, economically disadvantaged women-owned, or women-owned small business set-aside or sole-source award regardless of dollar value.

(c) *Representations.*

(1) The offeror represents as part of its offer that-

(i) it is, is not a small business concern; or

(ii) It is, is not a small business joint venture that complies with the requirements of 13 CFR 121.103(h) and 13 CFR 125.8(a) and (b). [_____The offeror shall enter the name and unique entity identifier of each party to the joint venture: __.]

(2) [*Complete only if the offeror represented itself as a small business concern in paragraph (c)(1) of this provision.]* The offeror represents that it is, is not a women-owned small disadvantage business concern.

(3) *Women-owned small business (WOSB) joint venture eligible under the WOSB Program.* The offeror represents as part of its offer that it is, is not a joint venture that complies with the requirements of 13 CFR 127.506(a) through (c). [____The offeror shall enter the name and unique entity identifier of each party to the joint venture: __.]

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(4) *Economically disadvantaged women-owned small business (EDWOSB) joint venture.* The offeror represents as part of its offer that it is, is not a joint venture that complies with the requirements of 13 CFR 127.506(a) through (c). [____The offeror shall enter the name and unique entity identifier of each party to the joint venture: __.]

(5) *SDVOSB joint venture eligible under the SDVOSB Program*. [*Complete only if the offeror is certified as a SDVOSB concern*]. The offeror represents as part of its offer that it is, is not a SDVOSB joint venture eligible under the SDVOSB Program that complies with the requirements of 13 CFR 128.402. [____The offeror shall enter the name and unique entity identifier of each party to the joint venture:__.]

(6) *HUBZone joint venture eligible under the HUBZone Program.* [*Complete only if the offeror is a HUBZone small business concern.*] The offeror represents, as part of its offer, that it is, is not a HUBZone joint venture that complies with the requirements of 13 CFR 126.616(a) through (c). [____The offeror shall enter the name and unique entity identifier of each party to the joint venture: __.] Each HUBZone small business concern participating in the HUBZone joint venture must be certified as a HUBZone concern.

(d) *Notice.* Under 15 U.S.C. 645(d), any person who misrepresents a firm's status as a business concern that is small, HUBZone small, small disadvantaged, service-disabled veteran-owned small, economically disadvantaged women-owned small, or women-owned small eligible under the WOSB Program in order to obtain a contract to be awarded under the preference programs established pursuant to section 8, 9, 15, 31, and 36 of the Small Business Act or any other provision of Federal law that specifically references section 8(d) for a definition of program eligibility, will be-

(1) Punished by imposition of fine, imprisonment, or both;

(2) Subject to administrative remedies, including suspension and debarment; and

(3) Ineligible for participation in programs conducted under the authority of the Act.

(End of provision)

52.230-1	Cost Accounting Standards Notices and Certification. (Deviation 2026-O0038)	2026-02

Cost Accounting Standards Notices and Certification (Feb 2026) (Deviation 2026-O0038)

Note: This notice does not apply to small businesses or foreign governments. This notice is in

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three parts, identified by Roman numerals I through III.

Offerors shall examine each part and provide the requested information in order to determine Cost Accounting Standards (CAS) requirements applicable to any resultant contract.

If the offeror is an educational institution, part II does not apply unless the contemplated contract will be subject to full or modified CAS coverage pursuant to 48 CFR 9903.201-2(c)(5) or 9903.201-2(c)(6), respectively.

I. Disclosure Statement-Cost Accounting Practices and Certification

(a) Any contract in excess of the lower CAS threshold specified in Federal Acquisition Regulation (FAR) 30.205(b) resulting from this solicitation will be subject to the requirements of the Cost Accounting Standards Board (48 CFR chapter 99), except for those contracts which are exempt as specified in 48 CFR 9903.201-1.

(b) Any offeror submitting a proposal which, if accepted, will result in a contract subject to the requirements of 48 CFR chapter 99 must, as a condition of contracting, submit a Disclosure Statement as required by 48 CFR 9903.202. When required, the Disclosure Statement must be submitted as a part of the offeror's proposal under this solicitation unless the offeror has already submitted a Disclosure Statement disclosing the practices used in connection with the pricing of this proposal. If an applicable Disclosure Statement has already been submitted, the offeror may satisfy the requirement for submission by providing the information requested in paragraph (c) of part I of this provision.

Caution: In the absence of specific regulations or agreement, a practice disclosed in a Disclosure Statement shall not, by virtue of such disclosure, be deemed to be a proper, approved, or agreed-to practice for pricing proposals or accumulating and reporting contract performance cost data.

(c) Check the appropriate box below:

(1) [ ] Certificate of Concurrent Submission of Disclosure Statement. The offeror hereby certifies that, as a part of the offer, copies of the Disclosure Statement have been submitted as follows:

(i) Original and one copy to the cognizant Administrative Contracting Officer (ACO) or cognizant Federal agency official authorized to act in that capacity (Federal official), as applicable; and

(ii) One copy to the cognizant Federal auditor.

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(Disclosure must be on Form No. CASB DS-1 or CASB DS-2, as applicable. Forms may be obtained from the cognizant ACO or Federal official.)

Date of Disclosure Statement: ____ Name and Address of Cognizant ACO or Federal Official Where Filed: _____

The offeror further certifies that the practices used in estimating costs in pricing this proposal are consistent with the cost accounting practices disclosed in the Disclosure Statement.

(2) [ ] Certificate of Previously Submitted Disclosure Statement. The offeror hereby certifies that the required Disclosure Statement was filed as follows:

Date of Disclosure Statement: ____ Name and Address of Cognizant ACO or Federal Official Where Filed: _____

The offeror further certifies that the practices used in estimating costs in pricing this proposal are consistent with the cost accounting practices disclosed in the applicable Disclosure Statement.

(3) [ ] Certificate of Monetary Exemption. The offeror hereby certifies that the offeror, together with all divisions, subsidiaries, and affiliates under common control, did not receive net awards of negotiated prime contracts and subcontracts subject to CAS totaling $50 million or more in the cost accounting period immediately preceding the period in which this proposal was submitted. The offeror further certifies that if such status changes before an award resulting from this proposal, the offeror will advise the Contracting Officer immediately.

(4) [ ] Certificate of Interim Exemption. The offeror hereby certifies that (i) the offeror first exceeded the monetary exemption for disclosure, as defined in (3) of this subsection, in the cost accounting period immediately preceding the period in which this offer was submitted and (ii) in accordance with 48 CFR 9903.202-1, the offeror is not yet required to submit a Disclosure Statement. The offeror further certifies that if an award resulting from this proposal has not been made within 90 days after the end of that period, the offeror will immediately submit a revised certificate to the Contracting Officer, in the form specified under paragraph (c)(1) or (c)(2) of part I of this provision, as appropriate, to verify submission of a completed Disclosure Statement.

Caution: Offerors currently required to disclose because they were awarded a CAS-covered prime contract or subcontract of $50 million or more in the current cost accounting period may not claim this exemption (4). Further, the exemption applies only in connection with proposals

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submitted before expiration of the 90-day period following the cost accounting period in which the monetary exemption was exceeded.

II. Cost Accounting Standards-Eligibility for Modified Contract Coverage

If the offeror is eligible to use the modified provisions of 48 CFR 9903.201-2(b) and elects to do so, the offeror shall indicate by checking the box below. Checking the box below shall mean that the resultant contract is subject to the Disclosure and Consistency of Cost Accounting Practices clause in lieu of the Cost Accounting Standards clause.

[ ] The offeror hereby claims an exemption from the Cost Accounting Standards clause under the provisions of 48 CFR 9903.201-2(b) and certifies that the offeror is eligible for use of the Disclosure and Consistency of Cost Accounting Practices clause because during the cost accounting period immediately preceding the period in which this proposal was submitted, the offeror received less than $50 million in awards of CAS-covered prime contracts and subcontracts. The offeror further certifies that if such status changes before an award resulting from this proposal, the offeror will advise the Contracting Officer immediately.

Caution: An offeror may not claim the above eligibility for modified contract coverage if this proposal is expected to result in the award of a CAS-covered contract of $50 million or more or if, during its current cost accounting period, the offeror has been awarded a single CAS-covered prime contract or subcontract of $50 million or more.

III. Additional Cost Accounting Standards Applicable to Existing Contracts

The offeror shall indicate below whether award of the contemplated contract would, in accordance with paragraph (a)(3) of the Cost Accounting Standards clause, require a change in established cost accounting practices affecting existing contracts and subcontracts.

[ ] Yes [ ] No

(End of provision)

52.230-7	Proposal Disclosure-Cost Accounting Practice Changes.	2005-04

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Proposal Disclosure-Cost Accounting Practice Changes (Apr 2005)

The offeror shall check "yes" below if the contract award will result in a required or unilateral change in cost accounting practice, including unilateral changes requested to be desirable changes.

[ ] Yes [ ] No

If the offeror checked "Yes" above, the offeror shall-

(1) Prepare the price proposal in response to the solicitation using the changed practice for the period of performance for which the practice will be used; and

(2) Submit a description of the changed cost accounting practice to the Contracting Officer and the Cognizant Federal Agency Official as pricing support for the proposal.

(End of provision)

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Section 00 70 00 - Conditions of the Contract

FAR Clauses Incorporated by Reference

Number	Title	Effective Date	Alternate Deviation	Variation Effective Date
52.222-3	Convict Labor. (Deviation 2026-O0038)	2026-02		
52.222-7	Withholding of Funds. (Deviation 2026-O0038)	2026-02		
52.225-11	Buy American-Construction Materials under Trade Agreements. (Deviation 2026-O0038) (Alternate I)	2026-02	Alternate I	2026-02
52.225-12	Notice of Buy American Requirement-Construction Materials Under Trade Agreements. (Alternate II)	2014-05	Alternate II	2023-11
52.228-11	Pledges of Assets (DEVIATION 2020-O0016)	2021-02	Deviation 2020-O0016	2020-04
52.240-90	Security Prohibitions and Exclusions Representations and Certifications. (Deviation 2026-O0038)	2026-02		
52.240-91	Security Prohibitions and Exclusions. (Deviation 2026-O0038)	2026-02		
52.240-93	Basic Safeguarding of Covered Contractor Information Systems. (Deviation 2026-O0038)	2026-02		

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DFARS Clauses Incorporated by Reference

Number	Title	Effective Date	Alternate Deviation	Variation Effective Date
252.219-7996	Small Business Subcontracting Plan (DoD Contracts). (DEVIATION 2026-O0037)	2026-02	Deviation 2026-O0037	2026-02
252.244-7999	Subcontracts for Commercial Products or Commercial Services. (DEVIATION 2026-O0015)	2026-02	Deviation 2026-O0015	2026-01

FAR Clauses Incorporated by Full Text

Number	Title	Effective Date	Alternate Deviation	Variation Effective Date
52.228-15	Performance and Payment Bonds-Construction (Deviation 2020-O0016)	2020-06	Deviation 2020-O0016	2020-04

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PERFORMANCE AND PAYMENT BONDS-CONSTRUCTION (APR 2020) (DEVIATION 2020-O0016)

(a) Definitions. As used in this clause-

Original contract price means the award price of the contract; or, for requirements contracts, the price payable for the estimated total quantity; or, for indefinite-quantity contracts, the price payable for the specified minimum quantity. Original contract price does not include the price of

any options, except those options exercised at the time of contract award.

(b) Amount of required bonds. Unless the resulting contract price is $150,000 or less, the successful offeror shall furnish performance and payment bonds to the Contracting Officer as follows:

(1) Performance bonds (Standard Form 25, except that no seal is required). The penal amount of performance bonds at the time of contract award shall be 100 percent of the original contract price.

(2) Payment bonds (Standard Form 25A, except that no seal is required). The penal amount of payment bonds at the time of contract award shall be 100 percent of the original contract price.

(3) Additional bond protection.

(i) The Government may require additional performance and payment bond protection if the contract price is increased. The increase in protection generally will equal 100 percent of the increase in contract price.

(ii) The Government may secure the additional protection by directing the Contractor to increase the penal amount of the existing bond or to obtain an additional bond.

(c) Furnishing executed bonds. The Contractor shall furnish all executed bonds, including any necessary reinsurance agreements, to the Contracting Officer, within the time period specified in the Bid Guarantee provision of the solicitation, or otherwise specified by the Contracting Officer, but in any event, before starting work.

(d) Surety or other security for bonds. The bonds shall be in the form of firm commitment, supported by corporate sureties whose names appear on the list contained in Treasury Department Circular 570, individual sureties, or by other acceptable security such as postal money order, certified check, cashier's check, irrevocable letter of credit, or, in accordance with Treasury Department regulations, certain bonds or notes of the United States. Treasury Circular 570 is published in the Federal Register or may be obtained from the U.S. Department of the Treasury, Financial Management Service, Surety Bond Branch, 3700 East West Highway, Room 6F01, Hyattsville, MD 20782. Or via the internet at http://www.fms.treas.gov/c570/.

(e) Notice of subcontractor waiver of protection (40 U.S.C. 3133(c)). Any waiver of the right to sue on the payment bond is void unless it is in writing, signed by the person whose right is waived, and executed after such person has first furnished labor or material for use in the

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performance of the contract.

(End of clause)

DFARS Clauses Incorporated by Full Text

Number	Title	Effective Date	Alternate Deviation	Variation Effective Date
252.204-7998	Alternate A, Annual Representations and Certifications. (DEVIATION 2026-O0043)	2026-02	Alternate A Deviation 2026-O0043	2026-02 2026-02

Alternate A, Annual Representations and Certifications (DEVIATION 2026-O0043)(FEB 2026)

Include the following paragraphs (e), (f), and (g) in the provision at FAR 52.204-7:

(e)(1) If the provision at FAR 52.204-7, System for Award Management - Registration, is included in this solicitation, paragraph (g) of this provision applies.

(2) If the provision at FAR 52.204-7, System for Award Management - Registration, is not included in this solicitation, and the Offeror has an active registration in the System for Award Management (SAM), the Offeror may choose to use paragraph (g) of this provision instead of completing the corresponding individual representations and certifications in the solicitation. The Offeror shall indicate which option applies by checking one of the following boxes:

(i) Paragraph (g) applies.

(ii) Paragraph (g) does not apply and the Offeror has completed the individual representations and certifications in the solicitation.

(f)(1) The following representations or certifications in the SAM database are applicable to this solicitation as indicated:

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(i) 252.204-7016, Covered Defense Telecommunications Equipment or Services--Representation. Applies to all solicitations.

(ii) 252.216-7008, Economic Price Adjustment--Wage Rates or Material Prices Controlled by a Foreign Government. Applies to solicitations for fixed-price supply and service contracts when the contract is to be performed wholly or in part in a foreign country, and a foreign government controls wage rates or material prices and may during contract performance impose a mandatory change in wages or prices of materials.

(iii) 252.225-7042, Authorization to Perform. Applies to all solicitations when performance will be wholly or in part in a foreign country.

(iv) 252.225-7049, Prohibition on Acquisition of Certain Foreign Commercial Satellite Services--Representations. Applies to solicitations for the acquisition of commercial satellite services.

(v) 252.225-7050, Disclosure of Ownership or Control by the Government of a Country that is a State Sponsor of Terrorism. Applies to all solicitations expected to result in contracts of $150,000 or more.

(vi) 252.229-7012, Tax Exemptions (Italy)--Representation. Applies to solicitations when contract performance will be in Italy.

(vii) 252.229-7013, Tax Exemptions (Spain)--Representation. Applies to solicitations when contract performance will be in Spain.

(2) The following representations or certifications in SAM are applicable to this solicitation as indicated by the Contracting Officer:

(i) 252.209-7002, Disclosure of Ownership or Control by a Foreign Government.

(ii) 252.225-7000, Buy American--Balance of Payments Program Certificate.

(iii) 252.225-7020, Trade Agreements Certificate.

Use with Alternate I.

X (iv) 252.225-7031, Secondary Arab Boycott of Israel.

(v) 252.225-7035, Buy American--Free Trade Agreements--Balance of Payments Program Certificate.

Use with Alternate I.

Use with Alternate II.

Use with Alternate III.

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Use with Alternate IV.

Use with Alternate V.

(vi) 252.226-7002, Representation for Demonstration Project for Contractors Employing Persons with Disabilities.

(vii) 252.232-7015, Performance-Based Payments--Representation.

(g) The Offeror has completed the annual representations and certifications electronically via the SAM website at *https://www.sam.gov* After reviewing the SAM database information, the Offeror verifies by submission of the offer that the representations and certifications currently posted electronically that apply to this solicitation as indicated in FAR 52.204-7 and paragraph (f) of this provision have been entered or updated within the last 12 months, are current, accurate, complete, and applicable to this solicitation (including the business size standard applicable to the NAICS code referenced for this solicitation), as of the date of this offer, and are incorporated in this offer by reference (see FAR 4.203-1); except for the changes identified below [*Offeror to insert changes, identifying change by provision number, title, date*]. These amended representation(s) and/or certification(s) are also incorporated in this offer and are current, accurate, and complete as of the date of this offer.

FAR/DFARS provision No.	Title	Date	Change
____	____	____	____
____	____	____	____
____	____	____	____
____	____	____	____
____	____	____	____

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Any changes provided by the Offeror are applicable to this solicitation only, and do not result in an update to the representations and certifications located in the SAM database.

(End of provision)

252.215-7992	Only One Offer. (DEVIATION 2026-O0048)	2026-03	Deviation 2026-O0048	2026-03

ONLY ONE OFFER (DEVIATION 2026-O0048) (MAR 2026)

(a) Cost or pricing data requirements. After initial submission of offers, if the Contracting Officer notifies the Offeror that only one offer was received, the Offeror agrees to--

(1) Submit any additional cost or pricing data that is required in order to determine whether the price is fair and reasonable (10 U.S.C. 3705) or to comply with the statutory requirement for certified cost or pricing data (10 U.S.C. 3702); and

(2) Except as provided in paragraph (b) of this provision, if the acquisition exceeds the certified cost or pricing data threshold and an exception to the requirement for certified cost or pricing data at FAR 15.403-2(b)(2) through (5) does not apply, certify all cost or pricing data in accordance with paragraph (c) of DFARS provision 252.215-7994, Requirements for Certified Cost or Pricing Data and Data Other Than Certified Cost or Pricing Data, of this solicitation.

(b) Canadian Commercial Corporation. If the Offeror is the Canadian Commercial Corporation, certified cost or pricing data are not required. If the Contracting Officer notifies the Canadian Commercial Corporation that additional data other than certified cost or pricing data are required in accordance with DFARS 225.870-4(c), the Canadian Commercial Corporation shall obtain and provide the following:

(1) Profit rate or fee (as applicable).

(2) Analysis provided by Public Works and Government Services Canada to the Canadian

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Commercial Corporation to determine a fair and reasonable price (comparable to the analysis required at 15.404).

(3) Data other than certified cost or pricing data necessary to permit a determination by the U. S. Contracting Officer that the proposed price is fair and reasonable [U.S. Contracting Officer to provide description of the data required in accordance with FAR 15.403-1 with the notification].

____

(4) As specified in FAR 15.403-1(d), an offeror who does not comply with a requirement to submit data that the U.S. Contracting Officer has deemed necessary to determine price reasonableness or cost realism is ineligible for award unless the head of the contracting activity determines that it is in the best interest of the Government to make the award to that offeror.

(c) Subcontracts. Unless the Offeror is the Canadian Commercial Corporation, the Offeror shall insert the substance of this provision, including this paragraph (c), in all subcontracts exceeding the simplified acquisition threshold defined in FAR part 2.

(End of provision)

252.215-7993	Proposal Adequacy Checklist. (DEVIATION 2026-O0048)	2026-03	Deviation 2026-O0048	2026-03

PROPOSAL ADEQUACY CHECKLIST (DEVIATION 2026-O0048) (MAR 2026)

The offeror shall complete the following checklist, providing location of requested information, or an explanation of why the requested information is not provided. In preparation of the offeror's checklist, offerors may elect to have their prospective subcontractors use the same or similar checklist as appropriate.

PROPOSAL ADEQUACY CHECKLIST

REFERENCES	SUBMISSION ITEM	PROPOSAL PAGE

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No. If not provided EXPLAIN (may use continuation pages)

GENERAL INSTRUCTIONS

1. FAR 15.408-2, Table 15-1, Section I Paragraph A Is there a properly completed first page of the proposal per FAR 15.408-2 Table 15-1 I.A or as specified in the solicitation? ____ ____

2. FAR 15.408-2, Table 15-1, Section I Paragraph A(7) Does the proposal identify the need for Government-furnished material/tooling/test equipment? Include the accountable contract number and contracting officer contact information if known.

____ ____

3. FAR 15.408-2, Table 15-1, Section I Paragraph A(8) Does the proposal identify and explain notifications of noncompliance with Cost Accounting Standards Board or Cost Accounting Standards (CAS); any proposal inconsistencies with your disclosed practices or applicable CAS; and inconsistencies with your established estimating and accounting principles and procedures? ____ ____

4. FAR 15.408-2, Table 15-1, Section I, Paragraph C(1)FAR 2.101, "Cost or pricing data" Does the proposal disclose any other known activity that could materially impact the costs?This may include, but is not limited to, such factors as--(1) Vendor quotations;(2) Nonrecurring costs;(3) Information on changes in production methods and in production or purchasing volume;(4) Data supporting projections of business prospects and objectives and related operations costs;(5) Unit-cost trends such as those associated with labor efficiency;(6) Make-or-buy decisions;(7) Estimated resources to attain business goals; and(8) Information on management decisions that could have a significant bearing on costs. ____

____

5. FAR 15.408-2, Table 15-1, Section I Paragraph B Is an Index of all certified cost or pricing data and information accompanying or identified in the proposal provided and appropriately referenced? ____ ____

6. FAR 15.403-2(b) Are there any exceptions to submission of certified cost or pricing data pursuant to FAR 15.403-2(b)? If so, is supporting documentation included in the proposal? (Note questions 18-20.) ____ ____

7. FAR 15.408-2, Table 15-1, Section I Paragraph C(2)(i) Does the proposal disclose the judgmental factors applied and the mathematical or other methods used in the estimate, including those used in projecting from known data? ____

____

8. FAR 15.408-2, Table 15-1, Section I Paragraph C(2)(ii) Does the proposal disclose the nature and amount of any contingencies included in the proposed price? ____ ____

9. FAR 15.408-2, Table 15-1, Section II, Paragraph A or B Does the proposal explain the basis of all cost estimating relationships (labor hours or material) proposed on other than a discrete basis? ____ ____

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10. FAR 15.408-2, Table 15-1, Section I Paragraphs D and E Is there a summary of total cost by element of cost and are the elements of cost cross-referenced to the supporting cost or pricing data? (Breakdowns for each cost element must be consistent with your cost accounting system, including breakdown by year.) ____ ____

11. FAR 15.408-2, Table 15-1, Section I Paragraphs D and E If more than one Contract Line Item Number (CLIN) or sub Contract Line Item Number (sub-CLIN) is proposed as required by the RFP, are there summary total amounts covering all line items for each element of cost and is it cross-referenced to the supporting cost or pricing data?

____ ____

12. FAR 15.408-2, Table 15-1, Section I Paragraph F Does the proposal identify any incurred costs for work performed before the submission of the proposal?

____ ____

13. FAR 15.408-2, Table 15-1, Section I Paragraph G Is there a Government forward pricing rate agreement (FPRA)? If so, the offeror shall identify the official submittal of such rate and factor data. If not, does the proposal include all rates and factors by year that are utilized in the development of the proposal and the basis for those rates and factors? ____ ____

COST ELEMENTS

MATERIALS AND SERVICES

14. FAR 15.408-2, Table 15-1, Section II Paragraph A Does the proposal include a consolidated summary of individual material and services, frequently referred to as a Consolidated Bill of Material (CBOM), to include the basis for pricing? The offeror's consolidated summary shall include raw materials, parts, components, assemblies, subcontracts and services to be produced or performed by others, identifying as a minimum the item, source, quantity, and price. ____ ____

SUBCONTRACTS (Purchased materials or services)

15. DFARS 215.404-8 Has the offeror identified in the proposal those subcontractor proposals, for which the contracting officer has initiated or may need to request field pricing analysis? ____ ____

16. FAR 15.404-8(b)FAR 52.244-2 Per the thresholds of FAR 15.404-8(b), Subcontract Pricing Considerations, does the proposal include a copy of the applicable subcontractor's certified cost or pricing data? ____ ____

17. FAR 15.408-2, Table 15-1, Note 1; Section II Paragraph A Is there a price/cost analysis establishing the reasonableness of each of the proposed subcontracts included with the proposal?If the offeror's price/cost analyses are not provided with the proposal, does the proposal include a matrix identifying dates for receipt of subcontractor proposal, completion of fact finding for purposes of price/cost analysis, and submission of the price/cost analysis? ____ ____

EXCEPTIONS TO CERTIFIED COST OR PRICING DATA

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18. FAR 52.215-20,FAR 2.101, "commercial product" or "commercial service" Has the offeror submitted an exception to the submission of certified cost or pricing data for commercial products or commercial services proposed either at the prime or subcontractor level, in accordance with provision 52.215-20?a. Has the offeror specifically identified the type of commercial product or commercial service claim (FAR 2.101 "commercial product" or "commercial service" definition), and the basis on which the commercial product or commercial service meets the definition?b. For modified commercial products (FAR 2.101 "commercial product" definition); did the offeror classify the modification(s) as either--i. A modification of a type customarily available in the commercial marketplace (paragraph (3)(i)); orii. A minor modification (paragraph (3)(ii)) of a type not customarily available in the commercial marketplace made to meet Federal Government requirements not exceeding the thresholds in FAR 15.403-2(c)(3)(iii)(B)?c. For proposed commercial products "of a type", or "evolved" or modified (FAR 2.101 "commercial product" definition), did the contractor provide a technical description of the differences between the proposed item and the comparison item (s)? ____ ____

19. [Reserved]

20. FAR 15.408-2, Table 15-1, Section II Paragraph A(1) Does the proposal support the degree of competition and the basis for establishing the source and reasonableness of price for each subcontract or purchase order priced on a competitive basis exceeding the threshold for certified cost or pricing data? ____ ____

INTERORGANIZATIONAL TRANSFERS

21. FAR 15.408-2, Table 15-1, Section II Paragraph A.(2) For inter-organizational transfers proposed at cost, does the proposal include a complete cost proposal in compliance with Table 15-1? ____ ____

22. FAR 15.408-2, Table 15-1, Section II Paragraph A(1) For inter-organizational transfers proposed at price in accordance with FAR 31.205-26(e), does the proposal provide an analysis by the prime that supports the exception from certified cost or pricing data in accordance with FAR15.403-2? ____ ____

DIRECT LABOR

23. FAR 15.408-2, Table 15-1, Section II Paragraph B Does the proposal include a time phased (i.e.; monthly, quarterly) breakdown of labor hours, rates and costs by category or skill level? If labor is the allocation base for indirect costs, the labor cost must be summarized in order that the applicable overhead rate can be applied. ____ ____

24. FAR 15.408-2, Table 15-1, Section II Paragraph B For labor Basis of Estimates (BOEs), does the proposal include labor categories, labor hours, and task descriptions, (e.g.; Statement of Work reference, applicable CLIN, Work Breakdown Structure, rationale for estimate, applicable history, and time-phasing)? ____ ____

25. FAR subpart 22.10 If covered by the Service Contract Labor Standards

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statute (41 U.S.C. chapter 67), are the rates in the proposal in compliance with the minimum rates specified in the statute? ____ ____

INDIRECT COSTS

26. FAR 15.408-2, Table 15-1, Section II Paragraph C Does the proposal indicate the basis of estimate for proposed indirect costs and how they are applied? (Support for the indirect rates could consist of cost breakdowns, trends, and budgetary data.)

____ ____

OTHER COSTS

27. FAR 15.408-2, Table 15-1, Section II Paragraph D Does the proposal include other direct costs and the basis for pricing? If travel is included does the proposal include number of trips, number of people, number of days per trip, locations, and rates (e.g. airfare, per diem, hotel, car rental, etc)? ____ ____

28. FAR 15.408-2, Table 15-1, Section II Paragraph E If royalties exceed $1,500 does the proposal provide the information/data identified by Table 15-1?

____ ____

29. FAR 15.408-2, Table 15-1, Section II Paragraph F When facilities capital cost of money is proposed, does the proposal include submission of Form CASB-CMF or reference to an FPRA/FPRP and show the calculation of the proposed amount?

____ ____

FORMATS FOR SUBMISSION OF LINE ITEM SUMMARIES

30. FAR 15.408-2, Table 15-1, Section III Are all cost element breakdowns provided using the applicable format prescribed in FAR 15.408-2, Table 15-1 III? (or alternative format if specified in the request for proposal) ____ ____

31. FAR 15.408-2, Table 15-1, Section III Paragraph B If the proposal is for a modification or change order, have cost of work deleted (credits) and cost of work added (debits) been provided in the format described in FAR 15.408-2, Table 15-1.III.B?

____ ____

32. FAR 15.408-2, Table 15-1, Section III Paragraph C For price revisions /redeterminations, does the proposal follow the format in FAR 15.408-2, Table 15-1.III. C? ____ ____

OTHER

33. FAR 16.4 If an incentive contract type, does the proposal include offeror proposed target cost, target profit or fee, share ratio, and, when applicable, minimum /maximum fee, ceiling price? ____ ____

34. FAR 16.203-4 and FAR 15.408-2, Table 15-1, Section II, Paragraphs A, B, C, and D If Economic Price Adjustments are being proposed, does the proposal show the rationale and application for the economic price adjustment? ____ ____

35. FAR 52.232-28 If the offeror is proposing Performance-Based

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Payments did the offeror comply with FAR 52.232-28? ____ ____

36. FAR 15.110(v)FAR 52.215-22FAR 52.215-23 Excessive Pass-through Charges- Identification of Subcontract Effort: If the offeror intends to subcontract more than 70% of the total cost of work to be performed, does the proposal identify: (i) the amount of the offeror's indirect costs and profit applicable to the work to be performed by the proposed subcontractor(s); and (ii) a description of the added value provided by the offeror as related to the work to be performed by the proposed subcontractor(s)? ____ ____

(End of provision)

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Section 00 72 00 - General Conditions

FAR Clauses Incorporated by Reference

Number	Title	Effective Date	Alternate Deviation	Variation Effective Date
52.202-1	Definitions.	2020-06		
52.203-3	Gratuities.	1984-04		
52.203-5	Covenant Against Contingent Fees.	2014-05		
52.203-6	Restrictions on Subcontractor Sales to the Government.	2020-06		
52.203-7	Anti-Kickback Procedures.	2020-06		
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity.	2014-05		
52.203-10	Price or Fee Adjustment for Illegal or Improper Activity.	2014-05		
52.203-12	Limitation on Payments to Influence Certain Federal Transactions.	2020-06		
52.203-19	Prohibition on Requiring Certain Internal Confidentiality Agreements or Statements.	2017-01		
52.204-10	Reporting Executive Compensation and First-Tier Subcontract Awards. (Deviation 2026-O0038)	2026-02		

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52.204-13	System for Award Management-Maintenance. (Deviation 2026-O0038)	2026-02
52.204-19	Incorporation by Reference of Representations and Certifications.	2014-12
52.209-6	Protecting the Government's Interest When Subcontracting With Contractors Debarred, Suspended, Proposed for Debarment, or Voluntarily Excluded. (Deviation 2026-O0038)	2026-02
52.209-9	Updates of Publicly Available Information Regarding Responsibility Matters. (Deviation 2026-O0038)	2026-02
52.209-10	Prohibition on Contracting With Inverted Domestic Corporations. (Deviation 2026-O0038)	2026-02
52.210-1	Market Research. (Deviation 2026-O0038)	2026-02
52.211-13	Time Extensions.	2000-09
52.215-2	Audit and Records-Negotiation. (Deviation 2026-O0038)	2026-02
52.219-8	Utilization of Small Business Concerns. (Deviation 2026-O0038)	2026-02
52.219-9	Small Business Subcontracting Plan. (Deviation 2026-O0038)	2026-02

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52.219-16	Liquidated Damages-Subcontracting Plan. (Deviation 2026-O0038)	2026-02
52.222-6	Construction Wage Rate Requirements. (Deviation 2026-O0038)	2026-02
52.222-8	Payrolls and Basic Records. (Deviation 2026-O0038)	2026-02
52.222-9	Apprentices and Trainees. (Deviation 2026-O0038)	2026-02
52.222-10	Compliance with Copeland Act Requirements. (Deviation 2026-O0038)	2026-02
52.222-11	Subcontracts (Labor Standards). (Deviation 2026-O0038)	2026-02
52.222-12	Contract Termination-Debarment.	2014-05
52.222-13	Compliance with Construction Wage Rate Requirements and Related Regulations.	2014-05
52.222-14	Disputes Concerning Labor Standards. (Deviation 2026-O0038)	2026-02
52.222-15	Certification of Eligibility.	2014-05
52.222-35	Equal Opportunity for Veterans. (Deviation 2026-O0038)	2026-02
52.222-36	Equal Opportunity for Workers with Disabilities. (Deviation 2026-O0038)	2026-02

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52.222-37	Employment Reports on Veterans. (Deviation 2026-O0038)	2026-02
52.222-40	Notification of Employee Rights Under the National Labor Relations Act. (Deviation 2026-O0038)	2026-02
52.222-50	Combating Trafficking in Persons. (Deviation 2026-O0038)	2026-02
52.222-55	Minimum Wages for Contractor Workers Under Executive Order 14026. (Deviation 2026-O0038)	2026-02
52.222-62	Paid Sick Leave Under Executive Order 13706. (Deviation 2026-O0038)	2026-02
52.222-90	Addressing DEI Discrimination by Federal Contractors. (Deviation 2026-O0040, Revision 1)	2026-04
52.223-5	Pollution Prevention and Right-to-Know Information.	2024-05
52.223-23	Sustainable Products. (Deviation 2026-O0038)	2026-02
52.226-7	Drug-Free Workplace.	2024-05
52.226-8	Encouraging Contractor Policies to Ban Text Messaging While Driving.	2024-05
52.227-1	Authorization and Consent.	2020-06
52.227-2	Notice and Assistance Regarding	2020-06

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	Patent and Copyright Infringement.	
52.227-4	Patent Indemnity-Construction Contracts.	2007-12
52.228-2	Additional Bond Security.	1997-10
52.228-12	Prospective Subcontractor Requests for Bonds.	2022-12
52.228-14	Irrevocable Letter of Credit.	2014-11
52.228-17	Individual Surety-Pledge of Assets (Bid Guarantee).	2021-02
52.229-3	Federal, State, and Local Taxes.	2013-02
52.232-17	Interest.	2014-05
52.232-23	Assignment of Claims.	2014-05
52.232-27	Prompt Payment for Construction Contracts.	2017-01
52.232-33	Payment by Electronic Funds Transfer-System for Award Management.	2018-10
52.232-39	Unenforceability of Unauthorized Obligations.	2013-06
52.232-40	Providing Accelerated Payments to Small Business Subcontractors.	2023-03
52.233-1	Disputes. (Deviation 2026-O0038)	2026-02
52.233-3	Protest after Award. (Deviation	2026-02

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	2026-O0038)	
52.233-4	Applicable Law for Breach of Contract Claim. (Deviation 2026-O0038)	2026-02
52.236-2	Differing Site Conditions. (Deviation 2026-O0038)	2026-02
52.236-3	Site Investigation and Conditions Affecting the Work. (Deviation 2026-O0038)	2026-02
52.236-5	Material and Workmanship. (Deviation 2026-O0038)	2026-02
52.236-6	Superintendence by the Contractor. (Deviation 2026-O0038)	2026-02
52.236-7	Permits and Responsibilities. (Deviation 2026-O0038)	2026-02
52.236-8	Other Contracts. (Deviation 2026-O0038)	2026-02
52.236-9	Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements. (Deviation 2026-O0038)	2026-02
52.236-10	Operations and Storage Areas. (Deviation 2026-O0038)	2026-02
52.236-11	Use and Possession Prior to Completion. (Deviation 2026-O0038)	2026-02
52.236-12	Cleaning Up. (Deviation 2026-O0038)	2026-02

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52.236-13	Accident Prevention. (Deviation 2026-O0038)	2026-02		
52.236-15	Schedules for Construction Contracts. (Deviation 2026-O0038)	2026-02		
52.236-16	Quantity Surveys. (Deviation 2026-O0038)	2026-02		
52.236-17	Layout of Work. (Deviation 2026-O0038)	2026-02		
52.236-21	Specifications and Drawings for Construction. (Deviation 2026-O0038)	2026-02		
52.242-5	Payments to Small Business Subcontractors.	2017-01		
52.242-13	Bankruptcy.	1995-07		
52.242-14	Suspension of Work.	1984-04		
52.243-4	Changes. (Deviation 2026-O0038)	2026-02		
52.244-6	Subcontracts for Commercial Products and Commercial Services. (Deviation 2026-O0038)	2026-02		
52.246-12	Inspection of Construction.	1996-08		
52.249-2	Termination for Convenience of the Government (Fixed-Price). (Alternate I)	2012-04	Alternate I	1996-09
52.249-10	Default (Fixed-Price Construction).	1984-04		

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52.253-1	Computer Generated Forms. (Deviation 2026-O0038)	2026-02

DFARS Clauses Incorporated by Reference

Number	Title	Effective Date	Alternate Deviation	Variation Effective Date
252.201-7000	Contracting Officer's Representative.	1991-12		
252.203-7000	Requirements Relating to Compensation of Former DoD Officials.	2011-09		
252.203-7001	Prohibition on Persons Convicted of Fraud or Other Defense-Contract-Related Felonies.	2023-01		
252.203-7002	Requirement to Inform Employees of Whistleblower Rights.	2022-12		
252.203-7004	Display of Hotline Posters.	2023-01		
252.204-7003	Control of Government Personnel Work Product.	1992-04		
252.204-7004	Antiterrorism Awareness Training for Contractors.	2023-01		
252.205-7000	Provision of Information to Cooperative Agreement Holders.	2024-10		
252.209-7004	Subcontracting with Firms that are Owned or Controlled by the Government of a Country that is	2019-05		

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	a State Sponsor of Terrorism.	
252.215-7002	Cost Estimating System Requirements.	2025-01
252.222-7006	Restrictions on the Use of Mandatory Arbitration Agreements.	2023-01
252.223-7008	Prohibition of Hexavalent Chromium.	2023-01
252.225-7012	Preference for Certain Domestic Commodities.	2022-04
252.225-7048	Export-Controlled Items.	2013-06
252.225-7056	Prohibition Regarding Business Operations with the Maduro Regime.	2023-01
252.225-7058	Postaward Disclosure of Employment of Individuals Who Work in the People's Republic of China.	2023-01
252.225-7060	Prohibition on Certain Procurements from the Xinjiang Uyghur Autonomous Region.	2023-06
252.226-7001	Utilization of Indian Organizations, Indian-Owned Economic Enterprises, and Native Hawaiian Small Business Concerns.	2023-01
252.232-7003	Electronic Submission of Payment Requests and Receiving Reports.	2018-12

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252.232-7010	Levies on Contract Payments.	2006-12
252.236-7000	Modification Proposals--Price Breakdown.	1991-12
252.236-7002	Obstruction of Navigable Waterways.	1991-12
252.236-7008	Contract Prices--Bidding Schedules.	1991-12
252.243-7001	Pricing of Contract Modifications.	1991-12
252.243-7002	Requests for Equitable Adjustment.	2022-12
252.247-7023	Transportation of Supplies by Sea.	2024-10

FAR Clauses Incorporated by Full Text

Number	Title	Effective Date	Alternate Deviation	Variation Effective Date
52.211-12	Liquidated Damages-Construction.	2000-09		

Liquidated Damages-Construction (Sept 2000)

(a) If the Contractor fails to complete the work within the time specified in the contract, the Contractor shall pay liquidated damages to the Government in the amount of $4,500.00 for each calendar day of delay until the work is completed or accepted.

(b) If the Government terminates the Contractor's right to proceed, liquidated damages will continue to accrue until the work is completed. These liquidated damages are in addition to excess costs of repurchase under the Termination clause.

(End of clause)

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52.219-4	Notice of Price Evaluation Preference for HUBZone Small Business Concerns. (Deviation 2026-O0038)	2026-02

Notice of Price Evaluation preference for HUBZone Small Business Concerns (Feb 2026) (Deviation 2026-O0038)

(a) Evaluation preference.

(1) Offers will be evaluated by adding a factor of 10 percent to the price of all offers, except-

(i) Offers from HUBZone small business concerns that have not waived the evaluation preference; and

(ii) Otherwise successful offers from small business concerns.

(b) Waiver of evaluation preference. A HUBZone small business concern may choose to waive the evaluation preference. If the concern waives the preference, the factor will be added to its offer for evaluation purposes.

[ ] Offeror chooses to waive the evaluation preference.

(c) Joint venture. A HUBZone joint venture agrees that, in the performance of the contract, at least 40 percent of the aggregate work performed by the joint venture shall be completed by the HUBZone small business parties to the joint venture. Work performed by the HUBZone small business parties to the joint venture must be more than administrative functions.

(End of provision)

52.219-28	Postaward Small Business Program Rerepresentation. (Deviation 2026-O0038)	2026-02

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Postaward Small Business Program Rerepresentation (Feb 2026) (Deviation 2026-O0038)

(a) Definitions. As used in this clause-

Long-term contract means a contract of more than five years in duration, including options. However, the term does not include contracts that exceed five years in duration because the period of performance has been extended for a cumulative period not to exceed six months under the clause at 52.217-8, Option to Extend Services, or other appropriate authority.

Small business concern-

(1) Means a concern, including its affiliates, that is independently owned and operated, not dominant in its field of operation, and qualified as a small business under the criteria in 13 CFR part 121 and the size standard in paragraph (c) of this clause.

(2) Affiliates, as used in this definition, means business concerns, one of whom directly or indirectly controls or has the power to control the others, or a third party or parties control or have the power to control the others. In determining whether affiliation exists, consideration is given to all appropriate factors including common ownership, common management, and contractual relationships. SBA determines affiliation based on the factors set forth at 13 CFR 121.103.

(b) If the Contractor represented that it was a small business concern, a small disadvantaged business concern, or a joint venture that was any of the small business concerns identified in 19.000(a)(3) prior to award of this contract, the Contractor shall rerepresent its size and socioeconomic status according to paragraph (e) of this clause or, if applicable, paragraph (g) of this clause, upon occurrence of any of the following:

(1) Within 30 days after execution of a novation agreement or within 30 days after modification of the contract to include this clause, if the novation agreement was executed prior to inclusion of this clause in the contract.

(2) Within 30 days after a merger or acquisition that does not require a novation or within 30 days after modification of the contract to include this clause, if the merger or acquisition occurred prior to inclusion of this clause in the contract.

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(3) For long-term contracts-

(i) Within 60 to 120 days prior to the end of the fifth year of the contract; and

(ii) Within 60 to 120 days prior to the date specified in the contract for exercising any option thereafter.

(c) The Contractor shall rerepresent its size status in accordance with the size standard in effect at the time of this rerepresentation that corresponds to the North American Industry Classification System (NAICS) code(s) assigned to this contract. The small business size standard corresponding to this NAICS code(s) can be found at https://www.sba.gov/document/support--table-size-standards.

(d) The small business size standard for a Contractor providing an end item that it does not manufacture, process, or produce itself, for a contract other than a construction or service contract, is 500 employees, or 150 employees for information technology value-added resellers under NAICS code 541519, if the acquisition-

(1) Was set aside for small business and has a value above the simplified acquisition threshold;

(2) Used the HUBZone price evaluation preference regardless of dollar value, unless the Contractor waived the price evaluation preference; or

(3) Was an 8(a), HUBZone, service-disabled veteran-owned, economically disadvantaged women-owned, or women-owned small business set-aside or sole-source award regardless of dollar value.

(e) Except as provided in paragraph (g) of this clause, the Contractor shall make the representation(s) required by paragraph (b) of this clause by validating or updating all its representations in the Representations and Certifications section of the System for Award Management (SAM) and its other data in SAM, as necessary, to ensure that they reflect the Contractor's current status. The Contractor shall notify the contracting officer in writing within the timeframes specified in paragraph (b) of this clause, that the data have been validated or updated, and provide the date of the validation or update.

(f) If the Contractor represented that it was other than a small business concern prior to award of this contract, the Contractor may, but is not required to, take the actions required by paragraphs (e) or (g) of this clause.

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(g) If the Contractor does not have representations and certifications in SAM, or does not have a representation in SAM for the NAICS code applicable to this contract, the Contractor is required to complete the following rerepresentation and submit it to the contracting office, along with the contract number and the date on which the rerepresentation was completed:

(1) The Contractor represents that it [ ] is, [ ] is not a small business concern under ____NAICS Code assigned to ____contract number.

(2) [Complete only if the Contractor represented itself as a small business concern in paragraph (g)(1) of this clause.] The Contractor represents that it [ ] is, [ ] is not, a small disadvantaged business concern as defined in 13 CFR 124.1001.

(3) Women-owned small business (WOSB) joint venture eligible under the WOSB Program. The Contractor represents that it [ ] is, [ ] is not a joint venture that complies with the requirements of 13 CFR 127.506(a) through (c). [____The Contractor shall enter the name and unique entity identifier of each party to the joint venture: __.]

(4) Economically disadvantaged women-owned small business (EDWOSB) joint venture. The Contractor represents that it [ ] is, [ ] is not a joint venture that complies with the requirements of 13 CFR 127.506(a) through (c). [____The Contractor shall enter the name and unique entity identifier of each party to the joint venture: __ .]

(5) Service-disabled veteran-owned small business (SDVOSB) joint venture eligible under the SDVOSB Program. The Contractor represents that it [ ] is, [ ] is not an SDVOSB joint venture eligible under the SDVOSB Program that complies with the requirements of 13 CFR 128.402. [____The Contractor shall enter the name and unique entity identifier of each party to the joint venture: __.]

(6) HUBZone joint venture eligible under the HUBZone Program.[Complete only if the offeror is a HUBZone small business concern.] The offeror represents, as part of its offer, that It [ ] is, [ ] is not a HUBZone joint venture that complies with the requirements of 13 CFR 126.616(a) through (c). [____The Contractor shall enter the name and unique entity identifier of each party to the joint venture: .] Each HUBZone small business concern participating in the HUBZone joint venture must be certified as a HUBZone concern. [____Contractor to sign and date and insert authorized signer's name and title.]

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(End of clause)

52.229-11	Tax on Certain Foreign Procurements-Notice and Representation.	2020-06

Tax on Certain Foreign Procurements-Notice and Representation (Jun 2020)

(a) Definitions. As used in this provision-

Foreign person means any person other than a United States person.

Specified Federal procurement payment means any payment made pursuant to a contract with a foreign contracting party that is for goods, manufactured or produced, or services provided in a foreign country that is not a party to an international procurement agreement with the United States. For purposes of the prior sentence, a foreign country does not include an outlying area of the United States.

United States person as defined in 26 U.S.C. 7701(a)(30) means

(1) A citizen or resident of the United States;

(2) A domestic partnership;

(3) A domestic corporation;

(4) Any estate (other than a foreign estate, within the meaning of 26 U.S.C. 701(a)(31)); and

(5) Any trust if-

(i) A court within the United States is able to exercise primary supervision over the administration of the trust; and

(ii) One or more United States persons have the authority to control all substantial decisions of

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the trust.

(b) Unless exempted, there is a 2 percent tax of the amount of a specified Federal procurement payment on any foreign person receiving such payment. See 26 U.S.C. 5000C and its implementing regulations at 26 CFR 1.5000C-1 through 1.5000C-7.

(c) Exemptions from withholding under this provision are described at 26 CFR 1.5000C-1(d)(5) through (7). The Offeror may claim an exemption from the withholding by using the Department of the Treasury Internal Revenue Service (IRS) Form W-14, Certificate of Foreign Contracting Party Receiving Federal Procurement Payments, available at www.irs.gov/w14. Any exemption claimed and self-certified on the IRS Form W-14 is subject to audit by the IRS. Any disputes regarding the imposition and collection of the 26 U.S.C. 5000C tax are adjudicated by the IRS as the 26 U.S.C. 5000C tax is a tax matter, not a contract issue. The IRS Form W-14 is provided to the acquiring agency rather than to the IRS.

(d) For purposes of withholding under 26 U.S.C. 5000C, the Offeror represents that

(1) It [ ] is [ ] is not a foreign person; and

(2) If the Offeror indicates "is" in paragraph (d)(1) of this provision, then the Offeror represents that-I am claiming on the IRS Form W-14 [ ] a full exemption, or [ ] partial or no exemption [Offeror must select one] from the excise tax.

(e) If the Offeror represents it is a foreign person in paragraph (d)(1) of this provision, then-

(1) The clause at FAR 52.229-12, Tax on Certain Foreign Procurements, will be included in any resulting contract; and

(2) The Offeror shall submit with its offer the IRS Form W-14. If the IRS Form W-14 is not submitted with the offer, exemptions will not be applied to any resulting contract and the Government will withhold a full 2 percent of each payment.

(f) If the Offeror selects "is" in paragraph (d)(1) and "partial or no exemption" in paragraph (d)(2) of this provision, the Offeror will be subject to withholding in accordance with the clause at FAR 52.229-12, Tax on Certain Foreign Procurements, in any resulting contract.

(g) A taxpayer may, for a fee, seek advice from the IRS as to the proper tax treatment of a transaction. This is called a private letter ruling. Also, the IRS may publish a revenue ruling, which is an official interpretation by the IRS of the Internal Revenue Code, related statutes, tax

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treaties, and regulations. A revenue ruling is the conclusion of the IRS on how the law is applied to a specific set of facts. For questions relating to the interpretation of the IRS regulations go to https://www.irs.gov/help/tax-law-questions.

(End of provision)

52.232-5	Payments under Fixed-Price Construction Contracts.	2014-05

Payments under Fixed-Price Construction Contracts (May 2014)

(a) Payment of price. The Government shall pay the Contractor the contract price as provided in this contract.

(b) Progress payments. The Government shall make progress payments monthly as the work proceeds, or at more frequent intervals as determined by the Contracting Officer, on estimates of work accomplished which meets the standards of quality established under the contract, as approved by the Contracting Officer.

(1) The Contractor's request for progress payments shall include the following substantiation:

(i) An itemization of the amounts requested, related to the various elements of work required by the contract covered by the payment requested.

(ii) A listing of the amount included for work performed by each subcontractor under the contract.

(iii) A listing of the total amount of each subcontract under the contract.

(iv) A listing of the amounts previously paid to each such subcontractor under the contract.

(v) Additional supporting data in a form and detail required by the Contracting Officer.

(2) In the preparation of estimates, the Contracting Officer may authorize material delivered on the site and preparatory work done to be taken into consideration. Material delivered to the

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Contractor at locations other than the site also may be taken into consideration if-

(i) Consideration is specifically authorized by this contract; and

(ii) The Contractor furnishes satisfactory evidence that it has acquired title to such material and that the material will be used to perform this contract.

(c) Contractor certification. Along with each request for progress payments, the Contractor shall furnish the following certification, or payment shall not be made: (However, if the Contractor elects to delete paragraph (c)(4) from the certification, the certification is still acceptable.)

I hereby certify, to the best of my knowledge and belief, that-

(1) The amounts requested are only for performance in accordance with the specifications, terms, and conditions of the contract;

(2) All payments due to subcontractors and suppliers from previous payments received under the contract have been made, and timely payments will be made from the proceeds of the payment covered by this certification, in accordance with subcontract agreements and the requirements of Chapter 39 of Title 31, United States Code;

(3) This request for progress payments does not include any amounts which the prime contractor intends to withhold or retain from a subcontractor or supplier in accordance with the terms and conditions of the subcontract; and

(4) This certification is not to be construed as final acceptance of a subcontractor's performance.

____ (Name)

____ (Title)

____ (Date)

(d) Refund of unearned amounts. If the Contractor, after making a certified request for progress payments, discovers that a portion or all of such request constitutes a payment for performance by the Contractor that fails to conform to the specifications, terms, and conditions of this contract (hereinafter referred to as the "unearned amount"), the Contractor shall-

(1) Notify the Contracting Officer of such performance deficiency; and

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(2) Be obligated to pay the Government an amount (computed by the Contracting Officer in the manner provided in paragraph (j) of this clause) equal to interest on the unearned amount from the 8th day after the date of receipt of the unearned amount until-

(i) The date the Contractor notifies the Contracting Officer that the performance deficiency has been corrected; or

(ii) The date the Contractor reduces the amount of any subsequent certified request for progress payments by an amount equal to the unearned amount.

(e) Retainage. If the Contracting Officer finds that satisfactory progress was achieved during any period for which a progress payment is to be made, the Contracting Officer shall authorize payment to be made in full. However, if satisfactory progress has not been made, the Contracting Officer may retain a maximum of 10 percent of the amount of the payment until satisfactory progress is achieved. When the work is substantially complete, the Contracting Officer may retain from previously withheld funds and future progress payments that amount the Contracting Officer considers adequate for protection of the Government and shall release to the Contractor all the remaining withheld funds. Also, on completion and acceptance of each separate building, public work, or other division of the contract, for which the price is stated separately in the contract, payment shall be made for the completed work without retention of a percentage.

(f) Title, liability, and reservation of rights. All material and work covered by progress payments made shall, at the time of payment, become the sole property of the Government, but this shall not be construed as-

(1) Relieving the Contractor from the sole responsibility for all material and work upon which payments have been made or the restoration of any damaged work; or

(2) Waiving the right of the Government to require the fulfillment of all of the terms of the contract.

(g) Reimbursement for bond premiums. In making these progress payments, the Government shall, upon request, reimburse the Contractor for the amount of premiums paid for performance and payment bonds (including coinsurance and reinsurance agreements, when applicable) after the Contractor has furnished evidence of full payment to the surety. The retainage provisions in paragraph (e) of this clause shall not apply to that portion of progress payments attributable to bond premiums.

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(h) Final payment. The Government shall pay the amount due the Contractor under this contract after-

(1) Completion and acceptance of all work;

(2) Presentation of a properly executed voucher; and

(3) Presentation of release of all claims against the Government arising by virtue of this contract, other than claims, in stated amounts, that the Contractor has specifically excepted from the operation of the release. A release may also be required of the assignee if the Contractor's claim to amounts payable under this contract has been assigned under the Assignment of Claims Act of1940 (31 U.S.C.3727 and 41 U.S.C. 6305).

(i) Limitation because of undefinitized work. Notwithstanding any provision of this contract, progress payments shall not exceed 80 percent on work accomplished on undefinitized contract actions. A "contract action" is any action resulting in a contract, as defined in FAR subpart 2.1, including contract modifications for additional supplies or services, but not including contract modifications that are within the scope and under the terms of the contract, such as contract modifications issued pursuant to the Changes clause, or funding and other administrative changes.

(j) Interest computation on unearned amounts. In accordance with 31 U.S.C. 3903(c)(1), the amount payable under paragraph (d)(2) of this clause shall be-

(1) Computed at the rate of average bond equivalent rates of 91-day Treasury bills auctioned at the most recent auction of such bills prior to the date the Contractor receives the unearned amount; and

(2) Deducted from the next available payment to the Contractor.

(End of clause)

52.232-16	Progress Payments. (Deviation 2026-O0038)	2026-02

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Progress Payments (Feb 2026) (Deviation 2026-O0038)

The Government will make progress payments to the Contractor when requested as work progresses, but not more frequently than monthly, in amounts of $2,500 or more approved by the Contracting Officer, under the following conditions:

(a) Computation of amounts.

(1) Unless the Contractor requests a smaller amount, the Government will compute each progress payment as 80 percent of the Contractor's total costs incurred under this contract whether or not actually paid, plus financing payments to subcontractors (see paragraph (j) of this clause), less the sum of all previous progress payments made by the Government under this contract. The Contracting Officer will consider cost of money that would be allowable under Federal Acquisition Regulation (FAR) 31.205-10 as an incurred cost for progress payment purposes.

(2) The amount of financing and other payments for supplies and services purchased directly for the contract are limited to the amounts that have been paid by cash, check, or other forms of payment, or that are determined due and will be paid to subcontractors-

(i) In accordance with the terms and conditions of a subcontract or invoice; and

(ii) Ordinarily within 30 days of the submission of the Contractor's payment request to the Government.

(3) The Government will exclude accrued costs of Contractor contributions under employee pension plans until actually paid unless-

(i) The Contractor's practice is to make contributions to the retirement fund quarterly or more frequently; and

(ii) The contribution does not remain unpaid 30 days after the end of the applicable quarter or shorter payment period (any contribution remaining unpaid shall be excluded from the Contractor's total costs for progress payments until paid).

(4) The Contractor shall not include the following in total costs for progress payment purposes in paragraph (a)(1) of this clause:

(i) Costs that are not reasonable, allocable to this contract, and consistent with sound and generally accepted accounting principles and practices.

(ii) Costs incurred by subcontractors or suppliers.

(iii) Costs ordinarily capitalized and subject to depreciation or amortization except for the properly depreciated or amortized portion of such costs.

(iv) Payments made or amounts payable to subcontractors or suppliers, except for-

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(A) Completed work, including partial deliveries, to which the Contractor has acquired title; and

(B) Work under cost-reimbursement or time-and-material subcontracts to which the Contractor has acquired title.

(5) The amount of unliquidated progress payments may exceed neither (i) the progress payments made against incomplete work (including allowable unliquidated progress payments to subcontractors) nor (ii) the value, for progress payment purposes, of the incomplete work. Incomplete work shall be considered to be the supplies and services required by this contract, for which delivery and invoicing by the Contractor and acceptance by the Government are incomplete.

(6) The total amount of progress payments shall not exceed 80 percent of the total contract price.

(7) If a progress payment or the unliquidated progress payments exceed the amounts permitted by subparagraphs (a)(4) or (a)(5) of this clause, the Contractor shall repay the amount of such excess to the Government on demand.

(8) Notwithstanding any other terms of the contract, the Contractor agrees not to request progress payments in dollar amounts of less than $2,500. The Contracting Officer may make exceptions.

(9) The costs applicable to items delivered, invoiced, and accepted shall not include costs in excess of the contract price of the items.

(b) *Liquidation.* Except as provided in the Termination for Convenience of the Government clause, all progress payments shall be liquidated by deducting from any payment under this contract, other than advance or progress payments, the unliquidated progress payments, or 80 percent of the amount invoiced, whichever is less. The Contractor shall repay to the Government any amounts required by a retroactive price reduction, after computing liquidations and payments on past invoices at the reduced prices and adjusting the unliquidated progress payments accordingly. The Government reserves the right to unilaterally change from the ordinary liquidation rate to an alternate rate when deemed appropriate for proper contract financing.

(c) *Reduction or suspension.* The Contracting Officer may reduce or suspend progress payments, increase the rate of liquidation, or take a combination of these actions, after finding on substantial evidence any of the following conditions:

(1) The Contractor failed to comply with any material requirement of this contract (which includes paragraphs (f) and (g) of this clause).

(2) Performance of this contract is endangered by the Contractor's (i) failure to make progress or (ii) unsatisfactory financial condition.

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(3) Inventory allocated to this contract substantially exceeds reasonable requirements.

(4) The Contractor is delinquent in payment of the costs of performing this contract in the ordinary course of business.

(5) The fair value of the undelivered work is less than the amount of unliquidated progress payments for that work.

(6) The Contractor is realizing less profit than that reflected in the establishment of any alternate liquidation rate in paragraph (b) of this clause, and that rate is less than the progress payment rate stated in subparagraph (a)(1) of this clause.

(d) *Title.*

(1) Title to the property described in this paragraph (d) shall vest in the Government. Vestiture shall be immediately upon the date of this contract, for property acquired or produced before that date. Otherwise, vestiture shall occur when the property is or should have been allocable or properly chargeable to this contract.

(2) *Property,* as used in this clause, includes all of the below-described items acquired or produced by the Contractor that are or should be allocable or properly chargeable to this contract under sound and generally accepted accounting principles and practices.

(i) Parts, materials, inventories, and work in process;

(ii) Special tooling and special test equipment to which the Government is to acquire title;

(iii) Nondurable (i.e., noncapital) tools, jigs, dies, fixtures, molds, patterns, taps, gauges, test equipment, and other similar manufacturing aids, title to which would not be obtained as special tooling under paragraph (d)(2)(ii) of this clause; and

(iv) Drawings and technical data, to the extent the Contractor or subcontractors are required to deliver them to the Government by other clauses of this contract.

(3) Although title to property is in the Government under this clause, other applicable clauses of this contract, e.g., the termination clauses, shall determine the handling and disposition of the property.

(4) The Contractor may sell any scrap resulting from production under this contract without requesting the Contracting Officer's approval, but the proceeds shall be credited against the costs of performance.

(5) To acquire for its own use or dispose of property to which title is vested in the Government under this clause, the Contractor must obtain the Contracting Officer's advance approval of the action and the terms. The Contractor shall (i) exclude the allocable costs of the property from

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the costs of contract performance, and (ii) repay to the Government any amount of unliquidated progress payments allocable to the property. Repayment may be by cash or credit memorandum.

(6) When the Contractor completes all of the obligations under this contract, including liquidation of all progress payments, title shall vest in the Contractor for all property (or the proceeds thereof) not-

(i) Delivered to, and accepted by, the Government under this contract; or

(ii) Incorporated in supplies delivered to, and accepted by, the Government under this contract and to which title is vested in the Government under this clause.

(7) The terms of this contract concerning liability for Government-furnished property shall not apply to property to which the Government acquired title solely under this clause.

(e) *Risk of loss.* Before delivery to and acceptance by the Government, the Contractor shall bear the risk of loss for property, the title to which vests in the Government under this clause, except to the extent the Government expressly assumes the risk. The Contractor shall repay the Government an amount equal to the unliquidated progress payments that are based on costs allocable to property that is lost (see 45.101).

(f) *Control of costs and property.* The Contractor shall maintain an accounting system and controls adequate for the proper administration of this clause.

(g) *Reports, forms, and access to records.*

(1) The Contractor shall promptly furnish reports, certificates, financial statements, and other pertinent information (including estimates to complete) reasonably requested by the Contracting Officer for the administration of this clause. Also, the Contractor shall give the Government reasonable opportunity to examine and verify the Contractor's books, records, and accounts.

(2) The Contractor shall furnish estimates to complete that have been developed or updated within six months of the date of the progress payment request. The estimates to complete shall represent the Contractor's best estimate of total costs to complete all remaining contract work required under the contract. The estimates shall include sufficient detail to permit Government verification.

(3) Each Contractor request for progress payment shall:

(i) Be submitted on Standard Form 1443, Contractor's Request for Progress Payment, or the electronic equivalent as required by agency regulations, in accordance with the form instructions and the contract terms; and

(ii) Include any additional supporting documentation requested by the Contracting Officer.

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(h) *Special terms regarding default.* If this contract is terminated under the Default clause, (i) the Contractor shall, on demand, repay to the Government the amount of unliquidated progress payments and (ii) title shall vest in the Contractor, on full liquidation of progress payments, for all property for which the Government elects not to require delivery under the Default clause. The Government shall be liable for no payment except as provided by the Default clause.

(i) *Reservations of rights.*

(1) No payment or vesting of title under this clause shall (i) excuse the Contractor from performance of obligations under this contract or (ii) constitute a waiver of any of the rights or remedies of the parties under the contract.

(2) The Government's rights and remedies under this clause (i) shall not be exclusive but rather shall be in addition to any other rights and remedies provided by law or this contract and (ii) shall not be affected by delayed, partial, or omitted exercise of any right, remedy, power, or privilege, nor shall such exercise or any single exercise preclude or impair any further exercise under this clause or the exercise of any other right, power, or privilege of the Government.

(j) *Financing payments to subcontractors.* The financing payments to subcontractors mentioned in paragraphs (a)(1) and (a)(2) of this clause shall be all financing payments to subcontractors or divisions, if the following conditions are met:

(1) The amounts included are limited to-

(i) The unliquidated remainder of financing payments made; plus

(ii) Any unpaid subcontractor requests for financing payments.

(2) The subcontract or interdivisional order is expected to involve a minimum of approximately 6 months between the beginning of work and the first delivery; or, if the subcontractor is a small business concern, 4 months.

(3) If the financing payments are in the form of progress payments, the terms of the subcontract or interdivisional order concerning progress payments-

(i) Are substantially similar to the terms of this clause for any subcontractor that is a large business concern, or this clause with its *Alternate I* for any subcontractor that is a small business concern;

(ii) Are at least as favorable to the Government as the terms of this clause;

(iii) Are not more favorable to the subcontractor or division than the terms of this clause are to the Contractor;

(iv) Are in conformance with the requirements of FAR 32.504(e); and

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(v) Subordinate all subcontractor rights concerning property to which the Government has title under the subcontract to the Government's right to require delivery of the property to the Government if-

(A) The Contractor defaults; or

(B) The subcontractor becomes bankrupt or insolvent.

(4) If the financing payments are in the form of performance-based payments, the terms of the subcontract or interdivisional order concerning payments-

(i) Are substantially similar to the Performance-Based Payments clause at FAR 52.232-32 and meet the criteria for, and definition of, performance-based payments in FAR Part 32;

(ii) Are in conformance with the requirements of FAR 32.504(f); and

(iii) Subordinate all subcontractor rights concerning property to which the Government has title under the subcontract to the Government's right to require delivery of the property to the Government if-

(A) The Contractor defaults; or

(B) The subcontractor becomes bankrupt or insolvent.

(5) If the financing payments are in the form of commercial product or commercial service financing payments, the terms of the subcontract or interdivisional order concerning payments-

(i) Are constructed in accordance with FAR 32.206(c) and included in a subcontract for a commercial product or commercial service purchase that meets the definition and standards for acquisition of commercial products and commercial services in FAR parts 2 and 12;

(ii) Are in conformance with the requirements of FAR 32.504(g); and

(iii) Subordinate all subcontractor rights concerning property to which the Government has title under the subcontract to the Government's right to require delivery of the property to the Government if-

(A) The Contractor defaults; or

(B) The subcontractor becomes bankrupt or insolvent.

(6) If financing is in the form of progress payments, the progress payment rate in the subcontract is the customary rate used by the contracting agency, depending on whether the subcontractor is or is not a small business concern.

(7) Concerning any proceeds received by the Government for property to which title has vested in the Government under the subcontract terms, the parties agree that the proceeds shall be

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applied to reducing any unliquidated financing payments by the Government to the Contractor under this contract.

(8) If no unliquidated financing payments to the Contractor remain, but there are unliquidated financing payments that the Contractor has made to any subcontractor, the Contractor shall be subrogated to all the rights the Government obtained through the terms required by this clause to be in any subcontract, as if all such rights had been assigned and transferred to the Contractor.

(9) To facilitate small business participation in subcontracting under this contract, the Contractor shall provide financing payments to small business concerns, in conformity with the standards for customary contract financing payments stated in FAR 32.113. The Contractor shall not consider the need for such financing payments as a handicap or adverse factor in the award of subcontracts.

(k) *Limitations on undefinitized contract actions.* Notwithstanding any other progress payment provisions in this contract, progress payments may not exceed 80 percent of costs incurred on work accomplished under undefinitized contract actions. A *contract action* is any action resulting in a contract, as defined in subpart 2.1, including contract modifications for additional supplies or services, but not including contract modifications that are within the scope and under the terms of the contract, such as contract modifications issued pursuant to the Changes clause, or funding and other administrative changes. This limitation shall apply to the costs incurred, as computed in accordance with paragraph (a) of this clause, and shall remain in effect until the contract action is definitized. Costs incurred which are subject to this limitation shall be segregated on Contractor progress payment requests and invoices from those costs eligible for higher progress payment rates. For purposes of progress payment liquidation, as described in paragraph (b) of this clause, progress payments for undefinitized contract actions shall be liquidated at 80 percent of the amount invoiced for work performed under the undefinitized contract action as long as the contract action remains undefinitized. The amount of unliquidated progress payments for undefinitized contract actions shall not exceed 80 percent of the maximum liability of the Government under the undefinitized contract action or such lower limit specified elsewhere in the contract. Separate limits may be specified for separate actions.

(l) *Due date.* The designated payment office will make progress payments on the 14th day after the designated billing office receives a proper progress payment request. In the event that the Government requires an audit or other review of a specific progress payment request to ensure compliance with the terms and conditions of the contract, the designated payment office is not compelled to make payment by the specified due date. Progress payments are considered contract financing and are not subject to the interest penalty provisions of the Prompt Payment Act.

(m) Progress payments under indefinite-delivery contracts. The Contractor shall account for and submit progress payment requests under individual orders as if the order constituted a separate contract, unless otherwise specified in this contract.

(End of clause)

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52.248-3 Value Engineering-Construction. 2025-10

Value Engineering-Construction (Oct 2025)

(a) General. The Contractor is encouraged to develop, prepare, and submit value engineering change proposals (VECP's) voluntarily. The Contractor shall share in any instant contract savings realized from accepted VECP's, in accordance with paragraph (f) of this clause.

(b) Definitions. "Collateral costs," as used in this clause, means agency costs of operation, maintenance, logistic support, or Government-furnished property.

Collateral savings, as used in this clause, means those measurable net reductions resulting from a VECP in the agency's overall projected collateral costs, exclusive of acquisition savings, whether or not the acquisition cost changes.

Contractor's development and implementation costs, as used in this clause, means those costs the Contractor incurs on a VECP specifically in developing, testing, preparing, and submitting the VECP, as well as those costs the Contractor incurs to make the contractual changes required by Government acceptance of a VECP.

Government costs, as used in this clause, means those agency costs that result directly from developing and implementing the VECP, such as any net increases in the cost of testing, operations, maintenance, and logistic support. The term does not include the normal administrative costs of processing the VECP.

Instant contract savings, as used in this clause, means the estimated reduction in Contractor cost of performance resulting from acceptance of the VECP, minus allowable Contractor's development and implementation costs, including subcontractors' development and implementation costs (see paragraph (h) of this clause).

Value engineering change proposal (VECP) means a proposal that-

(1) Requires a change to this, the instant contract, to implement; and

(2) Results in reducing the contract price or estimated cost without impairing essential functions

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or characteristics; provided, that it does not involve a change-

(i) In deliverable end item quantities only; or

(ii) To the contract type only.

(c) VECP preparation. As a minimum, the Contractor shall include in each VECP the information described in paragraphs (c)(1) through (7) of this clause. If the proposed change is affected by contractually required configuration management or similar procedures, the instructions in those procedures relating to format, identification, and priority assignment shall govern VECP preparation. The VECP shall include the following:

(1) A description of the difference between the existing contract requirement and that proposed, the comparative advantages and disadvantages of each, a justification when an item's function or characteristics are being altered, and the effect of the change on the end item's performance.

(2) A list and analysis of the contract requirements that must be changed if the VECP is accepted, including any suggested specification revisions.

(3) A separate, detailed cost estimate for (i) the affected portions of the existing contract requirement and (ii) the VECP. The cost reduction associated with the VECP shall take into account the Contractor's allowable development and implementation costs, including any amount attributable to subcontracts under paragraph (h) of this clause.

(4) A description and estimate of costs the Government may incur in implementing the VECP, such as test and evaluation and operating and support costs.

(5) A prediction of any effects the proposed change would have on collateral costs to the agency.

(6) A statement of the time by which a contract modification accepting the VECP must be issued in order to achieve the maximum cost reduction, noting any effect on the contract completion time or delivery schedule.

(7) Identification of any previous submissions of the VECP, including the dates submitted, the agencies and contract numbers involved, and previous Government actions, if known.

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(d) Submission. The Contractor shall submit VECP's to the Resident Engineer at the worksite, with a copy to the Contracting Officer.

(e) Government action.

(1) The Contracting Officer will notify the Contractor of the status of the VECP within 45 calendar days after the contracting office receives it. If additional time is required, the Contracting Officer will notify the Contractor within the 45-day period and provide the reason for the delay and the expected date of the decision. The Government will process VECP's expeditiously; however, it will not be liable for any delay in acting upon a VECP.

(2) If the VECP is not accepted, the Contracting Officer will notify the Contractor in writing, explaining the reasons for rejection. The Contractor may withdraw any VECP, in whole or in part, at any time before it is accepted by the Government. The Contracting Officer may require that the Contractor provide written notification before undertaking significant expenditures for VECP effort.

(3) Any VECP may be accepted, in whole or in part, by the Contracting Officer's award of a modification to this contract citing this clause. The Contracting Officer may accept the VECP, even though an agreement on price reduction has not been reached, by issuing the Contractor a notice to proceed with the change. Until a notice to proceed is issued or a contract modification applies a VECP to this contract, the Contractor shall perform in accordance with the existing contract. The decision to accept or reject all or part of any VECP is a unilateral decision made solely at the discretion of the Contracting Officer.

(f) Sharing-

(1) Rates. The Government's share of savings is determined by subtracting Government costs from instant contract savings and multiplying the result by-

(i) 45 percent for fixed-price contracts; or

(ii) 75 percent for cost-reimbursement contracts.

(2) Payment. Payment of any share due the Contractor for use of a VECP on this contract shall

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be authorized by a modification to this contract to-

(i) Accept the VECP;

(ii) Reduce the contract price or estimated cost by the amount of instant contract savings; and

(iii) Provide the Contractor's share of savings by adding the amount calculated to the contract price or fee.

(g) Collateral savings. If a VECP is accepted, the Contracting Officer will increase the instant contract amount by 20 percent of any projected collateral savings determined to be realized in a typical year of use after subtracting any Government costs not previously offset. However, the Contractor's share of collateral savings will not exceed the contract's firm-fixed-price or estimated cost, at the time the VECP is accepted, or $100,000, whichever is greater. The Contracting Officer is the sole determiner of the amount of collateral savings.

(h) Subcontracts. The Contractor shall include an appropriate value engineering clause in any subcontract of $90,000 or more and may include one in subcontracts of lesser value. In computing any adjustment in this contract's price under paragraph (f) of this clause, the Contractor's allowable development and implementation costs shall include any subcontractor's allowable development and implementation costs clearly resulting from a VECP accepted by the Government under this contract, but shall exclude any value engineering incentive payments to a subcontractor. The Contractor may choose any arrangement for subcontractor value engineering incentive payments; provided, that these payments shall not reduce the Government's share of the savings resulting from the VECP.

(i) Data. The Contractor may restrict the Government's right to use any part of a VECP or the supporting data by marking the following legend on the affected parts:

These data, furnished under the Value Engineering-Construction clause of contract ____, shall not be disclosed outside the Government or duplicated, used, or disclosed, in whole or in part, for any purpose other than to evaluate a value engineering change proposal submitted under the clause. This restriction does not limit the Government's right to use information contained in these data if it has been obtained or is otherwise available from the Contractor or from another source without limitations.

If a VECP is accepted, the Contractor hereby grants the Government unlimited rights in the VECP and supporting data, except that, with respect to data qualifying and submitted as limited rights technical data, the Government shall have the rights specified in the contract modification

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implementing the VECP and shall appropriately mark the data. (The terms "unlimited rights" and "limited rights" are defined in part 27 of the Federal Acquisition Regulation.)

(End of clause)

52.252-2	Clauses Incorporated by Reference.	1998-02

Clauses Incorporated By Reference (Feb 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

https://acquisition.gov/far-overhaul

(End of clause)

52.252-4	Alterations in Contract.	1984-04

Alterations in Contract (Apr 1984)

Portions of this contract are altered as follows:

52.225-11 Alt I

52.249-2 Alt 1

(End of clause)

52.252-6	Authorized Deviations in Clauses.	2020-11

Authorized Deviations in Clauses (Nov 2020)

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(a) The use in this solicitation or contract of any Federal Acquisition Regulation (48 CFR Chapter 1) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the date of the clause.

(b) The use in this solicitation or contract of any Defense Federal Acquisition Regulation (48 CFR 2) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the name of the regulation.

(End of clause)

DFARS Clauses Incorporated by Full Text

Number	Title	Effective Date	Alternate Deviation	Variation Effective Date
252.236-7001	Contract Drawings and Specifications.	2000-08		

CONTRACT DRAWINGS AND SPECIFICATIONS (AUG 2000)

(a) The Government will provide to the Contractor, without charge, one set of contract drawings and specifications, except publications incorporated into the technical provisions by reference, in electronic or paper media as chosen by the Contracting Officer.

(b) The Contractor shall-

(1) Check all drawings furnished immediately upon receipt;

(2) Compare all drawings and verify the figures before laying out the work;

(3) Promptly notify the Contracting Officer of any discrepancies;

(4) Be responsible for any errors that might have been avoided by complying with this paragraph (b); and

(5) Reproduce and print contract drawings and specifications as needed.

(c) In general--

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(1) Large-scale drawings shall govern small-scale drawings; and

(2) The Contractor shall follow figures marked on drawings in preference to scale measurements.

(d) Omissions from the drawings or specifications or the misdescription of details of work that are manifestly necessary to carry out the intent of the drawings and specifications, or that are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work. The Contractor shall perform such details as if fully and correctly set forth and described in the drawings and specifications.

(e) The work shall conform to the specifications and the contract drawings.

(End of clause)

252.236-7004 Payment for Mobilization and Demobilization. 1991-12

PAYMENT FOR MOBILIZATION AND DEMOBILIZATION (DEC 1991)

(a) The Government will pay all costs for the mobilization and demobilization of all of the Contractor's plant and equipment at the contract lump sum price for this item.

(1) Sixty (60) percent of the lump sum price upon completion of the contractor's mobilization at the work site.

(2) The remaining forty (40) percent upon completion of demobilization.

(b) The Contracting Officer may require the Contractor to furnish cost data to justify this portion of the bid if the Contracting Officer believes that the percentages in paragraphs (a)(1) and (2) of this clause do not bear a reasonable relation to the cost of the work in this contract.

(1) Failure to justify such price to the satisfaction of the Contracting Officer will result in payment, as determined by the Contracting Officer, of-

(i) Actual mobilization costs at completion of mobilization;

(ii) Actual demobilization costs at completion of demobilization; and

(iii) The remainder of this item in the final payment under this contract.

(2) The Contracting Officer's determination of the actual costs in paragraph (b)(1)of this clause is not subject to appeal.

(End of clause)

SOLICITATION

Section 00 73 00 - Supplementary Conditions

ATTACHMENTS:

1. General Wage Determination

2. Pre-award Survey

REQUIRED INSURANCE SCHEDULE (Construction) (AUG 2008)

The contractor shall procure and maintain during the entire period of contract performance under this contract the following minimum insurance:

Type	**Amount**
Workmen's Compensation	Coverage complying with applicable state statutes
Employer's Liability	Minimum amount of $100,000.00
General Liability on Comprehensive form of policy	Minimum limits of $500,000.00 per occurrence for bodily Injury which includes, but is not limited to, insurance for work required herein
Comprehensive Automobile Liability	Minimum limits of $200,000.00 per person and $500,000.00 per occurrence for bodily injury and $20,000.00 per occurrence for property damage

FAR PROVISION 52.229-11 AND FAR CLAUSE 52.229-12

FAR provision 52.229-11 and FAR clause 52.229-12 are included in this solicitation. This provision and clause concern the imposition of a 2 percent Federal excise tax withholding on any resultant contract award or payment request. This rule applies to Federal Government contracts for goods or services that are awarded to foreign persons- such as foreign contractors. It implements the Department of the Treasury's final regulations published in the Federal Register at 81 FR 55133 on August 18, 2016, under section 5000C of the Internal Revenue Code relating to the 2 percent tax on payments made by the U.S. Government to foreign persons pursuant to certain contracts.

Pursuant to the FAR 52.229-3 Federal, State, and Local Taxes, taxes imposed under 26 U.S.C. 5000 C may not be included in the contract price or reimbursed.

SOLICITATION

Exemptions from this excise tax must be claimed by an Offeror when it submits, with its offer, a U.S. Department of Treasury Internal Revenue Service (IRS) Form W-14, Certificate of Foreign Contracting Party Receiving Federal Procurement Payments, available via the internet at www.irs.gov/W14. If not submitted with the offer, exemptions will not be applied to any resulting contract and the Government will withhold a full 2 percent on each contract payment. Failure to submit an IRS Form W-14 with each payment request will also result in an automatic withholding of 2 percent from the payment request.

When filling out the IRS Form W-14 the following information may be used to complete Part I, Lines 6 and 7.

Line 6 Contract/reference number: W912P726RA020

Line 7 Name and address of the acquiring agency:

U.S. Army Corps of Engineers, San Francisco District

Attn: Contracting Officer450 Golden Gate Avenue, 4th Floor

San Francisco, CA 94102-3406

Any exemption claimed and self-certified is subject to audit by the IRS. Any disputes concerning this tax are adjudicated by the IRS because the Section 5000C tax is a tax matter not a contract issue. Offerors are encouraged to seek guidance from their own tax professionals for advice concerning the provision, clause, and exclusions exclusion/submission of IRS Form W-14.

Commencement, Prosecution, and Completion of Work - Construction *(Apr 1984)*

The Contractor shall be required to (a) commence work under this contract within 1 calendar days after the date the Contractor receives the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than 114 calendar days.* The time stated for completion shall include final cleanup of the premises.

(End of condition)

SOLICITATION

Variation in Quantity *(Apr 1984)*

If the quantity of a unit-priced item in this contract is an estimated quantity and the actual quantity of the unit-priced item varies more than 15 percent above or below the estimated quantity, an equitable adjustment in the contract price shall be made upon demand of either party. The equitable adjustment shall be based upon any increase or decrease in costs due solely to the variation above 115 percent or below 85 percent of the estimated quantity. If the quantity variation is such as to cause an increase in the time necessary for completion, the Contractor may request, in writing, an extension of time, to be received by the Contracting Officer within 10 days from the beginning of the delay, or within such further period as may be granted by the Contracting Officer before the date of final settlement of the contract. Upon the receipt of a written request for an extension, the Contracting Officer shall ascertain the facts and make an adjustment for extending the completion date as, in the judgement of the Contracting Officer, is justified.

(End of condition)

Site Visit (Construction) *(Feb 1995)*

a) The conditions, Differing Site Conditions, and Site Investigations and Conditions Affecting the Work, will be included in any contract awarded as a result of this solicitation. Accordingly, offerors or quoters are urged and expected to inspect the site where the work will be performed.

(b) Site visits may be arranged during normal duty hours by contacting:

Name: Alev Bilginsoy

Email: alev.bilginsoy@usace.army.mil

Telephone: (415) 297 8736

(End of Condition)

SOLICITATION

"General Decision Number: CA20260018 05/18/2026

State: California

Construction Types: Building, Heavy and Highway

Counties: California Counties of
Alameda, Calaveras, Contra Costa,
Fresno, Kings, Madera, Mariposa, Merced,
Monterey, San Benito, San Francisco, San
Joaquin, San Mateo, Santa Clara, Santa
Cruz, Stanislaus and Tuolumne

Building Construction Projects
Dredging Projects-Includes Dredging Projects (does not include hopper dredge work)
Heavy Construction Projects (excludes water well drilling)
Highway Construction Projects

Modification Number	Publication Date
4	01/30/2026
5	05/18/2026

ASBE0016-004 05/01/2025

	Rates	Fringes
ASBESTOS REMOVAL WORKER/HAZARDOUS MATERIAL HANDLER: INCLUDES PREPARATION, WETTING, STRIPPING, REMOVAL, SCRAPPING, VACUUMING, BAGGING AND DISPOSING OF ALL INSULATION MATERIALS FROM MECHANICAL SYSTEMS, WHETHER THEY CONTAIN ASBESTOS OR NOT (AREA 2)	$ 44.73	12.75

ASBE0016-008 01/01/2024

	Rates	Fringes
ASBESTOS WORKERS/INSULATOR: INCLUDES THE APPLICATION OF ALL INSULATING MATERIALS, PROTECTIVE COVERINGS, COATINGS, AND FINISHES TO ALL TYPES OF MECHANICAL SYSTEMS (AREA 2)	$ 64.56	25.07
ASBESTOS WORKERS/INSULATOR: INCLUDES THE APPLICATION OF ALL INSULATING MATERIALS, PROTECTIVE COVERINGS, COATINGS, AND FINISHES TO ALL TYPES OF		

SOLICITATION

MECHANICAL SYSTEMS (AREA 1).....$ 84.76
25.07

BOIL0549-001 01/01/2021

Rates
Fringes
BOILERMAKER: (AREA 2).....$ 45.60
38.99
BOILERMAKER: (AREA 1).....$ 49.62
41.27

BRCA0003-001 08/01/2024

Rates
Fringes
MARBLE FINISHER.....$ 42.06
19.80

BRCA0003-003 08/01/2024

Rates
Fringes
MARBLE MASON.....$ 61.72
30.31

BRCA0003-005 05/01/2024

Rates
Fringes
BRICKLAYER (8) ALAMEDA, CONTRA COSTA, SAN BENITO,
SANTA CLARA).....$ 56.94
26.28
BRICKLAYER (16) MONTEREY, SANTA CRUZ.....$ 54.18
27.82
BRICKLAYER (9) CALAVERAS, SAN JOAQUIN, STANISLAUS,
TOULUMNE.....$ 52.76
25.01
BRICKLAYER (7) SAN FRANCISCO, SAN MATEO.....$ 57.02
28.50
BRICKLAYER (1) FRESNO, KINGS, MADERA, MARIPOSA,
MERCED.....$ 51.17
25.80

BRCA0003-008 07/01/2024

Rates
Fringes
TERRAZZO WORKER/SETTER.....$ 60.58
29.79
TERRAZZO FINISHER.....$ 44.93
20.98

SOLICITATION

BRCA0003-011 04/01/2024

	Rates	Fringes
TILE LAYER AREA 3	$ 50.28	22.05
TILE LAYER AREA 2	$ 55.17	22.52
TILE LAYER AREA 1	$ 59.92	22.62
TILE FINISHER AREA 3	$ 32.68	18.32
TILE FINISHER AREA 2	$ 34.76	19.22
TILE FINISHER AREA 1	$ 37.75	19.28

CARP0022-001 07/01/2023

	Rates	Fringes
CARPENTERS: MILLWRIGHT (SAN FRANCISCO COUNTY)	$ 60.49	35.11
CARPENTERS: JOURNEYMAN CARPENTER (SAN FRANCISCO COUNTY)	$ 60.39	33.52
CARPENTERS: HARDWOOD FLOORLAYER, SHINGLER, POWER SAW OPERATOR, STEEL SCAFFOLD & STEEL SHORING ERECTOR, SAW FILER (SAN FRANCISCO COUNTY)	$ 60.54	33.52
CARPENTERS: BRIDGE BUILDER/HIGHWAY CARPENTER (SAN FRANCISCO COUNTY)	$ 60.39	33.52

CARP0034-001 07/01/2021

	Rates	Fringes
DIVER: MANIFOLD OPERATOR (STANDBY) (SURFACE DIVING): 050 TO 100 FT $2.00 PER FOOT 101 TO 150 FT $3.00 PER FOOT 151 TO 220 FT $4.00 PER FOOT 221 FT.-DEEPER $5.00 PER FOOT SATURATION DIVING: THE STANDBY RATE SHALL APPLY UNTIL SATURATION STARTS. THE SATURATION DIVING RATE APPLIES WHEN DIVERS ARE UNDER PRESSURE CONTINUOUSLY UNTIL WORK TASK AND DECOMPRESSION ARE COMPLETE. THE DIVER RATE SHALL BE PAID FOR ALL SATURATION HOURS. DIVING IN ENCLOSURES: WHERE IT IS NECESSARY FOR DIVERS TO ENTER PIPES OR TUNNELS, OR OTHER ENCLOSURES WHERE THERE IS NO VERTICAL ASCENT, THE FOLLOWING PREMIUM SHALL BE PAID: DISTANCE TRAVELED FROM ENTRANCE 26 FEET TO 300 FEET: $1.00 PER FOOT. WHEN IT IS NECESSARY FOR A DIVER TO ENTER ANY PIPE, TUNNEL OR OTHER ENCLOSURE LESS THAN 48"" IN HEIGHT, THE		

SOLICITATION

PREMIUM WILL BE $1.00 PER FOOT. WORK IN COMBINATION OF CLASSIFICATIONS: EMPLOYEES WORKING IN ANY COMBINATION OF CLASSIFICATIONS WITHIN THE DIVING CREW (EXCEPT DIVE SUPERVISOR) IN A SHIFT ARE PAID IN THE CLASSIFICATION WITH THE HIGHEST RATE FOR THAT SHIFT.....$ 59.51
34.69
DIVER: MANIFOLD OPERATOR (MIXED GAS) DEPTH PAY (SURFACE DIVING): 050 TO 100 FT $2.00 PER FOOT 101 TO 150 FT $3.00 PER FOOT 151 TO 220 FT $4.00 PER FOOT 221 FT.-DEEPER $5.00 PER FOOT SATURATION DIVING: THE STANDBY RATE SHALL APPLY UNTIL SATURATION STARTS. THE SATURATION DIVING RATE APPLIES WHEN DIVERS ARE UNDER PRESSURE CONTINUOUSLY UNTIL WORK TASK AND DECOMPRESSION ARE COMPLETE. THE DIVER RATE SHALL BE PAID FOR ALL SATURATION HOURS. DIVING IN ENCLOSURES: WHERE IT IS NECESSARY FOR DIVERS TO ENTER PIPES OR TUNNELS, OR OTHER ENCLOSURES WHERE THERE IS NO VERTICAL ASCENT, THE FOLLOWING PREMIUM SHALL BE PAID: DISTANCE TRAVELED FROM ENTRANCE 26 FEET TO 300 FEET: $1.00 PER FOOT. WHEN IT IS NECESSARY FOR A DIVER TO ENTER ANY PIPE, TUNNEL OR OTHER ENCLOSURE LESS THAN 48"" IN HEIGHT, THE PREMIUM WILL BE $1.00 PER FOOT. WORK IN COMBINATION OF CLASSIFICATIONS: EMPLOYEES WORKING IN ANY COMBINATION OF CLASSIFICATIONS WITHIN THE DIVING CREW (EXCEPT DIVE SUPERVISOR) IN A SHIFT ARE PAID IN THE CLASSIFICATION WITH THE HIGHEST RATE FOR THAT SHIFT.....$ 64.51
34.69
DIVER: DIVER WET DEPTH PAY (SURFACE DIVING): 050 TO 100 FT $2.00 PER FOOT 101 TO 150 FT $3.00 PER FOOT 151 TO 220 FT $4.00 PER FOOT 221 FT.-DEEPER $5.00 PER FOOT SATURATION DIVING: THE STANDBY RATE SHALL APPLY UNTIL SATURATION STARTS. THE SATURATION DIVING RATE APPLIES WHEN DIVERS ARE UNDER PRESSURE CONTINUOUSLY UNTIL WORK TASK AND DECOMPRESSION ARE COMPLETE. THE DIVER RATE SHALL BE PAID FOR ALL SATURATION HOURS. DIVING IN ENCLOSURES: WHERE IT IS NECESSARY FOR DIVERS TO ENTER PIPES OR TUNNELS, OR OTHER ENCLOSURES WHERE THERE IS NO VERTICAL ASCENT, THE FOLLOWING PREMIUM SHALL BE PAID: DISTANCE TRAVELED FROM ENTRANCE 26 FEET TO 300 FEET: $1.00 PER FOOT. WHEN IT IS NECESSARY FOR A DIVER TO ENTER ANY PIPE, TUNNEL OR OTHER ENCLOSURE LESS THAN 48"" IN HEIGHT, THE PREMIUM WILL BE $1.00 PER FOOT. WORK IN COMBINATION OF CLASSIFICATIONS: EMPLOYEES WORKING IN ANY COMBINATION OF CLASSIFICATIONS WITHIN THE DIVING CREW (EXCEPT DIVE SUPERVISOR) IN A SHIFT ARE PAID IN THE CLASSIFICATION WITH THE HIGHEST RATE FOR THAT SHIFT.....$ 103.62
34.69

SOLICITATION

DIVER: DIVER TENDER DEPTH PAY (SURFACE DIVING): 050 TO 100 FT $2.00 PER FOOT 101 TO 150 FT $3.00 PER FOOT 151 TO 220 FT $4.00 PER FOOT 221 FT.-DEEPER $5.00 PER FOOT SATURATION DIVING: THE STANDBY RATE SHALL APPLY UNTIL SATURATION STARTS. THE SATURATION DIVING RATE APPLIES WHEN DIVERS ARE UNDER PRESSURE CONTINUOUSLY UNTIL WORK TASK AND DECOMPRESSION ARE COMPLETE. THE DIVER RATE SHALL BE PAID FOR ALL SATURATION HOURS.
DIVING IN ENCLOSURES: WHERE IT IS NECESSARY FOR DIVERS TO ENTER PIPES OR TUNNELS, OR OTHER ENCLOSURES WHERE THERE IS NO VERTICAL ASCENT, THE FOLLOWING PREMIUM SHALL BE PAID: DISTANCE TRAVELED FROM ENTRANCE 26 FEET TO 300 FEET: $1.00 PER FOOT. WHEN IT IS NECESSARY FOR A DIVER TO ENTER ANY PIPE, TUNNEL OR OTHER ENCLOSURE LESS THAN 48"" IN HEIGHT, THE PREMIUM WILL BE $1.00 PER FOOT. WORK IN COMBINATION OF CLASSIFICATIONS: EMPLOYEES WORKING IN ANY COMBINATION OF CLASSIFICATIONS WITHIN THE DIVING CREW (EXCEPT DIVE SUPERVISOR) IN A SHIFT ARE PAID IN THE CLASSIFICATION WITH THE HIGHEST RATE FOR THAT SHIFT.....$ 59.51
34.69
DIVER: DIVER STANDBY DEPTH PAY (SURFACE DIVING): 050 TO 100 FT $2.00 PER FOOT 101 TO 150 FT $3.00 PER FOOT 151 TO 220 FT $4.00 PER FOOT 221 FT.-DEEPER $5.00 PER FOOT SATURATION DIVING: THE STANDBY RATE SHALL APPLY UNTIL SATURATION STARTS. THE SATURATION DIVING RATE APPLIES WHEN DIVERS ARE UNDER PRESSURE CONTINUOUSLY UNTIL WORK TASK AND DECOMPRESSION ARE COMPLETE. THE DIVER RATE SHALL BE PAID FOR ALL SATURATION HOURS.
DIVING IN ENCLOSURES: WHERE IT IS NECESSARY FOR DIVERS TO ENTER PIPES OR TUNNELS, OR OTHER ENCLOSURES WHERE THERE IS NO VERTICAL ASCENT, THE FOLLOWING PREMIUM SHALL BE PAID: DISTANCE TRAVELED FROM ENTRANCE 26 FEET TO 300 FEET: $1.00 PER FOOT. WHEN IT IS NECESSARY FOR A DIVER TO ENTER ANY PIPE, TUNNEL OR OTHER ENCLOSURE LESS THAN 48"" IN HEIGHT, THE PREMIUM WILL BE $1.00 PER FOOT. WORK IN COMBINATION OF CLASSIFICATIONS: EMPLOYEES WORKING IN ANY COMBINATION OF CLASSIFICATIONS WITHIN THE DIVING CREW (EXCEPT DIVE SUPERVISOR) IN A SHIFT ARE PAID IN THE CLASSIFICATION WITH THE HIGHEST RATE FOR THAT SHIFT.....$ 60.51
34.69
DIVER: ASSISTANT TENDER, ROV TENDER/TECHNICIAN DEPTH PAY (SURFACE DIVING): 050 TO 100 FT $2.00 PER FOOT 101 TO 150 FT $3.00 PER FOOT 151 TO 220 FT $4.00 PER FOOT 221 FT.-DEEPER $5.00 PER FOOT SATURATION DIVING: THE STANDBY RATE SHALL APPLY UNTIL SATURATION STARTS. THE SATURATION DIVING RATE APPLIES WHEN DIVERS ARE UNDER PRESSURE CONTINUOUSLY UNTIL WORK TASK AND

SOLICITATION

DECOMPRESSION ARE COMPLETE. THE DIVER RATE SHALL BE PAID FOR ALL SATURATION HOURS. DIVING IN ENCLOSURES: WHERE IT IS NECESSARY FOR DIVERS TO ENTER PIPES OR TUNNELS, OR OTHER ENCLOSURES WHERE THERE IS NO VERTICAL ASCENT, THE FOLLOWING PREMIUM SHALL BE PAID: DISTANCE TRAVELED FROM ENTRANCE 26 FEET TO 300 FEET: $1.00 PER FOOT. WHEN IT IS NECESSARY FOR A DIVER TO ENTER ANY PIPE, TUNNEL OR OTHER ENCLOSURE LESS THAN 48"" IN HEIGHT, THE PREMIUM WILL BE $1.00 PER FOOT. WORK IN COMBINATION OF CLASSIFICATIONS: EMPLOYEES WORKING IN ANY COMBINATION OF CLASSIFICATIONS WITHIN THE DIVING CREW (EXCEPT DIVE SUPERVISOR) IN A SHIFT ARE PAID IN THE CLASSIFICATION WITH THE HIGHEST RATE FOR THAT SHIFT.....$ 54.10
34.69

CARP0034-003 07/01/2021

	Rates	Fringes
PILEDRIVER	$ 54.10	34.69

CARP0035-007 07/01/2020

	Rates	Fringes
MASTER INSTALLER (MODULAR FURNITURE INSTALLER) AREA 3	$ 31.38	23.03
MASTER INSTALLER (MODULAR FURNITURE INSTALLER) AREA 2	$ 32.71	23.03
MASTER INSTALLER (MODULAR FURNITURE INSTALLER) AREA 1	$ 36.43	23.03
LEAD INSTALLER (MODULAR FURNITURE INSTALLER) AREA 3	$ 27.96	23.03
LEAD INSTALLER (MODULAR FURNITURE INSTALLER) AREA 2	$ 29.08	23.03
LEAD INSTALLER (MODULAR FURNITURE INSTALLER) AREA 1	$ 32.21	23.03
INSTALLER (MODULAR FURNITURE INSTALLER) AREA 3	$ 25.16	22.53
INSTALLER (MODULAR FURNITURE INSTALLER) AREA 2	$ 26.11	22.53
INSTALLER (MODULAR FURNITURE INSTALLER) AREA 1	$ 28.76	22.53

CARP0035-008 08/01/2020

	Rates	Fringes

SOLICITATION

DRYWALL STOCKER/SCRAPPER: (AREA 4).....$ 22.97
18.22
DRYWALL STOCKER/SCRAPPER: (AREA 3).....$ 23.64
18.22
DRYWALL STOCKER/SCRAPPER: (AREA 2).....$ 23.39
18.22
DRYWALL STOCKER/SCRAPPER: (AREA 1).....$ 26.33
18.22
DRYWALL INSTALLERS/LATHERS:: (AREA 4).....$ 45.92
31.26
DRYWALL INSTALLERS/LATHERS:: (AREA 3).....$ 47.27
31.26
DRYWALL INSTALLERS/LATHERS:: (AREA 2).....$ 46.77
31.26
DRYWALL INSTALLERS/LATHERS:: (AREA 1).....$ 52.65
31.26

CARP0152-001 07/01/2020

	Rates	Fringes
CARPENTERS: MILLWRIGHT (CONTRA COSTA COUNTY)	$ 52.75	32.41
CARPENTERS: JOURNEYMAN CARPENTER (CONTRA COSTA COUNTY)	$ 52.65	30.82
CARPENTERS: HARDWOOD FLOORLAYER, SHINGLER, POWER SAW OPERATOR, STEEL SCAFFOLD & STEEL SHORING ERECTOR, SAW FILER (CONTRA COSTA COUNTY)	$ 52.80	30.82
CARPENTERS: BRIDGE BUILDER/HIGHWAY CARPENTER (CONTRA COSTA COUNTY)	$ 52.65	30.82

CARP0152-002 07/01/2020

	Rates	Fringes
CARPENTERS: MILLWRIGHT (SAN JOAQUIN COUNTY)	$ 49.27	32.41
CARPENTERS: JOURNEYMAN CARPENTER (SAN JOAQUIN COUNTY)	$ 46.77	30.82
CARPENTERS: HARDWOOD FLOORLAYER, SHINGLER, POWER SAW OPERATOR, STEEL SCAFFOLD & STEEL SHORING ERECTOR, SAW FILER (SAN JOAQUIN COUNTY)	$ 46.92	30.82
CARPENTERS: BRIDGE BUILDER/HIGHWAY CARPENTER (SAN JOAQUIN COUNTY)	$ 52.65	30.82

CARP0152-004 07/01/2020

SOLICITATION

	Rates	Fringes
CARPENTERS: MILLWRIGHT (CALAVERAS, MARIPOSA, MERCED, STANISLAUS AND TUOLUMNE COUNTIES)	$ 47.92	32.41
CARPENTERS: JOURNEYMAN CARPENTER (CALAVERAS, MARIPOSA, MERCED, STANISLAUS AND TUOLUMNE COUNTIES)	$ 45.42	30.82
CARPENTERS: HARDWOOD FLOORLAYER, SHINGLER, POWER SAW OPERATOR, STEEL SCAFFOLD & STEEL SHORING ERECTOR, SAW FILER CALAVERAS, MARIPOSA, MERCED, STANISLAUS AND TUOLUMNE COUNTIES	$ 45.57	30.82
CARPENTERS: BRIDGE BUILDER/HIGHWAY CARPENTER (CALAVERAS, MARIPOSA, MERCED, STANISLAUS AND TUOLUMNE COUNTIES)	$ 52.65	30.82

CARP0217-001 07/01/2023

	Rates	Fringes
CARPENTERS: MILLWRIGHT (SAN MATEO COUNTY)	$ 60.49	35.11
CARPENTERS: JOURNEYMAN CARPENTER (SAN MATEO COUNTY)	$ 60.39	33.52
CARPENTERS: HARDWOOD FLOORLAYER, SHINGLER, POWER SAW OPERATOR, STEEL SCAFFOLD & STEEL SHORING ERECTOR, SAW FILER (SAN MATEO COUNTY)	$ 60.54	33.52
CARPENTERS: BRIDGE BUILDER/HIGHWAY CARPENTER (SAN MATEO COUNTY)	$ 60.39	33.52

CARP0405-001 07/01/2021

	Rates	Fringes
CARPENTERS: MILLWRIGHT (SANTA CLARA COUNTY)	$ 54.95	33.08
CARPENTERS: JOURNEYMAN CARPENTER (SANTA CLARA COUNTY)	$ 54.85	31.49
CARPENTERS: HARDWOOD FLOORLAYER, SHINGLER, POWER SAW OPERATOR, STEEL SCAFFOLD & STEEL SHORING ERECTOR, SAW FILER (SANTA CLARA COUNTY)	$ 55.00	31.49
CARPENTERS: BRIDGE BUILDER/HIGHWAY CARPENTER (SANTA CLARA COUNTY)	$ 54.85	31.49

CARP0405-002 07/01/2021

SOLICITATION

	Rates	Fringes
CARPENTERS: MILLWRIGHT (SAN BENITO COUNTY)	$ 51.47	33.08
CARPENTERS: JOURNEYMAN CARPENTER (SAN BENITO COUNTY)	$ 48.97	31.49
CARPENTERS: HARDWOOD FLOORLAYER, SHINGLER, POWER SAW OPERATOR, STEEL SCAFFOLD & STEEL SHORING ERECTOR, SAW FILER (SAN BENITO COUNTY)	$ 49.12	31.49
CARPENTERS: BRIDGE BUILDER/HIGHWAY CARPENTER (SAN BENITO COUNTY)	$ 54.85	31.49

CARP0505-001 07/01/2021

	Rates	Fringes
CARPENTERS: MILLWRIGHT (SANTA CRUZ COUNTY)	$ 51.47	33.08
CARPENTERS: JOURNEYMAN CARPENTER (SANTA CRUZ COUNTY)	$ 48.97	31.49
CARPENTERS: HARDWOOD FLOORLAYER, SHINGLER, POWER SAW OPERATOR, STEEL SCAFFOLD & STEEL SHORING ERECTOR, SAW FILER (SANTA CRUZ COUNTY)	$ 49.12	31.49
CARPENTERS: BRIDGE BUILDER/HIGHWAY CARPENTER (SANTA CRUZ COUNTY)	$ 54.85	31.49

CARP0605-001 07/01/2021

	Rates	Fringes
CARPENTERS: MILLWRIGHT (MONTEREY COUNTY)	$ 51.47	33.08
CARPENTERS: JOURNEYMAN CARPENTER (MONTEREY COUNTY)	$ 48.97	31.49
CARPENTERS: HARDWOOD FLOORLAYER, SHINGLER, POWER SAW OPERATOR, STEEL SCAFFOLD & STEEL SHORING ERECTOR, SAW FILER (MONTEREY COUNTY)	$ 49.12	31.49
CARPENTERS: BRIDGE BUILDER/HIGHWAY CARPENTER (MONTEREY COUNTY)	$ 54.85	31.49

CARP0701-001 07/01/2021

	Rates	Fringes
CARPENTERS: MILLWRIGHT (FRESNO AND MADERA COUNTIES)	$ 50.12	33.08

SOLICITATION

CARPENTERS: JOURNEYMAN CARPENTER (FRESNO AND MADERA COUNTIES).....$ 47.62
31.49
CARPENTERS: HARDWOOD FLOORLAYER, SHINGLER, POWER SAW OPERATOR, STEEL SCAFFOLD & STEEL SHORING ERECTOR, SAW FILER (FRESNO AND MADERA COUNTIES)...$ 47.77
31.49
CARPENTERS: BRIDGE BUILDER/HIGHWAY CARPENTER (FRESNO AND MADERA COUNTIES).....$ 54.85
31.49

CARP0713-001 07/01/2021

Rates
Fringes
CARPENTERS: MILLWRIGHT (ALAMEDA COUNTY).....$ 54.95
33.08
CARPENTERS: JOURNEYMAN CARPENTER (ALAMEDA COUNTY)...$ 54.85
31.49
CARPENTERS: HARDWOOD FLOORLAYER, SHINGLER, POWER SAW OPERATOR, STEEL SCAFFOLD & STEEL SHORING ERECTOR, SAW FILER (ALAMEDA COUNTY).....$ 55.00
31.49
CARPENTERS: BRIDGE BUILDER/HIGHWAY CARPENTER (ALAMEDA COUNTY).....$ 54.85
31.49

CARP1109-001 07/01/2021

Rates
Fringes
CARPENTERS: MILLWRIGHT (KINGS COUNTY).....$ 50.12
33.08
CARPENTERS: JOURNEYMAN CARPENTER (KINGS COUNTY).....$ 47.62
31.49
CARPENTERS: HARDWOOD FLOORLAYER, SHINGLER, POWER SAW OPERATOR, STEEL SCAFFOLD & STEEL SHORING ERECTOR, SAW FILER KINGS COUNTY.....$ 47.77
31.49
CARPENTERS: BRIDGE BUILDER/HIGHWAY CARPENTER (KINGS COUNTY).....$ 54.85
31.49

ELEC0006-004 12/01/2025

Rates
Fringes
SOUND & COMMUNICATIONS: TECHNICIAN (SAN FRANCISCO COUNTY) SCOPE OF WORK: INCLUDING ANY DATA SYSTEM WHOSE ONLY FUNCTION IS TO TRANSMIT OR RECEIVE INFORMATION; EXCLUDING ALL OTHER DATA SYSTEMS OR MULTIPLE SYSTEMS WHICH INCLUDE CONTROL FUNCTION OR POWER SUPPLY; INCLUSION OR EXCLUSION OF TERMINATIONS AND TESTINGS OF CONDUCTORS

SOLICITATION

DETERMINED BY THEIR FUNCTION; EXCLUDING FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING) AND WHEN PERFORMED ON NEW OR MAJOR REMODEL BUILDING PROJECTS OR JOBS FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN CONDUIT; EXCLUDING INSTALLATION OF RACEWAY SYSTEMS, LINE VOLTAGE WORK, INDUSTRIAL WORK, LIFE-SAFETY SYSTEMS (ALL BUILDINGS HAVING FLOORS LOCATED MORE THAN 75' ABOVE THE LOWEST FLOOR LEVEL HAVING BUILDING ACCESS); EXCLUDING ENERGY MANAGEMENT SYSTEMS. FOOTNOTE: FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING), ON PROJECTS WHICH INVOLVE NEW OR MAJOR REMODEL BUILDING CONSTRUCTION, FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN THE CONDUIT, SHALL BE PERFORMED BY THE INSIDE ELECTRICIAN.....$ 67.65
31.78
SOUND & COMMUNICATIONS: INSTALLER SCOPE OF WORK: INCLUDING ANY DATA SYSTEM WHOSE ONLY FUNCTION IS TO TRANSMIT OR RECEIVE INFORMATION; EXCLUDING ALL OTHER DATA SYSTEMS OR MULTIPLE SYSTEMS WHICH INCLUDE CONTROL FUNCTION OR POWER SUPPLY; INCLUSION OR EXCLUSION OF TERMINATIONS AND TESTINGS OF CONDUCTORS DETERMINED BY THEIR FUNCTION; EXCLUDING FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING) AND WHEN PERFORMED ON NEW OR MAJOR REMODEL BUILDING PROJECTS OR JOBS FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN CONDUIT; EXCLUDING INSTALLATION OF RACEWAY SYSTEMS, LINE VOLTAGE WORK, INDUSTRIAL WORK, LIFE-SAFETY SYSTEMS (ALL BUILDINGS HAVING FLOORS LOCATED MORE THAN 75' ABOVE THE LOWEST FLOOR LEVEL HAVING BUILDING ACCESS); EXCLUDING ENERGY MANAGEMENT SYSTEMS. FOOTNOTE: FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING), ON PROJECTS WHICH INVOLVE NEW OR MAJOR REMODEL BUILDING CONSTRUCTION, FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN THE CONDUIT, SHALL BE PERFORMED BY THE INSIDE ELECTRICIAN.(SAN FRANCISCO COUNTY).....$ 58.83
31.51

ELEC0006-007 06/01/2024

	Rates	Fringes
ELECTRICIAN (SAN FRANCISCO COUNTY)	$ 91.25	48.05

ELEC0100-002 09/01/2025

SOLICITATION

	Rates	Fringes
ELECTRICIAN (FRESNO, KINGS, AND MADERA COUNTIES)	$ 50.00	30.15

ELEC0100-005 12/01/2024

	Rates	Fringes
COMMUNICATIONS SYSTEM: TECHNICIAN (FRESNO, KINGS, MADERA) SCOPE OF WORK INCLUDES THE INSTALLATION TESTING, SERVICE AND MAINTENANCE, OF THE FOLLOWING SYSTEMS WHICH UTILIZE THE TRANSMISSION AND/OR TRANSFERENCE OF VOICE, SOUND, VISION AND DIGITAL FOR COMMERCIAL, EDUCATION, SECURITY AND ENTERTAINMENT PURPOSES FOR THE FOLLOWING: TV MONITORING AND SURVEILLANCE, BACKGROUND-FOREGROUND MUSIC, INTERCOM AND TELEPHONE INTERCONNECT, INVENTORY CONTROL SYSTEMS, MICROWAVE TRANSMISSION, MULTI-MEDIA, MULTIPLEX, NURSE CALL SYSTEM, RADIO PAGE, SCHOOL INTERCOM AND SOUND, BURGLAR ALARMS, AND LOW VOLTAGE MASTER CLOCK SYSTEMS. A. SOUND AND VOICE TRANSMISSION/TRANSFERENCE SYSTEMS BACKGROUND FOREGROUND MUSIC, INTERCOM AND TELEPHONE INTERCONNECT SYSTEMS, TELEPHONE SYSTEMS NURSE CALL SYSTEMS, RADIO PAGE SYSTEMS, SCHOOL INTERCOM AND SOUND SYSTEMS, BURGLAR ALARM SYSTEMS, LOW VOLTAGE, MASTER CLOCK SYSTEMS, MULTI-MEDIA/MULTIPLEX SYSTEMS, SOUND AND MUSICAL ENTERTAINMENT SYSTEMS, RF SYSTEMS, ANTENNAS AND WAVE GUIDE, B. FIRE ALARM SYSTEMS INSTALLATION, WIRE PULLING AND TESTING C. TELEVISION AND VIDEO SYSTEMS TELEVISION MONITORING AND SURVEILLANCE SYSTEMS VIDEO SECURITY SYSTEMS, VIDEO ENTERTAINMENT SYSTEMS, VIDEO EDUCATIONAL SYSTEMS, MICROWAVE TRANSMISSION SYSTEMS, CATV AND CCTV D. SECURITY SYSTEMS PERIMETER SECURITY SYSTEMS VIBRATION SENSOR SYSTEMS CARD ACCESS SYSTEMS ACCESS CONTROL SYSTEMS, SONAR/INFRARED MONITORING EQUIPMENT E. COMMUNICATIONS SYSTEMS THAT TRANSMIT OR RECEIVE INFORMATION AND/OR CONTROL SYSTEMS THAT ARE INTRINSIC TO THE ABOVE LISTED SYSTEMS SCADA (SUPERVISORY CONTROL AND DATA ACQUISITION) PCM (PULSE CODE MODULATION) INVENTORY CONTROL SYSTEMS, DIGITAL DATA SYSTEMS BROADBAND AND BASEBAND AND CARRIERS POINT OF SALE SYSTEMS, VSAT DATA SYSTEMS DATA COMMUNICATION SYSTEMS RF AND REMOTE CONTROL SYSTEMS, FIBER OPTIC DATA SYSTEMS WORK EXCLUDED RACEWAY SYSTEMS ARE NOT COVERED (EXCLUDING LADDER-RACK FOR THE PURPOSE OF THE ABOVE LISTED SYSTEMS). CHASES AND/OR NIPPLES (NOT TO EXCEED 10 FEET) MAY BE INSTALLED ON OPEN WIRING SYSTEMS. ENERGY MANAGEMENT SYSTEMS. SCADA (SUPERVISORY		

SOLICITATION

CONTROL AND DATA ACQUISITION) WHEN NOT INTRINSIC TO THE ABOVE LISTED SYSTEMS (IN THE SCOPE). FIRE ALARM SYSTEMS WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING) SHALL BE PERFORMED AT THE ELECTRICIAN WAGE RATE, WHEN EITHER OF THE FOLLOWING TWO (2) CONDITIONS APPLY: 1. THE PROJECT INVOLVES NEW OR MAJOR REMODEL BUILDING TRADES CONSTRUCTION. 2. THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN CONDUIT.....$ 52.07

28.21

COMMUNICATIONS SYSTEM: INSTALLER (FRESNO, KINGS, MADERA) SCOPE OF WORK INCLUDES THE INSTALLATION TESTING, SERVICE AND MAINTENANCE, OF THE FOLLOWING SYSTEMS WHICH UTILIZE THE TRANSMISSION AND/OR TRANSFERENCE OF VOICE, SOUND, VISION AND DIGITAL FOR COMMERCIAL, EDUCATION, SECURITY AND ENTERTAINMENT PURPOSES FOR THE FOLLOWING: TV MONITORING AND SURVEILLANCE, BACKGROUND-FOREGROUND MUSIC, INTERCOM AND TELEPHONE INTERCONNECT, INVENTORY CONTROL SYSTEMS, MICROWAVE TRANSMISSION, MULTI-MEDIA, MULTIPLEX, NURSE CALL SYSTEM, RADIO PAGE, SCHOOL INTERCOM AND SOUND, BURGLAR ALARMS, AND LOW VOLTAGE MASTER CLOCK SYSTEMS. A. SOUND AND VOICE TRANSMISSION/TRANSFERENCE SYSTEMS BACKGROUND FOREGROUND MUSIC, INTERCOM AND TELEPHONE INTERCONNECT SYSTEMS, TELEPHONE SYSTEMS NURSE CALL SYSTEMS, RADIO PAGE SYSTEMS, SCHOOL INTERCOM AND SOUND SYSTEMS, BURGLAR ALARM SYSTEMS, LOW VOLTAGE, MASTER CLOCK SYSTEMS, MULTI-MEDIA/MULTIPLEX SYSTEMS, SOUND AND MUSICAL ENTERTAINMENT SYSTEMS, RF SYSTEMS, ANTENNAS AND WAVE GUIDE, B. FIRE ALARM SYSTEMS INSTALLATION, WIRE PULLING AND TESTING C. TELEVISION AND VIDEO SYSTEMS TELEVISION MONITORING AND SURVEILLANCE SYSTEMS VIDEO SECURITY SYSTEMS, VIDEO ENTERTAINMENT SYSTEMS, VIDEO EDUCATIONAL SYSTEMS, MICROWAVE TRANSMISSION SYSTEMS, CATV AND CCTV D. SECURITY SYSTEMS PERIMETER SECURITY SYSTEMS VIBRATION SENSOR SYSTEMS CARD ACCESS SYSTEMS ACCESS CONTROL SYSTEMS, SONAR/INFRARED MONITORING EQUIPMENT E. COMMUNICATIONS SYSTEMS THAT TRANSMIT OR RECEIVE INFORMATION AND/OR CONTROL SYSTEMS THAT ARE INTRINSIC TO THE ABOVE LISTED SYSTEMS SCADA (SUPERVISORY CONTROL AND DATA ACQUISITION) PCM (PULSE CODE MODULATION) INVENTORY CONTROL SYSTEMS, DIGITAL DATA SYSTEMS BROADBAND AND BASEBAND AND CARRIERS POINT OF SALE SYSTEMS, VSAT DATA SYSTEMS DATA COMMUNICATION SYSTEMS RF AND REMOTE CONTROL SYSTEMS, FIBER OPTIC DATA SYSTEMS WORK EXCLUDED RACEWAY SYSTEMS ARE NOT COVERED (EXCLUDING LADDER-RACK FOR THE PURPOSE OF THE ABOVE LISTED SYSTEMS). CHASES AND/OR NIPPLES (NOT TO EXCEED 10 FEET) MAY BE INSTALLED ON OPEN WIRING SYSTEMS.

SOLICITATION

ENERGY MANAGEMENT SYSTEMS. SCADA (SUPERVISORY CONTROL AND DATA ACQUISITION) WHEN NOT INTRINSIC TO THE ABOVE LISTED SYSTEMS (IN THE SCOPE). FIRE ALARM SYSTEMS WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING) SHALL BE PERFORMED AT THE ELECTRICIAN WAGE RATE, WHEN EITHER OF THE FOLLOWING TWO (2) CONDITIONS APPLY: 1. THE PROJECT INVOLVES NEW OR MAJOR REMODEL BUILDING TRADES CONSTRUCTION. 2. THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN CONDUIT.....$ 45.28
28.01

ELEC0234-001 12/30/2025

Rates
Fringes

ELECTRICIAN (MONTEREY, SAN BENITO AND SANTA CRUZ COUNTIES) ZONE A : ALL OF SANTA CRUZ, MONTEREY, AND SAN BENITO COUNTIES WITHIN 25 AIR MILES OF HIGHWAY 1 AND DOLAN ROAD IN MOSS LANDING, AND AN AREA EXTENDING 5 MILES EAST AND WEST OF HIGHWAY 101 SOUTH TO THE SAN LUIS OBISPO COUNTY LINE.....$ 70.41
33.76

ELECTRICIAN (MONTEREY, SAN BENITO AND SANTA CRUZ COUNTIES) ZONE B: ANY AREA OUTSIDE OF ZONE A.....$ 77.45
33.97

ELEC0234-003 12/01/2021

Rates
Fringes

SOUND & COMMUNICATIONS, TECHNICIAN (MONTEREY, SAN BENITO, AND SANTA CRUZ COUNTIES) SCOPE OF WORK: INCLUDING ANY DATA SYSTEM WHOSE ONLY FUNCTION IS TO TRANSMIT OR RECEIVE INFORMATION; EXCLUDING ALL OTHER DATA SYSTEMS OR MULTIPLE SYSTEMS WHICH INCLUDE CONTROL FUNCTION OR POWER SUPPLY; INCLUSION OR EXCLUSION OF TERMINATIONS AND TESTINGS OF CONDUCTORS DETERMINED BY THEIR FUNCTION; EXCLUDING FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING) AND WHEN PERFORMED ON NEW OR MAJOR REMODEL BUILDING PROJECTS OR JOBS FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN CONDUIT; EXCLUDING INSTALLATION OF RACEWAY SYSTEMS, LINE VOLTAGE WORK, INDUSTRIAL WORK, LIFE-SAFETY SYSTEMS (ALL BUILDINGS HAVING FLOORS LOCATED MORE THAN 75' ABOVE THE LOWEST FLOOR LEVEL HAVING BUILDING ACCESS); EXCLUDING ENERGY MANAGEMENT SYSTEMS. FOOTNOTE: FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING), ON PROJECTS WHICH INVOLVE NEW OR MAJOR REMODEL BUILDING CONSTRUCTION, FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN THE CONDUIT,

SOLICITATION

SHALL BE PERFORMED BY THE INSIDE ELECTRICIAN.....$ 55.12
24.30
SOUND & COMMUNICATIONS, INSTALLER (MONTEREY, SAN
BENITO, AND SANTA CRUZ COUNTIES).....$ 47.93
24.09

ELEC0302-001 03/01/2025

Rates
Fringes
ELECTRICIAN (CONTRA COSTA COUNTY).....$ 66.26
35.84
CABLE SPLICER (CONTRA COSTA COUNTY).....$ 74.54
36.09

ELEC0302-003 12/01/2025

Rates
Fringes
SOUND & COMMUNICATIONS: TECHNICIAN (CONTRA COSTA
COUNTY) SCOPE OF WORK: INCLUDING ANY DATA
SYSTEM WHOSE ONLY FUNCTION IS TO TRANSMIT OR
RECEIVE INFORMATION; EXCLUDING ALL OTHER DATA
SYSTEMS OR MULTIPLE SYSTEMS WHICH INCLUDE CONTROL
FUNCTION OR POWER SUPPLY; INCLUSION OR EXCLUSION
OF TERMINATIONS AND TESTINGS OF CONDUCTORS
DETERMINED BY THEIR FUNCTION; EXCLUDING FIRE ALARM
WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND
CABLE PULLING) AND WHEN PERFORMED ON NEW OR MAJOR
REMODEL BUILDING PROJECTS OR JOBS FOR WHICH THE
CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED
IN CONDUIT; EXCLUDING INSTALLATION OF RACEWAY
SYSTEMS, LINE VOLTAGE WORK, INDUSTRIAL WORK,
LIFE-SAFETY SYSTEMS (ALL BUILDINGS HAVING FLOORS
LOCATED MORE THAN 75' ABOVE THE LOWEST FLOOR LEVEL
HAVING BUILDING ACCESS); EXCLUDING ENERGY
MANAGEMENT SYSTEMS. FOOTNOTE: FIRE ALARM WORK
WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND
CABLE PULLING), ON PROJECTS WHICH INVOLVE NEW OR
MAJOR REMODEL BUILDING CONSTRUCTION, FOR WHICH THE
CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED
IN THE CONDUIT, SHALL BE PERFORMED BY THE INSIDE
ELECTRICIAN.....$ 61.04
31.08
SOUND & COMMUNICATIONS: INSTALLER (CONTRA COSTA
COUNTY) SCOPE OF WORK: INCLUDING ANY DATA
SYSTEM WHOSE ONLY FUNCTION IS TO TRANSMIT OR
RECEIVE INFORMATION; EXCLUDING ALL OTHER DATA
SYSTEMS OR MULTIPLE SYSTEMS WHICH INCLUDE CONTROL
FUNCTION OR POWER SUPPLY; INCLUSION OR EXCLUSION
OF TERMINATIONS AND TESTINGS OF CONDUCTORS
DETERMINED BY THEIR FUNCTION; EXCLUDING FIRE ALARM
WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND
CABLE PULLING) AND WHEN PERFORMED ON NEW OR MAJOR

SOLICITATION

REMODEL BUILDING PROJECTS OR JOBS FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN CONDUIT; EXCLUDING INSTALLATION OF RACEWAY SYSTEMS, LINE VOLTAGE WORK, INDUSTRIAL WORK, LIFE-SAFETY SYSTEMS (ALL BUILDINGS HAVING FLOORS LOCATED MORE THAN 75' ABOVE THE LOWEST FLOOR LEVEL HAVING BUILDING ACCESS); EXCLUDING ENERGY MANAGEMENT SYSTEMS. FOOTNOTE: FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING), ON PROJECTS WHICH INVOLVE NEW OR MAJOR REMODEL BUILDING CONSTRUCTION, FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN THE CONDUIT, SHALL BE PERFORMED BY THE INSIDE ELECTRICIAN.....$ 53.08
30.84

ELEC0332-001 06/01/2025

Rates
Fringes
ELECTRICIAN (SANTA CLARA COUNTY) FOOTNOTES: WORK UNDER COMPRESSED AIR OR WHERE GAS MASKS ARE REQUIRED, ORWORK ON LADDERS, SCAFFOLDS, STACKS, ""BOSUN'S CHAIRS,"" OR OTHER STRUCTURES AND WHERE THE WORKERS ARE NOT PROTECTED BY PERMANENT GUARD RAILS AT A DISTANCE OF 40 TO 60 FT. FROM THE GROUND OR SUPPORTING STRUCTURES: TO BE PAID ONE AND ONE-HALF TIMES THE STRAIGHT-TIME RATE OF PAY. WORK ON STRUCTURES OF 60 FT. OR OVER (AS DESCRIBED ABOVE): TO BE PAID TWICE THE STRAIGHT-TIME RATE OF PAY.....$ 91.03
49.05
CABLE SPLICER (SANTA CLARA COUNTY) FOOTNOTES: WORK UNDER COMPRESSED AIR OR WHERE GAS MASKS ARE REQUIRED, ORWORK ON LADDERS, SCAFFOLDS, STACKS, ""BOSUN'S CHAIRS,"" OR OTHER STRUCTURES AND WHERE THE WORKERS ARE NOT PROTECTED BY PERMANENT GUARD RAILS AT A DISTANCE OF 40 TO 60 FT. FROM THE GROUND OR SUPPORTING STRUCTURES: TO BE PAID ONE AND ONE-HALF TIMES THE STRAIGHT-TIME RATE OF PAY. WORK ON STRUCTURES OF 60 FT. OR OVER (AS DESCRIBED ABOVE): TO BE PAID TWICE THE STRAIGHT-TIME RATE OF PAY.....$ 104.68
49.46

ELEC0332-003 12/01/2025

Rates
Fringes
SOUND & COMMUNICATIONS: TECHNICIAN (SANTA CLARA COUNTY) SCOPE OF WORK: INCLUDING ANY DATA SYSTEM WHOSE ONLY FUNCTION IS TO TRANSMIT OR RECEIVE INFORMATION; EXCLUDING ALL OTHER DATA SYSTEMS OR MULTIPLE SYSTEMS WHICH INCLUDE CONTROL FUNCTION OR POWER SUPPLY; INCLUSION OR EXCLUSION OF TERMINATIONS AND TESTINGS OF CONDUCTORS

SOLICITATION

DETERMINED BY THEIR FUNCTION; EXCLUDING FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING) AND WHEN PERFORMED ON NEW OR MAJOR REMODEL BUILDING PROJECTS OR JOBS FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN CONDUIT; EXCLUDING INSTALLATION OF RACEWAY SYSTEMS, LINE VOLTAGE WORK, INDUSTRIAL WORK, LIFE-SAFETY SYSTEMS (ALL BUILDINGS HAVING FLOORS LOCATED MORE THAN 75' ABOVE THE LOWEST FLOOR LEVEL HAVING BUILDING ACCESS); EXCLUDING ENERGY MANAGEMENT SYSTEMS. FOOTNOTE: FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING), ON PROJECTS WHICH INVOLVE NEW OR MAJOR REMODEL BUILDING CONSTRUCTION, FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN THE CONDUIT, SHALL BE PERFORMED BY THE INSIDE ELECTRICIAN.....$ 67.08
31.26
SOUND & COMMUNICATIONS: INSTALLER (SANTA CLARA COUNTY) SCOPE OF WORK: INCLUDING ANY DATA SYSTEM WHOSE ONLY FUNCTION IS TO TRANSMIT OR RECEIVE INFORMATION; EXCLUDING ALL OTHER DATA SYSTEMS OR MULTIPLE SYSTEMS WHICH INCLUDE CONTROL FUNCTION OR POWER SUPPLY; INCLUSION OR EXCLUSION OF TERMINATIONS AND TESTINGS OF CONDUCTORS DETERMINED BY THEIR FUNCTION; EXCLUDING FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING) AND WHEN PERFORMED ON NEW OR MAJOR REMODEL BUILDING PROJECTS OR JOBS FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN CONDUIT; EXCLUDING INSTALLATION OF RACEWAY SYSTEMS, LINE VOLTAGE WORK, INDUSTRIAL WORK, LIFE-SAFETY SYSTEMS (ALL BUILDINGS HAVING FLOORS LOCATED MORE THAN 75' ABOVE THE LOWEST FLOOR LEVEL HAVING BUILDING ACCESS); EXCLUDING ENERGY MANAGEMENT SYSTEMS. FOOTNOTE: FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING), ON PROJECTS WHICH INVOLVE NEW OR MAJOR REMODEL BUILDING CONSTRUCTION, FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN THE CONDUIT, SHALL BE PERFORMED BY THE INSIDE ELECTRICIAN.....$ 58.33
31.00

ELEC0595-001 06/01/2025

	Rates	Fringes
ELECTRICIAN (ALAMEDA COUNTY)	$ 76.00	49.07
CABLE SPLICER (ALAMEDA COUNTY)	$ 87.40	49.41

SOLICITATION

ELEC0595-002 06/01/2024

	Rates	Fringes
ELECTRICIAN: (2) ALL OTHER WORK (CALAVERAS AND SAN JOAQUIN COUNTIES)	$ 49.45	31.96
ELECTRICIAN: (1) TUNNEL WORK (CALAVERAS AND SAN JOAQUIN COUNTIES)	$ 51.92	32.04
CABLE SPLICER (CALAVERAS AND SAN JOAQUIN COUNTIES)	$ 59.34	32.26

ELEC0595-006 12/01/2025

	Rates	Fringes
SOUND & COMMUNICATIONS: INSTALLER (ALAMEDA COUNTY)	$ 58.33	31.00
SOUND & COMMUNICATIONS, TECHNICIAN (ALAMEDA COUNTY) SCOPE OF WORK: INCLUDING ANY DATA SYSTEM WHOSE ONLY FUNCTION IS TO TRANSMIT OR RECEIVE INFORMATION; EXCLUDING ALL OTHER DATA SYSTEMS OR MULTIPLE SYSTEMS WHICH INCLUDE CONTROL FUNCTION OR POWER SUPPLY; INCLUSION OR EXCLUSION OF TERMINATIONS AND TESTINGS OF CONDUCTORS DETERMINED BY THEIR FUNCTION; EXCLUDING FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING) AND WHEN PERFORMED ON NEW OR MAJOR REMODEL BUILDING PROJECTS OR JOBS FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN CONDUIT; EXCLUDING INSTALLATION OF RACEWAY SYSTEMS, LINE VOLTAGE WORK, INDUSTRIAL WORK, LIFE-SAFETY SYSTEMS (ALL BUILDINGS HAVING FLOORS LOCATED MORE THAN 75' ABOVE THE LOWEST FLOOR LEVEL HAVING BUILDING ACCESS); EXCLUDING ENERGY MANAGEMENT SYSTEMS. FOOTNOTE: FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING), ON PROJECTS WHICH INVOLVE NEW OR MAJOR REMODEL BUILDING CONSTRUCTION, FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN THE CONDUIT, SHALL BE PERFORMED BY THE INSIDE ELECTRICIAN	$ 67.08	31.26

ELEC0595-008 12/01/2024

	Rates	Fringes
COMMUNICATIONS SYSTEM: TECHNICIAN (CALAVERAS AND SAN JOAQUIN COUNTIES) SCOPE OF WORK: INCLUDING ANY DATA SYSTEM WHOSE ONLY FUNCTION IS TO TRANSMIT OR RECEIVE INFORMATION; EXCLUDING ALL OTHER DATA SYSTEMS OR MULTIPLE SYSTEMS WHICH INCLUDE CONTROL FUNCTION OR POWER SUPPLY; INCLUSION OR EXCLUSION		

SOLICITATION

OF TERMINATIONS AND TESTINGS OF CONDUCTORS DETERMINED BY THEIR FUNCTION; EXCLUDING FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING) AND WHEN PERFORMED ON NEW OR MAJOR REMODEL BUILDING PROJECTS OR JOBS FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN CONDUIT; EXCLUDING INSTALLATION OF RACEWAY SYSTEMS, LINE VOLTAGE WORK, INDUSTRIAL WORK, LIFE-SAFETY SYSTEMS (ALL BUILDINGS HAVING FLOORS LOCATED MORE THAN 75' ABOVE THE LOWEST FLOOR LEVEL HAVING BUILDING ACCESS); EXCLUDING ENERGY MANAGEMENT SYSTEMS. FOOTNOTE: FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING), ON PROJECTS WHICH INVOLVE NEW OR MAJOR REMODEL BUILDING CONSTRUCTION, FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN THE CONDUIT, SHALL BE PERFORMED BY THE INSIDE ELECTRICIAN.....$ 52.07
28.21
COMMUNICATIONS SYSTEM: INSTALLER (CALAVERAS AND SAN JOAQUIN COUNTIES) SCOPE OF WORK: INCLUDING ANY DATA SYSTEM WHOSE ONLY FUNCTION IS TO TRANSMIT OR RECEIVE INFORMATION; EXCLUDING ALL OTHER DATA SYSTEMS OR MULTIPLE SYSTEMS WHICH INCLUDE CONTROL FUNCTION OR POWER SUPPLY; INCLUSION OR EXCLUSION OF TERMINATIONS AND TESTINGS OF CONDUCTORS DETERMINED BY THEIR FUNCTION; EXCLUDING FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING) AND WHEN PERFORMED ON NEW OR MAJOR REMODEL BUILDING PROJECTS OR JOBS FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN CONDUIT; EXCLUDING INSTALLATION OF RACEWAY SYSTEMS, LINE VOLTAGE WORK, INDUSTRIAL WORK, LIFE-SAFETY SYSTEMS (ALL BUILDINGS HAVING FLOORS LOCATED MORE THAN 75' ABOVE THE LOWEST FLOOR LEVEL HAVING BUILDING ACCESS); EXCLUDING ENERGY MANAGEMENT SYSTEMS. FOOTNOTE: FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING), ON PROJECTS WHICH INVOLVE NEW OR MAJOR REMODEL BUILDING CONSTRUCTION, FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN THE CONDUIT, SHALL BE PERFORMED BY THE INSIDE ELECTRICIAN.....$ 45.28
28.01

ELEC0617-001 06/01/2025

	Rates	Fringes
ELECTRICIAN (SAN MATEO COUNTY)	$ 86.00	51.07

ELEC0617-003 12/01/2025

SOLICITATION

Rates
Fringes
SOUND & COMMUNICATIONS: TECHNICIAN (SAN MATEO COUNTY) SCOPE OF WORK: INCLUDING ANY DATA SYSTEM WHOSE ONLY FUNCTION IS TO TRANSMIT OR RECEIVE INFORMATION; EXCLUDING ALL OTHER DATA SYSTEMS OR MULTIPLE SYSTEMS WHICH INCLUDE CONTROL FUNCTION OR POWER SUPPLY; INCLUSION OR EXCLUSION OF TERMINATIONS AND TESTINGS OF CONDUCTORS DETERMINED BY THEIR FUNCTION; EXCLUDING FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING) AND WHEN PERFORMED ON NEW OR MAJOR REMODEL BUILDING PROJECTS OR JOBS FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN CONDUIT; EXCLUDING INSTALLATION OF RACEWAY SYSTEMS, LINE VOLTAGE WORK, INDUSTRIAL WORK, LIFE-SAFETY SYSTEMS (ALL BUILDINGS HAVING FLOORS LOCATED MORE THAN 75' ABOVE THE LOWEST FLOOR LEVEL HAVING BUILDING ACCESS); EXCLUDING ENERGY MANAGEMENT SYSTEMS. FOOTNOTE: FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING), ON PROJECTS WHICH INVOLVE NEW OR MAJOR REMODEL BUILDING CONSTRUCTION, FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN THE CONDUIT, SHALL BE PERFORMED BY THE INSIDE ELECTRICIAN.....$ 67.08
31.26
SOUND & COMMUNICATIONS: INSTALLER (SAN MATEO COUNTY) SCOPE OF WORK: INCLUDING ANY DATA SYSTEM WHOSE ONLY FUNCTION IS TO TRANSMIT OR RECEIVE INFORMATION; EXCLUDING ALL OTHER DATA SYSTEMS OR MULTIPLE SYSTEMS WHICH INCLUDE CONTROL FUNCTION OR POWER SUPPLY; INCLUSION OR EXCLUSION OF TERMINATIONS AND TESTINGS OF CONDUCTORS DETERMINED BY THEIR FUNCTION; EXCLUDING FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING) AND WHEN PERFORMED ON NEW OR MAJOR REMODEL BUILDING PROJECTS OR JOBS FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN CONDUIT; EXCLUDING INSTALLATION OF RACEWAY SYSTEMS, LINE VOLTAGE WORK, INDUSTRIAL WORK, LIFE-SAFETY SYSTEMS (ALL BUILDINGS HAVING FLOORS LOCATED MORE THAN 75' ABOVE THE LOWEST FLOOR LEVEL HAVING BUILDING ACCESS); EXCLUDING ENERGY MANAGEMENT SYSTEMS. FOOTNOTE: FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING), ON PROJECTS WHICH INVOLVE NEW OR MAJOR REMODEL BUILDING CONSTRUCTION, FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN THE CONDUIT, SHALL BE PERFORMED BY THE INSIDE ELECTRICIAN.....$ 58.33
31.00

SOLICITATION

ELEC0684-001 12/01/2024

	Rates	Fringes
ELECTRICIAN (MARIPOSA, MERCED, STANISLAUS AND TUOLUMNE COUNTIES) CABLE SPLICER = 110% OF JOURNEYMAN ELECTRICIAN	$ 48.50	30.09

ELEC0684-004 12/01/2024

	Rates	Fringes
COMMUNICATIONS SYSTEM: TECHNICIAN (MARIPOSA, MERCED, STANISLAUS AND TUOLUMNE COUNTIES) SCOPE OF WORK: INCLUDING ANY DATA SYSTEM WHOSE ONLY FUNCTION IS TO TRANSMIT OR RECEIVE INFORMATION; EXCLUDING ALL OTHER DATA SYSTEMS OR MULTIPLE SYSTEMS WHICH INCLUDE CONTROL FUNCTION OR POWER SUPPLY; INCLUSION OR EXCLUSION OF TERMINATIONS AND TESTINGS OF CONDUCTORS DETERMINED BY THEIR FUNCTION; EXCLUDING FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING) AND WHEN PERFORMED ON NEW OR MAJOR REMODEL BUILDING PROJECTS OR JOBS FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN CONDUIT; EXCLUDING INSTALLATION OF RACEWAY SYSTEMS, LINE VOLTAGE WORK, INDUSTRIAL WORK, LIFE-SAFETY SYSTEMS (ALL BUILDINGS HAVING FLOORS LOCATED MORE THAN 75' ABOVE THE LOWEST FLOOR LEVEL HAVING BUILDING ACCESS); EXCLUDING ENERGY MANAGEMENT SYSTEMS. FOOTNOTE: FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING), ON PROJECTS WHICH INVOLVE NEW OR MAJOR REMODEL BUILDING CONSTRUCTION, FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN THE CONDUIT, SHALL BE PERFORMED BY THE INSIDE ELECTRICIAN	$ 52.07	28.21
COMMUNICATIONS SYSTEM: INSTALLER (MARIPOSA, MERCED, STANISLAUS AND TUOLUMNE COUNTIES) SCOPE OF WORK: INCLUDING ANY DATA SYSTEM WHOSE ONLY FUNCTION IS TO TRANSMIT OR RECEIVE INFORMATION; EXCLUDING ALL OTHER DATA SYSTEMS OR MULTIPLE SYSTEMS WHICH INCLUDE CONTROL FUNCTION OR POWER SUPPLY; INCLUSION OR EXCLUSION OF TERMINATIONS AND TESTINGS OF CONDUCTORS DETERMINED BY THEIR FUNCTION; EXCLUDING FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING) AND WHEN PERFORMED ON NEW OR MAJOR REMODEL BUILDING PROJECTS OR JOBS FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN CONDUIT; EXCLUDING INSTALLATION OF RACEWAY SYSTEMS, LINE VOLTAGE WORK, INDUSTRIAL WORK, LIFE-SAFETY SYSTEMS (ALL BUILDINGS HAVING FLOORS LOCATED MORE THAN 75' ABOVE THE LOWEST FLOOR LEVEL HAVING BUILDING		

SOLICITATION

ACCESS); EXCLUDING ENERGY MANAGEMENT SYSTEMS.
FOOTNOTE: FIRE ALARM WORK WHEN INSTALLED IN RACEWAYS (INCLUDING WIRE AND CABLE PULLING), ON PROJECTS WHICH INVOLVE NEW OR MAJOR REMODEL BUILDING CONSTRUCTION, FOR WHICH THE CONDUCTORS FOR THE FIRE ALARM SYSTEM ARE INSTALLED IN THE CONDUIT, SHALL BE PERFORMED BY THE INSIDE ELECTRICIAN.....$ 45.28
28.01

ELEC1245-001 01/01/2025

Rates
Fringes

LINE CONSTRUCTION: (3) GROUNDMAN HOLIDAYS: NEW YEAR'S DAY, M.L. KING DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, VETERANS DAY, THANKSGIVING DAY AND DAY AFTER THANKSGIVING, CHRISTMAS DAY.....$ 40.76
21.76

LINE CONSTRUCTION: (2) EQUIPMENT SPECIALIST (OPERATES CRAWLER TRACTORS, COMMERCIAL MOTOR VEHICLES, BACKHOES, TRENCHERS, CRANES (50 TONS AND BELOW), OVERHEAD & UNDERGROUND DISTRIBUTION LINE EQUIPMENT) HOLIDAYS: NEW YEAR'S DAY, M.L. KING DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, VETERANS DAY, THANKSGIVING DAY AND DAY AFTER THANKSGIVING, CHRISTMAS DAY.....$ 53.30
22.26

LINE CONSTRUCTION: (1) LINEMAN; CABLE SPLICER HOLIDAYS: NEW YEAR'S DAY, M.L. KING DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, VETERANS DAY, THANKSGIVING DAY AND DAY AFTER THANKSGIVING, CHRISTMAS DAY.....$ 70.16
24.71

ELEV0008-001 01/01/2025

Rates
Fringes

ELEVATOR MECHANIC FOOTNOTE: A. PAID VACATION: EMPLOYER CONTRIBUTES 8% OF REGULAR HOURLY RATE AS VACATION PAY CREDIT FOR EMPLOYEES WITH MORE THAN 5 YEARS OF SERVICE, AND 6% FOR 6 MONTHS TO 5 YEARS OF SERVICE. B. PAID HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, VETERANS' DAY, THANKSGIVING DAY, FRIDAY AFTER THANKSGIVING, AND CHRISTMAS DAY.....$ 84.05
38.44

ENGI0003-001 06/29/2020

Rates
Fringes

OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::

SOLICITATION

GROUP 6.....$ 42.50
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 5.....$ 44.73
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 4.....$ 47.37
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 3 (Truck Crane Oiler).....$ 45.12
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 3 (Oiler).....$ 42.89
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 3 (Lifting devices).....$ 49.14
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 2 (Truck Crane Oiler).....$ 45.41
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 2 (Oiler).....$ 43.11
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 2 (Lifting devices).....$ 50.82
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 1 (Truck Crane Oiler).....$ 45.66
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 1 (Oiler).....$ 43.38
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 1 (Lifting devices).....$ 52.64
31.15
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: UNDERGROUND: (GROUP 5).....$ 58.09
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: UNDERGROUND: (GROUP 4).....$ 59.23
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: UNDERGROUND: (GROUP 3).....$ 60.37
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: UNDERGROUND: (GROUP 2).....$ 61.70
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: UNDERGROUND: (GROUP 1-A).....$ 65.43
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: UNDERGROUND: (GROUP 1).....$ 62.96
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND

SOLICITATION

WORK - AREA 1:: SHAFTS, STOPES, RAISES: (GROUP 5)...$ 58.19
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: SHAFTS, STOPES, RAISES: (GROUP 4)...$ 59.33
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: SHAFTS, STOPES, RAISES: (GROUP 3)...$ 60.47
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: SHAFTS, STOPES, RAISES: (GROUP 2)...$ 61.80
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: SHAFTS, STOPES, RAISES: (GROUP 1-A).$ 65.53
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: SHAFTS, STOPES, RAISES: (GROUP 1)...$ 63.06
32.53
OPERATOR: POWER EQUIPMENT, STEEL ERECTION - AREA
1:: GROUP 5.....$ 62.24
32.53
OPERATOR: POWER EQUIPMENT, STEEL ERECTION - AREA
1:: GROUP 4.....$ 63.54
32.53
OPERATOR: POWER EQUIPMENT, STEEL ERECTION - AREA
1:: GROUP 3.....$ 65.56
32.53
OPERATOR: POWER EQUIPMENT, STEEL ERECTION - AREA
1:: GROUP 2.....$ 67.04
32.53
OPERATOR: POWER EQUIPMENT, STEEL ERECTION - AREA
1:: GROUP 1.....$ 68.81
32.53
OPERATOR: POWER EQUIPMENT, CRANES AND ATTACHMENTS
- AREA 1:: GROUP 4.....$ 61.30
32.53
OPERATOR: POWER EQUIPMENT, CRANES AND ATTACHMENTS
- AREA 1:: GROUP 3 (Hydraulic).....$ 59.98
32.53
OPERATOR: POWER EQUIPMENT, CRANES AND ATTACHMENTS
- AREA 1:: GROUP 3 (Cranes).....$ 64.34
32.53
OPERATOR: POWER EQUIPMENT, CRANES AND ATTACHMENTS
- AREA 1:: GROUP 2.....$ 66.08
32.53
OPERATOR: POWER EQUIPMENT, CRANES AND ATTACHMENTS
- AREA 1:: GROUP 1.....$ 68.59
32.53
OPERATOR: POWER EQUIPMENT, AREA 1:: GROUP 8-A.....$ 55.49
32.53
OPERATOR: POWER EQUIPMENT, AREA 1:: GROUP 8.....$ 57.70
32.53
OPERATOR: POWER EQUIPMENT, AREA 1:: GROUP 7.....$ 58.84
32.53

SOLICITATION

OPERATOR: POWER EQUIPMENT, AREA 1:: GROUP 6.....$ 59.98
32.53
OPERATOR: POWER EQUIPMENT, AREA 1:: GROUP 5.....$ 61.30
32.53
OPERATOR: POWER EQUIPMENT, AREA 1:: GROUP 4.....$ 62.57
32.53
OPERATOR: POWER EQUIPMENT, AREA 1:: GROUP 3.....$ 63.95
32.53
OPERATOR: POWER EQUIPMENT, AREA 1:: GROUP 2.....$ 65.43
32.53
OPERATOR: POWER EQUIPMENT, AREA 1:: GROUP 1.....$ 66.96
32.53

ENGI0003-001 06/30/2025

Rates
Fringes
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 6.....$ 42.50
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 5.....$ 44.73
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 4.....$ 47.37
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 3 (Truck Crane Oiler).....$ 45.12
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 3 (Oiler).....$ 42.89
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 3 (Lifting devices).....$ 49.14
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 2 (Truck Crane Oiler).....$ 45.41
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 2 (Oiler).....$ 43.11
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 2 (Lifting devices).....$ 50.82
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 1 (Truck Crane Oiler).....$ 45.66
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 1 (Oiler).....$ 43.38
31.15
OPERATOR: POWER EQUIPMENT, PILEDRIVING - AREA 1::
GROUP 1 (Lifting devices).....$ 52.64
31.15
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND

SOLICITATION

WORK - AREA 1:: UNDERGROUND: (GROUP 5).....$ 58.09
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: UNDERGROUND: (GROUP 4).....$ 59.23
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: UNDERGROUND: (GROUP 3).....$ 60.37
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: UNDERGROUND: (GROUP 2).....$ 61.70
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: UNDERGROUND: (GROUP 1-A).....$ 65.43
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: UNDERGROUND: (GROUP 1).....$ 62.96
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: SHAFTS, STOPES, RAISES: (GROUP 5)...$ 58.19
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: SHAFTS, STOPES, RAISES: (GROUP 4)...$ 59.33
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: SHAFTS, STOPES, RAISES: (GROUP 3)...$ 60.47
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: SHAFTS, STOPES, RAISES: (GROUP 2)...$ 61.80
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: SHAFTS, STOPES, RAISES: (GROUP 1-A).$ 65.53
32.53
OPERATOR: POWER EQUIPMENT, TUNNEL AND UNDERGROUND
WORK - AREA 1:: SHAFTS, STOPES, RAISES: (GROUP 1)...$ 63.06
32.53
OPERATOR: POWER EQUIPMENT, STEEL ERECTION - AREA
1:: GROUP 5.....$ 62.24
32.53
OPERATOR: POWER EQUIPMENT, STEEL ERECTION - AREA
1:: GROUP 4.....$ 63.54
32.53
OPERATOR: POWER EQUIPMENT, STEEL ERECTION - AREA
1:: GROUP 3.....$ 65.56
32.53
OPERATOR: POWER EQUIPMENT, STEEL ERECTION - AREA
1:: GROUP 2.....$ 67.04
32.53
OPERATOR: POWER EQUIPMENT, STEEL ERECTION - AREA
1:: GROUP 1.....$ 68.81
32.53
OPERATOR: POWER EQUIPMENT, CRANES AND ATTACHMENTS
- AREA 1:: GROUP 4.....$ 61.30
32.53
OPERATOR: POWER EQUIPMENT, CRANES AND ATTACHMENTS

SOLICITATION

- AREA 1:: GROUP 3 (Hydraulic).....$ 59.98
32.53
OPERATOR: POWER EQUIPMENT, CRANES AND ATTACHMENTS
- AREA 1:: GROUP 3 (Cranes).....$ 64.34
32.53
OPERATOR: POWER EQUIPMENT, CRANES AND ATTACHMENTS
- AREA 1:: GROUP 2.....$ 66.08
32.53
OPERATOR: POWER EQUIPMENT, CRANES AND ATTACHMENTS
- AREA 1:: GROUP 1.....$ 68.59
32.53
OPERATOR: POWER EQUIPMENT, AREA 1:: GROUP 8-A.....$ 55.49
32.53
OPERATOR: POWER EQUIPMENT, AREA 1:: GROUP 8.....$ 57.70
32.53
OPERATOR: POWER EQUIPMENT, AREA 1:: GROUP 7.....$ 58.84
32.53
OPERATOR: POWER EQUIPMENT, AREA 1:: GROUP 6.....$ 59.98
32.53
OPERATOR: POWER EQUIPMENT, AREA 1:: GROUP 5.....$ 61.30
32.53
OPERATOR: POWER EQUIPMENT, AREA 1:: GROUP 4.....$ 62.57
32.53
OPERATOR: POWER EQUIPMENT, AREA 1:: GROUP 3.....$ 63.95
32.53
OPERATOR: POWER EQUIPMENT, AREA 1:: GROUP 2.....$ 65.43
32.53
OPERATOR: POWER EQUIPMENT, AREA 1:: GROUP 1.....$ 66.96
32.53

 ENGI0003-008 08/01/2024

                                                    Rates
Fringes
DREDGING (CLAMSHELL & DIPPER DREDGING; HYDRAULIC
SUCTION DREDGING) AREA 2:   (4) BARGEMAN; DECKHAND;
FIREMAN; LEVEEHAND; OILER   AREA DESCRIPTIONS
AREA 1: ALAMEDA,BUTTE, CONTRA COSTA, KINGS, MARIN,
MERCED, NAPA, SACRAMENTO, SAN BENITO, SAN
FRANCISCO, SAN JOAQUIN, SAN MATEO, SANTA CLARA,
SANTA CRUZ, SOLANO, STANISLAUS, SUTTER, YOLO, AND
YUBA COUNTIES   AREA 2: MODOC COUNTY THE
REMAINGING COUNTIES ARE SPLIT BETWEEN AREA 1 AND
AREA 2 AS NOTED BELOW: ALPINE COUNTY: AREA 1:
NORTHERNMOST PART AREA 2: REMAINDER CALAVERAS
COUNTY: AREA 1: REMAINDER   AREA 2: EASTERN PART
  COLUSA COUNTY: AREA 1: EASTERN PART AREA 2:
REMAINDER ELDORADO COUNTY: AREA 1: NORTH CENTRAL
PART AREA 2: REMAINDER   FRESNO COUNTY: AREA
1: REMAINDER   AREA 2: EASTERN PART   GLENN
COUNTY: AREA 1: EASTERN PART AREA 2: REMAINDER
 LASSEN COUNTY: AREA 1: WESTERN PART ALONG THE
SOUTHERN PORTION OF BORDER WITH SHASTA COUNTY AREA
2: REMAINDER MADERA COUNTY: AREA 1: EXCEPT

SOLICITATION

EASTERN PART AREA 2: EASTERN PART MARIPOSA COUNTY AREA 1: EXCEPT EASTERN PART AREA 2: EASTERN PART MONTERREY COUNTY AREA 1: EXCEPT SOUTHWESTERN PART AREA 2: SOUTHWESTERN PART NEVADA COUNTY: AREA 1: ALL BUT THE NORTHERN PORTION ALONG THE BORDER OF SIERRA COUNTY AREA 2: REMAINDER PLACER COUNTY: AREA 1: AL BUT THE CENTRAL PORTION AREA 2: REMAINDER PLUMAS COUNTY: AREA 1: WESTERN PORTION AREA 2: REMAINDER SHASTA COUNTY: AREA 1: ALL BUT THE NORTHEASTERN CORNER AREA 2: REMAINDER SIERRA COUNTY: AREA 1: WESTERN PART AREA 2: REMAINDER SISKIYOU COUNTY: AREA 1: CENTRAL PART AREA 2: REMAINDER SONOMA COUNTY: AREA 1: ALL BUT THE NORTHWESTERN CORNER AREA 2: REMAINDER TEHAMA COUNTY: AREA 1: ALL BUT THE WESTERN BORDER WITH MENDOCINO & TRINITY COUNTIES AREA 2: REMAINDER TRINITY COUNTY: AREA 1: EAST CENTRAL PART AND THE NORTHEASTERN BORDER WITH SHASTA COUNTY AREA 2: REMAINDER TUOLUMNE COUNTY: AREA 1: EXCEPT EASTERN PART AREA 2: EASTERN PART.....$ 53.23
39.55
DREDGING (CLAMSHELL & DIPPER DREDGING; HYDRAULIC SUCTION DREDGING) AREA 2: (3) BOOSTER PUMP OPERATOR; DECK ENGINEER; DECK MATE; DREDGE TENDER; WINCH OPERATOR AREA DESCRIPTIONS AREA 1: ALAMEDA,BUTTE, CONTRA COSTA, KINGS, MARIN, MERCED, NAPA, SACRAMENTO, SAN BENITO, SAN FRANCISCO, SAN JOAQUIN, SAN MATEO, SANTA CLARA, SANTA CRUZ, SOLANO, STANISLAUS, SUTTER, YOLO, AND YUBA COUNTIES AREA 2: MODOC COUNTY THE REMAINGING COUNTIES ARE SPLIT BETWEEN AREA 1 AND AREA 2 AS NOTED BELOW: ALPINE COUNTY: AREA 1: NORTHERNMOST PART AREA 2: REMAINDER CALAVERAS COUNTY: AREA 1: REMAINDER AREA 2: EASTERN PART COLUSA COUNTY: AREA 1: EASTERN PART AREA 2: REMAINDER ELDORADO COUNTY: AREA 1: NORTH CENTRAL PART AREA 2: REMAINDER FRESNO COUNTY: AREA 1: REMAINDER AREA 2: EASTERN PART GLENN COUNTY: AREA 1: EASTERN PART AREA 2: REMAINDER LASSEN COUNTY: AREA 1: WESTERN PART ALONG THE SOUTHERN PORTION OF BORDER WITH SHASTA COUNTY AREA 2: REMAINDER MADERA COUNTY: AREA 1: EXCEPT EASTERN PART AREA 2: EASTERN PART MARIPOSA COUNTY AREA 1: EXCEPT EASTERN PART AREA 2: EASTERN PART MONTERREY COUNTY AREA 1: EXCEPT SOUTHWESTERN PART AREA 2: SOUTHWESTERN PART NEVADA COUNTY: AREA 1: ALL BUT THE NORTHERN PORTION ALONG THE BORDER OF SIERRA COUNTY AREA 2: REMAINDER PLACER COUNTY: AREA 1: AL BUT THE CENTRAL PORTION AREA 2: REMAINDER PLUMAS COUNTY: AREA 1: WESTERN PORTION AREA 2: REMAINDER SHASTA COUNTY: AREA 1: ALL BUT THE NORTHEASTERN CORNER AREA 2: REMAINDER SIERRA COUNTY: AREA 1:

SOLICITATION

WESTERN PART AREA 2: REMAINDER SISKIYOU COUNTY: AREA 1: CENTRAL PART AREA 2: REMAINDER SONOMA COUNTY: AREA 1: ALL BUT THE NORTHWESTERN CORNER AREA 2: REMAINDER TEHAMA COUNTY: AREA 1: ALL BUT THE WESTERN BORDER WITH MENDOCINO & TRINITY COUNTIES AREA 2: REMAINDER TRINITY COUNTY: AREA 1: EAST CENTRAL PART AND THE NORTHEASTERN BORDER WITH SHASTA COUNTY AREA 2: REMAINDER TUOLUMNE COUNTY: AREA 1: EXCEPT EASTERN PART AREA 2: EASTERN PART.....$ 56.53 39.55

DREDGING (CLAMSHELL & DIPPER DREDGING; HYDRAULIC SUCTION DREDGING) AREA 2: (2) DREDGE DOZER; HEAVY DUTY REPAIRMAN : AREA DESCRIPTIONS AREA 1: ALAMEDA,BUTTE, CONTRA COSTA, KINGS, MARIN, MERCED, NAPA, SACRAMENTO, SAN BENITO, SAN FRANCISCO, SAN JOAQUIN, SAN MATEO, SANTA CLARA, SANTA CRUZ, SOLANO, STANISLAUS, SUTTER, YOLO, AND YUBA COUNTIES AREA 2: MODOC COUNTY THE REMAINGING COUNTIES ARE SPLIT BETWEEN AREA 1 AND AREA 2 AS NOTED BELOW: ALPINE COUNTY: AREA 1: NORTHERNMOST PART AREA 2: REMAINDER CALAVERAS COUNTY: AREA 1: REMAINDER AREA 2: EASTERN PART COLUSA COUNTY: AREA 1: EASTERN PART AREA 2: REMAINDER ELDORADO COUNTY: AREA 1: NORTH CENTRAL PART AREA 2: REMAINDER FRESNO COUNTY: AREA 1: REMAINDER AREA 2: EASTERN PART GLENN COUNTY: AREA 1: EASTERN PART AREA 2: REMAINDER LASSEN COUNTY: AREA 1: WESTERN PART ALONG THE SOUTHERN PORTION OF BORDER WITH SHASTA COUNTY AREA 2: REMAINDER MADERA COUNTY: AREA 1: EXCEPT EASTERN PART AREA 2: EASTERN PART MARIPOSA COUNTY AREA 1: EXCEPT EASTERN PART AREA 2: EASTERN PART MONTERREY COUNTY AREA 1: EXCEPT SOUTHWESTERN PART AREA 2: SOUTHWESTERN PART NEVADA COUNTY: AREA 1: ALL BUT THE NORTHERN PORTION ALONG THE BORDER OF SIERRA COUNTY AREA 2: REMAINDER PLACER COUNTY: AREA 1: AL BUT THE CENTRAL PORTION AREA 2: REMAINDER PLUMAS COUNTY: AREA 1: WESTERN PORTION AREA 2: REMAINDER SHASTA COUNTY: AREA 1: ALL BUT THE NORTHEASTERN CORNER AREA 2: REMAINDER SIERRA COUNTY: AREA 1: WESTERN PART AREA 2: REMAINDER SISKIYOU COUNTY: AREA 1: CENTRAL PART AREA 2: REMAINDER SONOMA COUNTY: AREA 1: ALL BUT THE NORTHWESTERN CORNER AREA 2: REMAINDER TEHAMA COUNTY: AREA 1: ALL BUT THE WESTERN BORDER WITH MENDOCINO & TRINITY COUNTIES AREA 2: REMAINDER TRINITY COUNTY: AREA 1: EAST CENTRAL PART AND THE NORTHEASTERN BORDER WITH SHASTA COUNTY AREA 2: REMAINDER TUOLUMNE COUNTY: AREA 1: EXCEPT EASTERN PART AREA 2: EASTERN PART.....$ 57.65 39.55

DREDGING (CLAMSHELL & DIPPER DREDGING; HYDRAULIC SUCTION DREDGING) AREA 2: (1) LEVERMAN AREA

SOLICITATION

DESCRIPTIONS AREA 1: ALAMEDA,BUTTE, CONTRA COSTA, KINGS, MARIN, MERCED, NAPA, SACRAMENTO, SAN BENITO, SAN FRANCISCO, SAN JOAQUIN, SAN MATEO, SANTA CLARA, SANTA CRUZ, SOLANO, STANISLAUS, SUTTER, YOLO, AND YUBA COUNTIES AREA 2: MODOC COUNTY THE REMAINGING COUNTIES ARE SPLIT BETWEEN AREA 1 AND AREA 2 AS NOTED BELOW: ALPINE COUNTY: AREA 1: NORTHERNMOST PART AREA 2: REMAINDER CALAVERAS COUNTY: AREA 1: REMAINDER AREA 2: EASTERN PART COLUSA COUNTY: AREA 1: EASTERN PART AREA 2: REMAINDER ELDORADO COUNTY: AREA 1: NORTH CENTRAL PART AREA 2: REMAINDER FRESNO COUNTY: AREA 1: REMAINDER AREA 2: EASTERN PART GLENN COUNTY: AREA 1: EASTERN PART AREA 2: REMAINDER LASSEN COUNTY: AREA 1: WESTERN PART ALONG THE SOUTHERN PORTION OF BORDER WITH SHASTA COUNTY AREA 2: REMAINDER MADERA COUNTY: AREA 1: EXCEPT EASTERN PART AREA 2: EASTERN PART MARIPOSA COUNTY AREA 1: EXCEPT EASTERN PART AREA 2: EASTERN PART MONTERREY COUNTY AREA 1: EXCEPT SOUTHWESTERN PART AREA 2: SOUTHWESTERN PART NEVADA COUNTY: AREA 1: ALL BUT THE NORTHERN PORTION ALONG THE BORDER OF SIERRA COUNTY AREA 2: REMAINDER PLACER COUNTY: AREA 1: AL BUT THE CENTRAL PORTION AREA 2: REMAINDER PLUMAS COUNTY: AREA 1: WESTERN PORTION AREA 2: REMAINDER SHASTA COUNTY: AREA 1: ALL BUT THE NORTHEASTERN CORNER AREA 2: REMAINDER SIERRA COUNTY: AREA 1: WESTERN PART AREA 2: REMAINDER SISKIYOU COUNTY: AREA 1: CENTRAL PART AREA 2: REMAINDER SONOMA COUNTY: AREA 1: ALL BUT THE NORTHWESTERN CORNER AREA 2: REMAINDER TEHAMA COUNTY: AREA 1: ALL BUT THE WESTERN BORDER WITH MENDOCINO & TRINITY COUNTIES AREA 2: REMAINDER TRINITY COUNTY: AREA 1: EAST CENTRAL PART AND THE NORTHEASTERN BORDER WITH SHASTA COUNTY AREA 2: REMAINDER TUOLUMNE COUNTY: AREA 1: EXCEPT EASTERN PART AREA 2: EASTERN PART.....$ 62.61
39.55
DREDGING (CLAMSHELL & DIPPER DREDGING; HYDRAULIC SUCTION DREDGING) AREA 1: (4) BARGEMAN; DECKHAND; FIREMAN; LEVEEHAND; OILER AREA DESCRIPTIONS AREA 1: ALAMEDA,BUTTE, CONTRA COSTA, KINGS, MARIN, MERCED, NAPA, SACRAMENTO, SAN BENITO, SAN FRANCISCO, SAN JOAQUIN, SAN MATEO, SANTA CLARA, SANTA CRUZ, SOLANO, STANISLAUS, SUTTER, YOLO, AND YUBA COUNTIES AREA 2: MODOC COUNTY THE REMAINGING COUNTIES ARE SPLIT BETWEEN AREA 1 AND AREA 2 AS NOTED BELOW: ALPINE COUNTY: AREA 1: NORTHERNMOST PART AREA 2: REMAINDER CALAVERAS COUNTY: AREA 1: REMAINDER AREA 2: EASTERN PART COLUSA COUNTY: AREA 1: EASTERN PART AREA 2: REMAINDER ELDORADO COUNTY: AREA 1: NORTH CENTRAL PART AREA 2: REMAINDER FRESNO COUNTY: AREA

SOLICITATION

1: REMAINDER AREA 2: EASTERN PART GLENN COUNTY: AREA 1: EASTERN PART AREA 2: REMAINDER LASSEN COUNTY: AREA 1: WESTERN PART ALONG THE SOUTHERN PORTION OF BORDER WITH SHASTA COUNTY AREA 2: REMAINDER MADERA COUNTY: AREA 1: EXCEPT EASTERN PART AREA 2: EASTERN PART MARIPOSA COUNTY AREA 1: EXCEPT EASTERN PART AREA 2: EASTERN PART MONTERREY COUNTY AREA 1: EXCEPT SOUTHWESTERN PART AREA 2: SOUTHWESTERN PART NEVADA COUNTY: AREA 1: ALL BUT THE NORTHERN PORTION ALONG THE BORDER OF SIERRA COUNTY AREA 2: REMAINDER PLACER COUNTY: AREA 1: AL BUT THE CENTRAL PORTION AREA 2: REMAINDER PLUMAS COUNTY: AREA 1: WESTERN PORTION AREA 2: REMAINDER SHASTA COUNTY: AREA 1: ALL BUT THE NORTHEASTERN CORNER AREA 2: REMAINDER SIERRA COUNTY: AREA 1: WESTERN PART AREA 2: REMAINDER SISKIYOU COUNTY: AREA 1: CENTRAL PART AREA 2: REMAINDER SONOMA COUNTY: AREA 1: ALL BUT THE NORTHWESTERN CORNER AREA 2: REMAINDER TEHAMA COUNTY: AREA 1: ALL BUT THE WESTERN BORDER WITH MENDOCINO & TRINITY COUNTIES AREA 2: REMAINDER TRINITY COUNTY: AREA 1: EAST CENTRAL PART AND THE NORTHEASTERN BORDER WITH SHASTA COUNTY AREA 2: REMAINDER TUOLUMNE COUNTY: AREA 1: EXCEPT EASTERN PART AREA 2: EASTERN PART.....$ 51.23 39.55

DREDGING (CLAMSHELL & DIPPER DREDGING; HYDRAULIC SUCTION DREDGING) AREA 1: (3) BOOSTER PUMP OPERATOR; DECK ENGINEER; DECK MATE; DREDGE TENDER; WINCH OPERATOR AREA DESCRIPTIONS AREA 1: ALAMEDA,BUTTE, CONTRA COSTA, KINGS, MARIN, MERCED, NAPA, SACRAMENTO, SAN BENITO, SAN FRANCISCO, SAN JOAQUIN, SAN MATEO, SANTA CLARA, SANTA CRUZ, SOLANO, STANISLAUS, SUTTER, YOLO, AND YUBA COUNTIES AREA 2: MODOC COUNTY THE REMAINGING COUNTIES ARE SPLIT BETWEEN AREA 1 AND AREA 2 AS NOTED BELOW: ALPINE COUNTY: AREA 1: NORTHERNMOST PART AREA 2: REMAINDER CALAVERAS COUNTY: AREA 1: REMAINDER AREA 2: EASTERN PART COLUSA COUNTY: AREA 1: EASTERN PART AREA 2: REMAINDER ELDORADO COUNTY: AREA 1: NORTH CENTRAL PART AREA 2: REMAINDER FRESNO COUNTY: AREA 1: REMAINDER AREA 2: EASTERN PART GLENN COUNTY: AREA 1: EASTERN PART AREA 2: REMAINDER LASSEN COUNTY: AREA 1: WESTERN PART ALONG THE SOUTHERN PORTION OF BORDER WITH SHASTA COUNTY AREA 2: REMAINDER MADERA COUNTY: AREA 1: EXCEPT EASTERN PART AREA 2: EASTERN PART MARIPOSA COUNTY AREA 1: EXCEPT EASTERN PART AREA 2: EASTERN PART MONTERREY COUNTY AREA 1: EXCEPT SOUTHWESTERN PART AREA 2: SOUTHWESTERN PART NEVADA COUNTY: AREA 1: ALL BUT THE NORTHERN PORTION ALONG THE BORDER OF SIERRA COUNTY AREA 2:

SOLICITATION

REMAINDER PLACER COUNTY: AREA 1: AL BUT THE CENTRAL PORTION AREA 2: REMAINDER PLUMAS COUNTY: AREA 1: WESTERN PORTION AREA 2: REMAINDER SHASTA COUNTY: AREA 1: ALL BUT THE NORTHEASTERN CORNER AREA 2: REMAINDER SIERRA COUNTY: AREA 1: WESTERN PART AREA 2: REMAINDER SISKIYOU COUNTY: AREA 1: CENTRAL PART AREA 2: REMAINDER SONOMA COUNTY: AREA 1: ALL BUT THE NORTHWESTERN CORNER AREA 2: REMAINDER TEHAMA COUNTY: AREA 1: ALL BUT THE WESTERN BORDER WITH MENDOCINO & TRINITY COUNTIES AREA 2: REMAINDER TRINITY COUNTY: AREA 1: EAST CENTRAL PART AND THE NORTHEASTERN BORDER WITH SHASTA COUNTY AREA 2: REMAINDER TUOLUMNE COUNTY: AREA 1: EXCEPT EASTERN PART AREA 2: EASTERN PART.....$ 54.53
39.55
DREDGING (CLAMSHELL & DIPPER DREDGING; HYDRAULIC SUCTION DREDGING) AREA 1: (1) LEVERMAN AREA DESCRIPTIONS AREA 1: ALAMEDA,BUTTE, CONTRA COSTA, KINGS, MARIN, MERCED, NAPA, SACRAMENTO, SAN BENITO, SAN FRANCISCO, SAN JOAQUIN, SAN MATEO, SANTA CLARA, SANTA CRUZ, SOLANO, STANISLAUS, SUTTER, YOLO, AND YUBA COUNTIES AREA 2: MODOC COUNTY THE REMAINGING COUNTIES ARE SPLIT BETWEEN AREA 1 AND AREA 2 AS NOTED BELOW: ALPINE COUNTY: AREA 1: NORTHERNMOST PART AREA 2: REMAINDER CALAVERAS COUNTY: AREA 1: REMAINDER AREA 2: EASTERN PART COLUSA COUNTY: AREA 1: EASTERN PART AREA 2: REMAINDER ELDORADO COUNTY: AREA 1: NORTH CENTRAL PART AREA 2: REMAINDER FRESNO COUNTY: AREA 1: REMAINDER AREA 2: EASTERN PART GLENN COUNTY: AREA 1: EASTERN PART AREA 2: REMAINDER LASSEN COUNTY: AREA 1: WESTERN PART ALONG THE SOUTHERN PORTION OF BORDER WITH SHASTA COUNTY AREA 2: REMAINDER MADERA COUNTY: AREA 1: EXCEPT EASTERN PART AREA 2: EASTERN PART MARIPOSA COUNTY AREA 1: EXCEPT EASTERN PART AREA 2: EASTERN PART MONTERREY COUNTY AREA 1: EXCEPT SOUTHWESTERN PART AREA 2: SOUTHWESTERN PART NEVADA COUNTY: AREA 1: ALL BUT THE NORTHERN PORTION ALONG THE BORDER OF SIERRA COUNTY AREA 2: REMAINDER PLACER COUNTY: AREA 1: AL BUT THE CENTRAL PORTION AREA 2: REMAINDER PLUMAS COUNTY: AREA 1: WESTERN PORTION AREA 2: REMAINDER SHASTA COUNTY: AREA 1: ALL BUT THE NORTHEASTERN CORNER AREA 2: REMAINDER SIERRA COUNTY: AREA 1: WESTERN PART AREA 2: REMAINDER SISKIYOU COUNTY: AREA 1: CENTRAL PART AREA 2: REMAINDER SONOMA COUNTY: AREA 1: ALL BUT THE NORTHWESTERN CORNER AREA 2: REMAINDER TEHAMA COUNTY: AREA 1: ALL BUT THE WESTERN BORDER WITH MENDOCINO & TRINITY COUNTIES AREA 2: REMAINDER TRINITY COUNTY: AREA 1: EAST CENTRAL PART AND THE NORTHEASTERN BORDER WITH SHASTA COUNTY AREA 2:

SOLICITATION

REMAINDER TUOLUMNE COUNTY: AREA 1: EXCEPT
EASTERN PART   AREA 2: EASTERN PART.....$ 60.61
39.55
DREDGING (CLAMSHELL & DIPPER DREDGING; HYDRAULIC
SUCTION DREDGING) AREA 1:   (2) DREDGE DOZER; HEAVY
DUTY REPAIRMAN   AREA DESCRIPTIONS   AREA 1:
ALAMEDA,BUTTE, CONTRA COSTA, KINGS, MARIN, MERCED,
NAPA, SACRAMENTO, SAN BENITO, SAN FRANCISCO, SAN
JOAQUIN, SAN MATEO, SANTA CLARA, SANTA CRUZ,
SOLANO, STANISLAUS, SUTTER, YOLO, AND YUBA COUNTIES
   AREA 2: MODOC COUNTY THE REMAINGING COUNTIES
ARE SPLIT BETWEEN AREA 1 AND AREA 2 AS NOTED BELOW:
   ALPINE COUNTY: AREA 1: NORTHERNMOST PART AREA
2: REMAINDER CALAVERAS COUNTY: AREA 1:
REMAINDER   AREA 2: EASTERN PART   COLUSA COUNTY:
AREA 1: EASTERN PART AREA 2: REMAINDER ELDORADO
COUNTY: AREA 1: NORTH CENTRAL PART AREA 2:
REMAINDER   FRESNO COUNTY: AREA 1: REMAINDER
AREA 2: EASTERN PART   GLENN COUNTY: AREA 1:
EASTERN PART AREA 2: REMAINDER   LASSEN COUNTY:
AREA 1: WESTERN PART ALONG THE SOUTHERN PORTION OF
BORDER WITH SHASTA COUNTY AREA 2: REMAINDER
MADERA COUNTY: AREA 1: EXCEPT EASTERN PART   AREA
2: EASTERN PART   MARIPOSA COUNTY   AREA 1: EXCEPT
EASTERN PART   AREA 2: EASTERN PART   MONTERREY
COUNTY   AREA 1: EXCEPT SOUTHWESTERN PART   AREA 2:
SOUTHWESTERN PART   NEVADA COUNTY: AREA 1: ALL
BUT THE NORTHERN PORTION ALONG THE BORDER OF SIERRA
COUNTY AREA 2: REMAINDER PLACER COUNTY: AREA 1:
 AL BUT THE CENTRAL PORTION AREA 2: REMAINDER
PLUMAS COUNTY: AREA 1: WESTERN PORTION AREA 2:
REMAINDER SHASTA COUNTY: AREA 1: ALL BUT THE
NORTHEASTERN CORNER AREA 2: REMAINDER SIERRA
COUNTY: AREA 1: WESTERN PART AREA 2: REMAINDER
SISKIYOU COUNTY: AREA 1: CENTRAL PART AREA 2:
REMAINDER SONOMA COUNTY: AREA 1: ALL BUT THE
NORTHWESTERN CORNER AREA 2: REMAINDER TEHAMA
COUNTY: AREA 1: ALL BUT THE WESTERN BORDER WITH
MENDOCINO & TRINITY COUNTIES AREA 2: REMAINDER
TRINITY COUNTY: AREA 1: EAST CENTRAL PART AND THE
NORTHEASTERN BORDER WITH SHASTA COUNTY AREA 2:
REMAINDER TUOLUMNE COUNTY: AREA 1: EXCEPT
EASTERN PART   AREA 2: EASTERN PART.....$ 55.65
39.55

 ENGI0003-019 06/30/2025

                                                Rates
Fringes
OPERATOR: POWER EQUIPMENT, LANDSCAPE WORK ONLY:
GROUP 3 (AREA 2).....$ 49.64
28.56
OPERATOR: POWER EQUIPMENT, LANDSCAPE WORK ONLY:

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GROUP 3 (AREA 1).....$ 47.64
28.56
OPERATOR: POWER EQUIPMENT, LANDSCAPE WORK ONLY:
GROUP 2 (AREA 2).....$ 54.25
28.56
OPERATOR: POWER EQUIPMENT, LANDSCAPE WORK ONLY:
GROUP 2 (AREA 1).....$ 52.25
28.56
OPERATOR: POWER EQUIPMENT, LANDSCAPE WORK ONLY:
GROUP 1 (AREA 2).....$ 57.85
28.56
OPERATOR: POWER EQUIPMENT, LANDSCAPE WORK ONLY:
GROUP 1 (AREA 1).....$ 55.85
28.56

IRON0377-001 01/01/2025

Rates
Fringes
IRONWORKERS: ORNAMENTAL, REINFORCING AND STRUCTURAL
(ALAMEDA, CONTRA COSTA, SAN MATEO, SANTA CLARA
COUNTIES).....$ 55.33
35.15
IRONWORKERS: FENCE ERECTOR (ALAMEDA, CONTRA COSTA,
SAN MATEO, SANTA CLARA COUNTIES).....$ 45.78
26.51

IRON0377-003 01/01/2025

Rates
Fringes
IRONWORKERS: ORNAMENTAL, REINFORCING AND STRUCTURAL
(SAN FRANCISCO CITY AND COUNTY).....$ 55.83
35.15
IRONWORKERS: FENCE ERECTOR (SAN FRANCISCO CITY AND
COUNTY).....$ 45.78
26.51

IRON0433-005 01/01/2025

Rates
Fringes
IRONWORKER: ORNAMENTAL, REINFORCING AND STRUCTURAL
(REMAINING COUNTIES).....$ 50.70
35.15
IRONWORKER: FENCE ERECTOR (REMAINING COUNTIES).....$ 45.78
26.51

LABO0067-006 06/30/2025

Rates
Fringes
LABORER, ASBESTOS/MOLD/LEAD LABORER: AREA 2.....$ 38.15
30.03

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LABORER, ASBESTOS/MOLD/LEAD LABORER: AREA 1.....$ 39.15
30.03

LABO0073-002 07/01/2023

Rates
Fringes
LABORER, TRAFFIC CONTROL/LANE CLOSURE: TRAFFIC
CONTROL PERSON II INSTALLATION AND REMOVAL OF
TEMPORARY/PERMANENT SIGNS, MARKERS, DELINEATORS AND
CRASH CUSHIONS. (CALAVERAS AND SAN JOAQUIN
COUNTIES).....$ 34.06
27.30
LABORER, TRAFFIC CONTROL/LANE CLOSURE: TRAFFIC
CONTROL PERSON I LAYOUT OF TRAFFIC CONTROL, CRASH
CUSHIONS, CONSTRUCTION AREA AND ROADSIDE SIGNAGE.
(CALAVERAS AND SAN JOAQUIN COUNTIES).....$ 36.56
27.30
LABORER, TRAFFIC CONTROL/LANE CLOSURE: ESCORT
DRIVER, FLAG PERSON (CALAVERAS AND SAN JOAQUIN
COUNTIES).....$ 36.26
27.30

LABO0073-003 07/01/2023

Rates
Fringes
LABORER: MASON TENDER-BRICK (SAN JOAQUIN COUNTY)....$ 36.29
25.55

LABO0073-005 06/26/2023

Rates
Fringes
TUNNEL AND SHAFT LABORERS: SHOTCRETE SPECIALIST.....$ 46.41
27.72
TUNNEL AND SHAFT LABORERS: GROUP 5 GROUT CREW;
REBOUNDMAN; SWAMPER/ BRAKEMAN.....$ 44.42
27.72
TUNNEL AND SHAFT LABORERS: GROUP 4 VIBRATOR
OPERATOR, PAVEMENT BREAKER; BULL GANG - MUCKERS,
TRACKMEN; CONCRETE CREW - INCLUDES RODDING AND
SPREADING, DUMPMEN (ANY METHOD).....$ 44.96
27.72
TUNNEL AND SHAFT LABORERS: GROUP 3 BIT GRINDER;
BLASTER, DRILLER, POWDERMEN, HEADING; CHERRY
PICKERMEN - WHERE CAR IS LIFTED; CONCRETE FINISHER
IN TUNNEL; CONCRETE SCREEDMAN; GROUT PUMPMAN AND
POTMAN; GUNITE & SHOTCRETE GUNMAN & POTMAN;
HEADERMEN; HIGH PRESSURE NOZZLEMAN; MINER - TUNNEL,
INCLUDING TOP AND BOTTOM MAN ON SHAFT AND RAISE
WORK; NIPPER; NOZZLEMAN ON SLICK LINE; SANDBLASTER
- POTMAN, ROBOTIC SHOTCRETE PLACER, SEGMENT
ERECTOR, TUNNEL MUCK HAULER, STEEL FORM RAISER AND

SOLICITATION

SETTER; TIMBERMAN, RETIMBERMAN (WOOD OR STEEL OR
SUBSTITUTE MATERIALS THEREFORE); TUGGER (FOR TUNNEL
LABORER WORK); CABLE TENDER; CHUCK TENDER;
POWDERMAN - PRIMER HOUSE.....$ 45.41
27.72
TUNNEL AND SHAFT LABORERS: GROUP 2 RODMEN; SHAFT
WORK & RAISE (BELOW ACTUAL OR EXCAVATED GROUND
LEVEL).....$ 45.66
27.72
TUNNEL AND SHAFT LABORERS: GROUP 1 DIAMOND DRILLER;
GROUNDMEN; GUNITE AND SHOTCRETE NOZZLEMEN.....$ 45.89
27.72

LABO0073-007 06/30/2025

Rates
Fringes
LABORER: GARDENERS, HORTICULTURAL & LANDSCAPE
LABORERS (CALAVERAS AND SAN JOAQUIN COUNTIES)- (2)
Establishment Warranty Period.....$ 31.59
29.89
LABORER: GARDENERS, HORTICULTURAL & LANDSCAPE
LABORERS (CALAVERAS AND SAN JOAQUIN COUNTIES)- (1)
New Construction.....$ 37.90
29.89
LABORER, WRECKING: GROUP 2 Semi-skilled wrecker
(salvaging of other building materials) (CALAVERAS
AND SAN JOAQUIN COUNTIES) FOOTNOTES: LABORERS
WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING
SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE
THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO
WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH
IN GROUP 1-A BELOW.....$ 38.00
29.89
LABORER, WRECKING: GROUP 1 (CALAVERAS AND SAN
JOAQUIN COUNTIES).....$ 38.15
29.89
LABORER, GUNITE: GROUP 4 GUINTE LABORER
(CALAVERAS AND SAN JOAQUIN COUNTIES) FOOTNOTES:
LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS,
SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER
HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL
NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE
RATE SET FORTH IN GROUP 1-A BELOW.....$ 37.90
29.89
LABORER, GUNITE: GROUP 3 REBOUNDMAN (CALAVERAS AND
SAN JOAQUIN COUNTIES) FOOTNOTES: LABORERS WORKING
OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING
SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE
THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO
WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH
IN GROUP 1-A BELOW.....$ 38.02
29.89
LABORER, GUNITE: GROUP 2 NOZZLEMAN, GUNMAN, POTMAN,

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GROUNDMAN (CALAVERAS AND SAN JOAQUIN COUNTIES)
FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM
BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL
RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE
RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO
RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW..$ 38.61
29.89
LABORER, GUNITE: GROUP 1 (CALAVERAS AND SAN JOAQUIN
COUNTIES).....$ 39.11
29.89
LABORER, CONSTRUCTION CRAFT LABORERS: GROUP 4 FINAL
CLEAN-UP WORK OF DEBRIS, GROUNDS AND BUILDING
INCLUDING BUT NOT LIMITED TO: STREET CLEANER;
CLEANING AND WASHING WINDOWS; BRICK CLEANER
(JOBSITE ONLY); MATERIAL CLEANER (JOBSITE ONLY).
THE CLASSIFICATION ""MATERIAL CLEANER"" IS TO BE
UTILIZED UNDER THE FOLLOWING CONDITIONS: A:
AT DEMOLITION SITE FOR THE SALVAGE OF THE MATERIAL.
B: AT THE CONCLUSION OF A JOB WHERE THE
MATERIAL IS TO BE SALVAGED AND STOCKED TO BE REUSED
ON ANOTHER JOB. C: FOR THE CLEANING OF
SALVAGE MATERIAL AT THE JOBSITE OR TEMPORARY
JOBSITE YARD. THE MATERIAL CLEANER
CLASSIFICATION SHOULD NOT BE USED IN THE
PERFORMANCE OF ""FORM STRIPPING, CLEANING AND
OILING AND MOVING TO THE NEXT POINT OF ERECTION"".
(CALAVERAS AND SAN JOAQUIN COUNTIES)
FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM
BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL
RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE
RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO
RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.
SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE
GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY
WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW
SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK
INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND
ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE
$5.00 PER DAY ABOVE GROUP 1 WAGE RATES.
MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL
EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL
RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR
ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT
SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL
NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND
LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER
WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY
COVER HAS BEEN PLACED.....$ 31.59
29.89
LABORER, CONSTRUCTION CRAFT LABORERS: GROUP 3
CONSTRUCTION LABORERS, INCLUDING BRIDGE AND GENERAL
LABORER; DUMP, LOAD SPOTTER; FLAG PERSON; FIRE
WATCHER; FENCE ERECTOR; GUARDRAIL ERECTOR;
GARDENER, HORTICULTURAL AND LANDSCAPE LABORER;

SOLICITATION

JETTING; LIMBER, BRUSH LOADER AND PILER; PAVEMENT MARKER (BUTTON SETTER); MAINTENANCE, REPAIR TRACK AND ROAD BEDS; STREETCAR AND RAILROAD CONSTRUCTION TRACK LABORER; TEMPORARY AIR AND WATER LINES, VICTAULIC OR SIMILAR; TOOL ROOM ATTENDANT (JOBSITE ONLY) (CALAVERAS AND SAN JOAQUIN COUNTIES)
FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.
   SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES.
MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 37.90
29.89
LABORER, CONSTRUCTION CRAFT LABORERS: GROUP 2
ASPHALT SHOVELER; CEMENT DUMPER AND HANDLING DRY CEMENT OR GYPSUM; CHOKE-SETTER AND RIGGER (CLEARING WORK); CONCRETE BUCKET DUMPER AND CHUTE; CONCRETE CHIPPING AND GRINDING; CONCRETE LABORER (WET OR DRY); DRILLER TENDER, CHUCK TENDER, NIPPER; GUINEA CHASER (STAKE), GROUT CREW; HIGH PRESSURE NOZZLE, ADDUCTOR; HYDRAULIC MONITOR (OVER 100 LBS. PRESSURE); LOADING AND UNLOADING, CARRYING AND HAULING OF ALL RODS AND MATERIALS FOR USE IN REINFORCING CONCRETE CONSTRUCTION; PITTSBURGH CHIPPER AND SIMILAR TYPE BRUSH SHREDDERS; SLOPER; SINGLE FOOT, HAND-HELD, PNEUMATIC TAMPER; ALL PNEUMATIC, AIR, GAS AND ELECTRIC TOOLS NOT LISTED IN GROUPS 1 THROUGH 1-F; JACKING OF PIPE - UNDER 12 INCHES (CALAVERAS AND SAN JOAQUIN COUNTIES)
FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.
   SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND

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ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 38.00
29.89
LABORER, CONSTRUCTION CRAFT LABORERS: GROUP 1-E WORK ON AND/OR IN BELL HOLE FOOTINGS AND SHAFTS THEREOF, AND WORK ON AND IN DEEP FOOTINGS. (A DEEP FOOTING IS A HOLE 15 FEET OR MORE IN DEPTH.) IN THE EVENT THE DEPTH OF THE FOOTING IS UNKNOWN AT THE COMMENCEMENT OF EXCAVATION, AND THE FINAL DEPTH EXCEEDS 15 FEET, THE DEEP FOOTING WAGE RATE WOULD APPLY TO ALL EMPLOYEES FOR EACH AND EVERY DAY WORKED ON OR IN THE EXCAVATION OF THE FOOTING FROM THE DATE OF INCEPTION. (CALAVERAS AND SAN JOAQUIN COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 38.70
29.89
LABORER, CONSTRUCTION CRAFT LABORERS: GROUP 1-C BURNING AND WELDING IN CONNECTION WITH LABORERS' WORK; SYNTHETIC THERMOPLASTICS AND SIMILAR TYPE WELDING (CALAVERAS AND SAN JOAQUIN COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.
SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE

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GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES.
MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 38.20
29.89
LABORER, CONSTRUCTION CRAFT LABORERS: GROUP 1-A JOY DRILL MODEL TWM-2A; GARDNER-DENVER MODEL DH143 AND SIMILAR TYPE DRILLS; TRACK DRILLER; JACK LEG DRILLER; WAGON DRILLER; MECHANICAL DRILLERS, ALL TYPES REGARDLESS OF TYPE OR METHOD OF POWER; MECHANICAL PIPE LAYERS, ALL TYPES REGARDLESS OF TYPE OR METHOD OF POWER; BLASTER AND POWDER; ALL WORK OF LOADING, PLACING AND BLASTING OF ALL POWDER AND EXPLOSIVES OF WHATEVER TYPE REGARDLESS OF METHOD USED FOR SUCH LOADING AND PLACING; HIGH SCALERS (INCLUDING DRILLING OF SAME); TREE TOPPER; BIT GRINDER (CALAVERAS AND SAN JOAQUIN COUNTIES)
FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.
   SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES.
MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 38.37
29.89
LABORER, CONSTRUCTION CRAFT LABORERS: GROUP 1-ASPHALT SPREADER BOXES (ALL TYPES); BARKO, WACKER AND SIMILAR TYPE TAMPERS; BUGGYMOBILE; CAULKER, BANDER, PIPEWRAPPER, CONDUIT LAYER, PLASTIC

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PIPELAYER; CERTIFIED HAZARDOUS WASTE WORKER INCLUDING LEADE ABATEMENT; COMPACTORS OF ALL TYPES; CONCRETE AND MAGNESITE MIXER, 1/2 YD. AND UNDER; CONCRETE PAN WORK; CONCRETE SANDER; CONCRETE SAW; CRIBBER AND/OR SHORING; CUT GRANITE CURB SETTER; DRI-PAK-IT MACHINE; FALLER, LOGLOADER AND BUCKER; FORM RAISER, SLIP FORMS; GREEN CUTTER; HEADERBOARD, HUBSETTER, ALIGNER, BY ANY METHOD; HIGH PRESSURE BLOW PIPE (1-1/2"" OR OVER, 100 LBS. PRESSURE/OVER); HYDRO SEEDER AND SIMILAR TYPE; JACKHAMMER OPERATOR; JACKING OF PIPE OVER 12 INCHES; JACKSON AND SIMILAR TYPE COMPACTOR; KETTLE TENDER, POT AND WORKER APPLYING ASPHALT, LAY-KOLD, CREOSOTE, LIME, CAUSTIC AND SIMILAR TYPE MATERIALS (APPLYING MEANS APPLYING, DIPPING OR HANDLING OF SUCH MATERIALS); LAGGING, SHEETING, WHALING, BRACING, TRENCHJACKING, LAGGING HAMMER; MAGNESITE, EPOXYRESIN, FIBERGLASS, MASTIC WORKER (WET OR DRY); NO JOINT PIPE AND STRIPPING OF SAME, INCLUDING REPAIR OF VOIDS; PAVEMENT BREAKER AND SPADER, INCLUDING TOOL GRINDER; PERMA CURB; PIPELAYER (INCLUDING GRADE CHECKING IN CONNECTION WITH PIPELAYING); PRECAST-MANHOLE SETTER; PRESSURE PIPE TESTER; POST HOLE DIGGER, AIR, GAS AND ELECTRIC; POWER BROOM SWEEPER; POWER TAMPERS OF ALL TYPES (EXCEPT AS SHOWN IN GROUP 2); RAM SET GUN AND STUD GUN; RIPRAP STONEPAVER AND ROCK-SLINGER, INCLUDING PLACING OF SACKED CONCRETE AND/OR SAND (WET OR DRY) AND GABIONS AND SIMILAR TYPE; ROTARY SCARIFIER OR MULTIPLE HEAD CONCRETE CHIPPING SCARIFIER; ROTO AND DITCH WITCH; ROTOTILLER; SANDBLASTER, POT, GUN, NOZZLE OPERATORS; SIGNALLING AND RIGGING; TANK CLEANER; TREE CLIMBER; TURBO BLASTER; VIBRASCREED, BULL FLOAT IN CONNECTION WITH LABORERS' WORK; VIBRATOR; HAZARDOUS WASTE WORKER (LEAD REMOVAL); ASBESTOS AND MOLD REMOVAL WORKER (CALAVERAS AND SAN JOAQUIN COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK

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BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 38.15 29.89

LABORER, CONSTRUCTION CRAFT LABORERS: CONSTRUCTION SPECIALIST GROUP ASPHALT IRONER AND RAKER; CHAINSAW; LASER BEAM IN CONNECTION WITH LABORERS' WORK; CAST-IN- PLACE MANHOLE FORM SETTER; PRESSURE PIPELAYER; DAVIS TRENCHER - 300 OR SIMILAR TYPE (AND ALL SMALL TRENCHERS); BLASTER; DIAMOND DRILLER; MULTIPLE UNIT DRILL; HYDRAULIC DRILL (CALAVERAS AND SAN JOAQUIN COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES.
MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 38.85 29.89

LABORER (CONSTRUCTION CRAFT LABORERS) GROUP 1-f CALAVERAS AND SAN JOAQUIN COUNTIES.....$ 30.37 29.89

LABO0073-009 07/01/2023

Rates Fringes

LABORER, PLASTER TENDER (CALAVERAS AND SAN JOAQUIN COUNTIES) WORK ON A SWING STAGE SCAFFOLD: $1.00 PER HOUR ADDITIONAL.....$ 39.77 28.54

LABO0261-003 07/01/2023

Rates Fringes

LABORER, TRAFFIC CONTROL/LANE CLOSURE: TRAFFIC CONTROL PERSON II INSTALLATION AND REMOVAL OF TEMPORARY/PERMANENT SIGNS, MARKERS, DELINEATORS AND

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CRASH CUSHIONS. (SAN FRANCISCO AND SAN MATEO
COUNTIES).....$ 35.06
27.30
LABORER, TRAFFIC CONTROL/LANE CLOSURE: TRAFFIC
CONTROL PERSON I   LAYOUT OF TRAFFIC CONTROL, CRASH
CUSHIONS, CONSTRUCTION AREA AND ROADSIDE SIGNAGE.
(SAN FRANCISCO AND SAN MATEO COUNTIES).....$ 37.56
27.30
LABORER, TRAFFIC CONTROL/LANE CLOSURE: ESCORT
DRIVER, FLAG PERSON   (SAN FRANCISCO AND SAN MATEO
COUNTIES).....$ 37.26
27.30

LABO0261-005 06/26/2023

Rates
Fringes
TUNNEL AND SHAFT LABORERS: SHOTCRETE SPECIALIST
(SAN FRANCISCO AND SAN MATEO COUNTIES).....$ 46.41
27.72
TUNNEL AND SHAFT LABORERS: GROUP 5 GROUT CREW;
REBOUNDMAN; SWAMPER/ BRAKEMAN (SAN FRANCISCO AND
SAN MATEO COUNTIES).....$ 44.42
27.72
TUNNEL AND SHAFT LABORERS: GROUP 4 VIBRATOR
OPERATOR, PAVEMENT BREAKER; BULL GANG - MUCKERS,
TRACKMEN; CONCRETE CREW - INCLUDES RODDING AND
SPREADING, DUMPMEN (ANY METHOD) (SAN FRANCISCO AND
SAN MATEO COUNTIES).....$ 44.96
27.72
TUNNEL AND SHAFT LABORERS: GROUP 3 BIT GRINDER;
BLASTER, DRILLER, POWDERMEN, HEADING; CHERRY
PICKERMEN - WHERE CAR IS LIFTED; CONCRETE FINISHER
IN TUNNEL; CONCRETE SCREEDMAN; GROUT PUMPMAN AND
POTMAN; GUNITE & SHOTCRETE GUNMAN & POTMAN;
HEADERMEN; HIGH PRESSURE NOZZLEMAN; MINER - TUNNEL,
INCLUDING TOP AND BOTTOM MAN ON SHAFT AND RAISE
WORK; NIPPER; NOZZLEMAN ON SLICK LINE; SANDBLASTER
- POTMAN, ROBOTIC SHOTCRETE PLACER, SEGMENT
ERECTOR, TUNNEL MUCK HAULER, STEEL FORM RAISER AND
SETTER; TIMBERMAN, RETIMBERMAN (WOOD OR STEEL OR
SUBSTITUTE MATERIALS THEREFORE); TUGGER (FOR TUNNEL
LABORER WORK); CABLE TENDER; CHUCK TENDER;
POWDERMAN - PRIMER HOUSE (SAN FRANCISCO AND SAN
MATEO COUNTIES).....$ 45.41
27.72
TUNNEL AND SHAFT LABORERS: GROUP 2 RODMEN; SHAFT
WORK & RAISE (BELOW ACTUAL OR EXCAVATED GROUND
LEVEL) (SAN FRANCISCO AND SAN MATEO COUNTIES).....$ 45.66
27.72
TUNNEL AND SHAFT LABORERS: GROUP 1 DIAMOND DRILLER;
GROUNDMEN; GUNITE AND SHOTCRETE NOZZLEMEN (SAN
FRANCISCO AND SAN MATEO COUNTIES).....$ 45.89
27.72

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LABO0261-009 06/26/2023

	Rates	Fringes
LABORERS:, GUNITE - AREA A:: GROUP 1 (SAN FRANCISCO, AND SAN MATEO COUNTIES)	$ 37.46	27.30
LABORERS:, GUNITE - AREA A: GROUP 4 GUNITE LABORER (SAN FRANCISCO, AND SAN MATEO COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.	$ 36.25	27.30
LABORERS:, GUNITE - AREA A: GROUP 3 REBOUNDMAN (SAN FRANCISCO, AND SAN MATEO COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.	$ 36.37	27.30
LABORERS:, GUNITE - AREA A: GROUP 2 NOZZLEMAN, GUNMAN, POTMAN, GROUNDMAN (SAN FRANCISCO, AND SAN MATEO COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.	$ 36.96	27.30
LABORER: GARDENERS, HORTICULTURAL & LANDSCAPE LABORERS - AREA A: (SAN FRANCISCO, AND SAN MATEO COUNTIES)- (2) Establishment Warranty Period	$ 29.94	27.30
LABORER: GARDENERS, HORTICULTURAL & LANDSCAPE LABORERS - AREA A: (SAN FRANCISCO, AND SAN MATEO COUNTIES)- (1) New Construction	$ 36.25	27.30
LABORER, WRECKING - AREA A:: GROUP 1 (SAN FRANCISCO, AND SAN MATEO COUNTIES)	$ 36.50	27.30
LABORER, WRECKING - AREA A: GROUP 2 Semi-skilled wrecker (salvaging of other building materials) (SAN FRANCISCO, AND SAN MATEO COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.	$ 36.35	27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A:		

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GROUP 4 FINAL CLEAN-UP WORK OF DEBRIS, GROUNDS AND BUILDING INCLUDING BUT NOT LIMITED TO: STREET CLEANER; CLEANING AND WASHING WINDOWS; BRICK CLEANER (JOBSITE ONLY); MATERIAL CLEANER (JOBSITE ONLY). THE CLASSIFICATION ""MATERIAL CLEANER"" IS TO BE UTILIZED UNDER THE FOLLOWING CONDITIONS: A: AT DEMOLITION SITE FOR THE SALVAGE OF THE MATERIAL. B: AT THE CONCLUSION OF A JOB WHERE THE MATERIAL IS TO BE SALVAGED AND STOCKED TO BE REUSED ON ANOTHER JOB. C: FOR THE CLEANING OF SALVAGE MATERIAL AT THE JOBSITE OR TEMPORARY JOBSITE YARD. THE MATERIAL CLEANER CLASSIFICATION SHOULD NOT BE USED IN THE PERFORMANCE OF ""FORM STRIPPING, CLEANING AND OILING AND MOVING TO THE NEXT POINT OF ERECTION"". (SAN FRANCISCO, AND SAN MATEO COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 29.94
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A: GROUP 3 CONSTRUCTION LABORERS, INCLUDING BRIDGE AND GENERAL LABORER; DUMP, LOAD SPOTTER; FLAG PERSON; FIRE WATCHER; FENCE ERECTOR; GUARDRAIL ERECTOR; GARDENER, HORTICULTURAL AND LANDSCAPE LABORER; JETTING; LIMBER, BRUSH LOADER AND PILER; PAVEMENT MARKER (BUTTON SETTER); MAINTENANCE, REPAIR TRACK AND ROAD BEDS; STREETCAR AND RAILROAD CONSTRUCTION TRACK LABORER; TEMPORARY AIR AND WATER LINES, VICTAULIC OR SIMILAR; TOOL ROOM ATTENDANT (JOBSITE ONLY) (SAN FRANCISCO, AND SAN MATEO COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO

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RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.
SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES.
MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 36.25
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A:
GROUP 2 ASPHALT SHOVELER; CEMENT DUMPER AND HANDLING DRY CEMENT OR GYPSUM; CHOKE-SETTER AND RIGGER (CLEARING WORK); CONCRETE BUCKET DUMPER AND CHUTE; CONCRETE CHIPPING AND GRINDING; CONCRETE LABORER (WET OR DRY); DRILLER TENDER, CHUCK TENDER, NIPPER; GUINEA CHASER (STAKE), GROUT CREW; HIGH PRESSURE NOZZLE, ADDUCTOR; HYDRAULIC MONITOR (OVER 100 LBS. PRESSURE); LOADING AND UNLOADING, CARRYING AND HAULING OF ALL RODS AND MATERIALS FOR USE IN REINFORCING CONCRETE CONSTRUCTION; PITTSBURGH CHIPPER AND SIMILAR TYPE BRUSH SHREDDERS; SLOPER; SINGLE FOOT, HAND-HELD, PNEUMATIC TAMPER; ALL PNEUMATIC, AIR, GAS AND ELECTRIC TOOLS NOT LISTED IN GROUPS 1 THROUGH 1-F; JACKING OF PIPE - UNDER 12 INCHES (SAN FRANCISCO, AND SAN MATEO COUNTIES)
FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.
SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES.
MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY

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COVER HAS BEEN PLACED.....$ 36.35
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A:
GROUP 1-E WORK ON AND/OR IN BELL HOLE FOOTINGS AND SHAFTS THEREOF, AND WORK ON AND IN DEEP FOOTINGS. (A DEEP FOOTING IS A HOLE 15 FEET OR MORE IN DEPTH.) IN THE EVENT THE DEPTH OF THE FOOTING IS UNKNOWN AT THE COMMENCEMENT OF EXCAVATION, AND THE FINAL DEPTH EXCEEDS 15 FEET, THE DEEP FOOTING WAGE RATE WOULD APPLY TO ALL EMPLOYEES FOR EACH AND EVERY DAY WORKED ON OR IN THE EXCAVATION OF THE FOOTING FROM THE DATE OF INCEPTION. (SAN FRANCISCO, AND SAN MATEO COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 37.05
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A:
GROUP 1-C BURNING AND WELDING IN CONNECTION WITH LABORERS' WORK; SYNTHETIC THERMOPLASTICS AND SIMILAR TYPE WELDING (SAN FRANCISCO, AND SAN MATEO COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR

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REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 36.55
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A: GROUP 1-A JOY DRILL MODEL TWM-2A; GARDNER-DENVER MODEL DH143 AND SIMILAR TYPE DRILLS; TRACK DRILLER; JACK LEG DRILLER; WAGON DRILLER; MECHANICAL DRILLERS, ALL TYPES REGARDLESS OF TYPE OR METHOD OF POWER; MECHANICAL PIPE LAYERS, ALL TYPES REGARDLESS OF TYPE OR METHOD OF POWER; BLASTER AND POWDER; ALL WORK OF LOADING, PLACING AND BLASTING OF ALL POWDER AND EXPLOSIVES OF WHATEVER TYPE REGARDLESS OF METHOD USED FOR SUCH LOADING AND PLACING; HIGH SCALERS (INCLUDING DRILLING OF SAME); TREE TOPPER; BIT GRINDER (SAN FRANCISCO, AND SAN MATEO COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 36.72
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A: GROUP 1- ASPHALT SPREADER BOXES (ALL TYPES); BARKO, WACKER AND SIMILAR TYPE TAMPERS; BUGGYMOBILE; CAULKER, BANDER, PIPEWRAPPER, CONDUIT LAYER, PLASTIC PIPELAYER; CERTIFIED HAZARDOUS WASTE WORKER INCLUDING LEADE ABATEMENT; COMPACTORS OF ALL TYPES; CONCRETE AND MAGNESITE MIXER, 1/2 YD. AND UNDER; CONCRETE PAN WORK; CONCRETE SANDER; CONCRETE SAW; CRIBBER AND/OR SHORING; CUT GRANITE CURB SETTER; DRI-PAK-IT MACHINE; FALLER, LOGLOADER AND BUCKER; FORM RAISER, SLIP FORMS; GREEN CUTTER; HEADERBOARD, HUBSETTER, ALIGNER, BY ANY METHOD; HIGH PRESSURE BLOW PIPE (1-1/2"" OR OVER, 100 LBS. PRESSURE/OVER);

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HYDRO SEEDER AND SIMILAR TYPE; JACKHAMMER OPERATOR; JACKING OF PIPE OVER 12 INCHES; JACKSON AND SIMILAR TYPE COMPACTOR; KETTLE TENDER, POT AND WORKER APPLYING ASPHALT, LAY-KOLD, CREOSOTE, LIME, CAUSTIC AND SIMILAR TYPE MATERIALS (APPLYING MEANS APPLYING, DIPPING OR HANDLING OF SUCH MATERIALS); LAGGING, SHEETING, WHALING, BRACING, TRENCHJACKING, LAGGING HAMMER; MAGNESITE, EPOXYRESIN, FIBERGLASS, MASTIC WORKER (WET OR DRY); NO JOINT PIPE AND STRIPPING OF SAME, INCLUDING REPAIR OF VOIDS; PAVEMENT BREAKER AND SPADER, INCLUDING TOOL GRINDER; PERMA CURB; PIPELAYER (INCLUDING GRADE CHECKING IN CONNECTION WITH PIPELAYING); PRECAST-MANHOLE SETTER; PRESSURE PIPE TESTER; POST HOLE DIGGER, AIR, GAS AND ELECTRIC; POWER BROOM SWEEPER; POWER TAMPERS OF ALL TYPES (EXCEPT AS SHOWN IN GROUP 2); RAM SET GUN AND STUD GUN; RIPRAP STONEPAVER AND ROCK-SLINGER, INCLUDING PLACING OF SACKED CONCRETE AND/OR SAND (WET OR DRY) AND GABIONS AND SIMILAR TYPE; ROTARY SCARIFIER OR MULTIPLE HEAD CONCRETE CHIPPING SCARIFIER; ROTO AND DITCH WITCH; ROTOTILLER; SANDBLASTER, POT, GUN, NOZZLE OPERATORS; SIGNALLING AND RIGGING; TANK CLEANER; TREE CLIMBER; TURBO BLASTER; VIBRASCREED, BULL FLOAT IN CONNECTION WITH LABORERS' WORK; VIBRATOR; HAZARDOUS WASTE WORKER (LEAD REMOVAL); ASBESTOS AND MOLD REMOVAL WORKER SAN FRANCISCO, AND SAN MATEO COUNTIES FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED. .....$ 36.50
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A: CONSTRUCTION SPECIALIST GROUP ASPHALT IRONER AND RAKER; CHAINSAW; LASER BEAM IN CONNECTION WITH LABORERS' WORK; CAST-IN- PLACE MANHOLE FORM SETTER;

SOLICITATION

PRESSURE PIPELAYER; DAVIS TRENCHER - 300 OR SIMILAR
TYPE (AND ALL SMALL TRENCHERS); BLASTER; DIAMOND
DRILLER; MULTIPLE UNIT DRILL; HYDRAULIC DRILL
(SAN FRANCISCO, AND SAN MATEO COUNTIES)
FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM
BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL
RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE
RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO
RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.
SEWER CLEANERS SHALL RECEIVE $4.00 PER
DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER""
MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT
WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE
WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER
SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL
RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES.
MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL
EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL
RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR
ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT
SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL
NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND
LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER
WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY
COVER HAS BEEN PLACED.....$ 37.20
27.30

LABO0261-011 07/01/2023

Rates
Fringes
MASON TENDER, BRICK SAN FRANCISCO AND SAN MATEO
COUNTIES FOOTNOTES: UNDERGROUND WORK SUCH AS
SEWERS, MANHOLES, CATCH BASINS, SEWER PIPES,
TELEPHONE CONDUITS, TUNNELS AND CUT TRENCHES: $5.00
PER DAY ADDITIONAL. WORK IN LIVE SEWAGE: $2.50 PER
DAY ADDITIONAL.....$ 37.05
27.45

LABO0261-014 07/01/2023

Rates
Fringes
PLASTER TENDER (SAN FRANCISCO AND SAN MATEO
COUNTIES) WORK ON A SWING STAGE SCAFFOLD: $1.00
PER HOUR ADDITIONAL.....$ 41.93
30.32

LABO0270-003 07/01/2023

Rates
Fringes
LABORER, TRAFFIC CONTROL/LANE CLOSURE: TRAFFIC

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CONTROL PERSON II (Area B).....$ 34.06
27.30
LABORER, TRAFFIC CONTROL/LANE CLOSURE: TRAFFIC
CONTROL PERSON II (Area A).....$ 35.06
27.30
LABORER, TRAFFIC CONTROL/LANE CLOSURE: TRAFFIC
CONTROL PERSON I (Area B).....$ 36.56
27.30
LABORER, TRAFFIC CONTROL/LANE CLOSURE: TRAFFIC
CONTROL PERSON I (Area A).....$ 37.56
27.30
LABORER, TRAFFIC CONTROL/LANE CLOSURE: ESCORT
DRIVER, FLAG PERSON (Area B).....$ 36.26
27.30
LABORER, TRAFFIC CONTROL/LANE CLOSURE: ESCORT
DRIVER, FLAG PERSON (Area A).....$ 37.26
27.30

LABO0270-004 06/26/2023

Rates
Fringes
TUNNEL AND SHAFT LABORERS: SHOTCRETE SPECIALIST
(MONTEREY, SAN BENITO, SANTA CLARA, AND SANTA CRUZ
COUNTIES).....$ 46.41
27.72
TUNNEL AND SHAFT LABORERS: GROUP 5 GROUT CREW;
REBOUNDMAN; SWAMPER/ BRAKEMAN (MONTEREY, SAN
BENITO, SANTA CLARA, AND SANTA CRUZ COUNTIES).....$ 44.42
27.72
TUNNEL AND SHAFT LABORERS: GROUP 4 VIBRATOR
OPERATOR, PAVEMENT BREAKER; BULL GANG - MUCKERS,
TRACKMEN; CONCRETE CREW - INCLUDES RODDING AND
SPREADING, DUMPMEN (ANY METHOD) (MONTEREY, SAN
BENITO, SANTA CLARA, AND SANTA CRUZ COUNTIES).....$ 44.96
27.72
TUNNEL AND SHAFT LABORERS: GROUP 3 BIT GRINDER;
BLASTER, DRILLER, POWDERMEN, HEADING; CHERRY
PICKERMEN - WHERE CAR IS LIFTED; CONCRETE FINISHER
IN TUNNEL; CONCRETE SCREEDMAN; GROUT PUMPMAN AND
POTMAN; GUNITE & SHOTCRETE GUNMAN & POTMAN;
HEADERMEN; HIGH PRESSURE NOZZLEMAN; MINER - TUNNEL,
INCLUDING TOP AND BOTTOM MAN ON SHAFT AND RAISE
WORK; NIPPER; NOZZLEMAN ON SLICK LINE; SANDBLASTER
- POTMAN, ROBOTIC SHOTCRETE PLACER, SEGMENT
ERECTOR, TUNNEL MUCK HAULER, STEEL FORM RAISER AND
SETTER; TIMBERMAN, RETIMBERMAN (WOOD OR STEEL OR
SUBSTITUTE MATERIALS THEREFORE); TUGGER (FOR TUNNEL
LABORER WORK); CABLE TENDER; CHUCK TENDER;
POWDERMAN - PRIMER HOUSE (MONTEREY, SAN BENITO,
SANTA CLARA, AND SANTA CRUZ COUNTIES).....$ 45.41
27.72
TUNNEL AND SHAFT LABORERS: GROUP 2 RODMEN; SHAFT
WORK & RAISE (BELOW ACTUAL OR EXCAVATED GROUND

SOLICITATION

LEVEL) (MONTEREY, SAN BENITO, SANTA CLARA, AND
SANTA CRUZ COUNTIES).....$ 45.66
27.72
TUNNEL AND SHAFT LABORERS: GROUP 1: DIAMOND
DRILLER; GROUNDMEN; GUNITE AND SHOTCRETE NOZZLEMEN
(MONTEREY, SAN BENITO, SANTA CLARA, AND SANTA CRUZ
COUNTIES).....$ 45.89
27.72

LABO0270-005 07/01/2023

Rates
Fringes
LABORER: MASON TENDER-BRICK (MONTEREY AND SAN
BENITO COUNTIES).....$ 36.29
25.55

LABO0270-007 06/26/2023

Rates
Fringes
LABORER: GARDENERS, HORTICULTURAL & LANDSCAPE
LABORERS - AREA B (MONTEREY, SAN BENITO AND SANTA
CRUZ COUNTIES)- (2) Establishment Warranty Period...$ 28.94
27.30
LABORER: GARDENERS, HORTICULTURAL & LANDSCAPE
LABORERS - AREA B (MONTEREY, SAN BENITO AND SANTA
CRUZ COUNTIES)- (1) New Construction.....$ 35.25
27.30
LABORER, WRECKING - AREA B: GROUP 2 Semi-skilled
wrecker (salvaging of other building materials)
(MONTEREY, SAN BENITO AND SANTA CRUZ COUNTIES)
FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM
BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL
RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE
RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO
RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW..$ 35.35
27.30
LABORER, WRECKING - AREA B: GROUP 1 (MONTEREY, SAN
BENITO AND SANTA CRUZ COUNTIES).....$ 35.50
27.30
LABORER, GUNITE - AREA B: GROUP 4 GUNITE LABORER
(MONTEREY, SAN BENITO AND SANTA CRUZ COUNTIES)
FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM
BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL
RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE
RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO
RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW..$ 35.25
27.30
LABORER, GUNITE - AREA B: GROUP 3REBOUNDMAN
(MONTEREY, SAN BENITO AND SANTA CRUZ COUNTIES)
FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM
BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL
RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE

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RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW..$ 35.37
27.30
LABORER, GUNITE - AREA B: GROUP 2 NOZZLEMAN, GUNMAN, POTMAN, GROUNDMAN (MONTEREY, SAN BENITO AND SANTA CRUZ COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.....$ 35.96
27.30
LABORER, GUNITE - AREA B: GROUP 1 (MONTEREY, SAN BENITO AND SANTA CRUZ COUNTIES).....$ 36.46
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B: GROUP 4 (MONTEREY, SAN BENITO AND SANTA CRUZ COUNTIES) FINAL CLEAN-UP WORK OF DEBRIS, GROUNDS AND BUILDING INCLUDING BUT NOT LIMITED TO: STREET CLEANER; CLEANING AND WASHING WINDOWS; BRICK CLEANER (JOBSITE ONLY); MATERIAL CLEANER (JOBSITE ONLY). THE CLASSIFICATION ""MATERIAL CLEANER"" IS TO BE UTILIZED UNDER THE FOLLOWING CONDITIONS: A: AT DEMOLITION SITE FOR THE SALVAGE OF THE MATERIAL. B: AT THE CONCLUSION OF A JOB WHERE THE MATERIAL IS TO BE SALVAGED AND STOCKED TO BE REUSED ON ANOTHER JOB. C: FOR THE CLEANING OF SALVAGE MATERIAL AT THE JOBSITE OR TEMPORARY JOBSITE YARD. THE MATERIAL CLEANER CLASSIFICATION SHOULD NOT BE USED IN THE PERFORMANCE OF ""FORM STRIPPING, CLEANING AND OILING AND MOVING TO THE NEXT POINT OF ERECTION"". (MONTEREY, SAN BENITO AND SANTA CRUZ COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE

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TEMPORARY COVER HAS BEEN PLACED.....$ 28.94
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B:
GROUP 3 CONSTRUCTION LABORERS, INCLUDING BRIDGE
AND GENERAL LABORER; DUMP, LOAD SPOTTER; FLAG
PERSON; FIRE WATCHER; FENCE ERECTOR; GUARDRAIL
ERECTOR; GARDENER, HORTICULTURAL AND LANDSCAPE
LABORER; JETTING; LIMBER, BRUSH LOADER AND PILER;
PAVEMENT MARKER (BUTTON SETTER); MAINTENANCE,
REPAIR TRACK AND ROAD BEDS; STREETCAR AND RAILROAD
CONSTRUCTION TRACK LABORER; TEMPORARY AIR AND WATER
LINES, VICTAULIC OR SIMILAR; TOOL ROOM ATTENDANT
(JOBSITE ONLY) (MONTEREY, SAN BENITO AND SANTA
CRUZ COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR
WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS,
BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE
APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO
WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH
IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE
$4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER
CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN
CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS.
THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE
DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER
MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1
WAGE RATES. MAINTENANCE AND REPAIR TRACK AND
ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED
HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR
REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND
STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS
PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK
BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO
CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE
TEMPORARY COVER HAS BEEN PLACED.....$ 35.25
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B:
GROUP 2 ASPHALT SHOVELER; CEMENT DUMPER AND
HANDLING DRY CEMENT OR GYPSUM; CHOKE-SETTER AND
RIGGER (CLEARING WORK); CONCRETE BUCKET DUMPER AND
CHUTE; CONCRETE CHIPPING AND GRINDING; CONCRETE
LABORER (WET OR DRY); DRILLER TENDER, CHUCK TENDER,
NIPPER; GUINEA CHASER (STAKE), GROUT CREW; HIGH
PRESSURE NOZZLE, ADDUCTOR; HYDRAULIC MONITOR (OVER
100 LBS. PRESSURE); LOADING AND UNLOADING, CARRYING
AND HAULING OF ALL RODS AND MATERIALS FOR USE IN
REINFORCING CONCRETE CONSTRUCTION; PITTSBURGH
CHIPPER AND SIMILAR TYPE BRUSH SHREDDERS; SLOPER;
SINGLE FOOT, HAND-HELD, PNEUMATIC TAMPER; ALL
PNEUMATIC, AIR, GAS AND ELECTRIC TOOLS NOT LISTED
IN GROUPS 1 THROUGH 1-F; JACKING OF PIPE - UNDER 12
INCHES (MONTEREY, SAN BENITO AND SANTA CRUZ
COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR
WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS,
BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE

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APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 35.35
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B:
GROUP 1-F WIRE WINDING MACHINE IN CONNECTION WITH GUNITING OR SHOT CRETE (MONTEREY, SAN BENITO AND SANTA CRUZ COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 36.08
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B:
GROUP 1-E WORK ON AND/OR IN BELL HOLE FOOTINGS AND SHAFTS THEREOF, AND WORK ON AND IN DEEP FOOTINGS. (A DEEP FOOTING IS A HOLE 15 FEET OR MORE IN DEPTH.) IN THE EVENT THE DEPTH OF THE FOOTING IS UNKNOWN AT THE COMMENCEMENT OF EXCAVATION, AND THE FINAL DEPTH EXCEEDS 15 FEET, THE DEEP FOOTING WAGE RATE WOULD APPLY TO ALL EMPLOYEES FOR EACH AND EVERY DAY WORKED ON OR IN THE EXCAVATION OF THE FOOTING FROM THE DATE OF INCEPTION. (MONTEREY, SAN

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BENITO AND SANTA CRUZ COUNTIES) FOOTNOTES:
LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS,
SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER
HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL
NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE
RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS
SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE
RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO
HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN
SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE
RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL
RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00
PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE
AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES
PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25
PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK
PERFORMED ON UNDERGROUND STRUCTURES NOT
SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL
NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND
LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER
WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY
COVER HAS BEEN PLACED.....$ 36.05
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B:
GROUP 1-C BURNING AND WELDING IN CONNECTION WITH
LABORERS' WORK; SYNTHETIC THERMOPLASTICS AND
SIMILAR TYPE WELDING (MONTEREY, SAN BENITO AND
SANTA CRUZ COUNTIES) FOOTNOTES: LABORERS WORKING
OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING
SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE
THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO
WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH
IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE
$4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER
CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN
CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS.
THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE
DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER
MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1
WAGE RATES. MAINTENANCE AND REPAIR TRACK AND
ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED
HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR
REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND
STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS
PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK
BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO
CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE
TEMPORARY COVER HAS BEEN PLACED.....$ 35.55
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B:
GROUP 1-A JOY DRILL MODEL TWM-2A; GARDNER-DENVER
MODEL DH143 AND SIMILAR TYPE DRILLS; TRACK DRILLER;
JACK LEG DRILLER; WAGON DRILLER; MECHANICAL
DRILLERS, ALL TYPES REGARDLESS OF TYPE OR METHOD OF

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POWER; MECHANICAL PIPE LAYERS, ALL TYPES REGARDLESS OF TYPE OR METHOD OF POWER; BLASTER AND POWDER; ALL WORK OF LOADING, PLACING AND BLASTING OF ALL POWDER AND EXPLOSIVES OF WHATEVER TYPE REGARDLESS OF METHOD USED FOR SUCH LOADING AND PLACING; HIGH SCALERS (INCLUDING DRILLING OF SAME); TREE TOPPER; BIT GRINDER (MONTEREY, SAN BENITO AND SANTA CRUZ COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 35.72
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B:
GROUP 1- LABORER CLASSIFICATIONS CONSTRUCTION SPECIALIST GROUP: ASPHALT IRONER AND RAKER; CHAINSAW; LASER BEAM IN CONNECTION WITH LABORERS' WORK; CAST-IN- PLACE MANHOLE FORM SETTER; PRESSURE PIPELAYER; DAVIS TRENCHER - 300 OR SIMILAR TYPE (AND ALL SMALL TRENCHERS); BLASTER; DIAMOND DRILLER; MULTIPLE UNIT DRILL; HYDRAULIC DRILL.
GROUP 1: ASPHALT SPREADER BOXES (ALL TYPES); BARKO, WACKER AND SIMILAR TYPE TAMPERS; BUGGYMOBILE; CAULKER, BANDER, PIPEWRAPPER, CONDUIT LAYER, PLASTIC PIPELAYER; CERTIFIED HAZARDOUS WASTE WORKER INCLUDING LEADE ABATEMENT; COMPACTORS OF ALL TYPES; CONCRETE AND MAGNESITE MIXER, 1/2 YD. AND UNDER; CONCRETE PAN WORK; CONCRETE SANDER; CONCRETE SAW; CRIBBER AND/OR SHORING; CUT GRANITE CURB SETTER; DRI-PAK-IT MACHINE; FALLER, LOGLOADER AND BUCKER; FORM RAISER, SLIP FORMS; GREEN CUTTER; HEADERBOARD, HUBSETTER, ALIGNER, BY ANY METHOD; HIGH PRESSURE BLOW PIPE (1-1/2"" OR OVER, 100 LBS. PRESSURE/OVER); HYDRO SEEDER AND SIMILAR TYPE; JACKHAMMER OPERATOR; JACKING OF PIPE OVER 12 INCHES; JACKSON AND SIMILAR TYPE COMPACTOR; KETTLE TENDER, POT AND WORKER APPLYING ASPHALT, LAY-KOLD, CREOSOTE, LIME, CAUSTIC AND SIMILAR TYPE MATERIALS (APPLYING MEANS

SOLICITATION

APPLYING, DIPPING OR HANDLING OF SUCH MATERIALS); LAGGING, SHEETING, WHALING, BRACING, TRENCHJACKING, LAGGING HAMMER; MAGNESITE, EPOXYRESIN, FIBERGLASS, MASTIC WORKER (WET OR DRY); NO JOINT PIPE AND STRIPPING OF SAME, INCLUDING REPAIR OF VOIDS; PAVEMENT BREAKER AND SPADER, INCLUDING TOOL GRINDER; PERMA CURB; PIPELAYER (INCLUDING GRADE CHECKING IN CONNECTION WITH PIPELAYING); PRECAST-MANHOLE SETTER; PRESSURE PIPE TESTER; POST HOLE DIGGER, AIR, GAS AND ELECTRIC; POWER BROOM SWEEPER; POWER TAMPERS OF ALL TYPES (EXCEPT AS SHOWN IN GROUP 2); RAM SET GUN AND STUD GUN; RIPRAP STONEPAVER AND ROCK-SLINGER, INCLUDING PLACING OF SACKED CONCRETE AND/OR SAND (WET OR DRY) AND GABIONS AND SIMILAR TYPE; ROTARY SCARIFIER OR MULTIPLE HEAD CONCRETE CHIPPING SCARIFIER; ROTO AND DITCH WITCH; ROTOTILLER; SANDBLASTER, POT, GUN, NOZZLE OPERATORS; SIGNALLING AND RIGGING; TANK CLEANER; TREE CLIMBER; TURBO BLASTER; VIBRASCREED, BULL FLOAT IN CONNECTION WITH LABORERS' WORK; VIBRATOR; HAZARDOUS WASTE WORKER (LEAD REMOVAL); ASBESTOS AND MOLD REMOVAL WORKER (MONTEREY, SAN BENITO AND SANTA CRUZ COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED. .....$ 35.50 27.30

LABORER, CONSTRUCTION CRAFT LABORERS - AREA B: CONSTRUCTION SPECIALIST GROUP ASPHALT IRONER AND RAKER; CHAINSAW; LASER BEAM IN CONNECTION WITH LABORERS' WORK; CAST-IN- PLACE MANHOLE FORM SETTER; PRESSURE PIPELAYER; DAVIS TRENCHER - 300 OR SIMILAR TYPE (AND ALL SMALL TRENCHERS); BLASTER; DIAMOND DRILLER; MULTIPLE UNIT DRILL; HYDRAULIC DRILL MONTEREY, SAN BENITO AND SANTA CRUZ COUNTIES FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM

SOLICITATION

BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.
SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES.
MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 36.20
27.30

LABO0270-010 06/26/2023

Rates
Fringes
LABORER: GARDENERS, HORTICULTURAL & LANDSCAPE LABORERS - AREA A: (SANTA CLARA COUNTY)- (2) Establishment Warranty Period.....$ 29.94
27.30
LABORER: GARDENERS, HORTICULTURAL & LANDSCAPE LABORERS - AREA A: (SANTA CLARA COUNTY)- (1) New Construction.....$ 36.25
27.30
LABORER, WRECKING - AREA A:: GROUP 2 Semi-skilled wrecker (salvaging of other building materials) (SANTA CLARA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.....$ 36.35
27.30
LABORER, WRECKING - AREA A:: GROUP 1 (SANTA CLARA COUNTY).....$ 36.50
27.30
LABORER, GUNITE - AREA A:: GROUP 1 (SANTA CLARA COUNTY).....$ 37.46
27.30
LABORER, GUNITE - AREA A: GROUP 4 GUNITE LABORER (SANTA CLARA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO

SOLICITATION

WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH
IN GROUP 1-A BELOW.....$ 36.25
27.30
LABORER, GUNITE - AREA A: GROUP 3 REBOUNDMAN
(SANTA CLARA COUNTY) FOOTNOTES: LABORERS WORKING
OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING
SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE
THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO
WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH
IN GROUP 1-A BELOW.....$ 36.37
27.30
LABORER, GUNITE - AREA A: GROUP 2 NOZZLEMAN,
GUNMAN, POTMAN, GROUNDMAN (SANTA CLARA COUNTY)
FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM
BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL
RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE
RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO
RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW..$ 36.96
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A::
GROUP 1 (SANTA CLARA COUNTY).....$ 36.50
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A:
GROUP 4 FINAL CLEAN-UP WORK OF DEBRIS, GROUNDS AND
BUILDING INCLUDING BUT NOT LIMITED TO: STREET
CLEANER; CLEANING AND WASHING WINDOWS; BRICK
CLEANER (JOBSITE ONLY); MATERIAL CLEANER (JOBSITE
ONLY). THE CLASSIFICATION ""MATERIAL CLEANER"" IS TO
BE UTILIZED UNDER THE FOLLOWING CONDITIONS:
A: AT DEMOLITION SITE FOR THE SALVAGE OF THE
MATERIAL. B: AT THE CONCLUSION OF A JOB WHERE
THE MATERIAL IS TO BE SALVAGED AND STOCKED TO BE
REUSED ON ANOTHER JOB. C: FOR THE CLEANING OF
SALVAGE MATERIAL AT THE JOBSITE OR TEMPORARY
JOBSITE YARD. THE MATERIAL CLEANER
CLASSIFICATION SHOULD NOT BE USED IN THE
PERFORMANCE OF ""FORM STRIPPING, CLEANING AND
OILING AND MOVING TO THE NEXT POINT OF ERECTION"".
(SANTA CLARA COUNTY) FOOTNOTES:
LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS,
SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER
HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL
NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE
RATE SET FORTH IN GROUP 1-A BELOW. SEWER
CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1
WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO
HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN
SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE
RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL
RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00
PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE
AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES
PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25
PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK

SOLICITATION

PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 29.94
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A: GROUP 3 CONSTRUCTION LABORERS, INCLUDING BRIDGE AND GENERAL LABORER; DUMP, LOAD SPOTTER; FLAG PERSON; FIRE WATCHER; FENCE ERECTOR; GUARDRAIL ERECTOR; GARDENER, HORTICULTURAL AND LANDSCAPE LABORER; JETTING; LIMBER, BRUSH LOADER AND PILER; PAVEMENT MARKER (BUTTON SETTER); MAINTENANCE, REPAIR TRACK AND ROAD BEDS; STREETCAR AND RAILROAD CONSTRUCTION TRACK LABORER; TEMPORARY AIR AND WATER LINES, VICTAULIC OR SIMILAR; TOOL ROOM ATTENDANT (JOBSITE ONLY) (SANTA CLARA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 36.25
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A: GROUP 2 ASPHALT SHOVELER; CEMENT DUMPER AND HANDLING DRY CEMENT OR GYPSUM; CHOKE-SETTER AND RIGGER (CLEARING WORK); CONCRETE BUCKET DUMPER AND CHUTE; CONCRETE CHIPPING AND GRINDING; CONCRETE LABORER (WET OR DRY); DRILLER TENDER, CHUCK TENDER, NIPPER; GUINEA CHASER (STAKE), GROUT CREW; HIGH PRESSURE NOZZLE, ADDUCTOR; HYDRAULIC MONITOR (OVER 100 LBS. PRESSURE); LOADING AND UNLOADING, CARRYING AND HAULING OF ALL RODS AND MATERIALS FOR USE IN REINFORCING CONCRETE CONSTRUCTION; PITTSBURGH CHIPPER AND SIMILAR TYPE BRUSH SHREDDERS; SLOPER; SINGLE FOOT, HAND-HELD, PNEUMATIC TAMPER; ALL PNEUMATIC, AIR, GAS AND ELECTRIC TOOLS NOT LISTED IN GROUPS 1 THROUGH 1-F; JACKING OF PIPE - UNDER 12

SOLICITATION

INCHES (SANTA CLARA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 36.35
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A: GROUP 1-F WIRE WINDING MACHINE IN CONNECTION WITH GUNITING OR SHOT CRETE (SANTA CLARA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 37.08
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A: GROUP 1-E WORK ON AND/OR IN BELL HOLE FOOTINGS AND SHAFTS THEREOF, AND WORK ON AND IN DEEP FOOTINGS. (A DEEP FOOTING IS A HOLE 15 FEET OR MORE IN DEPTH.) IN THE EVENT THE DEPTH OF THE FOOTING IS UNKNOWN AT THE COMMENCEMENT OF EXCAVATION, AND THE FINAL DEPTH EXCEEDS 15 FEET, THE DEEP FOOTING WAGE

SOLICITATION

RATE WOULD APPLY TO ALL EMPLOYEES FOR EACH AND EVERY DAY WORKED ON OR IN THE EXCAVATION OF THE FOOTING FROM THE DATE OF INCEPTION. (SANTA CLARA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 37.05
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A:
GROUP 1-C BURNING AND WELDING IN CONNECTION WITH LABORERS' WORK; SYNTHETIC THERMOPLASTICS AND SIMILAR TYPE WELDING (SANTA CLARA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.
SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 36.55
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A:
GROUP 1-A JOY DRILL MODEL TWM-2A; GARDNER-DENVER MODEL DH143 AND SIMILAR TYPE DRILLS; TRACK DRILLER;

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JACK LEG DRILLER; WAGON DRILLER; MECHANICAL DRILLERS, ALL TYPES REGARDLESS OF TYPE OR METHOD OF POWER; MECHANICAL PIPE LAYERS, ALL TYPES REGARDLESS OF TYPE OR METHOD OF POWER; BLASTER AND POWDER; ALL WORK OF LOADING, PLACING AND BLASTING OF ALL POWDER AND EXPLOSIVES OF WHATEVER TYPE REGARDLESS OF METHOD USED FOR SUCH LOADING AND PLACING; HIGH SCALERS (INCLUDING DRILLING OF SAME); TREE TOPPER; BIT GRINDER (SANTA CLARA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 36.72
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A: CONSTRUCTION SPECIALIST GROUP ASPHALT IRONER AND RAKER; CHAINSAW; LASER BEAM IN CONNECTION WITH LABORERS' WORK; CAST-IN- PLACE MANHOLE FORM SETTER; PRESSURE PIPELAYER; DAVIS TRENCHER - 300 OR SIMILAR TYPE (AND ALL SMALL TRENCHERS); BLASTER; DIAMOND DRILLER; MULTIPLE UNIT DRILL; HYDRAULIC DRILL (SANTA CLARA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND

SOLICITATION

STRUCTURES NOT SPECIFICALLY COVERED.....$ 37.20
27.30

LABO0270-011 07/01/2023

Rates
Fringes
LABORER, PLASTER TENDER (MONTEREY, SAN BENITO,
SANTA CRUZ, SANTA CLARA COUNTIES) WORK ON A SWING
STAGE SCAFFOLD: $1.00 PER HOUR ADDITIONAL.....$ 40.68
29.68

LABO0294-001 07/01/2023

Rates
Fringes
LABORER, BRICK: MASON TENDER-BRICK (FRESNO, KINGS
AND MADERA COUNTIES).....$ 36.29
25.55

LABO0294-002 07/01/2023

Rates
Fringes
LABORER, TRAFFIC CONTROL/LANE CLOSURE: TRAFFIC
CONTROL PERSON II INSTALLATION AND REMOVAL OF
TEMPORARY/PERMANENT SIGNS, MARKERS, DELINEATORS AND
CRASH CUSHIONS. (FRESNO, KINGS, AND MADERA
COUNTIES).....$ 34.06
27.30
LABORER, TRAFFIC CONTROL/LANE CLOSURE: TRAFFIC
CONTROL PERSON I LAYOUT OF TRAFFIC CONTROL, CRASH
CUSHIONS, CONSTRUCTION AREA AND ROADSIDE SIGNAGE.
(FRESNO, KINGS, AND MADERA COUNTIES).....$ 36.56
27.30
LABORER, TRAFFIC CONTROL/LANE CLOSURE: ESCORT
DRIVER, FLAG PERSON (FRESNO, KINGS, AND MADERA
COUNTIES).....$ 36.26
27.30

LABO0294-005 06/26/2023

Rates
Fringes
TUNNEL AND SHAFT LABORERS:, GROUP 3 BIT GRINDER;
BLASTER, DRILLER, POWDERMEN, HEADING; CHERRY
PICKERMEN - WHERE CAR IS LIFTED; CONCRETE FINISHER
IN TUNNEL; CONCRETE SCREEDMAN; GROUT PUMPMAN AND
POTMAN; GUNITE & SHOTCRETE GUNMAN & POTMAN;
HEADERMEN; HIGH PRESSURE NOZZLEMAN; MINER - TUNNEL,
INCLUDING TOP AND BOTTOM MAN ON SHAFT AND RAISE
WORK; NIPPER; NOZZLEMAN ON SLICK LINE; SANDBLASTER
- POTMAN, ROBOTIC SHOTCRETE PLACER, SEGMENT
ERECTOR, TUNNEL MUCK HAULER, STEEL FORM RAISER AND

SOLICITATION

SETTER; TIMBERMAN, RETIMBERMAN (WOOD OR STEEL OR
SUBSTITUTE MATERIALS THEREFORE); TUGGER (FOR TUNNEL
LABORER WORK); CABLE TENDER; CHUCK TENDER;
POWDERMAN - PRIMER HOUSE (FRESNO, KINGS, AND MADERA
COUNTIES).....$ 45.41
27.72
TUNNEL AND SHAFT LABORERS:, GROUP 2 RODMEN; SHAFT
WORK & RAISE (BELOW ACTUAL OR EXCAVATED GROUND
LEVEL) (FRESNO, KINGS, AND MADERA COUNTIES).....$ 45.66
27.72
TUNNEL AND SHAFT LABORERS: SHOTCRETE SPECIALIST
(FRESNO, KINGS, AND MADERA COUNTIES).....$ 46.41
27.72
TUNNEL AND SHAFT LABORERS: GROUP 5 GROUT CREW;
REBOUNDMAN; SWAMPER/ BRAKEMAN (FRESNO, KINGS, AND
MADERA COUNTIES).....$ 44.42
27.72
TUNNEL AND SHAFT LABORERS: GROUP 4 VIBRATOR
OPERATOR, PAVEMENT BREAKER; BULL GANG - MUCKERS,
TRACKMEN; CONCRETE CREW - INCLUDES RODDING AND
SPREADING, DUMPMEN (ANY METHOD) (FRESNO, KINGS, AND
MADERA COUNTIES).....$ 44.96
27.72
TUNNEL AND SHAFT LABORERS: GROUP 1 DIAMOND DRILLER;
GROUNDMEN; GUNITE AND SHOTCRETE NOZZLEMEN (FRESNO,
KINGS, AND MADERA COUNTIES).....$ 45.89
27.72

LABO0294-008 06/26/2023

Rates
Fringes
LABORER: GARDENERS, HORTICULTURAL & LANDSCAPE
LABORERS - AREA B: (FRESNO, KINGS, AND MADERA
COUNTIES)- (2) Establishment Warranty Period.....$ 28.94
27.30
LABORER: GARDENERS, HORTICULTURAL & LANDSCAPE
LABORERS - AREA B: (FRESNO, KINGS, AND MADERA
COUNTIES)- (1) New Construction.....$ 35.25
27.30
LABORER, WRECKING - AREA B:: GROUP 1 (FRESNO,
KINGS, AND MADERA COUNTIES).....$ 35.50
27.30
LABORER, WRECKING - AREA B: GROUP 2 Semi-skilled
wrecker (salvaging of other building materials)
(FRESNO, KINGS, AND MADERA COUNTIES) FOOTNOTES:
LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS,
SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER
HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL
NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE
RATE SET FORTH IN GROUP 1-A BELOW. .....$ 35.35
27.30
LABORER, GUNITE - AREA B:: GROUP 1 (FRESNO, KINGS,

SOLICITATION

AND MADERA COUNTIES).....$ 36.46
27.30
LABORER, GUNITE - AREA B: GROUP 4 GUNITE LABORER
(FRESNO, KINGS, AND MADERA COUNTIES)
FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM
BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL
RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE
RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO
RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW..$ 35.25
27.30
LABORER, GUNITE - AREA B: GROUP 3 REBOUNDMAN
(FRESNO, KINGS, AND MADERA COUNTIES) FOOTNOTES:
LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS,
SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER
HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL
NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE
RATE SET FORTH IN GROUP 1-A BELOW.....$ 35.37
27.30
LABORER, GUNITE - AREA B: GROUP 2 NOZZLEMAN,
GUNMAN, POTMAN, GROUNDMAN (FRESNO, KINGS, AND
MADERA COUNTIES) FOOTNOTES: LABORERS WORKING OFF
OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS,
BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE
APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO
WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH
IN GROUP 1-A BELOW.....$ 35.96
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B:
GROUP 4 FINAL CLEAN-UP WORK OF DEBRIS, GROUNDS AND
BUILDING INCLUDING BUT NOT LIMITED TO: STREET
CLEANER; CLEANING AND WASHING WINDOWS; BRICK
CLEANER (JOBSITE ONLY); MATERIAL CLEANER (JOBSITE
ONLY). THE CLASSIFICATION ""MATERIAL CLEANER"" IS TO
BE UTILIZED UNDER THE FOLLOWING CONDITIONS:
A: AT DEMOLITION SITE FOR THE SALVAGE OF THE
MATERIAL. B: AT THE CONCLUSION OF A JOB WHERE
THE MATERIAL IS TO BE SALVAGED AND STOCKED TO BE
REUSED ON ANOTHER JOB. C: FOR THE CLEANING OF
SALVAGE MATERIAL AT THE JOBSITE OR TEMPORARY
JOBSITE YARD. THE MATERIAL CLEANER
CLASSIFICATION SHOULD NOT BE USED IN THE
PERFORMANCE OF ""FORM STRIPPING, CLEANING AND
OILING AND MOVING TO THE NEXT POINT OF ERECTION"".
(FRESNO, KINGS, AND MADERA COUNTIES)
FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM
BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL
RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE
RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO
RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.
SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY
ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS
ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW
SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK
INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND

SOLICITATION

ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE
$5.00 PER DAY ABOVE GROUP 1 WAGE RATES.
MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL
EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL
RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR
ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT
SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL
NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND
LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER
WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY
COVER HAS BEEN PLACED. GUNITE LABORER
CLASSIFICATIONS.....$ 28.94
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B:
GROUP 3 CONSTRUCTION LABORERS, INCLUDING BRIDGE AND
GENERAL LABORER; DUMP, LOAD SPOTTER; FLAG PERSON;
FIRE WATCHER; FENCE ERECTOR; GUARDRAIL ERECTOR;
GARDENER, HORTICULTURAL AND LANDSCAPE LABORER;
JETTING; LIMBER, BRUSH LOADER AND PILER; PAVEMENT
MARKER (BUTTON SETTER); MAINTENANCE, REPAIR TRACK
AND ROAD BEDS; STREETCAR AND RAILROAD CONSTRUCTION
TRACK LABORER; TEMPORARY AIR AND WATER LINES,
VICTAULIC OR SIMILAR; TOOL ROOM ATTENDANT (JOBSITE
ONLY) (FRESNO, KINGS, AND MADERA COUNTIES)
FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM
BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL
RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE
RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO
RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.
SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY
ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS
ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW
SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK
INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND
ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE
$5.00 PER DAY ABOVE GROUP 1 WAGE RATES.
MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL
EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL
RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR
ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT
SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL
NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND
LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER
WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY
COVER HAS BEEN PLACED.....$ 35.25
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B:
GROUP 2 ASPHALT SHOVELER; CEMENT DUMPER AND
HANDLING DRY CEMENT OR GYPSUM; CHOKE-SETTER AND
RIGGER (CLEARING WORK); CONCRETE BUCKET DUMPER AND
CHUTE; CONCRETE CHIPPING AND GRINDING; CONCRETE
LABORER (WET OR DRY); DRILLER TENDER, CHUCK TENDER,
NIPPER; GUINEA CHASER (STAKE), GROUT CREW; HIGH
PRESSURE NOZZLE, ADDUCTOR; HYDRAULIC MONITOR (OVER

SOLICITATION

100 LBS. PRESSURE); LOADING AND UNLOADING, CARRYING AND HAULING OF ALL RODS AND MATERIALS FOR USE IN REINFORCING CONCRETE CONSTRUCTION; PITTSBURGH CHIPPER AND SIMILAR TYPE BRUSH SHREDDERS; SLOPER; SINGLE FOOT, HAND-HELD, PNEUMATIC TAMPER; ALL PNEUMATIC, AIR, GAS AND ELECTRIC TOOLS NOT LISTED IN GROUPS 1 THROUGH 1-F; JACKING OF PIPE - UNDER 12 INCHES (FRESNO, KINGS, AND MADERA COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.

SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 35.35 27.30

LABORER, CONSTRUCTION CRAFT LABORERS - AREA B: GROUP 1-F WIRE WINDING MACHINE IN CONNECTION WITH GUNITING OR SHOT CRETE (FRESNO, KINGS, AND MADERA COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN

SOLICITATION

PLACED.....$ 36.08
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B:
GROUP 1-E WORK ON AND/OR IN BELL HOLE FOOTINGS AND SHAFTS THEREOF, AND WORK ON AND IN DEEP FOOTINGS. (A DEEP FOOTING IS A HOLE 15 FEET OR MORE IN DEPTH.) IN THE EVENT THE DEPTH OF THE FOOTING IS UNKNOWN AT THE COMMENCEMENT OF EXCAVATION, AND THE FINAL DEPTH EXCEEDS 15 FEET, THE DEEP FOOTING WAGE RATE WOULD APPLY TO ALL EMPLOYEES FOR EACH AND EVERY DAY WORKED ON OR IN THE EXCAVATION OF THE FOOTING FROM THE DATE OF INCEPTION. (FRESNO, KINGS, AND MADERA COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 36.05
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B:
GROUP 1-C BURNING AND WELDING IN CONNECTION WITH LABORERS' WORK; SYNTHETIC THERMOPLASTICS AND SIMILAR TYPE WELDING (FRESNO, KINGS, AND MADERA COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE

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THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 35.55
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B:
GROUP 1-A JOY DRILL MODEL TWM-2A; GARDNER-DENVER MODEL DH143 AND SIMILAR TYPE DRILLS; TRACK DRILLER; JACK LEG DRILLER; WAGON DRILLER; MECHANICAL DRILLERS, ALL TYPES REGARDLESS OF TYPE OR METHOD OF POWER; MECHANICAL PIPE LAYERS, ALL TYPES REGARDLESS OF TYPE OR METHOD OF POWER; BLASTER AND POWDER; ALL WORK OF LOADING, PLACING AND BLASTING OF ALL POWDER AND EXPLOSIVES OF WHATEVER TYPE REGARDLESS OF METHOD USED FOR SUCH LOADING AND PLACING; HIGH SCALERS (INCLUDING DRILLING OF SAME); TREE TOPPER; BIT GRINDER (FRESNO, KINGS, AND MADERA COUNTIES)
FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.
SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES.
MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED. .....$ 35.72
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B:
GROUP 1- ASPHALT SPREADER BOXES (ALL TYPES); BARKO, WACKER AND SIMILAR TYPE TAMPERS; BUGGYMOBILE; CAULKER, BANDER, PIPEWRAPPER, CONDUIT LAYER, PLASTIC PIPELAYER; CERTIFIED HAZARDOUS WASTE WORKER INCLUDING LEADE ABATEMENT; COMPACTORS OF ALL TYPES; CONCRETE AND MAGNESITE MIXER, 1/2 YD. AND UNDER; CONCRETE PAN WORK; CONCRETE SANDER; CONCRETE SAW; CRIBBER AND/OR SHORING; CUT GRANITE CURB SETTER; DRI-PAK-IT MACHINE; FALLER, LOGLOADER AND BUCKER; FORM RAISER, SLIP FORMS; GREEN CUTTER; HEADERBOARD, HUBSETTER, ALIGNER, BY ANY METHOD; HIGH PRESSURE

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BLOW PIPE (1-1/2"" OR OVER, 100 LBS. PRESSURE/OVER); HYDRO SEEDER AND SIMILAR TYPE; JACKHAMMER OPERATOR; JACKING OF PIPE OVER 12 INCHES; JACKSON AND SIMILAR TYPE COMPACTOR; KETTLE TENDER, POT AND WORKER APPLYING ASPHALT, LAY-KOLD, CREOSOTE, LIME, CAUSTIC AND SIMILAR TYPE MATERIALS (APPLYING MEANS APPLYING, DIPPING OR HANDLING OF SUCH MATERIALS); LAGGING, SHEETING, WHALING, BRACING, TRENCHJACKING, LAGGING HAMMER; MAGNESITE, EPOXYRESIN, FIBERGLASS, MASTIC WORKER (WET OR DRY); NO JOINT PIPE AND STRIPPING OF SAME, INCLUDING REPAIR OF VOIDS; PAVEMENT BREAKER AND SPADER, INCLUDING TOOL GRINDER; PERMA CURB; PIPELAYER (INCLUDING GRADE CHECKING IN CONNECTION WITH PIPELAYING); PRECAST-MANHOLE SETTER; PRESSURE PIPE TESTER; POST HOLE DIGGER, AIR, GAS AND ELECTRIC; POWER BROOM SWEEPER; POWER TAMPERS OF ALL TYPES (EXCEPT AS SHOWN IN GROUP 2); RAM SET GUN AND STUD GUN; RIPRAP STONEPAVER AND ROCK-SLINGER, INCLUDING PLACING OF SACKED CONCRETE AND/OR SAND (WET OR DRY) AND GABIONS AND SIMILAR TYPE; ROTARY SCARIFIER OR MULTIPLE HEAD CONCRETE CHIPPING SCARIFIER; ROTO AND DITCH WITCH; ROTOTILLER; SANDBLASTER, POT, GUN, NOZZLE OPERATORS; SIGNALLING AND RIGGING; TANK CLEANER; TREE CLIMBER; TURBO BLASTER; VIBRASCREED, BULL FLOAT IN CONNECTION WITH LABORERS' WORK; VIBRATOR; HAZARDOUS WASTE WORKER (LEAD REMOVAL); ASBESTOS AND MOLD REMOVAL WORKER (FRESNO, KINGS, AND MADERA COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED. .....$ 35.50
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B: CONSTRUCTION SPECIALIST GROUP ASPHALT IRONER AND RAKER; CHAINSAW; LASER BEAM IN CONNECTION WITH

SOLICITATION

LABORERS' WORK; CAST-IN- PLACE MANHOLE FORM SETTER; PRESSURE PIPELAYER; DAVIS TRENCHER - 300 OR SIMILAR TYPE (AND ALL SMALL TRENCHERS); BLASTER; DIAMOND DRILLER; MULTIPLE UNIT DRILL; HYDRAULIC DRILL (FRESNO, KINGS, AND MADERA COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED. .....$ 36.20
27.30

LABO0294-010 07/01/2023

	Rates	Fringes
PLASTERER TENDER (CALAVERAS, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, SAN JOAQUIN, STANISLAUS & TUOLUMNE) WORK ON A SWING STAGE SCAFFOLD: $1.00 PER HOUR ADDITIONAL	$ 39.77	28.54

LABO0294-011 07/01/2023

	Rates	Fringes
LABORER, PLASTER TENDER (FRESNO, KINGS, AND MADERA COUNTIES)	$ 39.77	28.54

LABO0304-002 07/01/2023

	Rates	Fringes
LABORER, TRAFFIC CONTROL/LANE CLOSURE: TRAFFIC CONTROL PERSON II INSTALLATION AND REMOVAL OF TEMPORARY/PERMANENT SIGNS, MARKERS, DELINEATORS AND		

SOLICITATION

CRASH CUSHIONS. (ALAMEDA COUNTY).....$ 35.06
27.30
LABORER, TRAFFIC CONTROL/LANE CLOSURE: TRAFFIC
CONTROL PERSON I   LAYOUT OF TRAFFIC CONTROL, CRASH
CUSHIONS, CONSTRUCTION AREA AND ROADSIDE SIGNAGE.
(ALAMEDA COUNTY).....$ 37.56
27.30
LABORER, TRAFFIC CONTROL/LANE CLOSURE: ESCORT
DRIVER, FLAG PERSON (ALAMEDA COUNTY).....$ 37.26
27.30

LABO0304-003 06/26/2023

Rates
Fringes
TUNNEL AND SHAFT LABORERS:, GROUP 5 GROUT CREW;
REBOUNDMAN; SWAMPER/ BRAKEMAN (ALAMEDA COUNTY).....$ 44.42
27.72
TUNNEL AND SHAFT LABORERS:, GROUP 4 VIBRATOR
OPERATOR, PAVEMENT BREAKER; BULL GANG - MUCKERS,
TRACKMEN; CONCRETE CREW - INCLUDES RODDING AND
SPREADING, DUMPMEN (ANY METHOD) (ALAMEDA COUNTY)....$ 44.96
27.72
TUNNEL AND SHAFT LABORERS:, GROUP 3 BIT GRINDER;
BLASTER, DRILLER, POWDERMEN, HEADING; CHERRY
PICKERMEN - WHERE CAR IS LIFTED; CONCRETE FINISHER
IN TUNNEL; CONCRETE SCREEDMAN; GROUT PUMPMAN AND
POTMAN; GUNITE & SHOTCRETE GUNMAN & POTMAN;
HEADERMEN; HIGH PRESSURE NOZZLEMAN; MINER - TUNNEL,
INCLUDING TOP AND BOTTOM MAN ON SHAFT AND RAISE
WORK; NIPPER; NOZZLEMAN ON SLICK LINE; SANDBLASTER
- POTMAN, ROBOTIC SHOTCRETE PLACER, SEGMENT
ERECTOR, TUNNEL MUCK HAULER, STEEL FORM RAISER AND
SETTER; TIMBERMAN, RETIMBERMAN (WOOD OR STEEL OR
SUBSTITUTE MATERIALS THEREFORE); TUGGER (FOR TUNNEL
LABORER WORK); CABLE TENDER; CHUCK TENDER;
POWDERMAN - PRIMER HOUSE (ALAMEDA COUNTY).....$ 45.41
27.72
TUNNEL AND SHAFT LABORERS:, GROUP 2 RODMEN; SHAFT
WORK & RAISE (BELOW ACTUAL OR EXCAVATED GROUND
LEVEL) (ALAMEDA COUNTY).....$ 45.66
27.72
TUNNEL AND SHAFT LABORERS:, GROUP 1 DIAMOND
DRILLER; GROUNDMEN; GUNITE AND SHOTCRETE NOZZLEMEN
(ALAMEDA COUNTY).....$ 45.89
27.72
TUNNEL AND SHAFT LABORERS: SHOTCRETE SPECIALIST
(ALAMEDA COUNTY).....$ 46.41
27.72

LABO0304-004 06/26/2023

Rates
Fringes

SOLICITATION

LABORER: GARDENERS, HORTICULTURAL & LANDSCAPE LABORERS - AREA A: (ALAMEDA COUNTY)- (2) Establishment Warranty Period.....$ 29.94 27.30
LABORER: GARDENERS, HORTICULTURAL & LANDSCAPE LABORERS - AREA A: (ALAMEDA COUNTY)- (1) New Construction.....$ 36.25 27.30
LABORER, WRECKING - AREA A:: GROUP 1 (ALAMEDA COUNTY).....$ 36.50 27.30
LABORER, WRECKING - AREA A: GROUP 2 Semi-skilled wrecker (salvaging of other building materials) (ALAMEDA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.....$ 36.35 27.30
LABORER, GUNITE - AREA A:: GROUP 1 (ALAMEDA COUNTY).$ 37.46 27.30
LABORER, GUNITE - AREA A: GROUP 4 GUNITE LABORER (ALAMEDA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.....$ 36.25 27.30
LABORER, GUNITE - AREA A: GROUP 3 REBOUNDMAN (ALAMEDA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.....$ 36.37 27.30
LABORER, GUNITE - AREA A: GROUP 2 NOZZLEMAN, GUNMAN, POTMAN, GROUNDMAN (ALAMEDA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW..$ 36.96 27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A:: GROUP 1-A JOY DRILL MODEL TWM-2A; GARDNER-DENVER MODEL DH143 AND SIMILAR TYPE DRILLS; TRACK DRILLER; JACK LEG DRILLER; WAGON DRILLER; MECHANICAL DRILLERS, ALL TYPES REGARDLESS OF TYPE OR METHOD OF POWER; MECHANICAL PIPE LAYERS, ALL TYPES REGARDLESS OF TYPE OR METHOD OF POWER; BLASTER AND POWDER; ALL WORK OF LOADING, PLACING AND BLASTING OF ALL POWDER

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AND EXPLOSIVES OF WHATEVER TYPE REGARDLESS OF METHOD USED FOR SUCH LOADING AND PLACING; HIGH SCALERS (INCLUDING DRILLING OF SAME); TREE TOPPER; BIT GRINDER (ALAMEDA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 36.72
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A::
GROUP 1 (ALAMEDA COUNTY).....$ 36.50
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A:
GROUP 4 FINAL CLEAN-UP WORK OF DEBRIS, GROUNDS AND BUILDING INCLUDING BUT NOT LIMITED TO: STREET CLEANER; CLEANING AND WASHING WINDOWS; BRICK CLEANER (JOBSITE ONLY); MATERIAL CLEANER (JOBSITE ONLY). THE CLASSIFICATION ""MATERIAL CLEANER"" IS TO BE UTILIZED UNDER THE FOLLOWING CONDITIONS:
A: AT DEMOLITION SITE FOR THE SALVAGE OF THE MATERIAL. B: AT THE CONCLUSION OF A JOB WHERE THE MATERIAL IS TO BE SALVAGED AND STOCKED TO BE REUSED ON ANOTHER JOB. C: FOR THE CLEANING OF SALVAGE MATERIAL AT THE JOBSITE OR TEMPORARY JOBSITE YARD. THE MATERIAL CLEANER CLASSIFICATION SHOULD NOT BE USED IN THE PERFORMANCE OF ""FORM STRIPPING, CLEANING AND OILING AND MOVING TO THE NEXT POINT OF ERECTION"".
(ALAMEDA COUNTY) FOOTNOTES:
LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE

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RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 29.94
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A: GROUP 3 CONSTRUCTION LABORERS, INCLUDING BRIDGE AND GENERAL LABORER; DUMP, LOAD SPOTTER; FLAG PERSON; FIRE WATCHER; FENCE ERECTOR; GUARDRAIL ERECTOR; GARDENER, HORTICULTURAL AND LANDSCAPE LABORER; JETTING; LIMBER, BRUSH LOADER AND PILER; PAVEMENT MARKER (BUTTON SETTER); MAINTENANCE, REPAIR TRACK AND ROAD BEDS; STREETCAR AND RAILROAD CONSTRUCTION TRACK LABORER; TEMPORARY AIR AND WATER LINES, VICTAULIC OR SIMILAR; TOOL ROOM ATTENDANT (JOBSITE ONLY) (ALAMEDA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 36.25
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A: GROUP 2 ASPHALT SHOVELER; CEMENT DUMPER AND HANDLING DRY CEMENT OR GYPSUM; CHOKE-SETTER AND RIGGER (CLEARING WORK); CONCRETE BUCKET DUMPER AND CHUTE; CONCRETE CHIPPING AND GRINDING; CONCRETE LABORER (WET OR DRY); DRILLER TENDER, CHUCK TENDER, NIPPER; GUINEA CHASER (STAKE), GROUT CREW; HIGH PRESSURE NOZZLE, ADDUCTOR; HYDRAULIC MONITOR (OVER 100 LBS. PRESSURE); LOADING AND UNLOADING, CARRYING

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AND HAULING OF ALL RODS AND MATERIALS FOR USE IN REINFORCING CONCRETE CONSTRUCTION; PITTSBURGH CHIPPER AND SIMILAR TYPE BRUSH SHREDDERS; SLOPER; SINGLE FOOT, HAND-HELD, PNEUMATIC TAMPER; ALL PNEUMATIC, AIR, GAS AND ELECTRIC TOOLS NOT LISTED IN GROUPS 1 THROUGH 1-F; JACKING OF PIPE - UNDER 12 INCHES (ALAMEDA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 36.35
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A: GROUP 1-F WIRE WINDING MACHINE IN CONNECTION WITH GUNITING OR SHOT CRETE (ALAMEDA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 37.08
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A:

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GROUP 1-E WORK ON AND/OR IN BELL HOLE FOOTINGS AND SHAFTS THEREOF, AND WORK ON AND IN DEEP FOOTINGS. (A DEEP FOOTING IS A HOLE 15 FEET OR MORE IN DEPTH.) IN THE EVENT THE DEPTH OF THE FOOTING IS UNKNOWN AT THE COMMENCEMENT OF EXCAVATION, AND THE FINAL DEPTH EXCEEDS 15 FEET, THE DEEP FOOTING WAGE RATE WOULD APPLY TO ALL EMPLOYEES FOR EACH AND EVERY DAY WORKED ON OR IN THE EXCAVATION OF THE FOOTING FROM THE DATE OF INCEPTION. (ALAMEDA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 37.05
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A:
GROUP 1-C BURNING AND WELDING IN CONNECTION WITH LABORERS' WORK; SYNTHETIC THERMOPLASTICS AND SIMILAR TYPE WELDING (ALAMEDA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER

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WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 36.55
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A: CONSTRUCTION SPECIALIST GROUP ASPHALT IRONER AND RAKER; CHAINSAW; LASER BEAM IN CONNECTION WITH LABORERS' WORK; CAST-IN- PLACE MANHOLE FORM SETTER; PRESSURE PIPELAYER; DAVIS TRENCHER - 300 OR SIMILAR TYPE (AND ALL SMALL TRENCHERS); BLASTER; DIAMOND DRILLER; MULTIPLE UNIT DRILL; HYDRAULIC DRILL (ALAMEDA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 37.20
27.30

LABO0304-005 07/01/2023

Rates
Fringes
BRICK TENDER (ALAMEDA COUNTY) FOOTNOTES: WORK ON JOBS WHERE HEAT-PROTECTIVE CLOTHING IS REQUIRED: $2.00 PER HOUR ADDITIONAL. WORK AT GRINDERS: $.25 PER HOUR ADDITIONAL. MANHOLE WORK: $2.00 PER DAY ADDITIONAL.....$ 37.05
27.45

LABO0304-008 07/01/2023

Rates
Fringes
PLASTERER TENDER (ALAMEDA AND CONTRA COSTA COUNTIES) WORK ON A SWING STAGE SCAFFOLD: $1.00 PER HOUR ADDITIONAL.....$ 41.93
30.32

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LABO0324-002 07/01/2023

	Rates	Fringes
LABORER, TRAFFIC CONTROL/LANE CLOSURE: TRAFFIC CONTROL PERSON II INSTALLATION AND REMOVAL OF TEMPORARY/PERMANENT SIGNS, MARKERS, DELINEATORS AND CRASH CUSHIONS. (CONTRA COSTA COUNTY)	$ 35.06	27.30
LABORER, TRAFFIC CONTROL/LANE CLOSURE: TRAFFIC CONTROL PERSON I LAYOUT OF TRAFFIC CONTROL, CRASH CUSHIONS, CONSTRUCTION AREA AND ROADSIDE SIGNAGE. (CONTRA COSTA COUNTY)	$ 37.56	27.30
LABORER, TRAFFIC CONTROL/LANE CLOSURE: ESCORT DRIVER, FLAG PERSON (CONTRA COSTA COUNTY)	$ 37.26	27.30

LABO0324-006 06/26/2023

	Rates	Fringes
TUNNEL AND SHAFT LABORERS:, GROUP 5 GROUT CREW; REBOUNDMAN; SWAMPER/ BRAKEMAN (CONTRA COSTA COUNTY)	$ 44.42	27.72
TUNNEL AND SHAFT LABORERS:, GROUP 4 VIBRATOR OPERATOR, PAVEMENT BREAKER; BULL GANG - MUCKERS, TRACKMEN; CONCRETE CREW - INCLUDES RODDING AND SPREADING, DUMPMEN (ANY METHOD) (CONTRA COSTA COUNTY)	$ 44.96	27.72
TUNNEL AND SHAFT LABORERS:, GROUP 3 BIT GRINDER; BLASTER, DRILLER, POWDERMEN, HEADING; CHERRY PICKERMEN - WHERE CAR IS LIFTED; CONCRETE FINISHER IN TUNNEL; CONCRETE SCREEDMAN; GROUT PUMPMAN AND POTMAN; GUNITE & SHOTCRETE GUNMAN & POTMAN; HEADERMEN; HIGH PRESSURE NOZZLEMAN; MINER - TUNNEL, INCLUDING TOP AND BOTTOM MAN ON SHAFT AND RAISE WORK; NIPPER; NOZZLEMAN ON SLICK LINE; SANDBLASTER - POTMAN, ROBOTIC SHOTCRETE PLACER, SEGMENT ERECTOR, TUNNEL MUCK HAULER, STEEL FORM RAISER AND SETTER; TIMBERMAN, RETIMBERMAN (WOOD OR STEEL OR SUBSTITUTE MATERIALS THEREFORE); TUGGER (FOR TUNNEL LABORER WORK); CABLE TENDER; CHUCK TENDER; POWDERMAN - PRIMER HOUSE (CONTRA COSTA COUNTY)	$ 45.41	27.72
TUNNEL AND SHAFT LABORERS:, GROUP 2 RODMEN; SHAFT WORK & RAISE (BELOW ACTUAL OR EXCAVATED GROUND LEVEL) (CONTRA COSTA COUNTY)	$ 45.66	27.72
TUNNEL AND SHAFT LABORERS:, GROUP 1 DIAMOND DRILLER; GROUNDMEN; GUNITE AND SHOTCRETE NOZZLEMEN (CONTRA COSTA COUNTY)	$ 45.89	27.72

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TUNNEL AND SHAFT LABORERS: SHOTCRETE SPECIALIST
(CONTRA COSTA COUNTY).....$ 46.41
27.72

LABO0324-012 06/26/2023

Rates
Fringes
LABORER: GARDENERS, HORTICULURAL & LANDSCAPE
LABORERS - AREA A: (CONTRA COSTA COUNTY)- (2)
Establishment Warranty Period.....$ 29.94
27.30
LABORER: GARDENERS, HORTICULURAL & LANDSCAPE
LABORERS - AREA A: (CONTRA COSTA COUNTY)- (1) New
Construction.....$ 36.25
27.30
LABORER, WRECKING - AREA A:: GROUP 1 (CONTRA COSTA
COUNTY).....$ 36.50
27.30
LABORER, WRECKING - AREA A: GROUP 2 Semi-skilled
wrecker (salvaging of other building materials)
(CONTRA COSTA COUNTY) FOOTNOTES: LABORERS
WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING
SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE
THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO
WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH
IN GROUP 1-A BELOW.....$ 36.35
27.30
LABORER, GUNITE - AREA A:: GROUP 1 (CONTRA COSTA
COUNTY).....$ 37.46
27.30
LABORER, GUNITE - AREA A: GROUP 4 GUNITE LABORER
(CONTRA COSTA COUNTY) FOOTNOTES: LABORERS
WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING
SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE
THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO
WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH
IN GROUP 1-A BELOW.....$ 36.25
27.30
LABORER, GUNITE - AREA A: GROUP 3REBOUNDMAN
(CONTRA COSTA COUNTY) FOOTNOTES: LABORERS
WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING
SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE
THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO
WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH
IN GROUP 1-A BELOW.....$ 36.37
27.30
LABORER, GUNITE - AREA A: GROUP 2 NOZZLEMAN,
GUNMAN, POTMAN, GROUNDMAN (CONTRA COSTA COUNTY)
FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM
BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL
RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE
RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO

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RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW..$ 36.96
27.30
LABORER, CONSTRUCTION CRAFT LABORERS: GROUP 1-G
Pipelayer (including grade checking in connection with pipelaying); Caulker; Bander; Pipewrapper; Conduit layer; Plastic pipe layer; Pressure pipe tester; No joint pipe and stripping of same, including repair of voids; Precast manhole setters, cast in place manhole form setters AREA A: CONTRA COSTA COUNTY Sewer cleaners shall receive $4.00 per day above Group 1 wage rates. """"Sewer cleaner"""" means any worker who handles or comes in contact with raw sewage in small diameter sewers. Those who work inside recently active, large diameter sewers, and all recently active sewer manholes shal receive $5.00 per day above Group 1 wage rates. Maintenance and repair track and road beds. All employees performing work covered herein shall receive $.25 per hour above their regular rate for all work performed on underground structures not specifically covered herein. This paragraph shall not be construed to apply to work below ground level in open cut. It shall apply to cut and cover work of subway construction after the temporary cover has been placed. FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.....$ 36.70
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A::
GROUP 1 (CONTRA COSTA COUNTY).....$ 36.50
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A:
GROUP 4 FINAL CLEAN-UP WORK OF DEBRIS, GROUNDS AND BUILDING INCLUDING BUT NOT LIMITED TO: STREET CLEANER; CLEANING AND WASHING WINDOWS; BRICK CLEANER (JOBSITE ONLY); MATERIAL CLEANER (JOBSITE ONLY). THE CLASSIFICATION ""MATERIAL CLEANER"" IS TO BE UTILIZED UNDER THE FOLLOWING CONDITIONS: A: AT DEMOLITION SITE FOR THE SALVAGE OF THE MATERIAL. B: AT THE CONCLUSION OF A JOB WHERE THE MATERIAL IS TO BE SALVAGED AND STOCKED TO BE REUSED ON ANOTHER JOB. C: FOR THE CLEANING OF SALVAGE MATERIAL AT THE JOBSITE OR TEMPORARY JOBSITE YARD. THE MATERIAL CLEANER CLASSIFICATION SHOULD NOT BE USED IN THE PERFORMANCE OF ""FORM STRIPPING, CLEANING AND OILING AND MOVING TO THE NEXT POINT OF ERECTION"".
(CONTRA COSTA COUNTY) FOOTNOTES:
LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL

SOLICITATION

NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 29.94
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A: GROUP 3 CONSTRUCTION LABORERS, INCLUDING BRIDGE AND GENERAL LABORER; DUMP, LOAD SPOTTER; FLAG PERSON; FIRE WATCHER; FENCE ERECTOR; GUARDRAIL ERECTOR; GARDENER, HORTICULTURAL AND LANDSCAPE LABORER; JETTING; LIMBER, BRUSH LOADER AND PILER; PAVEMENT MARKER (BUTTON SETTER); MAINTENANCE, REPAIR TRACK AND ROAD BEDS; STREETCAR AND RAILROAD CONSTRUCTION TRACK LABORER; TEMPORARY AIR AND WATER LINES, VICTAULIC OR SIMILAR; TOOL ROOM ATTENDANT (JOBSITE ONLY) (CONTRA COSTA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 36.25
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A: GROUP 2 ASPHALT SHOVELER; CEMENT DUMPER AND HANDLING DRY CEMENT OR GYPSUM; CHOKE-SETTER AND

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RIGGER (CLEARING WORK); CONCRETE BUCKET DUMPER AND CHUTE; CONCRETE CHIPPING AND GRINDING; CONCRETE LABORER (WET OR DRY); DRILLER TENDER, CHUCK TENDER, NIPPER; GUINEA CHASER (STAKE), GROUT CREW; HIGH PRESSURE NOZZLE, ADDUCTOR; HYDRAULIC MONITOR (OVER 100 LBS. PRESSURE); LOADING AND UNLOADING, CARRYING AND HAULING OF ALL RODS AND MATERIALS FOR USE IN REINFORCING CONCRETE CONSTRUCTION; PITTSBURGH CHIPPER AND SIMILAR TYPE BRUSH SHREDDERS; SLOPER; SINGLE FOOT, HAND-HELD, PNEUMATIC TAMPER; ALL PNEUMATIC, AIR, GAS AND ELECTRIC TOOLS NOT LISTED IN GROUPS 1 THROUGH 1-F; JACKING OF PIPE - UNDER 12 INCHES (CONTRA COSTA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 36.35
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A: GROUP 1-F WIRE WINDING MACHINE IN CONNECTION WITH GUNITING OR SHOT CRETE (CONTRA COSTA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.
SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL

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NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 37.08
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A: GROUP 1-E WORK ON AND/OR IN BELL HOLE FOOTINGS AND SHAFTS THEREOF, AND WORK ON AND IN DEEP FOOTINGS. (A DEEP FOOTING IS A HOLE 15 FEET OR MORE IN DEPTH.) IN THE EVENT THE DEPTH OF THE FOOTING IS UNKNOWN AT THE COMMENCEMENT OF EXCAVATION, AND THE FINAL DEPTH EXCEEDS 15 FEET, THE DEEP FOOTING WAGE RATE WOULD APPLY TO ALL EMPLOYEES FOR EACH AND EVERY DAY WORKED ON OR IN THE EXCAVATION OF THE FOOTING FROM THE DATE OF INCEPTION. (CONTRA COSTA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 37.05
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A: GROUP 1-C BURNING AND WELDING IN CONNECTION WITH LABORERS' WORK; SYNTHETIC THERMOPLASTICS AND SIMILAR TYPE WELDING (CONTRA COSTA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.
SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL

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EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 36.55
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A: GROUP 1-A JOY DRILL MODEL TWM-2A; GARDNER-DENVER MODEL DH143 AND SIMILAR TYPE DRILLS; TRACK DRILLER; JACK LEG DRILLER; WAGON DRILLER; MECHANICAL DRILLERS, ALL TYPES REGARDLESS OF TYPE OR METHOD OF POWER; MECHANICAL PIPE LAYERS, ALL TYPES REGARDLESS OF TYPE OR METHOD OF POWER; BLASTER AND POWDER; ALL WORK OF LOADING, PLACING AND BLASTING OF ALL POWDER AND EXPLOSIVES OF WHATEVER TYPE REGARDLESS OF METHOD USED FOR SUCH LOADING AND PLACING; HIGH SCALERS (INCLUDING DRILLING OF SAME); TREE TOPPER; BIT GRINDER (CONTRA COSTA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 36.72
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA A: CONSTRUCTION SPECIALIST GROUP ASPHALT IRONER AND RAKER; CHAINSAW; LASER BEAM IN CONNECTION WITH LABORERS' WORK; CAST-IN- PLACE MANHOLE FORM SETTER; PRESSURE PIPELAYER; DAVIS TRENCHER - 300 OR SIMILAR TYPE (AND ALL SMALL TRENCHERS); BLASTER; DIAMOND DRILLER; MULTIPLE UNIT DRILL; HYDRAULIC DRILL (CONTRA COSTA COUNTY) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO

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WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW FEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 37.20
27.30

LABO0324-014 07/01/2023

Rates
Fringes

BRICK TENDER (CONTRA COSTA COUNTY) FOOTNOTES:
WORK ON JOBS WHERE HEAT-PROTECTIVE CLOTHING IS REQUIRED: $2.00 PER HOUR ADDITIONAL. WORK AT GRINDERS: $.25 PER HOUR ADDITIONAL. MANHOLE WORK: $2.00 PER DAY ADDITIONAL.....$ 37.05
27.45

LABO1130-002 07/01/2023

Rates
Fringes

LABORER, TRAFFIC CONTROL/LANE CLOSURE: TRAFFIC CONTROL PERSON II INSTALLATION AND REMOVAL OF TEMPORARY/PERMANENT SIGNS, MARKERS, DELINEATORS AND CRASH CUSHIONS. (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE COUNTIES).....$ 34.06
27.30
LABORER, TRAFFIC CONTROL/LANE CLOSURE: TRAFFIC CONTROL PERSON I LAYOUT OF TRAFFIC CONTROL, CRASH CUSHIONS, CONSTRUCTION AREA AND ROADSIDE SIGNAGE. (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE COUNTIES).....$ 36.56
27.30
LABORER, TRAFFIC CONTROL/LANE CLOSURE: ESCORT DRIVER, FLAG PERSON (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE COUNTIES).....$ 36.26
27.30

LABO1130-003 06/26/2023

SOLICITATION

	Rates	Fringes
TUNNEL AND SHAFT LABORERS: SHOTCRETE SPECIALIST (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE COUNTIES)	$ 46.41	27.72
TUNNEL AND SHAFT LABORERS: GROUP 5 GROUT CREW; REBOUNDMAN; SWAMPER/ BRAKEMAN (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE COUNTIES)	$ 44.42	27.72
TUNNEL AND SHAFT LABORERS: GROUP 4 VIBRATOR OPERATOR, PAVEMENT BREAKER; BULL GANG - MUCKERS, TRACKMEN; CONCRETE CREW - INCLUDES RODDING AND SPREADING, DUMPMEN (ANY METHOD) (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE COUNTIES)	$ 44.96	27.72
TUNNEL AND SHAFT LABORERS: GROUP 3 BIT GRINDER; BLASTER, DRILLER, POWDERMEN, HEADING; CHERRY PICKERMEN - WHERE CAR IS LIFTED; CONCRETE FINISHER IN TUNNEL; CONCRETE SCREEDMAN; GROUT PUMPMAN AND POTMAN; GUNITE & SHOTCRETE GUNMAN & POTMAN; HEADERMEN; HIGH PRESSURE NOZZLEMAN; MINER - TUNNEL, INCLUDING TOP AND BOTTOM MAN ON SHAFT AND RAISE WORK; NIPPER; NOZZLEMAN ON SLICK LINE; SANDBLASTER - POTMAN, ROBOTIC SHOTCRETE PLACER, SEGMENT ERECTOR, TUNNEL MUCK HAULER, STEEL FORM RAISER AND SETTER; TIMBERMAN, RETIMBERMAN (WOOD OR STEEL OR SUBSTITUTE MATERIALS THEREFORE); TUGGER (FOR TUNNEL LABORER WORK); CABLE TENDER; CHUCK TENDER; POWDERMAN - PRIMER HOUSE (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE COUNTIES)	$ 45.41	27.72
TUNNEL AND SHAFT LABORERS: GROUP 2 RODMEN; SHAFT WORK & RAISE (BELOW ACTUAL OR EXCAVATED GROUND LEVEL) (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE COUNTIES)	$ 45.66	27.72
TUNNEL AND SHAFT LABORERS: GROUP 1 DIAMOND DRILLER; GROUNDMEN; GUNITE AND SHOTCRETE NOZZLEMEN (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE COUNTIES)	$ 45.89	27.72

LABO1130-005 07/01/2023

	Rates	Fringes
LABORER: MASON TENDER-BRICK (MARIPOSA, MERCED, STANISLAUS AND TUOLUMNE COUNTIES)	$ 36.29	25.55

LABO1130-007 06/26/2023

SOLICITATION

Rates
Fringes
LABORER: GARDENERS, HORTICULTURAL & LANDSCAPE LABORERS - AREA B: (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE , COUNTIES)- (2) Establishment Warranty Period.....$ 28.94 27.30

LABORER: GARDENERS, HORTICULTURAL & LANDSCAPE LABORERS - AREA B: (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE , COUNTIES)- (1) New Construction.....$ 35.25 27.30

LABORER, WRECKING - AREA B: GROUP 2 SEMI-SKILLED WRECKER (SALVAGING OF OTHER BUILDING MATERIALS) (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE , COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.....$ 35.35 27.30

LABORER, WRECKING - AREA B: GROUP 1- SKILLED WRECKER (REMOVING AND SALVAGING OF SASH, WINDOWS AND MATERIALS) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE , COUNTIES.....$ 35.50 27.30

LABORER, GUNITE - AREA B: GROUP 4 Gunite laborer (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE , COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.....$ 35.25 27.30

LABORER, GUNITE - AREA B: GROUP 3 REBOUNDMAN (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE , COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.....$ 35.37 27.30

LABORER, GUNITE - AREA B: GROUP 2 NOZZLEMAN, GUNMAN, POTMAN, GROUNDMAN (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE , COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER

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HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW.....$ 35.96
27.30
LABORER, GUNITE - AREA B: GROUP 1- GROUP 1: STRUCTURAL NOZZLEMAN FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE , COUNTIES.....$ 36.46
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B: GROUP 4 FINAL CLEAN-UP WORK OF DEBRIS, GROUNDS AND BUILDING INCLUDING BUT NOT LIMITED TO: STREET CLEANER; CLEANING AND WASHING WINDOWS; BRICK CLEANER (JOBSITE ONLY); MATERIAL CLEANER (JOBSITE ONLY). THE CLASSIFICATION ""MATERIAL CLEANER"" IS TO BE UTILIZED UNDER THE FOLLOWING CONDITIONS: A: AT DEMOLITION SITE FOR THE SALVAGE OF THE MATERIAL. B: AT THE CONCLUSION OF A JOB WHERE THE MATERIAL IS TO BE SALVAGED AND STOCKED TO BE REUSED ON ANOTHER JOB. C: FOR THE CLEANING OF SALVAGE MATERIAL AT THE JOBSITE OR TEMPORARY JOBSITE YARD. THE MATERIAL CLEANER CLASSIFICATION SHOULD NOT BE USED IN THE PERFORMANCE OF ""FORM STRIPPING, CLEANING AND OILING AND MOVING TO THE NEXT POINT OF ERECTION"". (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE , COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 28.94
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B: GROUP 3 CONSTRUCTION LABORERS, INCLUDING BRIDGE AND

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GENERAL LABORER; DUMP, LOAD SPOTTER; FLAG PERSON; FIRE WATCHER; FENCE ERECTOR; GUARDRAIL ERECTOR; GARDENER, HORTICULTURAL AND LANDSCAPE LABORER; JETTING; LIMBER, BRUSH LOADER AND PILER; PAVEMENT MARKER (BUTTON SETTER); MAINTENANCE, REPAIR TRACK AND ROAD BEDS; STREETCAR AND RAILROAD CONSTRUCTION TRACK LABORER; TEMPORARY AIR AND WATER LINES, VICTAULIC OR SIMILAR; TOOL ROOM ATTENDANT (JOBSITE ONLY) (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE , COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 35.25
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B:
GROUP 2 (ASPHALT SHOVELER; CEMENT DUMPER AND HANDLING DRY CEMENT OR GYPSUM; CHOKE-SETTER AND RIGGER (CLEARING WORK); CONCRETE BUCKET DUMPER AND CHUTE; CONCRETE CHIPPING AND GRINDING; CONCRETE LABORER (WET OR DRY); DRILLER TENDER, CHUCK TENDER, NIPPER; GUINEA CHASER (STAKE), GROUT CREW; HIGH PRESSURE NOZZLE, ADDUCTOR; HYDRAULIC MONITOR (OVER 100 LBS. PRESSURE); LOADING AND UNLOADING, CARRYING AND HAULING OF ALL RODS AND MATERIALS FOR USE IN REINFORCING CONCRETE CONSTRUCTION; PITTSBURGH CHIPPER AND SIMILAR TYPE BRUSH SHREDDERS; SLOPER; SINGLE FOOT, HAND-HELD, PNEUMATIC TAMPER; ALL PNEUMATIC, AIR, GAS AND ELECTRIC TOOLS NOT LISTED IN GROUPS 1 THROUGH 1-F; JACKING OF PIPE - UNDER 12 INCHES MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE , COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER

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CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 35.35
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B: GROUP 1-F WIRE WINDING MACHINE IN CONNECTION WITH GUNITING OR SHOT CRETE (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE , COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 36.08
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B: GROUP 1-E WORK ON AND/OR IN BELL HOLE FOOTINGS AND SHAFTS THEREOF, AND WORK ON AND IN DEEP FOOTINGS. (A DEEP FOOTING IS A HOLE 15 FEET OR MORE IN DEPTH.) IN THE EVENT THE DEPTH OF THE FOOTING IS UNKNOWN AT THE COMMENCEMENT OF EXCAVATION, AND THE FINAL DEPTH EXCEEDS 15 FEET, THE DEEP FOOTING WAGE RATE WOULD APPLY TO ALL EMPLOYEES FOR EACH AND EVERY DAY WORKED ON OR IN THE EXCAVATION OF THE FOOTING FROM THE DATE OF INCEPTION. (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE , COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL

SOLICITATION

RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES.
MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 36.05
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B:
GROUP 1-C BURNING AND WELDING IN CONNECTION WITH LABORERS' WORK; SYNTHETIC THERMOPLASTICS AND SIMILAR TYPE WELDING (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE , COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 35.55
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B:
GROUP 1-A JOY DRILL MODEL TWM-2A; GARDNER-DENVER MODEL DH143 AND SIMILAR TYPE DRILLS; TRACK DRILLER; JACK LEG DRILLER; WAGON DRILLER; MECHANICAL DRILLERS, ALL TYPES REGARDLESS OF TYPE OR METHOD OF POWER; MECHANICAL PIPE LAYERS, ALL TYPES REGARDLESS OF TYPE OR METHOD OF POWER; BLASTER AND POWDER; ALL

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WORK OF LOADING, PLACING AND BLASTING OF ALL POWDER AND EXPLOSIVES OF WHATEVER TYPE REGARDLESS OF METHOD USED FOR SUCH LOADING AND PLACING; HIGH SCALERS (INCLUDING DRILLING OF SAME); TREE TOPPER; BIT GRINDER (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE , COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED.....$ 35.72
27.30
LABORER, CONSTRUCTION CRAFT LABORERS - AREA B:
GROUP 1- ASPHALT SPREADER BOXES (ALL TYPES); BARKO, WACKER AND SIMILAR TYPE TAMPERS; BUGGYMOBILE; CAULKER, BANDER, PIPEWRAPPER, CONDUIT LAYER, PLASTIC PIPELAYER; CERTIFIED HAZARDOUS WASTE WORKER INCLUDING LEADE ABATEMENT; COMPACTORS OF ALL TYPES; CONCRETE AND MAGNESITE MIXER, 1/2 YD. AND UNDER; CONCRETE PAN WORK; CONCRETE SANDER; CONCRETE SAW; CRIBBER AND/OR SHORING; CUT GRANITE CURB SETTER; DRI-PAK-IT MACHINE; FALLER, LOGLOADER AND BUCKER; FORM RAISER, SLIP FORMS; GREEN CUTTER; HEADERBOARD, HUBSETTER, ALIGNER, BY ANY METHOD; HIGH PRESSURE BLOW PIPE (1-1/2"" OR OVER, 100 LBS. PRESSURE/OVER); HYDRO SEEDER AND SIMILAR TYPE; JACKHAMMER OPERATOR; JACKING OF PIPE OVER 12 INCHES; JACKSON AND SIMILAR TYPE COMPACTOR; KETTLE TENDER, POT AND WORKER APPLYING ASPHALT, LAY-KOLD, CREOSOTE, LIME, CAUSTIC AND SIMILAR TYPE MATERIALS (APPLYING MEANS APPLYING, DIPPING OR HANDLING OF SUCH MATERIALS); LAGGING, SHEETING, WHALING, BRACING, TRENCHJACKING, LAGGING HAMMER; MAGNESITE, EPOXYRESIN, FIBERGLASS, MASTIC WORKER (WET OR DRY); NO JOINT PIPE AND STRIPPING OF SAME, INCLUDING REPAIR OF VOIDS; PAVEMENT BREAKER AND SPADER, INCLUDING TOOL GRINDER; PERMA CURB; PIPELAYER (INCLUDING GRADE CHECKING IN CONNECTION WITH PIPELAYING); PRECAST-MANHOLE SETTER; PRESSURE PIPE

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TESTER; POST HOLE DIGGER, AIR, GAS AND ELECTRIC; POWER BROOM SWEEPER; POWER TAMPERS OF ALL TYPES (EXCEPT AS SHOWN IN GROUP 2); RAM SET GUN AND STUD GUN; RIPRAP STONEPAVER AND ROCK-SLINGER, INCLUDING PLACING OF SACKED CONCRETE AND/OR SAND (WET OR DRY) AND GABIONS AND SIMILAR TYPE; ROTARY SCARIFIER OR MULTIPLE HEAD CONCRETE CHIPPING SCARIFIER; ROTO AND DITCH WITCH; ROTOTILLER; SANDBLASTER, POT, GUN, NOZZLE OPERATORS; SIGNALLING AND RIGGING; TANK CLEANER; TREE CLIMBER; TURBO BLASTER; VIBRASCREED, BULL FLOAT IN CONNECTION WITH LABORERS' WORK; VIBRATOR; HAZARDOUS WASTE WORKER (LEAD REMOVAL); ASBESTOS AND MOLD REMOVAL WORKER (MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE , COUNTIES) FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25 PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY COVER HAS BEEN PLACED. MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE , COUNTIES.....$ 35.50 27.30

LABORER, CONSTRUCTION CRAFT LABORERS - AREA B: CONSTRUCTION SPECIALIST GROUP ASPHALT IRONER AND RAKER; CHAINSAW; LASER BEAM IN CONNECTION WITH LABORERS' WORK; CAST-IN- PLACE MANHOLE FORM SETTER; PRESSURE PIPELAYER; DAVIS TRENCHER - 300 OR SIMILAR TYPE (AND ALL SMALL TRENCHERS); BLASTER; DIAMOND DRILLER; MULTIPLE UNIT DRILL; HYDRAULIC DRILL MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE , COUNTIES FOOTNOTES: LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS SHALL RECEIVE $0.25 PER HOUR ABOVE THE APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO WORKERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1-A BELOW. SEWER CLEANERS SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. ""SEWER CLEANER"" MEANS ANY WORKER WHO HANDLES OR COMES IN CONTACT WITH RAW SEWAGE IN

SOLICITATION

SMALL DIAMETER SEWERS. THOSE WHO WORK INSIDE
RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL
RECENTLY ACTIVE SEWER MANHOLES SHAL RECEIVE $5.00
PER DAY ABOVE GROUP 1 WAGE RATES. MAINTENANCE
AND REPAIR TRACK AND ROAD BEDS. ALL EMPLOYEES
PERFORMING WORK COVERED HEREIN SHALL RECEIVE $ .25
PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK
PERFORMED ON UNDERGROUND STRUCTURES NOT
SPECIFICALLY COVERED HEREIN. THIS PARAGRAPH SHALL
NOT BE CONSTRUED TO APPLY TO WORK BELOW GROUND
LEVEL IN OPEN CUT. IT SHALL APPLY TO CUT AND COVER
WORK OF SUBWAY CONSTRUCTION AFTER THE TEMPORARY
COVER HAS BEEN PLACED.....$ 36.20
27.30

LABO1130-009 07/01/2023

Rates
Fringes
LABORER, PLASTER TENDER (MARIPOSA, MERCED,
STANISLAUS, AND TUOLUMNE COUNTIES) WORK ON A SWING
STAGE SCAFFOLD: $1.00 PER HOUR ADDITIONAL.....$ 39.77
28.54

PAIN0016-001 01/01/2025

Rates
Fringes
PAINTERS: ALAMEDA, CONTRA COSTA, MONTEREY, SAN
BENITO, SAN MATEO, SANTA CLARA, AND SANTA CRUZ
COUNTIES) PREMIUMS: EXOTIC MATERIALS - $1.25
ADDITIONAL PER HOUR. SPRAY WORK: - $0.50
ADDITIONAL PER HOUR. INDUSTRIAL PAINTING - $0.25
ADDITIONAL PER HOUR [WORK ON INDUSTRIAL BUILDINGS
USED FOR THE MANUFACTURE AND PROCESSING OF GOODS
FOR SALE OR SERVICE; STEEL CONSTRUCTION (BRIDGES),
STACKS, TOWERS, TANKS, AND SIMILAR STRUCTURES]
HIGH WORK: OVER 50 FEET - $2.00 PER HOUR
ADDITIONAL 100 TO 180 FEET - $4.00 PER HOUR
ADDITIONAL OVER 180 FEET - $6.00 PER HOUIR
ADDITIONAL.....$ 53.38
28.04

PAIN0016-003 01/01/2025

Rates
Fringes
DRYWALL FINISHER/TAPER: (AREA 2).....$ 59.63
31.29
DRYWALL FINISHER/TAPER: (AREA 1).....$ 63.76
32.69

PAIN0016-012 01/01/2024

SOLICITATION

Rates
Fringes
SOFT FLOOR LAYER ALAMEDA, CONTRA COSTA, MARIPOSA, MERCED, MONTEREY, SAN BENITO, SAN FRANCISCO, SAN MATEO, SANTA CLARA AND SANTA CRUZ COUNTIES.....$ 59.00 33.03

PAIN0016-015 01/01/2025

Rates
Fringes
PAINTER: BRUSH (CALAVERAS, MARIPOSA, MERCED, SAN JOAQUIN, STANISLAUS & TUOLUMNE COUNTIES)
FOOTNOTES: SPRAY/SANDBLAST: $0.50 ADDITIONAL PER HOUR. EXOTIC MATERIALS: $1.25 ADDITIONAL PER HOUR. HIGH TIME: OVER 50 FT ABOVE GROUND OR WATER LEVEL $2.00 ADDITIONAL PER HOUR. 100 TO 180 FT ABOVE GROUND OR WATER LEVEL $4.00 ADDITIONAL PER HOUR. OVER 180 FT ABOVE GROUND OR WATER LEVEL $6.00 ADDITIONAL PER HOUR.....$ 43.45 22.80

PAIN0016-022 01/01/2025

Rates
Fringes
PAINTER (SAN FRANCISCO COUNTY).....$ 57.00 28.04

PAIN0169-001 01/01/2023

Rates
Fringes
GLAZIER (FRESNO, KINGS, MADERA, MARIPOSA AND MERCED COUNTIES).....$ 44.33 28.88

PAIN0169-005 01/01/2024

Rates
Fringes
GLAZIER (ALAMEDA CONTRA COSTA, MONTEREY, SAN BENITO, SAN FRANCISCO, SAN MATEO, SANTA CLARA & SANTA CRUZ COUNTIES).....$ 56.22 34.00

PAIN0294-004 07/01/2023

Rates
Fringes
PAINTER: DRYWALL FINISHER/TAPER (FRESNO, KINGS AND MADERA COUNTIES) FOOTNOTE: SPRAY PAINTERS & PAPERHANGERS RECIVE $1.00 ADDITIONAL PER HOUR. PAINTERS DOING DRYWALL PATCHING RECEIVE $1.25

SOLICITATION

ADDITIONAL PER HOUR. LEAD ABATERS & SANDBLASTERS
RECEIVE $1.50 ADDITIONAL PER HOUR. HIGH TIME -
OVER 30 FEET (DOES NOT INCLUDE WORK FROM A LIFT)
$0.75 PER HOUR ADDITIONAL.....$ 35.74
21.80
PAINTER: BRUSH, ROLLER   (FRESNO, KINGS AND MADERA
COUNTIES) FOOTNOTE: SPRAY PAINTERS &
PAPERHANGERS RECIVE $1.00 ADDITIONAL PER HOUR.
PAINTERS DOING DRYWALL PATCHING RECEIVE $1.25
ADDITIONAL PER HOUR. LEAD ABATERS & SANDBLASTERS
RECEIVE $1.50 ADDITIONAL PER HOUR. HIGH TIME -
OVER 30 FEET (DOES NOT INCLUDE WORK FROM A LIFT)
$0.75 PER HOUR ADDITIONAL.....$ 34.49
21.80

 PAIN0294-005 01/01/2023

                                                    Rates
Fringes
SOFT FLOOR LAYER (FRESNO, KINGS & MADERA).....$ 38.53
23.19

 PAIN0767-001 01/01/2024

                                                    Rates
Fringes
GLAZIER   (CALAVERAS, SAN JOAQUIN, STANISLAUS AND
TUOLUMNE COUNTIES)   PAID HOLIDAYS: NEW YEAR'S
DAY, MARTIN LUTHER KING, JR. DAY, PRESIDENT'S DAY,
MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY,
VETERAN'S DAY, THANKSGIVING DAY, AND CHRISTMAS DAY.
   EMPLOYEE REQUIRED TO WEAR A BODY HARNESS SHALL
RECEIVE $1.50 PER HOUR ABOVE THE BASIC HOURLY RATE
AT ANY ELEVATION.....$ 43.25
35.62

 PAIN1176-001 07/01/2022

                                                    Rates
Fringes
PARKING LOT STRIPING/HIGHWAY MARKING: HIGHWAY
IMPROVEMENT: GROUP 3 PROTECTIVE COATING, PAVEMENT
SEALING.....$ 35.11
17.62
PARKING LOT STRIPING/HIGHWAY MARKING: HIGHWAY
IMPROVEMENT: GROUP 1 STRIPER: LAYOUT AND
APPLICATION OF PAINTED TRAFFIC STRIPES AND MARKING;
HOT THERMO PLASTIC; TAPE, TRAFFIC STRIPES AND
MARKINGS.....$ 40.83
17.62
PARKING LOT STRIPING/HIGHWAY MARKING: HIGHWAY
IMPROVEMEMT: GROUP 2 GAMECOURT & PLAYGROUND
INSTALLER.....$ 34.71
17.62

SOLICITATION

PAIN1237-003 01/01/2024

	Rates	Fringes
SOFT FLOOR LAYER (CALAVERAS; SAN JOAQUIN COUNTIES; STANISLAUS AND TUOLUMNE COUNTIES)	$ 48.54	26.59

PLAS0066-002 07/01/2019

	Rates	Fringes
PLASTERER (ALAMEDA, CONTRA COSTA, SAN MATEO AND SAN FRANCISCO COUNTIES)	$ 42.41	30.73

PLAS0300-001 07/01/2018

	Rates	Fringes
PLASTERER (AREA 337: MONTEREY COUNTY)	$ 32.88	31.68
PLASTERER (AREA 295: CALAVERAS & SAN JOAQUIN COUNTIES)	$ 32.70	31.68
PLASTERER (AREA 224: SAN BENITO, SANTA CLARA, SANTA CRUZ)	$ 32.88	31.68
PLASTERER (AREA 188: FRESNO)	$ 32.70	31.68
PLASTERER (AREA 429: MARIPOSA, MERCED, STANISLAUS, TUOLUMNE COUNTIES)	$ 32.70	31.68

PLAS0300-005 07/01/2016

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 32.15	23.27

PLUM0038-001 07/01/2023

	Rates	Fringes
PLUMBER, PLUMBER, STEAMFITTER, REFRIGERATION FITTER (SAN FRANCISCO COUNTY)	$ 85.50	48.98

PLUM0038-005 07/01/2025

	Rates	Fringes

SOLICITATION

LANDSCAPE/IRRIGATION FITTER: UNDERGROUND/UTILITY
FITTER (SAN FRANCISCO COUNTY).....$ 77.35
36.53

PLUM0062-001 01/01/2026

Rates
Fringes
PLUMBER & STEAMFITTER (MONTEREY AND SANTA CRUZ
COUNTIES).....$ 57.75
43.60

PLUM0159-001 07/01/2025

Rates
Fringes
PLUMBER AND STEAMFITTER: (2) ALL OTHER WORK (CONTRA
COSTA COUNTY).....$ 68.57
49.04
PLUMBER AND STEAMFITTER: (1) REFRIGERATION (CONTRA
COSTA COUNTY).....$ 67.68
49.04

PLUM0246-001 01/01/2026

Rates
Fringes
PLUMBER & STEAMFITTER (FRESNO, KINGS & MADERA
COUNTIES).....$ 54.50
42.54

PLUM0246-004 01/01/2017

Rates
Fringes
PLUMBER: PIPE TRADESMAN PIPE TRADESMAN SCOPE OF
WORK: INSTALLATION OF CORRUGATED METAL PIPING FOR
DRAINAGE, AS WELL AS INSTALLATION OF CORRUGATED
METAL PIPING FOR CULVERTS IN CONNECTION WITH STORM
SEWERS AND DRAINS; GROUTING, DRY PACKING AND
DIAPERING OF JOINTS, HOLES OR CHASES INCLUDING
PAVING OVER JOINTS, IN PIPING; TEMPORARY PIPING FOR
DIRT WORK FOR BUILDING SITE PREPARATION; OPERATING
JACK HAMMERS, PAVEMENT BREAKERS, CHIPPING GUNS,
CONCRETE SAWS AND SPADES TO CUT HOLES, CHASES AND
CHANNELS FOR PIPING SYSTEMS; DIGGING, GRADING,
BACKFILLING AND GROUND PREPARATION FOR ALL TYPES OF
PIPE TO ALL POINTS OF THE JOBSITE; GROUND
PREPARATION INCLUDING GROUND LEVELING, LAYOUT AND
PLANTING OF SHRUBBERY, TREES AND GROUND COVER,
INCLUDING WATERING, MOWING, EDGING, PRUNING AND
FERTILIZING, THE BREAKING OF CONCRETE, DIGGING,
BACKFILLING AND TAMPING FOR THE PREPARATION AND
COMPLETION OF ALL WORK IN CONNECTION WITH LAWN

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SPRINKLER AND LANDSCAPING; LOADING, UNLOADING AND DISTRIBUTING MATERIALS AT JOBSITE; PUTTING AWAY MATERIALS IN STORAGE BINS IN JOBSITE SECURE STORAGE AREA; DEMOLITION OF PIPING AND FIXTURES FOR REMODELING AND ADDITIONS; SETTING UP AND TEARING DOWN WORK BENCHES, LADDERS AND JOB SHACKS; CLEAN-UP AND SWEEPING OF JOBSITE; PIPE WRAPPING AND WATERPROOFING WHERE TAR OR SIMILAR MATERIAL IS APPLIED FOR PROTECTION OF BURIED PIPING; FLAGMAN....$ 13.00
10.74

PLUM0342-001 07/01/2025

	Rates	Fringes
PLUMBER, PIPEFITTER, STEAMFITTER (ALAMEDA & CONTRA COSTA COUNTIES)	$ 80.50	50.45
PIPEFITTER: CONTRA COSTA COUNTY (ALAMEDA & CONTRA COSTA COUNTIES)	$ 80.50	50.45

PLUM0355-004 07/01/2025

	Rates	Fringes
UNDERGROUND UTILITY WORKER: /LANDSCAPE FITTER ALAMEDA, CALAVERAS, CONTRA COSTA, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, MONTEREY, SAN BENITO, SAN JOAQUIN, SAN MATEO, SANTA CLARA, SANTA CRUZ, STANISLAUS, AND TUOLUMNE COUNTIES	$ 36.01	18.50

PLUM0393-001 07/01/2021

	Rates	Fringes
PLUMBER/PIPEFITTER (SAN BENITO AND SANTA CLARA COUNTIES)	$ 68.76	46.63

PLUM0442-001 01/01/2026

	Rates	Fringes
PLUMBER & STEAMFITTER (CALAVERAS, MARIPOSA, MERCED, SAN JOAQUIN, STANISLAUS & TUOLUMNE COUNTIES)	$ 58.45	38.74

PLUM0467-001 07/01/2025

	Rates	Fringes

SOLICITATION

PLUMBER/PIPEFITTER/STEAMFITTER (SAN MATEO COUNTY)...$ 87.75
41.44

ROOF0027-002 09/01/2024

Rates
Fringes
ROOFER (FRESNO, KINGS, AND MADERA COUNTIES).....$ 45.76
16.86

ROOF0040-002 08/01/2024

Rates
Fringes
ROOFER (SAN FRANCISCO & SAN MATEO COUNTIES).....$ 55.30
22.97

ROOF0081-001 08/01/2024

Rates
Fringes
ROOFER (ALAMEDA AND CONTRA COSTA COUNTIES).....$ 54.94
23.34

ROOF0081-004 08/01/2024

Rates
Fringes
ROOFER (CALAVERAS, MARIPOSA, MERCED, SAN JOAQUIN,
STANISLAUS AND TUOLUMNE COUNTIES).....$ 49.65
22.19

ROOF0095-002 08/01/2023

Rates
Fringes
ROOFER: KETTLE PERSON (2 KETTLES) (MONTEREY, SAN
BENITO, SANTA CLARA, AND SANTA CRUZ COUNTIES:).....$ 55.17
21.51
ROOFER: JOURNEYMAN (MONTEREY, SAN BENITO, SANTA
CLARA, AND SANTA CRUZ COUNTIES).....$ 53.17
21.51
ROOFER: BITUMASTIC, ENAMELER, COAL TAR, PITCH AND
MASTIC WORKER (MONTEREY, SAN BENITO, SANTA CLARA,
AND SANTA CRUZ COUNTIES).....$ 57.17
21.51

SFCA0483-001 01/01/2026

Rates
Fringes
SPRINKLER FITTER: FIRE (ALAMEDA, CONTRA COSTA,
SAN FRANCISCO, SAN MATEO AND SANTA CLARA COUNTIES)..$ 81.54
41.35

SOLICITATION

SFCA0669-011 01/01/2026

	Rates	Fringes
SPRINKLER FITTER CALAVERAS, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, MONTEREY, SAN BENITO, SAN JOAQUIN, SANTA CRUZ, STANISLAUS AND TUOLUMNE COUNTIES:	$ 49.69	29.72

SHEE0104-001 07/01/2025

	Rates	Fringes
SHEET METAL WORKER: (AREA 2)	$ 64.23	39.65

SHEE0104-003 07/01/2021

	Rates	Fringes
SHEET METAL WORKER (CALAVERAS AND SAN JOAQUIN COUNTIES)	$ 44.34	39.22

SHEE0104-005 07/01/2021

	Rates	Fringes
SHEET METAL WORKER: EXCLUDING METAL DECK AND SIDING (MARIPOSA, MERCED, STANISLAUS AND TUOLUMNE COUNTIES)	$ 41.28	45.41

SHEE0104-007 07/01/2021

	Rates	Fringes
SHEET METAL WORKER (FRESNO, KINGS, AND MADERA COUNTIES)	$ 44.07	40.79

SHEE0104-015 07/01/2024

	Rates	Fringes
SHEET METAL WORKER: METAL DECKING AND SIDING ONLY ALAMEDA, CONTRA COSTA, MONTEREY, SAN BENITO, SAN FRANCISCO, SAN MATEO, SANTA CLARA AND SANTA CRUZ COUNTIES:	$ 56.23	37.52

SOLICITATION

SHEE0104-018 07/01/2024

	Rates	Fringes
SHEET METAL WORKER: METAL DECKING AND SIDING ONLY CALAVERAS, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, SAN JOAQUIN, STANISLAUS AND TUOLUMNE COUNTIES:	$ 56.23	37.52

TEAM0094-001 07/01/2025

	Rates	Fringes
TRUCK DRIVERS: GROUP 5: DUMP TRUCKS, 65 YDS. AND OVER; HOLLAND HAULER; LOW BED HEAVY DUTY TRANSPORT OVER 7 AXLES FOOTNOTES: ARTICULATED DUMP TRUCK; BULK CEMENT SPREADER (WITH OR WITHOUT AUGER); DUMPCRETE TRUCK; SKID TRUCK (DEBRIS BOX); DRY PRE-BATCH CONCRETE MIX TRUCKS; DUMPSTER OR SIMILAR TYPE; SLURRY TRUCK: USE DUMP TRUCK YARDAGE RATE. HEATER PLANER; ASPHALT BURNER; SCARIFIER BURNER; INDUSTRIAL LIFT TRUCK (MECHANICAL TAILGATE); UTILITY AND CLEAN-UP TRUCK: USE APPROPRIATE RATE FOR THE POWER UNIT OR THE EQUIPMENT UTILIZED. TRUCK DRIVER CLASSIFICATIONS	$ 44.56	34.28
TRUCK DRIVERS: GROUP 4: DUMP TRUCKS, OVER 25 YDS. AND UNDER 65 YDS.; WATER PULLS - DW 10'S, 20'S, 21'S AND OTHER SIMILAR EQUIPMENT WHEN PULLING AQUA/PAK OR WATER TANK TRAILERS; HELICOPTER PILOTS (WHEN TRANSPORTING MEN AND MATERIALS); LOWBEDK HEAVY DUTY TRANSPORT UP TO INCLUDING 7 AXLES; DW10'S, 20'S, 21'S AND OTHER SIMILAR CAT TYPE, TERRA COBRA, LETOURNEAU PULLS, TOURNOROCKER, EUCLID AND SIMILAR TYPE EQUIPMENT WHEN PULLING FUEL AND/OR GREASE TANK TRAILERS OR OTHER MISCELLANEOUS TRAILERS; VACUUM TRUCKS 7500 GALS AND OVER AND TRUCK REPAIRMAN FOOTNOTES: ARTICULATED DUMP TRUCK; BULK CEMENT SPREADER (WITH OR WITHOUT AUGER); DUMPCRETE TRUCK; SKID TRUCK (DEBRIS BOX); DRY PRE-BATCH CONCRETE MIX TRUCKS; DUMPSTER OR SIMILAR TYPE; SLURRY TRUCK: USE DUMP TRUCK YARDAGE RATE. HEATER PLANER; ASPHALT BURNER; SCARIFIER BURNER; INDUSTRIAL LIFT TRUCK (MECHANICAL TAILGATE); UTILITY AND CLEAN-UP TRUCK: USE APPROPRIATE RATE FOR THE POWER UNIT OR THE EQUIPMENT UTILIZED. TRUCK DRIVER CLASSIFICATIONS	$ 44.21	34.28
TRUCK DRIVERS: GROUP 3: DUMP TRUCKS, 8 YDS. AND INCLUDING 24 YDS.; TRANSIT MIXERS, OVER 10 YDS.; WATER TRUCKS, 7,000 GALS. AND OVER; JETTING TRUCKS, 7,000 GALS. AND OVER; VACUUM TRUCKS UNDER 7500 GALS. TRUCKS TOWING TILT BED OR FLAT BED PULL		

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TRAILERS; LOWBED HEAVY DUTY TRANSPORT; HEAVY DUTY TRANSPORT TILLER PERSON; SELF- PROPELLED STREET SWEEPER WITH SELF-CONTAINED REFUSE BIN; BOOM TRUCK - HYDRO-LIFT OR SWEDISH TYPE EXTENSION OR RETRACTING CRANE; P.B. OR SIMILAR TYPE SELF-LOADING TRUCK; TIRE REPAIRPERSON; COMBINATION BOOTPERSON AND ROAD OILER; DRY DISTRIBUTION TRUCK (A BOOTPERSON WHEN EMPLOYED ON SUCH EQUIPMENT, SHALL RECEIVE THE RATE SPECIFIED FOR THE CLASSIFICATION OF ROAD OIL TRUCKS OR BOOTPERSON); AMMONIA NITRATE DISTRIBUTOR, DRIVER AND MIXER; SNOW GO AND/OR PLOW FOOTNOTES: ARTICULATED DUMP TRUCK; BULK CEMENT SPREADER (WITH OR WITHOUT AUGER); DUMPCRETE TRUCK; SKID TRUCK (DEBRIS BOX); DRY PRE-BATCH CONCRETE MIX TRUCKS; DUMPSTER OR SIMILAR TYPE; SLURRY TRUCK: USE DUMP TRUCK YARDAGE RATE. HEATER PLANER; ASPHALT BURNER; SCARIFIER BURNER; INDUSTRIAL LIFT TRUCK (MECHANICAL TAILGATE); UTILITY AND CLEAN-UP TRUCK: USE APPROPRIATE RATE FOR THE POWER UNIT OR THE EQUIPMENT UTILIZED. TRUCK DRIVER CLASSIFICATIONS.....$ 43.86 34.28

TRUCK DRIVERS: GROUP 2: DUMP TRUCKS, 6 YDS. AND UNDER 8 YDS.; TRANSIT MIXERS, THROUGH 10 YDS.; WATER TRUCKS, UNDER 7,000 GALS.; JETTING TRUCKS, UNDER 7,000 GALS.; SINGLE-UNIT FLAT RACK (3-AXLE UNIT); HIGHBED HEAVY DUTY TRANSPORT; SCISSOR TRUCK; RUBBER-TIRED MUCK CAR (NOT SELF-LOADED); RUBBER-TIRED TRUCK JUMBO; WINCH TRUCK AND ""A"" FRAME DRIVERS; COMBINATION WINCH TRUCK WITH HOIST; ROAD OIL TRUCK OR BOOTPERSON; BUGGYMOBILE; ROSS, HYSTER AND SIMILAR STRADDLE CARRIERS; SMALL RUBBER-TIRED TRACTOR FOOTNOTES: ARTICULATED DUMP TRUCK; BULK CEMENT SPREADER (WITH OR WITHOUT AUGER); DUMPCRETE TRUCK; SKID TRUCK (DEBRIS BOX); DRY PRE-BATCH CONCRETE MIX TRUCKS; DUMPSTER OR SIMILAR TYPE; SLURRY TRUCK: USE DUMP TRUCK YARDAGE RATE. HEATER PLANER; ASPHALT BURNER; SCARIFIER BURNER; INDUSTRIAL LIFT TRUCK (MECHANICAL TAILGATE); UTILITY AND CLEAN-UP TRUCK: USE APPROPRIATE RATE FOR THE POWER UNIT OR THE EQUIPMENT UTILIZED. TRUCK DRIVER CLASSIFICATIONS.....$ 43.56 34.28

TRUCK DRIVERS: GROUP 1: DUMP TRUCKS, UNDER 6 YDS.; SINGLE UNIT FLAT RACK (2- AXLE UNIT); NIPPER TRUCK (WHEN FLAT RACK TRUCK IS USED APPROPRIATE FLAT RACK SHALL APPLY); CONCRETE PUMP TRUCK (WHEN FLAT RACK TRUCK IS USED APPROPRIATE FLAT RACK SHALL APPLY); CONCRETE PUMP MACHINE; FORK LIFT AND LIFT JITNEYS; FUEL AND/OR GREASE TRUCK DRIVER OR FUEL PERSON; SNOW BUGGY; STEAM CLEANING; BUS OR PERSONHAUL DRIVER; ESCORT OR PILOT CAR DRIVER; PICKUP TRUCK; TEAMSTER OILER/GREASER AND/OR SERVICEPERSON; HOOK TENDER (INCLUDING LOADING AND UNLOADING); TEAM

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DRIVER; TOOL ROOM ATTENDANT (REFINERIES)
FOOTNOTES: ARTICULATED DUMP TRUCK; BULK CEMENT SPREADER (WITH OR WITHOUT AUGER); DUMPCRETE TRUCK; SKID TRUCK (DEBRIS BOX); DRY PRE-BATCH CONCRETE MIX TRUCKS; DUMPSTER OR SIMILAR TYPE; SLURRY TRUCK: USE DUMP TRUCK YARDAGE RATE. HEATER PLANER; ASPHALT BURNER; SCARIFIER BURNER; INDUSTRIAL LIFT TRUCK (MECHANICAL TAILGATE); UTILITY AND CLEAN-UP TRUCK: USE APPROPRIATE RATE FOR THE POWER UNIT OR THE EQUIPMENT UTILIZED. TRUCK DRIVER CLASSIFICATIONS.....$ 43.26 34.28

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Note: Executive Order 13658 generally applies to contracts subject to the Davis-Bacon Act that were awarded on or between January 1, 2015 and January 29, 2022, and that have not been renewed or extended on or after January 30, 2022. Executive Order 13658 does not apply to contracts subject only to the Davis-Bacon Related Acts regardless of when they were awarded. If a contract is subject to Executive Order 13658, the contractor must pay all covered workers at least $13.65 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract from May 11, 2026, through December 31, 2026. The applicable Executive Order minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under Executive Order 13658 is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after

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award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than "SU", "UAVG", "SA", or "SC" denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The "SU" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by

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computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

"SU" wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The "SA" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the "SA" identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

a) a survey underlying a wage determination
b) an existing published wage determination
c) an initial WHD letter setting forth a position on a wage determination matter
d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations.

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Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

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END OF GENERAL DECISION"

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PRE-AWARD SURVEY

PRE-AWARD SURVEY OF PROSPECTIVE CONTRACTORS
CONSTRUCTION CONTRACTS

It is the general policy of the Department of Defense that contracts shall be awarded only to contractors determined to be responsible in accordance with Part 9 of the Federal Acquisition Regulation (FAR).

No contract shall be awarded to any person or firm unless the Contracting Officer first makes an affirmative determination that the prospective contractor is responsible within the meaning of the FAR, Part 9.

Before making a determination of responsibility, the Contracting Officer shall have in his/her possession or obtain information sufficient to satisfy himself/herself that a prospective contractor currently meets the minimum FAR Part 9 standards.

In order to make the required determination and also to expedite the contract award, the following information must be submitted by the Contractor as directed (see Section 00 22 00):

A. COMPLETED CONTRACTOR EXPERIENCE DATA FORM WITH SUPPLEMENTAL SCHEDULES A-D (ATTACHED).

B. LATEST FINANCIAL STATEMENTS. IF THE FINANCIAL STATEMENT IS MORE THAN 60 DAYS OLD, SUBMIT A CERTIFICATE STATING THAT THE FIRM'S FINANCIAL CONDITION IS SUBSTANTIALLY THE SAME, OR, IF NOT THE SAME, STATE THE CHANGES THAT HAVE TAKEN PLACE.

C. PROVIDE LETTERS FROM BANKS OR OTHER FINANCIAL INSTITUTIONS WITH WHICH THE CONTRACTOR CONDUCTS BUSINESS. THE LETTERS SHOULD CONTAIN INFORMATION ABOUT YOUR FIRM'S ACCOUNTS, LOANS, LINES OF CREDIT, ETC., PROVIDING INFORMATION LEADING TO A DETERMINATION THAT YOUR FIRM IS "RESPONSIBLE" AS DEFINED IN THE FEDERAL ACQUISITION REGULATION, PART 9, "HAS THE FINANCIAL RESOURCES TO PERFORM THE CONTRACT OR THE ABILITY TO OBTAIN THEM". THE GOVT IS INTERESTED IN FINANCIAL STABILITY, TIMELY PAYMENTS, THE LENGTH AND NATURE OF THE RELATIONSHIP BETWEEN THE FIRM AND THE FINANCIAL INSTITUTION, ETC. WHICH REVEALS THE FIRM'S FINANCIAL ABILITY TO PERFORM THE CONTRACT. THE LETTERS SHOULD ALSO PROVIDE THE NAME AND TELEPHONE NUMBER OF THE BANK REPRESENTATIVE THE GOVERNMENT MAY CONTACT.

BE SURE TO INCLUDE IN YOUR PREAWARD SURVEY, INFORMATION ON ANY CONTRACTS YOU HAVE HAD WITH THE SAN FRANCISCO DISTRICT, SACRAMENTO DISTRICT OR LOS ANGELES DISTRICT, CORPS OF ENGINEERS, WITHIN THE LAST 12 MONTHS.

THESE DOCUMENTS SHALL BE TREATED BY THE GOVERNMENT AS CONFIDENTIAL.

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CONSTRUCTION CONTRACTOR EXPERIENCE DATA	DATE:
Firm Name and Telephone Number	Main Office Address (Street, City, and State)
Branch Offices	Services Rendered ☐ Construction ☐ Design ☐ Consultant
Organization ☐ Individual ☐ Joint Venture ☐ Partnership ☐ Corporation	Date Organized Date Incorporated: State:
Names of Officers and Other Key Personnel	

I – PRESENT PAYROLL PERSONNEL (List Number of Each Category Below)		
Partners: Officers: Other Key:	Remainder: Total:	Subtotal Permanent: Maximum Personnel at Any Time: Date:
II—EQUIPMENT OWNED Present Value ($)		**III—FINANCIAL DATA AS OF (DATE):** Current Assets:
Acquisition Cost ($)		Current Liabilities: Net Worth:

IV—TOTAL VALUE OF CONSTRUCTION AND DEMOLITION WORK IN PAST 6 YRS EXCLUSIVE OF JOINT VENTURE (LIST MOST RECENT FIRST)		**V—LARGEST JOB EVER CONTRACTED (If Other Than in Past Six Years)**
$	**LARGEST JOB IN PAST 6 YRS**	Contract Amount: Date: Description: Owner:
$	Contract Amount: Date: Description:	
$		
$		
$		
$		
Avg. Annual Income $		

VI—TYPE OF WORK IN WHICH FIRM SPECIALIZES	
NAME AND POSITION/TITLE OF PERSON SIGNING	**SIGNATURE**
NOTE: Use reverse side for explanations or detailed description of item(s) reported above.	

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SCHEDULE A

CONSTRUCTION CONTRACTOR EXPERIENCE DATA

EXISTING COMMITMENTS: (List below the construction projects your firm has under way on this date, including those on which you are presently low bidder but have not received an award.)

CONTRACT NUMBER AND AMOUNT	DESCRIPTION OF WORK	FOR WHOM PERFORMED*	PERCENT COMPLETE	PERCENT SUBLET

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* PROVIDE NAME OF ORGANIZATION, POINT OF CONTACT AND TELEPHONE NUMBER FOR CONTACT.

SCHEDULE B

CONSTRUCTION CONTRACTOR EXPERIENCE DATA

EXPERIENCE DATA: (List below the principal construction projects your firm has completed within the past six (6) years.)

CONTRACT NO.	AMOUNT	DESCRIPTION/LOCATION	CONTACT PERSON/PHONE NO.	PERCENT SUBLET

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SCHEDULE C

CONSTRUCTION CONTRACTOR EXPERIENCE DATA

CONSTRUCTION AND/OR TECHNICAL EOUIPMENT: (List total equipment and Facilities owned for performing the work and present status as to whether or not it is committed to existing contracts.)

QUANTITY	DESCRIPTION	CONDITION	YEARS OF PRESENT SERVICE STATUS

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SCHEDULE D

CONSTRUCTION CONTRACTOR EXPERIENCE DATA

TO BE COMPLETED IF PROPOSED MILITARY CONSTRUCTION CONTRACT EXCEEDS $1,OOO,OOO.

A. Each contract awarded within the preceding three-month period exceeding $1,OOO,OOO in value with brief description of the contract:

B. Each contract awarded within the preceding three-year period not already physically completed and exceeding $5,000,000 in value with brief description of the contract:

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01 32 23	HYDROGRAPHIC SURVEY
01 33 00	SUBMITTAL PROCEDURES
01 35 26	GOVERNMENTAL SAFETY REQUIREMENTS
01 42 00	SOURCES FOR REFERENCE PUBLICATIONS
01 45 00.00 10	QUALITY CONTROL
01 45 00.15 10	RESIDENT MANAGEMENT SYSTEM CONTRACTOR MODE (RMS CM)
01 50 00	TEMPORARY FACILITIES AND CONTROLS
01 57 19.01 43	TEMPORARY ENVIRONMENTAL CONTROLS FOR DREDGING IN SAN FRANCISCO BAY
01 57 19.86 43	EELGRASS SURVEYS AND LIGHT MONITORING
01 57 19.99 43	HERRING OBSERVERS

DIVISION 35 - WATERWAY AND MARINE CONSTRUCTION

35 20 23	DREDGING
35 20 23.13	NATIONAL DREDGING QUALITY MANAGEMENT PROGRAM - SCOW MONITORING PROFILE

ATTACHMENT LIST

SECTION	SUBPART	ATTACHMENT
01 11 00	1.1	DMMO Suitability Determination
01 32 23	1.5	Survey QC Log
01 33 00		Submittal Register
01 35 26	1.7	Accident Prevention Plan Worksheet
01 35 26	1.3	Summary of Worker Compensation Claims
01 35 26	1.12.3	USACE Summary of Contractor Work-Related Injuries and Illnesses
01 35 26	1.12.3	Summary Guide for Completing USACE Contractor Monthly Summary Record of Injury/Illnesses & Work Hour Exposure
01 57 19.01 43	1.7	San Francisco Regional Water Quality Certification (2026-2029)
01 57 19.01 43	1.7	National Marine Fisheries Service Biological Opinion
01 57 19.01 43	1.7	U.S. Fish and Wildlife Service Biological Opinion
01 57 19.01 43	1.7	BCDC Letter of Agreement 2026-2029
01 57 19.86 43	1.4	Magnuson-Stevens Essential Fish Habitat Consultation
01 57 19.86 43	1.4	California Eelgrass Mitigation Policy and Guidelines
01 57 19.86 43	3.1	Eelgrass Light Monitoring Plan
01 57 19.99 43	3.1	Biological Observation Log
35 20 23	1.3.1.1	DDLS
35 20 23	1.3.1.2	DMDSL Logs

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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 11 00

SUMMARY OF WORK

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-- End of Section Table of Contents --

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SECTION 01 11 00

SUMMARY OF WORK

PART 1 GENERAL

1.1 PROJECT DESCRIPTION

The work includes annual maintenance dredging of the federal navigation channel in Richmond Inner Harbor, which cannot begin before 1 June in any year.

1.1.1 Requirements

a. Dredge Richmond Inner Harbor Channel to -37-ft MLLW as stated in Section 00 10 00 Pricing Schedule and Plan Sheet ID G-02: General Notes for acceptance.

b. The project depth for reaches 1 through 14 is -37-ft MLLW. Refer to General Notes on drawings for placement designations.

c. The environmental window is between 1 June and 30 November. Refer to Section 01 57 19.99 43 for Special Environmental Requirements for in-water work that extends beyond 30 November.

d. Material to be dredged from Richmond Inner Harbor Reaches 1 through 14 is suitable and shall be taken for placement at the Montezuma Wetlands site. Contractor shall refer to the DMMO Suitability Determination attached at the end of the specifications package. Sample areas 1 through 4 correspond to Reaches 1 through 10 while sample areas 5 and 6 corresponds to Reaches 11 through 14.

e. Any work done after 30 November through 15 March requires herring monitoring as described in section 01 57 19.99 43.

f. Contractor shall perform pre-dredge and post-dredge eelgrass population surveys per Section 01 57 19.86 43. Dredging in a reach is prohibited prior to completing the pre-dredge eelgrass population survey in the reach.

g. Contractor shall provide Montezuma Wetlands LLC with weekly schedules of dredging deliveries and prior notification of a minimum of 8 hours of any upcoming interruption to dredging deliveries to compensate for downtime of offloading crew shift costs. The points of contact at Montezuma Wetlands LLC are:

Buddy Rodarte
Budrodarte@comcast.net
707-479-2146

Dawayne Carter
Dawaynecarter90@gmail.com
707-580-9948

Sharon Hall
Sharon@montezumallc.com

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415-235-0874

Cassie Pinnell
Cassie@montezumallc.com
510-326-6296

1.1.2 Constraints

Hopper and hydraulic dredging is prohibited for this project.

Herring spawning observers are required for dredging operations as stated in Section 01 57 19.99 43.

Dredging operations at locations where utilities cross the channel shall be performed in strict compliance with applicable OSHA regulations, including but not limited to 29 CFR 1910 and 29 CFR 1926, and all utility owner requirements.

The Contractor shall identify, locate, and verify the position and elevation of all submarine pipelines and overhead utilities prior to dredging including 811 coordination, in accordance with OSHA hazard identification requirements. Work shall not commence until utility locations are confirmed and safe work limits are established.

1.1.2.1 Submarine Pipelines (Below Dredge Level)

Dredging shall be controlled to prevent contact with, exposure of, or damage to submarine pipelines. A minimum 10' pipeline cover and dredge cut-off level shall be maintained at all times. Anchoring, spudding, or equipment contact within the pipeline protection zone is prohibited unless approved. If a pipeline is exposed, struck, or suspected to be damaged, work shall stop immediately and the Engineer shall be notified, in accordance with OSHA incident response requirements.

1.1.2.2 Overhead Powerlines (Above Work Area)

Minimum clearance distances from high-voltage overhead powerlines shall be maintained at all times in accordance with OSHA electrical safety regulations (29 CFR 1910.333 and 1926 Subpart K). No part of dredging equipment, including booms, masts, spuds, or ladders, shall encroach into the minimum required clearance zone. A designated safety observer shall be present during operations beneath overhead powerlines. Work shall cease during conditions that reduce visibility or control, including high winds or storms.

1.1.2.3 Equipment and Operations

Equipment height, swing radius, and dredging depth shall be physically and operationally limited to prevent utility contact. Only approved dredging methods with controlled depth capability shall be used at the utility crossing. Any unsafe condition involving utilities shall be corrected immediately before work resumes.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

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SD-01 Preconstruction Submittals

Certificates Of Insurance

Surety Bonds

List Of Proposed Subcontractors

1.3 MEETINGS

1.3.1 Preconstruction Conference

After award of contract, a pre-dredging conference will be held at such time and location as determined by the Contracting Officer or delegated representative for purposes of discussing and developing mutual understanding between the Contracting Officer or delegated representative and the Contractor's Representatives regarding the terms, conditions, and requirements of the contract. Members of the conference from the Government will include the quality assurance staff, the Contracting Officer or delegated representative, the Government Environmental Manager and construction staff. Members from the Contractor shall include the dredge master, chief hydrographic surveyor, and the quality control staff. The discussion will include, but will not be limited to, the following:

-Contractor supervisory and quality control project staff

-Correspondence procedures

-Quality Control and Hydrographic Surveying

-Project scheduling and payment procedures

-Resident Management System (RMS-QC)

-Other subjects that may be of interest to the contracting parties

1.3.2 Environmental Preconstruction

Refer to Section 01 57 19.01 43 for details.

1.3.3 Safety Mutual Understanding Meeting

Refer to paragraph 1.6.3.1 of Section 01 35 26 for details.

1.3.4 Weekly Meetings

Weekly construction/survey/coordination/progress meetings shall be held between the Contractor and Contracting Officer or delegated representative. Contractor shall provide meeting agenda at least one day before the meeting. Agenda shall include at minimum but not limited to the following topics: safety, quality control, environmental, progress and quantities to date, two-week look ahead, submittals, RFIs, correspondences, progress payments, three-phase inspections and surveys. Minutes of the weekly meeting shall be prepared by the Contactor's CQC Manager and submitted to the Contracting Officer or delegated representative within 24 hrs.

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1.4 CONTRACTOR PERFORMANCE EVALUATIONS

The Contractor's performance shall be evaluated using the Construction Performance Assessment Reporting System (CPARS) in accordance with Subpart 36.201 (Evaluation of Contractor Performance) of the Federal Acquisition Regulation and ER 415-1-17. The Contractor may access, review, and comment on the evaluation for a period of 60 days. Accessing and using CPARS requires Public Key Infrastructure (PKI) certification. The certification is a Department of Defense requirement and was implemented to provide security in electronic transactions. This certification is purchased from an External Certificate Authorities (ECA) vendor. Contractor access to CPARS is required for Contractor to participate in the performance evaluation process. PKI certification is the sole responsibility of the Contractor. Current information about the PKI certification process and known PKI vendors can be found at the following link: http://www.cpars.gov/.

1.5 PERMITS

The Contractor shall obtain and comply with all licenses and permits required by Federal, State, and local laws, codes, and regulations unless otherwise specified in these contract documents. The list of permits is in spec section 01 57 19.01 43 and 01 57 19.86 43.

1.6 PUBLIC SAFETY

1.6.1 General

The Contractor shall provide guard personnel as required to provide protection in the interest of public safety. Whenever the Contractor's operations create a condition hazardous to the public, he shall furnish at their own expense and without cost to the Government, such guards as are necessary to give adequate warning to the public of any dangerous conditions to be encountered, and he shall furnish, erect, or maintain such lights, signs, barricades or fences, and other devices as are necessary to prevent accidents and to avoid damage or injury to the public. Flagmen and guards, while on duty and assigned to give warning to the public that the dredging is being accomplished, and of any dangerous conditions to be encountered as a result thereof, shall be equipped with appropriate safety equipment and a red flag. Signs, flags, lights, and other warning and safety devices shall conform to applicable city, county, and state requirements. Should the Contractor appear to be negligent in furnishing adequate warning and protective measures, the Contracting Officer or delegated representative will direct attention to the existence of a hazard, and the necessary warning and protective measures shall be furnished and installed by the Contractor without additional cost to the Government. The installation of any general illumination shall not relieve the Contractor of their responsibility for furnishing and maintaining all devices necessary to provide protection to all parties concerned. As part of the best pracictces, the contractor is highly encouraged to hold a safety meeting, open to the general public, at a venue frequented by the boating community to proactively inform and receive feedback from the public of the upcoming dreging work and task timelines.

1.7 PUBLIC UTILITIES AND PRIVATE IMPROVEMENTS

The Contractor shall take care to preserve and protect any existing

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utilities or features improvements from injury or damage during construction operations. All damages shall be promptly repaired or replaced by the Contractor. The Contractor shall notify the Contracting Officer or delegated representative immediately if any utility or structure has been damaged by the Contractor. The Contractor shall assume full responsibility for reimbursing the owners for any damage to thei properties, utilities, or improvements, or interference with their services caused through the dredging operations. The Contractor is not relieved from the responsibility set forth in "FAR 52.236-3, Site Investigation and Conditions Affecting the Work" except as provided above.

1.8 SAFETY OF STRUCTURES

The Contractor shall use reasonable and proper care in the execution of the work to assure the stability of piers and other structures lying on or adjacent to the site of work, insofar as they may be jeopardized by the dredging operations and on account of moving or mooring of equipment. The Contractor shall make good all damages resulting from the moving and mooring of equipments and from dredging operations insofar as such damages may be caused by variations in locations and/or depth of dredging below that ordered by the Contracting Officer or delegated representative.

1.9 EXISTING WORK

In addition to FAR 52.236-9 Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements:

a. Remove or alter existing work in such a manner as to prevent injury or damage to any portions of the existing work which remain.

b. Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as approved by the Contracting Officer. At the completion of operations, existing work must be in a condition equal to or better than that which existed before new work started.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

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PROJECT SCHEDULE

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AACE INTERNATIONAL (AACE)

AACE 29R-03 (2011) Forensic Schedule Analysis

1.2 PAYMENT

Separate payment will not be made for providing and maintaining an effective project schedule, and all associated costs will be included in applicable bid schedule prices.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Initial Project Schedule; G

Periodic Schedule Updates; G

1.4 PROJECT SCHEDULER QUALIFICATIONS

Each schedule submittal shall identify the Project Scheduler who was responsible for the preparation of the schedule submittal and all required updating and production of reports. The Project Scheduler must have a minimum of 2 years experience scheduling construction projects similar in size and nature to this project with scheduling software that meets the requirements of this specification. Representative must have a comprehensive knowledge of CPM scheduling principles and application.

PART 2 PRODUCTS

2.1 SOFTWARE

The scheduling software utilized to produce and update the schedules required herein must be capable of meeting all requirements of this specification.

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2.1.1 Government Default Software

The Government intends to use Primavera P6.

2.1.2 Contractor Software

Scheduling software used by the contractor must be commercially available from the software vendor for purchase with vendor software support agreements available. The software routine used to create the required sdef file must be created and supported by the software manufacturer.

2.1.2.1 Primavera

If Primavera P6 is selected for use, provide the "xer" export file in a version of P6 importable by the Government system.

2.1.2.2 Other than Primavera

Contractor shall furnish two scheduling software licenses, two computers, and training for two Government employees in the use of the software if the contractor chooses to use software other than Primavera P6. These computers will be stand-alone and not connected to Government network. Computers and licenses will be returned at project completion.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

Prepare for approval a Project Schedule, as specified herein, pursuant to FAR Clause 52.236-15, SCHEDULE FOR CONSTRUCTION CONTRACTS. Show in the schedule the proposed sequence to perform the work and dates completed for starting and completing all schedule activities. The scheduling of the entire project is required. The scheduling is the responsibility of the Contractor. Contractor management personnel must actively participate in development and maintenance of an accurate Project Schedule. Provide a schedule that is a forward planning as well as a project monitoring tool. Use the Critical Path Method (CPM) of network calculation to generate all Project Schedules. Prepare each Project Schedule using the Precedence Diagram Method (PDM).

3.2 BASIS FOR PAYMENT AND COST LOADING

The schedule is the basis for determining contract earnings during each update period and therefore the amount of each progress payment. The aggregate value of all activities coded to a contract CLIN must equal the value of the CLIN.

3.2.1 Activity Cost Loading

Activity cost loading must be reasonable and without front-end loading. Provide additional documentation to demonstrate reasonableness if requested by the Contracting Officer or delegated representative.

3.2.2 Withholdings / Payment Rejection

Failure to meet the requirements of this specification may result in the disapproval of the initial or periodic schedule updates and subsequent

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rejection of payment requests until compliance is met.

In the event that the Contracting Officer or delegated representative directs schedule revisions and those revisions have not been included in subsequent Project Schedule revisions or updates, the Contracting Officer or delegated representative may withhold 10 percent of pay request amount from each payment period until such revisions to the project schedule have been made.

3.3 PROJECT SCHEDULE DETAILED REQUIREMENTS

3.3.1 Level of Detail Required

Develop the Project Schedule to the appropriate level of detail to address major milestones and to allow for satisfactory project planning and execution. Failure to develop the Project Schedule to an appropriate level of detail will result in its disapproval. The Contracting Officer or delegated representative will consider, but is not limited to, the following characteristics and requirements to determine appropriate level of detail:

3.3.2 Activity Durations

Reasonable activity durations are those that allow the progress of ongoing activities to be accurately determined between update periods. Less than 2 percent of all non-procurement activities may have Original Durations (OD) greater than 20 work days or 30 calendar days.

3.3.3 Procurement Activities

Include activities associated with the critical submittals and their approvals, procurement, fabrication, and delivery of long lead materials, equipment, fabricated assemblies, and supplies. Long lead procurement activities are those with an anticipated procurement sequence of over 90 calendar days.

3.3.4 Mandatory Tasks

Include the following activities/tasks in the initial project schedule and all updates.

a. Submission, review and acceptance of SD-01 Preconstruction Submittals (individual activity for each).

b. Submission, review and acceptance of features require design completion Submission, review and acceptance of design packages.

c. Submission of mechanical/electrical/information systems layout drawings.

d. Long procurement activities

e. Submission and approval of as-built drawings.

f. Contractor's pre-final inspection.

g. Correction of punch list from Contractor's pre-final inspection.

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h. Government's pre-final inspection.

i. Correction of punch list from Government's pre-final inspection.

j. Final inspection.

3.3.5 Government Activities

Show Government and other agency activities that could impact progress. These activities include, but are not limited to: approvals, acceptance, design reviews, environmental permit approvals by State regulators, inspections, utility tie-in, Government Furnished Equipment (GFE) and Notice to Proceed (NTP) for phasing requirements.

3.3.6 Activity Code Structure

Use the activity coding structure defined in the Standard Data Exchange Format (SDEF) in ER 1-1-11. This exact structure is mandatory. Develop and assign all Activity Codes to activities as detailed herein. A template SDEF compatible schedule backup file is available on the RMS CM web site: http://rms.usace.army.mil.

The SDEF format is as follow:

FIELD	ACTIVITY CODE	LENGTH	DESCRIPTION
1	WRKP	3	WORKERS PER DAY
2	RESP	4	RESPONSIBLE PARTY
3	AREA	4	AREA OF WORK
4	MODF	6	MODIFICATION NUMBER
5	BIDI	6	BID ITEM (CLIN)
6	PHAS	2	PHASE OF WORK
7	CATW	1	CATEGORY OF WORK
8	FOW	20	FEATURE OF WORK*
*Some systems require that FEATURE OF WORK values be placed in several activity code fields.The notation shown is for Primavera P6Refer to the specific software guidelines with respect to the FEATURE OF WORK field requirements.			

3.3.7 Standard Activity Coding Dictionary

The Contractor shall develop the Project Schedule to an appropriate level of detail. Failure to develop the Project Schedule to an appropriate level of detail, as determined by the Contracting Officer or delegated representative, will result in its disapproval. The Contracting Officer or delegated representative will consider, but is not limited to, the following characteristics and requirements to determine appropriate level

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of detail:

3.3.7.1 Workers per Day (WRKP)

Assign Workers per Day for all field or direct work activities, if directed by the Contracting Officer or delegated representative. Workers per day is based on the average number of workers expected each day to perform a task for the duration of that activity.

3.3.7.2 Responsible Party Coding (RESP)

Assign responsibility code for all activities to the Prime Contractor, Subcontractor(s) or Government agency(ies) responsible for performing the activity.

a. Activities coded with a Government Responsibility code include, but are not limited to, Government approvals, Government design reviews, environmental permit approvals by State regulators, Government Furnished Property/Equipment (GFP) and Notice to Proceed (NTP) for phasing requirements.

b. Activities cannot have more than one Responsibility Code. Examples of acceptable activity code values are: DOR (for the designer of record);ELEC (for the electrical subcontractor); MECH (for the mechanical subcontractor); and GOVT (for USACE).

3.3.7.3 Area of Work Coding (AREA)

Assign Work Area code to activities based upon the work area in which the activity occurs. Define work areas based on resource constraints or space constraints that would preclude a resource, such as a particular trade or craft work crew from working in more than one work area at a time due to restraints on resources or space. Examples of Work Area Coding include different areas within a floor of a building, different floors within a building, and different buildings within a complex of buildings. Activities cannot have more than one Work Area Code.

Not all activities are required to be Work Area coded. A lack of Work Area coding indicates the activity is not resource or space constrained.

3.3.7.4 Modification Number (MODF)

Assign a Modification Number Code to any activity or sequence of activities added to the schedule as a result of a Contract Modification, when approved by Contracting Officer or delegated representative. Key all Code values to the Government's modification numbering system. An activity can have only one Modification Number Code.

3.3.7.5 Bid Item Coding (BIDI)

Assign a Bid Item Code to all activities using the Contract Line Item Schedule (CLIN) to which the activity belongs, even when an activity is not cost loaded. An activity can have only one BIDI Code.

3.3.7.6 Phase Work Coding (PHAS)

Assign Phase of Work Code to all activities. Examples of phase of work are design phase, procurement phase, and construction phase. Each activity can

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have only one Phase of Work code.

a. Code proposed fast track design and construction phases proposed to allow filtering and organizing the schedule by fast track design and construction packages.

b. If the contract specifies phasing with separately defined performance periods, identify a Phase Code to allow filtering and organizing the schedule accordingly.

3.3.7.7 Category of Work Coding (CATW)

Assign a Category of Work Code to all activities. Category of Work Codes include, but are not limited to, design, design submittal, design reviews, review conferences, permits, construction submittals, construction submittal, procurement, fabrication, weather sensitive installation, non- weather sensitive installation, start-up, and testing activities. Each activity can have no more than one Category of Work Code.

3.3.7.8 Feature of Work Coding (FOW)

Assign a Feature of Work Code to appropriate activities based on the Definable Feature of Work to which the activity belongs based on the approved QC plan.

Definable Feature of Work is defined in Section 01 45 00.00 10 QUALITY CONTROL. An activity can have only one Feature of Work Code.

3.3.8 Contract Milestones and Constraints

Milestone activities are to be used for significant project events including, but not limited to, project phasing, project start and end activities, or interim completion dates. The use of artificial float constraints such as "zero free float" or "zero total float" are prohibited.

Mandatory constraints that ignore or effect network logic are prohibited. No constrained dates are allowed in the schedule other than those specified herein. Submit additional constraints to the Contracting Officer or delegated representative for approval on a case by case basis.

3.3.8.1 Project Start Date Milestones and Constraint

The first activity in the project schedule must be a start milestone titled "NTP Acknowledged," which must have a "Start On" constraint date equal to the date that the NTP is acknowledged.

3.3.8.2 End Project Finish Milestone and Constraint

The last activity in the schedule must be a finish milestone titled "End Project."

Constrain the project schedule to the Contract Completion Date in such a way that if the schedule calculates an early finish, then the float calculation for "End Project" milestone reflects positive float on the longest path. If the project schedule calculates a late finish, then the "End Project" milestone float calculation reflects negative float on the longest path.

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The Government is under no obligation to accelerate Government activities to support a Contractor's early completion.

3.3.8.3 Interim Completion Dates and Constraints

Constrain contractually specified interim completion dates to show negative float when the calculated late finish date of the last activity in that phase is later than the specified interim completion date.

3.3.8.3.1 Start Phase

Use a start milestone as the first activity for a project phase. Call the start milestone "Start Phase X" where "X" refers to the phase of work.

3.3.8.3.2 End Phase

Use a finish milestone as the last activity for a project phase. Call the finish milestone "End Phase X" where "X" refers to the phase of work.

3.3.9 Calendars

Schedule activities on a Calendar to which the activity logically belongs. Develop calendars to accommodate any contract defined work period such as a 7-day calendar for Government Acceptance activities, concrete cure times, etc. Develop the default Calendar to match the physical work plan with non- work periods identified including weekends and holidays. Develop Seasonal Calendar(s) and assign to seasonally affected activities as applicable.

3.3.10 Open Ended Logic

Only two open ended activities are allowed: the first activity "NTP Acknowledged" may have no predecessor logic, and the last activity -"End Project" may have no successor logic.

Predecessor open ended logic may be allowed in a time impact analyses upon the Contracting Officer or delegated representative's approval.

3.3.11 Default Progress Data Disallowed

Actual Start and Finish dates must not automatically update with default mechanisms included in the scheduling software. Updating of the percent complete and the remaining duration of any activity must be independent functions. Disable program features that calculate one of these parameters from the other. Activity Actual Start (AS) and Actual Finish (AF) dates assigned during the updating process must match those dates provided in the Contractor Quality Control Reports. Failure to document the AS and AF dates in the Daily Quality Control report (Dredge Daily Report) will result in disapproval of the Contractor's schedule.

3.3.12 Out of Sequence Progress

Activities that have progressed before all preceding logic has been satisfied (Out-of-Sequence Progress) will be allowed only on a case-by-case basis subject to approval by the Contracting Officer or delegated representative. Propose logic corrections to eliminate out of sequence progress or justify not changing the sequencing for approval

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prior to submitting an updated project schedule. Address out of sequence progress or logic changes in the Narrative Report and in the periodic schedule update meetings.

3.3.13 Added and Deleted Activities

Do not delete activities from the project schedule or add new activities to the schedule without approval from the Contracting Officer or delegated representative. Activity ID and description changes are considered new activities and cannot be changed without Contracting Officer or delegated representative approval.

3.3.14 Original Durations

Activity Original Durations (OD) must be reasonable to perform the work item. OD changes are prohibited unless justification is provided and approved by the Contracting Officer or delegated representative.

3.3.15 Leads, Lags, and Start to Finish Relationships

Lags must be reasonable as determined by the Government and not used in place of realistic original durations, must not be in place to artificially absorb float, or to replace proper schedule logic.

a. Leads (negative lags) are prohibited.

b. Start to Finish (SF) relationships are prohibited.

3.3.16 Retained Logic

Schedule calculations must retain the logic between predecessors and successors ("retained logic" mode) even when the successor activity(s) starts and the predecessor activity(s) has not finished (out-of-sequence progress). Software features that in effect sever the tie between predecessor and successor activities when the successor has started and the predecessor logic is not satisfied ("progress override") are not be allowed.

3.3.17 Percent Complete

Update the percent complete for each activity started, based on the realistic assessment of earned value. Activities which are complete but for remaining minor punch list work and which do not restrain the initiation of successor activities may be declared 100 percent complete to allow for proper schedule management.

3.3.18 Remained Duration

Update the remaining duration for each activity based on the number of estimated work days it will take to complete the activity. Remaining duration may not mathematically correlate with percentage found under paragraph entitled Percent Complete.

3.3.19 Cost Loading of Closeout Activities

Cost load the "Correction of punch list from Government pre-final inspection" activity(ies) not less than 1 percent of the present contract value. Activity(ies) may be declared 100 percent complete upon the Government's verification of completion and correction of all punch list

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work identified during Government pre-final inspection(s).

3.3.20 Early Completion Schedule and the Right to Finish Early

An Early Completion Schedule is an Initial Project Schedule (IPS) that indicates all scope of the required contract work will be completed before the contractually required completion date.

a. No IPS indicating an Early Completion will be accepted without being fully resource-loaded (including crew sizes and man-hours) and the Government agreeing that the schedule is reasonable and achievable.

b. The Government is under no obligation to accelerate work items it is responsible for to ensure that the early completion is met, nor is it responsible to modify incremental funding (if applicable) for the project to meet the contractor's accelerated work.

3.4 PROJECT SCHEDULE SUBMISSIONS

Provide the submissions as described below. The data, reports, and network diagrams required for each submission are contained in paragraph 3.5 SUBMISSION REQUIREMENTS. If the Contractor fails or refuses to furnish the information and schedule updates as set forth herein, then the Contractor will be deemed not to have provided an estimate upon which a progress payment can be made.

Review comments made by the Government on the schedule(s) do not relieve the Contractor from compliance with requirements of the Contract Documents.

3.4.1 Initial Project Schedule Submission

Submit the Initial Project Schedule for approval within 14 calendar days after notice to proceed is issued. The schedule must demonstrate a reasonable and realistic sequence of activities which represent all work through the entire contract performance period. No payment will be made for work items not fully detailed in the Project Schedule.

3.4.2 Periodic Schedule Updates

Update the Project Schedule on a regular basis, monthly at a minimum. Provide a draft Periodic Schedule Update for review at the schedule update meetings as prescribed in the paragraph PERIODIC SCHEDULE UPDATE MEETINGS. These updates will enable the Government to assess Contractor's progress.

a. Update information including Actual Start Dates (AS), Actual Finish Dates (AF), Remaining Durations (RD), and Percent Complete is subject to the approval of the Government at the meeting.

b. AS and AF dates must match the date(s) reported on the Contractor's Quality Control Report for an activity start or finish.

3.5 SUBMISSION REQUIREMENTS

Submit the following items for the Initial Schedule, and every Periodic Schedule Update throughout the life of the project:

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3.5.1 Data Electronic Files

Provide one set of data in electronic format in RMS containing the current project schedule and all previously submitted schedules in the format of the scheduling software (e.g. .xer). Also include in the data electronic file, the Narrative Report and all required Schedule Reports. Label each data file indicating the type of schedule (Initial, Update), full contract number, Data Date and file name. Each schedule must have a unique file name and use project specific settings.

3.5.2 Narrative Report

Provide a Narrative Report with each schedule submission. The Narrative Report is expected to communicate to the Government the thorough analysis of the schedule output and the plans to compensate for any problems, either current or potential, which are revealed through that analysis. Include the following information as minimum in the Narrative Report:

a. Identify and discuss the work scheduled to start in the next update period.

b. A description of activities along the two most critical paths where the total float is less than or equal to 20 work days.

c. A description of current and anticipated problem areas or delaying factors and their impact and an explanation of corrective actions taken or required to be taken.

d. Identify and explain why activities based on their calculated late dates should have either started or finished during the update period but did not.

e. Identify and discuss all schedule changes by activity ID and activity name including what specifically was changed and why the change was needed. Include at a minimum new and deleted activities, logic changes, duration changes, calendar changes, lag changes, resource changes, and actual start and finish date changes.

f. Identify and discuss out-of-sequence work.

3.5.3 Schedule Reports

The format, filtering, organizing and sorting for each schedule report will be as directed by the Contracting Officer or delegated representative. Typically, reports contain Activity Numbers, Activity Description, Original Duration, Remaining Duration, Early Start Date, Early Finish Date, Late Start Date, Late Finish Date, Total Float, Actual Start Date, Actual Finish Date, and Percent Complete. Provide the reports electronically in .pdf format. The following lists typical reports that will be requested:

3.5.3.1 Activity Report

List of all activities sorted according to activity number.

3.5.3.2 Logic Report

List of detailed predecessor and successor activities for every activity in ascending order by activity number.

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3.5.3.3 Total Float Report

A list of all incomplete activities sorted in ascending order of total float. List activities which have the same amount of total float in ascending order of Early Start Dates. Do not show completed activities on this report.

3.5.3.4 Earnings Report by CLIN

A compilation of the Total Earnings on the project from the NTP to the data date, which reflects the earnings of activities based on the agreements made in the schedule update meeting defined herein. Provided a complete schedule update has been furnished, this report serves as the basis of determining progress payments. Group activities by CLIN number and sort by activity number. Provide a total CLIN percent earned value, CLIN percent complete, and project percent complete. The printed report must contain the following for each activity: the Activity Number, Activity Description, Original Budgeted Amount, Earnings to Date, Earnings this period, Total Quantity, Quantity to Date, and Percent Complete (based on cost).

3.5.3.5 Schedule Log

Provide a Scheduling/Leveling Report generated from the current project schedule being submitted.

3.5.4 Network Diagram

The Network Diagram is required for the Initial and Periodic Updates. Depict and display the order and interdependence of activities and the sequence in which the work is to be accomplished. The Contracting Officer will use, but is not limited to, the following conditions to review compliance with this paragraph:

3.5.4.1 Continuous Flow

Show a continuous flow from left to right with no arrows from right to left. Show the activity number, description, duration, and estimated earned value on the diagram.

3.5.4.2 Project Milestone Dates

Show dates on the diagram for start of project, any contract required interim completion dates, and contract completion dates.

3.5.4.3 Critical Path

Show all activities on the critical path. The critical path is defined as the longest path.

3.5.4.4 Banding

Organize activities using the WBS or as otherwise directed to assist in the understanding of the activity sequence. Typically, this flow will group activities by major elements of work, category of work, work area and/or responsibility.

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3.5.4.5 Cash Flow / Schedule Variance Control (SVC) Diagram

With each schedule submission, provide a SVC diagram showing 1) Cash Flow S- Curves indicating planned project cost based on projected early and late activity finish dates, and 2) Earned Value to-date.

3.6 PERIODIC SCHEDULE UPDATE MEETINGS

3.7 REQUEST FOR TIME EXTENSIONS

Provide a justification of delay to the Contracting Officer or delegated representative in accordance with the contract provisions and clauses for approval within 10 days of a delay occurring. Also prepare a time impact analysis for each Government request for proposal (RFP) to justify time extensions.

3.7.1 Justification of Delay

Provide a description of the event(s) that caused the delay and/or impact to the work. As part of the description, identify all schedule activities impacted. Show that the event that caused the delay/impact was the responsibility of the Government. Provide a time impact analysis that demonstrates the effects of the delay or impact on the project completion date or interim completion date(s). Evaluate multiple impacts chronologically; each with its own justification of delay. With multiple impacts consider any concurrency of delay. A time extension and the schedule fragnet becomes part of the project schedule and all future schedule updates upon approval by the Contracting Officer or delegated representative.

3.7.2 Time Impact Analysis (Prospective Analysis)

Prepare a time impact analysis for approval by the Contracting Officer or delegated representative based on industry standard AACE 52R-06. Utilize a copy of the last approved schedule prior to the first day of the impact or delay for the time impact analysis. If Contracting Officer or delegated representative determines the time frame between the last approved schedule and the first day of impact is too great, prepare an interim updated schedule to perform the time impact analysis. Unless approved by the Contracting Officer or delegated representative, no other changes may be incorporated into the schedule being used to justify the time impact.

3.7.3 Forensic Schedule Analysis (Retrospective Analysis)

Prepare an analysis for approval by the Contracting Officer or delegated representative based on industry standard AACE 29R-03.

3.7.4 Fragmentary Network (Fragnet)

Prepare a proposed fragnet for time impact analysis consisting of a sequence of new activities that are proposed to be added to the project schedule to demonstrate the influence of the delay or impact to the project's contractual dates. Clearly show how the proposed fragnet is to be tied into the project schedule including all predecessors and successors to the fragnet activities. The proposed fragnet must be approved by the Contracting Officer or delegated representative prior to incorporation into the project schedule.

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3.7.5 Time Extension

The Contracting Officer or delegated representative must approve the Justification of Delay including the time impact analysis before a time extension will be granted. No time extension will be granted unless the delay consumes all available Project Float and extends the projected finish date ("End Project" milestone) beyond the Contract Completion Date. The time extension will be in calendar days.

Actual delays that are found to be caused by the Contractor's own actions, which result in a calculated schedule delay will not be a cause for an extension to the performance period, completion date, or any interim milestone date.

3.7.6 Impact to Early Completion Schedule

No extended overhead will be paid for delay prior to the original Contract Completion Date for an Early Completion IPS unless the Contractor actually performed work in accordance with that Early Completion Schedule. The Contractor must show that an early completion was achievable had it not been for the impact.

3.8 FAILURE TO ACHIEVE PROGRESS

Should the progress fall behind the approved project schedule for reasons other than those that are excusable within the terms of the contract, the Contracting Officer or delegated representative may require provision of a written recovery plan for approval. The plan must detail how progress will be made-up to include which activities will be accelerated by adding additional crews, longer work hours, extra work days, etc.

3.8.1 Artificially Improving Progress

Artificially improving progress by means such as, but not limited to, revising the schedule logic, modifying or adding constraints, shortening activity durations, or changing calendars in the project schedule is prohibited. Indicate assumptions made and the basis for any logic, constraint, duration and calendar changes used in the creation of the recovery plan. Any additional resources, manpower, or daily and weekly work hour changes proposed in the recovery plan must be evident at the work site and documented in the daily report along with the Schedule Narrative Report.

3.8.2 Failure to Perform

Failure to perform work and maintain progress in accordance with the supplemental recovery plan may result in an interim and final unsatisfactory performance rating and/or may result in corrective action directed by the Contracting Officer or delegated representative pursuant to FAR 52.236-15 Schedules for Construction Contracts, FAR 52.249-10 Default (Fixed-Price Construction), and other contract provisions.

3.8.3 Recovery Schedule

Should the Contracting Officer or delegated representative find it necessary, submit a recovery schedule pursuant to FAR 52.236-15 Schedules for Construction Contracts.

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3.9 OWNERSHIP OF FLOAT

Except for the provision given in the paragraph IMPACT TO EARLY COMPLETION SCHEDULE, float available in the schedule, at any time, may not be considered for the exclusive use of either the Government or the Contractor including activity and/or project float. Activity float is the number of work days that an activity can be delayed without causing a delay to the "End Project" finish milestone. Project float (if applicable) is the number of work days between the projected early finish and the contract completion date milestone.

3.10 TRANSFER OF SCHEDULE DATA INTO RMS/QCS

Import the schedule data into the Resident Management System Contractor Mode (RMS CM) and export the RMS CM data to the Government. This data is considered to be additional supporting data in a form and detail required by the Contracting Officer or delegated representative pursuant to FAR 52.232-5 - Payments under Fixed- Price Construction Contracts. The receipt of a proper payment request pursuant to FAR 52.232-27 - Prompt Payment for Construction Contracts is contingent upon the Government receiving both acceptable and approvable electronic export from RMS CM of the application for progress payment.

3.11 PRIMAVERA P6 MANDATORY REQUIREMENTS

If Primavera P6 is being used, request a backup file template (.xer) from the Government, if one is available, prior to building the schedule. The following settings are mandatory and required in all schedule submissions to the Government:

a. Activity Codes must be Project Level, not Global or EPS level.

b. Calendars must be Project Level, not Global or Resource level.

c. Activity Duration Types must be set to "Fixed Duration & Units".

d. Percent Complete Types must be set to "Physical".

e. Time Period Admin Preferences must remain the default "8.0 hr/day, 40 hr/week, 172 hr/month, 2000 hr/year". Set Calendar Work Hours/Day to 8.0 Hour days.

f. Set Schedule Option for defining Critical Activities to "Longest Path".

g. Set Schedule Option for defining progressed activities to "Retained Logic".

h. Set up cost loading using a single lump sum labor resource. The Price/Unit must be $1/hr, Default Units/Time must be "8h/d", and settings "Auto Compute Actuals" and "Calculate costs from units" selected.

i. Activity ID's must not exceed 10 characters.

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j. Activity Names must have the most defining and detailed description within the first 30 characters.

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SECTION 01 32 23

HYDROGRAPHIC SURVEY

PART 1 GENERAL

1.1 INTRODUCTION

This section provides procedural, technical, and quality requirements for hydrographic surveying to be performed under this contract. Unless otherwise indicated in this contract, each required service shall include field-to-finish effort performed in accordance with the standards and specifications in EM 1110-2-1003.

1.2 PAYMENTS

Work included in this section of the specifications for which no specific contract line item is included in the Pricing Schedule of the contract shall be considered an associated subsidiary obligation. No separate payment will be made for associated subsidiary obligations.

1.3 TECHNICAL CRITERIA AND REFERENCE STANDARDS

All parties shall comply with the procedures, standards and quality control criteria in EM 1110-2-1003 in performing hydrographic surveys for this contract. 200 khz multibeam sonar setting shall be used for all surveys.

1.3.1 References

The publications listed below form a part of this specification.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 1110-2-1003	(Nov 2013) Engineering and Design - Hydrographic Surveying

1.4 WORK TO BE PERFORMED

The types of surveys to be performed under this contract are listed in the paragraphs below. The Government shall be informed about Contractor surveying activities, including provisions for onsite Government observers. The Government will have the option of accompanying the Contractor on surveys.

1.4.1 Before-Dredge Survey

A survey used to represent the depth of a reach within the project channel prior to dredging will be referred to as a Before-Dredge (BD) Survey. The BD Survey will be performed by the 3rd party contractor unless otherwise established in writing by the Contracting Officer or designated representative. All raw and edited survey data shall be submitted to the Government.

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1.4.2 After-Dredge Survey

A survey used to represent the depth of a reach within the project channel after dredging will be referred to as an After-Dredge (AD) Survey. The AD Survey used for volume computations and determining reach completion will be performed by the 3rd party contractor unless otherwise established in writing by the Contracting Officer or designated representative. All raw and edited survey data shall be submitted to the Government.

1.4.2.1 Reach Completion

Completion of Reach(es) will be in writing from the Contracting Officer Representative based on the 3rd Party After-dredge multi-beam survey plan view plots using 5’ X 5’ bin data.

1.4.2.2 Reach Rejection

If the Contracting Officer Representative finds the after-dredge survey of the reach to be unacceptable, the Contractor shall resume dredging, in accordance with Section 35 20 23 DREDGING, until the work is complete. The Contractor is responsible for time required for dredging to remove shoals, lumps, or other lack of contract depth and for the time required to resurvey the rejected Reach. When the dredging is complete, the after-dredge survey process is then repeated for the entire reach.

1.4.3 Quality Control (QC) Surveys

Surveys conducted by the Contractor will be referred to as Quality Control or QC Surveys. QC Surveys shall be conducted at least once per week during weeks in which there is dredging or disposal. When directed by the Contracting Officer Representative, the Contractor shall perform QC surveys and provide cross-sectional views of the edited, tide-level adjusted survey data to the Government on site.

1.4.4 Progress Payment Survey

Surveys conducted for the purpose of progress payments will be referred to as Progress Payment Surveys. Progress Payment Surveys will be performed by the 3rd party contractor unless otherwise established in writing by the Contracting Officer or designated representative. The Contractor shall calculate the volume of material dredged for Progress Payment Quantity based on the Before-Dredge Survey and the Progress Payment Survey using the TIN method as defined in EM 1110-2-1003.

1.4.5 Quality Assurance (QA) Survey

The Government may perform QA surveys to assure the quality of the dredging and disposal operations, and the quality of the Contractor's QC surveys.

1.4.6 Volume Computations

The Government will calculate final quantities for payments and dredging acceptance for all reaches. Volume computations shall be generated by using the TIN (Triangulated Irregular Network) computation method, as outlined in the Hydrographic Surveying Manual EM 1110-2-1003, dated November 2013, and the subsequent changes/revisions issued by HQUSACE. A 5-foot by 5-foot matrix using the average depth of all depths recorded in

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a cell shall be generated from the edited multi-beam data to perform the TIN volume computations, following the procedures in EM 1110-2-1003. The Government will furnish construction templates and limits from which volumes are to be computed so that the contractor can verify the Government's quantities.

1.5 SUBMITTALS

Government approval is required for submittals with a "G" designation. Submittals not having a "G" designation are for information only. The following shall be submitted in accordance with the submittal requirements of these specifications.

SD-01 Preconstruction Submittals

Equipment Data and Software

Equipment Offset/Calibration Survey

SD-06 Test Reports

Survey Documentation Submittal; G

1.6 EQUIPMENT DATA

Prior to the start of dredging operations, Contractor shall submit information on the surveying equipment for each vessel intended for use on the project. Typical information shall, as a minimum, include the the vessel beam and LOA, description of sensor placement on the vessel and reference origin of the survey system, survey equipment name, model, and year of manufacture, installed firmware versions, manufacturer's stated positioning accuracy and capability including the electronic frequencies and beam footprint of the depth sounding equipment, available positional telemetry methods, equipment, and services/subscriptions utilized, latest calibration date of any sensor requiring calibration, and any software title and version number used for field data acquisition and post processing. The vessel/equipment that performs a survey shall be recorded in the Survey QC Log, Attachment 1 at the end of the Specification package.

1.7 SOFTWARE

Prior to the start of dredging operations, the Contractor shall submit data on the surveying software. Use site design or survey software in the integrated hydrographic survey system. The software shall support the varied Corps dredging templates outlined in Chapter 10 of EM 1110-2-1003 and shall be capable of computing dredged quantities. Provide the government the software, software license, and any other entity necessary to allow the government full access in reviewing the raw and unedited data described below under Electronic Copies of Surveys. The government uses Hypack software and does not require additional software or licenses to support that application.

1.8 EQUIPMENT OFFSETS/CALIBRATION SURVEY

Prior to the start of dredging operations, the Contractor shall submit documentation of vessel survey sensor offsets, lever arms, and calibration results.

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Offsets: Submit the results of the most recent vessel offset survey and the resulting lever arms used for both data acquisition and post-processing. Offsets and lever arms shall be provided either as a table identifying the applicable software input fields, offset values, and units of measurement, or as a digital image of the software configuration screen showing the input fields, values, and units of measurement.

Calibration: Submit the results of the most recent plate/bar check conducted within the project area to validate the vertical accuracy of the survey system. The plate/bar check shall utilize an independent RTK GNSS measurement system referenced to the plate/bar and shall demonstrate that the hydrographic survey system meets the applicable vertical accuracy requirements of EM 1110-2-1003. The Contractor shall also submit two fully post-processed XYZ datasets from a 500-foot by 500-foot bordered area within the project limits: one collected at dead-slow speed with 100 percent coverage, and one collected at normal survey speed with 100 percent coverage. Include a statistical comparison of the two datasets, including the arithmetic mean difference.

Any changes to sensor offsets or lever arms during the project shall be documented and submitted to the Government for approval prior to performing additional survey work. USACE may witness offset measurements, calibration checks, and performance testing conducted by the Contractor and may perform independent verification when deemed necessary to confirm survey system accuracy.

1.9 SURVEY DOCUMENTATION SUBMITTAL

A Survey Documentation Submittal shall be submitted by the Contractor for every Progress Payment survey. The report shall include the items such as: scope of work, tidal data, general site plan map, line designation map, calibration procedures used, horizontal and vertical accuracies, and any other pertinent information to describe the purpose, methods, and results obtained.

Survey procedures, data collection equipment, methods and densities, and equipment calibration for this work shall follow the criteria given in EM 1110-2-1003 for class of survey specified in task orders to this basic contract.

Survey QC Log (Attachment 1): The Contractor shall complete a Survey QC Log for all Contractor-performed Progress Payment surveys. The Survey QC Log shall be completely filled out. The Survey QC Log shall be included with the electronic submission and a copy shall be attached to the Dredge Daily (QC) Report.

The Basic Survey Documentation Submittal shall also include the following:

1.9.1 Depth Elevation Measurements: Contractor shall provide a full TIN model of the bottom of the dredged area and depth soundings plotted along the 100-foot station lines from a minimum sized 5' x 5' binned data set using Average Mean Depth analysis. The Contractor shall use color shading and topographic elevation lines to clearly identify areas above and below the project depth. Sounding selection and bottom detection shall be performed using accepted multibeam processing procedures consistent with EM 1110-2-1003.

1.9.2 Electronic Copies of Surveys: Contractor shall provide a full electronic copy of every survey. Electronic copies shall include point

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files (.XYZ format), templates used for calculations (Channel Design [CHN] and Volume Border [BRD]), results of calculations (TIN Report), and a plot of the soundings. The electronic point file shall be the same file that the Contractor uses for volume computations. All raw, unedited data, along with all files and associated data used for editing, along with a copy of the survey documentation, updated as necessary, shall be submitted in RMS to the Government. All electronic survey data shall contain a string of information in the title that clearly identifies the contents of the data. The string shall uniquely identify the project and reach. The Contractor shall provide a description of any changes that have been made to the originally submitted survey documentation. Contractor may use web-base secure "sharepoint" file server systems, such as DoD SAFE, to transmit survey data files electronically to the Government.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 SURVEYING PROCEDURES

3.1.1 Horizontal Positioning Procedures and Accuracies

The Contractor and Government vessel positioning systems and/or modes utilized on this contract shall conform to the allowable horizontal positioning criteria in EM 1110-2-1003, based on the class of survey required. The Contractor may be required to demonstrate to the Government that his positioning system, mode, and/or procedures are capable of meeting the accuracy requirements in EM 1110-2-1003.

3.1.1.1 Positioning

Positioning shall be accomplished using a fully integrated hydrographic survey system utilizing Global Navigation Satellite System (GNSS) positioning with Real-Time Kinematic (RTK) corrections. The positioning system, correction source, and survey procedures shall meet the applicable horizontal and vertical accuracy requirements specified in EM 1110-2-1003 for the class of hydrographic survey being performed.

3.1.2 Reference Horizontal Control Data

Unless otherwise indicated, the Government will provide sufficient existing project control from which hydrographic surveys may be extended. This control shall be presumed to meet the accuracy requirements in EM 1110-2-1003. When hydrographic surveys are required to be controlled from particular existing monuments, this will be noted in the drawings furnished. All horizontal and vertical monuments are known to be in-place as of the date shown on the drawings. Descriptions for each point are in the contract drawings. The Contractor's field representative shall immediately notify the government's Contracting Officer Representative if existing control points have been disturbed.

3.1.3 Depth Measurement Procedures and Calibration

a. General: Contractor field survey team shall have the capability to

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obtain manual (lead line and sounding pole) and multibeam acoustic depth measurements during this contract. All depth measurement equipment, procedures, and quality control shall strictly conform to the minimum criteria standards in EM 1110-2-1003. The Government reserves the right to inspect any depth measurement equipment employed during this contract.

b. Technology. All official surveys to include the BD, AD and progress payment surveys will be based on multibeam technology as specified in EM 1110-2-1003.

c. Depth measurement precision/accuracy. Depth measurements including depth observation precision and resolution shall meet the vertical accuracy standards prescribed in EM 1110-2-1003.

d. Acoustic depth measurement. A survey quality multibeam echo sounder shall be used for work performed on this contract. The device must be capable of providing the required vertical accuracies. The echo sounding recorder shall be in good condition and free from instabilities which may affect the quality of the data.

e. Acoustic calibration requirements. Acoustic depth sounders shall be calibrated in strict conformance with the allowable methods, tolerances, and other criteria given in EM 1110-2-1003. Any deviation from these criteria must be approved by the Contracting Officer Representative. Depth sounding equipment shall be calibrated such that the tolerances given in EM 1110-2-1003 are achieved. Bar/Ball check, velocity checks, patch test, and performance tests must be recorded in the Survey QC Log. Failure to perform and submit evidence of calibration for each day's work will result in the work being deemed unsatisfactory and requiring correction at the contractor's expense. External checks of the calibration equipment or vessel draft/squat shall also be performed as required in EM 1110-2-1003. These periodic checks shall be recorded in a standard bound survey book and retained aboard the vessel for review by Government or contracted construction inspectors.

f. Onsite Vessel-to-Vessel Calibration. Prior to all payment surveys, the Contractor shall have the right to request a vessel-to-vessel onsite calibration session with a Government vessel. The Contractor shall request the calibration session as soon as the given payment survey date(s) is established. Survey lines taken from the Vessel-to-Vessel Calibration shall be compared and checked on site for accuracy and consistency. The Contractor and Government must reach consensus of survey results prior to proceeding with dredging.

3.1.4 Vertical Reference Datum

The vertical reference datum is identified in the contract drawings. Vertical control for hydrographic surveys shall be established using RTK GNSS and applicable geoid models and either static tidal datum offsets or VDatum model in accordance with EM 1110-2-1003. If RTK positioning is unavailable or fails to meet the required vertical accuracy standards, the Contractor shall provide an approved tidal monitoring system and establish vertical control through tidal observations referenced to the vertical datum specified in the contract documents.

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SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

The Contracting Officer or delegated representative may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections.

Units of weights and measures used on all submittals are to be the same as those used in the contract drawings.

Each submittal is to be complete and in sufficient detail to allow ready determination of compliance with contract requirements.

Contractor's Quality Control (CQC) System Manager to check and approve all items prior to submittal and stamp, sign, and date indicating action taken. Proposed deviations from the contract requirements are to be clearly identified. Include within submittals items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals.

Submittals requiring Government approval are to be scheduled and made prior to the acquisition of the material or equipment covered thereby. Pick up and dispose of samples not incorporated into the work in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

1.2 DEFINITIONS

1.2.1 Submittal Descriptions (SD)

Submittals requirements are specified in the technical sections. Submittals are identified by Submittal Description (SD) numbers and titles as follows:

SD-01 Preconstruction Submittals

Submittals which are required prior to or at the start of construction (work) or the next major phase of the construction on a multi-phase contract.

Preconstruction Submittals include schedule, tabular list of locations, features, or other pertinent information regarding products, materials, equipment, or components to be used in the work.

SD-06 Test Reports

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Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. (Testing must have been within three years of date of contract award for the project.)

Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipment to job site.

Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.

SD-07 Certificates

Statements printed on the manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements. Must be dated after award of project contract and clearly name the project.

Document required of Contractor, or of a manufacturer, supplier, installer or Subcontractor through Contractor. The document purpose is to further promote the orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel qualifications.

1.2.2 Approving Authority

Person authorized to approve submittal is the Contracting Officer or delegated representative.

1.2.3 Work

As used in this section, on- and off-site construction required by contract documents, including labor necessary to produce submittals construction, materials, products, equipment, and systems incorporated or to be incorporated in such construction. In exception, excludes work to produce SD-01 submittals.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Submittal Register; G

1.4 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

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1.4.1 Government Approved (G)

Within the terms of the Contract Clause SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION, submittals are considered to be "shop drawings

1.4.2 For Information Only

Submittals not requiring Government approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above.

1.5 NOT IN USE

1.6 PREPARATION

1.6.1 Transmittal Form

Use transmittal form ENG Form 4025 provided in RMS for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. These forms are included in the RMS CM software that the Contractor is required to use for this contract. Properly complete this form by filling out all the heading blank spaces and identifying each item submitted. Exercise special care to ensure proper listing of the specification paragraph and sheet number of the contract drawings pertinent to the data submitted for each item.

1.6.2 Format for SD-02 Shop Drawings

Submit one (1) electronic copy of shop drawings in PDF format and one (1) electronic copy of shop drawings in PDF format requiring review and approval by the Contracting Officer or delegated representative. All submittals will be electronically transmitted via the RMS-CM software.

1.6.3 Format of SD-01 Preconstruction Submittals and SD-11 Closeout Submittals

Unless otherwise approved, all submittals will be electronically transmitted via the RMS-CM software.

1.7 NOT IN USE

1.8 INFORMATION ONLY SUBMITTALS

Approval of the Contracting Officer or delegated representative is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer or delegated representative from

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requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe.

1.9 SUBMITTAL REGISTER

Prepare and maintain submittal register, as the work progresses. The Contractor is responsible for developing the final submittal register. Do not change data which is output in columns (c), (d), (e), and (f) as delivered by Government; retain data which is output in columns (a), (g), (h), and (i) as approved. This list may not be all inclusive and additional submittals may be required. Maintain a submittal register for the project in accordance with Section 01 45 00.15 10 RESIDENT MANAGEMENT SYSTEM CONTRACTOR MODE (RMS CM).

Column (c): Lists specification section in which submittal is required.

Column (d): Lists each submittal description (SD No. and type, e.g. SD-02 Shop Drawings) required in each specification section.

Column (e): Lists one principal paragraph in specification section where a material or product is specified. This listing is only to facilitate locating submitted requirements. Do not consider entries in column (e) as limiting project requirements.

Column (f): Indicate approving authority for each submittal.

Thereafter, the Contractor is to track all submittals by maintaining a complete list, including completion of all data columns, including dates on which submittals are received and returned by the Government.

1.9.1 Use of Submittal Register

Submit submittal register as an electronic database, using submittals management program furnished to Contractor. Submit with QC plan and project schedule. Verify that all submittals required for project are listed and add missing submittals. Coordinate and complete the following fields on the register database submitted with the QC plan and the project schedule:

Column (a) Activity Number: Activity number from the project schedule.

Column (g) Contractor Submit Date: Scheduled date for approving authority to receive submittals.

Column (h) Contractor Approval Date: Date Contractor needs approval of submittal.

1.9.2 Contractor Use of Submittal Register

Update the following fields with each submittal throughout contract.:

Column (b) Transmittal Number: Contractor assigned list of consecutive numbers.

Column (j) Action Code (k): Date of action used to record

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Contractor's review when forwarding submittals to QC.

Column (l) List date of submittal transmission.

Column (q) List date approval received.

1.9.3 Approving Authority Use of Submittal Register

Update the following fields.

Column (b) Transmittal Number: List of consecutive, Contractor-assigned numbers.

Column (l) List date of submittal receipt.

Column (m) through (p) List Date related to review actions.

Column (q) List date returned to Contractor.

1.9.4 Action Codes

1.9.5 Copies Delivered to the Gorvernment

Deliver electronic copy of submittal register updated by Contractor to Government with each invoice request via RMS.

1.10 VARIATIONS

Variations from contract requirements require Government approval pursuant to contract Clause FAR 52.236-21 and will be considered where advantageous to Government.

1.10.1 Considering Variations

Discussion with Contracting Officer or delegated representative prior to submission will help ensure functional and quality requirements are met and minimize rejections and re-submittals. When contemplating a variation which results in lower cost, consider submission of the variation as a Value Engineering Change Proposal (VECP).

Specifically point out variations from contract requirements in transmittal letters. Failure to point out deviations may result in the Government requiring rejection and removal of such work at no additional cost to the Government.

1.10.2 Proposing Variations

When proposing variation, deliver written request to the Contracting Officer or delegated representative, with documentation of the nature and features of the variation and why the variation is desirable and beneficial to Government. If lower cost is a benefit, also include an estimate of the cost savings. In addition to documentation required for variation, include the submittals required for the item. Clearly mark the proposed variation in all documentation.

Check the column "variation" of ENG Form 4025 for submittals which include proposed deviations requested by the Contractor. Set forth in writing the reason for any deviations and annotate such deviations on the submittal.

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The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

1.10.3 Warranting that Variations are Compatible

When delivering a variation for approval, Contractor warrants that this contract has been reviewed to establish that the variation, if incorporated, will be compatible with other elements of work.

1.10.4 Review Schedule Extension

In addition to normal submittal review period, a period of 10 working days will be allowed for consideration by the Government of submittals with variations.

1.11 SCHEDULING

Schedule and submit concurrently submittals covering component items forming a system or items that are interrelated. Include certifications to be submitted with the pertinent drawings at the same time. No delay damages or time extensions will be allowed for time lost in late submittals.

a. Coordinate scheduling, sequencing, preparing and processing of submittals with performance of work so that work will not be delayed by submittal processing. Allow for potential resubmittal of requirements.

b. Submittals called for by the contract documents will be listed on the register. If a submittal is called for but does not pertain to the contract work, the Contractor is to include the submittal in the register and annotate it "N/A" with a brief explanation. Approval by the Contracting Officer or delegated representative does not relieve the Contractor of supplying submittals required by the contract documents but which have been omitted from the register or marked "N/A."

c. Re-submit register and annotate monthly by the Contractor with actual submission and approval dates. When all items on the register have been fully approved, no further re-submittal is required.

d. Carefully control procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

1.12 GOVERNMENT APPROVING AUTHORITY

When approving authority is Contracting Officer or delegated representative, the Government will:

a. Note date on which submittal was received.

b. Review submittals for approval within scheduling period specified and only for conformance with project design concepts and compliance with contract documents.

c. Identify returned submittals with one of the actions defined in

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paragraph entitled, "Review Notations," of this section and with markings appropriate for action indicated.

Upon completion of review of submittals requiring Government approval, stamp and date submittals. One electronic copy of the submittal will be retained by the Contracting Officer or delegated representative and one electronic copy of the submittal will be returned to the Contractor. If the Government performs a conformance review of other Designer of Record approved submittals, the submittals will be identified and returned, as described above.

1.12.1 Review Notations

Government review will be completed within 14 calendar days after date of acceptance in RMS. Submittals will be returned to the Contractor with the following Action Codes or notations :

a. Action Code "A"- "Approved as Submitted." Description: Proceed without further submission.

b. Action Code "B"- "Approved, except as noted on drawings. Resubmission notrequired." Description: Proceed without further submission, but contract or must comply with comments. Reviewing official will annotate comments or provide a comment sheet describing actions required prior to the contractor implementing the material included in the submittal.

c. Action Code "C" - "Approved, except as noted on drawings. Refer to attached or annotated comments. Resubmission required." Description: Do not proceed until resubmission is approved. Resubmission is required for this item after corrections are made to the submittal data based upon the reviewing official's comments.

d. Action Code "D"- "Will be returned by separate correspondence." Description: This code is generally used to return primary contract plans such as the Accident Prevention Plan or Contractor Quality Control Plan.

e. Action Code "E"- "Disapproved. See attached or annotated comments." Description: Submitted item does not comply with contract requirements. Review requirements, select a product or method that complies with the contract documents, and resubmit.

f. Action Code "F"-"Receipt is acknowledged." Description: This code is used for FlO submittals. The submittal may or may not have been reviewed.

g. Action Code "G"- "Other action is required." Description: Specific actions will be annotated on or attached to returned submittal. Typically includes requirement for re-submittal.

h. Action Code "X"-"Receipt is acknowledged. The submittal does not comply with contract requirements as noted." Description: A FlO submittal returned with this code was one of the 10% or so of FlO submittals reviewed by the government. The submittal does not comply with the contract requirements for this information and requires corrective action and resubmission by the contractor.

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1.13 DISAPPROVED SUBMITTALS

Make corrections required by the Contracting Officer or delegated representative. If the Contractor considers any correction or notation on the returned submittals to constitute a change to the contract drawings or specifications; notice as required under the FAR clause entitled CHANGES, is to be given to the Contracting Officer or delegated representative. Contractor is responsible for the dimensions and design of correction details. Failure to point out deviations may result in the Government requiring rejection and removal of such work at the Contractor's expense.

If changes are necessary to submittals, make such revisions and submission of the submittals in accordance with the procedures above. No item of work requiring a submittal change is to be accomplished until the changed submittals are approved.

1.14 APPROVED SUBMITTALS

The Contracting Officer or delegated representative's approval or acceptance of submittals is not to be construed as a complete check, and indicates only that the general method of construction, materials, detailing and other information are satisfactory.

Approval or acceptance does not relieve the Contractor of the responsibility for any error that may exist, because under the Quality Control (QC) requirements of this contract, the Contractor is responsible for ensuring information contained within each submittal accurately conforms with the requirements of the contract documents.

After submittals have been approved or accepted by the Contracting Officer or delegated representative, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.15 APPROVED SAMPLES

Approval of a sample is only for the characteristics or use named in such approval and is not be construed to change or modify any contract requirements. Before submitting samples, the Contractor to assure that the materials or equipment will be available in quantities required in the project. No change or substitution will be permitted after a sample has been approved.

Match the approved samples for materials and equipment incorporated in the work. If requested, approved samples, including those which may be damaged in testing, will be returned to the Contractor, at his expense, upon completion of the contract. Samples not approved will also be returned to the Contractor at its expense, if so requested.

Failure of any materials to pass the specified tests will be sufficient cause for refusal to consider, under this contract, any further samples of the same brand or make of that material. Government reserves the right to disapprove any material or equipment which previously has proved unsatisfactory in service.

Samples of various materials or equipment delivered on the site or in

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place may be taken by the Contracting Officer or delegated representative for testing. Samples failing to meet contract requirements will automatically void previous approvals. Contractor shall replace such materials or equipment to meet contract requirements.

Approval of the Contractor's samples by the Contracting Officer or delegated representative does not relieve the Contractor of his responsibilities under the contract.

1.16 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements is to be similar to the following:

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CONTRACTOR (Firm Name)   _____ Approved _____ Approved with corrections as noted on submittal data and/or attached sheets(s)   SIGNATURE: _____ TITLE: _____ DATE: _____

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

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GOVERNMENTAL SAFETY REQUIREMENTS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)

ASSP A10.34	(2021) Protection of the Public on or Adjacent to Construction Sites

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B30.3	(2025) Tower Cranes
ASME B30.5	(2025) Mobile and Locomotive Cranes
ASME B30.8	(2020) Floating Cranes and Floating Derricks
ASME B30.9	(2025) Slings
ASME B30.20	(2025) Below-the-Hook Lifting Devices
ASME B30.22	(2023) Articulating Boom Cranes
ASME B30.26	(2015; R 2020) Rigging Hardware

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 10	(2026) Standard for Portable Fire Extinguishers
NFPA 70	(2023) National Electrical Code
NFPA 70E	(2024) Standard for Electrical Safety in the Workplace
NFPA 302	(2025) Fire Protection Standard for Pleasure and Commercial Motor Craft
NFPA 306	(2024) Standard for the Control of Gas Hazards and Vessels
NFPA 241	(2022) Standard for Safeguarding Construction, Alteration, and Demolition Operations

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U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2024) Safety and Occupational Health (SOH) Requirements

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction

1.2 DEFINITIONS

The following definitions are for the convenience of the reader. If there is a referenced document in the text of this specification section, that is the document that should define terms for that paragraph. If further clarification is needed, contact the Contracting Officer.

1.2.1 Site Safety and Health Officer (SSHO) - Level 1

A Contractor Employee that is responsible for overseeing and ensuring implementation of the prime Contractor's Safety and Occupational Health (SOH) program according to the Contract, EM 385-1-1, applicable federal, state, and local requirements.

1.2.1.1 Alternate SSHO - Level 1

An employee that meets the definition of the contract-required level SSHO, but is not the primary SSHO per EM 385-1-1.

1.2.1.2 SSHO - Level 2

An employee with collateral SOH responsibility that meets and follows the requirements of EM 385-1-1 for position. Level 2 SSHOs cannot be assigned to projects that have a residual RAC of high or extremely high.

1.2.1.3 SSHO - Level 3

A qualified person (QP) or Competent Person (CP) with SOH responsibility that meets and follows requirements of EM 385-1-1 for position. Level 3 SSHOs cannot be assigned to projects that have a residual RAC of high or extremely high.

1.2.2 Competent Person (CP)

The CP is a person designated in writing, who, through training, knowledge and experience, is capable of identifying, evaluating, and addressing existing and predictable hazards in the working environment or working conditions that are unsanitary, hazardous, or dangerous to personnel, and who has authorization to take prompt corrective measures to eliminate them.

1.2.3 Qualified Person (QP)

The QP is a person designated in writing, who, by possession of a recognized degree, certificate, or professional standing, or extensive knowledge, training, and experience, has successfully demonstrated their

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ability to solve or resolve problems related to the subject matter, the work, or the project.

1.2.4 High Risk Activities

High Risk Activities are activities that involve work at heights, crane and rigging, excavations and trenching, scaffolding, electrical work, and confined space entry.

1.2.5 High Visibility Accident

A High Visibility Accident is any mishap which may generate publicity or high visibility.

1.2.6 Load Handling Equipment (LHE)

LHE is a term used to describe cranes, hoists and all other hoisting equipment (hoisting equipment means equipment, including crane, derricks, hoists and power operated equipment (excavators, forklifts, rough terrain equipment) when used with rigging to raise, lower, or horizontally move a suspended load).

1.2.7 Medical Treatment

Medical Treatment is treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even when provided by a physician or registered personnel.

1.2.8 Near Miss

A Near Miss is a mishap resulting in no personal injury and zero property damage, but given a shift in time or position, damage or injury may have occurred (e.g., a worker falls off a scaffold and is not injured; a crane swings around to move the load and narrowly misses a parked vehicle).

1.2.9 Operating Envelope

The Operating Envelope is the area surrounding any crane or load handling equipment. Inside this "envelope" is the crane, the 360-degree area up to the crane's maximum working radius, the operator, riggers and crane walkers, other personnel involved in the operation, rigging gear between the hook, the load, the crane's supporting structure (i.e. ground or rail), the load's rigging path, the lift and rigging procedure.

1.2.10 USACE Property and Equipment

Interpret "USACE" property and equipment specified in USACE EM 385-1-1 as Government property and equipment.

1.2.11 Load Handling Equipment (LHE) Accident or Load Handling Equipment Mishap

A LHE accident occurs when any one or more of the eight elements in the operating envelope fails to perform correctly during operation, including operation during maintenance or testing resulting in personnel injury or death; material or equipment damage; dropped load; derailment; two-blocking; overload; or collision, including unplanned contact between the load, crane, or other objects. A dropped load, derailment,

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two-blocking, overload and collision are considered accidents, even though no material damage or injury occurs. A component failure (e.g., motor burnout, gear tooth failure, bearing failure) is not considered an accident solely due to material or equipment damage unless the component failure results in damage to other components (e.g., dropped boom, dropped load, or roll over). Document an LHE mishap using the Crane High Hazard working group mishap reporting form.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Accident Prevention Plan (APP); G

Activity Hazard Analysis (AHA); G

Personnel Transfer by Boat; G

Personal Locator Beacons (PLB) and Receiver Unit

Man Overboard Drill Results; G

SD-06 Test Reports

Monthly Exposure Report

Notifications and Reports

Accident Reports; G

LHE Inspection Reports

Worker Compensation Claims

SD-07 Certificates

Crane Operators/Riggers; G

Certificate Of Compliance

Seaworthiness Certificate

Third Party Certificate

Tug and Boat Operators

1.4 MONTHLY EXPOSURE REPORTS

Provide a Monthly Exposure Report and attach to the monthly billing request through RMS. This report is a compilation of employee-hours worked each month for all site workers, both Prime and subcontractor. Failure to submit the report may result in retention of up to 10 percent of the voucher.

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1.5 REGULATORY REQUIREMENTS

In addition to the detailed requirements included in the provisions of this Contract, comply with the most recent edition of USACE EM 385-1-1, and the following federal, state OSHA, Coast Guard laws, ordinances, criteria, rules and regulations. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements govern.

1.6 SITE QUALIFICATIONS, DUTIES, AND MEETINGS

1.6.1 Personnel Qualifications

1.6.1.1 Level 1 Site Safety and Health Officer (SSHO)

Provide an SSHO that meets the requirements of EM 385-1-1. The SSHO must ensure that the requirements of 29 CFR 1926.16 are met for the project. Provide a Safety oversight team that includes a minimum of one person at each project to function as the Level 1 Site Safety and Health Officer (SSHO). The Level 1 SSHO or an equally qualified Alternate SSHO must be at the work site at all times or available to implement and administer the Contractor's safety program and Government-accepted Accident Prevention Plan. The SSHO and Alternate SSHO must have the required training, experience, and qualifications in accordance with EM 385-1-1.

If the Level 1 SSHO is off-site for a period longer than 24 hours, an equally-qualified Alternate SSHO must be provided and must fulfill the same roles and responsibilities as the primary SSHO. When either SSHO is temporarily off-site (up to 24 hours), a designated Level 2 or 3 SSHO may be used as the SSHO and must always be on the project site when work is being performed. Note: This position can be collateral duty (safety duties in addition to their full-time occupation) or one that meets the requirements of a CP or QP as is described in EM 385-1-1.

1.6.1.1.1 Additional Site Safety and Health Officer (SSHO) Requirements and Duties

The Level 1 SSHO or Alternate may not serve as the Quality Control Manager, Biological Monitor or as the Superintendent or be assigned any additional duties.

1.6.1.2 Competent Person Qualifications

Provide Competent Persons in accordance with EM 385-1-1 and herein. Competent Persons for high risk activities include confined space, cranes and rigging, excavation/trenching, fall protection, and electrical work. The CP for these activities must be designated in writing, and meet the requirements for the specific activity (i.e. competent person, fall protection).

The Competent Person identified in the Contractor's Safety and Health Program and accepted Accident Prevention Plan, must always be on-site at all times when the work that presents the hazards associated with their professional expertise is being performed and coordinate and consult with the USACE safety office on all high risk activities. Provide the credentials of the Competent Persons(s) to the Contracting Officer or delegated representative for information in consultation with the Safety

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Office.

1.6.1.2.1 Competent Person for Fall Protection

Provide a Competent Person for Fall Protection who meets the requirements of the EM 385-1-1 section 21 fall protection..

1.6.1.2.2 Competent Person for Confined Space Entry

Provide a "Competent Person" to supervise the entry into each confined space. That individual must meet the requirements and definition of Competent Person as contained in EM 385-1-1. Since this work involves marine operations that handle combustible or hazardous materials, this person shall have the ability to understand and follow through on the air sampling, PPE, and instructions of a Marine Chemist, Coast Guard authorized persons, or Certified Industrial Hygienist. All confined space and enclosed space work shall comply with NFPA 306, 29 CFR 1915, Subpart B, "Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment" or as applicable, 1910.147 for general industry. all confined space shall be assessed as "confined space permit required" until deemed not by competent person in writing.

1.6.1.3 Qualified Trainer Requirements

Individuals qualified to instruct the 40 hour contract safety awareness course, or portions thereof, must meet the definition of a Competent Person Trainer, and, at a minimum, possess a working knowledge of the following subject areas: EM 385-1-1, Electrical Standards, Lockout/Tagout, Fall Protection, Confined Space Entry for Construction; Excavation, Trenching and Soil Mechanics, and Scaffolds in accordance with 29 CFR 1926.450, Subpart L.

Instructors are required to:

a. Prepare class presentations that cover construction-related safety requirements.

1.6.1.4 Crane Operators/Riggers

Provide Operators, Signal Persons, and Riggers meeting the requirements in EM 385-1-1, for Riggers and Crane Operators and Signal Persons. Provide proof of current qualification.

Also meet the crane operator requirements of the State of California for Crane certification.

1.6.2 Personnel Duties

1.6.2.1 Duties of the Site Safety and Health Officer (SSHO)

The SSHO must:

a. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. SSHO must conduct morning safety huddle and document to be added to daily logs Attach safety inspection logs to the Contractors' daily production report.

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b. Conduct mishap investigations and complete required accident reports. Report mishaps and near misses. Contractor must use the ENG 3394 form (latest version) to document all mishaps, near misses, and accidents or injuries

c. Use and maintain OSHA's Form 300 to log work-related injuries and illnesses occurring on the project site for Prime Contractors and subcontractors, and make available to the Contracting Officer or delegated representative upon request. Post and maintain the Form 300A on the site Safety Bulletin Board.

d. Maintain applicable safety reference material on the job site.

e. Attend the pre-construction, pre-work meetings including preparatory meetings, and periodic in-progress meetings.

f. Review the APP and AHAs for compliance with EM 385-1-1, and approve, sign, implement and enforce them.

g. Establish a Safety and Occupational Health (SOH) Deficiency Tracking System that lists and monitors outstanding deficiencies until resolution.

h. Ensure subcontractor compliance with safety and health requirements. It is the responsibility of the prime contractor that all subcontractors adhere to the primary contractors government approved APP.

i. Maintain a list of hazardous chemicals on site and their Safety Data Sheets (SDS).

j. Maintain a weekly list of high hazard activities involving energy, equipment, excavation, entry into confined space, and elevation, and be prepared to discuss details during QC Meetings.

k. Provide and keep a record of site safety orientation and indoctrination for Contractor employees, subcontractor employees, and site visitors.

Superintendent, QC Manager, and SSHO are subject to dismissal if the above or any other required duties are not being effectively carried out. If either the Superintendent, QC Manager, or SSHO are dismissed, project work will be stopped and will not be allowed to resume until a suitable replacement is approved and the above duties are again being effectively carried out.

1.6.3 Meetings

1.6.3.1 Safety Mutual Understanding Meeting

a. Contractor representatives who have a responsibility or significant role in accident prevention on the project must attend this pre-construction meeting. This includes the project superintendent, Site Safety and Occupational Health Officer, quality control manager, or any other assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, program and procedures associated with it).

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b. Discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the Contract. This list of proposed AHAs will be reviewed and an agreement will be reached between the Contractor and the Contracting Officer as to which phases will require an analysis. In addition, establish a schedule for the preparation, submittal, and Government review of AHAs to preclude project delays.

c. Deficiencies in the submitted APP, identified during the Contracting Officer or designated representative's review, must be corrected, and the APP re-submitted for review prior to the start of construction. Work is not permitted to begin until an APP is established that is acceptable to the Contracting Officer or designated representative.

1.6.3.2 Safety Meetings

Conduct safety meetings to review past activities, plan for new or changed operations, review pertinent aspects of appropriate AHA (by trade), establish safe working procedures for anticipated hazards, and provide pertinent Safety and Occupational Health (SOH) training and motivation. Conduct meetings at least once a month for all supervisors at the project location. The SSHO, supervisors, foremen, or Alternate SSHO must conduct meetings at least once a week for all workers, as well as one informal "safety huddle" talk daily prior to the start of each shift. Attach minutes showing contract title, signatures of attendees and a list of topics discussed to the Contractors' Dredge Daily (CQC) report in RMS. Document meeting minutes to include the date, persons in attendance, subjects discussed, and names of individual(s) who conducted the meeting. Maintain documentation on-site and furnish copies to the Contracting Officer or delegated representative on request. Notify the Contracting Officer or delegated representative of all scheduled meetings 7 calendar days in advance.

1.6.3.3 Work Phase Meetings
Review the appropriate AHA and document attendance at the preparatory, initial and follow-up phases of quality control inspection. The analysis should be used during daily inspections to ensure the implementation and effectiveness of safety and health controls.

1.6.3.4 New Employee Indoctrination
Inform new employees (prime and sub-contractor) of specific site hazards before they begin work. Documentation of this orientation shall be kept on file at the project site.

1.6.3.5 Periodic Training
Provide Safety and Health Training in accordance with USACE EM 385-1-1 and the accepted APP. Ensure all required training has been accomplished for all onsite employees.

1.6.3.6 Training on Activity Hazard Analysis (AHA)
Prior to beginning a new phase, provide training to all affected employees to include a review of the AHA for the work to be implemented. In this training, train employees on the AHA process, i.e., identification of hazards, assessment, control development, supervision, and follow up. Ensure that all employees understand the risks involved in dredging operation and hazardous environments.

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1.7 ACCIDENT PREVENTION PLAN (APP)

A qualified safety professional must prepare the written site-specific APP. Prepare the APP in accordance with the format and requirements of EM 385-1-1, and herein. Use ENG Form 6293 as a template. See attachment 1 at the end of the specification package. The APP must be job-specific and address any unusual or unique aspects of the project or activity for which it is written. The APP must interface with the Contractor's overall safety and health program referenced in the APP in the applicable APP element, and made site-specific. Describe the methods to evaluate past safety performance of potential subcontractors in the selection process. Also, describe innovative methods used to ensure and monitor safe work practices of subcontractors. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the Contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP must be signed by an officer of the firm (Prime Contractor senior person), the individual preparing the APP, the on-site superintendent, the designated SSHO, the Contractor Quality Control Manager, and any designated Certified Safety Professional (CSP) or Certified Health Physicist (CIH). The SSHO must provide and maintain the APP and a log of signatures by each subcontractor foreman, attesting that they have read and understand the APP, and make the APP and log available on-site to the Contracting Officer. If English is not the foreman's primary language, the Prime Contractor must provide an interpreter.

Submit the APP to the Contracting Officer or delegated representative within 7 calendar days after Notice to Proceed (NTP) for acceptance. Work cannot proceed without an accepted APP. Once reviewed and accepted by the Contracting Officer or delegated representative, the APP and attachments will be enforced as part of the Contract. Disregarding the provisions of this Contract or the accepted APP is cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified. Continuously review and amend the APP, as necessary, throughout the life of the Contract. Changes to the accepted APP must be made with the knowledge and concurrence of the Contracting Officer or delegated representative, project superintendent, SSHO and Quality Control Manager. Incorporate unusual or high-hazard activities not identified in the original APP as they are discovered. Should any severe hazard exposure (i.e. imminent danger) become evident, stop work in the area, secure the area, and develop a plan to remove the exposure and control the hazard. Notify the Contracting Officer or delegated representative within 4 hours of discovery. Eliminate and remove the hazard. In the interim, take all necessary action to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public (as defined by ASSP A10.34), and the environment.

A paper copy of the accepted APP will be maintained at all times on each dredge. Continuously review and amend the APP, as necessary, throughout the life of the contract. Incorporate unusual or high-hazard activities not identified in the original APP as they are discovered.

When submitting the revised APP, contractor shall identify location of revisions through track changes.

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1.8 ACTIVITY HAZARD ANALYSIS (AHA)

The Activity Hazard Analysis (AHA) format shall be in accordance with EM 385-1-1. Submit the initial AHA for review within 7 calendar days after Notice to proceed. Submit each subsequent AHA 15 days prior to the start of each phase. Format subsequent AHAs as amendments to the APP. Before beginning each activity, task or Definable Feature of Work (DFOW) involving a type of work presenting hazards not experienced in previous project operations, or where a new work crew or subcontractor is to perform the work, the Contractor(s) performing that work activity must prepare an AHA. AHAs must be developed by the Prime Contractor, subcontractor, or supplier performing the work, and provided for Prime Contractor review and approval before submitting to the Contracting Officer or designated representative. AHAs must be signed by the SSHO, Superintendent, QC Manager and the subcontractor Foreman performing the work. Format the AHA in accordance with EM 385-1-1 or as directed by the Contracting Officer or designated representative. Submit the AHA for review at least 15 working days prior to the start of each activity task. The Government reserves the right to require the Contractor to revise and resubmit the AHA if it fails to effectively identify the work sequences, specific anticipated hazards, site conditions, equipment, materials, personnel and the control measures to be implemented.

AHAs must identify competent persons required for phases involving high risk activities, including confined entry, crane and rigging, excavations, trenching, electrical work, fall protection, and scaffolding.

1.8.1 AHA Management

Review the AHA list periodically (at least monthly) at the Contractor supervisory safety meeting, and update as necessary when procedures, scheduling, or hazards change. Use the AHA during daily inspections by the SSHO to ensure the implementation and effectiveness of the required safety and health controls for that work activity.

1.8.2 AHA Signature Log

Each employee performing work as part of an activity, task or DFOW must review the AHA for that work and sign a signature log specifically maintained for that AHA prior to starting work on that activity. The SSHO must maintain a signature log on site for every AHA. Provide employees whose primary language is other than English, with an interpreter to ensure a clear understanding of the AHA and its contents.

1.9 DISPLAY OF SAFETY INFORMATION

1.9.1 Safety Bulletin Board

Within one calendar day(s) after commencement of work, erect a safety bulletin board at the job site. Where size, duration, or logistics of project do not facilitate a bulletin board, an alternative method, acceptable to the Contracting Officer or delegated representative, that is accessible and includes all mandatory information for employee and visitor review, may be deemed as meeting the requirement for a bulletin board. Include and maintain information on safety bulletin board as required by EM 385-1-1.

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1.9.2 Safety and Occupational Health (SOH) Deficiency Tracking System

Establish a SOH deficiency tracking system that lists and monitors the status of SOH deficiencies in chronological order. Use the tracking system to evaluate the effectiveness of the APP. A monthly evaluation of the data must be discussed in the QC or SOH meeting with everyone on the project. The list must be posted on the project bulletin board and updated daily, and provide the following information:

a. Date deficiency identified;

b. Description of deficiency;

c. Name of person responsible for correcting deficiency;

d. Projected resolution date;

e. Date actually resolved.

1.10 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project, including those listed in paragraph REFERENCES. Maintain applicable equipment manufacturer's manuals.

1.11 EMERGENCY MEDICAL TREATMENT

Contractors must arrange for their own emergency medical treatment in accordance with EM 385-1-1. Government has no responsibility to provide emergency medical treatment.

1.12 NOTIFICATIONS and REPORTS

1.12.1 Mishap Notification

Notify the Contracting Officer or delegated representative and the USACE SOHO as soon as practical, but no more than eight hours, after any mishaps, including recordable accidents, incidents, and near misses, as defined in EM 385-1-1, any report of injury, illness, or any property damage. For LHE or rigging mishaps, notify the Contracting Officer or delegated representative as soon as practical but not more than eight hours after mishap. The Contractor is responsible for obtaining appropriate medical and emergency assistance and for notifying fire, law enforcement, and regulatory agencies. Immediate reporting is required for electrical mishaps, to include Arc Flash; shock; uncontrolled release of hazardous energy (includes electrical and non-electrical); load handling equipment or rigging; fall from height (any level other than same surface); and underwater diving. These mishaps must be investigated in depth to identify all causes and to recommend hazard control measures.

Within notification include Contractor name; Contract title; type of Contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (for example, type of construction equipment used and PPE used). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted. Assist and cooperate fully with the Government's investigation(s) of any mishap.

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1.12.2 Accident Reports

a. Conduct an accident investigation for recordable injuries and illnesses, property damage, and near misses as defined in EM 385-1-1, to establish the root cause(s) of the accident. Complete the applicable USACE Accident Report Form 3394, and provide an interim ENG3394 report within 24hrs. and with a final post investigation report 10 calendar day(s) of the accident per the EM385-1-1.

b. Near Misses: Near miss reports are considered positive and proactive Contractor safety management actions.

c. Conduct an accident investigation for any load handling equipment accident (including rigging accidents) to establish the root cause(s) of the accident. Complete the LHE Accident Report (Crane and Rigging Accident Report) form and provide the report to the Contracting Officer or delegated representative within 30 calendar days of the accident. Do not proceed with crane operations until cause is determined and corrective actions have been implemented to the satisfaction of the Contracting Officer or delegated representative. Provide an interim ENG3394 report within 24hrs. and with a final post investigation report 10 calendar day(s) of the accident per the EM385-1-1.

1.12.3 LHE Inspection Reports

Submit LHE inspection reports required in accordance with EM 385-1-1 and as specified herein with Daily Reports of Inspections.

1.12.4 Certificate of Compliance and Pre-lift Plan/Checklist for LHE and Rigging

Provide a FORM 16-1 Certificate of Compliance for LHE entering an activity under this Contract and in accordance with EM 385-1-1. Post certifications on the crane.

Develop a Standard Lift Plan (SLP) in accordance with EM 385-1-1 using ENG Form 6203 Standard Pre-Lift Crane Plan/Checklist for each lift planned. Submit SLP to the Contracting Officer or delegated representative for approval within 15 calendar days in advance of planned lift.

1.12.5 Third Party Certificate of Barge-Mounted Mobile Cranes

The Contractor shall certify barge-mounted mobile cranes in accordance with 29 CFR 1919 by an OSHA accredited person in accordance with EM 385-1-1. If barge-mounted mobile crane leave dredge site and dredging operations are not complete, upon returning to USACE dredge site, a new inspection is required for all dredging equipment.

1.12.6 Worker Compensation Claims

The Contractor shall submit at the 50 percent (50%) point and at project completion a written Summary of Worker Compensation Claims. The Contractor's compensation insurance carrier shall certify the data on the Contractor's employee claims as "correct and true". The report shall include all subcontractors with the same certification by their compensation insurance carriers.

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1.13 HOT WORK

The Contractor shall submit and obtain a written permit prior to performing "Hot Work" (welding, cutting, etc.) or operating other flame-producing/spark producing devices, from the Fire Division. A permit is required from the Explosives Safety Office for work in and around where explosives are processed, stored, or handled. CONTRACTORS ARE REQUIRED TO MEET ALL CRITERIA BEFORE A PERMIT IS ISSUED. The Contractor shall provide at least two (2) twenty (20) pound 4A:20 BC rated extinguishers for normal "Hot Work". All extinguishers shall be current inspection tagged, approved safety pin and tamper resistant seal. It is also mandatory for the Contractor to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch shall be trained in accordance with NFPA 51B and remain on-site for a minimum of 30 minutes after completion of the task or as specified on the hot work permit. When starting work in the facility, the Contractor shall require personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency Fire Division phone number. ANY FIRE, NO MATTER HOW SMALL, SHALL BE REPORTED TO THE RESPONSIBLE FIRE DIVISION IMMEDIATELY.

1.14 SPECIAL SAFETY REQUIREMENTS

In addition to the referenced Safety and Health Requirements Manual, EM 385-1-1, the Contractor shall comply with the following safety requirements:

a. All transfers of personnel between launches and dredges shall be made deck to deck.

b. When bin measurements are obtained in rough seas, the vessel's speed and direction shall be altered to minimize ship motion and wave action over the deck. Under no circumstances shall soundings be taken when conditions are determined to be un-safe by either the Captain or the GQAR.

c. The Contractor shall file a Float Plan when required by EM 385-1-1.

d. Personnel Transfer by Boat

(l)Establish a written procedure for transfer of personnel by boat. This procedure shall include as a minimum the following items:

(a) Sea and weather conditions under which a personnel transfer will, or will not, be allowed
(b) Procedure for establishing present sea conditions.
(c) Clear lines of authority regarding determination of safe sea conditions for a personnel transfer.

(2) Establish a written safety briefing for all personnel transferring by boat. As a minimum, include the following items and shall be posted on board both the boat and dredge:

(a) A requirement for the boat operator to provide a copy of the procedure and a verbal briefing for all personnel upon their initial transit to each work location (dredge or placement site).
(b) A log containing the names, dates, and location of each

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briefing provided.
(c) Detailed procedures for personnel transfer.

A copy of this procedure shall be posted on board both the launch and the dredge.

e. All U.S. Coast Guard Rules and Regulations including, but not limited to, the use of lights and day signals, draft limitations, safe speed in fog or limited visibility, and radio monitoring VHF-FM channel 13 or 16 as required shall be strictly followed.

f. Consideration shall be given to other channel users when going to and from the dredged material placement site. Caution shall be taken to avoid damage to crab pots or fishing nets in or near the channel or when transiting to placement areas. Reduced speed is required where there is a concentration of boats.

g. The Contractor shall immediately report to the GQAR any malfunctioning equipment that affects the safety of the personnel or plant.

h. Due to local sea and weather conditions, the Contractor is required to provide AHA's, and shall include Personal Locator Beacon procedures in the AHA's for the following:

(1) Personnel working on deck without handrails.
(2) Personnel outside the handrails without fall protection.
(3) Personnel cleaning out drag heads.

i. Personal Locator Beacons (PLB) and Receiver unit.

(1) The Contractor shall furnish a Receiver unit located on the bridge, on or near the ships helm, but within sight of the mate or operator of the dredge, tug or other floating plant operating the Vessel.
(2) As a minimum, the following personnel shall wear Personal Locator Beacons:

(a) All personnel in an area that is not protected by handrails shall wear either a PLB or a fall protection system that meets all the requirements of EM 385-1-1. A fall protection system can only be worn where feasible, safe, and practical. Where it is not feasible, safe or practical to provide a fall arrest system, all personnel accessing unguarded decks, shall be equipped with a PLB.

(b) All personnel transiting in small boats including project visitors.

(c) Water quality monitoring crew, including the boat operator.

(d) All personnel actively conducting hydrographic surveys.

(e) Anytime there are less than three personnel transiting by boat.

(3) The Contractor shall submit a Personal Locator Beacon system for review, as part of the Accident Prevention Plan.

(4) The Contractor shall supply two Personal Locator Beacons to the Government prior to commencement of work. These will be returned to

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the Contractor within 30 days after physical completion of all work. In addition, the Contractor shall provide PLB's to all personnel transiting on their boats including Government visitors.

(5) The Contractor shall remove and replace all Personal Locator Beacons (including the PLB(s) provided to the GQAR's) that malfunction or break from the project immediately, regardless of the fault or cause. No dredging or placement will be allowed to occur without the required number of PLB(s) on site. It is recommended that the Contractor keep a sufficient number of spare PLB(s) on site to avoid delays in the dredging and placement, should a PLB malfunction or be damaged. The Contractor shall ensure all personnel shall be trained in the use of PLBs. The Contractor shall brief all personnel assigned to the project on the procedure if the system is activated.

(6) Specifications on Personal Locator Beacon (PLB)/EPIRB and direction/location finder.

(a) Miniature Personal Water Activated 121.5 MHz PLB/EPIRB (Alerting Unit)65%
(b) PLB/EPIRB's shall alert a 121.5 MHz Direction finder within two minutes. (Base Unit)
(c) Examples of acceptable units are Sea Marshall PLB8-LR 'SOS' (alerting unit), Sea Marshall
SARfinder 1003(base unit with 'SOS' man overboard alarm and location finder), ACR mini B 300
ILS H2ON EPIRB, ACR Vecta2 Direction Finder, or equivalent.

(7) Single Band Radios for monitoring PLB's: The Contractor shall keep single band radios at the following locations for monitoring the PLB signal. These radios shall be used for no other purpose. In all cases, a monitored radio shall be located within range of all personnel wearing PLBs. The PLB signal shall be monitored by the Contractor.

(a) All Contractor boats (except the dredge with the base unit)

(b) Contractor's field office(s)

(c) Government office.

(8) The Contractor shall mount a directional antenna on the Contractor's boat that will be used as a rescue boat, with an external speaker that can be clearly heard over the engine noise, in and around the boat.

j. Automatic Identification System (AIS): All dredges used on this Contract are required to have AIS installed and fully operational prior to the start of work and throughout the life of the Contract. The Contractor shall have personnel trained and on-site that meet the U.S. Coast Guard's minimum requirements for the use of AIS.

k. Rescue System

(1) The Contractor's rescue boat shall be equipped with a rescue man overboard system that can be used by a single person. All personnel working on these vessels shall be trained on man overboard rescue techniques and procedures.

(2) All Contractor personnel on all floating plant, shall be trained

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in man overboard rescue. Provide man overboard training to all GQARs overseeing the monitoring; anticipate training four to six GQARs periodically.

(3) No vessel specified in sub-item (k)(1) above to have a rescue system will be allowed to operate on this Contract without a rescue system installed and crew trained on its use.

1. VHF Radios: Have VHF radios at all steering stations on board all dredges, monitoring vessels, survey vessels, launches and other boats used on the project.

m. Personal Flotation Devices (PFDs): All PFDs shall meet the requirements of EM 385-1-1. In addition to the requirements of EM 385-1-1, PFDs shall be worn in the following locations and for the following operations:

(1) During all water quality monitoring operations performed on the water.

(2) On the decks of all launches and motorboats regardless of whether handrails are installed. Launches and motorboats include water quality monitoring vessels, survey vessels and all other small boats used on the project.

(3) When taking bin soundings in areas subject to wave action.

(4) PFD's are required on deck at all times during dredging operations.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 DREDGING AND OTHER WORK

Comply with EM 385-1-1, NFPA 70, NFPA 70E, NFPA 241, the APP, the AHA, Federal and State OSHA regulations, and other related submittals and activity fire and safety regulations. The most stringent standard prevails.

PPE is governed by the nature of the work being performed, which includes the use of personal hearing protection in designated noise hazard areas or when performing noise hazard tasks. Safety glasses must be worn or carried/available on each person. Mandatory PPE includes:

a. Hard Hat

b. Long Pants

c. Appropriate Safety Shoes

d. Appropriate Class Reflective Vests
e. Safety Glasses.

f. Personal Flotation Devises (PFDs) while working on vessels, and on or

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near docks and jetties.

3.1.1 Worksite Communication

Employees working alone in a remote location or away from other workers must be provided an effective means of emergency communications (i.e., cellular phone, two-way radios, land-line telephones or other acceptable means). The selected communication must be readily available (easily within the immediate reach) of the employee and must be tested prior to the start of work to verify that it effectively operates in the area/environment. An employee check-in/check-out communication procedure must be developed to ensure employee safety.

3.1.2 Hazardous Material Exclusions

Notwithstanding any other hazardous material used in this Contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocyanates, lead-based paint, and hexavalent chromium, are prohibited. The Contracting Officer or delegated representative, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials. Low mercury lamps used within fluorescent lighting fixtures are allowed as an exception without further Contracting Officer or delegated representative approval.

3.1.3 Unforeseen Hazardous Material

Contract documents identify materials such as PCB, lead paint, and friable and non-friable asbestos and other OSHA regulated chemicals (i.e. 29 CFR Part 1910.1000). If material(s) that may be hazardous to human health upon disturbance are encountered during construction operations, stop that portion of work and notify the Contracting Officer or delegated representative immediately. Within 14 calendar days the Government will determine if the material is hazardous. If material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to FAR 52.243-4 Changes and FAR 52.236-2 Differing Site Conditions.

3.2 CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)

The Contractor shall ensure that each employee is familiar with and complies with these procedures and 29 CFR 1910.147 The Control of Hazardous Energy (lockout/tagout).

3.3 FALL PROTECTION PROGRAM

Establish a fall protection program, for the protection of all employees exposed to fall hazards. Within the program include company policy, identify roles and responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and evacuation procedures in accordance with EM 385-1-1.

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3.3.1 Training

Institute a fall protection training program. As part of the Fall Protection Program, provide training for each employee who might be exposed to fall hazards and using personal fall protection equipment. Provide training by a competent person for fall protection in accordance with EM 385-1-1. Document training and practical application of the competent person in accordance with EM 385-1-1 and in the AHA.

3.3.2 Fall Protection Equipment and Systems

Enforce use of personal fall protection equipment and systems designated (to include fall arrest, restraint, and positioning) for each specific work activity in the Site Specific Fall Protection and Prevention Plan and AHA at all times when an employee is exposed to a fall hazard. Protect employees from fall hazards as specified in EM 385-1-1 (Chapter 21).

Provide personal fall protection equipment, systems, subsystems, and components that comply with EM 385-1-1, 29 CFR 1926.500 Subpart M.

3.3.2.1 Additional Personal Fall Protection

In addition to the required fall protection systems, other protective measures such as safety skiffs, personal floatation devices, and life rings, are required when working above or next to water in accordance with EM 385-1-1. Personal fall protection systems and equipment are required when working from an articulating or extendible boom, swing stages, or suspended platform. In addition, personal fall protection systems are required when operating other equipment such as scissor lifts. The need for tying-off in such equipment is to prevent ejection of the employee from the equipment during raising, lowering, travel, or while performing work.

3.3.2.2 Personal Fall Protection Equipment

Only a full-body harness with a shock-absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest body support device. The use of body belts is not acceptable. Harnesses must have a fall arrest attachment affixed to the body support (usually a Dorsal D-ring) and specifically designated for attachment to the rest of the system. Snap hooks and carabineers must be self-closing and self-locking, capable of being opened only by at least two consecutive deliberate actions and have a minimum gate strength of3,600 lbs in all directions. Use webbing, straps, and ropes made of synthetic fiber. The maximum free fall distance when using fall arrest equipment must not exceed6 feet, unless the proper energy absorbing lanyard is used. Always take into consideration the total fall distance and any swinging of the worker (pendulum-like motion), that can occur during a fall, when attaching a person to a fall arrest system. Equip all full body harnesses with Suspension Trauma Preventers such as stirrups, relief steps, or similar in order to provide short-term relief from the effects of orthostatic intolerance in accordance with EM 385-1-1.

3.3.3 Horizontal Lifelines (HLL)

Provide HLL in accordance with EM 385-1-1. Commercially manufactured horizontal lifelines (HLL) must be designed, installed, certified and used, under the supervision of a qualified person, for fall protection as part of a complete fall arrest system which maintains a safety factor of 2

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(29 CFR 1926.500). The competent person for fall protection may (if deemed appropriate by the qualified person) supervise the assembly, disassembly, use and inspection of the HLL system under the direction of the qualified person. Locally manufactured HLLs are not acceptable unless they are custom designed for limited or site specific applications by a Registered Professional Engineer who is qualified in designing HLL systems.

3.3.4 Guardrails and Safety Nets

Design, install and use guardrails and safety nets in accordance with EM 385-1-1 and 29 CFR 1926.

3.3.5 Rescue and Evacuation Plan and Procedures

When personal fall arrest systems are used, ensure that the mishap victim can self-rescue or can be rescued promptly should a fall occur. Prepare a Rescue and Evacuation Plan and include a detailed discussion of the following: methods of rescue; methods of self-rescue or assisted-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility. Include the Rescue and Evacuation Plan within the Activity Hazard Analysis (AHA) for the phase of work, in the Fall Protection and Prevention (FP&P) Plan, and the Accident Prevention Plan (APP). The plan must be in accordance with the requirements of EM 385-1-1.

3.4 EQUIPMENT

3.4.1 Material Handling Equipment (MHE)

a. Material handling equipment such as forklifts must not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions. Material handling equipment fitted with personnel work platform attachments are prohibited from traveling or positioning while personnel are working on the platform.

b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions. Material Handling Equipment Operators must be trained in accordance with OSHA 29 CFR 1910.

c. Operators of forklifts or power industrial trucks must be licensed in accordance with OSHA.

3.4.2 Load Handling Equipment (LHE)

The following requirements apply. In exception, these requirements do not apply to commercial truck mounted and articulating boom cranes used solely to deliver material and supplies (not prefabricated components, structural steel, or components of a systems-engineered metal building) where the lift consists of moving materials and supplies from a truck or trailer to the ground; to cranes installed on mechanics trucks that are used solely in the repair of shore-based equipment; to crane that enter the activity but are not used for lifting; nor to other machines not used to lift loads suspended by rigging equipment. However, LHE accidents occurring during such operations must be reported.

a. Equip cranes and derricks as specified in EM 385-1-1.

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b. Notify the Contracting Officer or delegated representative within 24 hourse of LHE entering the activity, in accordance with EM 385-1-1, so that necessary quality assurance spot checks can be coordinated. Contractor's operator must remain with the crane during the spot check. Rigging gear must be in accordance with OSHA and ASME B30.9 Standards safety standards.

c. Comply with the LHE manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. Perform erection under the supervision of a designated person (as defined in ASME B30.5). Perform all testing in accordance with the manufacturer's recommended procedures.

d. Comply with ASME B30.5 for mobile and locomotive cranes, ASME B30.22 for articulating boom cranes, ASME B30.3 for construction tower cranes, ASME B30.8 for floating cranes and floating derricks, ASME B30.9 for slings, ASME B30.20 for below the hook lifting devices and ASME B30.26 for rigging hardware.

e. When operating in the vicinity of overhead transmission lines, operators and riggers must be alert to this special hazard and follow the requirements of EM 385-1-1, and ASME B30.5 or ASME B30.22 as applicable.

f. Do not use crane suspended personnel work platforms (baskets) unless the Contractor proves that using any other access to the work location would provide a greater hazard to the workers or is impossible. Do not lift personnel with a line hoist or friction crane. Additionally, submit a specific AHA for this work to the Contracting Officer. Ensure the activity and AHA are thoroughly reviewed by all involved personnel.

g. Inspect, maintain, and recharge portable fire extinguishers as specified in NFPA 10, Standard for Portable Fire Extinguishers.

h. All employees must keep clear of loads about to be lifted and of suspended loads, except for employees required to handle the load.

i. Use cribbing when performing lifts on outriggers.

j. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.

k. A physical barricade must be positioned to prevent personnel access where accessible areas of the LHE's rotating superstructure poses a risk of striking, pinching or crushing personnel.

l. Maintain inspection records in accordance by EM 385-1-1, including shift, monthly, and annual inspections, the signature of the person performing the inspection, and the serial number or other identifier of the LHE that was inspected. Records must be available for review by the Contracting Officer or delegated representative.

m. Maintain written reports of operational and load testing in accordance with EM 385-1-1, listing the load test procedures used along with any repairs or alterations performed on the LHE. Reports must be available for review by the Contracting Officer or delegated representative.

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n. Certify that all LHE operators have been trained in proper use of all safety devices (e.g. anti-two block devices).

o. Take steps to ensure that wind speed does not contribute to loss of control of the load during lifting operations. At wind speeds greater than 20 mph, the operator, rigger and lift supervisor must cease all crane operations, evaluate conditions and determine if the lift may proceed. Base the determination to proceed or not on wind calculations per the manufacturer and a reduction in LHE rated capacity if applicable. Include this maximum wind speed determination as part of the activity hazard analysis plan for that operation.

3.4.3 Machinery and Mechanized Equipment

a. Proof of qualifications for operator must be kept on the project site for review.

b. Manufacture specifications or owner's manual for the equipment must be on-site and reviewed for additional safety precautions or requirements that are sometimes not identified by OSHA or USACE EM 385-1-1. Incorporate such additional safety precautions or requirements into the AHAs.

3.4.4 Seaworthiness Certification and Equipment Inspection

3.4.4.1 Seaworthiness Certification

Before any plant or equipment, including hydrographic survey equipment and crew boat, is put into use on the job, it shall be inspected and tested by the Contractor's operator of the plant or equipment or the manufacturer's representative, in the presence of the Contractor's Safety Officer. The Contractor shall submit certification in writing that the plant or equipment is operating within manufacturer's tolerances and specifications, is in safe operating condition, and meets or exceeds equipment requirements of the contract and EM 385-1-1, Section 19. All floating plant or dredges shall have a current Coast Guard certification, ABS classification, or marine survey by a NAMS or SAMS surveyor.

a. All dredges and quarter boats not subject to USCG inspection and certification or not having a current American Bureau of Shipping (ABS) classification shall be inspected in the working mode annually by a marine surveyor accredited by the National Association of Marine Surveyors (NAMS) or the Society of Accredited Marine Surveyors (SAMS) and having at least five (05) years experience in commercial marine plant and equipment. A qualified person shall inspect all other floating plants before they are placed into use and at least annually thereafter. The inspection shall be documented, and a copy of the most recent inspection report shall be posted in a public area on board the vessel and a copy shall be furnished to the designated authority upon request. The inspection shall be appropriate for the intended use of the plant and shall, as a minimum, evaluate structural integrity and compliance with NFPA 302, Fire Protection Standard for Pleasure and Commercial Motor Craft and EM 385-1-1.

b. Cranes and crane operators shall be in compliance with EM 385-1-1 for the life of the contract. The Contractor (including subcontractors) shall have cage boom guards, insulating links, or proximity warning devices on

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cranes that will be working adjacent to power lines. These devices shall not alter the requirements of any other regulation of this part - even if law or other regulation requires such device. Insulating links shall be capable of withstanding a 1-minute dry low frequency dielectric test of 50,000 volts, alternating current(EM 385-1-1). Calibration records with stamped date of required manufacturer inspection of proximity warning devices shall be kept on the crane. Additionally, the AHA shall satisfy EM 385-1-1 requirements.

3.4.4.2 Contractor Inspection of Floating Plants

Using included safety checklists, the Contractor shall conduct inspections for each piece of floating plant. The Contractor shall furnish the completed checklists to the Contracting Officer or delegated representative prior to plant use.

3.4.4.3 Government Inspection of Floating Plants

After the Contractor has submitted the checklists required by paragraph, the Government shall be given sufficient time to inspect all plant and equipment to be utilized. The Government will inspect to determine conformance with the manufacturer's specifications furnished by the Contractor and with requirements of EM 385-1-1. The Contractor shall not use any plant or equipment on the work under this contract until the Government has been allowed the opportunity for inspection during normal working hours and necessary repairs made for deficiencies found. Any delay of this inspection by the Contractor will not serve to excuse any noncompliance with safety regulations or the justification of a time extension.

3.4.5 Weight Handling Equipment

a. Equip cranes and derricks as specified in EM 385-1-1.

b. Notify the Contracting Officer or delegated representative 15 days in advance of any cranes entering the activity so that necessary quality assurance spot checks can be coordinated. Contractor's operator shall remain with the crane during the spot check.

c. Comply with the crane manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. Perform erection under the supervision of a designated person (as defined in ASME B30.5). Perform all testing in accordance with the manufacturer's recommended procedures.

d. Comply with ASME B30.5 for mobile and locomotive cranes, ASME B30.22 for articulating boom cranes, ASME B30.3 for tower cranes, and ASME B30.8 for floating cranes and floating derricks.

e. Under no circumstance shall a Contractor make a lift at or above 90 percent (90%) of the cranes rated capacity in any configuration.

f. When operating in the vicinity of overhead transmission lines, operators and riggers shall be alert to this special hazard and follow the requirements of USACE EM 385-1-1, ASME B30.5 or ASME B30.22 as applicable.

g. Do not crane suspended personnel work platforms (baskets) unless the

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Contractor proves that using any other access to the work location would provide a greater hazard to the workers or is impossible. Do not lift personnel with a line hoist or friction crane.

h. Inspect, maintain, and recharge portable fire extinguishers as specified in NFPA 10, Standard for Portable Fire Extinguishers.

i. All employees must keep clear of loads about to be lifted and of suspended loads.

j. Use cribbing when performing lifts on outriggers.

k. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.

1. A physical barricade must be positioned to prevent personnel from entering the counterweight swing (tail swing) area of the crane.

m. Certification records which include the date of inspection, signature of the person performing the inspection, and the serial number or other identifier of the crane that was inspected shall always be available for review by Contracting Officer or delegated representative.

n. Written reports listing the load test procedures used along with any repairs or alterations performed on the crane shall be available for review by Contracting Officer or delegated representative.

o. Certify that all crane operators have been trained in proper use of all safety devices (e.g. anti-two block devices).

p. Take steps to ensure that wind speed does not contribute to loss of control of the load during lifting operations. Prior to conducting lifting operations set a maximum wind speed at which a crane can be safely operated based on the equipment being used, the load being lifted, experience of operators and riggers, and hazards on the work site. This maximum wind speed determination shall be included as part of the activity hazard analysis plan for that operation.

3.4.6 Equipment and Mechanized Equipment

a. Proof of qualifications for operator shall be kept on the project site for review.

b. Manufacture specifications or owner's manual for the equipment shall be on-site and reviewed for additional safety precautions or requirements that are sometimes not identified by OSHA or USACE EM 385-1-1. Incorporate such additional safety precautions or requirements into the AHAs.

c. Equipment and mechanized equipment shall be inspected in accordance with manufacturer's recommendations for safe operation by a competent person prior to being placed into use.

3.4.7 Use of Explosives

Explosives shall not be used or brought to the project site without prior written approval from the Contracting Officer or delegated representative. Such approval shall not relieve the Contractor of responsibility for

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injury to persons or for damage to property due to blasting operations.

Storage of explosives, when permitted on Government property, shall be only where directed and in approved storage facilities. These facilities shall be kept locked at all times except for inspection, delivery, and withdrawal of explosives.

3.5 UTILITIES

3.5.1 Utility Locations

All underground utilities in the work area must be positively identified by a third party, independent, private utility locating company in addition to any station locating service and coordinated with the station utility department.

3.5.2 Utility Location Verification

The Contractor shall verify underground utility locations, including utility depth, by hand digging using wood or fiberglass handled tools when any adjacent work is expected to come within three feet of the underground system.

3.5.3 Utilities Within and Under Concrete, Bituminous Asphalt, and Other Impervious Surfaces

Utilities located within and under concrete slabs or pier structures, bridges, parking areas, and the like, are extremely difficult to identify. Whenever contract work involves chipping, saw cutting, or core drilling through concrete, bituminous asphalt or other impervious surfaces, the existing utility location must be coordinated with station utility departments in addition to location and depth verification by a third party, independent, private locating company. The third party, independent, private locating company shall locate utility depth by use of Ground Penetrating Radar (GPR), X-ray, bore scope, or ultrasound prior to the start of dredging. Outages to isolate utility systems must be used in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the Contractor from meeting this requirement.

3.6 ELECTRICAL

3.6.1 Portable Extension Cords

The Contractor shall size portable extension cords in accordance with manufacturer ratings for the tool to be powered and protected from damage. Immediately removed from service all damaged extension cords. Portable extension cords shall meet the requirements of EM 385-1-1, NFPA 70E, and OSHA electrical standards.

3.7 WORK IN CONFINED SPACES

The Contractor shall comply with the requirements in Section 34 of USACE EM 385-1-1, 29 CFR 1910, 29 CFR 1910.146, OSHA Directive CPL 2.100 and 29 CFR 1926. Any potential for a hazard in the confined space requires a permit system to be used.

a. Entry Procedures. The Contractor shall prohibit entry into a confined space by personnel for any purpose, including hot work, until the

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qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. (See Section 34 of USACE EM 385-1-1 for entry procedures.) All hazards pertaining to the space shall be reviewed with each employee during review of the AHA.

b. Forced air ventilation is required for all confined space entry operations and the minimum air exchange requirements must be maintained to ensure exposure to any hazardous atmosphere is kept below its' action level.

c. Sewer wet wells require continuous atmosphere monitoring with audible alarm for toxic gas detection.

3.8 NAVIGATION

The Contractor shall conform operations according to the U.S. Coast Guard publication "Navigation Rules, International-Inland, COMDT INST M16672.2D," dated 25 MAR 1999.

3.8.1 Navigation Aids

Navigation aids located within or near the areas required to be dredged will be removed, if necessary, by the U.S. Coast Guard in advance of dredging operations. The Contractor shall not remove, change the location of, obstruct, willfully damage, make fast to, or interfere with any aid to navigation. The Contractor shall notify the U.S. Coast Guard in writing, with a copy to the Contracting Officer or delegated representative, 30 days in advance of the time he plans to dredge adjacent to any aids which require relocation to facilitate dredging. The Contractor shall contact the U.S. Coast Guard for information concerning the position to which the aids will be relocated.

3.8.2 Dredging Aids

The Contractor shall obtain approval from the U.S. Coast Guard for all buoys, dredging aid markers to be placed in the water, and dredging aid markers affixed with a light prior to the installation. Dredging aid markers and lights shall not be colored or placed in a manner that they will obstruct or be confused with navigation aids.

3.8.3 U.S. Coast Guard Notification

The Contractor shall notify the Coast Guard prior to operations as described in this section. Contractor shall submit copies of all written Coast Guard notifications to the Government.

3.8.4 Local Notice to Mariners

The Contractor shall provide the following information to the U.S. Coast Guard 14 days prior to start of operation:

a. Type of operation (i.e. dredging, diving operations, construction.);

b. Location of operation, including Latitude and Longitude and geographical position if applicable;

c. Duration of operation, including start and completion dates (If these dates change, the Coast Guard needs to be notified.)

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d. Vessels involved in the operation.

e. VHF-FM Radio Frequencies monitored by vessels on scene;

f. Point of Contact and 24 hour phone number;

g. Chart Number for the area of the operation.

3.8.5 Signal Lights

The Contractor shall display signal lights and conduct operations in accordance with the General Regulations of the Department of the Army, the Coast Guard governing lights and day signals to be displayed by towing vessels with tows on which no signals can be displayed, vessels working on wrecks, dredges, vessels engaged in laying cables or pipe or in submarine or bank protection operations, lights to be displayed on dredge pipe lines, day signals to be displayed by vessels of more than 65 feet in length moored or anchored in a fairway or channel, and the passing's by other vessels of floating plant working in navigable channels, as approved by the Secretary of the Army (33 CFR 201.1 201.16) and the Commandant,U.S. Coast Guard (33 CFR 80.18 80.31a and 33 CFR 95.51 95.70).

3.8.6 Obstruction Marking and Lighting

The Contractor shall furnish and install an obstruction marking and lighting in accordance with the requirements of FAA Publication Advisory Circular 70/7460-lK.

3.9 RADIOLOGICAL SAFETY

If there is intent to use any radiological source on the project, such use shall be reported by letter to the Contracting Officer or delegated representative. The letter shall state the type or radioactive material in the source, serial number of the equipment, manufacturer, licensee, and the purpose for which the equipment will be used. A copy of the last safety certification(s) from the appropriate Federal and State agencies shall be included with the letter. No radiological materials shall be stored, handled or used on this contract without the prior approval of the Contracting Officer or delegated representative. The storage, handling and use of radioactive materials shall comply with the pertinent State and Federal safety regulations.

3.10 MARINE TRANSPORTATION SAFETY

During dredging, disposal and dredging operations, the Contractor shall implement the following U.S. Coast Guard provisions to ensure marine transportation safety:

a. All Contractors' vessels operating in or near a navigation channel shall continuously monitor applicable channels.
b. In the event that the Contractor's vessels restrict or affect navigation of other vessels, the Contractor's vessel operators shall transmit and confirm their intentions and any other necessary information via applicable channels to promote safe navigation for all vessels in the project vicinity.
c. U.S. Coast Guard shall be contacted via radio whenever a Contractor's vessel moves a scow between the dredge and the disposal sites, the dredge plant commences dredging operations, or if the dredge

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operators change dredge location.

3.10.1 Vessel Traffic Services (VTS) Reporting Requirements

Contractor vessels shall continuously monitor applicable VHF-FM Radio Frequencies and applicable VTS working frequency at all times while conducting operations. Contractor vessels shall notify the VTS via radio five minutes in advance of actual departure from the dredge site and immediately prior to arrival at the disposal site and to begin actual disposal operations.

All Contractor vessels, including dredges, shall be equipped with a Class "A" Automatic Identification System (AIS) transceiver installed using the guidelines set forth in the Guidelines for Installation of Shipborne Automatic Identification System (IMO SN/Circ.227, 2003). Contractor AIS must be capable of providing information automatically and continuously to the VTS base station and other vessels, receiving and processing information from other sources, responding to high priority and safety related calls with a minimum delay, and providing positional and maneuvering information at a data rate adequate to facilitate accurate tracking by authority and other ships (i.e. AIS equipment shall be configured to process and display accurate ship dimensions and position information on an Electronic Chart Display and Information System (ECDIS), radar or integrated system).

Shall report the following information to the VTS 15 minutes prior to getting underway:

a. Vessel type and name;

b. Position;

c. Destination

d. Intended Route

e. Time and Point of Entry; and

f. Dangerous cargo on board or in its tow.

Report information to the applicable VTS by VHF-FM Radio.

3.10.2 Anchor Waiver Requirements

Contractor shall provide written notification four days prior to conducting dredging activities or when anchoring outside of designated anchorages to the U.S. Coast Guard. These notifications shall be provided prior to any dredging operations utilizing a mechanical means (i.e. spuds, anchor chains, etc.) to affix to the seafloor.

3.11 TUG AND SCOW OPERATOR CERTIFICATION

Tug and scow operators shall be licensed masters. Prior to dredging or dredging operations, the Contractor shall submit certification of this requirement.

3.12 CREOSOTE

Personnel handling or working in the vicinity of coal tar (creosote)

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treated piles, bottom debris, dredge material shall be afforded appropriate NIOSH approved personal protective equipment during these exposures (i.e. gloves).

3.13 MEANS OF ESCAPE FOR PERSONNEL QUARTERED, OR WORKING ON THE FLOATING PLANT

Two means of escape shall be provided for assembly, sleeping, and messing areas on floating plants. For areas involving 10 or more persons, both means of egress shall be through standard size doors opening to different exit routes. Where nine of fewer persons are involved, one of the means of escape may be a window (minimum dimensions 14-inches by 36 -inches) which leads to different exit routes. The Contractor shall invite Government personnel to witness drills for each shift in accordance with the emergency planning requirements of USACE EM 385-1-1.

3.14 EMERGENCY ALARMS AND SIGNALS

3.14.1 Alarms

The Contractor shall install and maintain emergency alarms on all floating plants where it is possible for either a passenger or crewman to be out of sight or hearing from any other person. Operate the alarm from the primary electrical system with standby batteries on trickle charge that will automatically furnish the required energy during an electrical-system failure. The Contractor shall place a sufficient number of signaling devices on each deck so that the alarm sound can be heard distinctly at any point above the ambient noise level. All signaling devices shall be interconnected that actuation can occur from at least one strategic point on each deck.

3.14.2 Fire Alarm Signal

The general fire alarm signal shall be in accordance with EM 385-1-1.

3.14.3 Abandon Ship Signal

The signal for abandon ship shall be in accordance with EM 385-1-1.

3.14.4 Man-Overboard Signal

The Contractor shall hail and pass the word to the bridge. All personnel and vessels capable of rendering assistance shall respond.

3.15 HOUSEKEEPING

All debris in work areas shall be cleaned up daily or more frequently by the Contractor if necessary. Debris may be temporarily located in an approved location; however garbage accumulation shall be removed each day.

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SOURCES FOR REFERENCE PUBLICATIONS

PART 1 GENERAL

1.1 REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the standards producing organization (e.g., ASTM B564 Standard Specification for Nickel Alloy Forgings). However, when the standards producing organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

1.2 ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided.

AACE INTERNATIONAL (AACE)
1265 Suncrest Towne Centre Drive
Morgantown, WV 26505-1876 USA
Ph: 304-296-8444
Fax: 304-291-5728
Internet: https://web.aacei.org/

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
Two Park Avenue
New York, NY 10016-5990
Ph: 800-843-2763
Fax: 973-882-1717
E-mail: customercare@asme.org
Internet: https://www.asme.org/

ASTM INTERNATIONAL (ASTM)
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken, PA 19428-2959
Ph: 610-832-9500
Fax: 610-832-9555
E-mail: service@astm.org
Internet: https://www.astm.org/

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
1 Batterymarch Park
Quincy, MA 02169-7471
Ph: 800-344-3555
Fax: 800-593-6372
Internet: https://www.nfpa.org

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U.S. ARMY CORPS OF ENGINEERS (USACE)
CRD-C DOCUMENTS available on Internet:
http://www.wbdg.org/ffc/army-coe/standards
Order Other Documents from:
Official Publications of the Headquarters, USACE
E-mail: hqpublications@usace.army.mil
Internet: http://www.publications.usace.army.mil/
or
https://www.hnc.usace.army.mil/Missions/Engineering-Directorate/TECHINF
U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
8601 Adelphi Road
College Park, MD 20740-6001
Ph: 866-272-6272
Internet: https://www.archives.gov/
Order documents from:
Superintendent of Documents
U.S. Government Publishing Office (GPO)
732 N. Capitol Street, NW
Washington, DC 20401
Ph: 202-512-1800 or 866-512-1800
Bookstore: 202-512-0132
Internet: https://www.gpo.gov/

AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)
520 N. Northwest Highway
Park Ridge, IL 60068
Ph: (847) 699-2929
E-mail: customerservice@assp.org
Internet: https://www.assp.org

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

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QUALITY CONTROL

PART 1 GENERAL

1.1 REFERENCE

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D3740	(2023) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM E329	(2025B) Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

1.2 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program, and all associated costs will be included in the applicable Bid Schedule unit or lump-sum prices.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Contractor Quality Control(CQC) Plan; G

SD-06 Test Reports

Verification Statement

PART 2 PRODUCTS

Not Used

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PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

Establish and maintain an effective quality control (QC) system that complies with FAR 52.246-12 Inspection of Construction. QC consists of plans, procedures, and organization necessary to produce an end product which complies with the Contract requirements. The QC system covers all dredging operations, both onsite and offsite, and be keyed to the proposed sequence. The project superintendent will be held responsible for the quality of work and is subject to removal by the Contracting Officer or delegated representative for non-compliance with the quality requirements specified in the Contract. In this context the highest level manager responsible for the overall dredging activities at the site, including quality and production is the project superintendent. The project superintendent maintains a daily physical presence at the site and is responsible for all dredging and related activities at the site, except as otherwise acceptable to the Contracting Officer or delegated representative.

3.2 CONTRACTOR QUALITY CONTROL(CQC) PLAN

Submit no later than 7 days after receipt of Notice to Proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements FAR 52.246-12 Inspection of Construction. The Contractor will be permitted to begin only after acceptance of the CQC Plan. Work outside of the accepted plan will not be permitted to begin until acceptance of a CQC Plan.

3.2.1 Content of the CQC Plan

The Contractor shall include, as a minimum, the following to cover all operations, both onsite and offsite, including work by:

a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff will implement the three phase control system for all aspects of the work specified. Include a CQC System Manager who reports to the project superintendent.

b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.

c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. Letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities will be issued by the CQC System Manager. Copies of these letters must be furnished to the Government.

d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors. These procedures must be in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

e. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph

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requiring test, feature of work to be tested, test frequency, and person responsible for each test. (Laboratory facilities approved by the Contracting Officer or delegated representative must be used.)

f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

g. Procedures for tracking deficiencies from identification through acceptable corrective action. Establish verification procedures that identified deficiencies have been corrected.

h. Reporting procedures, including proposed reporting formats.

i. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable features under a particular section. Each reach is to be considered a separate definable feature.

3.2.2 Acceptance of Plan

Government acceptance of the Contractors plan is required prior to the start of dredging. Acceptance is conditional and will be predicated on satisfactory performance during the execution of the contract. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.3 Notification of Changes

After acceptance of the CQC Plan, notify the Contracting Officer or delegated representative in writing of any proposed change. Proposed changes are subject to acceptance by the Contracting Officer or delegated representative.

3.3 QUALITY CONTROL ORGANIZATION

3.3.1 Personnel Requirements

The requirements for the CQC organization are a CQC Resident Management System (RMS) Manager and sufficient number of additional qualified personnel to ensure safety and contract compliance. The Safety and Health Manager must receive direction and authority from the CQC System Manager and serve as a member of the CQC staff. Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly will also be included as part of the CQC organization. The Contractor's CQC staff must maintain a daily presence at the site during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance.The CQC staff will be subject to acceptance by the Contracting Officer or delegated representative. Provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Promptly complete and furnish all letters, material submittals, shop drawing submittals,

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schedules and all other project documentation to the CQC organization. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer or delegated representative.

3.3.2 CQC System Manager

Identify as CQC System Manager an individual within the onsite work organization that is responsible for overall management of CQC and has the authority to act in all CQC matters for the Contractor. The CQC System Manager is required to have a minimum of 5 years construction experience on construction similar to this Contract. This CQC System Manager is on the site daily during dredging and is employed by the prime Contractor.The CQC System Manager is assigned no other duties. Identify in the plan an alternate to serve in the event of the CQC System Manager's absence. The requirements for the alternate are the same as the CQC System Manager.

3.3.3 CQC Personnel

In addition to CQC personnel specified elsewhere in the contract, provide as part of the CQC organization specialized personnel to assist the CQC System Manager for the following areas: environmental and submittals clerk, These individuals or specialized technical companies are employees of the prime or subcontractor; be responsible to the CQC System Manager; be physically present at the project site during work on the specialized personnel's areas of responsibility; have the necessary education or experience in accordance with the experience matrix listed herein. These individuals have no other duties other than quality control.

Experience Matrix	
Area	Qualifications
Environmental	Degree in environmental science or related field to be verified by the government. Qualification using experience only must come from experience performing environmental CQC for dredging projects with a similar environment.
Submittals	Submittal Clerk with 1 yr experience

3.3.4 Additional Requirement

In addition to the above experience and/or education requirements, the CQC RMS Manager must have completed or shall take the course entitled "Construction Quality Management for Contractors" and shall be a holder of a valid certificate of course completion. This course is periodically offered at the San Francisco District and the Sacramento District. If the certificate expires while the contract underway, the approved CQC Manager shall retake the course and provide the new certificate prior to the expiration of the old certificate.

3.3.5 Organizational Changes

The Contractor shall maintain the CQC staff at full strength at all times.

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When it is necessary to make changes to the CQC staff, revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer or delegated representative for acceptance.

3.4 SUBMITTALS AND DELIVERABLES

Submittals, if needed, must comply with the requirements in Section 01 33 00SUBMITTAL PROCEDURES. The CQC organization is responsible for certifying that all submittals and deliverables are in compliance with the contract requirements.

3.5 CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the dredging operation, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control must be conducted by the CQC RMS Manager for each definable feature of work as follows:

3.5.1 Preparatory Phase

This phase is performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase includes:

a. A review of each paragraph of applicable specifications, reference codes, and standards. Make available during the preparatory inspection a copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field. Maintain and make available in the field for use by Government personnel until final acceptance of the work.

b. Review of the contract drawings.

c. Check to assure that all materials and/or equipment have been tested, submitted, and approved.

d. Review of provisions that have been made to provide required control inspection and testing.

e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.

f. Examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.

g. Review of the appropriate activity hazard analysis to assure safety requirements are met.

h. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document tolerances and workmanship standards for that feature of work.

i. Check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer or delegated representative.

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j. Discussion of the initial control phase.

k. The Government must be notified at least 24 hours in advance of beginning the preparatory control phase. Include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. Document the results of the preparatory phase actions by separate minutes prepared by the CQC System Manager and attach to the Dredge daily CQC report. Instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.5.2 Initial Phase

This phase is accomplished at the beginning of a definable feature of work. Accomplish the following:

a. Check work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.

b. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.

c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.

d. Resolve all differences.

e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.

f. The Government must be notified at least 24 hours in advance of beginning the initial phase. Prepare separate minutes of this phase by the CQC System Manager and attach to the Dredge daily CQC report. Indicate the exact location of initial phase for future reference and comparison with follow-up phases.

g. The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

3.5.3 Follow-up Phase

The Contractor shall perform daily checks to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. Record the checks in the CQC documentation. Conduct final follow-up checks and correct all deficiencies prior to the start of additional features of work which may be affected by the deficient work. Do not build upon nor conceal non-conforming work.

3.5.4 Additional Preparatory and Initial Phases

Conduct additional preparatory and initial phases on the same definable features of work if: the quality of on-going work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a definable feature is resumed after

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a substantial period of inactivity; or if other problems develop.

3.6 TESTS

3.6.1 Testing Procedure

The Contractor shall perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements. Upon request, furnish to the Government duplicate samples of test specimens for possible testing by the Government. Testing includes operation and/or acceptance tests when specified. Procure the services of a Corps of Engineers approved testing laboratory or establish an approved testing laboratory at the project site. Perform the following activities and record and provide the following data:

a. Verify that testing procedures comply with contract requirements.

b. Verify that facilities and testing equipment are available and comply with testing standards.

c. Check test instrument calibration data against certified standards.

d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

e. Record results of all tests taken, both passing and failing on the CQC report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test. If approved by the Contracting Officer or delegated representative, actual test reports may be submitted later with a reference to the test number and date taken. Provide an information copy of tests performed by an offsite or commercial test facility directly to the Contracting Officer or delegated representative. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.6.2 Testing Laboratories

Not Used

3.6.3 Onsite Laboratory

Not Used

3.6.4 Furnishing or Transportation of Samples for Testing

Not Used

3.7 COMPLETION INSPECTION

Not Used

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3.8 DOCUMENTATION

The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. Include in these records the work of subcontractors and suppliers on an acceptable form that includes, as a minimum, the following information:

a. Contractor/subcontractor and their area of responsibility.

b. Operating plant/equipment with hours worked, idle, or down for repair.

c. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.

d. Test and/or control activities performed with results and references to specifications/drawings requirements. Identify the control phase (Preparatory, Initial, Follow-up). List of deficiencies noted, along with corrective action.

e. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.

f. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.

g. Offsite surveillance activities, including actions taken.

h. Job safety evaluations stating what was checked, results, and instructions or corrective actions.

i. Instructions given/received and conflicts in plans and/or specifications.

j. Contractor's Verification Statement.

The Contractor shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. The Contractor shall cover both conforming and deficient features and include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The Contractor shall submit daily reports in RMS within 48 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, the Contractor shall prepare and submit one report for every 7 days of no work and on the last day of a no work period. All calendar days must be accounted for throughout the life of the contract. The first report following a day of no work will be for that day only. Reports must be signed and dated by the CQC System Manager. The Contractor shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel within the CQC System Manager Report.

3.9 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer or delegated representative will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of

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such notice. Such notice, when delivered to the Contractor at the work site, will be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer or delegated representative may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders will be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

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RESIDENT MANAGEMENT SYSTEM CONTRACTOR MODE (RMS CM)

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this section to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2024) Safety and Occupational Health (SOH) Requirements

1.2 MEASUREMENT AND PAYMENT

The work of this section is not measured for payment. The Contractor is responsible for the work of this section, without any direct compensation other than the payment received for contract items.

1.3 CONTRACT ADMINISTRATION

The Government will use the Resident Management System (RMS) to assist in its monitoring and administration of this contract. The Government accesses the system using the Government Mode of RMS (RMS GM) and the Contractor accesses the system using the Contractor Mode (RMS CM). The term RMS will be used in the remainder of this section for both RMS GM and RMS CM. The joint Government-Contractor use of RMS facilitates electronic exchange of information and overall management of the contract. The Contractor accesses RMS to record, maintain, input, track, and electronically share information with the Government throughout the contract period in the following areas:

-Administration
-Finances
-Quality Control
-Submittal Monitoring
-Scheduling
-Closeout
-Import/Export of Data

The Contractor must be prepared to transition from the Resident Management System (RMS) to the new Construction Management Platform (CMP) at any time during the period of performance of this contract, once the USACE enterprise implements this change. The Contractor's obligation to transition from RMS to the CMP system is a requirement of this contract. Therefore, additional time or cost increase to complete this transition will not be considered. In the event of the transition, RMS project information will be migrated to CMP by the government and available in the CMP system. After the transition, the Contractor must utilize the CMP system to perform all contract administration functions previously required in RMS, including all areas listed above. After the transition, “RMS” and “CMP” will be synonymous for all “Resident Management System”

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and “RMS” references in this contract’s specification. To facilitate the transition from RMS to CMP, online training for the CMP system will be made available to the Contractor with enough time to train staff, prior to the transition occurring.

1.3.1 Correspondence and Electronic Communications

Provide correspondence and other documents in electronic format.

1.3.2 Other Factors

Other portions of this document have a direct relationship to the reporting accomplished through RMS. Particular attention is directed to the following:

a. Contract Clause, 52.236-15 "Schedules for Construction Contracts"

b. Contract Clause, 52.232-27 "Prompt Payment for Construction Contracts"

c. Contract Clause, 52.232-5 "Payments Under Fixed-Priced Construction Contracts"

d. Section 01 32 01.00 10 PROJECT SCHEDULE

e. Section 01 33 00 SUBMITTAL PROCEDURES

f. Section 01 35 26 GOVERNMENTAL SAFETY REQUIREMENTS

g. Section 01 45 00.00 10 QUALITY CONTROL

1.4 RMS SOFTWARE

RMS is a Windows-based program that can be run on a Windows-based PC meeting the requirements as specified in paragraph SYSTEM REQUIREMENTS. Download, install and be able to utilize the latest version of the RMS software within 7 calendar days of receipt of the Notice to Proceed. RMS software, user manuals, access and installation instructions, program updates and training information are available from the RMS website (http://rmsdocumentation.com). The Government and the Contractor will have different access authorities to the same contract database through RMS. The common database will be updated automatically each time a user finalizes an entry or change.

1.5 SYSTEM REQUIREMENTS

The following is the recommended system configuration to run the Contractor Mode RMS for full utilization of all features for all types and sizes of contracts. Smaller, less complicated, projects may not require the configuration levels described below. Required configuration also noted below.

Recommended RMS System Requirements
Hardware

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Recommended RMS System Requirements	
Windows-based PC	1.7 GHz i3; AMD A6 3650 GHz or higher processor (REQUIRED)
RAM	8 GB
Hard Drive Disk	100 GB space for sole use by RMS system
Monitor	Screen resolution 1366 x 768
Mouse or other pointing device	
Windows compatible printer	Laser printer must have 4 MB+ of RAM
Connection to the Internet	minimum 4 Mbs per user
Software	
MS Windows	Windows 7 x 64 bit (RMS requires 64 bit O/S) or newer (REQUIRED)
Word Processing software	Viewer for MS Word 2013, MS Excel 2013 or newer (REQUIRED)
E-mail	MAPI compatible (REQUIRED)
Virus protection software	Regularly upgraded with all issued Manufacturer's updates and is able to detect most zero day viruses (REQUIRED)

1.6 CONTRACT DATABASE - GOVERNMENT

The Government will enter the basic contract award data in RMS prior to granting the Contractor access. The Government entries into RMS will generally be related to submittal reviews, correspondence status, and Quality Assurance(QA)comments, as well as other miscellaneous administrative information.

1.7 CONTRACT DATABASE - CONTRACTOR

Contractor entries into RMS establish, maintain, and update data throughout the duration of the contract. Contractor entries generally include prime and subcontractor information, daily reports, submittals, RFI's, schedule updates and payment requests. RMS includes the ability to import attachments and export reports in many of the modules, including submittals. The Contractor responsibilities for entries in RMS typically include the following items:

1.7.1 Administration

1.7.1.1 Contractor Information

Contractor must enter all current Contractor administrative data and information into RMS within 7 calendar days of receiving access to the contract in RMS. This includes, but is not limited to, Contractor's

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name, address, telephone numbers, management staff, and other required items.

1.7.1.2 Subcontractor Information

Contractor must enter all missing subcontractor administrative data and information into RMS CM within 7 calendar days of receiving access to the contract in RMS or within 7 calendar days of the signing of the subcontractor agreement for agreements signed at a later date. This includes name, trade, address, phone numbers, and other required information for all subcontractors. A subcontractor is listed separately for each trade to be performed.

1.7.1.3 Correspondence

Contractor must identify all Contractor correspondence to the Government with a serial number. Prefix correspondence initiated by the Contractor's site office with "S". Prefix letters initiated by the Contractor's home (main) office with "H". Letters are numbered starting from 0001. (e.g., H-0001 or S- 0001). The Government's letters to the Contractor will be prefixed with "C" or "RFP".

1.7.1.4 Equipment

Contractor must enter and maintain a current list of equipment planned for use or being used on the jobsite, including the most recent and planned equipment inspection dates.

1.7.1.5 Reports

Contractor must track the status of the project utilizing the reports available in RMS. The value of these reports is reflective of the quality of the data input. These reports include the Progress Payment Request worksheet, Quality Control (QC) comments, Submittal Register Status, and Three-Phase Control worksheets.

1.7.1.6 Request For Information (RFI)

Contractor must create and track all Requests For Information (RFI) in the RMS Administration Module for Government review and response.

1.7.2 Finances

1.7.2.1 Pay Activity Data

Contractor must develop and enter a list of pay activities in conjunction with the project schedule. The sum of pay activities equals the total contract amount, including modifications. Each pay activity must be assigned to a Contract Line Item Number (CLIN). The sum of the activities assigned to a CLIN equals the amount of each CLIN.

1.7.2.2 Payment Requests

Contractor must prepare all progress payment requests using RMS. Update the work completed under the contract at least monthly, measured as percent or as specific quantities. After the update, generate a payment request and prompt payment certification using RMS. Submit the signed prompt payment certification and payment request as well as supporting data electronically

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1.7.3 Quality Control (QC)

Contractor must enter and track implementation of the 3-phase QC Control System, QC testing, transferred and installed property and warranties in RMS. Prepare daily reports, identify and track deficiencies, document progress of work, and support other Contractor QC requirements in RMS. Maintain all data on a daily basis. Insure that RMS reflects all quality control methods, tests and actions contained within the Contractor Quality Control (CQC) Plan and Government review comments of same within 7 calendar days of Government acceptance of the CQC Plan.

1.7.3.1 Quality Control (QC) Reports

The Contractor' Quality Control (QC) Daily Report in RMS is the official report. The Contractor can use other supplemental formats to record QC data, but information from any supplemental formats are to be consolidated and entered into the RMS QC Daily Report. Any supplemental information may be entered into RMS as an attachment to the report. QC Daily Reports must be finalized, signed and submitted to the government for review in RMS within 24 hours after the date covered by the report.

1.7.3.2 Deficiency Tracking.

Contractor must use the QC Daily Report Module to enter and track deficiencies. Deficiencies identified and entered into RMS by the Contractor or the Government will be sequentially numbered with a QC or QA prefix for tracking purposes. Enter each deficiency into RMS the same day that the deficiency is identified. Monitor, track and resolve all QC and QA entered deficiencies. A deficiency is not considered to be corrected until the Government indicates concurrence in RMS.

1.7.3.3 Three-Phase Control Meetings

Contractor must maintain scheduled and actual dates and times of preparatory and initial control meetings in RMS. Worksheets for the three-phase control meetings are generated within RMS.

1.7.3.4 Labor and Equipment Hours

Contractor must enter labor and equipment exposure hours on a daily basis. Roll up the labor and equipment exposure data into a monthly exposure report.

1.7.3.5 Accident/Safety Reporting

Both the Contractor and the Government enter safety related comments in RMS as a deficiency. The Contractor must monitor, track and show resolution for safety issues in the QC Daily Report area of the RMS QC Module. Contractor must also follow all reporting requirements for accidents and incidents as required in these specifications, EM 385-1-1 and as required by any other applicable Federal, State or local agencies.

1.7.3.6 Definable Features of Work

Contractor must enter each feature of work, as defined in the approved CQC Plan, into the RMS QC Module. A feature of work may be associated with a single or multiple pay activities, however a pay activity is only to be

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linked to a single feature of work.

1.7.3.7 Activity Hazard Analysis

Contractor must import activity hazard analysis electronic document files into the RMS QC Module utilizing the document package manager.

1.7.4 Submittal Management

Contractor must enter all current submittal register data and information into RMS within 7 calendar days of receiving access to the contract in RMS. Group electronic submittal documents into transmittal packages to send to the Government, except very large electronic files, samples, spare parts, mock ups, color boards, or where hard copies are specifically required. Track transmittals and update the submittal register in RMS on a daily basis throughout the duration of the contract.

1.7.5 Schedule

Contractor must enter and update the contract project schedule in RMS by either manually entering all schedule data or by importing the Standard Data Exchange Format (SDEF) file, based on the requirements in the Project Schedule section of these specifications.

1.7.6 Closeout

Closeout documents, processes and forms are managed and tracked in RMS by both the Contractor and the Government. Ensure that all closeout documents are entered, completed and documented within RMS.

1.8 IMPLEMENTATION

Use of RMS as described in the preceding paragraphs is mandatory. Ensure that sufficient resources are available to maintain contract data within the RMS system. RMS is an integral part of the Contractor's required management of quality control.

1.9 NOTIFICATION OF NONCOMPLIANCE

Take corrective action within 7 calendar days after receipt of notice of RMS non-compliance by the Contracting Officer or delegated representative.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

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SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SUMMARY

Requirements of this Section apply to, and are a component of, each section of the specifications.

1.2 REFERENCE

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EP 310-1-6a	(2019) Sign Standards Manual, VOL 1
EP 310-1-6b	(2006) Sign Standards Manual, VOL 2, Appendices

PART 2 PRODUCTS

2.1 TEMPORARY SIGNAGE

2.1.1 Bulletin Board

2.1.1.1 General

Construct and erect a bulletin board that is accessible to all employees at all times, contains a copy of wage rates, equal opportunity notice, and other such items required to be posted. Mount the bulletin board at a highly visible location on the dredge(s), or erect at the location directed by the Contracting Officer or delegated representative. The bulletin boards shall be erected prior to mobilization to the project site. The Bulletin Boards may also contain the Section 01 35 26 GOVERNMENTAL SAFETY REQUIREMENTS.

2.1.1.2 Dredging Operation

The bulletin boards shall be weatherproof, approximately 36 inches wide and 30 inches high, with hinged glass door. Bulletin board shall be painted or have approved factory finish. (Detail information about specifications for materials, fabrication techniques, and installation of signs and posts, please refer to https://www.publications.usace.army.mil/USACE-Publications/Engineer-Pamphlets/, EP 310-1-6b Appendix B).

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2.1.1.3 Maintenance and Disposal

Maintain the bulletin boards in good condition throughout the life of the contract. The bulletin boards shall remain the property of the Contractor and upon completion the contract, remove from the site.

2.1.2 Project and Signs

The project site, dredge(s) and survey boat(s) shall each have a project sign mounted at a highly visible location at the site and on the dredge(s) and the survey boat(s) as designated by the Contracting Officer or delegated representative. The project signs shall be constructed in accordance with USACE Engineer Pamphlets, EP 310-1-6a, Section 16. The specification for Project Signs can be found at the website https://www.publications.usace.army.mil/USACE-Publications/Engineer-Pamphlets/ Figure 1 is "Project Identification Sign" and Figure 2 shows on-the-job "Safety Performance Sign" of the contractor. These two signs are to be displayed side by side and mounted for reading by passing viewers. The panel sizes and graphic formats have been standardized for visual consistency throughout all Corps operations. Panels are fabricated using HDO (High Density Overlaid) plywood with dimensional lumber uprights and bracing. The sign faces are non-reflective vinyl. All legends are to be die-out or computer-cut in the sizes and typefaces specified and applied to the white panel background following the graphic formats shown on EP 310-1-6a, Section 16. The Communications Red panel on the left side of the construction project sign with Corps signature (reverse version) is screen printed onto the white back ground.

a. Mounting and fabrication details are provided at the website https://www.publications.usace.army.mil/USACE-Publications/Engineer-Pamphlets/, EP 310-1-6b Appendix B. The signs shall be erected as soon as possible and no later than 5 days after NTP.

b. All floating plant, including survey vessels, shall carry signs, both port and starboard, identifying that they are working under Corps of Engineers contract. The signs shall have red block lettering, no less than six inches high with the wording "U.S. ARMY CORPS OF ENGINEERS CONTRACT NO. W912P7XXC00XX". Sign background shall be white. Number and size of sign, lettering, and other sign features shall be determined at the Pre-construction Conference.

PART 3 EXECUTION

Not Used

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TEMPORARY ENVIRONMENTAL CONTROLS FOR DREDGING IN SAN FRANCISCO BAY

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910.120	Hazardous Waste Operations and Emergency Response
40 CFR 241	Solid Wastes Used as Fuels or Ingredients in Combustion Units
40 CFR 243	Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste
40 CFR 258	Criteria for Municipal Solid Waste Landfills
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 266	Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
40 CFR 268	Land Disposal Restrictions
40 CFR 279	Standards for the Management of Used Oil
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency Plan

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40 CFR 300.125	National Oil and Hazardous Substances Pollution Contingency Plan - Notification and Communications
40 CFR 355	Emergency Planning and Notification
40 CFR 60	Standards of Performance for New Stationary Sources
40 CFR 63	National Emission Standards for Hazardous Air Pollutants for Source Categories
40 CFR 64	Compliance Assurance Monitoring
49 CFR 171	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements, and Security Plans
49 CFR 173	Shippers - General Requirements for Shipments and Packagings
49 CFR 178	Specifications for Packagings

1.2 DEFINITIONS

1.2.1 Class I and II Ozone Depleting Substance (ODS)

Class I ODS is defined in Section 602(a) of The Clean Air Act. A list of Class I ODS can be found on the EPA website at the following weblink. https://www.epa.gov/ozone-layer-protection/ozone-depleting-substances.

Class II ODS is defined in Section 602(s) of The Clean Air Act. A list of Class II ODS can be found on the EPA website at the following weblink. https://www.epa.gov/ozone-layer-protection/ozone-depleting-substances.

1.2.2 Electronics Waste

Electronics waste is discarded electronic devices intended for salvage, recycling, or disposal.

1.2.3 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally or historically.

1.2.4 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during dredging. The control of environmental pollution and damage requires compliance with

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applicable environmental permits as listed in paragraph 1.7 of this specification and regulations; consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2.5 Hazardous Debris

As defined in paragraph SOLID WASTE, debris that contains listed hazardous waste (either on the debris surface, or in its interstices, such as pore structure) in accordance with 40 CFR 261. Hazardous debris also includes debris that exhibits a characteristic of hazardous waste in accordance with 40 CFR 261.

1.2.6 Hazardous Materials

Hazardous materials as defined in 49 CFR 171 and listed in 49 CFR 172.

Hazardous material is any material that is regulated as a hazardous material in accordance with 49 CFR 173; or requires a Safety Data Sheet (SDS) in accordance with 29 CFR 1910.120; or during end use, treatment, handling, packaging, storage, transportation, or disposal meets or has components that meet or have potential to meet the definition of a hazardous waste as defined by 40 CFR 261 Subparts A, B, C, or D. Designation of a material by this definition, when separately regulated or controlled by other sections or directives, does not eliminate the need for adherence to that hazard-specific guidance which takes precedence over this section for "control" purposes. Such material includes ammunition, weapons, explosive actuated devices, propellants, pyrotechnics, chemical and biological warfare materials, medical and pharmaceutical supplies, medical waste and infectious materials, bulk fuels, radioactive materials, and other materials such as asbestos, mercury, and polychlorinated biphenyls (PCBs).

1.2.7 Hazardous Waste

Hazardous Waste is any material that meets the definition of a solid waste and exhibits a hazardous characteristic (ignitability, corrosivity, reactivity, or toxicity) as specified in 40 CFR 261, Subpart C, or contains a listed hazardous waste as identified in 40 CFR 261, Subpart D.

1.2.8 Land Application

Land Application means spreading or spraying discharge water at a rate that allows the water to percolate into the soil. No sheeting action, soil erosion, discharge into storm sewers, discharge into defined drainage areas, or discharge into the "waters of the United States" must occur. Comply with federal, state, and local laws and regulations.

1.2.9 National Pollutant Discharge Elimination System (NPDES)

The NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

1.2.10 Oily Waste

Oily waste are those materials that are, or were, mixed with Petroleum, Oils, and Lubricants (POLs) and have become separated from that POLs. Oily wastes also means materials, including wastewaters, centrifuge

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solids, filter residues or sludges, bottom sediments, tank bottoms, and sorbents which have come into contact with and have been contaminated by, POLs and may be appropriately tested and discarded in a manner which is in compliance with other state and local requirements.

This definition includes materials such as oily rags, "kitty litter" sorbent clay and organic sorbent material. These materials may be land filled provided that: It is not prohibited in other state regulations or local ordinances; the amount generated is "de minimums" (a small amount); it is the result of minor leaks or spills resulting from normal process operations; and free-flowing oil has been removed to the practicable extent possible. Large quantities of this material, generated as a result of a major spill or in lieu of proper maintenance of the processing equipment, are a solid waste. As a solid waste, perform a hazardous waste determination prior to disposal. As this can be an expensive process, it is recommended that this type of waste be minimized through good housekeeping practices and employee education.

1.2.11 Regulated Waste

Regulated waste are solid wastes that have specific additional federal, state, or local controls for handling, storage, or disposal.

1.2.12 Sediment

Sediment is soil and other debris that have eroded and have been transported by runoff water or wind.

1.2.13 Solid Waste

Solid waste is a solid, liquid, semi-solid or contained gaseous waste. A solid waste can be a hazardous waste, non-hazardous waste, or non-Resource Conservation and Recovery Act (RCRA) regulated waste. Types of solid waste typically generated at project sites may include:

1.2.13.1 Debris

Debris is non-hazardous solid material generated during the dredging activities that exceeds 2.5-inch particle size that is: a manufactured object; plant or animal matter; or natural geologic material (for example, cobbles and boulders), broken or removed concrete, masonry, and rock asphalt paving; ceramics; roofing paper and shingles. Inert materials may be reinforced with or contain ferrous wire, rods, accessories and weldments. A mixture of debris and other material such as soil or sludge is also subject to regulation as debris if the mixture is comprised primarily of debris by volume, based on visual inspection.

1.2.13.2 Material not regulated as solid waste

Material not regulated as solid waste is nuclear source or byproduct material regulated under the Federal Atomic Energy Act of 1954 as amended; suspended or dissolved materials in domestic sewage effluent or irrigation return flows, or other regulated point source discharges; regulated air emissions; and fluids or wastes associated with natural gas or crude oil exploration or production.

1.2.13.3 Non-Hazardous Waste

Non-hazardous waste is waste that is excluded from, or does not meet,

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hazardous waste criteria in accordance with 40 CFR 263.

1.2.13.4 Recyclables

Recyclables are materials, equipment and assemblies such as doors, windows, door and window frames, plumbing fixtures, glazing and mirrors that are recovered and sold as recyclable, wiring, insulated/non-insulated copper wire cable, wire rope, and structural components. It also includes commercial-grade refrigeration equipment with Freon removed, household appliances where the basic material content is metal, clean polyethylene terephthalate bottles, cooking oil, used fuel oil, textiles, high-grade paper products and corrugated cardboard, stackable pallets in good condition and clean crating material. Metal meeting the definition of lead contaminated or lead based paint contaminated may not be included as recyclable if sold to a scrap metal company. Paint cans that meet the definition of empty containers in accordance with 40 CFR 261.7 may be included as recyclable if sold to a scrap metal company.

1.2.13.5 Scrap Metal

This includes scrap and excess ferrous and non-ferrous metals such as reinforcing steel, structural shapes, pipe, and wire that are recovered or collected and disposed of as scrap. Scrap metal meeting the definition of hazardous material or hazardous waste is not included.

1.2.13.6 Wood

Wood is dimension and non-dimension lumber, plywood, chipboard, hardboard. Treated or painted wood that meets the definition of lead contaminated or lead based contaminated paint is not included. Treated wood includes, but is not limited to, lumber, utility poles, crossties, and other wood products with chemical treatment.

1.2.14 Stormwater

Stormwater is any precipitation in an urban or suburban area that does not evaporate or soak into the ground, but instead collects and flows into storm drains, rivers, and streams.

1.2.15 Surface Discharge

Surface discharge means discharge of water into drainage ditches, storm sewers, creeks or "waters of the United States". Surface discharges are discrete, identifiable sources and require a permit from the governing agency. Comply with federal, state, and local laws and regulations.

1.2.16 Waters of the United States

Waters of the United States means federally jurisdictional waters, including wetlands, that are subject to regulation under Section 404 of the Clean Water Act or navigable waters, as defined under the Rivers and Harbors Act.

1.2.17 Wetlands

Wetlands are those areas that are inundated or saturated by surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

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1.2.18 Universal Waste

The universal waste regulations streamline collection requirements for certain hazardous wastes in the following categories: batteries, pesticides, mercury-containing equipment (for example, thermostats), and lamps (for example, fluorescent bulbs). The rule is designed to reduce hazardous waste in the municipal solid waste (MSW) stream by making it easier for universal waste handlers to collect these items and send them for recycling or proper disposal. These regulations can be found at 40 CFR 273.

1.2.19 Upland Beneficial Reuse Site Benefitting Aquatic Species

An upland beneficial reuse site, as approved by the National Marine Fisheries Service that benefits aquatic species.

1.2.20 Average Load Factor

The load factor is a unitless number between 0 and 1, calculated using the following equation: LF=Pp/Pref. Where LF= propulsion engine load factor, Pp= propulsion engine operating power during either idle, dredge operation, or transport depending on the type of vessel; expressed in units of kilowatts or horsepower, and Pref= the vessels total installed propulsion power in units of kilowatts or horsepower. The average load factor is the most representative value for the load factor during any particular type of activity such as idling, dredge operations, or transport depending on the type of vessel.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Pre-Dredge Submittals

Solid Waste Management Permit

Environmental Protection Plan; G

Air Quality Parameters Report

SD-07 Certificates

Employee Training Records

SD-11 Closeout Submittals

Solid Waste Management Report

Waste Determination Documentation

1.4 ENVIRONMENTAL PROTECTION REQUIREMENTS

Provide and maintain, during the life of the contract, environmental protection as defined. Plan for and provide environmental protective measures to control pollution that develops during dredging practice. Plan

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for and provide environmental protective measures required to correct conditions that develop during dredging. Protect the environmental resources within the project boundaries and those affected outside the limits of work during the entire duration of this Contract. Comply with federal, state, and local regulations pertaining to the environment, including water, air, solid waste, hazardous waste and substances, oily substances, and noise pollution.

Tests and procedures assessing whether dredging operations comply with Applicable Environmental Laws may be required. Analytical work must be performed by qualified laboratories; and where required by law, the laboratories must be certified.

1.5 QUALITY ASSURANCE

1.5.1 Regulatory Notifications

Notification in the event of a Misdump: Contractor shall immediately notify the Government COR, Government Representative, and the Government Environmental Representative in the event of a draft loss occurs of 2 feet or greater. In the event that a draft loss has occurred scow shall be removed from rotation and inspected. Inspection report shall be provided to the Government. If required by resource agencies, testing of contaminants shall be performed at no cost to the Government.

1.5.2 Environmental Brief

Prior to the start of dredging, the Contractor shall meet with the Government or authorized representative and discuss the EPP. The EPP shall be submitted for review a minimum of 7 days prior to the Preconstruction Conference meeting. Prior to the start of dredging work, a mutual understanding relative to the details of environmental protection shall be agreed upon, including measures for protecting natural and cultural resources, required reports, required permits as listed in paragraph LICENSES AND PERMITS of this specification, permit requirements (such as mitigation measures), Quality control activities, testing procedures, administration of the EPP for both on-site and off-site work, the interrelationship of Contractor's quality control with the Government's Quality Assurance, and any other environmental measures to be taken.

Discuss the results of the before dredge survey and intended placement locations at this meeting. Minutes of the meeting will be prepared by the Contractor and signed by both the Contractor and the Government. The minutes shall become a part of the contract file.

There may be occasions when subsequent environmental conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the EPP or procedures which may require corrective action by the Contractor.

1.5.3 Employee Training Records

Prepare and maintain Employee Training Records throughout the term of the contract meeting applicable 40 CFR requirements. Provide Employee Training Records to the Government.

Conduct environmental protection/pollution control meetings for personnel prior to commencing dredging activities. Conduct additional meetings for

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new personnel and when site conditions change. Include in the training and meeting agenda: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, waters of the United States, and endangered species, special status species, and their habitat that are known to be in the area. Document the date and personnel attending this meeting and provide this records to the Government.

1.6 ENVIRONMENTAL PROTECTION PLAN

The purpose of the environmental protection plan is to present an overview of known or potential environmental issues that must be considered and addressed during construction. Include in the Environmental Protection Plan measures for protecting natural and cultural resources, required reports, and other measures to be taken.

Meet with the Government to discuss the Environmental Protection Plan and develop a mutual understanding relative to the details for environmental protection including measures for protecting natural resources, required reports, and other measures to be taken.

Submit the Environmental Protection Plan within 15 days after notice to proceed and not less than 7 days before the Preconstruction Conference so it can be discussed as described in subparagraph Environmental Brief. Revise the Environmental Protection Plan throughout the project to include any reporting requirements, changes in site conditions, or contract modifications that change the project scope of work in a way that could have an environmental impact. Revisions to the EPP will be documented by the contractor using red-lining. No requirement in this section will relieve the Contractor of any applicable federal, state, and local environmental protection laws and regulations.

During Construction, identify, implement, and submit for approval any additional requirements to be included in the Environmental Protection Plan. Maintain the current version onsite.

The Environmental Protection Plan includes, but is not limited to, the following elements:

1.6.1 General Overview and Purpose

1.6.1.1 Descriptions

A brief description of each specific plan required by environmental permits as listed in paragraph 1.7 of this specification or elsewhere in this Contract such as spill control plan, solid waste management plan, wastewater management plan, air pollution control plan, contaminant prevention plan, biological resources and wetlands plan, Non- Hazardous Solid Waste Disposal Plan.

1.6.1.2 Duties

The duties and level of authority assigned to the person(s) on the job site who oversee environmental compliance, such as who is responsible for

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adherence to the EPP, who is responsible for spill cleanup and training personnel on spill response procedures, who is responsible for manifesting hazardous waste to be removed from the site (if applicable), and who is responsible for training the Contractor's environmental protection personnel.

1.6.1.3 Procedures

A copy of any standard or project-specific operating procedures that will be used to effectively manage and protect the environment on the project site.

1.6.1.4 Communications

Communication and training procedures that will be used to convey environmental management requirements to Contractor employees and subcontractors.

1.6.1.5 Contact Information

Emergency contact information (office phone number, cell phone number, and e-mail address).

1.6.2 General Site Information

1.6.2.1 Drawings

Provide drawings showing general project area, locations of proposed temporary project access and staging areas and other related information.

1.6.2.2 Work Area

Work area plan showing the proposed activity in each portion of the area and identify the areas of limited use or nonuse. Include measures for marking the limits of use areas, including methods for protection of features to be preserved within authorized work areas and methods to control runoff and to contain materials on site, and a traffic control plan.

1.6.2.3 Documentation

A letter signed by an officer of the firm appointing the Environmental Manager and stating that person is responsible for managing and implementing the Environmental Program as described in this contract including ensuring compliance with all permits as listed in paragraph 1.7 of this specification and regulations. Include in this letter the Environmental Manager's authority to direct the removal and replacement of non-conforming work. If the Environmental Manager must be changed, immediately appoint a new Environmental Manager and submit a new signed letter that meets the requirements herein from 01 57 19.01 43, 1.6.2.3.

1.6.3 Plan for Management of Natural Resources

Identify locations and procedures and practices to be employed to protect natural resources. Include at a minimum:

a. Fish and wildlife resources

b. Wetland areas

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1.6.4 Protection of Historical, Cultural, and Archaeological Resources

Identify procedures and practices to be employed, to protect historic and cultural resources in accordance with paragraphs PROTECTION OF CULTURAL RESOURCES.

1.6.5 Protection of the Environment from Waste Derived from Contractor Operations

Control and disposal of solid and sanitary waste. Control and disposal of hazardous waste.

This item consist of the management procedures for hazardous waste to be generated. As a minimum, include the following:

a. List of the types of hazardous wastes expected to be generated

b. Procedures to ensure a written waste determination is made for appropriate wastes that are to be generated

c. Sampling/analysis plan, including laboratory method(s) that will be used for waste determinations and copies of relevant laboratory certifications.

d. Methods and proposed locations for hazardous waste accumulation/storage (that is, in tanks or containers)

e. Management procedures for storage, labeling, transportation, and disposal of waste (treatment of waste is not allowed unless specifically noted)

f. Management procedures and regulatory documentation ensuring disposal of hazardous waste complies with Land Disposal Restrictions 40 CFR 268

g. Management procedures for recyclable hazardous materials such as lead-acid batteries, used oil, and similar

h. Used oil management procedures in accordance with 40 CFR 279; Hazardous waste minimization procedures

i. Plans for the disposal of hazardous waste by permitted facilities; and Procedures to be employed to ensure required employee training records are maintained.

1.6.6 Prevention of Releases to the Environment

a. Procedures to prevent releases to the environment

b. Notifications in the event of a release to the environment

1.6.7 Clean Air Act Compliance

1.6.7.1 Pollution Generating Equipment

Identify air pollution generating equipment or processes that may require federal, state, or local permits under the Clean Air Act and obtain any applicable permits. Determine requirements based on any current permits

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and the impacts of the project.

In accordance with 40 CFR § 51.853(c)(2)(ix), the USACE has determined that the proposed agency action is exempt from the requirement to prepare a conformity determination with the State Implementation Plan under the Clean Air Act because the project consists of maintenance dredging, no new depths are required, and disposal would be at approved disposal sites.

Unless "optimized" or diesel powered equipment with the "Best Available Control Technology" (BACT) emission devices are used, injection timing on diesel powered dredges and equipment shall be retarded two degrees from manufacturer's recommended setting to reduce air pollutant emissions.

Reformulated diesel fuel shall be used for all diesel powered dredges and equipment to reduce air pollutant emissions. Reformulated diesel fuel shall be a low sulfur, reduced aromatics diesel fuel meeting the following specifications, unless otherwise approved by the Government: (1) Sulfur content less than 0.05 percent by weight and (2) Aromatics content less than 20 percent by volume Prior to dredging operations, the Contractor shall submit certification from the fuel supplier or manufacturer stating that the fuel contents meet the above requirements and proof of reformulated diesel fuel purchase of the above specified fuel shall be submitted to the Government.

Dredges and equipment shall not be allowed to idle when not required in performing the work.

1.6.7.2 Stationary Internal Combustion Engines

Comply with 40 CFR 60 Subpart IIII, 40 CFR 60 Subpart JJJJ, 40 CFR 63 Subpart ZZZZ, and local regulations as applicable. Maintain applicable records and log hours of operation and fuel use. Logs must include reasons for operation and delineate between emergency and non-emergency operation.

1.6.7.3 Air Pollution-engineering Processes

Identify planned air pollution-generating processes and management control measures (including, but not limited to, spray painting, abrasive blasting, demolition, material handling, fugitive dust, and fugitive emissions). Log hours of operations and track quantities of materials used.

1.6.7.4 Air Quality Parameters Report Requirements

The following items must be included in the Air Quality Parameters Report:

(1) Provide a list of all fixed or mobile equipment, machinery or operations that could generate air emissions during the project.

(2) Identify portable and stationary internal combustion engines that will be supplied, used or serviced.

(3) Make, model, serial number, manufacture date, size (engine brake horsepower), and EPA emission certification status of each engine.

(4) Average load factor while a) idling, b) dredging, and c) during transport, for each engine.

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(5) Average fuel use per hour for a) idling, b) dredging, and c) during transport, for each engine.

1.6.7.5 Compliant Materials

Provide the Government a list of and SDSs for all hazardous materials proposed for use on site. Materials must be compliant with all Clean Air Act regulations for emissions including solvent and volatile organic compound contents, and applicable National Emission Standards for Hazardous Air Pollutants requirements. The Government may alter or limit use of specific materials as needed to meet permit requirements for emissions.

1.7 LICENSES AND PERMITS

Obtain licenses and permits required for the dredging of the project and in accordance with FAR 52.236-7 Permits and Responsibilities. Notify the Government of all general use permitted equipment the Contractor plans to use on site. This paragraph supplements the Contractor's responsibility under FAR 52.236-7 Permits and Responsibilities. It is the contractor's responsibility to understand the environmental provisions in the existing permits.

a. The following permits have been obtained by the Government and are attached to these specifications:

(1) San Francisco Regional Water Quality Control Board (SFRWQCB) - Programmatic Water Quality Certification 2026-2029

(2) Long Term Management Strategy National Marine Fisheries Service Endangered Species Act Biological Opinion 2015

(3) USFWS Reinitiation of the Programmatic Formal Endangered Species Consultation on the Proposed Long-Term Management Strategy for Placement of Dredged Material in San Francisco Bay, California, 2025-February

(4) Consistency Determination Letter of Agreement from BCDC C2025.005.00

1.8 SOLID WASTE MANAGEMENT PERMIT

Provide the Government with written notification of the quantity of anticipated solid waste or debris that is anticipated or estimated to be generated the by dredging operation. Include in the report the locations where various types of waste will be disposed or recycled. Include letters of acceptance from the receiving location or as applicable; submit one copy of the receiving location state and local Solid Waste Management Permit or license showing such agency's approval of the disposal plan before transporting wastes off site.

1.8.1 Solid Waste Management Report

Submit a solid waste disposal report to the Government. For each waste, the report will state the classification (using the definitions provided in this section), amount, location, and name of the business receiving the solid waste.

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PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 PROTECTION OF NATURAL RESOURCES

Minimize interference with, disturbance to, and damage to fish, wildlife, and plants, including their habitats. Prior to the commencement of activities, consult with the Government, regarding rare species or sensitive habitats that need to be protected. The protection of rare, threatened, and endangered animal and plant species identified, including their habitats, is the Contractor's responsibility. The following species are known and could be affected within the dredging area: green sturgeon, chinook and steelhead salmon, least terns, and California clapper rails.

Preserve the natural resources within the project boundaries and outside the limits of permanent work. Restore to an equivalent or improved condition upon completion of work that is consistent with the requirements of the Government or as otherwise specified. Confine the dredging activities within the limits of the work indicated or specified.

3.1.1 Flow Ways

Do not alter water flows or otherwise significantly disturb the native habitat adjacent to the project and critical to the survival of fish and wildlife, except as specified and permitted.

3.2 STORMWATER

Do not discharge stormwater from dredging activities to the sanitary sewer. If the water is noted or suspected of being contaminated, it may only be released to the storm drain system if the discharge is specifically permitted. Obtain authorization in advance from the Government for any release of contaminated water. Comply with local municipal separate storm sewer system requirements, as applicable.

3.2.1 Contractor Facilities and Work Areas

Place field offices, staging areas, stockpile storage, and temporary buildings in areas designated on the drawings or as directed by the Government. Move or relocate the Contractor facilities only when approved by the Government. Provide erosion and sediment controls for onsite borrow and spoil areas to prevent sediment from entering nearby waters. Control temporary excavation and embankments for plant or work areas to protect adjacent areas.

3.3 SURFACE AND GROUNDWATER

3.3.1 Waters of the United States

Do not enter, disturb, destroy, or allow discharge of contaminants into waters of the United States except as authorized herein. The protection of waters of the United States shown on the drawings in accordance with

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paragraph LICENSES AND PERMITS is the Contractor's responsibility. Authorization to enter specific waters of the United States identified does not relieve the Contractor from any obligation to protect other waters of the United States within, adjacent to, or in the vicinity of the project site and associated boundaries.

3.4 PROTECTION OF CULTURAL RESOURCES

3.4.1 Archaeological Resources

Protect these resources and be responsible for their preservation during the life of the Contract. If, during dredging activities, any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found, activities that may damage or alter such resources shall be suspended by the contractor. Resources covered by this paragraph include, but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, paving's, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, immediately notify the Government so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. Cease all activities that may result in impact to or the destruction of these resources. Secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources. The Government retains ownership and control over archaeological resources.

In the unlikely event that any of the resources listed above are discovered during maintenance dredging in the federal channels, USACE will immediately cease dredging, notify appropriate resource agencies, and consult a qualified expert for the particular resource discovered (e.g., archeologist, paleontologist, local coroner, Native American Heritage Commission).

3.5 AIR RESOURCES

Equipment operation, activities, or processes will be in accordance with 40 CFR 64 and state air emission and performance laws and standards.

3.5.1 Preconstruction Air Permits

Contractor shall obtain any applicable emission certifications (e.g. smog certifications) required for all construction equipment to ensure construction equipment abides by all applicable state and federal air quality laws.

3.5.2 Burning

Burning is prohibited during execution of this project.

3.5.3 Accidental Venting of Refrigerant

Accidental venting of a refrigerant is a release and must be reported immediately to the Government.

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3.5.4 Odors

Control odors from dredging activities. The odors must be in compliance with state regulations and local ordinances and may not constitute a health hazard.

3.6 WASTE MINIMIZATION

Minimize the use of hazardous materials and the generation of waste. Include procedures for pollution prevention/hazardous waste minimization in the EPP. Describe the anticipated types of the hazardous materials to be used when requesting information.

3.6.1 Salvage, Reuse and Recycle

Identify anticipated materials and waste for salvage, reuse, and recycling. Describe actions to promote material reuse, resale or recycling. To the extent practicable, all scrap metal must be sent for reuse or recycling and will not be disposed of in a landfill.

Include the name, physical address, and telephone number of the hauler, if transported by a franchised solid waste hauler. Include the destination and, unless exempted, provide a copy of the state or local permit (cover) or license for recycling.

3.6.2 Nonhazardous Solid Waste Diversion Report

Maintain an inventory of nonhazardous solid waste diversion and disposal. Submit a report to the Government on the first day of the month and monthly thereafter during dredging. Include the following in the report:

Dredging Operation Debris Disposed	_____Tons
Debris Recycled	_____Tons
Total Debris Generated	_____Tons
Waste Sent to Waste-To-Energy Incineration Plant (This amount should not be included in the recycled amount)	_____Tons

3.7 WASTE MANAGEMENT AND DISPOSAL

3.7.1 Waste Determination Documentation

Complete an appropriate Waste Determination form for Contractor-derived wastes to be generated. All potentially hazardous solid waste streams that are not subject to a specific exclusion or exemption from the hazardous waste regulations (e.g. scrap metal, domestic sewage) or subject to special rules, (lead-acid batteries and precious metals) must be characterized in accordance with the requirements of 40 CFR 261 or corresponding applicable state or local regulations. Base waste determination on user knowledge of the processes and materials used, and

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analytical data when necessary. Attach support documentation to the Waste Determination form. As a minimum, provide a Waste Determination form for the following waste (this listing is not inclusive): oil- and latex -based painting and caulking products, solvents, adhesives, aerosols, petroleum products, and containers of the original materials.

3.7.2 Solid Waste Management

3.7.2.1 Solid Waste Management Report

Provide copies of the waste handling facilities' weight tickets, receipts, bills of sale, and other sales documentation. In lieu of sales documentation, a statement indicating the disposal location for the solid waste that is signed by an employee authorized to legally obligate or bind the firm may be submitted. The sales documentation must include the receiver's tax identification number and business, EPA or state registration number, along with the receiver's delivery and business addresses and telephone numbers. For each solid waste retained for the Contractor's own use, submit the information previously described in this paragraph on the solid waste disposal report. Prices paid or received do not have to be reported to the Government unless required by other provisions or specifications of this Contract or public law.

3.7.2.2 Control and Management of Solid Wastes

Pick up solid wastes, and place in covered containers that are regularly emptied. Prevent contamination of all project areas when handling and disposing of wastes. At project completion, leave the areas clean. Employ segregation measures so that no hazardous or toxic waste will become co-mingled with non-hazardous solid waste. Transport solid waste and dispose of it in compliance with 40 CFR 260, state, and local requirements for solid waste disposal. A Subtitle D RCRA permitted landfill is the minimum acceptable offsite solid waste disposal option. Verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate. Haul waste materials to an appropriate landfill site. Comply with landfill site procedures. Segregate and separate treated wood components disposed at a lined landfill approved to accept this waste in accordance with local and state regulations. Solid waste disposal offsite must comply with most stringent local, state, and federal requirements, including 40 CFR 241, 40 CFR 243, and 40 CFR 258.

Manage hazardous material used, including but not limited to, aerosol cans, waste paint, cleaning solvents, contaminated brushes, and used rags, in accordance with 49 CFR 173.

3.7.3 Control and Management of Hazardous Waste

Do not dispose of hazardous waste in the project area. Do not discharge any waste to a sanitary sewer, storm drain, or to surface waters or conduct waste treatment or disposal within project areas.

3.7.3.1 Hazardous Waste/Debris Management

Identify dredging activities that will generate hazardous waste or debris. Provide a documented waste determination for resultant waste streams. Identify, label, handle, store, and dispose of hazardous waste or debris in accordance with federal, state, and local regulations, including 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, 40 CFR 265,

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40 CFR 266, and 40 CFR 268.

Manage hazardous waste in accordance with the approved EPP. Store hazardous wastes in approved containers in accordance with 49 CFR 173 and 49 CFR 178. Prior to removal of any hazardous waste from the project area, hazardous waste manifests must be signed by personnel from the contractor. Do not bring hazardous waste into the project area. Provide the Government with a copy of waste determination documentation for any solid waste streams that have any potential to be hazardous waste or contain any chemical constituents listed in 40 CFR 372-SUBPART D.

3.7.4 Releases/Spills of Oil and Hazardous Substances

3.7.4.1 Response and Notifications

Exercise due diligence to prevent, contain, and respond to spills of hazardous material, hazardous substances, hazardous waste, sewage, regulated gas, petroleum, lubrication oil, and other substances regulated in accordance with 40 CFR 300. Maintain spill cleanup equipment and materials at the work site. In the event of a spill, take prompt, effective action to stop, contain, curtail, or otherwise limit the amount, duration, and severity of the spill/release. In the event of any releases of oil and hazardous substances, chemicals, or gases; immediately notify the Fire Department, Government and the state or local authority.

Submit verbal and written notifications as required by the federal(40 CFR 300.125 and 40 CFR 355), state, local regulations and instructions. Provide copies of the written notification and documentation that a verbal notification was made within 20 days. Spill response must be in accordance with 40 CFR 300 and applicable state and local regulations. Contain and clean up these spills without cost to the Government.

3.7.4.2 Clean Up

Clean up hazardous and non-hazardous waste spills. Reimburse the Government for costs incurred including sample analysis materials, clothing, equipment, and labor if the Government will initiate its own spill cleanup procedures, for Contractor-responsible spills, when: Spill cleanup procedures have not begun within one hour of spill discovery/occurrence; or, in the Government's judgment, spill cleanup is inadequate and the spill remains a threat to human health or the environment.

3.7.5 Mercury Materials

Immediately report to the Governmental instances of breakage or mercury spillage. Clean mercury spill area to the satisfaction of the Government.

Do not recycle a mercury spill cleanup; manage it as a hazardous waste for disposal.

3.8 PREVIOUSLY USED EQUIPMENT

Clean previously used equipment prior to bringing it onto the project site. Equipment must be free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. Consult with the U.S. Department of Agriculture jurisdictional office for additional cleaning requirements.

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3.9 CONTROL AND MANAGEMENT OF LIGHTING BALLAST AND LAMPS CONTAINING PCBS

Manage and dispose of contaminated waste in accordance with 40 CFR 761.

3.10 MILITARY MUNITIONS

In the event military munitions, as defined in 40 CFR 260, are discovered or uncovered, immediately stop work in that area and immediately inform the Government.

3.11 PETROLEUM, OIL, LUBRICANT (POL) STORAGE AND FUELING

POL products include flammable or combustible liquids, such as gasoline, diesel, lubricating oil, used engine oil, hydraulic oil, mineral oil, and cooking oil. Store POL products and fuel equipment and motor vehicles in a manner that affords the maximum protection against spills into the environment. Manage and store POL products in accordance with EPA 40 CFR 112, and other federal, state, regional, and local laws and regulations. Use secondary containments, dikes, curbs, and other barriers, to prevent POL products from spilling and entering the ground, storm or sewer drains, stormwater ditches or canals, or navigable waters of the United States. Describe in the EPP (see paragraph ENVIRONMENTAL PROTECTION PLAN) how POL tanks and containers must be stored, managed, and inspected and what protections must be provided. Storage of fuel on the project site must be in accordance with EPA, state, and local laws and regulations and paragraph OIL STORAGE INCLUDING FUEL TANKS.

3.11.1 Used Oil Management

Manage used oil generated on site in accordance with 40 CFR 279. Determine if any used oil generated while onsite exhibits a characteristic of hazardous waste. Used oil containing 1,000 parts per million of solvents is considered a hazardous waste and disposed of at the Contractor's expense. Used oil mixed with a hazardous waste is also considered a hazardous waste. Dispose in accordance with paragraph HAZARDOUS WASTE DISPOSAL.

3.11.2 Oil Storage Including Fuel Tanks

Provide secondary containment and overfill protection for oil storage tanks. A berm used to provide secondary containment must be of sufficient size and strength to contain the contents of the tanks plus 5 inches freeboard for precipitation. Construct the berm to be impervious to oil for 72 hours that no discharge will permeate, drain, infiltrate, or otherwise escape before cleanup occurs. Use drip pans during oil transfer operations; adequate absorbent material must be onsite to clean up any spills and prevent releases to the environment. Cover tanks and drip pans during inclement weather. Provide procedures and equipment to prevent overfilling of tanks. If tanks and containers with an aggregate aboveground capacity greater than 1320 gallons will be used onsite (only containers with a capacity of 55 gallons or greater are counted), provide and implement a SPCC plan meeting the requirements of 40 CFR 112. Do not bring underground storage tanks for Contractor use during a project. Include the SPCC plan in the EPP.

Monitor and remove any rainwater that accumulates in open containment

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dikes or berms. Inspect the accumulated rainwater prior to draining from a containment dike to the environment, to determine there is no oil sheen present.

3.12 INADVERTENT DISCOVERY OF PETROLEUM-CONTAMINATED SOIL OR HAZARDOUS WASTES

If petroleum-contaminated soil, or suspected hazardous waste is found during dredging operation that was not identified in the Contract documents, immediately notify the Government. Do not disturb this material until authorized by the Government.

3.13 SOUND INTRUSION

Make the maximum use of low-noise emission products, as certified by the EPA. Blasting or use of explosives are not permitted.

Keep construction activities under surveillance and control to minimize environment damage by noise. Comply with the provisions of the State of California rules.

3.14 POST DREDGING CLEANUP

Clean up in accordance with Contract Clause: "Cleaning Up". Unless otherwise instructed in writing by the Government, remove traces of construction, and other vestiges prior to final acceptance of the work.

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EELGRASS SURVEYS AND LIGHT MONITORING

PART 1 GENERAL

1.1 Definitions

1.1.1 LMP

USACE SF Bay Dredging Program Eelgrass Light Monitoring Plan 2024 - 2030

1.1.2 CEMP

California Eelgrass Mitigation Policy and Implementing Guidelines (NOAA 2014) available at the following weblink: https://media.fisheries.noaa.gov/dam-migration/cemp_oct_2014_final.pdf

1.1.3 NMFS

National Marine Fisheries Service

1.2 SUBMITTALS

SD-01 Preconstruction Submittals

Light Monitoring Equipment Calibration Data And Survey Equipment Photos Report; G

Pre-Dredge Eelgrass Population Survey

SD-06 Test Reports

Weekly Light Monitoring Report;

SD-11 Closeout Submittals

Light Monitoring Final Report; G

Post-Dredge Eelgrass Population Survey

1.3 SPECIAL ENVIRONMENTAL REQUIREMENTS

Perform Light Monitoring during daylight hours while dredging operations are occurring within a 250-meter boundary zone surrounding the critical eelgrass beds adjacent to the dredging areas. Dredging operations within the eelgrass boundary zone shall not begin before Light Monitoring has started. Comply with the provisions and conditions included in the EELGRASS SURVEYS AND LIGHT MONITORING spec section, where applicable. Submit an updated eelgrass survey prior to start of dredging in a reach with eelgrass and again after dredging is completed in a reach with eelgrass.

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1.4 Permits and Guidance

Notify the Government of all general use permitted equipment the Contractor plans to use on site. This paragraph supplements the Contractor's responsibility under FAR 52.236-7 Permits and Responsibilities. It is the contractor's responsibility to understand the environmental provisions in the existing permits and applicable guidance documents for carrying out the work.

a. The following permits have been obtained by the Government and are attached to these specifications:

(1) Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation

(2) National Marine Fisheries Service California Eelgrass Mitigation Policy and Implementing Guidelines

b. The following guidance for Environmental Compliance is attached to these specifications:

(1) USACE SF Bay Dredging Program Eelgrass Light Monitoring Plan 2024 - 2030 (LMP)

1.5 MEASUREMENT AND PAYMENT FOR LIGHT MONITORING

Work included in this section of the specifications for which no specific contract line item is included in the Pricing Schedule of the contract shall be considered an associated subsidiary obligation. No separate payment will be made for associated subsidiary obligations.

1.6 MEASUREMENT AND PAYMENT FOR EELGRASS SURVEYS

Work included in this section of the specifications for which no specific contract line item is included in the Pricing Schedule of the contract shall be considered an associated subsidiary obligation. No separate payment will be made for associated subsidiary obligations.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 LIGHT MONITORING

Dredging is prohibited within the 250 meter eelgrass light monitoring buffer zones during daylight hours unless light monitoring is performed. The LMP contains drawings in the appendix for the approximate locations of eelgrass from last dredging season. Light monitoring will be carried out under the supervision of a scientist with prior experience performing light monitoring.

Eelgrass Impact Minimization Measures:

1. If the minimum light level for eelgrass measured at the dredge site is below the minimum light threshold at the reference

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location(s) the contractor must stop dredging and scow overflow/decant immediately for 2 hours unless the minimum light threshold is recovered before 2 hours or daylight hours conclude, whichever occurs first. The contractor will notify the Government Contracting Officer immediately whenever operations must be changed due to eelgrass light monitoring constraints.

2. If the minimum light level measured at the dredge site and the associated reference locations are both below the minimum light threshold, it is assumed that factors outside of dredging activities (e.g. boat traffic, extreme tidal events, wind wave action, etc.) that can increase turbidity are affecting light levels and dredging operations may continue unimpeded.

3. If the minimum light level measured at the dredge site is below the minimum light threshold but not at the reference location(s), then additional factors will be considered to determine whether the difference in light levels throughout the day are due to dredging activities. If it is determined that reduction of light levels at the dredge site is substantial and due to dredging activities, the minimization measures listed below will be employed by the Contractor.

    a. Alter timing of dredging
    b. Use "Environmental-Style" cable arm clamshell bucket.
    c. Deploy silt curtains

4. Light monitoring will be carried out according to the LMP which is attached to these specifications.

3.1.1 Light Monitoring Reports

A Weekly Light Monitoring Report will be submitted each week by noon on Monday that includes work performed during the preceding week when light monitoring is needed. Weekly Light Monitoring Reports will be submitted using email to the government. Weekly Light Monitoring Reports will include the following items:

a. Names of monitors, dates and timing for monitoring.

b. Locations where light monitoring was performed each day, including the reach and station numbers.

c. Maximum and minimum light level measured each day.

d. The reach and station number for location(s) and timing for any recorded instances when the light level is below the minimum light threshold.

e. Actions taken by the contractor such as minimization measures when the light level is below the minimum light threshold.

f. Names and contact information for individuals working on light monitoring activities including scientists (i.e. ecologists), project manager, light monitors, project engineer, and quality control manager.

Light Monitoring Equipment Calibration Data and Survey Equipment Photos Report will be submitted as a pre-construction submittal. Light

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monitoring equipment calibration will be carried out in compliance with the LMP. If the equipment is recalibrated at any point, the new calibration data should be added to the Light Monitoring Equipment Calibration Data and Survey Equipment Photos Report and it should be immediately re-submitted to the Government.

The Light Monitoring Equipment Calibration Data and Survey Equipment Photos Report will include the following:

a. The manufacturer name and model name for each piece of light monitoring equipment that is used.

b. The calibration data for each piece of light monitoring equipment with reference to applicable protocols that are required per the LMP.

c. Photos for each piece of light monitoring equipment used.

A Light Monitoring Final Report will be completed as a closeout submittal which will include the following:

a. Summary of light monitoring efforts over the course of the contract, including the contractor response for each instance when the light level was below the minimum light threshold

b. Appendix with all Weekly Light Monitoring Reports included.

c. Appendix with the Final Version of the Light Monitoring Equipment Calibration Data and Survey Equipment Photos Report.

3.2 Eelgrass Population Survey

The contractor will perform a population survey of the eelgrass populations before and after dredging in any channel that contains eelgrass within the 250 meter buffer zone per the methodology and requirements included in the LMP.

3.2.1 Pre-Dredge and Post-Dredge Eelgrass Population Surveys

A pre-dredge eelgrass population survey will be completed no more than 7 days before dredging in a reach that contains eelgrass within the 250 meters (820 feet) buffer of planned dredging locations.

The results of each pre-dredge eelgrass population survey will supersede eelgrass conditions shown on the project plans to satisfy requirements in the LMP.

Subsequent pre-dredge surveys will be performed before resuming dredging in a reach that contains eelgrass within 250 meters (820 feet) if 14 or more calendar days have elapsed since dredging last occurred in that reach.

A post-dredge eelgrass population survey will be completed no more than 7 days after completing dredging in a reach that contains eelgrass, or when dredging in a reach will not resume within 14 calendar days from when dredging last occurred in a reach within 250 meters (820 feet) of an eelgrass population.

All eelgrass surveys will be carried out under the supervision of a

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scientist with prior experience performing eelgrass population surveys that satisfy requirements in the LMP.

The pre-dredge eelgrass population survey and post-dredge eelgrass population survey will each include the following items:

a. Summary of eelgrass population survey results with estimates for population number and area using the guidance and methodology in the LMP.

b. Map of the eelgrass population(s) which includes the dredging location(s), light monitoring reference stations. Submit the map in PDF format and derived from the spatial data prepared under item (d).

c. The post-construction eelgrass population survey map will include all locations where the minimum light threshold measured at the dredge site fell below the reference site threshold during the dredging season. Label each with the date and timing of any dredge operation suspensions.

d. Provide GIS-compatible spatial data files delineating eelgrass beds, survey boundaries, and project footprint, in accordance with the CEMP available at: https://media.fisheries.noaa.gov/dam-migration/cemp_oct_2014_final.pdf.

Submit shapefiles or geodatabase format files compatible with ESRI ArcGIS software, including metadata indicating horizontal projection (UTM Zone 10 or 11, NAD83) and vertical datum (MLLW).

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HERRING OBSERVERS

PART 1 GENERAL

1.1 DEFINITIONS

1.1.1 Upland Beneficial Reuse Site Benefitting Aquatic Species

An upland beneficial reuse site that benefits aquatic species, as approved by the National Marine Fisheries Service.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-07 Certificates

Herring Observer Resumes; G,

1.3 SPECIAL ENVIRONMENTAL REQUIREMENTS

Government approval is required to dredge beyond November 30 of any year. Herring Observers are required day and night (24 hrs/day) for all dredging operations that occur after between 01 December and 14 March, if such dredging is approved by the Government. Contractor shall provide trained observers in accordance with instructions included in the HERRING OBSERVERS paragraph below. Herring Observer Resumes shall be submitted to the Government for review no later than 12 November in any year. Any material dredged after November 30 in any year (if approved by the Government)shall be placed at an upland beneficial reuse site benefitting aquatic species, as directed by the Government.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 Herring Observers

The contractor shall provide to the Government Herring Observer resumes no later than 12 November in any year if dredging is expected to occur after November 30. The Contractor is responsible for acquiring the services of CDFW-approved Herring Observers to observe and record data documenting herring spawning activities during all dredging operations after 30 November. Herring Observers will be used until 15 March of the following year or the end of the dredging cycle, whichever occurs first. The contractor shall provide at least one approved Herring Observer per dredge

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plant. The observing activities shall be documented in accordance with CDFW guidance shown in Attachment 1 Daily Biological Observation Log attached at the end of the specification package. The daily biological observation logs shall be submitted to CDFW, Government and the COR on a daily basis. The observer(s) will immediately notify the Contractor, COR, Government, and CDFW when spawning activity is observed within 500-meters of dredging activities, and the Contractor shall immediately move to an area outside of the 500-meter buffer to continue dredging and may not resume dredging in the area where spawning was observed until given permission by the Contracting Officer or designated representative. The Point of Contact for submission of the Daily Biological Observation Log from CDFW are:

Arn Aarreberg
Environmental Scientist
CDFW
3637 Westwind Blvd.
Santa Rosa, CA. 95403
(707) 791-4195 - Primary (Cell)
Arn.Aarreberg@wildlife.ca.gov

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3.3.2 Area Acceptance

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DREDGING

PART 1 GENERAL

1.1 DEFINITION

Dredging work is defined as the removal of bottom sediments including; clay, silt, sand, and gravel from streams, rivers, lakes, coastal waters, oceans, and transporting the resulting material by barges, ships, or pipelines to a designated placement site on land or in water. Dredge material types can be soft or hard. Hard material is defined as material requiring the use of special equipment for economical removal, and includes boulders or fragments too large to be removed in one piece by the dredge.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation: submittals not having a "G" designation are for information only. Submit the following in accordance with Section SUBMITTAL PROCEDURES 01 33 00:

SD-01 Preconstruction Submittals

Work Plan; G

Coast Guard Notification

SD-10 Operation and Maintenance Data

Dredge Material Disposal Site Log (DMDSL)

1.3 MATERIAL TO BE REMOVED

The type of material to be removed from this project is mainly clay, silt, gravel and/or sand.

1.3.1 Dredge Material Disposal Site Log (DMDSL)

Submit a DMDSL on a weekly basis by noon Monday that enumerates work accomplished during the preceding week. The DMDSL logs to be submitted shall include the reach from where the material came from. Every Monday, the Contractor shall e-mail the prior week's DMDSL data to the government.

Include the dredge episode number. Maintain a DMDSL using the "Dredge Material Disposal Site Log" form in Attachment 2 at the end of the Specification package. DMDSL shall be included as an attachment to QC Daily Reports.

1.4 WORK PLAN

The purpose of the work plan is to outline the primary objectives required during construction. The work plan should clearly articulate and outline the steps needed to achieve contract milestones, deliverables, resources,

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etc. The work plan should be submitted within 15 days after Notice to Proceed or prior to the date of the Preconstruction Conference.

Revise the work plan throughout the project to include any changes in site conditions or contract modifications that change the project scope of work.

At a minimum the work plan should include, but is not limited to, the following elements:

(1) Introduction - Identify the project name, location, purpose and general timeline
(2) Duties - List the duties to the person(s) required on the jobsite and intended work shifts
(3) Equipment - Provide equipment lists, equipment specifications, layouts and/or data sheets
(4) Sequence - Outline the sequence of construction activities
(5) Procedures - List any standard or project-specific operating procedures or methods that will be used to effectively manage the project and comply with contract requirements and permits
(6) Constraints - Identify all foreseen constraining conditions (if applicable) and address how they will be managed to not impact the project
(7) Contact Information - Provide emergency contact information (office phone number, cell phone number, and e-mail address)

1.5 MEASUREMENT AND PAYMENT

1.5.1 Method of Measurement

All BD and AD surveys are performed in accordance with Section HYDROGRAPHIC SURVEY 01 32 23. The material removed will be measured by cubic yard in place (in-situ). The drawings represent existing conditions based on current available information, but will be verified and corrected, if necessary, by soundings taken before dredging in each locality. Results of soundings will be the basis for payment.

1.5.1.1 Before-Dredge Survey

The Before Dredge (BD) Survey is the hydrographic survey that is performed prior to the start of dredging for the purposes of payment in accordance with Section HYDROGRAPHIC SURVEY 01 32 23.

1.5.1.2 After-Dredge Survey

The After Dredge (AD) Survey is the hydrographic survey that is performed after the dredging is completed for the purposes of acceptance and payment in accordance with Section HYDROGRAPHIC SURVEY 01 32 23.

1.5.1.3 Required Dredge Prism

The Required Dredging Prism is defined by the material above the project depth and in between the channel toes. The total quantity of material required to be dredged will be the material available in the Required Dredging Prism per the "Typical Dredging Section" shown in the drawings.

1.5.1.4 Allowable (Paid) Overdepth Prism

The depth of the Allowable Overdepth (Paid) Prism is defined by the material below project depth and above the 1-foot Allowable (Paid)

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Overdepth. The maximum width of the Allowable Overdepth (Paid) Prism is defined by the channel width between the channel toes. Dredging within the Allowable (Paid) Overdepth Prism is authorized but not required.

1.5.1.5 Allowable (Unpaid) Overdepth Prism

The depth of the Allowable (Unpaid) Overdepth Prism is defined by the material below the 1-foot Allowable (Paid) Overdepth and above the 2-foot Allowable Overdepth (Paid plus Unpaid). The width of the Allowable Overdepth (Unpaid) Prism is defined by the channel width between the channel toes. Dredging in this Prism is authorized but not required. Dredging in excess of the allowable 2-foot overdepth is prohibited.

1.5.2 Side Slope Prism

The Side Slope Prism is the area outside of the channel toes. Dredging on the side slope is prohibited. Material that sloughs from the side slope into the channel and is removed will be paid as evidenced by the Before- and After-Dredge surveys.

1.5.3 Progress Payment Quantity

The material quantity for progress payments will be ninety percent (90%) of the payable quantity calculated using the Contractor's progress survey and the Before-Dredge survey, less any previously paid quantities.

1.5.4 Final Payment Quantities

The final payment quantities for each reach will be 100% of the payable quantity calculated from the Before-Dredge and After-Dredge surveys, less any prevailing paid quantities using the TIN to TIN method in EM 1110-2-1003.

1.6 PERMIT

All work shall be performed in accordance with the conditions and requirements included in the state and federal permits applicable to this project.

1.7 BASIS FOR BIDS

Payment will be at the contract unit price per cubic yard, multiplied by total cubic yards of acceptable dredging. Base bids on total cubic yards of dredging. Include a bid unit price per cubic yard of dredging based on the quantity as specified or indicated. If the Contracting Officer or delegated representative requires an increase or a decrease in total volume of dredging, the contract price will be adjusted. Dredging conditions specified and indicated describe conditions which are known. However, the Contractor is responsible for other conditions encountered which are not unusual when compared to conditions recognized in the dredging business as usual in dredging activities such as those required under this contract.

PART 2 PRODUCTS

Not used.

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PART 3 EXECUTION

3.1 INSPECTION

Inspect the work, keep records of work performed, and ensure that gages, targets, ranges, and other markers are in place and usable for the intended purpose. Furnish, at the request of the Contracting Officer or delegated representative, boats, boatmen, laborers, and materials necessary for inspecting, supervising, and surveying the work. When required, provide transportation for the Contracting Officer or delegated representative and inspectors to and from the disposal area and between the dredging plant and adjacent points on shore.

3.1.1 Government QAR Accommodations

The Contractor shall provide, upon request of the Government QA Representative (GQAR), suitable transportation from all points on shore designated by the GQAR to and from the various pieces of plant, and to and from the dredging and disposal areas. Transportation will be made available during all shift changes, when requested by GQAR. Contractor should anticipate at least two round trips per 24-hour period. Contractor shall provide GQAR access to a desk, or other suitable workspace including electrical outlet, while on-board the dredge plant. Should the Contractor refuse, neglect, or delay compliance with these requirements, the specific transportation facilities may be furnished and maintained by the Contracting Officer or delegated representative, and the cost thereof will be deducted from any amounts due, or to become due the Contractor.

3.2 CONDUCT OF DREDGING WORK

3.2.1 Order of Work

When needed, the Contracting Officer or delegated representative will direct the Contractor on the order of work. The Government reserves the right to change the order of work at any time.

3.2.2 Interference with Navigation

Minimize interference of channels and passages. The Contractor is responsible for shifting or moving of dredges or the interruption of dredging operations to accommodate the movement of vessels and floating equipment, if necessary. Adhere to Coast Guard Regulations for passing vessels. Richmond Inner Harbor and the adjacent areas to be dredged are mainly used by deep draft commercial vessels, small recreation and commercial craft, which may cause some interference with contract operations. The Contractor will be required to conduct the work in such a manner as to obstruct navigation as little as possible, and in the event the Contractor's plant so obstructs the channel as to make difficult or endanger the passage of any vessels, the plant shall be promptly moved on the approach of any vessel to such an extent as may be necessary to afford a practicable passage. Moving of dredging plant may also be based on the determination of the docking pilot if vessel traffic requires it.

3.2.2.1 Coast Guard Notification

The Contractor shall submit copies of written Coast Guard notifications prior to conducting dredging activities. Utilize the Work Plan to forecast

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the activities in the channels and notify the United States Coast Guard Marine Safety Office in writing with a copy to the Contracting Office Representative. All Coast Guard notifications shall be provided in accordance with Section GOVERNMENT SAFETY REQUIREMENTS (DREDGING) 01 35 26 U.S. Coast Guard Notification and Marine Transportation Safety. When utilizing the Government-furnished open water disposal area, notify the U.S. Coast Guard in accordance with Section AQUATIC DISPOSAL 35 20 24 Notification. All dredge plants must be equipped with an Automatic Identification System (AIS) transponder that is compatible with Coast Guard specifications identified in Section GOVERNMENT SAFETY REQUIREMENTS (DREDGING) 01 35 26 Vessel Traffic Services (VTS) Reporting Requirements.

3.2.3 Lights

Each night, between sunset and sunrise and during periods of restricted visibility, provide lights for floating plants, pipelines, ranges, and markers. Also, provide lights for buoys that could endanger or obstruct navigation. When night work is in progress, maintain lights from sunset to sunrise for the observation of dredging operations. Lighting shall conform to United States Coast Guard requirements for visibility and color.

3.2.4 Positioning

Furnish, set, and maintain DGPS-based electronic positioning systems capable of displaying the real-time dredge plant position and the project limits and/or ranges, buoys, and markers needed to define the work and to facilitate inspection. Establish and maintain gages in locations observable from each part of the work so that the depth may be determined. Suspend dredging when the positioning system cannot be seen or followed. The Contracting Officer or delegated representative will furnish, upon request by the Contractor, survey lines, points, and elevations necessary for electronic positioning and/orthe setting of ranges, gages, and buoys.

3.2.5 Plant

Maintain the plant, scows, coamings, barges, pipelines, and associated equipment to meet the requirements of the work. Promptly repair leaks or breaks along pipelines. Remove dredged material placed due to leaks and breaks.

3.2.6 Disposal of Excavated Material

Provide for safe transportation and disposal of dredged materials. Transport and dispose of dredged material from Richmond Inner Harbor reaches 1 through 14 at Montezuma Wetlands site, unless otherwise directed by the Contracting Officer or delegated representative. The deposit of dredged materials in unauthorized places is forbidden. Comply with rules and regulations of local port and harbor governing authorities.

3.2.6.1 Method of Disposal

Deposit dredged material at Montezuma Wetlands site by scow or barge, and using an appropriate method to unload scow/barge to place material within the upland site.

3.2.6.2 Disposal in Indicated Fill Areas

In depositing excavated material for fill, uniformly grade and allow for shrinkage. Provide and maintain necessary bulkheads, dikes, ditches,

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weirs, spillways, and other construction necessary to confine and retain the fill in the dredge fill area.

3.2.6.3 Overflow/Decant, Spillage and Leakage

Overflow/decant, spillage and leakage is prohibited during transportation to the disposal site. Overflow/decanting at the dredge site will be controlled in accordance with the requirements in Section TEMPORARY ENVIRONMENTAL CONTROLS FOR DREDGING IN SAN FRANCISCO BAY 01 57 19.01 43.

3.2.6.4 Barring and Knock-Down Dredging

Barring, dragging and all other methods of bed leveling are prohibited.

3.2.6.5 Prohibition on Trash and Debris; use of Grizzly

Only dredged material determined in advance by EPA and USACE to be suitable for ocean disposal may be discharged at SF-DODS. Uncharacterized dredged material, vessels, trash, and other debris are prohibited from being discharged at the site. In order to exclude large trash and debris (including rocks) from being disposed at the site, before transport to SF-DODS all dredged material must be placed into scows through a steel mesh or chain "grizzly" with openings of no more than 12 inches by 12 inches. Material retained on the grizzly must be removed and disposed of separately. EPA and USACE may on a case-by-case basis waive the requirement to use a grizzly if they determine that trash and debris is unlikely to be present in the area to be dredged.

3.2.7 Navigation Warnings

Furnish and maintain, if applicable, navigation warning signs along the pipeline.

3.2.8 Method of Communication

Provide a system of communication between the dredge crew and the crew at the disposal area. A portable two-way radio is acceptable.

3.2.9 Safety of Structures

The execution of work shall ensure the stability of piers, bulkheads, and other structures lying on or adjacent to the site of the work, insofar as structures may be jeopardized by dredging operations. Repair damage resulting from dredging operations, insofar as such damage may be caused by variation in locations or depth of dredging, or both, from that indicated or permitted under the contract.

3.2.10 Plant Removal

Upon completion of the work, promptly remove plant, including ranges, buoys, piles, and other markers or obstructions.

3.3 ACCEPTANCE

The Government will take soundings before and after dredging in accordance with Section HYDROGRAPHIC SURVEY 01 32 23.

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3.3.1 Final Examination and Area Completion

The Government will perform payment surveys. Final estimates will be subject to deductions or correction of deductions previously made because of excessive overdepth, dredging outside of authorized areas, or disposal of material in an unauthorized manner.

3.3.2 Area Acceptance

Any shoals, lumps, or other lack of required contract depth disclosed by the After-Dredge survey shall be removed by dredging the channel bottom at the contract rate for dredging. No shoals or lumps above contract depth, as evidenced by multi-beam sounding will be accepted. Completion will be in writing from the Government Representative based on the After-Dredge multi-beam survey plan.

-- End of Section --

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SECTION 35 20 23.13

NATIONAL DREDGING QUALITY MANAGEMENT PROGRAM - SCOW MONITORING PROFILE

PART 1 GENERAL

1.1 DESCRIPTION

The work under this contract requires use of the National Dredging Quality Management Program (DQM)to monitor the dredge's status at all times during the contract and to manage data history. For the purpose of these specifications, a scow is defined as any non-self-propelled vessel used to transport dredged material. This includes, but is not limited to, split-hull scows, pocket scows, hopper barges, and deck barges.

This performance-based specification section identifies the minimum required output and the precision and instrumentation requirements. The requirements may be satisfied using equipment and technical procedures selected by the Contractor.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" classification. Submittals not having a "G" classification are for information only. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-07 Certificates

National Dredging Quality Management Program Certification,G

1.3 PAYMENT

Separate payment for installation, operation, and maintenance of the DQM-certified system as specified herein for the duration of the dredging operations is not allowed; all costs in connection therewith are considered a subsidiary obligation of the Contractor and are covered under the contract unit price for dredging in the bidding schedule.

1.4 NATIONAL DREDGING QUALITY MANAGEMENT PROGRAM CERTIFICATION

1.4.1 Certification

The Contractor is required to have a current certification from DQM for the scow instrumentation system to be used under this contract. Criteria for certification is based on the most recent specification posted on the DQM website https://www.sam.usace.army.mil/Missions/Spatial-Data-Branch/Dredging-Quality-Managemen Verify compliance with these criteria by onsite quality assurance (QA) checks conducted by the DQM Support Center Data Acquisition and Analysis Team and by periodic review of the transmitted data. If a system is installed specifically for this contract, in order to ensure that it is capable of transmitting quality data to the DQM database, the QA checks should take place either prior to the start of the contract or, with prior approval of the local USACE District, as soon as practical after dredging commences. DQM Certification is valid for one year from the date of

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certification and is contingent upon the system's ability to meet the performance requirements as outlined in paragraph PERFORMANCE REQUIREMENTS. If issues with data quality are not corrected within 48 hours, the system certification will be revoked and additional QA checks by the Data Acquisition and Analysis Team may be necessary. Annual DQM Certification must be based on the following:

A series of QA checks as outlined on the DQM website https://www.sam.usace.army.mil/Missions/Spatial-Data-Branch/Dredging-Quality-Manag

Verification of data acquisition and transfer as described in paragraph PERFORMANCE REQUIREMENTS

Review of the Dredge Plant Instrumentation Plan (DPIP) as described in paragraph DREDGE PLANT INSTRUMENTATION PLAN (DPIP)

1.4.2 Quality Assurance (QA)

The Dredging Contractor must have personnel who are familiar with the system instrumentation and who have the ability to recalibrate the sensors on site during the QA process. The Dredging Contractor must coordinate pickup times and locations and provide transportation to and from any platform with a DQM system to team personnel in a timely manner. The Dredging Contractor must also have on site for the QA checks a tug capable of towing the scow. As a general rule, DQM Data Acquisition and Analysis Team personnel will come with personal protective equipment (PPE) consisting of hardhats, steel toe boots, and life jackets. If additional safety equipment is needed, such as eye protection, safety harnesses, work gloves, or personal location beacons, provide these items to the team while on site. Submit a test data package to the DQM database from the system on each scow and have it accepted by the DQM Support Center prior to scow compliance checks. Also submit data collected during the QA Checks from the scow monitoring system to the DQM database and the Data Acquisition and Analysis Team personnel while on site. It is the Dredging Contractor's obligation to inform the QA team if the location designated for the QA checks has any site-specific safety concerns prior to their arrival on site.

The owner or operator of the scow must contact DQM at DQM-AnnualQA@rpsgroup.com on an annual basis, or at least three weeks prior to the proposed beginning of dredging, to schedule QA checks. This notification is meant to make the Data Acquisition and Analysis Team aware of a target date and the contract on which the plant will be used. At least one week prior to the target date, the Dredging Contractor must contact the Data Acquisition and Analysis Team and verbally coordinate a specific date and location. The Contractor must then follow up this conversation with a written email confirmation. The owner/operator must coordinate the QA checks with all local authorities including, but not limited to, the local USACE Contracting Officer's Representative (COR).

1.4.3 Recertification

Recertification is required for any yard work which produces modification to displacement (for example, a change in scow lines, or repositioning or repainting hull marks), modification to bin volume (change in bin dimensions or addition or subtraction of structure), or changes in sensor type or location; report these changes in the sensor log section of the DPIP. A system does not have to be transmitting data between jobs; however, in order to retain certification during this period, the system

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sensors or hardware should not be disconnected or removed from the scow. If the system is powered down, retain calibration coefficients.

1.5 DREDGE PLANT INSTRUMENTATION PLAN (DPIP)

The Contractor must have a digital copy of the DPIP on file with the DQM Support Center. While working on site, the Contractor must also maintain on the dredge a copy of the DPIP which is easily accessible to Government personnel at all times. This document must describe the sensors used, configuration of the system, how sensor data will be collected, how quality control on the data will be performed, and how sensors/data reporting equipment will be calibrated and repaired if they fail. A description of computed scow-specific data and how the sensor data will be transmitted to the DQM database must also be included. The Contractor must submit to the DQM Support Center any addendum or modifications made to the plan, subsequent to its original submission, prior to start of work.

A complete list of the required DPIP contents is provided on the DQM website https://www.sam.usace.army.mil/Missions/Spatial-Data-Branch/Dredging-Quality-Managemen Submit to the DQM Support Center any addendum or modifications made to the plan, subsequent to its original submission, prior to the start of work. Any changes to the computation methods must be approved by the DQM Support Center prior to their implementation.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 REQUIREMENTS FOR REPORTED DATA

Provide, operate, and maintain all hardware and software to meet these specifications. The Contractor is responsible for replacement, repair, and calibration of sensors and other necessary data acquisition equipment needed to supply the required data. Complete repairs within 48 hours of any sensor failure. Notify the Contracting Officer's Representative (COR) upon completion of a repair, replacement, installation, modification, or calibration. The COR may request recalibration of sensors or other hardware components at any time during the contract as deemed necessary.

Keep a log of sensor repair, replacement, installation, modification, and calibration in the onsite copy of the DPIP. The log must contain a three-year history of sensor maintenance, including the time of sensor failures (and subsequent repairs), the time and results of sensor calibrations, the time of sensor replacements, and the time that backup sensor systems were initiated to provide the required data. It must also contain the name of the person responsible for the sensor work. Install sensors that are capable of collecting parameters within specified accuracies and resolutions indicated in the following subparagraphs.

With the exception of position and any value calculated, reported sensor values should represent a weighted average with the highest and lowest values not included in the calculated average for the given interval. The averaging routine used should be consistent across all event triggers. This information should be documented in the DPIP sections that say "Calculations done external to the instrumentation." These data-reporting requirements cover the collection of electronic data on a scow through the

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entire dredging cycle. Disposal events can consist of both open-water disposal and offloading. Open-water disposal is the placement of material via bottom doors or split hull. Offloading is the placement of material via either hydraulic or mechanical means.

3.1.1 Scow Name

Assign a unique name for each scow that will remain constant from one dredging operation to the next.

3.1.2 Contract Number

The USACE-assigned contract number for the project will be reported.

3.1.3 Load Number

A DQM load number must document the end of a disposal event for a given scow.

3.1.4 Horizontal Positioning

Record horizontal positioning as the geographic coordinates of the vessel as indicated by the location of the Global Positioning System (GPS) antenna. Obtain all locations using a positioning system operating with a minimum accuracy level of 3 to 10 feet horizontal Circular Error Probable (CEP). Report positions as Latitude/Longitude WGS 84 in decimal degrees. West Longitude and South Latitude values are reported as negative.

3.1.5 Date and Time

Report the date and time to the nearest second and referenced to Universal Time Coordinated (UTC) based on a 24-hour format: yyyy-mm-dd hh:mm:ss.

3.1.6 Hull Status

Hull status is meant to reflect a condition when material could be removed or released from the scow. For this contract, hull status must register closed prior to leaving the disposal area.

3.1.6.1 Open-Water Disposal

Indicate an open split hull or open bottom door of a scow by reporting an "OPEN" value. Indicate a closed split hull or closed bottom door of a scow by reporting a "CLOSED" value. An open status must be indicated as the bin starts to open, and a closed status must be indicated only once the bin is fully closed. For pocket scows, the open/closed status must correspond to the compartment which is first to open and last to close.

3.1.6.2 Offloading

For non-dumping scows, an "OPEN" value indicates that the bin is in the process of being unloaded, either by pumping or mechanical means.

3.1.7 Course

Provide scow course-over-ground (COG) using industry-standard equipment. Provide scow course-over-ground (to the nearest whole degree) with values from 000 (true north) to 359 degrees referenced to a clockwise positive direction convention.

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3.1.8 Speed

Provide scow speed-over-ground in knots using industry-standard equipment with a minimum accuracy of 1.0 knot and resolution to the nearest 0.1 knot.

3.1.9 Heading

Provide scow heading using industry-standard equipment. The scow heading must be accurate to within 5 degrees and reported to the nearest whole degree with values from 000 (true north) to 359 degrees referenced to a clockwise positive direction convention.

3.1.10 Draft

Report all draft measurements in feet, tenths, and hundredths with an accuracy of plus or minus 0.1 foot relative to observed physical draft readings. Report the measurements at a resolution of two decimal places (hundredths of a foot). The reported forward draft value must be equal to the sum of the visual forward port and starboard draft mark readings divided by two. The reported aft draft value must be equal to the sum of the visual aft port and starboard draft mark readings divided by two. Forward draft, aft draft, and average draft will be reported. Place sensors at an optimum location on the scow to be reflective of observed physical draft mark readings at any trim or list. Minimum accuracies are conditional to relatively calm water. The reported sensor value is an average of at least ten samples per event, with at least one maximum value and one minimum value removed, and the minimum eight remaining values averaged. When the average draft is calculated for the purpose of determining displacement, maintain significant digits for average draft such that if forward draft were 0.15 and aft draft were 0.1, then the average draft would be 0.125.

3.1.11 Displacement

Report scow displacement in long tons, based on the most accurate method available for the scow. The minimum standard of accuracy for displacement is interpolation from the displacement table, based on the average draft. For this contract the density of water used to calculate displacement is64.11 lbs/cubic foot and is used for an additional interpolation between the fresh and salt water tables.

3.2 NATIONAL DREDGING QUALITY MANAGEMENT PROGRAM SYSTEM REQUIREMENTS

The Contractor's DQM system must be capable of collecting, displaying, and transmitting information to the DQM database. The parameters which must be reported to the DQM database include trip number, date and time, hull status, scow course, scow speed, scow heading, draft, displacement, ullage, and bin volume. Provide an easily accessible, permanent visual display on the scow to show in real time the parameters collected by the system in the same units as the data submitted to the DQM database. In the event a reported parameter is calculated based on multiple sensors, the sensor values as used in the equation must be able to be viewed in addition to the required parameter. If a hardware problem occurs, or if a part of the system is physically damaged, the Contractor is responsible for repairing it within 48 hours of determination of the condition.

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3.2.1 Telemetry

The Contractor may select any commercial satellite, cellular phone, or other data communications systems available, as long as it is capable of transmitting real-time data as well as enough additional bandwidth to clear historically queued data when a connection is reobtained. If connectivity is lost, que and transmit unsent data upon restoration of connectivity. Delays in pushing real-time data to the DQM database should not exceed four hours. Exceptions to these requirements may be granted by the DQM Center on a case-by-case basis with consideration for contract-specific requirements, site-specific conditions, and extreme weather events.

The data transmission process from the scow to the DQM database must be automated. The data may be sent from the scow directly to the DQM database or to a shore-based system. Data transmitted to the DQM database should be raw data; use repeatable automated software or programming routine to process any shoreside data. Include a description of this process in the DPIP.

3.2.2 Data Reporting Frequency

Log disposal activities with high temporal and spatial resolution. Log data as a series of events. Each set of measurements (time, position, etc.) will be considered an event. Collect any required information in paragraph REQUIREMENTS FOR REPORTED DATA, that is not an averaged variable (that is, draft and ullage) within 1 second of the reported time. Measure data with sufficient frequency by the scow system to resolve the events to the accuracy specified in the following table. Any averaged variable must be collected and computed within this sampling interval. Event types "Sailing," "Loading/Stationary," "Offloading," and "Open Water Disposal" are triggered by a time criterion; the criterion should be consistent across the "Sailing" and "Open Water Disposal" event types and should not change for the data collected on a given scow. This criterion should be documented by the Contractor in the DPIP.

Event Type	**Event Trigger Descriptions**	**Event Time Resolution**	**Event Position Resolution**
Loading/ Stationary	**No change in position with hull status closed** An elapsed time of 1 hour since the last event. NONCLOSURE In the event a scow has completed an open water disposal and transited back to a holding station without closing the hull, the sampling must be changed to once per hour.	1 minute	N/A
Sailing	**Change in position with hull status closed** Time from the last sample equals 1 minute.	1 second	plus or minus 10 ft

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Event Type	Event Trigger Descriptions	Event Time Resolution	Event Position Resolution
Open Water Disposal	**Hull status open** A position must be recorded within 1 second of the hull status going from closed to open and again within 1 second of the hull status going from open to closed. Report the position at any equal interval from 6 to 12 seconds. This interval must always remain consistent for the dredge plant.	1 second	plus or minus 10 ft
Offloading	**Offloading material, hull status reported as open** A position must be recorded within 1 minute arrival at the offload location and within one secnd of the material starting to be removed from scow. The time from the last sample equals 1 minute. STANDBY OFFLOADING In the even a scow is not being actively offloaded at the offload location for a time equal to one hour, the sampling interval must be equal to once an hour.	1 second 1 minute	plus or minus 10 ft

Example: The scow is stationary for 1 hour and 15 minutes, and then it sails to the disposal area. You should have a "Loading/Stationary" event at time 0, time 1 hour, and time 1 hour and 15 minutes. Then, for "Sailing," within 1 second of an elapsed time of 1 minute from the 1 hour and 15 minutes event, another event occurs.

3.2.3 Data Transmission to the Web Service

Use a Simple Object Access Protocol (SOAP) web service to report sensor data to the DQM database. Transmit data as it is collected in real time and pushed to the DQM web service. If the web service is not available or returns an error message, store the data in a queue and transmit upon re-establishment of the connection, starting with the oldest data in the queue and continuing until real-time transmission is restored. Delays in pushing real-time data to the DQM database should not exceed four hours. Exceptions to these requirements may be granted by the DQM Support Center on a case-by-case basis with consideration for contract-specific requirements, site-specific conditions, and extreme weather events.

Contact dqm-support@usace.army.mil to obtain the web service URL and the appropriate key credentials and communication protocol.

The data transmission method call takes two arguments: a string containing the plant identifier assigned by the DQM Support Center and a second string containing the XML-formatted sensor data. The method returns the string "OK" if the data is received. If the data is not received, either the web service or the client application throws an error.

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3.2.4 XML-Formatted Sensor Data String

Pass each scow event as a string on one continuous line of data. The example below is broken up by variable for ease of reading:

```
<?xml version="1.0"?>
<SCOW_DREDGING_DATA version="2.5">
   <SCOW_NAME>AU1994</SCOW_NAME>
   <CONTRACT>W123BA-09-D-0087_RL01</CONTRACT>
   <TRIP_NUMBER>34</TRIP_NUMBER>
   <X_POSITION>-81.670632</X_POSITION>
   <Y_POSITION>41.528987</Y_POSITION>
   <DATE_TIME>2010-08-14 10:50:15</DATE_TIME>
   <SCOW_SPEED>0.0</SCOW_SPEED>
   <SCOW_COURSE>0.0</SCOW_COURSE>
   <HULL_STATUS>OPEN</HULL_STATUS>
   <SCOW_HEADING></SCOW_HEADING>
   <SCOW_FWD_DRAFT></SCOW_FWD_DRAFT>
   <SCOW_AFT_DRAFT></SCOW_AFT_DRAFT>
   <SCOW_AVG_DRAFT></SCOW_AVG_DRAFT>
   <ULLAGE_FWD></ULLAGE_FWD>
   <ULLAGE_AFT></ULLAGE_AFT>
   <ULLAGE_AVG></ULLAGE_AVG>
   <SCOW_BIN_VOLUME></SCOW_BIN_VOLUME>
   <SCOW_DISPLACEMENT></SCOW_DISPLACEMENT>
   <SCOW_LIGHTSHIP></SCOW_LIGHTSHIP>
   <SCOW_TDS></SCOW_TDS>
   <ADDITIONAL_DATA>Some more scow info, if needed</ADDITIONAL_DATA>
</SCOW_DREDGING_DATA>
```

Format DATE_TIME values as YYYY-MM-DD HH:MM:SS, as shown above. If, for any reason, a field has no value, the enclosing XML tags should be sent with nothing between them (for example, <DRAFT_AFT></DRAFT_AFT>). The web service cannot handle a "null" value or any other indicators of no value collected.

3.2.5 Contractor Data Backup

Maintain an archive of all data sent to the DQM database during the dredging contract. The Contracting Officer's Representative (COR) may require, at no increase in the contract price, that the Contractor provide a copy of these data covering specified time periods. Provide the data in the HTML format which would have been transmitted to the DQM database. Submit data via storage medium acceptable to the COR.

At the end of the dredging contact, contact the DQM Support Center prior to discarding the data. The DQM Support Center will verify that all data has been received and appropriately archived before giving the Contractor discard permission. Record in a separate section at the end of the scow's onsite copy of the DPIP the following information:

Person who made the call
Date of the call
DQM representative who gave permission to discard

3.3 PERFORMANCE REQUIREMENTS

The Contractor's DQM system must be fully operational at the start of dredging operations and fully certified prior to moving dredge material on

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the contract (see paragraph NATIONAL DREDGING QUALITY MANAGEMENT PROGRAM CERTIFICATION). To meet contract requirements for operability, in addition to certification, the Contractor's system must provide a data string with values for all parameters while operating, as described within the specifications. Additionally, all hardware must be compliant with DPIP requirements (see paragraph DREDGE PLANT INSTRUMENTATION PLAN (DPIP)). Quality data strings are considered to be those providing values for all parameters reported when operating according to the specification. Make repairs necessary to restore data return compliance within 48 hours. Failure by the Contractor to report the required data within the specified time window for scow measurements (see paragraph DATA REPORTING FREQUENCY, and paragraph DATA TRANSMISSION TO THE WEB SERVICE) and failure to receive DQM certification prior to dredging will result in withholding of up to 10 percent of the contract progress payment per FAR 52.232-5 Payments under Fixed-Price Construction Contracts.

3.4 LIST OF ITEMS TO BE PROVIDED BY THE CONTRACTOR

DPIP
https://www.sam.usace.army.mil/Missions/Spatial-Data-Branch/Dredging-Quality-M

DQM SYSTEM
Sensor instrumentation - Paragraph REQUIREMENTS FOR REPORTED DATA

SCOW DATA
Event documentation - Paragraph DATA REPORTING FREQUENCY
Data reports - Paragraph DATA TRANSMISSION TO THE WEB SERVICE

QA EQUIPMENT ON THE DREDGE
Clear and accurate draft marks

-- End of Section --

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Attachments to Section 01 11 00

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DREDGED MATERIAL MANAGEMENT OFFICE

MEMORANDUM FOR THE RECORD

TO: Ellie Covington, Chris Eng, Liesel Sanstrom DATE: April 20, 2026

FROM: Jessica Vargas, Chair, Dredged Material Management Office

SUBJECT: USACE 2026 Maintenance Dredging; Richmond Inner Harbor; Tier I Request; DMMO Serial Number: 26-027

At the meeting on April 1, 2026, the Dredged Material Management Office (DMMO) completed its review of your request for a Tier I exclusion from testing for approximately 350,000 cubic yards of material proposed to be dredged of the calculated 1,010,000 cubic yards available in the Richmond Inner Harbor to a design depth of -38 feet mean lower low water, plus an overdepth allowance of 2 feet. The Tier I Request is contained in the report prepared by USACE entitled "Richmond Inner Harbor Federal Navigation Channel 2026 Maintenance Dredging, Tier I Evaluation," dated March 2026.

The members of the DMMO have determined that a Tier I exclusion from testing is appropriate for the material to be dredged from the areas defined in the above request and in the 2025 sampling and analysis report prepared by Pacific EcoRisk and DR Reed and Associates, Inc., entitled "Richmond Inner Harbor 2024 Maintenance Dredging Final Sampling and Analysis Report," dated February 2025. The members of the DMMO have determined that the sediment proposed for dredging from all Sample Areas, as characterized in the above documents, is suitable as follows:

- Sediment proposed to be dredged from Sample Areas 1-6 is suitable for placement at an in-Bay placement site and the San Francisco Deep Ocean Disposal Site (SF-DODS).
- Sediment proposed to be dredged from Sample Areas 1-4 is suitable for placement at a beneficial reuse site, such as Montezuma Wetlands Restoration Project (MWRP) or Cullinan Ranch Restoration Project (CRRP).
- Sediment proposed to be dredged from Sample Areas 5-6 is suitable for placement at MWRP as foundation material.

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U.S. Environmental Protection Agency, Region IX, WTR-8
75 Hawthorne Street
San Francisco, CA 94105-3919

San Francisco Bay Conservation and Development Commission
375 Beale Street, Suite 510
San Francisco, CA 94105

U.S. Army Corps of Engineers San Francisco District
450 Golden Gate Avenue
San Francisco, CA 94102-3404

San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612-1413

California State Lands Commission
100 Howe Avenue, Suite 100-South
Sacramento, CA 95835-8202

Please note that this memorandum does not constitute an authorization to proceed with your dredge and placement project. You must first obtain all appropriate authorizations and provide all appropriate notifications.

Respectfully,

Jessica Vargas
Chair, Dredged Material Management Office

Copies Furnished:

US EPA, San Francisco, CA, Attn: Dana Michels
US NMFS, Santa Rosa, CA, Attn: Sara Azat
US FWS, Sacramento, CA, Attn: Kim Squires
CA BCDC, San Francisco, CA, Attn: Brenda Goeden
CA RWQCB, Oakland, CA, Attn: Jazzy Graham-Davis
CA SLC, Sacramento, CA, Attn: Marlene Schroeder
CA DFW, Santa Rosa, CA, Attn: Arn Aarreberg

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Attachment 1 – Survey Quality Control (QC) Log	
Survey Quality Control (QC) Log	
Contract Name:	Contract #:
Block 1 – Personnel and Equipment	
Survey Technician:	Vessel Name/Length:
Survey Assistant, if any:	Vessel Operator:
Surveying SW/Version:	Other Personnel, if any:
Depth Sounder:	Line File I.D.:
Tidal Level Recording Unit:	Motion Compensator:
DGPS:	Velocity Probe:
Other Equipment:	
Block 2 – Survey Parameters	
Survey Date:	Survey Purpose:
Survey Location:	Weather/Sea State:
Tide Gauge Location:	DGPS Location:
Survey File I.D.:	Stations Surveyed:
Calibration Time/Location:
Bar Check and/or Velocity Probe	Calibration Notes:
Obstacle Locations:	
Observations:	Remarks, if any:
Block 3 – Certification of Progress Payment Survey	
I certify that the payment survey was performed by me or under my direct supervision and that the survey was conducted in accordance with the systematic/procedural methods and techniques described in the contract documents. The observed, recorded, and edited data are fully and finally acceptable for determining and measuring contract performance and payment. Any exceptions are noted in the box below. Signature._____ Name._____	
Exception(s) to the Certification:	
Block 4 - Government Observations	
Government Observer, if any:	
Observations:	Remarks, if any:

SOLICITATION

Attachment 2 – Contractor Survey Certification

Contract #._____Survey of Reach #._____

Survey Date._____Certification of Government Survey

I have fully observed the performance of the survey and have determined, based on my review of EM 1110-2-1003 requirements and of Contractor survey data for the same area, that the data contains no evidence of collusion, fraud, or obvious error. The recorded data, including calibration corrections thereto, have been obtained in accordance with the systematic/procedural methods and techniques described in the contract documents. All known and unknown systematic and random errors have been minimized consistent with: (1) the relative precision errors of the equipment utilized; and (2) absolute accuracies expected (or likely) given current (state-of-the-art) horizontal and vertical measurement limitations associated with offshore survey system, procedures, and related variables.
As such, the observed and recorded data are fully and finally acceptable for determining and measuring contract performance and payment.

Signature. _____ Name._____

SOLICITATION

Attachment to Section 01 33 00

SOLICITATION

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
Richmond Inner Harbor FY26 Maintenance Dredging

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)		(q)	(r)
		01 11 00	SD-01 Preconstruction Submittals																
			Certificates Of Insurance																
			Surety Bonds																
			List Of Proposed Subcontractors																
		01 32 01.00 10	SD-01 Preconstruction Submittals																
			Initial Project Schedule	3.4.1	G														
			Periodic Schedule Updates	3.4.2	G														
		01 33 00	SD-01 Preconstruction Submittals																
			Submittal Register	1.9	G														
		01 35 26	SD-01 Preconstruction Submittals																
			Accident Prevention Plan (APP)	1.7	G														
			Activity Hazard Analysis (AHA)	1.8	G														
			Personnel Transfer by Boat	1.14	G														
			Personal Locator Beacons (PLB)	1.14															
			and Receiver Unit																
			Man Overboard Drill Results		G														
			SD-06 Test Reports																
			Monthly Exposure Report	1.4															
			Notifications and Reports	1.12															
			Accident Reports	1.12.2	G														
			LHE Inspection Reports	1.12.3															
			Worker Compensation Claims	1.12.6															
			SD-07 Certificates																
			Crane Operators/Riggers; G																
			Certificate Of Compliance	1.12.4															
			Seaworthiness Certificate																

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SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
Richmond Inner Harbor FY26 Maintenance Dredging

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAG # RAPH	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY				MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01 35 26	Third Party Certificate	1.12.5														
			Tug and Boat Operators															
		01 45 00.00 10	SD-01 Preconstruction Submittals															
			Contractor Quality Control(CQC)	3.2	G													
			Plan															
			SD-06 Test Reports															
			Verification Statement	3.8														
		01 57 19.01 43	SD-01 Preconstruction Submittals															
			Solid Waste Management Permit	1.8														
			Environmental Protection Plan	1.6	G													
			Air Quality Parameters Report	1.6.7.4														
			SD-07 Certificates															
			Employee Training Records	1.5.3														
			SD-11 Closeout Submittals															
			Solid Waste Management Report	3.7.2.1														
		01 57 19.86 43	SD-01 Preconstruction Submittals															
			Light Monitoring Equipment	3.1.1	G													
			Calibration Data And Survey															
			Equipment Photos Report															
			Pre-Dredge Eelgrass Population	3.2.1														
			Survey															
			SD-06 Test Reports															
			Weekly Light Monitoring Report	3.1.1														
			SD-11 Closeout Submittals															
			Light Monitoring Final Report	3.1.1	G													

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SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
Richmond Inner Harbor FY26 Maintenance Dredging

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAG # RAPH	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)		(q)	(r)
		01 57 19.86 43	Post-Dredge Eelgrass Population Survey	3.2.1															
		01 57 19.99 43	SD-07 Certificates																
			Herring Observer Resumes	1.3	G														
		35 20 23	SD-01 Preconstruction Submittals																
			Work Plan	1.4	G														
			Coast Guard Notification	3.2.2.1															
			SD-10 Operation and Maintenance Data																
			Dredge Material Disposal Site Log (DMDSL)	1.3.1															
		35 20 23.13	SD-07 Certificates																
			National Dredging Quality Management Program Certification	1.4	G														

SOLICITATION

Attachments to Section 01 35 26

SOLICITATION

U.S. Army Corps of Engineers (USACE)

ACCIDENT PREVENTION PLAN (APP) WORKSHEET

For use of this form, see EM 385-1-1; the proponent agency is CESO.

This form serves as a guide. It does not replace or eliminate the need to comply with the requirements set forth in Engineering Manual 385-1-1, Safety and Occupational Health Requirements Manual. The references included in this form correspond to the applicable chapters of EM 385-1-1. No work will begin onsite until the accident prevention plan (APP) is developed according to the EM 385-1-1, reviewed to ensure minimum requirements are met, and approved by the appropriate personnel identified in "Part 1 -Signatures"

PART 1 - SIGNATURES

Plan Preparer - For example: Qualified Person (QP), Competent Person (CP), or project Quality Control (QC).

1. Name:	2. Title:
3. Email Address:	4. Phone Number:
5. Signature	

Plan Approver - Corporate Safety Official

1. Name:	2. Title:
3. Email Address:	4. Phone Number:
5. Signature	

Plan Concurrence - For example: Industrial hygienist, Project Manager, Superintendent, Site Safety & Health Officer, Quality Control, etc.

1. Name:	2. Title:
3. Email Address:	4. Phone Number:
5. Signature:	

PART 2: PROJECT INFORMATION

1. Project Name:	
2. Project Address (attach map in Appendix 1):	
3. Estimated Project Start Date:	4. Estimated Project Completion Date:
5. Project Description / Description of work to be performed:	

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PART 3: PRIME CONTRACTOR INFORMATION		
1. Prime Contractor Name:		
2. Contract Number:		
3. Project Manager Name:		
4. Quality Control (QC) Manager Name:		
5. Contractor Corporate Safety Official Name:		
6. Primary Site Safety & Health Officer (SSHO) Name:		
7. Alternate Site Safety & Health Officer (SSHO) Name(s):		
PART 4: SOH COMMITMENT AND POLICY		
1. Provide a statement of safety and health policy detailing commitment to providing a safe and healthful workplace for all employees on this project.		
2. Provide a statement outlining the Contractor's safety program goals and objectives.		
3. Identify policies and procedure regarding non-compliance with safety requirements.		
4. Provide written procedures for holding managers and supervisors accountable for safety.		
5. Prime contractor is responsible for the implementation and enforcement of the SOH program for contractor employees, subcontractors, suppliers, and visitors at the site of work?	☐ Yes	☐ No
6. Prime contractor will require subcontractors, suppliers, and visitors to comply with the APP and EM 385-1-1?	☐ Yes	☐ No
7. No work will be performed unless a designated SSHO is present on the site of work.	☐ Yes	☐ No
8. A list of all known subcontractor(s) and supplier(s) are listed in Appendix 2.	☐ Yes	☐ No
9. If all subcontractor(s) and supplier(s) are not known at the time of initial APP submittal, Appendix 2 will be updated and resubmitted to the KO/COR for acceptance prior to the start of any work activities.	☐ Yes	☐ No
10. All subcontractors will have a copy of the APP, applicable AHAs and will be required to comply with them.	☐ Yes	☐ No
11. Subcontractors and suppliers at the site of work will abide by the EM 385-1-1, this APP, and all AHAs.	☐ Yes	☐ No
12. This APP and AHAs will be available to all workers at the site of work.	☐ Yes	☐ No

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PART 5: TRAINING		
1. All employees will be trained according to applicable EM 385-1-1, federal, state, and local requirements prior to the commencement of work.	☐ Yes	☐ No

2. The following personnel are identified and designated as personnel responsible for SOH on this project. Add the following documentation to Appendix 3 of this worksheet: 1) SSHO designation letter (ENG Form 6282), 2) instructor signed OSHA 30-hour card (or course completion certificate if within 90 days of having completed the OSHA 30-hour training), and 3) proof of 24 hours of competency of SOH training within the last 3 years for the personnel identified below. (EM 385-1-1, Chapter 2, 2-3 Personnel Qualification/Training):
(Check and list names of personnel being designated)

☐ Primary SSHO Name:

☐ Alternate SSHO Name(s):

3. QP(s) and CP(s) required by EM 385-1-1 (for example, excavation, confined space, scaffolding, fall protection, etc.) for this project will be included in Appendix 3. Include 1) List of names or designation letters and 2) proof of qualification/competency.

PART 6: SOH INSPECTIONS		
1. All applicable inspections required by EM 385-1-1, contract, federal, state, and local requirements will be completed.	☐ Yes	☐ No

2. The following personnel are assigned to conduct inspections, the type of inspection and frequency for the worksite. At minimum the SSHO must conduct daily site inspections.

Who will conduct inspection?	Frequency?	What type of inspection?

3. Employees that conduct inspections will have technical proficiency needed to perform inspections. Proof of inspector's training/qualification is included in Appendix 3.	☐ Yes	☐ No
4. Deficiencies will be documented and tracked as required by this EM 385-1-1?	☐ Yes	☐ No

6. Will any external inspections be required (for example, USCG, OSHA, etc.)? ☐ Yes ☐ No
If yes, describe:

PART 7: ACCIDENT REPORTING AND INVESTIGATION		
1. Exposure data (man-hours worked) will be reported to KO/COR as required by the contract?	☐ Yes	☐ No
2. All accidents will be reported as soon as possible according to EM 385-1-1?	☐ Yes	☐ No
3. All accidents occurring incidentally to an operation, project, or facility for which the EM 385-1-1 is applicable will be thoroughly investigated and analyzed. Corrective actions to prevent reoccurrence will be implemented as soon as reasonably possible. The KO/COR will be notified when corrective actions are completed.	☐ Yes	☐ No
4. Accident notification will be provided to the KO/COR as stated below:	☐ Yes	☐ No

ACCIDENT TYPE	KO/COR NOTIFICATION TIME
Fatality, permanent and partial disability, or property damage over $600,000	Immediately, no later than (NLT) 8 hours
All other accidents and near misses	Immediately, NLT 24 hours

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PART 8: SOH OVERSIGHT		
1. A risk management process that meets or exceeds the requirement of the EM 385-1-1 will be implemented on this project site?	☐ Yes	☐ No
2. Hazardous conditions and unsafe acts will be immediately corrected?	☐ Yes	☐ No
3. APP and AHAs will be prepared by a QP or CP according to the EM 385-1-1 prior to the start of any work activities on the site of work (as much as the information can be known at that point in time).	☐ Yes	☐ No
4. The plans and AHAs will be updated throughout the life of the project to include changes in personnel, equipment, conditions, etc. Additional revisions must be incorporated as necessary to reflect changing site conditions, construction methods, personnel roles and responsibilities and construction schedules.	☐ Yes	☐ No
5. No activity/work will be started at the site of work until the APP is reviewed and submitted to the KO/COR for acceptance, with the site-specific plans and procedures required by the EM 385-1-1 to complete the project?	☐ Yes	☐ No
6. APP and AHAs will be provided to and reviewed by all workers involved in the activity prior to work?	☐ Yes	☐ No
7. Workers will sign AHA(s) to concur with identified job steps and controls needed to mitigate hazards?	☐ Yes	☐ No
PART 9: SEVERE WEATHER PLAN		
1. The SSHO or designated onsite personnel is responsible for checking the weather conditions at a minimum of twice a day?	☐ Yes	☐ No
2. What severe weather forecast will require the SSHO to monitor weather conditions continuously? Describe.		
3. What are the training requirements for severe weather precautions and actions?		
4. Identify area of retreat or other actions to be taken such as evacuation, shelter in place, etc.		
5. Identify procedures to stop outdoor activities if extreme weather conditions to include thunderstorms are in the area.		

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PART 10: ACTIVITY HAZARD ANALYSIS (RISK MANAGEMENT)

1. Major phases of work anticipated:

2. Definable Features of Work (DFOW)

Note. An activity-specific AHA will be submitted to the KO/COR for each DFOW prior to any work being performed.

3. List equipment to be used:

4. Anticipated High-Risk Activities: (See examples below, check all that apply):

☐ Electrical and/or Hazardous Energy	☐ Confined Space
☐ Working at Heights	☐ Excavations & Trenching
☐ Scaffolding	☐ Other: _____
☐ Diving	☐ Other: _____
☐ Load Handling Equipment	☐ Other: _____
☐ Occupational Exposure	☐ Other: _____

5. Detailed project-specific hazards and controls will be provided utilizing AHAs for each activity/DFOW.	☐ Yes	☐ No
6. No work will begin on an activity/DFOW until the initial AHA addressing the project-specific hazards has been developed, reviewed, and accepted by the KO/COR. (See EM 385-1-1 Chapter 2 section 2-6).	☐ Yes	☐ No
7. AHAs are living documents and are intended to be created, utilized in the field, and updated (by the workers) as necessary.	☐ Yes	☐ No
8. Workers/crews will have accepted AHA(s) that reflects current site conditions, personnel, equipment, control measures, etc. while the work is being performed?	☐ Yes	☐ No
9. AHA will be used by the contractor personnel to assure work is being performed consistent with the AHA?	☐ Yes	☐ No
10. Once the activity has been completed, the AHA will be available and kept onsite for the length of the contract.	☐ Yes	☐ No
11. AHAs for unknown work activities will be submitted to the KO/COR prior to work and attached to Appendix 4 of this document.	☐ Yes	☐ No

12. Who has the authority to accept residual risk on AHA(s)? (List below)

Category of Risk	Approval Authority (Name and Title)
Extremely High Risk	
High Risk	
Medium Risk	
Low Risk	

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PART 11: REQUIRED PROJECT SITE-SPECIFIC PLANS AND PROCEDURES		
1. Based on a risk assessment of contracted activities and on mandatory OSHA compliance programs, the contractor will ensure that all applicable SOH risks and associated compliance plans are in place.	☐ Yes	☐ No
2. Include all project-specific compliance plans, as applicable to the work being performed, and as identified below. The plans will incorporate project-wide procedures to control hazards to which the employees of all project employers may be exposed.	☐ Yes	☐ No
3. These plans and procedures will be coordinated with all project employers and be included in project-specific emergency response and evacuation procedures.	☐ Yes	☐ No

4. Address each of the plans in the outline below in the order that they are listed.
   Option 1: If a plan is applicable, develop and attach it to Appendix 5. Submit to the KO/COR with this worksheet for acceptance prior to work.
   Option 2: If a plan is applicable, but all of the minimum required information for the plan is not yet known, provide justification next to each plan title, and provide an expected date the plan will be created, reviewed, and attached to Appendix 5. Submit to the KO/COR with this worksheet for acceptance prior to work.
   Option 3: If a plan is not applicable because of the nature of the work to be performed, provide justification next to each plan title.

Minimum plans required by EM 385-1-1	Reference EM 385-1-1 paragraph:	Select Option	Justification for Option 2 and Option 3
Exposure Control Plan	3-7.a		
AED Program	3-7.b		
Construction Site Plan	4-7.a		
Access/Haul Road Plan	4-7.b		
Hearing Conservation Program	5-7.a		
Respiratory Protection Program	5-7.b		
Hazard Communication (HazCom) Program	6-7.a		
Process Safety Management (PSM) Program	6-7.b		
Lead Compliance Plan	6-7.c		
Asbestos Management Plan	6-7.d		
Ionizing Radiation Safety Plan	6-7.e		
Radiofrequency Plan	6-7.e		
Abrasive Blasting Plan	6-7.g		
Thermal Stress Management Plan	6-7.h		
Mold Remediation Plan	6-7.i		
Silica Compliance Plan	6-7.j		
Fatigue Management Plan	6-7.k		
Night Operations Lighting Plan	7-7		
Traffic Control Plan	8-7		
Fire Prevention Plan	9-7.a		
Wildland Fire Management Plan	9-7.b		
Housekeeping Plan	10-7		
Electrical Safety Plan	11-7		
Assured Equipment Grounding Conductor Program	11-7.b		
Energy Control Plan	12-7.a		
Hazard Isolation Procedures	12-7.b		

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Demolition Plan	17-7		
Emergency Plan for Marine Activities	19-7.a		
Severe Weather Plan for Marine Activities	19-7.b		
Float Plans	19-7.c		
Tow Plans	19-7.d		
Fall Protection and Prevention Plan	21-7.a		
Rescue Plan	21-7.b		
Scaffold Work Plan	21-7.b		
Rope Access Work Plan	23-7		
Excavation and Trenching Plan	25-7		
Fire Prevention and Protection Plan	26-7 a & f		
Compressed Air Work Plan	26-7 a & b		
Contingency Response Plan	26-7 a & c		
Emergency Rescue Plans and Equipment	26-7 a & d		
Ventilation and Dust Control Plan	26-7 a & e		
Formwork and Shoring Plan	27-7.a		
Masonry Bracing Plan	27-7.b		
Steel Erection Plan	28-7.a		
Site Layout Plan	28-7.b		
Explosive Site Safety Plan	29-7.a		
Master Blasting Plan	29-7.b		
Vibrations Monitoring Plan	29-7.c		
Dive Operations Plan	30-7.a & d		
Emergency Management Plan	30-7.a & e		
Safe Practices Manual	30-7.b		
Snorkeling Plan	30-7.f		
Tree Maintenance and Removal Plan	31-7		
Construction Safety and Phasing Plan	32-7.a		
Safety Plan Compliance Document	32-7.b		
Aviation Pre-Accident Plan	33-7		
Standard Lift Plan	34-7.b		
Confined Space Plan	34-7.b & c		
Standard Lift Plan - Floating Plan	34-7.c		
Critical Lift Plan	34-7.d		
Pile Driving	34-7.e		
Housekeeping Plan	35-7.a		
Extermination Plan	35-7.b		
Site Safety and Health Plan	36-7.a		
Comprehensive Work Plan	36-7.b		
Emergency Response Plan	36-7.c		

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PART 12: PROJECT SITE COORDINATION
1. Provide procedures for coordinating SOH activities with other employers on the site of work:

PART 13: REQUIRED APPENDICES Indicate if each of the following items are, or are not, attached to this plan.		
Appendix 1. Project Map	☐ Yes	☐ No
Appendix 2. Subcontractor/Suppliers	☐ Yes	☐ No
Appendix 3. Personal Qualifications and Designations	☐ Yes	☐ No
Appendix 4. Activity Hazard Analysis	☐ Yes	☐ No
Appendix 5. Site-specific plans and procedures	☐ Yes	☐ No
Appendix 6. Any additional plans, procedures, etc. can be added to this appendix and will be coordinated with the KO/COR.	☐ Yes	☐ No

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Attachment 1

Worker's Compensation Claims

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WORKER'S COMPENSATION CLAIMS
(EM385-1-1, Section 2)

Issuing Office: CESPN-ET-CO-SF

Contract Name:_____ Date: _____

_____

Contract No. _____

Contract Completion: ☐ 50%

☐ 100%

Contractor: ☐ PRIME TIME: _____

_____

☐ SUB NAME: _____

_____

LISTINGS OF CLAIMS

NONE ☐

1._____

_____

2._____

_____

3._____

_____

4._____

CERTIFIED BY (Compensation Insurance Carrier):

_____

_____

_____

CLARIFICATION: Above listing is true and correct to the best of my knowledge.

SIGNED: _____

_____

Title

***** SAFETY PAYS******

SOLICITATION

Attachment 2

SUMMARY GUIDE FOR COMPLETING USACE CONTRACTOR MONTHLY SUMMARY RECORD OF INJURIES/ILLNESSES & WORK HOUR EXPOSURE (SAFETY EXPOSURE REPORT)

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Summary Guide for Completing USACE Contractor Monthly Summary Record of Injuries/Illnesses & Work Hour Exposure

In accordance with the provisions of EM 385-1-1, Section 01 Program Management, Paragraph 01.D Accident Reporting and Recording, sub-paragraphs 01.D.05, you (the Prime Contractor) shall provide a monthly record of all exposure and accident experience incidental to the work (this includes exposure and accident experience of the Prime Contractor and its sub-contractor(s)). At a minimum, these records shall include exposure work hours and a record of occupational injuries and illnesses that include the data elements listed below. Definitional criteria for each data element is found in 29 CFR Part 1904. Most of this information can be obtained from the Contractor's OSHA 300 Log.

If the Contractor injuries/illnesses and/or work hour exposure changes after the record is submitted to USACE, Contractor shall provide a revised report to the GDA. In addition, the contractor must complete the USACE ENG Form 3394, Report of Accident Investigation for all recordable accidents. Definitions for recordable accidents are the same as found in 29 CFR Part 1904 and provided below. This monthly report shall be submitted to the GDA within the time limit and in a manner (electronic, hardcopy) established by the GDA. Unless otherwise specified by the GDA, this form shall be submitted by close of business on the 10th day of the following month.

How do I determine the Standard Industrial Classification (SIC) or North American Industry Classification System (NAICS) code for the prime, sub, and supply contractors?

You determine the SIC code by using the Standard Industrial Classification Manual and the the NAIC code by using the North American Industry Classification System Manual. Both codes are products of the Executive Office of the President, Office of Management and Budget. You may contact your nearest OSHA office or State agency for help in determining your SIC or NAIC code.

Recordable Injuries/Illness which must be included in the Record

Contractor must keep records of fatalities, injuries, and illnesses that are:

Work related
New case
Meet 1 or more of the recording requirements listed below:

Death
Days away from Work after the date of injury
Restricted work or transfer to another job
Medical Treatment beyond first aid
Loss of consciousness

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Needlestick injuries and cuts from sharps that are contaminated with another person's blood or other potentially infectious material.

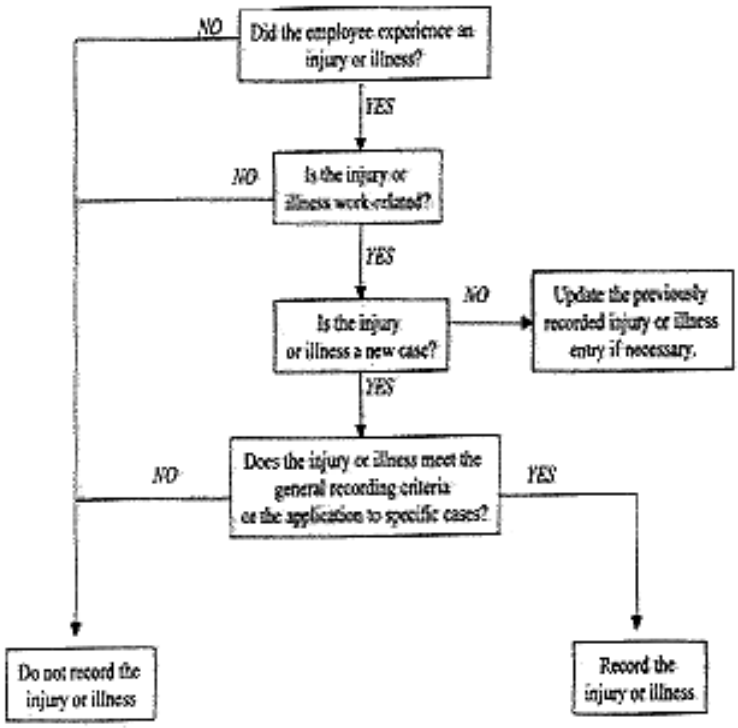
Medical removal under medical surveillance requirements of an OSHA Standard

Occupational hearing loss if the employee has experienced a work-related STS in hearing in one or both ears and the employee's total hearing level is 25 dB or more above audiometric zero in same ear(s) as the STS.

Work-related tuberculosis Cases

How do I decide whether a particular injury or illness is recordable?

The decision tree for recording work-related injuries and illnesses below shows the steps involved in making this determination.



When is an injury/illness considered work-related?

An injury/illness is considered work-related if an event or exposure in the work environment caused or contributed to the condition or significantly aggravated a preexisting condition. Work relatedness is presumed for injuries and illnesses resulting from events or exposures occurring in the workplace, unless an exception specifically applies. See 29 CFR Part 1904.5(b)(2) for exceptions.

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Land Based Activities

The work environment for USACE contractors is defined as the physical location of the project site(s).

Marine Activities

For marine activity accident reporting only, the contractor's responsibility for reporting work-related accidents extends to the following personnel and equipment:

1. Prime Contractor and subcontractor personnel and equipment (P&E) performing work in direct support of the contracted activity. This includes:
    a. Contractor P&E that have reported on-station in a contract-defined work area to begin work under project-funded pay or subcontract status.
    b. Contractor P&E at all sites leased or used during contract work for storage, staging, anchorage, transiting, or deposit of materials.
    c. Contractor P&E during mobilization or demobilization under terms of the contract.
2. Service and supply vendors when they come under the direct operational control of a prime or subcontractor vessel master or project superintendent, such as:
    a. When making final approach to make up to Contractor vessels/plant
    b. While their vessels are made up to Contractor vessels, structures, or equipment.
    c. During delivery of materials or on-board a vessel.
    d. When casting off and navigating away from Contractor vessels/plant.

What is medical treatment?

Medical treatment includes managing and caring for a patient for the purpose of combating disease or disorder. The following are not considered medical treatments and are NOT recordable:

Visits to a doctor or health care professional solely for observation or counseling;
Diagnosis procedures, including administering prescription medications that are used solely for diagnostic purposes; and
Any procedure that can be labeled first aid.

What is First Aid?

First aid means only those treatments specifically listed in 1904.7. They are:

Using non-prescription medication at non-prescription strength (for medications available in both prescription and non-prescription form, a recommendation by a physician or other licensed health care professional to use a non-prescription medication at prescription strength is considered medical treatment for recordkeeping purposes);

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Administering tetanus immunizations (other immunizations, such as Hepatitis B vaccine or rabies vaccine, are considered medical treatment);

Cleaning, flushing or soaking wounds on the surface of the skin;

Using wound coverings such as bandages, Band-Aids™, gauze pads, etc.; or using butterfly bandages or Steri-Strips™ (other wound closing devices such as sutures, staples, etc., are considered medical treatment);

Using hot or cold therapy;

Using any non-rigid means of support, such as elastic bandages, wraps, non-rigid back belts, etc. (devices with rigid stays or other systems designed to immobilize parts of the body are considered medical treatment for recordkeeping purposes);

Using temporary immobilization devices while transporting an accident victim (*e.g.*, splints, slings, neck collars, back boards, etc.).

Drilling of a fingernail or toenail to relieve pressure, or draining fluid from a blister;

Using eye patches;

Removing foreign bodies from the eye using only irrigation or a cotton swab;

Removing splinters or foreign material from areas other than the eye by irrigation, tweezers, cotton swabs or other simple means;

Using finger guards;

Using massages (physical therapy or chiropractic treatment are considered medical treatment for recordkeeping purposes); or

Drinking fluids for relief of heat stress.

How do you decide if the case involved restricted work?

Restricted work activity occurs when, as the result of a work-related injury/illness, an employer or health care professional keeps, or recommends keeping, an employee from doing the routine functions of his or her job or from working the full workday that the employee would have been scheduled to work before the injury or illness occurred.

How do you count the number of days of restricted work activity on the number of days away from work?

Count the number of CALENDAR days the employee was on restricted work activity or was away from work as a result of the recordable injury/illness. Do not count the day on which the injury/illness occurred in this number. Begin counting days from the day after the incident occurs. If a single injury/illness involving both days away from work and days of restricted work activity, enter the total number of days for each. You may stop counting days of restricted work activity or days away from work once the total of either or the combination of both reaches 180 days.

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What if the outcome changes after the record is submitted to the GDA?

If the outcome or extent of injury/illness changes after the record has been submitted to the GDA, the record should be revised and resubmitted to the GDA on or before the date the subsequent monthly record is to be submitted.

What is an Injury?

An injury is any wound or damage to the body resulting from an event in the work environment.

Examples: Cuts, puncture, laceration, abrasion, fracture, bruise, contusion, chipped tooth, amputation, insect bite, electrocution, or a thermal, chemical, electrical, or radiation burn. Sprain and strain injuries to muscles, joints, and connective tissues are classified as injuries when they result from a slip, trip, fall or other similar accidents.

What is an Illness?

Skin diseases or disorders

Skin diseases or disorders are illnesses involving the worker's skin that are caused by work exposure to chemicals, plants, or other substances.

Examples: Contact dermatitis, eczema, or rash caused by primary irritants and sensitizers or poisonous plants; oil acne; fraction blisters, chrome ulcers; inflammation of the skin.

Respiratory conditions

Respiratory conditions are illnesses associated with breathing hazardous biological agents, chemicals, dust, gases, vapors, or fumes at work.

Examples: Silicosis, asbestosis, pneumonitis, pharyngitis, rhinitis, or acute congestion; farmer's lung, beryllium disease, tuberculosis, occupational asthma, reactive airways dysfunction syndrome (RADS), chronic obstructive pulmonary disease (COPD), hypersensitivity pneumonitis, toxic inhalation injury, such as metal fume fever, chronic obstructive bronchitis, and other pneumoconiosis.

Poisoning

Poisoning includes disorders evidenced by abnormal concentrations of toxic substances in blood, other tissues, other bodily fluids, or the breath that are caused by the ingestion or absorption of toxic substances into the body.

Examples: Poisoning by lead, mercury, cadmium, arsenic, or other metals; poisoning by carbon monoxide, hydrogen sulfide, or other gases; poisoning by benzene, benzol, carbon tetrachloride, or other organic solvents; poisoning by insecticide sprays, such as parathion or lead arsenate; poisoning by other chemicals, such as formaldehyde.

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Hearing loss

Noise-induced hearing loss is defined for recordkeeping purposes as a change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more in either ear at 2,000, 3,000, and 4,000 hertz, and the employee's totally hearing level is 25 decibels (dB) or more above audiometric zero (also averaged at 2,000, 3,000, and 4,000 hertz) in the same ear(s).

All other illnesses

All other occupational illnesses.

Examples: Heatstroke, sunstroke, heat exhaustion, heat stress and other effects of environmental heat; freezing, frostbite, and other effects of exposure to low temperatures; decompression sickness; effects of ionizing radiation (isotopes, x-rays, radium); effects of nonionizing radiation (welding flash, ultra-violet rays, lasers); anthrax; bloodborne pathogenic diseases, such as AIDS, HIV, hepatitis B or hepatitis C; brucellosis; malignant or benign tumors; histoplasmosis; coccidioidomycosis.

How do you determine the total hours worked by all employees?

Land Based Activities

Include hours prime and sub-contractor employees worked on the project work site by salaried, hourly, part-time, and seasonal workers, as well as hours worked by other workers subject to the day-to-day supervision by prime and sub-contractor employees (example: temporary help services workers). Also include the hours worked by supply contractor employees associated with materials, services, or equipment provided by suppliers (example: concrete supply drivers and helpers delivering concrete for placement on the work site, dump truck drivers while on site delivering or removing materials, other supply contractor employees who are performing an on-site service) while on the project work site.

Marine Activities

For marine activity reporting only, the contractor's responsibility for reporting work-related hours of exposure extends to the following personnel and equipment:

1. Prime Contractor and subcontractor personnel and equipment (P&E) performing work in direct support of the contracted activity. This includes:
    a. Contractor P&E that have reported on-station in a contract-defined work area to begin work under project-funded pay or subcontract status.
    b. Contractor P&E at all sites leased or used during contract work for storage, staging, anchorage, transiting, or deposit of materials.
    c. Contractor P&E during mobilization or demobilization under terms of the contract.

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2. Service and supply vendors when they come under the direct operational control of a prime or subcontractor vessel master or project superintendent, such as:

a. When making final approach to make up to Contractor vessels/plant.
b. While their vessels are made up to Contractor vessels, structures, or equipment.
c. During delivery of materials or on-board a vessel.
d. When casting off and navigating away from Contractor vessels/plant.

Do not include vacation, sick leave, holidays, or any other non-work time, even if employees were paid for it. If the contractor keeps records of only hours paid or if the contractor has employees who are not paid by the hour (salaried employees), estimate the hours that the employees actually worked on the project.

If this number isn't available, you can use this optional worksheet to estimate it.

Optional Worksheet

_____	**Find** the number of all prime and sub-contractor full-time employees on the project site as defined above for both land based and marine activities for the month.
X_____	**Multiply** by the number of work hours for a full-time employee in a month.
_____	This is the number of full-time hours worked.
+_____	**Add** the number of any overtime hours as well as the hours worked by other employees (part-time, temporary, seasonal, supply contractors, etc.)
_____	**Round** the answer to the next highest whole number. Write the rounded number in the Monthly Exposure Hours blank.

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USACE Summary of Contractor Work-Related Injuries and Illnesses

Month Submitted _____ **Year** _____

US Army Corps of Engineers

Review the Record o verify that the entries are complete & accurate before completing this summary
Using the Record, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the record. If you had no cases write "0". This summary is a cummulative record of the injury/illness experience for the year

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	0	0
(G)	(H)	(I)	(J)

Number of Days

Total days of job transfer or restriction	Total days away from work
0	0
(K)	(L)

Injury and Illness Types

Total number of…

	(M)		(M)
(1) Injury	0	(4) Poisoning	0
(2) Skin Disorder	0	(5) Hearing Loss	0
(3) Respiratory Condition	0	(6) All other illnesses	0

Establishment information

Establishment name

Street

City State Zip

Industry description (e.g., Manufacture of motor truck trailers)

Standard Industrial Classification (SIC), if known (e.g., SIC 3715)

____ ____ ____ ____

or

North American Industrial Classification (NAICS) if known (e.g. 336212)

____ ____ ____ ____

Employment information

Annual average number of employees _____

Total hours worked by all employees last year _____

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USACE PRIME CONTRACTOR
Monthly Record of Work-Related Injuries/Illnesses & Exposure

US Army Corps of Engineers

Month _____
Year _____

In accordance with the provisions of EM 385-1-1, Section 01 Program Management, Paragraph 01.D Accident Reporting and Recording, sub-paragraphs 01.D.05, you (the Prime Contractor) shall provide a monthly record of all exposure and accident experience incidental to the work (this includes exposure and accident experience of the Prime Contractor and its sub-contractor(s). As a minimum , these records shall include exposure work hours and a record of occupational injuries and illnesses that include the data elements listed below. Definitional criteria for each data element is found in 29 CFR Part 1904. If the maintenance of OSHA 300 Logs are required by OSHA, most of this information can be obtained from those logs. If data on log provided below is revised after it is submitted to USACE, Contractor shall provide a revised report to the GDA. You must complete the USACE ENG Form 3394, Report of Accident Investigation Report for all recordable accidents. If you're not sure whether a case is recordable, call your local Safety and Occupational Health Office for help.

USACE Command	
Contractor Name	
Contract Number	
Project Title	
City	State
USACE Office Overseeing Work	

Identify the person						Describe The Case		Classify the case											
(A)		(B1)	(B2)	(B3)	(C)	(D)	(E)	(F)	Using these categories, check ONLY the most serious result for each case:				Enter the number of days the injured or ill worker was:		Check the "injury" column or choose one type of illness:				
Company Name	Prime or Sub (P or S)	Age	Gender	Date Employee Began Work on Job Covered by Contract	Job Title (e.g., Welder)	Date of injury or onset of illness (mo./day)	Where the event occurred (e.g. Loading dock north end)	Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (e.g. Second degree burns on right forearm from acetylene torch)	Death	Days away from work	Remained at work		On job transfer or restriction (days)	Away from work (days)	(M)				
											Job transfer or restriction	Other record-able cases			Injury	Skin Disorder	Respiratory Condition	Poisoning	Hearing Loss	All other Illnesses
									(G)	(H)	(I)	(J)	(K)	(L)	(1)	(2)	(3)	(4)	(5)	(6)
									0	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*

For Government Use Only

TYPE OF WORK ACTIVITY (Choose One):

Construction		Environmental Remed.	
Opn & Main.		Superfund	
Eng. Services		FUDS	
Dredging		IRP	
Rsch. & Dev.		FUSRAP	
Emerg. Opns.		Ordinance/Expl. Cleanup	
Other		Environmental Other	

Type of Contract (Choose One):

Civil Works	
Military Programs	
Other	

Exposure Hours	
Month	
Year to Date	

Certification of Record	
Name of Person Submit. Record	
Signature	
Date	

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SAN FRANCISCO BAY REGION

ORDER NO. R2-2025-0025

REISSUED WASTE DISCHARGE REQUIREMENTS and WATER QUALITY CERTIFICATION for:

U.S. ARMY CORPS OF ENGINEERS, SAN FRANCISCO DISTRICT SAN FRANCISCO BAY FEDERAL CHANNEL MAINTENANCE DREDGING PROGRAM, 2026 THROUGH 2029

The California Regional Water Quality Control Board, San Francisco Bay Region (Water Board), finds that:

A. Purpose of Order

This Order constitutes Waste Discharge Requirements (WDRs) and provides the Clean Water Act (CWA) section 401 water quality certification (Certification) for the U.S. Army Corps of Engineers, San Francisco District (USACE) for the San Francisco Bay Federal Channel Maintenance Dredging Program, 2026 through 2029 Project (Project). USACE previously implemented San Francisco Bay Area navigation maintenance dredging under WDRs and Water Quality Certification Order No. R2-2020-0011 issued for a five-year period starting in 2020, and a one-year water quality certification issued March 21, 2025, to cover dredging year[1] 2025. USACE submitted a Pre-Filing Meeting Request to the California Regional Water Quality Control Board, San Francisco Bay Region (Water Board), on May 15, 2025. A Pre-Filing Meeting was held on May 23, 2025. On July 2, 2025, USACE submitted a complete and valid request for certification verifying that the Project described below will not violate state water quality standards. The Water Board provided public notice of the request for certification of the Project and for public comments from August 29, 2025 through September 29, 2025 pursuant to CWA section 401(a)(1) and Cal. Code Regs. (CCR), tit. 23, section 3858. Per Code of Federal Regulations (CFR), title 40, section 121.6, the federal agency and state certifying authority may jointly agree in writing to the reasonable period of time for the state certifying authority to act on a request for certification, provided the reasonable period of time does not exceed one year from the date that the request for certification was received. On July 18, 2025, USACE and the Water Board agreed in writing to a reasonable period of time of 180 days (i.e., until December 29, 2025).

[1] Dredging year refers to the calendar year in which dredging is planned to begin.

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USACE authorizes its own discharges pursuant to CWA section 404 (33 U.S. Code (USC) 1344, 40 CFR section 336.1(a)) and section 10 of the Rivers and Harbors Act of 1899 (33 USC 403).

For the Certification, the Water Board is required to evaluate whether the Project, including its operation activities, will comply with applicable water quality requirements per 40 CFR section 121.3(a). The Water Board must include conditions, i.e., requirements, in a certification to assure that the activity will comply with applicable water quality requirements per 40 CFR section 121.3(b). For the WDR, the Water Board must implement the San Francisco Bay Water Quality Control Plan (Basin Plan) and protect beneficial uses, among other requirements, per Water Code section 13263.

B. Project Scope

The Water Board and USACE jointly prepared the Environmental Assessment/Environmental Impact Report for San Francisco Bay Federal Channels Operation and Maintenance Dredging and Sediment Placement Activities, Dredging Years 2025-2034 (EA/EIR). The EA/EIR along with the application for this Order described above in Finding A Purpose of Order describe the Project. The Project and its history are summarized below in Finding 1 through 17.

1. Project Overview

USACE maintains the navigability of federally-authorized channels at the entrance to and within San Francisco Bay. USACE removes accumulated sediment (primarily silt and clay) by hydraulic (e.g., self-propelled hopper, hydraulic cutter head) or mechanical (e.g., clamshell) dredges and typically disposes of the dredged sediment by either self-propelled hopper, dump scow, or by use of a pipeline to transport sediment to beneficial reuse sites. Dredging will occur consistent with the standard practices described in the EA/EIR Section 2.3.1.5.

Dredging within San Francisco Bay is managed cooperatively through the Long-Term Management Strategy (LTMS) for the Placement of Dredged Material in the San Francisco Bay Region. The Water Board and USACE both participate in the LTMS with the U.S. Environmental Protection Agency (U.S EPA), the San Francisco Bay Conservation and Development Commission (BCDC), and the California State Lands Commission (CSLC). These LTMS agencies evaluated alternative management options for disposal and reuse of dredged sediment over a 50-year planning horizon in a Policy Environmental Impact Statement/Programmatic Environmental Impact Report (EIS/EIR) completed in October 1998. The EIS/EIR indicated that dredged sediment disposal may have adverse impacts on the beneficial uses of the waters of San Francisco Bay and that in-Bay disposal should be reduced from historical levels. As a result, LTMS agencies decreased disposal of sediment within San Francisco Bay. The LTMS also created the Dredged Material Management Office (DMMO), a working group with representatives of the state and federal agencies with regulatory authority over Bay Area dredging projects.

This WDR and Certification applies only to maintenance dredging, which is performed on a periodic basis to previously authorized and historical depths and removes recently deposited

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sediment. This Certification does not apply to “new work” dredging, which removes sediment to new authorized depths and may involve dredging consolidated sediment or historically-contaminated sediment.

2. Dredging Project Summary

USACE proposes to perform maintenance dredging at several locations in the Bay Area (Figure 1). USACE’s maintenance dredging program provides for maintenance of federal navigation channels inside San Francisco Bay. USACE plans to dredge channels critical to the region’s maritime trade and the economy of the region and nation. The Richmond Outer Harbor, Richmond Inner Harbor, Oakland Inner and Outer Harbor, Pinole Shoal (San Pablo Bay), Suisun Bay Channel and New York Slough, and Redwood City Harbor (not including the San Bruno Channel) navigation channels are expected to be dredged annually or biennially. The San Rafael Creek, Napa River and Petaluma River (upper portion and across the flats) navigation channels are expected to be dredged once during this Order. San Bruno Channel is infrequently dredged and may or may not be dredged once during this Order.

USACE also annually dredges the Main Ship Channel (MSC), which is outside of the San Francisco Bay. The eastern portion of this channel is within the seaward limit of state submerged lands (three nautical miles from the coastline) and is therefore within Water Board jurisdiction. Dredging, however, has not taken place in this portion of the channel over the past 20 years and USACE does not expect to dredge this portion of the channel during this Order. Nevertheless, the Main Ship Channel is included for coverage in this Order to allow USACE to dredge any portion of the channel where shoaling occurs, and to provide coverage for placement or disposal at sites within Water Board jurisdiction (i.e. SF-17 or a beach nourishment project at Ocean Beach, San Francisco).

3. Phased Implementation of Dredging

USACE is implementing a phased approach to maintenance dredging during this four-year Order. In dredging year 2026, USACE will likely conduct dredging and placement following the Phase 1 description in Table 1. For this Phase, the government hopper dredge Essayons, or similarly-sized hopper dredge, would be used to dredge the MSC and Richmond Outer Harbor. At Pinole Shoal, dredging would be deferred until 2027. All other channels would be dredged mechanically or with cutterhead. Phase 1 represents the current, ongoing dredging operation as implemented over the last 9 years. In 2026, it is possible USACE will implement Phase 2 as described in Table 1. In Phase 2, the government hopper dredge Essayons, or similarly-sized hopper dredge, would be used to dredge the MSC and the Richmond Outer Harbor and the Pinole Shoal Channels. A channel slated for ocean disposal at SF-DODS, either Richmond Inner Harbor or Oakland Harbor, will be split between placement in-Bay and at a non-aquatic beneficial reuse site to achieve additional beneficial reuse of dredged sediment while maintaining the same cost as ocean disposal. The decision on whether Phase 1 or Phase 2 will be implemented by USACE will depend on whether Phase 2 is feasible after considering logistics and cost. Logistical and cost considerations that will affect whether Phase 2 is feasible include, but are not limited to, equipment availability, contracting requirements, and implementation schedule.

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For dredging years 2027, 2028, and 2029, USACE will either implement Phase 2 as described above, or might be ready to implement Phase 3. In this phase, the government hopper dredge Essayons, or similarly-sized hopper dredge, would be used to dredge as described in Phase 2, and add additional hopper dredging in Richmond Inner Harbor and/or part of Oakland Harbor. USACE would utilize cost savings from additional hopper dredging at those channels to place additional sediment from other channels at an approved non-aquatic beneficial reuse site, while maintaining the same overall cost for the annual dredging program. Phase 3 is described in detail in Table 1. The decision on whether Phase 2 or Phase 3 will be implemented by USACE will depend on whether Phase 3 is feasible after considering logistics and cost. Logistical and cost considerations that will affect whether Phase 3 is feasible include, but are not limited to, equipment availability, contracting requirements, and implementation schedule.

When implementing Phase 2 or 3, USACE will minimize in-Bay hopper dredging entrainment impacts by placing dredged sediment at a non-aquatic tidal wetland restoration site to benefit longfin smelt and other Bay species.

The volume of beneficial reuse to minimize/offset impacts will be calculated by first using the following equation and the actual volume of water and sediment pumped by the hopper dredge to calculate acres of restoration:

$$Acres\ of\ restoration = \frac{800\ acres\ \times Volume_{water/sediment\ pumped\ by\ hopper\ dredge}}{3.0\ million\ acre-feet}$$

Then, the acres of restoration will be converted to a volume of dredged sediment for beneficial reuse using the following equation:

$$Volume\ of\ Beneficial\ Reuse = \frac{acres\ of\ restoration \times \$1{,}325{,}000\ per\ acre}{Cost_{Increment}\ per\ cubic\ yard} \times 2$$

In the rare event that logistical or cost considerations make it infeasible to implement Phase 3, USACE may shift back to implementing Phase 1 or 2 at any point during the period of this Order. The lack of available equipment would be the most likely consideration that would make Phase 3 infeasible.

USACE is using a phased implementation because all three phases are eligible as the Federal Standard Base Plan[2]. For dredged sediment placement, USACE fully considers all three phases in Table 1 practicable and reasonable alternatives on an equal basis, including the use of dredged sediment beneficially, to identify the Federal Standard (33 CFR Parts 335-338). “Base Plan” is an operational manifestation of the Federal Standard because it defines the disposal or

[2] The Federal Standard Base Plan means the dredged material disposal alternative or alternatives identified by the Corps which represent the least costly alternatives consistent with sound engineering practices and meeting the environmental standards established by the 404(b)(1) evaluation process or ocean dumping criteria (33 CFR § 335.7).

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placement costs that are assigned to the “navigational purpose” of the project (USACE Engineer Regulation 1105-2-103).

Lastly, in any given year, USACE may partner with a local sponsor to cost share the incremental cost of beneficial reuse or may fund the incremental cost if suitable funds were provided to USACE through federal appropriations. This would increase beneficial reuse beyond what is planned in Phase 1, 2, or 3. In this situation, the exact channel or channels from which sediment would be taken to beneficial reuse might be dictated by the funding source or be determined by USACE. Further, the impacts from the Project in this situation would be less than planned in Phases 1, 2, or 3 because temporary disturbance from sediment disposal in the Bay, which affects turbidity, would be less as a result of less sediment being disposed in the Bay. Likewise, if more sediment was beneficially reused during Phase 3, entrainment impacts from hopper dredging would be less because it is only logistically feasible for USACE to beneficially reuse sediment that is generated through mechanical or cutterhead dredging.

4. Dredging Volumes and Timing

Tables 1 and 2 summarize USACE’s dredging activities, including average and maximum estimated dredging volumes per episode, and the Federal Standard placement sites for the Project. The volume estimates are based on historical dredging from 2000 to 2022.

Based on the range of volumes that USACE has proposed (Table 1 and 2) and previously conditioned dredging volume limits, the maximum total dredging volume within San Francisco Bay is 10.32 million cubic yards (mcy) and the maximum total dredging volume in the San Francisco Main Ship Channel (MSC) west of the Golden Gate, outside San Francisco Bay, is 1.8 mcy for four years (2026 through 2029). USACE expects to begin dredging in May each year and to complete dredging by the spring of the following calendar year. Exact timing of work will be determined on a year-by-year basis by USACE based on accretion rates, channel depths, funding availability, and equipment availability. This Order authorizes and certifies maintenance dredging activities through dredging year 2029, which includes dredging that may extend into May 2030.

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Table 1. 2025 San Francisco Bay Dredging Project Summary

Project	Maintenance Depth (feet below MLLW)[1]	Likely Dredge Type	Alternate Dredge Method	Dredging Recurrence (Years)	Average Volume Per Episode (cy)[2]	Maximum Volume Per Episode (cy)[2]	Phase 1[3]	Phase 2[3]	Phase 3[3]
Richmond Outer Harbor	45	Hopper	Clamshell-Bucket or Cutterhead	1-2	210,000[4]	730,000	SF-10[5, 6]	SF-11[5, 6]	SF-10[5, 6]
Richmond Inner Harbor	38	Clamshell-Bucket or Hopper	Cutterhead	1	300,000	630,000	SF-DODS	SF-11[5] and Non-Aquatic Beneficial Reuse	SF-11[5, 6]
Oakland Inner and Outer Harbor	50	Clamshell-Bucket or Hopper	Cutterhead	1	750,000	1,225,000	SF-DODS	SF-DODS	SF-11[5, 6] and Non-Aquatic Beneficial Reuse
Pinole Shoal	35	Hopper	Clamshell-Bucket	1-2	150,000[4]	560,000	SF-10[5, 6]	SF-10[5, 6]	SF-9[5, 6]
Suisun Bay Channel and New York Slough[7, 8]	35	Clamshell-Bucket	N/A	1	165,000	425,000	SF-16[5]	SF-16[5] and Non-Aquatic Beneficial Reuse	SF-16[5] and Non-Aquatic Beneficial Reuse
Redwood City Harbor (Harbor Channel)	30	Clamshell-Bucket	Cutterhead	1	180,000	650,000	SF-11[5]	SF-11[5]	SF-11[5]
Redwood City Harbor (San Bruno Channel)	30	Hopper	Clamshell-Bucket	Infrequent	30,000	30,000	SF-11[5]	SF-11[5]	SF-11[5]

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Project	Maintenance Depth (feet below MLLW)[1]	Likely Dredge Type	Alternate Dredge Method	Dredging Recurrence (Years)	Average Volume Per Episode (cy)[2]	Maximum Volume Per Episode (cy)[2]	Phase 1[3]	Phase 2[3]	Phase 3[3]
San Rafael Creek	6-8	Clamshell-Bucket	Cutterhead	4-6	110,000	280,000	SF-11[5]	SF-11[5]	SF-9[5]
Napa River	9	Cutterhead	Clamshell-Bucket	6-11	110,000	165,000	Local Sponsor Provided Upland	Local Sponsor Provided Upland and Non-Aquatic Beneficial Reuse	Local Sponsor Provided Upland and Non-Aquatic Beneficial Reuse
Petaluma River Channel	8	Cutterhead	Clamshell-Bucket	4-7	150,000	210,000	Local Sponsor Provided Upland	Local Sponsor Provided Upland and Non-Aquatic Beneficial Reuse	Local Sponsor Provided Upland and Non-Aquatic Beneficial Reuse
Petaluma River (Across the Flats)	8	Clamshell-Bucket	Cutterhead	3	70,000	330,000[9]	SF-10[5]	SF-10[5]	SF-10[5]
Sea Trials for Hopper Maintenance	N/A	Hopper	N/A	N/A[10]	12,000	12,000	SF-11[5] or SF-8	SF-11[5] or SF-8	SF-11[5] or SF-8

Notes:

[1] A 2-foot overdredge allowance beyond these depths is authorized, but not shown.

[2] Average and maximum volumes are based on dredging volumes from 2000 through 2022 (EA/EIR).

[3] USACE may divert any suitable sediment, as determined by the DMMO, from the Federal Standard placement site to beneficial reuse for any of the phases when funding outside the Operation and Maintenance Program is available.

[4] Represents the average volume per episode when the channel is dredged annually.

[5] Also includes other in-Bay disposal sites.

[6] USACE may place the last hopper dredged load at SF-8, the San Francisco bar Channel Disposal Site.

[7] Aside from regularly scheduled maintenance of this navigation project, USACE would take urgent action outside the work window, as needed, to remove the hazardous shoaling at Bulls Head Reach.

[8] Due to rapid shoaling at Bulls Head Reach, this portion of the Suisun Bay Channel may be advance maintenance dredged by up to 4 feet, plus an additional 2 feet of allowable overdepth.

[9] Petaluma River (Across the Flats) is dredged infrequently, this maximum volume is from 1994 dredging.

[10] Sea trials for hopper dredge maintenance will happen as needed, up to twice, when the USACE owned ships enter dry dock in the San Francisco Bay.

cy = cubic yards

mcy = million cubic yards

SF-9 = Carquinez Strait Disposal Site

SF-10 = San Pablo Bay Disposal Site

SF-11 = Alcatraz Island Disposal Site

SF-16 = Suisun Bay Disposal Site

SF-DODS = San Francisco Deep Ocean Disposal Site (55 miles west of Golden Gate)

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Table 2. Main Ship Channel Dredging Summary

Project	Maintenance Depth (feet below MLLW)[1]	Likely Dredge Type	Alternate Dredge Method	Dredging Recurrence (Years)	Average Volume Per Episode (cy)[2]	Maximum Volume Per Episode (cy)[2]	Phase 1[3]	Phase 2[3]	Phase 3[3]
San Francisco Harbor – Main Ship Channel	55	Hopper	N/A	1	345,000	615,000	SF-8 and SF-17	SF-8 and SF-17	SF-8 and SF-17

Notes:

[1] Typical 2-foot overdredge allowances beyond these depths are not shown.

[2] Average and maximum volumes are based on dredging volumes from 2000 through 2022 (EA/EIR).

[3] USACE may divert any suitable sediment, as determined by the DMMO, from the Federal Standard placement site to beneficial reuse for any of the phases when funding outside the Operation and Maintenance Program is available.

SF-8 = San Francisco Bar Channel Disposal Site

SF-17 = Ocean Beach placement site (near shore site, includes the Ocean Beach nearshore demonstration site

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5. Dredging Locations

The general locations of the channels are depicted collectively in Figure 1. The channel boundaries are more precisely shown on the Project maps provided in Figures 2 through 10. The actual shoaling locations within each channel will be determined on a quarterly basis by USACE. Dredging will be confined within the channel boundaries shown in Figures 1 through 10 and shall not exceed the project depth, as shown in Tables 1 and 2, plus an overdredge depth of 2 feet. Placement of dredge sediment will be confined to the boundaries of the placement sites depicted in Figures 1 through 10.

6. Contaminant Resuspension

Dredging can cause resuspension of contaminants bound to the sediment. Therefore, USACE is required to characterize sediment quality and place that sediment in appropriate locations. When contaminants, such as dichlorodiphenyltrichloroethane, polychlorinated biphenyls, and mercury, are detected in the Project area at elevated concentrations that may pose a threat to aquatic life, mechanical dredging will be undertaken with a closed environmental clamshell bucket to minimize potential adverse effects from the release of sediment with elevated contamination levels. USACE shall coordinate with the Water Board, in conjunction with the DMMO, to determine the extent of elevated concentrations and appropriate measures during the sediment characterization and episode approval process pursuant to Provision 2 of this Order.

7. Disposal and Placement Sites

The dredged sediment will be disposed at a combination of aquatic disposal sites or placed at tidal wetland beneficial reuse sites over the term of this Order. The location in which dredged sediment will be disposed or reused will be based on the physical, chemical, and biological suitability of the sediment for the dredge footprint and other technical, logistical, and cost practicability considerations. Disposal sites may include USACE-designated unconfined aquatic disposal locations within San Francisco Bay (henceforth referred to as in-Bay disposal), which include the following sites: Carquinez Strait Disposal Site (SF-9), San Pablo Bay Disposal Site (SF-10), Alcatraz Island Disposal Site (SF-11), and Suisun Bay Disposal Site (SF-16). Disposal may also take place in the Pacific Ocean at San Francisco Deep Ocean Disposal Site (SF-DODS). SF-DODS is beyond the 3-mile offshore limit of Water Board jurisdiction and is regulated by the U.S. EPA, under the federal Marine Protection, Research and Sanctuary Act.

Sand dredged from the San Francisco MSC may be placed for beneficial reuse, such as for nourishment of the San Francisco littoral cell to help combat erosion at Ocean Beach. USACE is currently conducting a beach nourishment beneficial reuse pilot demonstration study at the Ocean Beach Near Shore Demonstration Site, which is encompassed by the future Ocean Beach placement site (SF-17), in waters of the Pacific Ocean adjacent to the south-of-Sloat-Boulevard stretch of Ocean Beach (Figure 8). SF-17 is located where waves can potentially feed sediment toward the southern reach of Ocean Beach, which may ultimately help mitigate ongoing shoreline erosion in the area that threatens significant municipal infrastructure,

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including segments of the Great Highway and major sewer lines running underneath and alongside it.

Additionally, sand has historically been disposed at the San Francisco Bar Channel Disposal Site (SF-8). Pre-site designation studies concluded that the area would be dispersive, meaning that waves would spread the sand shoreward to the surf zone and beach at such a rate that accumulation would be minimal. However, surveys indicate that spreading occurs at a much slower rate than expected and that underwater shoals impair safe operation of hopper dredges during rough seas. USACE therefore limits use of SF-8 to the extent feasible. Sand from in-Bay channels and non-USACE projects may be considered beneficial reuse when placed in the eastern portion of SF-8 that is within the three nautical mile limit of Water Board jurisdiction because it is adding new sand to the San Francisco Bar and littoral transport system. Sand placed at SF-8 from the San Francisco MSC is not considered beneficial reuse because the dredged sediment is already within the San Francisco Bar and littoral transport system.

USACE may also place dredged sediment at a tidal wetland beneficial reuse site such as Cullinan Ranch Restoration Project (Cullinan) or Montezuma Wetlands Restoration Project (Montezuma), which are the only currently approved tidal wetland beneficial reuse sites.

Should USACE place some or all of the dredged sediment at Cullinan, the dredged sediment will be transported to Cullinan in the San Pablo Bay National Wildlife Refuge by barge, where it will be beneficially reused to restore tidal wetlands for the endangered salt marsh harvest mouse and other species. Dredged sediment placement and management at Cullinan is regulated under Waste Discharge Requirements Order No. R2-2010-0108. All dredged sediment and any water entrained during dredging will be completely contained within the placement cell. Cullinan is near to meeting its dredged sediment needs and is expected to reach capacity within the term of this Order.

Should USACE place some or all of the dredged sediment at Montezuma, the dredged sediment will be transported to Montezuma in the Suisun Marsh by barge, where it will be beneficially reused to restore tidal marsh habitat for the endangered salt marsh harvest mouse and other species. Dredged sediment placement and management at Montezuma is regulated under Waste Discharge Requirements Order No. R2-2012-0087. Montezuma still needs approximately 13 million cy and is not expected to reach capacity during the term of this Order.

Over the term of this Order a new beneficial reuse placement site is expected to be permitted at Bel Marin Keys Unit V (Bel Marin Keys). Bel Marin Keys is the second phase of the Hamilton Wetlands Restoration project and adds 1,600 acres of wetlands including 900 acres of tidal wetlands and 680 acres of non-tidal and freshwater wetlands, as well as upland, subtidal, and non-wetland tidal habitats, for a total acreage of approximately 2,600 acres for the expanded site. This Order includes coverage for the placement of dredged sediment at any fully evaluated and permitted beneficial reuse placement site.

The EA/EIR explored potential near-shore strategic placement sites to beneficially reuse dredged sediment through shallow water placement methods in San Francisco Bay, but given

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the lack of site-specific details, any strategic placement site will require site-specific environmental impact evaluation under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), and separate permitting under the Porter-Cologne Water Quality Control Act (Porter-Cologne) and Clean Water Act section 401 prior to use. This includes implementation of Alternative 4 in the EA/EIR, described below in Finding 18; therefore, implementation of this alternative is not authorized by this Order.

8. Advance Maintenance

Advance maintenance dredging is utilized in areas where typical shoaling patterns create navigational restrictions on an ongoing basis. Advance maintenance is restricted to Suisun Bay Channel and Bulls Head Reach, which exhibit rapid shoaling.

9. Knock-Down Dredging

USACE may need to occasionally perform knock-down dredging or grading of underwater shoals, to supplement routine maintenance dredging episodes. Regular maintenance dredging completely removes the shoaled sediments from a Project area, but knock-down dredging is the redistribution of shoaled sediments within a Project area. Knock-down dredging is most useful in supplementing routine maintenance dredging when time constraints may not allow for normal dredging or when shoals threaten safe navigation only in a small portion of a Project area that is otherwise at or below its permitted depth. Conducting separate knock-down operations is often more efficient than mobilizing dredging equipment and transporting the sediment to a disposal site. Knock-down dredging is typically performed by dragging an I-beam towed by a boat across a shoal to redistribute the shoaled sediment within the maintenance Project area. The temporarily redistributed sediment is subsequently removed during a regular dredging event. Knock-down events occurring separately from full dredging episodes, or in combination with a dredging episode occurring in a different location within the same channel, will be subject to the same coordination with the DMMO as full dredging episodes. USACE anticipates knocking down no more than 15,000 cy in each deep draft channel (which includes Richmond Inner Harbor, Oakland Inner and Outer Harbor, Pinole Shoal, and Suisun Bay, and Redwood City channels). Depending on the volume of sediment, contaminant concentrations, and other project-specific details, water quality monitoring may be required and will be coordinated during the episode approval process described in Provision 7 of this Order.

10. Emergency Dredging

USACE is authorized by Congress to ensure that all navigation channels are dredged to a safe depth. If an area is found to be an unacceptable hazard to life or navigation or threatens to cause an immediate and unforeseen significant economic hardship if corrective action is not taken quickly, USACE may carry out dredging on a limited basis even though that project is not scheduled for dredging. In such cases, an expedited testing and approval process is often necessary. USACE does not anticipate performing more than one emergency dredging episode per year consisting of less than 40,000 cy. The Water Board recognizes the need for expedited review of emergency dredging episodes and expects that USACE will still follow the procedures outlined in Provision 7 of this Order for written approval of emergency dredging episodes.

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In atypical conditions, such as after an extraordinary storm event, a shoaling situation may be such an immediate hazard that even an expedited review process is not feasible. The Water Board recognizes that USACE has the authority to remove the immediate hazard without the Executive Officer's approval pursuant to this Order.

11. Disposal and Reuse of Dredged Sediment History

The LTMS agencies endorsed the following long-term goals in the LTMS Management Plan (Management Plan) approved by the LTMS Executive Committee in July 2001:

1. Maintain in an economically and environmentally sound manner those channels necessary for navigation in San Francisco Bay and Estuary and eliminate unnecessary dredging activities in the Bay and Estuary.
2. Conduct dredged material disposal in the most environmentally sound manner.
3. Maximize the use of dredged material as a resource.
4. Maintain the cooperative permitting framework for dredging and disposal applications.

The LTMS agencies determined that these goals can be accomplished in part by maximizing beneficial reuse of dredged sediment suitable for habitat restoration along the Bay margins and disposing suitable dredged sediment outside the Bay only when beneficial reuse is not practicable. As climate change science evolved and models predict even greater sea level rise, it is now recognized that the low-lying areas of the Bay, which were historically marshes, are in jeopardy of being inundated both by rising sea level and storm surges that are occurring more frequently and at greater intensity than previously experienced. In addition, in the mid-2000s, scientists from the U.S. Geological Survey identified a significant reduction in suspended sediment loading from the Sacramento/San Joaquin River system. Less sediment in suspension and circulation within the Bay impairs the ability of shorelines, mudflats, and tidal wetlands to withstand erosion and inundation, especially as sea level rises. In 2021, San Francisco Estuary Institute released the Sediment for Survival report, which estimates that approximately 477 mcy of sediment are needed by 2100 to maintain current mudflats, wetlands, and areas slated for restoration in the San Francisco Bay Area. The report describes that all current major sources of sediment, including dredging, can only meet a fraction of this total need. Accordingly, management practices need to change quickly to access additional sources of sediment, such as dredged sediment that is currently being disposed at SF-DODS. To accomplish this, regulatory, policy, and economic efforts need to be undertaken to maximize the reuse of known sediment sources, such as dredging, while also looking for new sediment sources. The Water Board therefore encourages beneficial reuse of suitable dredged sediment as one component of regional adaptation to climate change.

The Management Plan included an in-Bay disposal target of 1.25 mcy annually. To determine whether this target is being achieved, the volume of sediment disposed in-Bay is averaged over a blocked three-year period and compared to the 1.25 mcy threshold. To allow time for planning, budgeting, and creating alternatives to in-Bay disposal, the Management Plan established a 12-year transition period for achieving the in-Bay disposal target since in-Bay

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disposal volumes were in the 2 to 8 mcy range per year in the 80s and 90s. The transition period's disposal volume limits were voluntary as long as the long-term target was met overall. Public assurance that in-Bay disposal would in fact decrease was provided by language identifying when strict volume allocations to individual dredgers would be considered by the Water Board (i.e., a disposal allocation trigger). The transition period successfully concluded in 2012 with in-Bay disposal targets met every three years as described in the Management Plan. Since 2013, if the total average annual in-Bay disposal volume from the blocked three-year averaging period exceeds 1.25 mcy, the Management Plan indicates that the Water Board will consider imposition of mandatory in-Bay disposal allocations for all dredgers. In considering whether to impose allocations, the Water Board and other LTMS agencies are not to rely solely on a comparison of in-Bay disposal volumes to the 1.25 mcy target volume, but instead to consider trends and projections into the future, demonstrated efforts to support beneficial reuse, and any other relevant factors, among other criteria (LTMS Management Plan, section 6.5.2). In addition, in accordance with the Basin Plan, the Water Board will consider imposing allocations if in-Bay volume triggers are exceeded. As such, even if the 3-year average in-Bay disposal volume exceeds 1.25 mcy, imposing allocations will be considered, but is not specifically required by the Management Plan or Basin Plan.

USACE is the largest dredger in the Bay Area. Therefore, efforts by USACE to reduce in-Bay disposal and maximize beneficial reuse are critical to successful implementation of the LTMS long-term goals. From 2012 to 2019, USACE's dredging accounted for approximately 70 percent of the total volume of sediment dredged in San Francisco Bay by all dredgers. USACE's combined average annual in-Bay disposal volume over the first two post-2012 LTMS averaging periods (2013 through 2015 and 2016 through 2018) was 0.816 mcy per year. The 1.25 mcy average in-Bay disposal target was not exceeded during these averaging periods. For 2019 through 2023, USACE maintained a much lower average annual in-Bay disposal volume of 0.600 mcy due to the State Coastal Conservancy sharing the cost of beneficial reuse for Redwood City Harbor starting in 2019[3], and Section 1122 of the Water Resource Development Act (Section 1122) funds. USACE's disposal in combination with other dredgers did not exceed the 1.25 mcy in-Bay disposal target average since 2010.

Beneficial reuse is increasingly important to LTMS in light of the sediment needs of the region and has increased substantially due to a mix of approaches in the past few years. In 2022, USACE conducted the Oakland Harbor 50/50 Pilot Project, that placed approximately 432,000 cy of sediment at Cullinan Ranch for beneficial reuse and disposed 244,000 cy of sediment in-Bay at SF-11, for the same cost as 100 percent disposal at SF-DODS. This pilot project was successful in conducting beneficial reuse within the Federal Standard through cost savings from changing the disposal site location and is the approach used in Phase 2 of the Project. For 2023 and 2024, USACE received $19 million in Section 1122 funding to conduct beneficial reuse

[3] The State Coastal Conservancy provided $5,700,000 to USACE to share the incremental cost between the Federal Standard placement site and beneficial reuse sites for Redwood City Harbor.

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outside of the Federal Standard Base Plan. In 2023, this resulted in approximately 1.8 mcy of sediment beneficially reused at Montezuma and approximately 90,000 cy of sediment from Redwood City Harbor being placed at Eden Landing as a near-shore strategic placement pilot project. Additional funding for beneficial reuse is not guaranteed, but may be available over the term of this Order.

12. Integrated Alternatives Analysis

This Order requires USACE to submit an annual Integrated Alternatives Analysis (IAA) of disposal options for dredged sediments from the Project under Provision 6 of this Order. The IAA is required to implement CWA section 404(b)(1) and the State Policy for Water Quality Control: State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (Dredge and Fill Procedures) (CWA section 404(b)(1), 40 CFR section 230.10(a and d), and Dredge and Fill Procedures sections IV.A.1.h. and IV.B.1.a.).

13. Regional Monitoring Program

This Order requires USACE to provide a technical report that documents monitoring efforts designed to evaluate the water quality impacts of the dredged material discharge on waters of the State, pursuant to California Water Code (Water Code) section 13383. The Water Board requires dischargers of waste to the Bay, including those who dispose of dredged sediment, to monitor the impacts of their discharges. This monitoring provides necessary information about ambient Bay water quality and potential long-term impacts of dredged sediment disposal. USACE has and will continue to elect to participate in the San Francisco Estuary Regional Monitoring Program for Trace Substances (RMP) to fulfill this requirement. The RMP is a coordinated and comprehensive long-term monitoring program with the goal of monitoring water and sediment quality to provide the scientific foundation for managing and improving the health of the San Francisco Bay aquatic ecosystem.

The Water Board has implemented the RMP since 1992. The RMP is a coordinated and comprehensive long-term monitoring program with the goal of monitoring water and sediment quality to provide the scientific foundation for managing and improving the health of the San Francisco Bay aquatic ecosystem. Additionally, the RMP includes special and pilot studies to answer management questions linked to actions that will improve the health of the San Francisco Bay aquatic ecosystem. USACE is a participant in the RMP and will contribute $508,000 annually, following the dredging season, to the program by funding the United States Geological Survey (USGS) to monitor suspended sediments at an array of locations in the Bay under Provision 9 of this Order. This monitoring has and will continue to improve understanding of sediment transport processes and create a comprehensive database for various numerical modeling efforts.

14. Sediment Characterization

The Water Board participates in the DMMO, a working group with representatives of the state and federal agencies with regulatory authority over Bay Area dredging projects. Staff representatives of the Water Board, USACE, U.S. EPA, BCDC, and SLC meet regularly to

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jointly review dredging projects and make consensus-based recommendations to their respective agencies about the suitability of sediments for proposed placement sites based on sediment testing conducted according to DMMO testing requirements. Material proposed to be dredged and placed at ocean, inland aquatic, or beneficial reuse sites requires sediment characterization to predict the environmental impacts associated with dredging and dredged material placement activities. The objective of the sediment testing requirements is to ensure that dredging does not resuspend contaminated sediment, and placement and disposal of dredged material at designated sites occurs without causing degradation to the surrounding environment. Representatives from the California Department of Fish and Wildlife (CDFW), the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) also participate in the DMMO in an advisory capacity. Each DMMO agency retains its independent decision-making authority, but the group has significantly reduced project review time by concurrent consideration of projects. USACE handles the logistics for the operation of the DMMO.

Sediment is characterized according to the tiered testing protocols described in the Ocean Testing Manual, Inland Testing Manual, and Guidelines for Implementing the Inland Testing Manual in the San Francisco Bay Region. Tier I testing exemptions rely on existing data, with no additional testing or minimal physical and chemical analyses to verify that site conditions have not changed. Tier I reports include previous testing results, spill data, and information regarding any changes to the channel that could affect sediment quality. Tier III testing is a full suite of routine physical characteristics, chemistry, bioassays, and bioaccumulation analyses. Physical characteristics include grain size and total organic carbon; chemistry includes metals, butyltins, polycyclic aromatic hydrocarbons, pesticides, polychlorinated biphenyls, and sometimes dioxins and furans.

To characterize dredged sediment for disposal or placement, USACE will conduct full Tier III sediment sampling and characterization and submit completed reports to the DMMO for approval every three to five years for annually dredged channels, or as determined by the DMMO for all other channels. USACE will submit to the DMMO requests for Tier I testing exemptions for dredging episodes in channels that have Tier III results from the last three to five years, or as determined by the DMMO.

This Order requires that dredging episodes carried out will be reviewed by the DMMO for a recommendation on the suitability for disposal or beneficial reuse of the dredged sediment. Each dredging episode must be approved in writing by the Executive Officer pursuant to Provision 7 of this Order.

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15. Eelgrass

Eelgrass (*Zostera marina*) is a foundational species for SF Bay, supporting much of the biodiversity in the bay ecosystem. Eelgrass beds serve as nurseries for young fish and foraging areas for many species of fish, invertebrates, and birds. Eelgrass habitat is a high priority area for conservation and management. Eelgrass is protected under the CWA Section 404(b) (1) "Guidelines for Specification of Disposal Sites for Dredged or Fill Material," Subpart E, "Potential Impacts on Special Aquatic Sites." It has also been identified as Essential Fish Habitat for various life stages of fish species managed by fishery management plans under the Magnuson-Stevens Act, as established by NMFS. The California Eelgrass Mitigation Policy and Implementing Guidelines of October 2014, states a goal of no net loss of eelgrass habitat function in California and provides guidance for conducting surveys, impact assessment, and compensatory mitigation (NOAA Fisheries 2014).

Eelgrass in areas next to or downstream from dredging operations may be indirectly impacted by turbidity and increased sedimentation. Dredging-related turbidity plumes may temporarily impede light transmission into the water column. Since light penetration in the water column is essential to eelgrass growth and survival, variations in water quality and turbidity can readily impact them. The viability of eelgrass in beds next to dredging activities may also be impacted by sediment that settles on eelgrass blades.

The San Francisco Bay Conservation and Development Commission's website has a web-based tool, San Francisco Bay Eelgrass Impact Assessment Tool (Tool), for assessing the potential impacts of dredging projects on eelgrass. The Tool, which is located at San Francisco Bay Eelgrass Impact Assessment Tool | BCDC Open Data Portal (arcgis.com), shows 1) the maximum extent of eelgrass beds that have been surveyed in San Francisco Bay as of 2021; 2) a 45-meter growth buffer for potential bed expansion (direct impact buffer zone); and 3) a 250-meter turbidity buffer around eelgrass for determining indirect impacts (indirect impact buffer zone). The Water Board used the Tool to map the location of the Project, relative to the location of eelgrass beds and adjacent buffer zones. The Tool showed that some areas of the Project are within the 45-meter direct impact buffer zone or the 250 meter indirect impact buffer zone.

The majority of USACE channels included in this Project are frequently dredged, deep draft shipping lanes that are not conducive for eelgrass growth. Eelgrass is not present within the channel boundaries, but, as alluded to above, is present near the Richmond Inner Harbor and Oakland Inner Harbor. However, eelgrass surveys before and after dredging episodes conclude that USACE dredging does not have any impact on eelgrass. USACE will conduct eelgrass surveys and light monitoring in accordance with Provision 4 of this Order, consistent with the June 9, 2011, Programmatic Essential Fish Habitat Consultation Agreement between the U.S. EPA, USACE, and NMFS. Surveys and monitoring are necessary to verify that the Project is not having a greater than predicted impact on eelgrass and remains less than significant.

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16. Entrainment Impacts

All forms of dredging have the potential to impact the following beneficial uses of waters: habitat necessary for the preservation of rare and endangered species, fish spawning, fish migration, and estuarine habitat. Dredging incidentally removes fish and other aquatic life from the environment along with the dredged sediment, a process referred to as entrainment. Animals and plants on top of or embedded in the sediment as well as those in the water column near the dredging apparatus may be entrained. In general, smaller organisms with limited or no swimming capabilities are more susceptible to entrainment. Mechanical dredging is generally accepted to entrain fewer fish than hydraulic dredging, because less water is removed along with the sediment. However, it still may remove demersal fish and crustaceans that live in or on the sediment. Entrained fish are likely to suffer mechanical injury or suffocation during dredging, resulting in mortality. Longfin smelt and delta smelt are not strong swimmers and are presumed susceptible to entrainment in the flow fields created around the intakes of hydraulic suction dredges. Longfin smelt have the potential to occur in any of the Project areas in any season. Delta smelt have potential to occur in the portions of the San Francisco Estuary that include the Pinole Shoal (San Pablo Bay) and Suisun Bay Channel dredge areas during certain seasons. Delta smelt occur in San Pablo Bay in lower numbers than in the Suisun Bay; however, they may be present in San Pablo Bay in increased numbers during high water outflow years.

Entrainment monitoring aboard the hopper dredge Essayons took place under the previous Water Board orders in June, September, and October 2016; June and November 2017; June and October 2018; July and August 2019; July 2023; and in June and July 2024. The monitoring documented entrainment of longfin smelt in ~~some years but not others~~ all years between 2016 and 2024. However, the quantity of longfin smelt entrained was unclear. No delta smelt were observed in the monitoring apparatus during these monitoring events, most likely because the Essayons dredged in areas where the salinity exceeded the tolerance limit of delta smelt. Based on entrainment data, longfin smelt are the most at-risk state and/or federally listed threatened or endangered species of being entrained during dredging activities. The majority of species observed in monitoring are not state or federally listed as threatened or endangered. For these species, the number of individuals entrained is not expected to have an impact on their population because their population sizes are not impaired like the listed species. Implementation of the standard practices in the EA/EIR section 2.3.1.5, and measures that protect special-status fish species would also protect the non-listed species. Demersal fish and invertebrate species which are found on or near the bottom are not listed species, nor are they likely population limited. Entrainment is not expected to have a significant effect on their population or species survival.

This Order requires USACE to continue monitoring under Provision 11 to evaluate potential fish entrainment during hopper dredging by the USACE-owned ship, the Essayons, in the San Francisco Bay Area. USACE describes its monitoring in the 2020-24 Monitoring Plan for Potential Fish Entrainment During Dredging by The USACE Hopper Dredge Essayons in The San Francisco Bay Area (updated 2023). Changes to this monitoring plan must be approved in writing by the Executive Officer pursuant to Provision 11. Biological monitors (a lead delta smelt expert and three fisheries technician assistants) will conduct entrainment monitoring on a

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minimum of 80 percent of the dredging passes from onboard the Essayons while the vessel dredges in the San Francisco Bay. An entrainment sampling apparatus will sample dredged sediment that enters through both drag arms by passing the dredged sediment slurry through a rectangular shaped sieve. The biological monitors will sort, examine, and document the accumulated material. Other opportunistic monitoring methods (e.g., observing water surface in the hopper, sampling during water calibration and hopper flushing events) will also be conducted when relevant opportunities arise.

17. Avoidance, Minimization, and Compensatory Mitigation Measures for Entrainment Impacts

To avoid, minimize, and compensate for the entrainment impacts described above, USACE will implement measures included in the Project as described in EA/EIR Section 2.3.1.5 and the application for this Order, as well as the mitigation required in Provision 10 of this Order. These measures include operational best practices to first avoid, then minimize, and lastly compensate for adverse impacts that cannot be avoided and minimized, all in accordance with 40 CFR section 230 and the Dredge and Fill Procedures sections IV.A.1.h and IV.B, as well as conservation measures in the biological opinions issued by NMFS and USFWS for maintenance dredging and disposal projects. 40 CFR section 230 and the Dredge and Fill Procedures sections IV.A.1.h and IV.B both require a sequence of actions to first avoid, then to minimize, and lastly compensate for adverse impacts to aquatic resources that cannot be practicably avoided or minimized.

During the preparation of the 1998 LTMS EIS/EIR, the LTMS agencies initiated state and federal endangered species act (ESA) consultations with NMFS, USFWS, and the CDFW for maintenance dredging and disposal projects, covering threatened and endangered species and species of special concern, such as the Pacific herring. These programmatic consultations reduce the need for consultation on each individual dredging project by establishing programmatic work windows to avoid and minimize impacts to protected species. These programmatic work windows are based on presence/absence information for various sensitive species and establish times and locations where dredging and disposal activities may take place without further consultation.

In 2015, the LTMS programmatic consultation from NMFS was amended to (1) add measures to protect the green sturgeon from dredging activities and (2) allow work outside of the window established to protect salmonids if sediment dredged outside the work windows is beneficially reused to restore tidal wetlands. NMFS also allowed work outside windows established to protect green sturgeon if the sediment was beneficially reused. NMFS allows this because tidal wetlands provide habitat for salmonids and green sturgeon.

In 2023, the Oakland Harbor individual consultation from USFWS was initiated to add measures to protect the California least tern from potential impacts associated with USACE maintenance dredging activities in Oakland Harbor.

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On February 7, 2025, the LTMS programmatic consultation from USFWS was amended to add measures to protect the longfin smelt from dredging activities, including compensatory mitigation for in-Bay hopper dredging entrainment impacts. The compensatory mitigation for longfin smelt consists of beneficial reuse of dredged sediment to restore tidal wetlands. The volume of beneficial reuse required is derived by first calculating the acres of mitigation using an equation used by CDFW to determine mitigation requirements for entrainment impacts from water extraction in the delta for the Central Valley and State Water Projects and then converting the acres of mitigation to a volume of beneficial reuse using the average cubic yards of sediment required for one acre of restoration at three restoration projects. The volume of beneficial reuse is then multiplied by a factor of two to account for the uncertainty in the timing of the restoration, likely distance of the impact sites from the beneficial reuse site(s), temporal losses in aquatic resource functions, and the likelihood of success of the restoration activities at the beneficial reuse site(s). Like NMFS, USFWS accepts beneficial reuse as mitigation for entrainment impacts to longfin smelt because tidal wetlands provide valuable habitat for longfin smelt in a similar manner to the benefits provided to salmonids and sturgeon.

When conducting Phase 1, this Order requires USACE to compensate for unavoidable in-Bay hopper dredging entrainment impacts by either purchasing longfin smelt mitigation credits at a resource agency-approved habitat conservation bank or placing a specified volume of dredged sediment at a non-aquatic beneficial reuse site for tidal wetland restoration as required in Provision 10, in a similar manner to USFWS longfin smelt mitigation described above. USACE and the Water Board developed a formula to convert the acres of mitigation owed for entrainment impacts to an equivalent volume of sediment to be placed at a site for beneficial reuse in a tidal wetland restoration project, as described in detail in Mitigation Measure BI-1: Compensatory Mitigation for Longfin Smelt of the EA/EIR. Like USFWS, the volume of beneficial reuse required is derived by first calculating the acres of mitigation using the same equation from CDFW.

$$Acres\ of\ mitigation\ required = \frac{800\ acres\ \times Volume_{water/sediment\ pumped\ by\ hopper\ dredge}}{3.0\ million\ acre-feet}$$

The formula then differs from USFWS and converts the acres of mitigation credits into a dollar value based on the cost of credits from three representative mitigation banks. Next, the formula converts the dollar amount into a volume of sediment using the incremental cost between the current federal standard placement site and a beneficial reuse site. Finally, the volume of sediment is multiplied by a factor of two as in the USFWS formula described above.

$$Volume\ of\ Beneficial\ Reuse = \frac{acres\ of\ mitigation\ required\ \times \$1{,}325{,}000\ per\ acre}{Cost_{Increment}\ per\ cubic\ yard} \times 2$$

Unlike Phase 2 and 3, Phase 1 does not include any beneficial reuse for wetland restoration, all sediment is disposed of at SF-DODS, SF-17, or in-Bay. Therefore, USACE is required to compensate for significant impacts, reducing them to less than significant in combination with the standard practices described in the EA/EIR Section 2.3.1.5 and the hopper dredging specific practices described below.

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When conducting Phase 2 or 3, USACE will, as part of the Project, minimize hopper dredging entrainment impacts by placing dredged sediment at a non-aquatic beneficial reuse site for tidal wetland restoration from mechanically dredged channels, see Finding 3. Under Phases 2 and 3, USACE can conduct beneficial reuse at no additional cost, i.e. within the Federal Standard Base Plan, allowing for entrainment impacts to be minimized within the Project to the point that compensatory mitigation is not required with the standard practices described in the EA/EIR Section 2.3.1.5 and the hydraulic dredging specific practices described below. The formula to calculate the volume of dredged sediment required to minimize impacts to less than significant is the same as the formula described above for compensatory mitigation, and in Finding 3.

Under all phases of the Project, hopper dredging will be conducted in accordance with the following hydraulic dredging standard practices included in the EA/EIR section 2.3.1.5 to avoid and minimize entrainment impacts to less than significant, including:

a. No dredging shall occur in water ranging from 0 to 5 parts per thousand salinity between December 1 and June 30.

b. USACE shall implement a worker education program for listed fish species that could be adversely impacted by dredging. The program shall include a presentation to all workers on biology, general behavior, distribution and habitat needs, sensitivity to human activities, legal protection status, and project-specific protective measures.

c. Pump priming, drag head clearing, and suction of water at the beginning and end of each hopper load shall be conducted within three feet of the seafloor.

d. Hopper drag head suction pumps shall be turned off when raising and lowering the drag arms from the seafloor.

e. The drag head, cutterheads, and pipeline intakes shall remain in contact with the seafloor during suction dredging.

f. The drag head water intake doors shall be kept closed to the maximum extent practicable in locations most vulnerable to entraining smelt. In circumstances when the doors need to be opened to alleviate clogging, the doors shall be opened incrementally (i.e., the doors shall be opened in small increments and tested to see if the clog is removed) to ensure that doors are not fully opened unnecessarily.

For the delta smelt, USFWS has required USACE to consult on impacts since 2011 because monitoring at that time documented entrainment of this species by USACE dredging of Suisun Bay Channel and New York Slough. Beginning in 2015, biological opinions issued by USFWS have required USACE to dredge the Suisun Bay Channel and New York Slough using mechanical clamshell dredging, thereby avoiding impacts to delta smelt. Current entrainment monitoring does not observe delta smelt, indicating that the switch to mechanical dredging in Suisun Bay Channel and New York Slough has successfully reduced entrainment of the species during hopper dredging.

In 1998, CDFW recommended restricting dredging of all methods in the Central San Francisco Bay and Richardson Bay when Pacific herring is present for spawning and hatching, through a

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programmatic work window, which is currently March 16 to November 30. In 2024, CDFW agreed the LTMS biological opinion for green sturgeon is adequate to protect white sturgeon for this Project.

18. California Environmental Quality Act

Together, the Water Board, as lead agency under CEQA, and USACE, as lead agency under the NEPA, jointly prepared the EA/EIR. The EA/EIR analyzed maintenance dredging activities and disposal through dredging year 2034. Dredging year refers to the calendar year in which dredging is planned to begin.

On October 31, 2024, the Water Board issued a draft EA/EIR for public review and filed a Notice of Completion with the State Clearinghouse. (Ca. Code of Regs., tit. 14, §§ 15085-15087.) The public comment period for the draft EA/EIR (State Clearinghouse No. 2024020498) was from October 31, 2024, through December 30, 2024. The Water Board received and evaluated comments on the draft EA/EIR. The comments received and responses to comments are in Appendix H of the final EA/EIR.

The EA/EIR evaluated the continuation of maintenance dredging operation as occurred in the last 10 years as the No Project Alternative under CEQA, consistent with the CEQA Guidelines (Cal. Code Regs., tit. 14, section 15126.6(e)(3)(A)). The EA/EIR also evaluated four project alternatives with various options to divert sediment from unconfined aquatic disposal in-Bay or from the ocean disposal site towards tidal wetland beneficial reuse sites.

- No Project Alternative - The government hopper dredge Essayons, or similarly-sized hopper dredge, would be used to dredge the MSC and a maximum of one in-Bay federal channel, either the Richmond Outer Harbor or the Pinole Shoal Channel, annually. The channel not selected as the additional hopper dredge channel (i.e., either Pinole Shoal or Richmond Outer Harbor) would be deferred. All other channels would be dredged mechanically or with cutterhead. The No Project Alternative represents the current, ongoing dredging operation as implemented over the last permit period.

- Alternative 1, Beneficial Use: Diversion from Deep Ocean Disposal - The government hopper dredge Essayons, or similarly-sized hopper dredge, would be used to dredge the MSC and the Richmond Outer Harbor and the Pinole Shoal Channel, annually. A channel slated for ocean disposal at SF-DODS (e.g. Richmond Inner Harbor or Oakland Harbor) will be split between placement in-Bay and at a non-aquatic beneficial reuse site to achieve additional beneficial reuse of dredged sediment while maintaining the same cost as ocean disposal.

- Alternative 2, Beneficial Use: Regional Optimization, Leverage Hopper Dredging - The government hopper dredge Essayons, or similarly-sized hopper dredge, would be used to dredge as in Alternative 1, and add additional hopper dredging in Richmond Inner Harbor and/or part of Oakland Harbor. USACE would utilize cost savings from additional hopper dredging at some channels to place sediment from other channels mechanically

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or cutterhead dredged channels at an approved non-aquatic beneficial reuse site, while maintaining the same overall cost for the annual dredging program.

- Alternative 3, Beneficial Use: Cost Share Opportunity – USACE would partner with a local sponsor to cost share the incremental cost of beneficial reuse or USACE could fund the incremental cost if suitable funds were provided to USACE (e.g., Water Resources Development Act section 1122 funds).

- Alternative 4, Beneficial Use: Maximized – All in-Bay channels would be mechanically dredged except for small river channels that would be cutterhead dredged. All suitable sediment would be beneficially reused.

The Project consists of implementing a phased approach beginning with the No Project Alternative (Phase 1), then Alternative 1 (Phase 2), and lastly Alternative 2 (Phase 3), as well as additional beneficial reuse in the event non-federal funding or federal appropriations opportunities present themselves. The EA/EIR analyzed the environmental impacts of the Project and the alternatives described above. The EA/EIR identified that the Project would have significant entrainment impacts on longfin smelt under the No Project Alternative (i.e., Phase 1 of Project), but that the impact would be reduced to less than significant with mitigation measure BI-1. This Order imposes mitigation measure BI-1 when implementing Phase 1 to reduce impacts to longfin smelt to less than significant (see Finding 17 and Provision 10, which imposes mitigation measure BI-1). Thus, the mitigation measure to reduce significant environmental impacts to the longfin smelt to less than significant levels, as identified in the EA/EIR, has been required. This Order includes reporting and monitoring provisions that comprise a mitigation monitoring and reporting program for mitigation measures to reduce potential significant impacts (Pub. Resources Code, section 21081.6, subd. (a)(1); Cal. Code of Regs., tit. 14, section 15097).

The EA/EIR concluded that Alternative 1 and Alternative 2 would be less than significant with beneficial reuse, the standard practices that avoid and minimize entrainment impacts (see Finding 17), and incorporation of the cultural resource and archaeological protocols as part of the Project.

The Water Board has reviewed and considered the final EA/EIR prior to approving the Project and certifies that the final EA/EIR has been completed in compliance with CEQA and reflects the independent judgment and analysis of the Water Board. The Water Board will file a Notice of Determination with the State Clearinghouse within 5 business days from the issuance of this Order. (Cal. Code of Regs., tit. 14, section 15075, subd. (a).)

19. San Francisco Bay Basin Water Quality Control Plan (Basin Plan)

California Water Code section 13240 authorizes the Water Board to develop a Water Quality Control Plan for the San Francisco Bay Basin, which is the Water Board's master water quality control planning document (the Basin Plan). The Basin Plan designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes implementation programs and policies to achieve those objectives for all waters

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addressed through the plan. The Basin Plan was duly adopted by the Water Board and approved by the State Water Board, U.S. EPA, and the Office of Administrative Law where required. The latest version can be found on the Water Board's website at http://www.waterboards.ca.gov/sanfranciscobay/basin_planning.shtml. Requirements in this Order implement the Basin Plan.

The existing beneficial uses of San Francisco Bay in the vicinity of the dredging and disposal areas are:

- Industrial service supply
- Industrial process supply
- Commercial and sport fishing
- Shellfish harvesting (Central Bay only)
- Marine Habitat (Pacific Ocean only)
- Estuarine Habitat
- Fish migration
- Preservation of rare and endangered species
- Fish Spawning
- Wildlife habitat
- Water contact recreation
- Noncontact water recreation
- Navigation

20. *Water Code Section 13263*

Water Code section 13263 requires WDRs to implement the Basin Plan and take into consideration beneficial uses to be protected, the water quality objectives reasonably required for that purpose, other waste discharges, the need to prevent nuisance, and the provisions of Water Code section 13241. This Order implements the Basin Plan and takes into consideration the above factors. For example, this Order continues to include receiving water limitations to prevent violations of water quality objectives and prohibits the creation of any nuisance from dredging and disposal activities, among other requirements. For Water Code section 13241 factors, the Water Board finds:

a. **Past, present, and probable future beneficial uses of water**. Basin Plan Chapter 2 identifies designated beneficial uses for water bodies in the San Francisco Bay Region. Beneficial uses of water relevant to this Order are also identified above in Finding 19. The Water Board has taken beneficial uses into account in establishing the requirements of this Order. The prohibitions, receiving water limitation, and provisions in this Order ensure that present and future beneficial uses of water will not be adversely affected.
b. **Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto**. The environmental characteristics of the San Francisco Bay watershed are described in Chapter 1 of the Basin Plan and in the application for this Order. The prohibitions, receiving water limitation, and provisions

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in this Order ensure that the environmental characteristics of the hydrographic unit will not be adversely affected.

c. **Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area.** By complying with the requirements established in this Order, USACE will ensure control over factors that could affect water quality. The prohibitions, receiving water limitation, and provisions in this Order will ensure that dredging and sediment disposal and placement are properly implemented, and water quality is protected.
d. **Economic considerations.** USACE has reliably conducted its operations and maintenance dredging program as required by the Water Board and consistent with the Federal Standard Base Plan, which takes costs into consideration. Therefore, the prohibitions, receiving water limitation, and provisions are unlikely to impose additional economic burden on USACE. In the unlikely event that USACE incurs additional costs to remain in compliance with this Order, those costs would be justified and necessary to properly conduct the Project and protect public health and the environment. If USACE were not in compliance with this Order, it could have a negative economic impact on commercial fishing, aquatic navigation, and recreation. Because USACE maintains navigational channels into and through the San Francisco Bay to the region's ports and refineries, if USACE did not conduct the Project it would have severe negative impacts on the local economy and residents of the region.
e. **The need for developing housing within the region.** This Order will have no impact on the development of housing within the region.
f. **The need to develop and use recycled water.** This Order will have no impact on the development and use of recycled water.

21. Dredge and Fill Procedures

The Dredge and Fill Procedures include a wetland definition and procedures for submitting, reviewing, and approving applications for water quality certifications and waste discharge requirements for dredge or fill activities. The Dredge and Fill Procedures only allow authorization of dredge or fill activities after it has been demonstrated that a sequence of actions has been taken to first avoid, then to minimize, and lastly compensate for adverse impacts that cannot be practicably avoided or minimized to waters of the state. The avoidance, minimization, and compensatory mitigation measures included in the Project and required by this Order comply with the Dredge and Fill Procedures.

22. Anti-Degradation Policy

Federal regulations at 40 C.F.R. section 131.12 require that state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Resources Control Board established California's antidegradation policy through Resolution 68-16 ("Statement of Policy with Respect to Maintaining High Quality of Waters in California"). It incorporates the federal antidegradation policy where the federal policy applies under federal law and requires that whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality must be maintained. Resolution 68-16 only allows change in the existing high quality if it has

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been demonstrated to the Water Board that the change is consistent with maximum benefit to the people of the state, will not unreasonably affect present and anticipated beneficial uses of such water, and will not result in water quality less than that prescribed in the policies. Resolution 68-16 further requires that discharges meet WDRs that will result in the best practicable treatment or control of the discharge necessary to assure that (a) pollution or nuisance will not occur and (b) the highest water quality consistent with the maximum benefit to the people of the State will be maintained. Permitted discharges must comply with both the federal and state antidegradation policies.

This Order complies with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution 68-16. It does not authorize disposal or placement of sediment with concentrations of pollutants that would degrade water quality. Dredged sediment is characterized, and results are reviewed by the DMMO to provide sediment disposal and placement suitability, see Finding 14. Should sediment characterization indicate elevated contaminants, USACE is required in Provision 2 of this Order to implement additional z-layer[4] characterization and/or practices to prevent resuspended sediment from spreading contaminants, see Finding 6.

The Project will increase turbidity during the dredging, disposal and placement of sediment thereby temporarily degrading water quality. The increased turbidity, however, will be short-lived and spatially localized to the dredging, disposal and placement sites and areas in the immediate vicinity of the dredging, disposal and placement sites. Accordingly, the reduction in water quality will be minor, short-term, localized, and will not cause long-term effects. Mechanical dredging causes the highest turbidity by incidental fallback but is the most stationary method of dredging which spatially limits turbidity increases. Leaking or overflow of scows are not permitted during transport, preventing turbidity from increasing in route to sediment disposal or placement. Dredging is temporary, and turbidity quickly dissipates once dredging is complete. Hydraulic dredging causes significantly less disturbance and resuspension of sediment. Aquatic disposal of sediment causes a turbidity plume that dissipates in about 15 to 20 minutes (Reilly et al. 1992, LTMS EIS/EIR 1998), also being spatially localized.

The permitted discharge will also not result in water quality less than that prescribed in policies and this Order requires the best practicable control to assure no pollution or nuisance and the highest water quality consistent with the maximum benefit of the people.

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[4] Z-layer is defined as sediment sampled six inches below the project's over-depth allowance to determine whether newly exposed sediment after dredging would have an effect on essential fish habitat.

23. Notification

USACE and interested persons have been notified of the Water Board's consideration of WDRs and a certification for the Project and have been provided with the opportunity to submit their written comments from August 29 through September 29, 2025.

The Water Board, in a properly noticed public hearing, heard and considered all comments pertaining to the Project and the EA/EIR.

IT IS HEREBY ORDERED, pursuant to the provisions of Division 7 of the California Water Code and regulations adopted thereunder and other State regulations, as applicable, and to the provisions of the federal Clean Water Act, as amended, and regulations and guidelines adopted thereunder, that USACE shall comply with the following:

A. DISCHARGE PROHIBITIONS

1. The discharge of water, material, or wastes that is not otherwise authorized by the Order is prohibited.
2. Dredging and disposal activities that create a condition of pollution or nuisance as defined in section 13050(l) and (m) of the California Water Code are prohibited.
3. Overflow, leakage, or spilling of dredged sediment from barges, bins or dump scows during transportation from the dredging site to the placement site is prohibited.

B. RECEIVING WATER LIMITATION

1. The discharge shall not cause a violation of any applicable water quality objectives for receiving waters adopted by the Water Board and the State Water Board.

C. PROVISIONS

General

1. Maintenance dredging shall be implemented in conformance with the Project as described in Finding 1 through 17 above, and all documents submitted with the application for this Order.
2. Chemical and biological testing of sediment from the Project has historically shown elevated levels of contaminants in some channels that may pose a threat to aquatic life.
    a. Should testing and analysis of the overlying sediment from the Project show elevated levels of contaminants that may pose a threat to aquatic life, then USACE shall include, in its episode approval request package, the best management practices (BMPs) that will be used to prevent resuspended sediment from leaving the Project area. Appropriate BMPs include a closed environmental clamshell bucket to prevent spillage and/or enclosing the working dredge with a silt curtain.

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b. Should testing and analysis of the z-layer from the Project show elevated levels of contaminants that may pose a threat to aquatic life, USACE shall coordinate with the DMMO on a suitable plan, with a timeline, on actions and/or measures it will implement to prevent exposure of the contaminated z-layer to aquatic life post dredging. This plan shall be coordinated before the episode approval request package is submitted to the Water Board. USACE shall review the *Programmatic EFH Conservation Measures for the LTMS Program Agreed-upon by USACE, EPA, and NMFS* dated June 9, 2011 for possible measures to implement.

3. All post-dredge and monitoring reports required by this Order shall be submitted to the Water Board no later than June 30 each year through 2030, unless specified elsewhere in this Order.

Reporting and Monitoring

4. **Eelgrass:** Some areas of the Project are within the 45-meter direct impact buffer zone or the 250 meter indirect impact buffer zone identified by the San Francisco Bay Eelgrass Impact Assessment Tool. As such, USACE is required to implement the following provisions as it applies to the different areas of Project:

    a. Consistent with the Programmatic Essential Fish Habitat Consultation Agreement (Agreement), USACE shall conduct pre-dredge surveys of eelgrass areal coverage and density within the dredge footprint where it overlaps the 250-meter indirect impact buffer zone, conduct post-dredge surveys of eelgrass areal coverage and density if eelgrass is present in the pre-dredge survey, and shall send copies of these surveys to the Water Board; and

    b. Consistent with the Agreement, USACE shall implement light monitoring to protect eelgrass beds within 250 meters of dredging activity from adverse impacts due to excess turbidity in the water column and shall send the Water Board the results of light monitoring studies.

5. For each dredging episode, USACE shall coordinate the dredged sediment suitability determinations through the DMMO, following applicable federal and state guidance on a testing framework and on the preparation of reports.

6. **Integrated Alternatives Analysis:** USACE shall, as part of the episode approval process, submit to the Water Board an evaluation of alternative disposal sites pursuant to section 404(b)(1) of the Clean Water Act and the Dredge and Fill Procedures. This type of evaluation, also known as an “Integrated Alternatives Analysis,” or IAA, shall incorporate all USACE dredging projects (annual and non-annual) over as many years/dredging cycles as possible, up to a maximum of five years, and shall evaluate the practicability of the following beneficial reuse and disposal options:

    a. Habitat Restoration Beneficial Reuse: USACE shall evaluate the practicability of placing dredged sediment from the federal navigation channels at tidal marsh and other appropriate types of habitat restoration sites within the San

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Francisco Bay Region and USACE shall take dredged sediment to those sites where it is practicable. USACE shall make good faith efforts to coordinate with habitat restoration projects that are seeking dredged sediment.

b. Levee Restoration Beneficial Reuse: USACE shall evaluate the practicability of placing dredged sediment from the federal navigation channels at levee restoration sites within the San Francisco Bay Region and USACE shall take dredged sediment to those sites where it is practicable. USACE shall make good faith efforts to coordinate with levee restoration projects that are seeking dredged sediment.

c. Other Beneficial Reuse Sites and Rehandling Sites: USACE shall evaluate the practicability of placing dredged sediment from the federal navigation channels at other types of beneficial reuse sites and dredged sediment rehandling sites within the San Francisco Bay Region and USACE shall take dredged sediment to those sites where it is practicable.

d. Coordination with other USACE Projects: USACE shall evaluate the practicability of combining placement of dredged sediment from the federal navigation channels with sediment from other USACE projects implementing beneficial reuse when both projects will occur at similar times or locations or will be performed by the same contractor.

USACE shall submit the IAA by March 31, annually during years 2026 through 2029.

7. **Episode Approvals**: Dredging episodes, including knockdown events, shall not commence until authorized in writing by the Water Board Executive Officer. At least 45 days prior to a dredging episode, USACE shall provide an episode approval request package to the Water Board, with at least 30 days for the Water Board to review the request. The package shall include the following information specific to the episode:

   a. Estimated volume of sediment (i) overlying the permitted depth, (ii) overdepth, and (iii) total volume to be dredged;

   b. Areas to be dredged (include a map and acreage);

   c. Most recent bathymetric survey;

   d. Proposed and alternate disposal and/or beneficial reuse placement sites;

   e. Discussion on the sediment quality, explaining why the sediment is suitable for the proposed disposal and/or beneficial reuse placement sites;

   f. If testing and analysis of the overlying sediment in the Project show elevated levels of contaminants that may pose a threat to aquatic life, include the BMPs that will be used to prevent resuspended sediment from leaving the Project area (include map of where BMPs will be implemented); and

   g. If testing and analysis of the z-layer in the Project show elevated levels of contaminants that may pose a threat to aquatic life, include a final plan, with

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timeline, on actions and/or measures USACE will implement to prevent exposure of the contaminated z-layer to aquatic life post-dredging.

The episode approval is dependent on the information provided in the request being consistent with the certified and authorized Project in this Order, USACE's most recent IAA, and sediment suitability.

8. **Annual Post-Dredge Reporting:** For each year covered by this Order, USACE shall provide an electronic copy of a post-dredge report to the Water Board within 45 days after all dredge projects funded in the same fiscal year have been completed, or by the following June 30, whichever comes first. The post-dredge report for each channel shall be submitted via email to RB2-Dredgereports@waterboards.ca.gov. The report shall contain the following information:

    a. Dredging dates;

    b. Post-dredge survey maps of the dredge footprint;

    c. Calculated final dredge volume;

    d. Placement location(s) of dredged sediment; and

    e. Volume of dredged sediment placed at each placement location;

    f. As appropriate, a discussion on the actions and/or measures USACE implemented to prevent exposure of the contaminated z-layer to aquatic life post-dredging; and

    g. When USACE implements Phase 1, documentation of the calculation to determine the amount of mitigation needed to compensate for entrainment impacts from hopper dredging, and the method of fulfilling this mitigation through mitigation credits purchased or volume of sediment beneficial reused as required in Provision 10.

    If USACE does not dredge a channel for which an episode approval was issued, it shall provide a letter to the Water Board by February 14 the following year, specifying which channel it did not dredge.

9. **Monitoring Program:** USACE shall provide a monitoring report that evaluates the water quality impacts of the dredged sediment discharge on waters of the state. This provision is required, consistent with the Water Board's requirement of other dischargers to the Bay including those who dispose of dredged sediment, to monitor the impacts of their discharges to ensure compliance with water quality standards. This monitoring provides necessary information about ambient Bay water quality and potential long-term impacts of dredged sediment disposal. In lieu of submitting channel-specific reports, USACE may elect to participate in the San Francisco Estuary Regional Monitoring Program for Trace Substances (RMP) to fulfill this requirement by contributing $508,000 annually, following the dredging season, to USGS. The RMP is a coordinated and comprehensive long-term monitoring program with the goal of monitoring water and sediment quality to provide the scientific foundation for managing and improving the health of the San Francisco Bay aquatic ecosystem. Additionally, the RMP provides for special and pilot studies of

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interest to program participants. As such, the Water Board recognizes payments to USGS for monitoring that contributes to the RMP as fulfilling the requirement to provide information on water quality impacts.

Hopper Dredging

10. When implementing Phase 1, USACE shall compensate for unavoidable in-Bay hopper dredging entrainment impacts by either: 1) purchasing longfin smelt mitigation credits at a resource agency-approved habitat conservation bank, or 2) placing a volume of dredged sediment at a non-aquatic beneficial reuse site for tidal wetland restoration, per the equations below.

    If USACE complies by purchasing mitigation credits, the acres of mitigation required shall be calculated using the following equation and the actual volume of water and sediment pumped by the hopper dredge:

    $$Acres\ of\ mitigation\ required = \frac{800\ acres\ \times Volume_{water/sediment\ pumped\ by\ hopper\ dredge}}{3.0\ million\ acre-feet}$$

    If USACE complies by by placing a volume of dredged sediment at a non-aquatic beneficial reuse site for tidal wetland restoration, the volume of dredged sediment shall be determined using the following equation and the acres of mitigation calculated with the previous equation:

    $$Volume\ of\ Beneficial\ Reuse = \frac{acres\ of\ mitigation\ required\ \times \$1{,}325{,}000\ per\ acre}{Cost_{Increment}\ per\ cubic\ yard} \times 2$$

11. **Entrainment Monitoring:** USACE shall continue monitoring to evaluate potential fish entrainment during hopper dredging by the USACE-owned ship, the Essayons, in the San Francisco Bay as described in 2020-24 Monitoring Plan for Potential Fish Entrainment During Dredging by The USACE Hopper Dredge Essayons in The San Francisco Bay Area (updated 2023). Changes to this monitoring plan must be approved in writing by the Executive Officer. At a minimum USACE shall implement the following monitoring techniques:

    a. An entrainment sampling apparatus shall sample dredged sediment that enters through both drag arms by passing the dredged sediment slurry through a rectangular shaped sieve.

    b. Biological Monitors (a lead delta smelt expert and three fisheries technician assistants) shall conduct entrainment monitoring on a minimum of 80 percent of the dredging passes from onboard the Essayons while the vessel dredges in the San Francisco Bay. The biological monitors shall sort, examine, and document the accumulated material in the sampling apparatus.

    c. Other opportunistic monitoring methods (e.g., observing water surface in the hopper, sampling during water calibration and hopper flushing events) shall be conducted when relevant opportunities arise.

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The annual entrainment monitoring report is due by June 30 of years 2026 through 2029.

Administrative and General Compliance

12. USACE shall notify the Water Board immediately by telephone and e-mail whenever an adverse condition occurs due to the Project's activities. An adverse condition includes, but is not limited to, a violation or threatened violation of prohibitions or provisions of this Order, or a release of petroleum products or hazardous substances to waters of the state. A written notification of an adverse condition shall be submitted to the Water Board within 30 days of occurrence, except that for petroleum products and hazardous substances discharges, notification shall be to the California Office of Emergency Services as soon as there is knowledge of the discharge and notification is possible without impeding cleanup or emergency measures consistent with Water Code sections 13271 and 13272. The written notification shall identify the adverse condition, describe the action necessary to remedy the condition, and specify a timetable, subject to the modifications of the Water Board, for remedial actions.
13. In response to a suspected violation of any provision of this Order, the Water Board may require USACE to furnish, under penalty of perjury, any technical or monitoring reports the Water Board deems appropriate, under Water Code section 13383.

Standard Provisions

14. The discharge of dredged sediments to the waters of the State shall cease immediately whenever violations of this Order are detected by USACE or by Water Board, and the discharge shall not resume until compliance can be assured to the Executive Officer's satisfaction.
15. USACE shall provide the Water Board or its authorized representative, in accordance with Water Code section 13267(c), with the following:
    a. Entry upon premises in which any required records are kept.
    b. Access to copy any records required to be kept under terms and conditions of this Order.
    c. Access to inspect monitoring equipment required by this Order.
    d. Access to sample any discharge.
    e. Small craft transport to offshore locations or vessels for the purpose of inspection, provided that it is within normal business hours.

D. CERTIFICATION

1. The Water Board independently reviewed the Project to analyze impacts to water quality and beneficial uses within the Project's area. CWA section 401 authorizes the agency responsible for certification to prescribe provisions, effluent and other limitations, and monitoring requirements necessary to ensure compliance with applicable water quality

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requirements and with any other appropriate requirement of state law. Section 401 further provides that state certification provisions shall become provisions of any federal license or permit for the Project. The requirements of this Order must be met to ensure that the Project will comply with water quality standards, any applicable effluent limitations, standard of performance, prohibition, effluent standard, or pretreatment standard requirement pursuant to the CWA above and to ensure that the Project will comply with any other appropriate requirements of state law

2. The Water Board hereby certifies that any discharge from the Project will comply with the applicable provisions of Clean Water Act sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards), and with other applicable requirements of state law.
3. This Order applies to the Project as proposed in the application materials and conditioned and approved in this Order. Failure to implement the Project as proposed, conditioned, and approved is a violation of this Order. Violation or threatened violation of the conditions of this Order is subject to remedies, including, but not limited to, penalties or injunctive relief as provided under applicable state or federal law.
4. This Order action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to CWC section 13330 and 23 CCR section 3867. The Water Board may add to or modify the conditions of this Order, as appropriate, to implement any new or revised water quality standards and implementation plans adopted and approved pursuant to the Porter-Cologne Water Quality Control Act or section 303 of the Clean Water Act or in response to new information concerning the conditions of the Project.
5. This Order is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to 23 CCR subsection 3855(b) and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.
6. Order is conditioned upon total payment of the full fee required in state regulations (23 CCR section 3833). The application fee for the Project is $0 and additional annual fees are not required because the permittee is a federal agency.
7. Water Board Order No. R2-2020-0011 is hereby rescinded.
8. Dredging under this Order must be completed no later than May 15, 2030. This Order expires on June 30, 2030.

I, Eileen M. White, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on December 11, 2025.

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Eileen M. White
Executive Officer

ATTACHMENTS:

Figure 1. Location Map
Figure 2. Dredge Locations and Sediment Placement Areas for Richmond Harbor
Figure 3. Dredge Locations and Sediment Placement Areas for Oakland Harbor
Figure 4. Dredge Locations and Sediment Placement Areas for San Pablo Bay and Mare Island Strait
Figure 5. Dredge Locations and Sediment Placement Areas for Suisun Bay Channel
Figure 6. Dredge Locations and Sediment Placement Areas for Redwood City Harbor
Figure 7. Dredge Locations and Sediment Placement Areas for San Rafael Creek Channel
Figure 8. Dredge Locations and Sediment Placement Areas for Napa River Channel
Figure 9. Dredge Locations and Sediment Placement Areas for Petaluma River Channel
Figure 10. Dredge Locations and Sediment Placement Areas for San Francisco Harbor

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Figure 1. Location Map

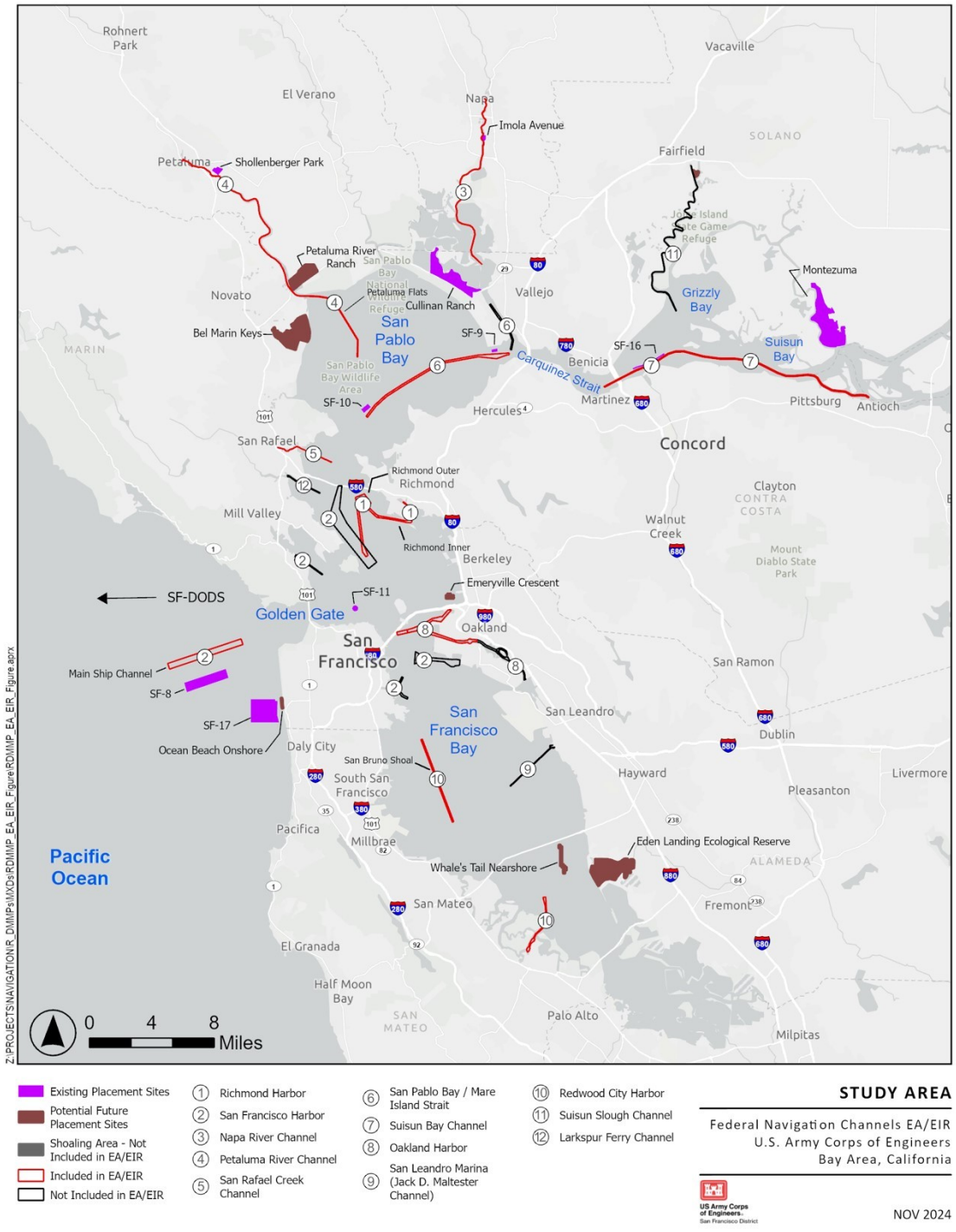

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Figure 2. Dredge Locations and Sediment Placement Areas for Richmond Harbor

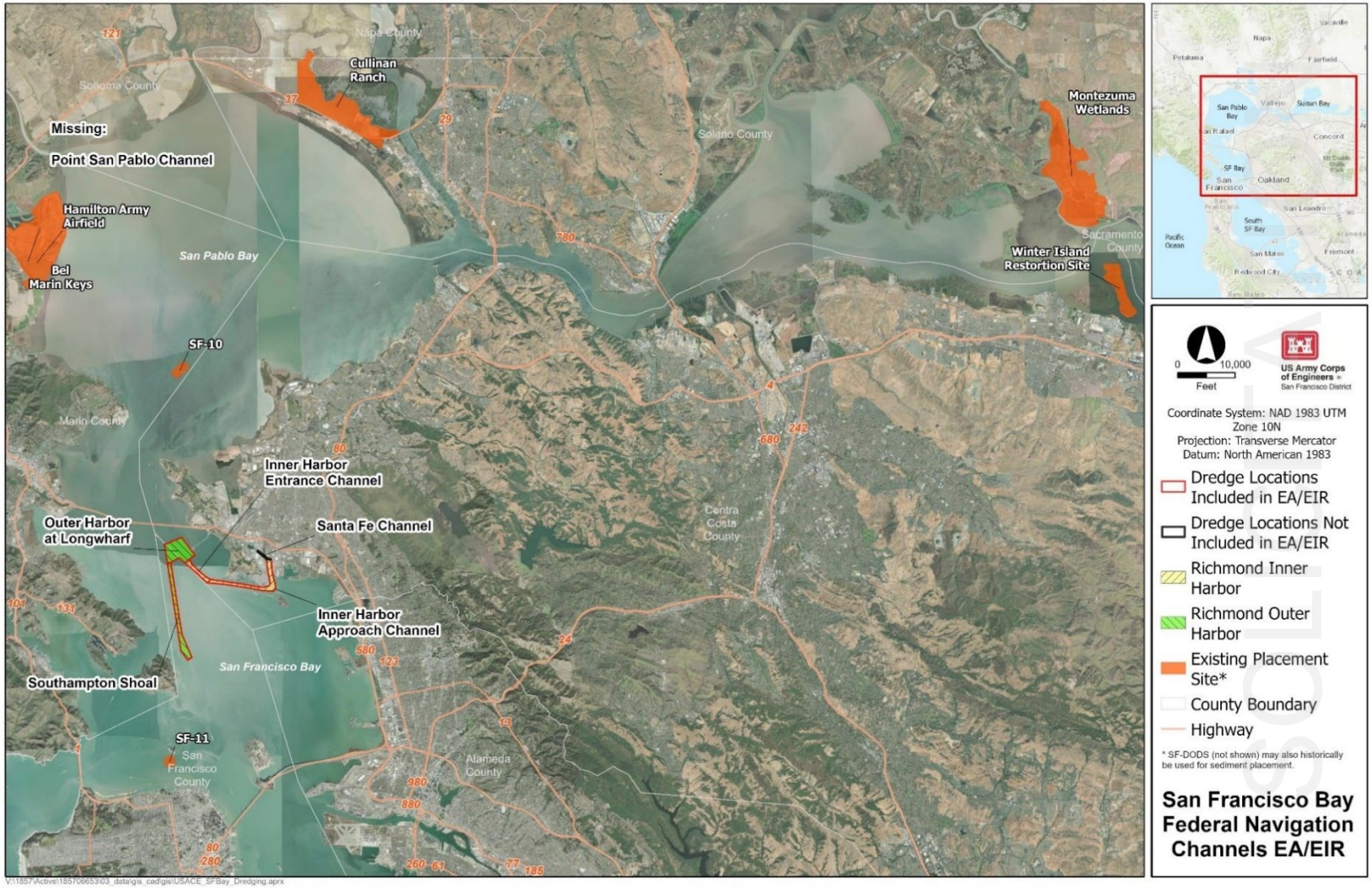

Figure 3. Dredge Locations and Sediment Placement Areas for Oakland Harbor

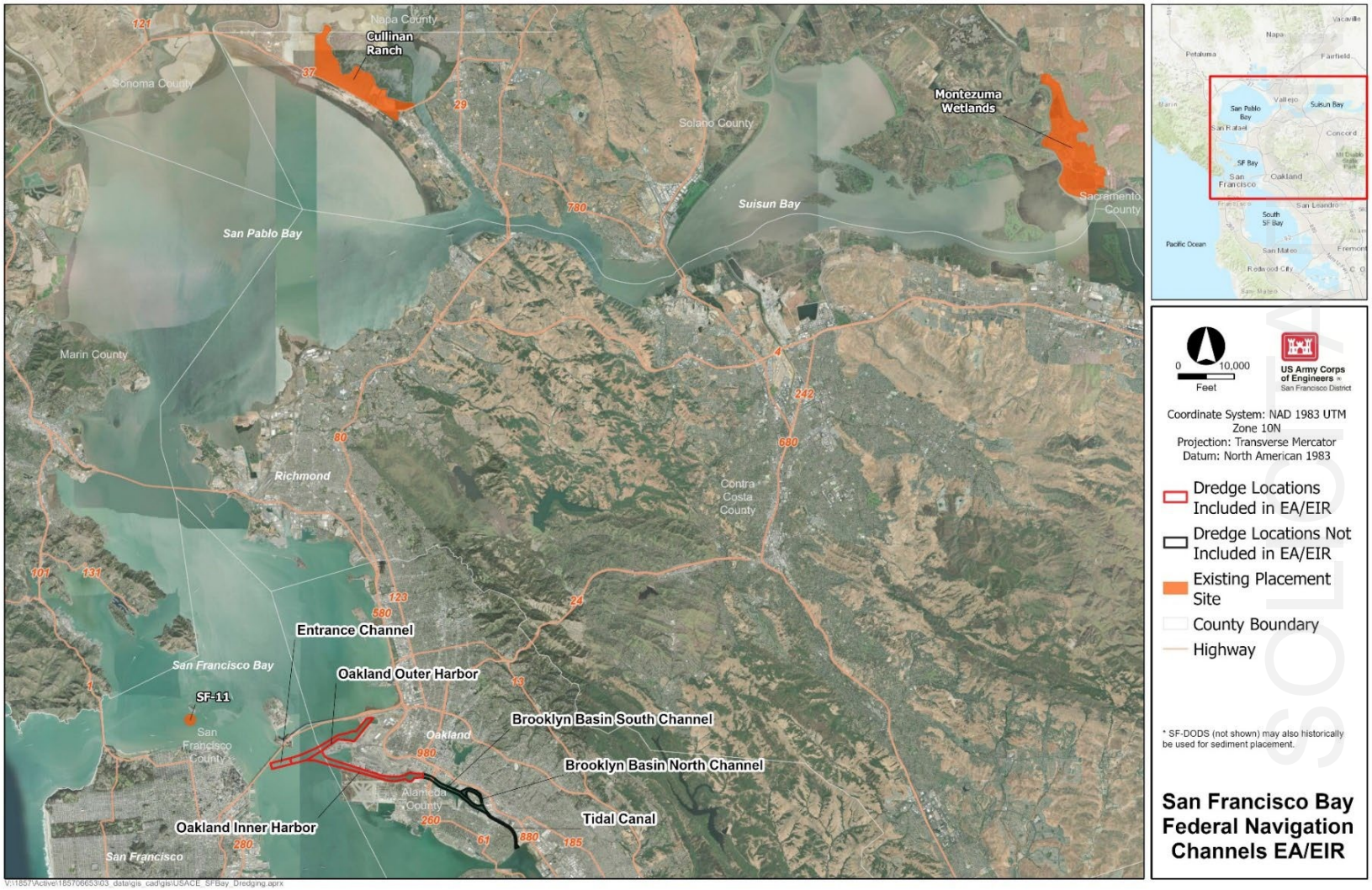

Figure 4. Dredge Locations and Sediment Placement Areas for San Pablo Bay and Mare Island Strait

Figure 5. Dredge Locations and Sediment Placement Areas for Suisun Bay Channel

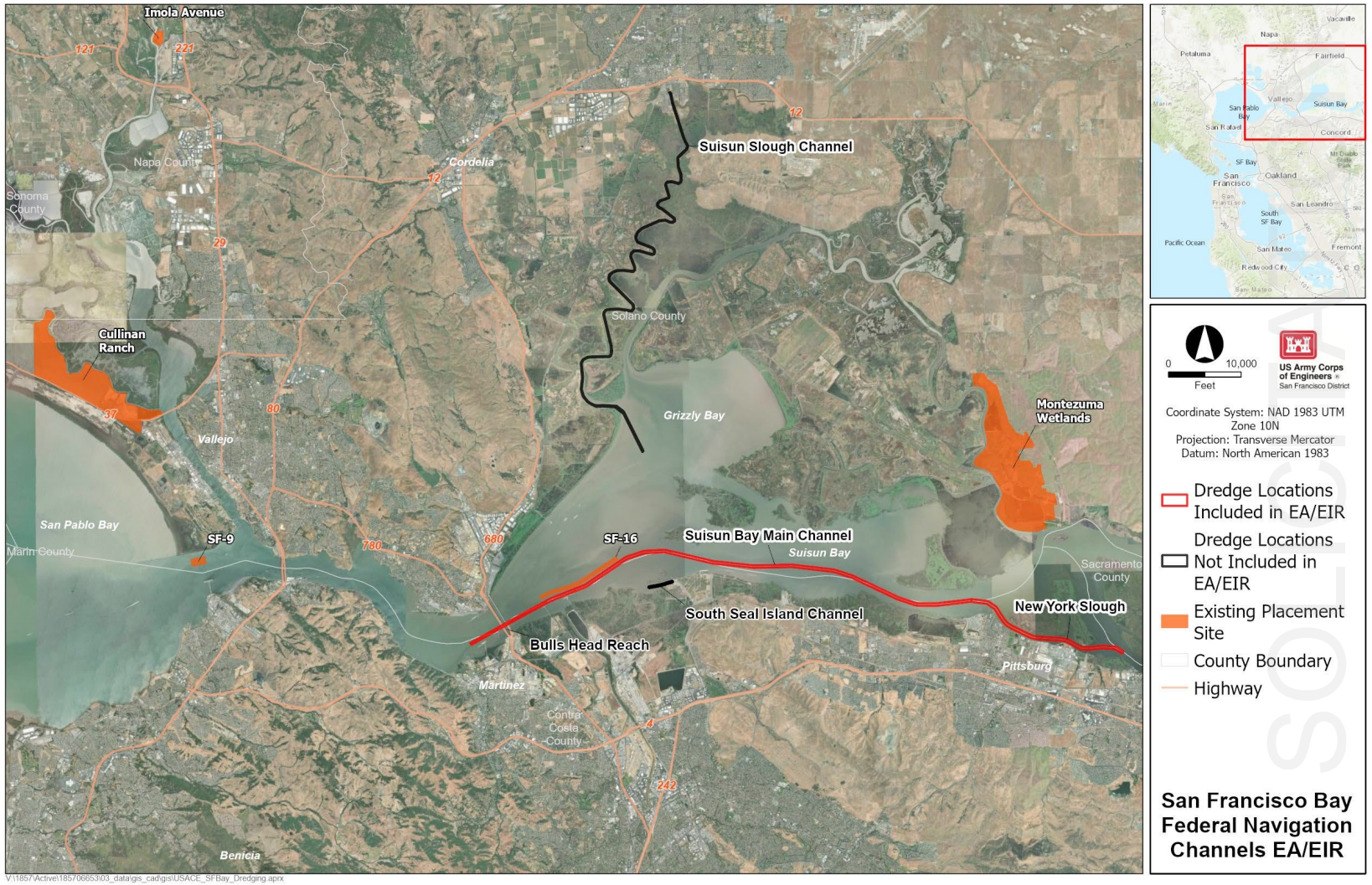

Figure 6. Dredge Locations and Sediment Placement Areas for Redwood City Harbor

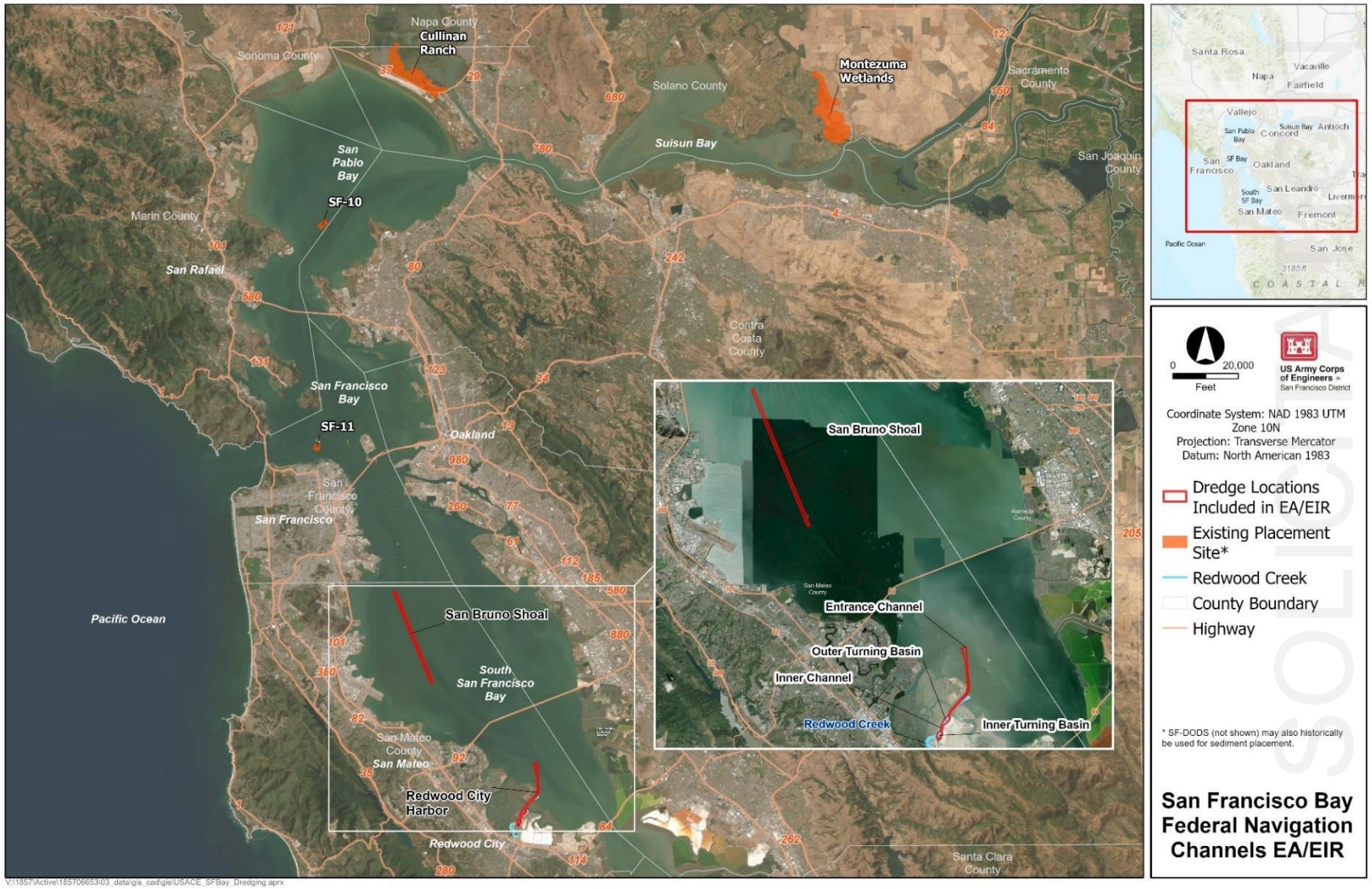

Figure 7. Dredge Locations and Sediment Placement Areas for San Rafael Creek Channel

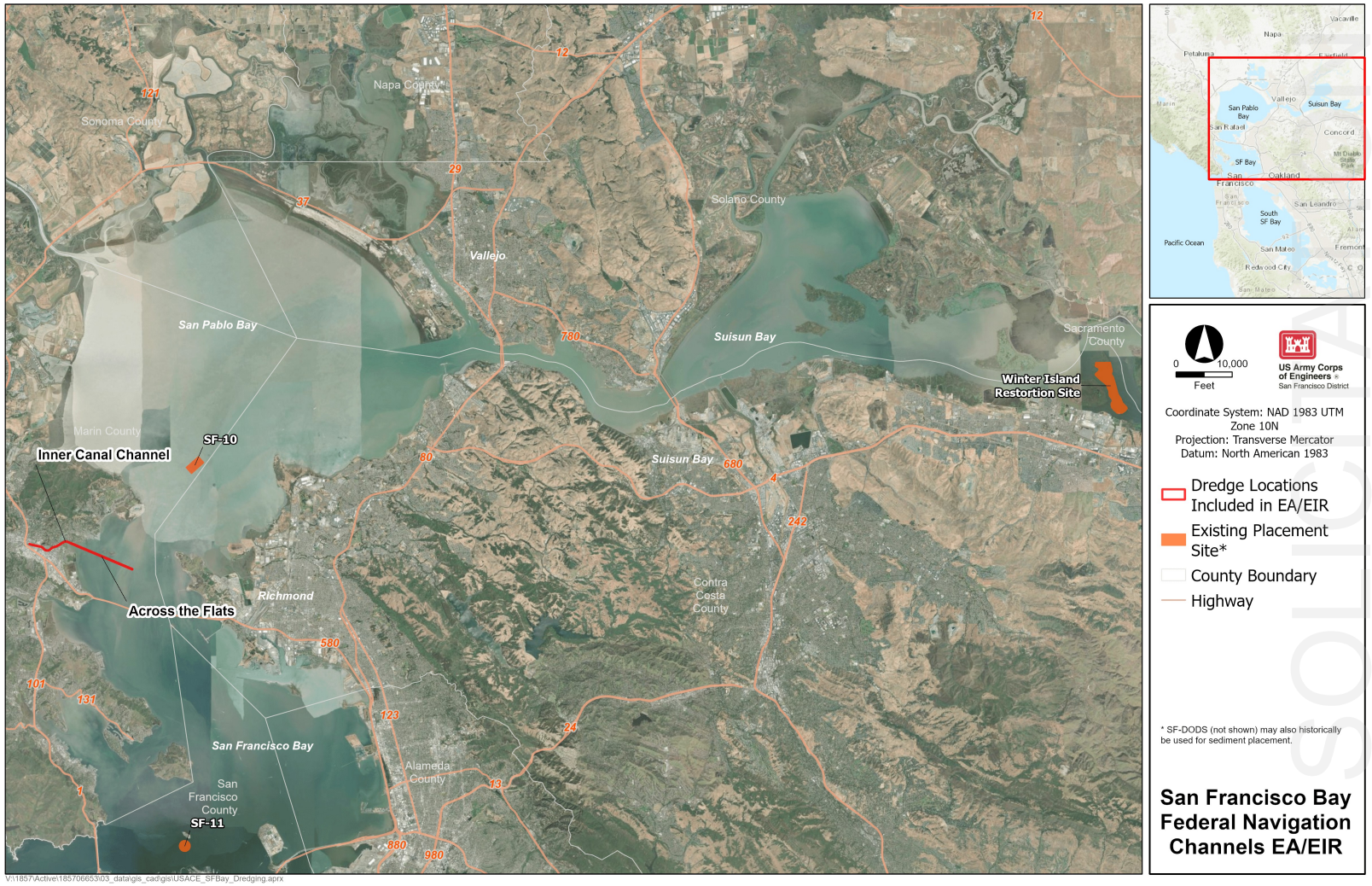

Figure 8. Dredge Locations and Sediment Placement Areas for Napa River Channel

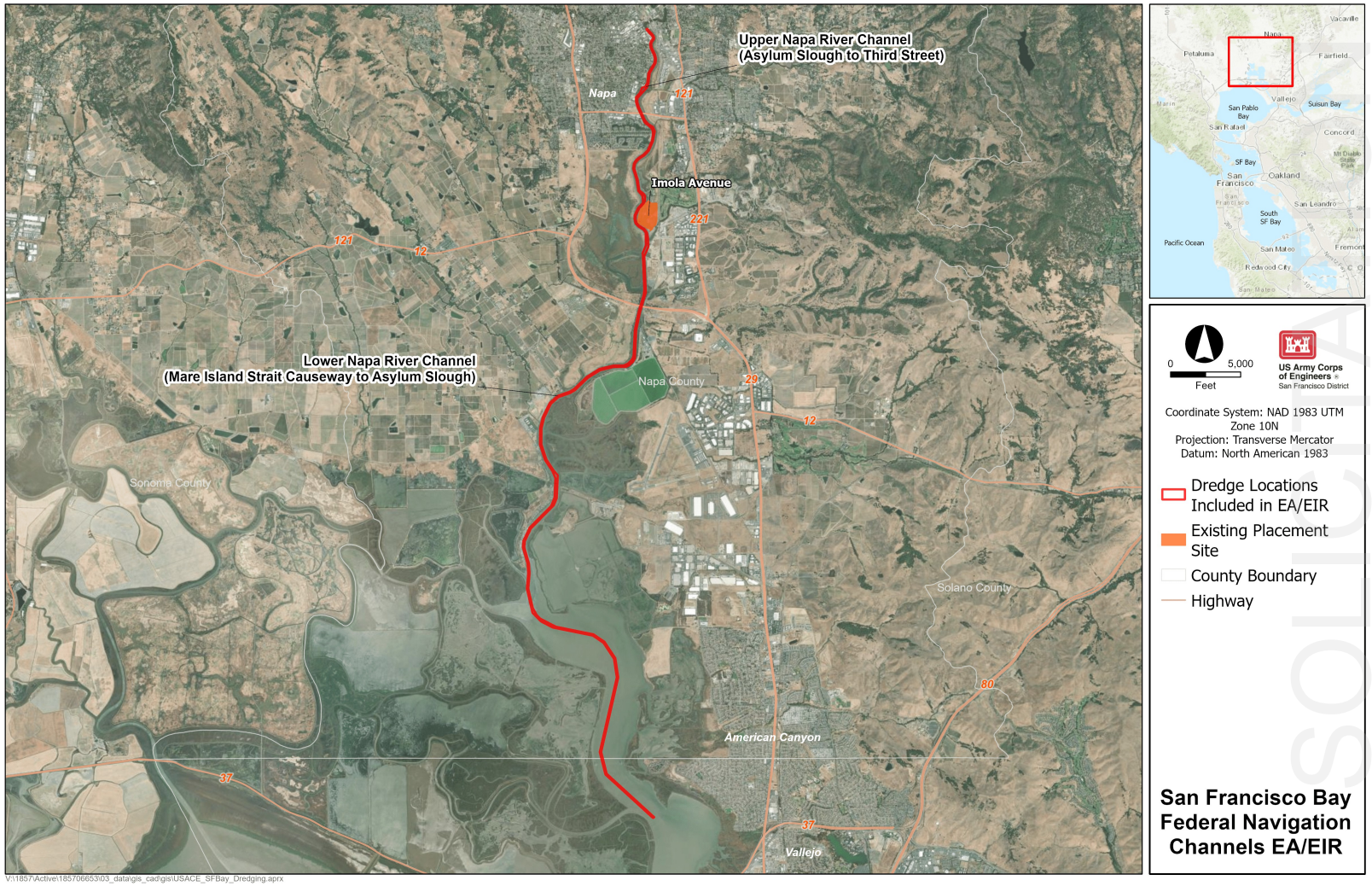

Figure 9. Dredge Locations and Sediment Placement Areas for Petaluma River Channel

Figure 10. Dredge Locations and Sediment Placement Areas for San Francisco Harbor

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

July 20, 2015 **In response refer to:** WCR-2014-1599

Lieutenant Colonel John C. Morrow
U.S. Army Corps of Engineers
San Francisco District
1455 Market Street
San Francisco, California 94103-1398

Michael Montgomery
Acting Director, Water Division
Environmental Protection Agency
75 Hawthorne Street
San Francisco, California 94105-3901

Dear Colonel Morrow and Mr. Montgomery:

NOAA's National Marine Fisheries Service (NMFS) has received the Corps of Engineers' (Corps) letter dated July 16, 2015, regarding the recently completed reinitiation of consultation pursuant to section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*), for the Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region (LTMS). This letter provides clarification regarding the July 9, 2015 biological opinion and the requirements of the incidental take statement (ITS).

Based on the Corps' letter and information provided during telephone conservations between our staff on July 17, 2015, the Corps has indicated to NMFS that they are not requesting reinitiation of the section 7 consultation for the LTMS Program. However, the Corps has pointed out that the ITS does not clearly address the requirements for maintenance dredging projects conducted or funded by the Corps in San Francisco Bay. NMFS clarifies here that the analysis contained in the opinion is based on the Corps' adherence to the appropriate LTMS Program measures and best management practices presented in October 2014 LTMS Program update. In the existing ITS (Section 2.8) attached to the July 9, 2015 biological opinion, an oversight by NMFS resulted in term and condition 1(a) only applying to dredging projects "permitted" by the Corps. For the purpose of clarifying the requirements of the biological opinion and ITS, the terms and conditions to implement reasonable and prudent measure #1 contained in Section 2.8 have been revised to include projects "conducted or funded" by the Corps.

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The revised ITS is enclosed and replaces the original ITS. Only Section 2.8, *Incidental Take Statement*, of the original opinion has been changed. The Corps and EPA must substitute the revised ITS for the original ITS, and the original ITS is no longer in effect. This change to the ITS is fully consistent with the analysis in the biological opinion, and thus reinitiation of consultation is not warranted. No change has been made to the body of the biological opinion and the opinion remains in effect. We believe this resolves the issues raised in your July 16, 2015 letter to NMFS.

Please contact Sara Azat at 707-575-6067 or Sara.Azat@noaa.gov if you have any questions, or if you require additional information regarding this biological opinion or the revised ITS.

Sincerely,

for

William W. Stelle, Jr.
Regional Administrator

Enclosure

cc: Cynthia Jo Fowler, Corps San Francisco District
Brian Ross, EPA, San Francisco
Larry Goldzband, BCDC, San Francisco
Bruce Wolfe, SFB Reg. Water Board, Oakland
Scott Wilson, CDFW, Napa
Becky Ota, CDFW, Belmont
Ryan Olah, USFWS, Sacramento
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Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion

Long Term Management Strategy
For the Placement of Dredged Material in the San Francisco Bay Region
Revised Incidental Take Statement

NMFS Consultation Number: WCR-2014-1599

Action Agency: U.S. Army Corps of Engineers, San Francisco District and
U.S. Environmental Protection Agency, Region IX

2.8 Incidental Take Statement

Section 9 of ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined by regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). "Incidental take" is defined by regulation as takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant (50 CFR 402.02). Section 7(b)(4) and section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this incidental take statement.

2.8.1 Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take would occur in association with LTMS Program dredging and in-bay disposal activities. Incidental take in the form of injury and/or mortality of threatened CCC steelhead, threatened CCV steelhead, threatened CV spring-run Chinook salmon, endangered Sacramento River winter-run Chinook salmon, and threatened southern DPS green sturgeon is anticipated. Sediment plumes associated with operation of dredges and disposal events are expected to result in incidental take ranging from injury and mortality of adult and smolt listed anadromous salmonids and threatened green sturgeon. Entrainment at hydraulic dredges is expected to result in the mortality of juvenile listed salmonids and green sturgeon.

NMFS was not able to estimate the specific number of CCC steelhead, CCV steelhead, CV spring-run Chinook salmon, winter-run Chinook salmon, and green sturgeon that may be incidentally taken by the proposed action. Monitoring or measuring the number of listed fish actually injured and/or killed by high concentrations of suspended sediment and entrainment during dredging and disposal activities is not feasible. Entrained fish will be carried away in a slurry of dredged sediments and placed at a disposal site which renders their losses as undetectable. Therefore, the number of affected listed fish is difficult to quantify. Due to the difficulty in quantifying the number of listed fish that could be affected by the LTMS Program, a

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surrogate measure of take is necessary to establish a limit to the take exempted by this incidental take statement. For this action, compliance with the expected in-bay dredged material disposal volume limit is the best surrogate measure for incidental take associated with implementation of the LTMS Program. The amount of dredged material disposed in-bay provides a measure of the extent of dredging performed and sediment plumes at disposal sites. Since both these activities are sources of incidental take, annual in-bay disposal volumes will provide a meaningful measure to assess the incidental take of listed anadromous salmonids and green sturgeon. Therefore, NMFS will consider the extent of take exceeded if LTMS Program in-bay disposal of dredged material exceeds a volume limit of 1.5 million cubic yards per year.[1]

2.8.2 Effect of the Take

In the biological opinion, NMFS determined that the amount or extent of anticipated take, coupled with other effects of the proposed action, is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

2.8.3 Reasonable and Prudent Measures

"Reasonable and prudent measures" are nondiscretionary measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02). NMFS believes the following reasonable and prudent measures are necessary and appropriate to minimize take of CCC steelhead, CCV steelhead, CV spring-run Chinook salmon, Sacramento River winter-run Chinook salmon, and the southern DPS of green sturgeon:

1. Ensure LTMS Program measures and dredging best management practices are properly implemented.

2. Prepare and submit annual reports regarding dredging and disposal activities performed under LTMS.

2.8.4 Terms and Conditions

The terms and conditions described below are non-discretionary, and the Corps and EPA must comply with them in order to implement the reasonable and prudent measures (50 CFR 402.14). The Corps and EPA has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this incidental take statement (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

The following terms and conditions implement reasonable and prudent measure 1:

a. The Corps and/or EPA must include as permit conditions in authorizations for dredging all appropriate LTMS Program measures and best management practices, including the

[1] The in-bay disposal target volume is 1.25 million cubic yards; however a contingency volume of 250,000 cubic yards has been established for emergencies when sedimentation or other factors result in unanticipated material volumes.

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following:

i. The work window for dredging and disposal is June 1 through November 30.

ii. No dredging will be permitted from December 1 through May 31 upstream or within 1,000 feet bayward of the mouths of Larkspur/Corte Madera Creek, Napa River Channel/Mare Island Strait, Petaluma River, and Novato Creek.

iii. Projects may plan work for the period outside the work window (December 1 through May 31) provided the project mitigates for its impacts by placing dredged material at a beneficial re-use site that will provide aquatic habitat benefits, such as a tidal wetlands restoration site. If a project is unable to place all material dredged outside the work window at a beneficial re-use site, the LTMS Program measures allow for an equivalent volume of dredged material to be placed at a beneficial re-use site from a project conducted within the work windows during the following season. This exemption does not apply to dredge sites upstream or within 1,000 feet bayward of the mouths of Larkspur/Corte Madera Creek, Napa River Channel/Mare Island Strait, Petaluma River, and Novato Creek.

iv. Projects that incur an unplanned and unavoidable need to complete a portion of an ongoing dredging operation outside of the work window, the LTMS agencies may approve up to 50,000 cubic yards of dredging and disposal per year for this purpose. This exemption may apply to dredge sites upstream or within 1,000 feet bayward of the mouths of Larkspur/Corte Madera Creek, Napa River Channel/Mare Island Strait, Petaluma River, and Novato Creek.

b. Dredging and disposal of dredged materials conducted or funded (in whole or in part) by the Corps must adhere to all appropriate LTMS Program measures and best management practices, including the following:

i. The work window for dredging and disposal is June 1 through November 30.

ii. No dredging will be permitted from December 1 through May 31 upstream or within 1,000 feet bayward of the mouths of Larkspur/Corte Madera Creek, Napa River Channel/Mare Island Strait, Petaluma River, and Novato Creek.

iii. Projects may plan work for the period outside the work window (December 1 through May 31) provided the project mitigates for its impacts by placing dredged material at a beneficial re-use site that will provide aquatic habitat benefits, such as a tidal wetlands restoration site. If a project is unable to place all material dredged outside the work window at a beneficial re-use site, the LTMS Program measures allow for an equivalent volume of dredged material to be placed at a beneficial re-use site from a project conducted within the work windows during the following season. This exemption does not apply to dredge sites upstream or within 1,000 feet bayward of the mouths of Larkspur/Corte Madera Creek, Napa River Channel/Mare Island Strait, Petaluma River, and Novato Creek.

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iv. Projects that incur an unplanned and unavoidable need to complete a portion of an ongoing dredging operation outside of the work window, the LTMS agencies may approve up to 50,000 cubic yards of dredging and disposal per year for this purpose. This exemption may apply to dredge sites upstream or within 1,000 feet bayward of the mouths of Larkspur/Corte Madera Creek, Napa River Channel/Mare Island Strait, Petaluma River, and Novato Creek.

The following terms and conditions implements reasonable and prudent measure 2:

a. The Corps and/or EPA must provide the following information as an annual report to NMFS by June 15 of the following year. The reports shall be submitted to NMFS North Central Coast Office, Attention: NCCO Supervisor, 777 Sonoma Avenue, Room 325, Santa Rosa, California, 95404-6528. The report must contain, at a minimum, the following information:

   i. **Dredging Episode Data.** For each dredging episode conducted during the previous year: project location, start and end date of dredging, amount of material dredged, and disposal location(s).

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

July 9, 2015 **In response refer to:** WCR-2014-1599

Lieutenant Colonel John C. Morrow
Department of the Army
San Francisco District
U.S. Army Corps of Engineers
1455 Market Street
San Francisco, California 94103-1398

Jane Diamond
Director, Water Division
Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, California 94105-3901

Dear Colonel Morrow and Ms. Diamond:

Thank you for your letter of October 2014, regarding the programmatic consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*), for the Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region (LTMS).

NMFS completed formal consultation with the Army Corps of Engineers (Corps) and the U.S. Environmental Protection Agency (EPA) during the adoption of the LTMS Program in 1998, and NMFS issued a biological opinion and incidental take statement on September 18, 1998. Since that time our agencies have worked together to further reduce the potential impacts of San Francisco Bay dredging projects on listed fish, to streamline the regulatory process, and reduce agency and dredge project sponsor workloads. The updated project description provided by the Corps and EPA in October 2014 reflects the successes of the LTMS Program to date, conditions that have changed since the 1998 consultation, and new measures to continue the protection and enhancement of conditions for listed fish and their habitat throughout the San Francisco Bay Region.

The enclosed biological opinion is based on our review of the proposed changes to the LTMS Program and replaces the September 18, 1998 biological opinion. The biological opinion

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describes NMFS' analysis of the potential effects of dredging and disposal projects conducted throughout the San Francisco Bay Region under the LTMS Program on threatened Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*), threatened California Central Valley steelhead (*O. mykiss*), threatened Central Valley spring-run Chinook salmon (*O. tshawytscha*), endangered Sacramento River winter-run Chinook salmon (*O. tshawytscha*), threatened southern distinct population segment (DPS) of North American green sturgeon (*Acipenser medirostris*), and designated critical habitat for green sturgeon, CCC steelhead, and winter-run Chinook salmon in accordance with section 7 of the ESA. CCC coho salmon (*Oncorhynchus kisutch*) was included in the 1998 NMFS biological opinion, but current information indicates this species has be extirpated from San Francisco Bay and its tributary streams. Based on the NMFS review of the updated LTMS Program, the proposed action is expected to have no effect on CCC coho salmon or its designated critical habitat.

In the enclosed biological opinion, NMFS concludes the project is not likely to jeopardize the continued existence of these listed salmonid species or green sturgeon. NMFS has also concluded the proposed project is not likely to result in the destruction or adverse modification of the critical habitats described above. However, NMFS anticipates take of listed salmonids will occur from entrainment and degradation of water quality during dredging and disposal activities. An incidental take statement, which applies to implementation of the LTMS Program with non-discretionary terms and conditions, is included with the enclosed biological opinion.

The biological opinion will be available through NMFS' Public Consultation Tracking System [https://pcts.nmfs.noaa.gov/pcts-web/homepage.pcts][1]. A complete record of this consultation is on file at the NMFS North-Central Coast Office in Santa Rosa, California.

Please contact Sara Azat at 707-575-6067 or Sara.Azat@noaa.gov if you have any questions, or if you require additional information regarding this biological opinion.

Sincerely,

for

William W. Stelle, Jr.
Regional Administrator

Enclosure

cc: Cynthia Jo Fowler, Corps San Francisco District
Brian Ross, EPA, San Francisco
Brenda Goeden, BCDC, San Francisco
Elizabeth Christian, SFB Reg. Water Board, Oakland
Jim Starr, CDFW, Stockton

[1] Once on the PCTS homepage, use the following PCTS tracking number within the Quick Search column: WCR 2014-1599.

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Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion

Long Term Management Strategy
For the Placement of Dredged Material in the San Francisco Bay Region

NMFS Consultation Number: WCR-2014-1599

Action Agency: Army Corps of Engineers, San Francisco District and U.S. Environmental Protection Agency, Region IX.

Affected Species and NMFS' Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species or Critical Habitat?	Is Action Likely To Jeopardize the Species?	Is Action Likely To Destroy or Adversely Modify Critical Habitat?
California Central Valley steelhead (*Oncorhynchus mykiss*)	Threatened	Yes	No	No
Central California Coast steelhead (*O. mykiss*)	Threatened	Yes	No	No
Sacramento River Winter-run Chinook (*O. tshawytscha*)	Endangered	Yes	No	No
Central Valley Spring-run Chinook (*O. tshawytscha*)	Threatened	Yes	No	No
North American Green Sturgeon (*Acipenser medirostris*)	Threatened	Yes	No	No

Consultation Conducted By: National Marine Fisheries Service, West Coast Region

Issued By: for

William W. Stelle, Jr.
Regional Administrator

Date: July 9, 2015

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LIST OF ACRONYMS

BA	Biological Assessment
BCDC	Bay Conservation and Development Commission
BMP	Best Management Practices
BOR	Bureau of Reclamation
BRT	Biological Review Team
CCC	Central California Coast
CDFW	California Department of Fish and Wildlife
CSLC	California State Lands Commission
Corps	U.S. Army Corps of Engineers
CV	Central Valley
cy	cubic yards
cy/yr	cubic yards per year
dB	decibel
DDT	dichlorodiphenyltrichloroethane
DPS	distinct population segment
DWR	Department of Water Resources
DQA	Data Quality Act
EFH	essential fish habitat
EIS	Environmental Impact Statement
ESA	Endangered Species Act
ESU	evolutionary significant unit
FEIR	Final Environmental Impact Report
FMP	Fishery Management Plan
FRH	Feather River Hatchery
ft	foot
FWS	United States Fish and Wildlife Service
GCID	Glenn Colusa Irrigation District
ITS	incidental take statement
MHHW	mean higher high water
MISP	Marine Invasive Species Program
MLLW	mean lower low water
mm	millimeter
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MOTCO	Military Ocean Terminal
NMFS	National Marine Fisheries Service
NTU	nephlometric turbidity units
PCE	primary constituent element
RBDD	Red Bluff Diversion Dam
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
TL	total length
TMDL	Total Maximum Daily Load
USFWS	United States Fish and Wildlife Service

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1.0 INTRODUCTION

1.1 Background

In response to growing concerns over direct, indirect, and cumulative effects of dredging and dredged material disposal activities on the aquatic environment of the San Francisco Bay/Estuary, Federal and state agencies joined with navigation interests, fishing groups, environmental organizations, and other interested parties to develop the Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region (LTMS Program). The San Francisco Bay LTMS Program is a cooperative effort of the U.S. Army Corps of Engineers (Corps), U.S. Environmental Protection Agency (EPA), the San Francisco Bay Regional Water Quality Control Board (Water Board), San Francisco Bay Conservation and Development Commission (BCDC), and State Water Resources Control Board (SWRCB) (herein after referred to as LTMS agencies).

In 1998, the LTMS agencies completed the Final Policy Environmental Impact Statement/Programmatic Environmental Impact Report (Programmatic EIS/EIR), selecting the new long-term plan for reducing disposal within San Francisco Bay over time, and increasing recycling of dredged material for "beneficial uses" including habitat restoration, levee maintenance, and construction fill. The San Francisco Bay LTMS is designed to develop technically feasible, economically prudent, and environmentally acceptable long-term solutions to the disposal of dredged material over a fifty year period. It specifically addresses maintenance dredging, and is not intended to address new dredging or sand mining. The primary goals of the LTMS includes managing dredging and disposal in an economically and environmentally sound manner, maximizing the use of dredged material for beneficial reuse, and developing a coordinated permit application review process for dredging and disposal projects.

During the development of the LTMS Program, the LTMS agencies worked with the California Department of Fish and Wildlife (CDFW, previously referred to as California Department of Fish and Game), the U.S. Fish and Wildlife Service (USFWS), and NOAA's National Marine Fisheries Service (NMFS) to develop measures to avoid and minimize the potential impacts of dredging and disposal projects. One of the primary tools used to avoid and minimize the potential adverse effects of dredging and in-bay disposal was environmental work windows. Environmental work windows are established periods within the calendar year that avoid or minimize overlap with the presence of a target species or a sensitive life stage of a target species. For certain species listed under the Endangered Species Act of 1973, as amended (ESA), and some non-listed species of special concern, environmental work windows were incorporated into the LTMS Program. During environmental work window periods, dredging and disposal activities are restricted in specific areas to protect listed species and species of special concern.

As early as 2001, the Corps, EPA, and NMFS began to discuss difficulties associated with the environmental work windows. Both the Corps' dredging program for federal navigation channels as well as small dredging projects by industry, municipalities, and private businesses were having problems accomplishing all their maintenance dredging projects within the

SOLICITATION

established work windows. Frequent requests to work outside the LTMS windows were submitted to NMFS for review and there became a need to develop mitigation actions for dredge projects that must work outside the established windows.

In June 2006, NMFS listed the southern distinct population segment (DPS) of North American green sturgeon as a threatened species under the ESA and in March 2009, the State of California listed longfin smelt (*Spirinchus thaleichthys*) as a threatened species under the California Endangered Species Act (CESA).

1.2 Consultation History

On February 18, 1998, the EPA initiated consultation with NMFS pursuant to section 7 of the ESA for the proposed adoption of the LTMS Program. The LTMS Program proposed to avoid and minimize adverse effects to listed anadromous salmonids by restricting dredging and the associated disposal of dredge materials to periods when the likelihood of listed anadromous salmonids presence in San Francisco Bay was low (i.e., environmental work windows). Appendix J of the LTMS Programmatic Environmental Impact Statement/Environmental Impact Report (EIS/EIR) presents the environmental work windows by species and location. NMFS, the Corps and EPA agreed during consultation that all dredge projects would adhere to these work windows. If a project was unable to restrict dredging or disposal to the environmental work window for listed anadromous salmonids, the Corps would conduct a separate, project-specific, section 7 consultation with NMFS.

A draft biological opinion/conference opinion and incidental take statement was provided by NMFS to EPA on August 19, 1998. Comments were provided by EPA and on September 18, 1998, NMFS issued a biological and conference opinion to EPA that addressed potential impacts to listed and proposed salmonids and to their designated critical habitat. The biological opinion concluded that dredging activities conducted in accordance with the 50-year LTMS Program would not likely jeopardize the continued existence of the following anadromous salmonid species: (1) endangered winter-run Chinook salmon; (2) threatened Central California Coast coho salmon; (3) threatened Central California Coast steelhead; (4) threatened California Central Valley steelhead; (5) proposed-threatened Central Valley fall/late-fall run Chinook salmon; (6) proposed-threatened Southern Oregon/California Coastal fall-run Chinook salmon; and (7) proposed-endangered Central Valley spring-run Chinook salmon.

By letter dated January 16, 1999, to NMFS, EPA clarified the following points regarding the LTMS Program addressed in the 1998 consultation with NMFS: (1) only dredging and disposal for navigational projects are included; (2) NMFS participation in the Dredge Materials Management Office does not require entering the interagency Memorandum of Understanding; (3) correction of a typographical error regarding the biological opinion and Table J-2 of the LTMS Final EIS/EIR; and (4) the Corps shall be included as a consulting agency under the LTMS Program's biological opinion.

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By letter dated August 13, 2004, to NMFS, EPA and the Corps requested two modifications to the environmental work windows for the LTMS Program: (1) South San Francisco Bay work window would be from June 1 to November 30; and (2) Napa River, Petaluma River, and Sonoma Creek work windows would be from July 1 to October 31. NMFS informed EPA and the Corps that these environmental work windows were generally consistent with the September 19, 1998 biological opinion and incidental take statement.

During the latter half of 2004, NMFS actively solicited information regarding the status of North American green sturgeon (*Acipenser medirostris*) for the purpose of updating the NMFS' 2002 risk assessment for this species. The NMFS Biological Review Team (BRT) completed an updated status review in February 2005 and it was submitted to NMFS Regional Offices for further consideration. On April 6, 2005, NMFS published a proposed rule to list the southern DPS of North American green sturgeon as a threatened species (70 FR 17386). On April 4, 2006, NMFS published the final rule listing the southern DPS of green sturgeon as a threatened species (71 FR 17757).

By letter dated November 29, 2006, NMFS requested the Corps and EPA provide information regarding the following topics: (1) characteristics of maintenance dredge sites; (2) characteristics of San Francisco Bay Region areas that are not being dredged; (3) in-bay disposal sites; (4) potential entrainment risk of listed species by large suction dredges; (5) natural and anthropogenic contaminants in dredged sediment; and (6) activity of large vessels that transit San Francisco Bay. On February 13, 2007, the Corps provided the requested information, less the information regarding large vessel activity. In April 2007, the Corps provided the vessel traffic data to NMFS.

On May 24, 2007 a conference call with representatives from NMFS and Corps discussed environmental work windows and measures for the protection of green sturgeon. The group reviewed the results of acoustic tag detections of sturgeon in the vicinity of the Richmond Harbor.

On January 28, 2008 the Corps provided NMFS an analysis regarding green sturgeon movements in relation to Corps dredging projects. The analysis utilized the results of acoustic tag detections of green sturgeon and concluded that the species spend 77 percent of their time in shallow water and are not likely to be present at the deeper in-bay aquatic disposal sites.

On November 20, 2008, NMFS, EPA and the Corps meet in San Francisco to discuss the effects of LTMS dredging projects on green sturgeon.

EPA submitted draft project description of the current LTMS Program to NMFS in June 2009.

On February 24, 2010, representatives of NMFS, Corps and EPA met to discuss the measures under development for the programmatic consultation for Essential Fish Habitat (EFH) pursuant to the Magnuson Stevens Fishery Conservation and Management Act (MSA), and the

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relationship to the reinitiated ESA consultation for listed species. In February 2010, the Corps provided detailed information to NMFS regarding the location and volume of dredging performed in federal navigation channels which occurred outside of the environmental work windows.

A meeting was held on March 26, 2010 with representatives of NMFS, Corps, EPA and BCDC to discuss environmental work windows, monitoring, research and green sturgeon. In particular, NMFS requested information from the Corps regarding the monitoring of water quality at dredging and disposal sites. Discussions on these topics continued by conference call on March 29, 2010, at a April 13, 2010 meeting, and at a April 27, 2010 meeting.

During 2011 and 2012, the Corps worked with CDFW staff to develop measures to avoid and reduce impacts to State-listed longfin smelt. NMFS participated in several conferences calls regarding this topic to gain a better understanding of the fisheries issues associated with the Corps' dredging equipment and collaborate on measures to reduce impacts associated with dredging. NMFS and CDFW coordination also ensured measures to avoid and reduce impacts to longfin smelt did not inadvertently cause harm to listed salmonids or green sturgeon.

On March 29, 2012, NMFS attended the LTMS Program 12-year review meeting with representatives from Corps, EPA, Water Board, BCDC, and various dredging stakeholder groups. The meeting provided a summary of the first 12 years of implementation of the LTMS Program.

Representatives of NMFS, Corps, EPA, BCDC, and the Water Board met on October 16, 2012, to update the LTMS project description and evaluate the program's environmental work windows. This group continued work in 2012 to simplify the work window requirements and develop mitigation for dredging projects that must work outside the environmental work windows.

In February 2013, the Regional Water Board and the Corps announced their intent to prepare a joint Environmental Assessment and Environmental Impact Report for the operation and maintenance of federal navigation channels in San Francisco Bay, consistent with the LTMS Program (Federal Navigation Channels EA/EIR). NMFS, EPA, and the Corps agreed that the reinitiated LTMS consultation with NMFS should be coordinated with this environmental review process to ensure consistency in the measures adopted to protect the state-listed longfin smelt. Coordination between representatives with NMFS, Corps, EPA, BCDC, CDFW, and the Regional Water Board continued in 2013 regarding the project schedule, modification of the LTMS environmental work windows, and fisheries measures for the Federal Navigation Channels EA/EIR.

From December 2013 through March 2014, representatives from the Corps, NMFS, EPA, BCDC, and the Water Board drafted a proposal that would allow for some dredging to occur outside the environmental work windows provided certain measures and mitigation actions are

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taken. This proposal was presented to the San Francisco Bay dredging stakeholder community at a LTMS Management Committee meeting on April 30, 2014. The proposal was generally well received by stakeholders and the LTMS agencies were encouraged to adopt this plan. Stakeholder comments were solicited and the final plan for updating the LTMS Program with these measures was submitted to NMFS by joint letter from EPA, dated October 8, 2014, and Corps, dated October 14, 2014. For purposes of the reinitiated section 7 consultation with NMFS, the October 2014 letter and plan constituted the final project description for the updated LTMS Program.

Via email message dated November 17, 2014, EPA provided to NMFS a clarification regarding the term "clamshell" in the final project description. The term "clamshell dredge" was used under the "Best Practices" section of paragraph 2(a) of the October 2014 project description. EPA requested "mechanical" be used in place of "clamshell" because there are some dredgers that use an excavator or other mechanical equipment that are not considered a "clamshell" dredge.

1.2.1 LTMS Actions Following the Issuance of the September 18, 1998 Biological Opinion

Following the issuance of the NMFS biological opinion in 1998, the LTMS agencies developed specific guidance for implementing the strategy selected in the program's Policy Environmental Impact Statement/Programmatic Environmental Impact Report and this program guidance was presented in the 2001 LTMS Management Plan (Management Plan). The LTMS is a 50-year plan that covers all federal and non-federal operations and maintenance dredging and dredged material placement in the region. To allow time for planning, budgeting, and creating alternatives to in-Bay disposal, the Management Plan established a 12-year transition period for achieving the reduced in-Bay disposal goal of 1.25 million cubic yards (plus 250,000 cubic yards contingency) annually. The transition period's disposal volume limits were voluntary as long as in-Bay goals were met overall. The 12-year transition period was completed in 2012 and the LTMS agencies issued a 12-Year Review Report in August 2012 (LTMS 2012).

1.2.1.1. Dredged Material Management Office

The Management Plan also formalized the Dredged Material Management Office (DMMO) for the purpose of providing a coordinated review of dredging and dredged material disposal project proposals. The DMMO is a joint program with representation from the Corps, EPA, BCDC, and Regional Water Board, and State Lands Commission. NMFS, California Department of Fish and Wildlife, and U.S. Fish and Wildlife Service are encouraged to participate at DMMO meetings as commenting resource agencies. Since implementation of the LTMS, the DMMO serves as a single point-of-entry into the state and federal regulatory process for dredge project applicants. The DMMO does not issue permits; rather it makes consensus-based recommendations to the member agencies on the completeness of permit applications, adequacy of sediment sampling and analysis plans (SAP), and suitability of sediments for proposed disposal locations.

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1.2.1.2 LTMS Studies and Literature Reviews

To improve the scientific understanding of listed fish species in San Francisco Bay and the potential impacts to these species from dredging, the LTMS Program has funded a number of studies, intended to help address the basis of some of the existing work windows with an eye toward whether they could be modified to allow dredging for longer periods in some locations. The LTMS environmental work window Science Framework was developed, with input from NMFS and the other resource agencies, to identify agency concerns and potential studies that may be able to address those concerns. The LTMS Program went on to undertake a number of the identified studies, including both literature reviews and laboratory and field studies. The completed and draft studies that perform by and in conjunction with the LTMS Program in San Francisco Bay are listed in Table 1. Since 2011-12, funding has been nearly eliminated and consequently additional scientific studies have been put on hold.

Table 1. LTMS-Associated Scientific Studies, Literature Reviews and Symposia

Completed Studies and Report
Sediment
Framework for Assessment of Potential Effects of Dredging on Sensitive Fish Species in San Francisco Bay. August 2004
Spatial Characterization of Suspended Sediment Plumes During Dredging Operations Through Acoustic Monitoring (Oakland Outer Harbor). January 2004.
Suspended Sediment Plumes Associated with Mechanical Dredging at the Port of Oakland, California. 25th Annual WEDA Conference, 2005.
Characterization of Suspended Sediment Plumes Associated with Knockdown Operations at Redwood City, California. October 2005.
Anadromous Salmonids
Young Salmonid Out-Migration Through San Francisco Bay with Special Focus on their Presence at the San Francisco Waterfront. May 2011.
Inter-annual variation of reach specific migratory success for Sacramento River hatchery yearling late-fall run Chinook Salmon (*Oncorhynchus tshawytshca)* and steelhead trout (*Oncorhynchus mykiss).* May 2012.
Juvenile Salmonid Outmigration and Distribution in the San Francisco Estuary: 2006-2008 Interim Draft Report. January 2010.
Longfin Smelt
LTMS Longfin Smelt Literature Review and Study Plan. August 2011.
Entrainment of Smelt in San Francisco Bay by Hydraulic Dredges: Rates, Effects, and Mitigation. October 2013.
Longfin Smelt Monitoring During Dredging of the Pinole Shoal Channel in San Pablo Bay, California in June 2010. July 2010.
2011 Longfin Smelt Monitoring During Dredging By the USACE Hopper Dredge Essayons In the San Francisco Bay Area. December 2011.
Herring
A Review of Scientific Information on the Effects of Suspended Sediments on Pacific herring (*Clupea pallasi)* Reproductive Success. April 2005.
White Paper: Potential Impacts of Dredging on Pacific Herring in San Francisco Bay. March 2005.
Impacts of Suspended Sediments on Fertilization, Embryonic Development, and Early Larval Life Stages of the Pacific herring, *Clupea pallasi.* April 2009
Impacts of Suspended Sediments on Fertilization, Embryonic Development and Early Larval Life Stages of the Pacific Herring, *Clupea pallasi.* July 2008.

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Methylmercury
Mercury Concentrations Bordering The Hamilton Army Air Field Remediation Site: September, 2001. October 2002.
Mercury Concentrations Bordering The Hamilton Army Air Field Remediation Site: February. 2003. September 2003.
Pre-Construction Biogeochemical analysis of mercury in Wetlands Bordering the Hamilton Army Airfield Wetlands Restoration Site. September 2005.
Mercury Cycle Studies Associated with the Hamilton Wetland Restoration Project. May 2006.
Pre-Construction Biogeochemical analysis of mercury in Wetlands Bordering the Hamilton Army Airfield (HAAF) Wetlands Restoration Site. Part 2. September 2007.
Pre-Construction Biogeochemical analysis of mercury in Wetlands Bordering the Hamilton Army Airfield (HAAF) Wetlands Restoration Site. Part 3. December 2009.
Comparison of DGT Sentinels and Bioassays for Long-term Mercury TMDL Monitoring under San Francisco Bay Field Conditions. December 2009.
LTMS Symposia on Methylmercury in Dredging Operations and Dredged Sediment Reuse (January 2010)
Miscellaneous
Least Tern Literature Review and Study Plan Development. February 2012.
Tools for Assessing and Monitoring Fish Behavior Caused by Dredging Activities. June 2011.
Literature Review (for studies conducted prior to 2008): Fish Behavior in Response to Dredging & Dredged Material Placement Activities. August 2009.
Supplement to the "Framework for Assessment of Potential Effects of Dredging on Sensitive fish Species in San Francisco Bay". 2013.
Effects of Short-term Water Quality Impacts Due to Dredging and Disposal on Sensitive Fish Species in San Francisco Bay. September 2008.
LTMS Science Symposium 2007, 2008 and 2010
LTMS Symposium on Green Sturgeon, Longfin Smelt and Dredging Operations in the San Francisco Bay (December 2009)
Dredging 201: The Permit Process and Beyond Workshop
Draft Reports
Juvenile Salmonid Outmigration: Interim Draft Report 2008-2009
Juvenile Salmonid Outmigration & Green Sturgeon: Distribution Draft Annual Report 2009, 2010 & 2011
Juvenile Salmonid Outmigration and Distribution in the San Francisco Estuary: Draft Annual Report. September 2007
Draft San Francisco Bay Juvenile Salmonid distribution and Tracking Project: Data Report. 14 August 2007.
Potential Impacts of Re-suspended sediments associated with Dredging and Dredged material placement of fishes in San Francisco Bay, California – Literature review and identification of Data Gaps. July 2010.
Draft - Bibliography of Scientific Literature on Pacific Herring (*Clupea pallasi)*, with Additional Selected References for Baltic Herring (*Clupea harengus)*. August 2004.

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1.3 Proposed Action

The Corps and EPA propose to continue implementation of the LTMS dredging as described below with the addition of several conservation and mitigation measures described in section 1.3.4 below. This reinitiation of consultation on the LTMS Program and this biological opinion applies to operations and maintenance dredging within San Francisco, San Pablo and Suisun Bays, as well as areas immediately outside the Golden Gate at San Francisco Bar and Ocean Beach, conducted by the Corps, other federal agencies, and non-federal entities. Corps and EPA authorities for these actions are as follows.

Non-Corps dredging and disposal of dredged material in the San Francisco Bay Region requires a Department of Army permit pursuant to Section 404 of the Clean Water Act (CWA), Section 103 of the Marine Protection, Research, and Sanctuaries Act (MPRSA), and Section 10 of the Rivers and Harbor Act of 1899. For Corps' conducted dredging projects, the Corps does not issue itself a CWA section 404 permit, but the CWA's Section 404(b)(1) Guidelines and other substantive requirements of the CWA and other environmental laws do apply. EPA provides oversight to the Corps CWA permit program, and has additional authorities pursuant to the Marine Protection, Resources, and Sanctuaries Act (MPRSA). Section 102 of the MPRSA authorizes EPA to establish criteria for evaluating all dredged material proposed for ocean dumping. These criteria are published separately in the Ocean Dumping Regulations at 40 C.F.R. pt. 220-228. Section 102 also authorizes EPA to designate permanent ocean-dredged material disposal sites in accordance with specific site selection criteria designed to minimize the adverse effects of ocean disposal of dredged material.

Under the LTMS Program, dredging is performed at 11 federal navigation channels (Table 2 and Figure 1) and approximately 100 maintenance dredging sites associated with ports, marinas, and homeowners associations (Table 3 and Figure 1). There are seven in-water disposal locations that are currently in use: Ocean Disposal (SF-DODS); San Francisco Bar (SF-8); Carquinez Strait (SF-9); San Pablo Bay (SF-10); Alcatraz (SF-11); Suisun Bay (SF-16); and Ocean Beach Demonstration Site (SF-17) (Figure 1).

A primary goal of the LTMS Program is to reduce the amount of in-Bay disposal. Specifically, the plan aims for a minimum of 40 percent of all dredged material to be beneficially reused (e.g., for enhancing or creating aquatic habitat, maintaining levees, etc.), up to 40 percent of material to be discharged offshore at the EPA-designated San Francisco Deep Ocean Disposal Site (SF-DODS) when beneficial reuse is not feasible, and no more than 20 percent of dredged material to be discharged in Bay (referred to as the "40-40-20 Plan"). The long-term goal of the LTMS Program is to limit in-bay disposal volumes to a maximum of 1.25 million cubic yards per Year (plus 250,000 cubic yards contingency).

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Figure 1. LTMS Dredging and Disposal Locations

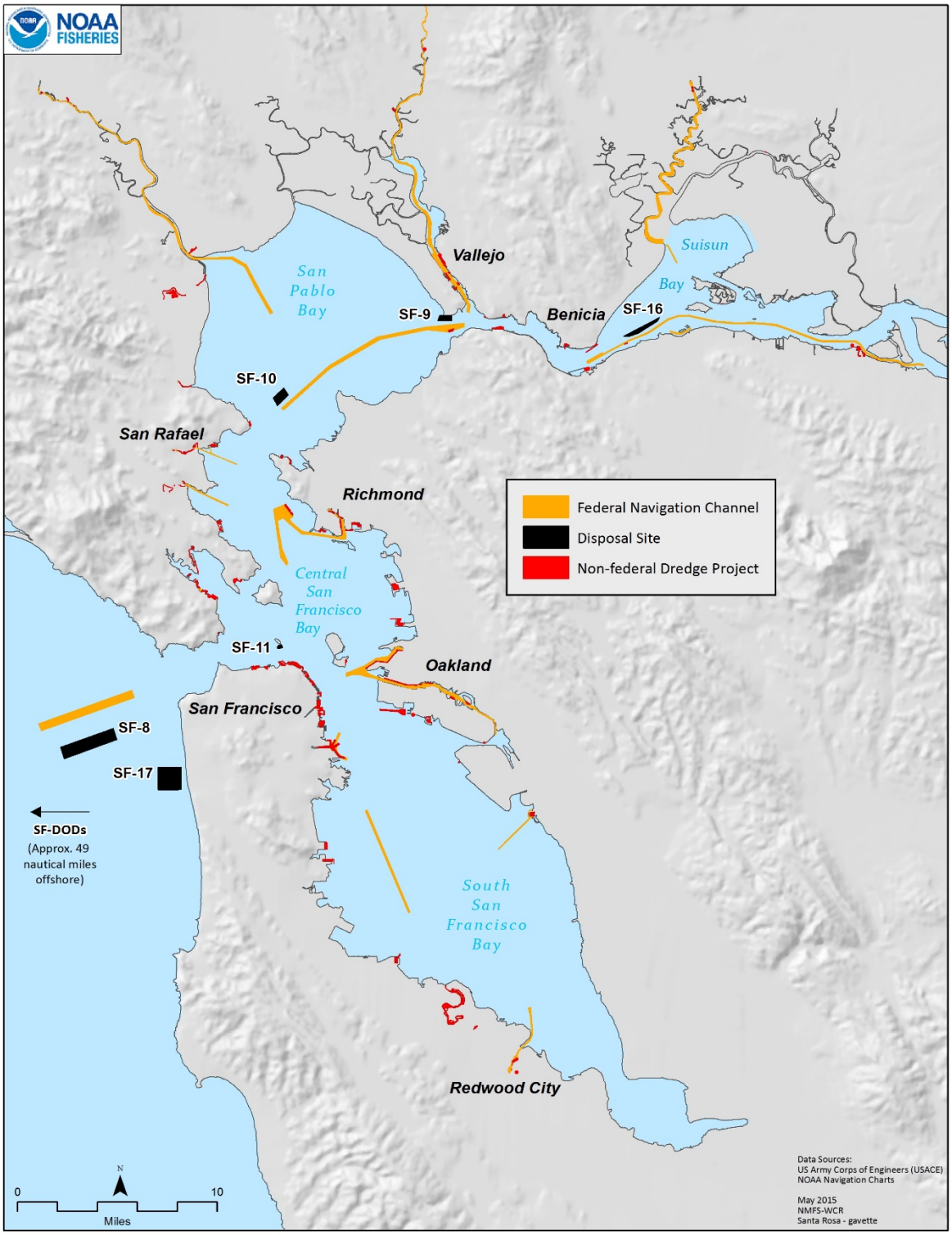

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Table 2. Corps Dredging of Federal Navigation Channels in SF Bay Region 2000-2014
Source: Federal Navigation Channels draft EA/EIR, December 2014.

Channel	Dredge Type	Typical Dredging Frequency (years)	Range of Volume Dredged per Episode (CY)[1]	Median Volume Dredged Per Episode (CY)[2]	Placement Site
Richmond – Inner Harbor	Clamshell-Bucket	1	11,000 – 631,000	390,000	SF-DODS, Upland24,870
Outer Harbor	Hopper	1	78,000 – 318,000	190,000	SF-11
San Francisco Harbor – Main Ship Channel	Hopper	1	78,000 – 613,000	306,000	SF-8, SF-17
Napa River Channel*	Cutterhead-Pipeline	6-10	140,000[3]	140,000[3]	Upland (Sponsor Provided)
Petaluma River Channel (and Across the Flats*)	Cutterhead-Pipeline (River Channel) Clamshell-Bucket (Across the Flats)	4-7	150,000[3]	150,000[3]	Upland (Sponsor Provided) for the River Channel SF-10 for Across the Flats
San Rafael Creek Channel	Clamshell-Bucket	4-7	78,000 – 87,000[3]	83,000[3]	SF-11
Pinole Shoal	Hopper	1	80,000 – 487,000	146,000	SF-10
Suisun Bay Channel and New York Slough	Hopper	1	21,000 – 423,000	159,000	SF-16
Oakland Inner and Outer Harbor	Clamshell-Bucket	1	122,000 – 1,055,000[4]	330,000	SF-DODS, MWRP
San Leandro Marina (Jack D. Maltester Channel)	Cutterhead-Pipeline	4-6	121,000 – 187,000[3]	154,000[3]	Upland (Sponsor Provided)
Redwood City Harbor	Clamshell-Bucket (Harbor Channels) Hopper (San Bruno Channel)	1-2	10,000 – 560,000	179,000	SF-11

Notes:
* For areas not dredged since 2000, the last dredging event is reported.
1 Range of volume dredged per fiscal year since 2000 (USACE, 2014). For areas not dredged since 2000, the last dredging event is reported.
2 Median volume dredged per fiscal year since 2000. For areas not dredged since 2000, the last dredging event is reported.
3 Due to the lower frequency at which these channels are dredged, future dredge volumes could be greater.
4 Due to the deepening of Oakland Harbor completed in 2010, future dredge volumes could be greater.
CY = cubic yards, MWRP = Montezuma Wetlands Restoration Project, Solano County

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Table 3. San Francisco Bay Region non-Corps dredge project sites. Latitudes and longitudes are provided for reference only and do not represent spatial extent of sites.

Name	Latitude	Longitude
Aeolian Yacht Club	37° 45.003' N	122° 14.079' W
Alameda Point Channel	37° 46.441' N	122° 18.907' W
Arques Shipyard and Marina	37° 52.064' N	122° 29.769' W
Ballena Isla Marina	37° 45.978' N	122° 17.109' W
Ballena Isla Townhomes	37° 46.149' N	122° 17.240' W
Bel Marin Keys Community Services District	38° 5.686' N	122° 29.445' W
Bellevue Channel (Belvedere Cove)	37° 52.337' N	122° 27.575' W
Belvedere Land Company	37° 52.363' N	122° 27.584' W
Benicia Marina	38° 2.597' N	122° 9.444' W
Benicia Port Terminal (Amport)	38° 2.488' N	122° 8.087' W
Berkeley Marina	37° 52.122' N	122° 18.972' W
Black Point Boat Launch Ramp	38° 6.880' N	122° 30.356' W
BP, Richmond Terminal	37° 54.439' N	122° 21.817' W
Brickyard Cove Homeowners Association	37° 54.497' N	122° 22.799' W
Brisbane Marina at Sierra Point	37° 40.462' N	122° 22.797' W
C&H Sugar Company	38° 3.494' N	122° 13.083' W
CA Maritime Academy	38° 3.976' N	122° 13.835' W
Cass Marina Turney Boat Ramp	37° 51.615'N	122° 29.116'W
Castrol North American Consumer's Berth	37° 55.342' N	122° 22.367' W
Chevron Rod and Gun	37° 57.617' N	122° 24.658' W
Chevron, Richmond Long Wharf	37° 55.492' N	122° 24.766' W
City of Emeryville Marina	37° 50.430' N	122° 18.750' W
City of Napa, JFK Boat Ramp	38°15.929'N	122°17'.04'W
City of Suisun Pierce Island Boat Ramp	38° 13.980' N	122° 2.249' W
City of Sunnydale Boat Ramp	37° 26.131' N	122° 1.622' W
Clipper Yacht Harbor	37° 51.858' N	122° 29.543' W
Coast Guard Station, Golden Gate	37° 49.968' N	122° 28.633' W
Coast Guard Station, Yerba Buena Island	37° 48.685' N	122° 21.637' W
Coast Guard, Alameda Station	37° 46.780' N	122° 14.963' W
Conoco Philips, Richmond	37° 54.754' N	122° 21.875' W
Conoco Philips, Rodeo Terminal	38° 3.421' N	122° 15.711' W
Corinthian Yacht Club	37° 52.359' N	122° 27.406' W
Corona Del Mar Homeowners Association	37° 45.832' N	122° 13.513' W
Coyote Point Marina	37° 35.339' N	122° 19.012' W
Emery Access Chanel	37° 50.563' N	122° 18.867' W
Emery Cove Marina	37° 50.312' N	122° 18.628' W
Exploratorium	37° 48.160' N	122° 23.902' W
Foster City Lagoon	37° 32.647' N	122° 15.829' W
Galilee Harbor	37° 51.759' N	122° 29.329' W
Gallinas Creek	38° 1.023' N	122° 30.472' W
Glen Cove Marina	38° 4.023' N	122° 12.790' W
Greenbrae Marina Neighborhood	37° 56.540' N	122° 30.627' W
Hanson Aggregates	37° 45.799' N	122° 13.439' W
Harbor Bay Ferry Channel	37° 44.143' N	122° 15.479' W
High Tide Boat Sales	37° 58.080' N	122° 30.718' W
Jackson Property	37° 45.862' N	122° 13.526' W

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Johnson Property	37° 52.405' N	122° 27.644' W
Kappas Marina – Richardson Bay Marina	37° 52.580' N	122° 30.262' W
Kiewit Pacific Company	38° 5.477' N	122° 15.294' W
Larkspur Landing Ferry Terminal	37° 56.744' N	122° 30.551' W
Larkspur Marina	37° 56.417' N	122° 31.391' W
Larkspur Sea Scout Base	37° 56.587' N	122° 30.699' W
Levin-Richmond Terminal Corporation	37° 55.269' N	122° 22.017' W
Loch Lomond Marina – Marina Village	37° 58.343' N	122° 28.867' W
Lowrie Yacht Harbor	37° 58.037' N	122° 30.469' W
Mare Island Shipyard	38° 5.796' N	122° 15.869' W
Marin Rowing Association	37° 56.557' N	122° 31.026' W
Marin Yacht Club	37° 58.315' N	122° 29.922' W
Marina Bay Yacht Harbor	37° 54.804' N	122° 20.960' W
Marina Plaza Harbor	37° 52.008' N	122° 29.706' W
Marina Vista Canal and Homeowners Assoc.	37° 58.385' N	122° 29.754' W
Martinez Marina	38° 1.629' N	122° 8.230' W
Martinez Shore Terminal	38° 2.748' N	122° 6.082' W
Montezuma Harbor	38° 11.229' N	121° 58.230' W
Napa Valley Marina	38° 13.245' N	122° 18.783' W
Oakland Yacht Club	37° 47.021' N	122° 15.818' W
Oyster Cove Marina	37° 39.821' N	122° 22.709' W
Oyster Point Marina	37° 39.820' N	122° 22.682' W
Paradise Cay Homeowners Assoc.	37° 54.825' N	122° 28.659' W
Paradise Cay Yacht Club	37° 54.930' N	122° 28.590' W
Petaluma Marina	38° 13.797' N	122° 36.811' W
Petaluma River Turning Basin	38° 14.106' N	122° 38.262' W
Pittsburg Marina	38° 2.143' N	121° 52.950' W
Plains Marketing (Martinez Shore Terminal)	38° 2.612' N	122° 6.142' W
Point San Pablo Yacht Club	37° 57.818' N	122° 25.103' W
Port of Oakland	37° 48.646' N	122° 19.715' W
Port of Redwood City	37° 30.808' N	122° 12.576' W
Port of Richmond	37° 54.729' N	122° 21.876' W
Port of San Francisco	37° 48.022' N	122° 23.770' W
Port Sonoma Marina	38° 7.060' N	122° 29.949' W
Redwood City Marina	37° 30.421' N	122° 12.727' W
Redwood City Harbor	37° 30.292' N	122° 12.420' W
Redwood Shores Lagoon	37° 32.315' N	122° 14.691' W
Richmond Yacht Club	37° 54.510' N	122° 23.015' W
RMC Lonestar Cement Marina Terminal	37° 30.850' N	122° 12.522' W
Ron Valantine Boat Dock	37° 46.160' N	122° 17.255' W
Ryer Island Boat Harbor (Veneco)	38° 4.467' N	122° 0.713' W
San Francisco Dry Dock	37° 45.801' N	122° 22.984' W
San Francisco Marina (Golden Gate & St. Francis Yacht Clubs)	37° 48.410' N	122° 26.661' W
San Francisco Yacht Club	37° 52.308' N	122° 27.735' W
San Leandro Marina	37° 41.820' N	122° 11.485' W
San Rafael Creek, Residential Berths (Canal)	37° 58.068' N	122° 30.680' W
San Rafael Rock Quarry	37° 59.302' N	122° 26.838' W
San Rafael Yacht Harbor	37° 58.134' N	122° 31.062' W
Sausalito Marina Properties	37° 51.603' N	122° 29.044' W
Sausalito Yacht Club/Harbor	37° 51.581' N	122° 28.877' W

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Schnitzer Steel	37° 47.628' N	122° 17.538' W
Schoonmaker Point Marina	37° 51.859' N	122° 29.479' W
Shamrock Materials	38° 13.515' N	122° 36.478' W
Shell Terminal	38° 2.002' N	122° 7.380' W
South Beach Yacht club	37° 46.804' N	122° 23.158' W
Strawberry Recreation District	37° 53.311' N	122° 30.001' W
Suisun City Marina	38° 14.056' N	122° 2.247' W
Time Oil Terminal	37° 55.079' N	122° 21.856' W
Timmers Landing	37° 54.554' N	122° 28.481' W
Tosco Refinery	37° 54.926' N	122° 21.900' W
US Army Reserve Center, Mare Island	38° 5.277' N	122° 15.468' W
USCG Integrated Support Command, Alameda	37° 46.753' N	122° 14.943' W
USCG Station Golden Gate	37° 49.996' N	122° 28.581' W
USCG Station Vallejo/Mare Island	38° 6.751’ N	122° 16.265’ W
USCG Station Yerba Buena Island	37° 48.568' N	122° 21.677' W
USS Posco	38° 1.915' N	121° 52.250' W
Valero Refinery Co. - Benicia Crude Dock	38° 2.676' N	122° 7.741' W
Vallejo Ferry Terminal	38° 5.982' N	122° 15.808' W
Vallejo Marina	38° 6.424' N	122° 16.096' W
Vallejo Yacht Club	38° 6.283' N	122° 16.063' W
WesPac Energy Pittsburg	38° 2.542’ N	121°53.565’ W
WETA Central Bay Ferry Maintenance Facility	37°46'16.48"N	122°17'57.29"W
WETA Harbor Bay Terminal	37°44.182’ N	122°15.423’ W
WETA Vallejo Baylink Ferry Terminal	38° 6.001' N	122° 15.789' W

Program administration and activities are described in detail below, with certain limitations and restrictions. Specifically, this programmatic consultation will not cover the following: (1) any new or previously unauthorized dredging; (2) any deepening of areas below currently authorized depths plus allowable overdepth; (3) dredging for power plant maintenance; and (4) dredging for levee maintenance. The reinitiated consultation and this biological opinion consider the effects of the remaining duration of the LTMS Program. Originally a 50-year program, the LTMS has been in effect for 15 years, resulting in a 35-year remaining lifetime for the program.

No interrelated and interdependent activities have been identified for this project. Although the proposed LTMS Program will help maintain existing maritime facilities including marinas, docks, wharfs, ports and navigation channels, future implementation of the program will not increase in the number of vessel transits per day, vessel size, or other maritime activities in the action area for the foreseeable future because the LTMS Program does not include any additional dredging for new or expanded maritime facilities. Therefore, the impacts of shipping and other maritime activities are considered as part of the environmental baseline.

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1.3.1 Administration of the Program

The DMMO will continue to provide a coordinated review of dredging and dredged material disposal project proposals[1]. The DMMO does not issue permits; rather it makes consensus-based recommendations to the member agencies on the completeness of permit applications, adequacy of sediment sampling and analysis plans (SAP), and suitability of sediments for proposed disposal locations.

The DMMO meets twice monthly to exchange technical information about dredging projects. Meetings are open to the public. The Corps serves as the "host" agency for the DMMO and provides logistical support for meetings. The Corps also maintains DMMO files and maintains the DMMO website, containing information on the DMMO and dredging-related issues. Dredge permit applicants must submit to the DMMO a SAP to confirm the suitability of sediment proposed to be dredged for unconfined aquatic placement in-Bay or at San Francisco Deep Ocean Disposal Site (SF-DODS), or upland/beneficial reuse placement. However, an applicant may alternatively submit a written request for a "Tier I" exclusion from the testing requirements based on factors such as previous testing history and physical characteristics of the material proposed for dredging. The LTMS Program permitting agencies (i.e., Regional Water Board, EPA, Corps, and BCDC) have delegated to the DMMO ultimate discretion over the required content and adequacy of the SAP. Sediment testing and analysis must be implemented as approved in the SAP and the results presented to the DMMO. Based on the results of sediment testing, the DMMO is responsible for ensuring all material dredged is physically, chemically, and biologically suitable for its disposal/placement site.

When some material is not suitable for the proposed disposal or placement site, the DMMO works with permittees to identify an appropriate alternative placement or disposal site. In cases where an alternative site is unavailable or perceived as too costly to use, permittees often choose not to immediately dredge that portion of the project. In addition to addressing sediment quality, the DMMO works closely with permittees to ensure dredging and disposal is performed within the relevant environmental work windows and other permit requirements. Annual reports prepared by the DMMO summarize the dredging and disposal activities of the previous year, and this information is used by the LTMS agencies for periodic review of the program.

In response to Conservation Measures developed during the 2011 NMFS-Corps consultation pursuant to the essential fish habitat (EFH) provisions of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the DMMO improved its procedures and requirements for sediment testing at dredge projects conducted in San Francisco Bay. Specifically, the new procedures include more systematic and predictable requirements for bioaccumulation testing and "residual" (post-dredge sediment surface) sampling and characterization. The program improvements also tie the sediment testing to San Francisco

[1] The DMMO is a joint program with representation from the Corps, EPA, BCDC, and Regional Water Board, and State Lands Commission. NMFS, California Department of Fish and Wildlife, and U.S. Fish and Wildlife Service are encouraged to participate at DMMO meetings as commenting resource agencies (see consultation history section of this opinion).

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Bay's existing Total Maximum Daily Load (TMDL) for mercury and PCB's, and the Regional Monitoring Program for San Francisco Bay. The Regional Monitoring Program is part of a region-wide program aimed at identifying chemical thresholds for sediment management. The LTMS agencies consider the DMMO and the sediment testing requirements to be ongoing projects that will continue to adapt as scientific understanding improves, testing methods advance, and resources permit.

1.3.2. Dredging Activities

Dredging involves the removal or excavation of bottom sediments from the aquatic environment in order to create or maintain waterways deep enough to support navigation, including access channels, turning basins, ports, and marinas. Dredging methods can be divided into two broad categories, mechanical and hydraulic (Gren 1976), differentiated primarily by the volume of water furnished with the dredged material. Mechanical dredges are commonly used for smaller, localized sites, and include clamshell, bucket, and excavator dredges. Hydraulic dredges remove and transport sediments by suction and pumping, which mixes large volumes of water with the sediment to form a slurry that is piped or barged to a disposal area. The most common hydraulic dredges include the cutterhead and the hopper dredge. Below is a list of the actions currently employed for the purpose of maintaining previously dredged areas in the San Francisco Bay Region.

1.3.2.1 Mechanical Dredging

Mechanical dredges remove bottom sediments by direct application of mechanical force to dislodge sediments, scooping the sediments from the bottom and placing them into a barge or scow for transport to a dredge disposal or reuse site. Mechanical dredging is typically used at the larger port and wharf facilities. Buckets on mechanical dredges typically range in size from 1 to 25 cubic yards.

Clamshell: A clamshell dredge employs a vertical loading grabber connected to wire rope which is lowered in the open position into the sediment, closed around the sediment load, and raised above the water surface where the sediment is deposited on a barge. Several diverse bucket configurations are available to be specifically tailored to the various sediment types.

Environmental bucket: An environmental bucket is similar to a conventional clamshell dredge; however the environmental bucket generally has features that include some combination of covers, exterior pulleys, and sealed joints, intended to reduce the amount of sediments that can spill or flow out of the bucket during dredging activities (Wang *et al*. 2002).

Excavator: Excavator dredging involves a backhoe excavator mounted to a barge. The excavator bucket is lowered to the seafloor where it scoops up sediment, brings the sediment up through the water column in the open bucket, where it is deposited on the barge.

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1.3.2.2 Hydraulic Dredging

Hydraulic dredges remove bottom sediments by suction force and those sediments are transported in the liquid slurry form for storage or transport to a disposal site. The Corps frequently operates one of two government-owned hopper dredges *Essayons* and the *Yaquina,* in San Francisco Bay for maintenance of Federal navigation channels. Small scale suction dredge are commonly used for marina projects and under-pier clearing. The intakes of some hydraulic dredges are equipped with a rotating cutter apparatus (i.e., cutterhead) to help break up bottom sediments and facilitate the pumping of the sediment up through the pipe.

Suction/Hopper: Hopper dredges are ships with both a suction pipe for dredging and a large hull for holding and transporting the dredged material. Hopper dredges are equipped with a drag arm, long suction pipes with drag heads attached to the end. During active dredging, the drag arm is slowly dragged across the seafloor using the forward motion of the vessel. The sediment and water slurry is drawn up through the drag head and drag arm by on-board pumps and deposited within the hopper bin. Once full, dredging ceases and hopper dredges move directly to the disposal site where dredged material is disposed through large doors at the bottom of the dredge. Although the *Essayons* and the *Yaquina* are not currently equipped as such, some hopper dredges have the ability to offload material via pipeline and pumps directly to an upland or beneficial reuse site. The intake pipe on the *Essayons* is 28 inches in diameter and the intake pipe on the *Yaquina* is 20 inches.

Suction: Suction dredges without a "hopper" cannot store the dredged material on-board and typically transport dredged materials in a slurry via pipeline for disposal at an upland or beneficial reuse location. As with hopper dredges, suction dredges are equipped with a drag arm and this arm moves across the seafloor to collect sediments. The most common small barge-mounted suction dredge used in San Francisco Bay is equipped with an 8- to 12-inch diameter intake.

1.3.2.3 Knockdown

Knockdowns employ an I-beam or other similar equipment to redistribute shoaled sediment into deeper areas within the dredging site. These are generally used for smoothing the bottom following conventional mechanical or hydraulic dredging, and for managing localized mounds without the need to mobilize a full dredging episode. Typically knockdowns are used to alleviate shoaling in marinas, ports, and in some navigational channels.

1.3.3 Disposal

During the dredging process the sediment removed from the seafloor must be transported to and disposed of at an alternate location. Dredged material may be deposited in several different location types, including in-bay, nearshore and offshore locations, and upland disposal locations.

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1.3.3.1 In-Bay Aquatic Disposal

In-bay disposal sites are open water locations within the estuarine waters of San Francisco Bay and inside the Golden Gate. There are currently four in-bay sites approved for disposal: Carquinez Strait (SF-9); San Pablo Bay (SF-10); Alcatraz (SF-11); and Suisun Bay (SF-16) (Figure 1).

1.3.3.2 Nearshore Aquatic Disposal

Nearshore disposal sites are open water locations in ocean waters outside the Golden Gate, but within 10 nautical miles of the Golden Gate Bridge. Currently there are two nearshore sites designated for placement of dredged material: San Francisco Bar Channel (SF-8) and Ocean Beach Demonstration Site (SF-17), both located south of the Main Ship Channel (Figure 1).

1.3.3.3 Ocean Disposal

Offshore disposal sites are deep open water locations in ocean waters outside of the Golden Gate Bridge. There is currently only one offshore disposal site. The San Francisco Deep Ocean Disposal Site (SF-DODS) is located approximately 49 nautical miles outside the Golden Gate (Figure 1).

1.3.3.4 Upland Disposal/Beneficial Reuse

Upland disposal includes any disposal site not located in the open waters of the San Francisco Bay estuary or ocean waters. Upland disposal may include a sanitary landfill or a beneficial reuse site. Beneficial use is the use of dredged material for human or environmental purposes and are intended to provide benefits beyond that of simple disposal. Beneficial reuse sites include placement at diked former bayland areas under conversion to wetlands, shoreline stabilization and erosion control, levees requiring maintenance, beach nourishment, construction sites, or capping of contaminated sediments. Both mechanical and hydraulic equipment may be used to transport dredged material to an upland disposal or beneficial reuse site.

Beneficial reuse sites for dredged material utilized by the LTMS Program to date include Montezuma Wetlands, Port of Oakland Middle Harbor Enhancement Area, Inner Bair Island, Hamilton Wetland Restoration Site, Sonoma Baylands, Winter Island and several remediation project sites. Upland/beneficial reuse sites are typically confined disposal in diked nearshore areas so that dredged materials do not come in direct contact with aquatic environs. Beneficial reuse sites currently available in 2015 to accept dredged material are limited to Montezuma Wetlands, Winter Island, and Cullinan Ranch; however, several additional sites are anticipated to be developed over the remaining term of the LTMS Program.

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1.3.4 Avoidance, Minimization and Mitigation Measures

The October 2014 LTMS Program consultation update provided to NMFS by the Corps and EPA proposes the following measures to avoid, minimize and mitigate the impacts of dredging and disposal in the San Francisco Bay Region. Corps conducted or funded dredging of federal navigation channels will be performed in compliance with these measures. Non-federal dredge projects authorized by the Corps' Regulatory Branch will include these measures as permit conditions.

1.3.4.1 Environmental Work Windows

1. For NMFS-listed salmon, steelhead and green sturgeon in San Francisco Bay (inshore of the Point Lobos-Point Bonita line), San Pablo Bay, and Suisun Bay, the work window is June 1 through November 30. Routine dredging and disposal operations conducted pursuant to the LTMS program during this time frame do not need further coordination with NMFS.

2. No dredging (mechanical or hydraulic) will be permitted from December 1 through May 31 upstream or within 1000 feet bayward of the mouths of Larkspur/Corte Madera Creek, Napa River Channel/Mare Island Strait (including Vallejo), Petaluma River, and Novato Creek without individual consultation.

3. For all other locations, a proponent may plan a project that performs work outside the work window (e.g., from December 1 through May 31) if the project mitigates for potential impacts by placing the dredged sediment at a beneficial reuse site that NMFS agrees will provide aquatic habitat benefits, such as tidal wetlands restoration. (For the purposes of this consultation only the portion of the material that is dredged between December 1 and May 31 is required to be placed at the beneficial reuse site.) If a project is unable to place all of the material dredged outside the work window at a beneficial reuse site (e.g., due to equipment constraints or site availability), absent additional consultation, the project proponent will be required to provide an equivalent volume of material, deemed suitable for the purpose by DMMO, to a similar beneficial reuse site from a dredging project conducted inside the work window (June 1 to November 30) and not otherwise planned to go to a reuse site benefitting aquatic habitat. (The intent is to mitigate for the additional potential impacts of dredging outside the window by providing more aquatic habitat benefit than would otherwise have occurred under an applicable, approved Alternatives Analysis.) The placement of a like volume of dredged material at a beneficial reuse site must occur within 12 months of the end of the previous work window (i.e. November 30th).

4. For projects with unplanned and unavoidable needs to complete a portion of their ongoing dredging outside of the work window (e.g. due to weather delays or mechanical breakdown), the LTMS agencies at their discretion may approve up to a cumulative total of 50,000 cubic yards per year of dredging outside the work window without further

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coordination with NMFS and without the need for further mitigation. For the purposes of this consultation, these small volumes may continue to be placed at the site(s) otherwise approved for the project(s) during the work window.

1.3.4.2 Best Practices for All Dredgers Regardless of Equipment Type (as applicable)

1. Minimize Dredging and Disposal
    a. Dredging at each project location will continue to be limited to the approved project depth plus over-depth.
    b. Knockdowns and advance maintenance proposed to reduce dredging and disposal volume or to extend the time needed between full dredging episodes may be approved by DMMO as appropriate.
2. Minimize Impacts of Dredging
    a. No overflow or decant water will be allowed to be discharged from any barge, with the exception of spillage incidental to clamshell dredge operations, unless monitoring or relevant studies show the effects of such discharge are negligible on water quality.
    b. To reduce turbidity that may affect fish habitat, return water overflow from hopper-type suction dredges would continue to be limited to no longer than 15 minutes at the dredge site during any one excavation action (cut). Overflow would be unrestricted when dredged material is greater than 90 percent sand.
    c. Turbidity control and/or monitoring measures will be required per the provisions of the LTMS Programmatic EFH Agreement when dredging occurs in proximity to identified eelgrass zones.
    d. Mitigation for any direct loss of eelgrass due to dredging will occur in consultation with NMFS, per the provisions of the LTMS Programmatic EFH Agreement.
3. Minimize Impacts of Disposal
    a. Monthly and annual disposal volume limits will remain in place for each in-Bay disposal site.
    b. The overall (average annual) in-Bay disposal volume limit set forth in the LTMS Management Plan will continue to be managed by DMMO.
    c. Where applicable, projects must be conducted in accordance with an Alternatives Analyses or Integrated Alternatives Analysis approved by the LTMS agencies, to demonstrate that they are meeting the LTMS in-Bay disposal goals to the extent practicable and feasible.

1.3.4.3 Additional Best Practices for Hydraulic Dredging

1. For hopper or pipeline dredging projects, a worker education program will be implemented for listed fish that could be adversely impacted by dredging. The program will include a presentation to all workers on biology, general behavior, distribution, habitat needs, sensitivity to human activities, legal protection status, and

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project-specific protective measures for each listed species. Workers would also be provided with written materials containing this information.

2. Draghead or pipeline pumps will only be turned on when the dragheads, cutterheads, or pipeline intakes are on the seafloor or within 3 feet of the seafloor when priming pumps.
3. Draghead, cutterheads, or pipeline intakes will be monitored so that they maintain positive contact with the seafloor during suction dredging.
4. Hopper dredges will close, to the extent possible, the draghead water intake port's doors in locations most vulnerable to entraining or entrapping listed fish. Typically, the drag arms do not clog when dredging areas are composed mostly of sand. However, in circumstances when the draghead intake port's doors need to be opened to alleviate clogging, the doors would be opened incrementally (i.e., one at a time until the clog is removed) to ensure that doors are not fully opened unnecessarily. It may take multiple iterations to fine tune the exact intake door opening necessary to prevent clogging. For each project the intake door opening will be different because the sediment in each project is different and the sediment physical characteristics (sand vs. mud) determine how much water is needed to slurry the sediment adequately.

1.4 Action Area

The action area is defined as all areas affected directly or indirectly by the Federal action and not merely the immediate area involved (50 CFR 402.02). The action area for the proposed LTMS Program encompasses all areas that will be affected by dredging and disposal activities as well as implementation of conservation and mitigation actions. The action area includes the water column and substrate within 11 federal navigation channels, and approximately 100 dredging sites at ports, marinas, and homeowners associations in South San Francisco Bay, Central San Francisco Bay, San Pablo Bay and Suisun Bay plus the water column down current of a dredging equipment to include the turbidity plume created by excavation and or overflow of water from the barge (Figure 1). The action area also includes four in-bay disposal sites and three disposal sites outside the Golden Gate. The four in-bay disposal sites are Carquinez Strait (SF-9), San Pablo Bay (SF-10), Alcatraz (SF-11), and Suisun Bay (SF-16) (Figure 1). The three disposal sites outside the Golden Gate are SF-DODS, the San Francisco Bar Channel Disposal Site (SF-8) and Ocean Beach (SF-17) (Figure 1).

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2.0 ENDANGERED SPECIES ACT: BIOLOGICAL OPINION AND INCIDENTAL TAKE STATEMENT

2.1 Analytical Framework

This biological opinion includes both a jeopardy analysis and an adverse modification analysis. The jeopardy analysis relies upon the regulatory definition of "to jeopardize the continued existence of a listed species," which is "to engage in an action that would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50 CFR 402.02). Therefore, the jeopardy analysis considers both survival and recovery of the species.

The adverse modification analysis considers the impacts on the conservation value of designated critical habitat. This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 C.F.R. 402.02, which was invalidated by *Gifford Pinchot Task Force v. USFWS*, 378 F.3d 1059 (9th Cir. 2004), amended by 387 F.3d 968 (9th Cir. 2004). Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat.

2.1.1 Jeopardy Analysis

In accordance with policy and regulation, the jeopardy analysis in this biological opinion has four components: (1) the Status of the Species, which evaluates the range-wide conditions, the factors responsible for that condition, and the species' likelihood of both survival and recovery for CCC steelhead DPS, CCV steelhead DPS, Central Valley spring-run Chinook salmon evolutionarily significant unit (ESU), Sacramento River winter-run Chinook salmon ESU, and southern DPS of North American green sturgeon; (2) the Environmental Baseline, which evaluates the condition of these listed species in the action area, the factors responsible for that condition, and the relationship of the action area to the likelihood of both survival and recovery of these listed species; (3) the Effects of the Action, which determines the direct and indirect effects of the proposed Federal action and the effects of any interrelated or interdependent activities on these species in the action area; and (4) Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on these species.

The jeopardy determination is made by adding the effects of the proposed Federal action and any Cumulative Effects to the Environmental Baseline and then determining if the resulting changes in species status in the action area are likely to cause an appreciable reduction in the likelihood of both the survival and recovery of this listed species in the wild.

The jeopardy analysis in this biological opinion places an emphasis on the range-wide likelihood of both survival and recovery of this listed species and the role of the action area in the survival and recovery of these listed species. The significance of the effects of the proposed Federal action is considered in this context, taken together with cumulative effects, for purposes of

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making the jeopardy determination. We use a hierarchical approach that focuses first on whether or not the effects on listed fish in the action area will impact their respective population. If the population will be impacted, we assess whether this impact is likely to affect the ability of the population to support the survival and recovery of the DPS or ESU.

2.1.2 Adverse Modification Analysis

The adverse modification analysis in this biological opinion relies on four components: (1) the Status of Critical Habitat, which evaluates the range-wide and watershed-wide condition of critical habitat for the CCC steelhead DPS, Sacramento River winter-run Chinook salmon ESU, and southern DPS of North American green sturgeon in terms of primary constituent elements (PCEs – sites for spawning, rearing, and migration) or physical and biological features, the factors responsible for that condition, and the resulting conservation value of the critical habitat overall; (2) the Environmental Baseline, which evaluates the condition of critical habitat in the action area, the factors responsible for that condition, and the conservation value of critical habitat in the action area; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the PCEs and physical and biological features in the action area and how that will influence the conservation value of affected critical habitat units; and (4) Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on the PCEs and physical and biological features, and how that will influence the conservation value of affected critical habitat units.

For purposes of the adverse modification determination, we add the effects of the proposed Federal action on CCC steelhead, Sacramento River winter-run Chinook salmon, and North American green sturgeon critical habitat in the action area, and any Cumulative Effects, to the Environmental Baseline and then determine if the resulting changes to the conservation value of critical habitat in the action area are likely to cause an appreciable reduction in the conservation value of critical habitat range-wide. If the proposed action will negatively affect PCEs or physical and biological features of critical habitat in the action area, we then assess whether or not this reduction will impact the value of the DPS or ESU critical habitat designation as a whole.

2.1.3 Use of Best Available Scientific and Commercial Information

To conduct the assessment, NMFS examined an extensive amount of information from a variety of sources. Detailed background information on the biology and status of the listed species and critical habitat has been published in a number of documents including peer reviewed scientific journals, primary reference materials, and governmental and non-governmental reports. Additional information regarding the effects of the proposed dredging and disposal actions on the listed species in question, their anticipated response to these actions, and the environmental consequences of the actions as a whole was formulated from the aforementioned resources, and the following:

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(1) LTMS Final Policy Environmental Impact Statement/Programmatic Environmental Impacts Report. Prepared by U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, San Francisco Bay Conservation and Development Commission, San Francisco Bay Regional Water Quality Control Board, December 1998.

(2) LTMS for the Placement of Dredged Material in the San Francisco Bay Region, Management Plan 2001. Prepared by U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, San Francisco Bay Conservation and Development Commission, San Francisco Bay Regional Water Quality Control Board, July 2001.

(3) LTMS Six Year Program Review. Prepared by U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, San Francisco Bay Conservation and Development Commission, San Francisco Bay Regional Water Quality Control Board. May 1, 2006.

(4) LTMS 12-Year Review Final Report. Prepared by U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, San Francisco Bay Conservation and Development Commission, San Francisco Bay Regional Water Quality Control Board. August 2013

(5) Draft Environmental Assessment/Environmental Impact Report, Maintenance Dredging of the Federal Navigation Channels in San Francisco Bay, Fiscal Years 2015-2024. Prepared for: U.S. Army Corps of Engineers and San Francisco Bay Regional Water Quality Control Board; Prepared by URS Group, Inc. December 2014.

Information was also provided in emails messages and telephone conversations between November 2006 and April 2015. For information that has been taken directly from published, citable documents, those citations have been referenced in the text and listed at the end of this document. A complete administrative record of this consultation is on file at the NMFS North-Central Coast Office (Administrative Record Number 151422SWR2014SR000251).

2.2 Status of the Species and Critical Habitat

This biological opinion analyzes the effects of the proposed San Francisco Bay, San Pablo Bay and Suisun Bay dredging projects on the following Federally-listed species (DPS or ESU) and designated critical habitats:

Central California Coast steelhead (*Oncorhynchus mykiss*) DPS
Threatened (71 FR 834; January 5, 2006)
Critical habitat (70 FR 52488; September 2, 2005)
California Central Valley steelhead (*O. mykiss*) DPS
Threatened (71 FR 834; January 5, 2006)
Central Valley Spring-run Chinook salmon (*O. tshawytscha*) ESU
Threatened (70 FR 37160; June 28, 2005)
Sacramento River Winter-run Chinook salmon (*O. tshawytscha*) ESU
Endangered (70 FR 37160; June 28, 2005;)

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Critical habitat (58 FR 33212; June 16, 1993)

North American Green Sturgeon (*Acipenser medirostris*) southern DPS

Threatened (71 FR 17757; April 7, 2006)

Critical habitat (74 FR 52300; September 8, 2008)

Critical habitat for CCV steelhead and CV spring-run Chinook salmon is not present in the action area.

CCC coho salmon was included in the 1998 NMFS biological opinion for the LTMS Program, but current information indicates this species has been extirpated from San Francisco Bay and its tributary streams. Based on the NMFS review of the updated LTMS Program, the proposed action is expected to have no effect on CCC coho salmon or its designated critical habitat.

2.2.1 Species Description, Life History, and Status

In this opinion, NMFS assesses four population viability parameters to help us understand the status of CCC steelhead, CCV steelhead, CV spring-run Chinook salmon, Sacramento River winter-run Chinook salmon, and southern DPS green sturgeon and their populations' ability to survive and recover. These population viability parameters are: abundance, population growth rate, spatial structure, and diversity (McElhany *et al*. 2000). NMFS has used existing information to determine the general condition of each population and factors responsible for the current status of each DPS or ESU.

We use these population viability parameters as surrogates for numbers, reproduction, and distribution, the criteria found within the regulatory definition of jeopardy (50 CFR 402.02). For example, the first three parameters are used as surrogates for numbers, reproduction, and distribution. We relate the fourth parameter, diversity, to all three regulatory criteria. Numbers, reproduction, and distribution are all affected when genetic or life history variability is lost or constrained. This results in reduced population resilience to environmental variation at local or landscape-level scales.

2.2.1.1. CCV and CCC Steelhead General Life History

Steelhead are anadromous forms of *O. mykiss*, spending some time in both freshwater and saltwater. Unlike Pacific salmon, steelhead are iteroparous, or capable of spawning more than once before death (Busby *et al*. 1996). Although one-time spawners are the great majority, Shapovalov and Taft (1954) reported that repeat spawners are relatively numerous (17.2 percent) in California streams. Steelhead young usually rear in freshwater for 1 to 3 years before migrating to the ocean as smolts, but rearing periods of up to 7 years have been reported. Migration to the ocean usually occurs in the spring. Steelhead may remain in the ocean for 1 to 5 years (2 to 3 years is most common) before returning to their natal streams to spawn (Busby *et al.* 1996). The distribution of steelhead in the ocean is not well known. Interannual variations in climate, abundance of key prey items (e.g. squid), and density dependent interactions with other salmonid species are key drivers of steelhead distribution and productivity in the marine

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environment (Atcheson *et al*. 2013; Atcheson *et al*. 2012). Recent information indicates that steelhead originating from central California use a cool, stable, thermal habitat window (ranging between 8-14 degrees Celcius [°C]) in the marine environment characteristic of conditions in northern waters above the 40th parallel to the southern boundary of the Bering Sea (Hayes *et al*. 2012). Adult steelhead typically migrate from the ocean to freshwater between December and April, peaking in January and February (Fukushima and Lesh 1998).

Juvenile steelhead migrate as smolts to the ocean from January through May, with peak migration occurring in April and May (Fukushima and Lesh 1998). Barnhart (1986) reports steelhead smolts in California typically range in size from 140 to 210 millimeter (mm) (fork length). Steelhead of this size can withstand higher salinities than smaller fish (McCormick 1994), and are more likely to occur for longer periods in tidally influenced estuaries, such as San Francisco Bay. Steelhead smolts in most river systems must pass through estuaries prior to seawater entry.

2.2.1.2 Status of CCC Steelhead DPS and Critical Habitat

Historically, approximately 70 populations[2] of steelhead existed in the CCC steelhead DPS (Spence *et al*. 2008; Spence *et al*. 2012). Many of these populations (about 37) were independent, or potentially independent, meaning they had a high likelihood of surviving for 100 years absent anthropogenic impacts (Bjorkstedt *et al*. 2005). The remaining populations were dependent upon immigration from nearby CCC steelhead DPS populations to ensure their viability (Bjorkstedt *et al*. 2005; McElhany *et al*. 2000).

While historical and present data on abundance are limited, CCC steelhead numbers are substantially reduced from historical levels. A total of 94,000 adult steelhead were estimated to spawn in the rivers of this DPS in the mid-1960s, including 50,000 fish in the Russian River - the largest population within the DPS (Busby *et al.* 1996). Near the end of the 20th century the population of wild CCC steelhead was estimated to be between 1,700- 7,000 fish (McEwan 2001). Recent estimates for the Russian River population are unavailable since monitoring data is limited. Abundance estimates for smaller coastal streams in the DPS indicate low population levels that are slowly declining, with recent estimates (2011/2012) for several streams (Redwood [Marin County], Waddell, San Vicente, Soquel, and Aptos creeks) of individual run sizes of 50 fish or less (The Nature Conservancy 2013). Some loss of genetic diversity has been documented and attributed to previous among-basin transfers of stock and local hatchery production in interior populations in the Russian River (Bjorkstedt *et al.* 2005). Similar losses in genetic diversity in the Napa River may have resulted from out-of-basin and out-of-DPS releases of steelhead in the Napa River basin in the 1970s and 80s. These transfers included fish from the South Fork Eel River, San Lorenzo River, Mad River, Russian River, and the Sacramento River.

[2] Population as defined by Bjorkstedt *et al.* 2005 and McElhaney *et al.* 2000 as, in brief summary, a group of fish of the same species that spawns in a particular locality at a particular season and does not interbreed substantially with fish from any other group. Such fish groups may include more than one stream. These authors use this definition as a starting point from which they define four types of populations (not all of which are mentioned here).

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In San Francisco Bay streams, reduced population sizes and fragmentation of habitat has likely also led to loss of genetic diversity in these populations. For more detailed information on trends in CCC steelhead abundance, see: Busby *et al.* 1996, NMFS 1997, Good *et al.* 2005, and Spence *et al.* 2008.

CCC steelhead have experienced serious declines in abundance and long-term population trends suggest a negative growth rate. This indicates the DPS may not be viable in the long term. DPS populations that historically provided enough steelhead immigrants to support dependent populations may no longer be able to do so, placing dependent populations at increased risk of extirpation. However, because CCC steelhead remain present in most streams throughout the DPS, roughly approximating the known historical range, CCC steelhead likely possess a resilience that is likely to slow their decline relative to other salmonid DPSs or ESUs in worse condition. In 2005, a status review concluded that steelhead in the CCC steelhead DPS remain "likely to become endangered in the foreseeable future" (Good *et al*. 2005). On January 5, 2006, NMFS issued a final determination that the CCC steelhead DPS is a threatened species, as previously listed (71 FR 834).

A more recent viability assessment of CCC steelhead concluded that populations in watersheds that drain to San Francisco Bay are highly unlikely to be viable, and that the limited information available did not indicate that any other CCC steelhead populations could be demonstrated to be viable (Spence *et al.* 2008). Viable populations have a high probability of long-term persistence (> 100 years). Monitoring data from the last ten years of adult CCC steelhead returns in Lagunitas and Scott creeks show steep declines in adults in 2008/2009. In 2011/2012 population levels began to increase, but still remained lower than levels observed over the past ten years (The Nature Conservancy 2013). The most recent status update found that the status of the CCC steelhead DPS remains "likely to become endangered in the foreseeable future" (Williams *et al*. 2011), as new and additional information available since Good *et al.* (2005), does not appear to suggest a change in extinction risk. On December 7, 2011, NMFS chose to maintain the threatened status of the CCC steelhead (76 FR 76386).

Critical habitat was designated for CCC steelhead on September 2, 2005 (70 FR 52488) and includes PCEs essential for the conservation of CCC steelhead. Critical habitat in estuaries is defined by the perimeter of the waterbody as displayed on standard 1:24,000 scale topographic maps or the elevation of extreme high water, whichever is greater. These PCEs include estuarine areas free of obstruction and excessive predation with the following essential features: (1) water quality, water quantity and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater; (2) natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels; and (3) juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation (70 FR 52488).

The condition of CCC steelhead critical habitat, specifically its ability to provide for their conservation, has been degraded from conditions known to support viable salmonid populations. NMFS has determined that present depressed population conditions are, in part, the result of the

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following human-induced factors affecting critical habitat: logging, agricultural and mining activities, urbanization, stream channelization, dams, wetland loss, and water withdrawals, including unscreened diversions for irrigation. Impacts of concern include alteration of streambank and channel morphology, alteration of water temperatures, loss of spawning and rearing habitat, fragmentation of habitat, loss of downstream recruitment of spawning gravels and large woody debris, degradation of water quality, removal of riparian vegetation resulting in increased streambank erosion, loss of shade (higher water temperatures) and loss of nutrient inputs (Busby *et al.* 1996, 70 FR 52488). Water development has drastically altered natural hydrologic cycles in many of the streams in the DPS. Alteration of flows results in migration delays, loss of suitable habitat due to dewatering and blockage; stranding of fish from rapid flow fluctuations; entrainment of juveniles into poorly screened or unscreened diversions, and increased water temperatures harmful to salmonids. Overall, current condition of CCC steelhead critical habitat is degraded, and does not provide the full extent of conservation value necessary for the recovery of the species.

2.2.1.3 Status of the CCV Steelhead DPS

California Central Valley (CCV) steelhead historically were well-distributed throughout the Sacramento and San Joaquin rivers (Busby *et al.* 1996). Although it appears CCV steelhead remain widely distributed in Sacramento River tributaries, the vast majority of historical spawning areas are currently above impassable dams. At present, all CCV steelhead are considered winter-run steelhead (McEwan and Jackson 1996), although there are indications that summer steelhead were present in the Sacramento River system prior to the commencement of large-scale dam construction in the 1940s (IEP 1999). McEwan and Jackson (1996) reported that wild steelhead stocks appear to be mostly confined to upper Sacramento River tributaries such as Antelope, Deer, and Mill creeks and the Yuba River. However, naturally spawning populations are also known to occur in Butte Creek, and the upper Sacramento mainstem, Feather, American, Mokelumne, and Stanislaus rivers (CALFED 2000). It is possible that other small populations of naturally spawning steelhead exist in Central Valley streams, but are undetected due to lack of sufficient monitoring and research programs; increases in fisheries monitoring efforts led to the discovery of steelhead populations in streams such as Auburn Ravine and Dry Creek (IEP 1999).

Small self-sustaining populations of CCV steelhead exist in the Stanislaus, Mokelumne, Calaveras, and other tributaries of the San Joaquin River (McEwan 2001). On the Stanislaus River, steelhead smolts have been captured in rotary screw traps at Caswell State Park and Oakdale each year since 1995 (Demko *et al*. 2000). Incidental catches and observations of steelhead juveniles also have occurred on the Tuolumne and Merced Rivers during fall-run Chinook salmon monitoring activities, indicating that steelhead are widespread, if not abundant, throughout accessible streams and rivers in the Central Valley (Good *et al*. 2005).

Steelhead counts at the Red Bluff Diversion Dam (RBDD) have declined from an average annual count of 11,187 adults for the ten-year period beginning in 1967, to an average annual count 2,202 adults in the 1990's (McEwan and Jackson 1996). Estimates of the adult steelhead

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population composition in the Sacramento River (natural origin versus hatchery origin) have also changed over this time period; through most of the 1950's, Hallock *et al*. (1961) estimated that 88 percent of returning adults were of natural origin, and this estimate declined to 10-30 percent in the 1990's (McEwan and Jackson 1996). Furthermore, the California Fish and Wildlife Plan estimated a total run size of about 40,000 adults for the entire Central Valley, including San Francisco Bay, in the early 1960s (CDFG 1965). In 1991-92, this run was probably less than 10,000 fish based on dam counts, hatchery returns and past spawning surveys (McEwan and Jackson 1996).

The status of CCV steelhead appears to have worsened since the 2005 status review (Good *et al*. 2005), when the Biological Review Team (BRT) concluded that the DPS was in danger of extinction. New information available since Good *et al*. (2005) indicates an increased extinction risk (Williams *et al*. 2011). Steelhead have been extirpated from most of their historical range in this region. Habitat concerns in this DPS focus on the widespread degradation, destruction, and blockage of freshwater habitat within the region, and water allocation problems. Widespread hatchery production of introduced steelhead within this DPS also raises concerns about the potential ecological interactions between introduced and native stocks. Because the CCV steelhead population has been fragmented into smaller isolated tributaries without any large source population, and the remaining habitat continues to be degraded by water diversions, the population remains at an elevated risk for future population declines. Based on this information, NMFS chose to maintain the threatened listing for this species (76 FR 50447), but recommends reviewing CCV steelhead status again in 2-3 years, (instead of the normal 5 years) if species numbers do not improve (NMFS 2011).

2.2.1.4 CV Spring-run and Sacramento River Winter-run Chinook Salmon General Life History

Chinook salmon return to freshwater to spawn when they are 3 to 8 years old (Healey 1991). Runs are designated on the basis of adult migration timing; however, distinct runs also differ in the degree of maturation at the time of river entry, thermal regime and flow characteristics of their spawning site, and actual time of spawning (Myers *et al*. 1998). Both winter-run and spring-run Chinook salmon tend to enter freshwater as immature fish, migrate far upriver, and delay spawning for weeks or months. For comparison, fall-run Chinook salmon enter freshwater at an advanced stage of maturity, move rapidly to their spawning areas on the mainstem or lower tributaries of rivers, and spawn within a few days or weeks of freshwater entry (Healey 1991). Adult endangered Sacramento River winter-run Chinook salmon enter San Francisco Bay from November through June (Hallock and Fisher 1985), and delay spawning until spring or early summer. Adult threatened Central Valley spring-run Chinook salmon enter the Sacramento-San Joaquin Delta (Delta) beginning in January and enter natal streams from March to July (Myers *et al*. 1998). Central Valley spring-run Chinook salmon adults hold in freshwater over summer and spawn in the fall. Central Valley spring-run Chinook salmon juveniles typically spend a year or more in freshwater before migrating toward the ocean. Adequate instream flows and cool water temperatures are more critical for the survival of Central Valley spring-run Chinook salmon due to over summering by adults and/or juveniles.

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Sacramento River winter-run Chinook salmon spawn primarily from mid-April to mid-August, peaking in May and June, in the Sacramento River reach between Keswick Dam and the Red Bluff Diversion Dam. Central Valley spring-run Chinook salmon typically spawn between September and October depending on water temperatures. Chinook salmon generally spawn in waters with moderate gradient and gravel and cobble substrates. Eggs are deposited within the gravel where incubation, hatching, and subsequent emergence take place. The upper preferred water temperature for spawning adult Chinook salmon is 13ºC (Chambers 1956) to 14 ºC (Reiser and Bjornn 1979). The length of time required for eggs to develop and hatch is dependent on water temperature, and quite variable.

Sacramento River winter-run Chinook salmon fry begin to emerge from the gravel in late June to early July and continue through October (Fisher 1994). Juvenile winter-run Chinook salmon spend 4 to 7 months in freshwater prior to migrating to the ocean as smolts. Central Valley spring-run Chinook salmon fry emerge from November to March and spend about 3 to 15 months in freshwater prior to migrating towards the ocean (Kjelson *et al*. 1981). Post-emergent fry seek out shallow, nearshore areas with slow current and good cover, and begin feeding on small terrestrial and aquatic insects and crustaceans. Chinook fry and parr may spend time rearing within riverine and/or estuarine habitats including natal tributaries, the Sacramento River, non-natal tributaries to the Sacramento River, and the Delta.

Within estuarine habitat, juvenile rearing Chinook salmon movements are generally dictated by tidal cycles, following the rising tide into shallow water habitats from the deeper main channels, and returning to the main channels when the tide recedes (Healey 1991; Levings 1982; Levy and Northcote 1982). Juvenile Chinook salmon forage in shallow areas with protective cover, such as intertidal and subtidal mudflats, marshes, channels and sloughs (Dunford 1975; McDonald 1960). As juvenile Chinook salmon increase in length, they tend to school in the surface waters of the main and secondary channels and sloughs, following the tides into shallow water habitats to feed (Allen and Hassler 1986). Kjelson *et al*. (1981) reported that juvenile Chinook salmon demonstrated a diel migration pattern, orienting themselves to nearshore cover and structure during the day, but moving into more open, offshore waters at night. The fish also distributed themselves vertically in relation to ambient light. Juvenile Sacramento River winter-run Chinook salmon migrate to the sea as smolts after only rearing in freshwater for 4 to 7 months, and occur in the Delta from October through early May (CDFG 2000). Most Central Valley spring-run Chinook salmon smolts are present in the Delta from mid-March through mid-May depending on flow conditions (CDFG 1998).

2.2.1.5 Status of the CV Spring-run Chinook Salmon

Historically, the predominant salmon run in the Central Valley was the spring-run Chinook salmon. Extensive construction of dams throughout the Sacramento-San Joaquin basin has reduced the Central Valley spring-run Chinook salmon run to only a small portion of its historical distribution. The Central Valley drainage as a whole is estimated to have supported Central Valley spring-run Chinook salmon runs as large as 600,000 fish between the late 1880s and 1940s (CDFG 1998). The ESU has been reduced to only three naturally-spawning

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populations that are free of hatchery influence from an estimated 17 historic populations.[3] These three populations (spawning in three tributaries to the Sacramento River - Deer, Mill, and Butte creeks), are in close geographic proximity, increasing the ESU's vulnerability to disease or catastrophic events.

Central Valley spring-run Chinook salmon from the Feather River Hatchery (FRH) were included in the ESU because they are believed by NMFS to be the only population in the ESU that displays early run timing. This early run timing is considered by NMFS to represent an important evolutionary legacy of the spring-run populations that once spawned above Oroville Dam (70 FR 37160). The FRH population is closely related genetically to the natural Feather River population. The FRH's goal is to release five million spring-run Chinook salmon per year. Recent releases have ranged from about one-and-a-half to five million fish, with most releases below five million fish (Good *et al*. 2005).

Several actions have been taken to improve habitat conditions for Central Valley spring-run Chinook salmon, including: habitat restoration efforts in the Central Valley; and changes in freshwater harvest management measures. Although protective measures likely have contributed to recent increases in Central Valley spring-run Chinook salmon abundance, the ESU is still well below levels observed from the 1960s. Threats from climatic variation, high temperatures, predation, and water diversions still persist. Hatchery production can also pose a threat to salmonids. Potential adverse effects from hatchery production include competition for food between naturally-spawned and hatchery fish, run hybridization and genomic homogenization. Despite these potential impacts from hatchery production, NMFS ultimately concluded the FRH stock should be included in the Central Valley spring-run Chinook ESU because it still exhibited a spring-run migration timing and was the best opportunity for restoring a more natural spring-run population in the Feather River. In the most recent status review of this ESU, NMFS concluded that the FRH stock should be considered part of the Central Valley spring-run Chinook ESU (Williams *et al*. 2011). Because wild Central Valley spring-run Chinook salmon ESU populations are confined to relatively few remaining watersheds and continue to display broad fluctuations in abundance, the BRT concluded that the ESU is likely to become endangered within the foreseeable future. The most recent status review concludes the status of Central Valley spring-run Chinook salmon ESU has probably deteriorated since the 2005 status review (Williams *et al.* 2011). New information available since Good *et al.* (2005) indicates an increased extinction risk. Based on this information, NMFS has chosen to maintain the threatened listing for this species (76 FR 50447), but recommends reviewing Central Valley spring-run Chinook status again in 2-3 years, (instead of the normal 5 years) if species numbers do not improve (NMFS 2011).

2.2.1.6 Status of the Sacramento River Winter-Run Chinook Salmon and Critical Habitat

The Sacramento River winter-run Chinook salmon ESU has been completely displaced from its historical spawning habitat by the construction of Shasta and Keswick dams. Approximately,

[3] There has also been a small run in Big Chico Creek in recent years (Good *et al.* 2005).

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300 miles of tributary spawning habitat in the upper Sacramento River is now inaccessible to the ESU. Most components of the Sacramento River winter-run Chinook salmon life history (e.g., spawning, incubation, freshwater rearing) have been compromised by the habitat blockage in the upper Sacramento River. The only remaining spawning habitat in the upper Sacramento River is between Keswick Dam and Red Bluff Diversion Dam (RBDD). This habitat is artificially maintained by cool water releases from Shasta and Keswick Dams, and the spatial distribution of spawners in the upper Sacramento River is largely governed by the water year type and the ability of the Central Valley Project to manage water temperatures in this area.

Sacramento River winter-run Chinook salmon were first listed as threatened in 1989 under an emergency rule. In 1994, NMFS reclassified the ESU as an endangered species due to several factors, including: (1) the continued decline and increased variability of run sizes since its listing as a threatened species in 1989; (2) the expectation of weak returns in coming years as the result of two small year classes (1991 and 1993); and (3) continuing threats to the species. NMFS issued a final listing determination on June 28, 2005. Between the time Shasta Dam was built and the Sacramento River winter-run Chinook salmon were listed in 1989, major impacts to the population occurred from warm water releases from Shasta Dam, juvenile and adult passage constraints at the RBDD, water exports in the southern Delta, and entrainment at a large number of unscreened or poorly-screened water diversions. However, the naturally spawning component of this ESU has exhibited marked improvements in abundance and productivity in the 2000s (CDFG 2008). These increases in abundance are encouraging, relative to the years of critically low abundance of the 1980s and early 1990s; however, returns of several West Coast Chinook salmon and coho salmon stocks were lower than expected in 2007 (NMFS 2008), and stocks remained low through 2009.

A captive broodstock artificial propagation program for Sacramento River winter-run Chinook salmon has operated since the early 1990s as part of recovery actions for this ESU. As many as 150,000 juvenile salmon have been released by this program, but in most cases the number of fish released was in the tens of thousands (Good *et al*. 2005). NMFS reviewed this hatchery program in 2004 and concluded that as much as 10 percent of the natural spawners may be attributable to the program's support of the population (69 FR 33102). The artificial propagation program has contributed to maintaining diversity through careful use of methods that ensure genetic diversity. If improvements in natural production continue, the artificial propagation program may be discontinued (69 FR 33102).

Critical habitat was designated for the Sacramento River winter-run Chinook salmon on June 16, 1993. Physical and biological features that are essential for the conservation of Sacramento winter-run Chinook salmon, based on the best available information, include: (1) access from the Pacific Ocean to appropriate spawning areas in the upper Sacramento River; (2) the availability of clean gravel for spawning substrate; (3) adequate river flows for successful spawning, incubation of eggs, fry development and emergence, and downstream transport of juveniles; (4) water temperatures between 6 and 14˚C for successful spawning, egg incubation, and fry development; (5) habitat areas and adequate prey that are not contaminated; (6) riparian areas that provide for successful juvenile development and survival; and (7) access downstream

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so that juveniles can migrate from the spawning grounds to San Francisco Bay and the Pacific Ocean (58 FR 33212).

Designated critical habitat for Sacramento River winter-run Chinook salmon includes the Sacramento River from Keswick Dam, Shasta County (River Mile 302) to Chipps Island (River Mile 0), all waters from Chipps Island westward to Carquinez Bridge, all waters of San Pablo Bay, and all water of San Francisco Bay (north of the San Francisco /Oakland Bay Bridge). Winter-run Chinook salmon critical habitat has been degraded from conditions known to support viable salmonid populations. It does not provide the full extent of conservation values necessary for the recovery of the species. In particular, adequate river flows and water temperatures have been impacted by human actions, substantially altering the historical river characteristics in which the Sacramento River winter-run Chinook salmon evolved. Depletion and storage of stream flows behind large dams on the Sacramento River and other tributary streams have drastically altered the natural hydrologic cycles of the Sacramento River and Delta. Alteration of flows results in migration delays, loss of suitable habitat due to dewatering and blockage; stranding of fish from rapid flow fluctuations; entrainment of juveniles into poorly screened or unscreened diversions, and increased water temperatures harmful to salmonids. Other impacts of concern include alteration of stream bank and channel morphology, loss of riparian vegetation, loss of spawning and rearing habitat, fragmentation of habitat, loss of downstream recruitment of spawning gravels, degradation of water quality, and loss of nutrient input.

Several actions have been taken to improve habitat conditions for Sacramento River winter-run Chinook salmon, including: changes in ocean and inland fishing harvest that to increase ocean survival and adult escapement, and implementation of habitat restoration efforts throughout the Central Valley. However, this population remains below established recovery goals and the naturally-spawned component of the ESU is dependent on one extant population in the Sacramento River. In addition to concern for catastrophic events that could affect the one remaining population, there is particular concern about risks to the ESU's genetic diversity (genetic diversity is probably limited because there is only one remaining population) life-history variability, local adaptation, and spatial structure (Good *et al*. 2005, 70 FR 37160). The status of Sacramento River winter-run Chinook salmon is little changed since the last status review (Good *et al*. 2005), and new information available since does not appear to suggest a change in extinction risk (Williams *et al*. 2011). On August 15, 2011, NMFS reaffirmed no change to the listing of endangered for the Sacramento River winter-run Chinook salmon ESU (76 FR 50447).

2.2.1.7 Green Sturgeon General Life History

Green sturgeon is an anadromous, long-lived, and bottom-oriented fish species in the family Acipenseridae. Sturgeon have skeletons composed mostly of cartilage and lack scales, instead possessing five rows of characteristic bony plates on their body called "scutes." On the underside of their flattened snouts are sensory barbels and a siphon-shaped, protrusible, toothless mouth. Large adults may exceed 2 meters in length and 100 kilograms in weight (Moyle 1976). Based on genetic analyses and spawning site fidelity, NMFS determined that North American green sturgeon are comprised of at least two DPSs: a northern DPS consisting of populations

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originating from coastal watersheds northward of and including the Eel River ("northern DPS green sturgeon"), with spawning confirmed in the Klamath and Rogue river systems; and a southern DPS consisting of populations originating from coastal watersheds south of the Eel River ("southern DPS green sturgeon"), with spawning confirmed in the Sacramento River system (Adams *et al*. 2002).

Green sturgeon is the most marine-oriented species of sturgeon (Moyle 2002). Along the West Coast of North America, they range in nearshore waters from Mexico to the Bering Sea (Adams *et al*. 2002), with a general tendency to head north after their out-migration from freshwater (Lindley *et al*. 2011). While in the ocean, archival tagging indicates that green sturgeon occur in waters between 0 and 200 meters depth, but spend most of their time in waters between 20–80 meters and temperatures of 9.5–16.0°C (Huff *et al*. 2011; Nelson *et al*. 2010). Subadult and adult green sturgeon move between coastal waters and estuaries, but relatively little is known about how green sturgeon use these habitats (Lindley *et al*. 2011). Lindley *et al*. (2011) report multiple rivers and estuaries are visited by aggregations of green sturgeon in summer months, and larger estuaries (e.g., San Francisco Bay) appear to be particularly important habitat. During the winter months, green sturgeon generally reside in the coastal ocean. Areas north of Vancouver Island are favored overwintering areas, with Queen Charlotte Sound and Hecate Strait likely destinations based on detections of acoustically-tagged green sturgeon (Lindley *et al*. 2008; Nelson *et al*. 2010).

Based on genetic analysis, Israel *et al*. (2009) reported that almost all green sturgeon collected in the San Francisco Bay system were southern DPS. This is corroborated by tagging and tracking studies which found that no green sturgeon tagged in the Klamath or Rogue rivers (i.e., Northern DPS) have yet been detected in San Francisco Bay (Lindley *et al*. 2011). However, green sturgeon inhabiting coastal waters adjacent to San Francisco Bay include northern DPS green sturgeon.

Adult southern DPS green sturgeon spawn in the Sacramento River watershed during the spring and early summer months (Moyle *et al*. 1995). Eggs are laid in turbulent areas on the river bottom and settle into the interstitial spaces between cobble and gravel (Adams *et al*. 2007). Like salmonids, green sturgeon require cool water temperatures for egg and larval development, with optimal temperatures ranging from 11 to 17˚C (Van Eenennaam *et al*. 2006). Eggs hatch after 6–8 days, and larval feeding begins 10–15 days post-hatch. Metamorphosis of larvae into juveniles typically occurs after a minimum of 45 days (post-hatch) when fish have reached 60–80 mm total length (TL). After hatching larvae migrate downstream and metamorphose into juveniles. Juveniles spend their first few years in the Sacramento-San Joaquin Delta (Delta) and San Francisco Estuary before entering the marine environment as subadults. Juvenile green sturgeon salvaged at the State and Federal water export facilities in the southern Delta are generally between 200 mm and 400 mm TL (Adams *et al*. 2002) which suggests southern DPS green sturgeon spend several months to a year rearing in freshwater before entering the Delta and San Francisco Estuary. Laboratory studies conducted by Allen and Cech (2007) indicated juveniles approximately 6-month old were tolerant of saltwater, but approximately 1.5-year old green sturgeon appeared more capable of successful osmoregulation in salt water.

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Subadult green sturgeon spend several years at sea before reaching reproductive maturity and returning to freshwater to spawn for the first time (Nakamoto *et al*. 1995). Little data are available regarding the size and age-at-maturity for the southern DPS green sturgeon, but it is likely similar to that of the northern DPS. Male and female green sturgeon differ in age-at-maturity. Males can mature as young as 14 years and female green sturgeon mature as early as age 16 (Van Eenennaam *et al*. 2006). Adult green sturgeon are believed to spawn every two to five years. Recent telemetry studies by Heublein *et al*. (2009) indicate adults typically enter San Francisco Bay from the ocean and begin their upstream spawning migration between late February and early May. These adults on their way to spawning areas in the upper Sacramento River typically migrate rapidly through the estuary toward their upstream spawning sites. Preliminary results from tagged adult sturgeon suggest travel time from the Golden Gate to Rio Vista in the Delta is generally 1-2 weeks. Post-spawning, Heublein *et al*. (2009) reported tagged southern DPS green sturgeon displayed two outmigration strategies; outmigration from Sacramento River prior to September 1 and outmigration during the onset of fall/winter stream flow increases. The transit time for post-spawning adults through the San Francisco Estuary appears to be very similar to their upstream migration (i.e., 1-2 weeks).

During the summer and fall, an unknown proportion of the population of non-spawning adults and subadults enter the San Francisco Estuary from the ocean for periods ranging from a few days to 6 months (Lindley *et al*. 2011). Some fish are detected only near the Golden Gate, while others move as far inland as Rio Vista in the Delta. The remainder of the population appear to enter bays and estuaries farther north from Humboldt Bay, California to Grays Harbor, Washington (Lindley *et al*. 2011).

Green sturgeon feed on benthic invertebrates and fish (Adams *et al*. 2002). Radtke (1966) analyzed stomach contents of juvenile green sturgeon captured in the Sacramento-San Joaquin Delta and found the majority of their diet was benthic invertebrates, such as mysid shrimp and amphipods (Corophium *spp*). Manual tracking of acoustically-tagged green sturgeon in the San Francisco Bay estuary indicates they are generally bottom-oriented, but make occasional forays to surface waters, perhaps to assist their movement (Kelly *et al*. 2007). Dumbauld *et al*. (2008) report that immature green sturgeon found in Willapa Bay, Grays Harbor, and the Columbia River Estuary, fed on a diet consisting primarily of benthic prey and fish common to these estuaries (ghost shrimp, crab, and crangonid shrimp), with burrowing thalassinid shrimp representing a significant proportion of the sturgeon diet. Dumbauld *et al*. (2008) observed feeding pits (depressions in the substrate believed to be formed when green sturgeon feed) in soft-bottom intertidal areas where green sturgeon are believed to spend a substantial amount foraging.

2.2.1.8 Status of Southern DPS Green Sturgeon and Critical Habitat

To date, little population-level data have been collected for green sturgeon. In particular, there are no published abundance estimates for either northern DPS or southern DPS green sturgeon in any of the natal rivers based on survey data. As a result, efforts to estimate green sturgeon

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population size have had to rely on sub-optimal data with known potential biases. Available abundance information comes mainly from four sources: 1) incidental captures in the California Department of Fish and Wildlife (CDFW) white sturgeon monitoring program; 2) fish monitoring efforts associated with two diversion facilities on the upper Sacramento River; 3) fish salvage operations at the water export facilities on the Sacramento-San Joaquin Delta; and 4) dual frequency sonar identification in spawning areas of the upper Sacramento River. These data are insufficient in a variety ways (short time series, non-target species, etc.) and do not support more than a qualitative evaluation of changes in green sturgeon abundance.

CDFW's white sturgeon monitoring program incidentally captures southern DPS green sturgeon. Trammel nets are used to capture white sturgeon and CDFW (CDFG 2002) utilizes a multiple-census or Peterson mark-recapture method to estimate the size of subadult and adult sturgeon population. By comparing ratios of white sturgeon to green sturgeon captures, estimates of southern DPS green sturgeon abundance can be calculated. Estimated abundance of green sturgeon between 1954 and 2001 ranged from 175 fish to more than 8,000 per year and averaged 1,509 fish per year. Unfortunately, there are many biases and errors associated with these data, and CDFG does not consider these estimates reliable. For larval and juvenile green sturgeon in the upper Sacramento River, information is available from salmon monitoring efforts at the RBDD and the Glenn-Colusa Irrigation District (GCID). Incidental capture of larval and juvenile green sturgeon at the RBDD and GCID have ranged between 0 and 2,068 green sturgeon per year (Adams *et al*. 2002). Genetic data collected from these larval green sturgeon suggest that the number of adult green sturgeon spawning in the upper Sacramento River remained roughly constant between 2002 and 2006 in river reaches above Red Bluff (Israel and May 2010). In 2011, rotary screw traps operating in the Upper Sacramento River at RBDD captured 3,700 larval green sturgeon which represents the highest catch on record in 16 years of sampling (Poytress *et al*. 2011).

Juvenile green sturgeon are collected at water export facilities operated by the California Department of Water Resources (DWR) and the Federal Bureau of Reclamation (BOR) in the Sacramento-San Joaquin Delta. Fish collection records have been maintained by DWR from 1968 to present and by BOR from 1980 to present. The average number of southern DPS green sturgeon taken per year at the DWR facility prior to 1986 was 732; from 1986 to 2001, the average per year was 47 (70 FR 17386). For the BOR facility, the average number prior to 1986 was 889; from 1986 to 2001 the average was 32 (70 FR 17386). Direct capture in the salvage operations at these facilities is a small component of the overall effect of water export facilities on southern DPS green sturgeon; entrained juvenile green sturgeon are exposed to potential high levels of predation by non-native predators, disruption in migratory behavior, and poor habitat quality. Delta water exports have increased substantially since the 1970s and it is likely that this has contributed to negative trends in the abundance of migratory fish that utilize the Delta, including the southern DPS green sturgeon.

During the spring and summer spawning period, researchers with University of California Davis have utilized dual-frequency identification sonar (i.e., DIDSON) to count adult green sturgeon in the upper Sacramento River. These surveys estimated 175 to 250 sturgeon (±50) in the

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mainstem Sacramento River during the 2010 and 2011 spawning seasons (Mora, personal communication, January 2012). However, it is important to note that this estimate may include some white sturgeon, and movements of individuals in and out of the survey area confound these estimates. Given these uncertainties, caution must be taken in using these estimates to infer the spawning run size for the Sacramento River, until further analyses are completed.

The most recent status review update concluded the southern DPS green sturgeon is likely to become endangered in the foreseeable future due to the substantial loss of spawning habitat, the concentration of a single spawning population in one section of the Sacramento River, and multiple other risks to the species such as stream flow management, degraded water quality, and introduced species (NMFS 2005). Based on this information, the southern DPS green sturgeon was listed as threatened on April 7, 2006 (71 FR 17757).

Critical habitat was designated for the southern DPS of green sturgeon on October 9, 2009 (74 FR 52300) and includes coastal marine waters within 60 fathoms depth from Monterey Bay, California to Cape Flattery, Washington, including the Strait of Juan de Fuca to its United States boundary. Designated critical habitat also includes the Sacramento River, lower Feather River, lower Yuba River, Sacramento-San Joaquin Delta, Suisun Bay, San Pablo Bay, and San Francisco Bay in California. PCEs of designated critical habitat in estuarine areas are food resources, water flow, water quality, mitigation corridor, depth, and sediment quality. In freshwater riverine systems, PCEs of green sturgeon critical habitat are food resources, substrate type or size, water flow, water quality, migratory corridor, depth, and sediment quality. In nearshore coastal marine areas, PCEs are migratory corridor, water quality, and food resources.

The current condition of critical habitat for the southern DPS of green sturgeon is degraded over its historical conditions. It does not provide the full extent of conservation values necessary for the recovery of the species, particularly in the upstream riverine habitat of the Sacramento River. In the Sacramento River, migration corridor and water flow PCEs have been impacted by human actions, substantially altering the historical river characteristics in which the southern DPS of green sturgeon evolved. In addition, the alterations to the Sacramento-San Joaquin River Delta may have a particularly strong impact on the survival and recruitment of juvenile green sturgeon due to their protracted rearing time in brackish and estuarine waters.

2.2.2 Factors Responsible for Steelhead, Chinook Salmon, and Green Sturgeon Stock Declines

NMFS cites many reasons (primarily anthropogenic) for the decline of steelhead (Busby *et al*. 1996), Chinook salmon (Myers *et al*. 1998), and southern DPS of green sturgeon (Adams *et al*. 2002; NMFS 2005). The foremost reason for the decline in these anadromous populations is the degradation and/or destruction of freshwater and estuarine habitat. Additional factors contributing to the decline of these populations include: commercial and recreational harvest, artificial propagation, natural stochastic events, marine mammal predation, reduced marine-derived nutrient transport, and ocean conditions.

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2.2.2.1 Habitat Degradation and Destruction

The best scientific information presently available demonstrates a multitude of factors, past and present, have contributed to the decline of west coast salmonids and green sturgeon by reducing and degrading habitat by adversely affecting essential habitat features. Most of this habitat loss and degradation has resulted from anthropogenic watershed disturbances caused by urban development, agriculture, poor water quality, water resource development, dams, gravel mining, forestry (Adams *et al*. 2002; Busby *et al*. 1996; Good *et al*. 2005), and lagoon management (Bond 2006; Smith 1990).

2.2.2.2 Commercial and Recreational Harvest

Until recently, commercial and recreational harvest of southern DPS green sturgeon was allowed under State and Federal law. The majority of these fisheries have been closed (NMFS 2005). Ocean salmon fisheries off California are managed to meet the conservation objectives for certain stocks of salmon listed in the Pacific Coast Salmon Fishery Management Plan, including any stock that is listed as threatened or endangered under the ESA. Early records did not contain quantitative data by species until the early 1950's. In addition, the confounding effects of habitat deterioration, drought, and poor ocean conditions on salmonids make it difficult to assess the degree to which recreational and commercial harvest have contributed to the overall decline of salmonids and green sturgeon in West Coast rivers.

2.2.2.3 Artificial Propagation

Releasing large numbers of hatchery fish can pose a threat to wild salmon and steelhead stocks through genetic impacts, competition for food and other resources, predation of hatchery fish on wild fish, and increased fishing pressure on wild stocks as a result of hatchery production (Waples 1991).

2.2.2.4 Natural Stochastic Events

Natural events such as droughts, landslides, floods, and other catastrophes have adversely affected salmonid and sturgeon populations throughout their evolutionary history. The effects of these events are exacerbated by anthropogenic changes to watersheds such as logging, roads, and water diversions. These anthropogenic changes have limited the ability of salmonid and sturgeon to rebound from natural stochastic events and depressed populations to critically low levels.

2.2.2.5 Marine Mammal Predation

Predation is not known to be a major factor contributing to the decline of West Coast salmon and steelhead and green sturgeon populations relative to the effects of fishing, habitat degradation, and hatchery practices. Predation may have substantial impacts in localized areas. Harbor seal

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(*Phoca vitulina*) and California sea lion (*Zalophus californianus*) numbers have increased along the Pacific Coast (NMFS 1997).

In a peer reviewed study of harbor seal predation in the Alsea River Estuary of Oregon, the combined results of multiple methodologies led researchers to infer that seals consumed 21 percent (range equals 3 - 63 percent) of the estimated prespawning population of coho salmon. The majority of the predation occurred upriver, at night, and was done by a relatively small proportion of the local seal population (Wright *et al*. 2007). However, at the mouth of the Russian River, Hanson (1993) reported that the foraging behavior of California sea lions and harbor seals with respect to anadromous salmonids was minimal, and predation on salmonids appeared to be coincidental with the salmonid migrations rather than dependent upon them.

The Corps has observed Steller sea lion (*Eumetopias jubatus*) preying on white sturgeon at the Bonneville Dam tailrace (Tackley *et al*. 2008). This suggests that predation of green sturgeon by sea lions may also occur in confined areas like dam tailraces when both species are present.

2.2.2.6 Avian Predation

Avian predation on juvenile salmonids is an important source of mortality in freshwater and estuarine habitats when birds and salmonids overlap spatially and temporally. Frechette *et al*. (2013) estimate that the population of kingfishers foraging in the Scott Creek estuary have the potential to remove 3–17 percent of annual production, whereas mergansers had the potential to remove 5–54 percent of annual steelhead production in this Central California coast watershed. Observed predation rates by cormorants and terns on Columbia River subyearling Chinook ranges between 2-22 percent, in which more than 8 million lower Columbia River (tule) fall-run Chinook Salmon subyearlings released from hatcheries are estimated to be consumed by double-crested cormorants and terns annually (Sebring *et al*. 2013).

2.2.2.7 Reduced Marine-Derived Nutrient Transport

Marine-derived nutrients from adult salmon carcasses have been shown to be vital for the growth of juvenile salmonids and the surrounding terrestrial and riverine ecosystems (Bilby *et al*. 1996; Bilby *et al*. 1998; Gresh *et al*. 2000). Declining salmon and steelhead populations have resulted in decreased marine-derived nutrient transport to many watersheds. Nutrient loss may be contributing to the further decline of ESA-listed salmonid populations (Gresh *et al*. 2000).

2.2.2.8 Ocean Conditions

Recent evidence suggests poor ocean conditions played a significant role in the low number of returning adult fall run Chinook salmon to the Sacramento River in 2007 and 2008 (Lindley *et al*. 2009). Changes in ocean conditions likely affect ocean survival of all west coast salmonid populations (Good *et al*. 2005; Spence *et al*. 2008).

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2.2.2.9 Global Climate Change

Another factor affecting the rangewide status of threatened Southern DPS of North American green sturgeon, threatened CCV steelhead, threatened Central Valley spring-run Chinook salmon, endangered Sacramento River winter-run Chinook salmon, and aquatic habitat at large is climate change. Impacts from global climate change are already occurring in California. For example, average annual air temperatures, heat extremes, and sea level have all increased in California over the last century (Kadir *et al.* 2013). Snow melt from the Sierra Nevada has declined (Kadir *et al.* 2013). However, total annual precipitation amounts have shown no discernable change (Kadir *et al.* 2013).

Modeling of climate change impacts in California suggests average summer air temperatures are expected to increase (Lindley *et al*. 2007). Heat waves are expected to occur more often, and heat wave temperatures are likely to be higher (Hayhoe *et al*. 2004). Total precipitation in California may decline; critically dry years may increase (Lindley *et al*. 2007; Schneider 2007). The Sierra Nevada snow pack is likely to decrease by as much as 70 to 90 percent by the end of this century under the highest emission scenarios modeled (Luers *et al*. 2006). Wildfires are expected to increase in frequency and magnitude, by as much as 55 percent under the medium emissions scenarios modeled (Luers *et al*. 2006). Vegetative cover may also change, with decreases in evergreen conifer forest and increases in grasslands and mixed evergreen forests. The likely change in amount of rainfall in Northern and Central Coastal California streams under various warming scenarios is less certain, although as noted above, total rainfall across the state is expected to decline.

For the California North Coast, some models show large increases (75 to 200 percent) in rainfall while other models show decreases of 15 to 30 percent (Hayhoe *et al*. 2004). Snowmelt contribution to runoff in the San Francisco Bay and San Joaquin Delta may decrease by about 20 percent per decade over the next century (Cloern *et al*. 2011). Many of these changes are likely to further degrade salmonid habitat by, for example, reducing stream flows during the summer and raising summer water temperatures. Estuaries may also experience changes detrimental to salmonids and green sturgeon. Estuarine productivity is likely to change based on changes in freshwater flows, nutrient cycling, and sediment amounts (Scavia *et al*. 2002). In marine environments, ecosystems and habitats important to sub adult and adult green sturgeon and salmonids are likely to experience changes in temperatures, circulation and chemistry, and food supplies (Brewer and Barry 2008; Feely 2004; Osgood 2008; Turley 2008).

In the San Francisco Bay region, extreme warm temperatures generally occur in July and August, but as climate change takes hold, the occurrences of these events will likely begin in June and could continue to occur in September (Cayan *et al*. 2012). Interior portions of San Francisco Bay are forecasted to experience a threefold increase in the frequency of hot daytime and nighttime temperatures (heat waves) from the historical period (Cayan *et al*. 2012). Climate simulation models also predict that the San Francisco region will maintain its Mediterranean climate regime, but experience a higher degree of variability of annual precipitation during the next 50 years and years that are drier than the historical annual average during the middle and

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end of the twenty-first century. The greatest reduction in precipitation is forecasted to occur in March and April, with the core winter months remaining relatively unchanged (Cayan *et al*. 2012). The projections described above are for the mid to late 21st Century. In shorter time frames, climate conditions not caused by the human addition of carbon dioxide to the atmosphere are more likely to predominate (Cox and Stephenson 2007; Santer *et al* 2011).

2.3 Environmental Baseline

The Environmental Baseline is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat (including designated critical habitat), and ecosystem in the action area. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impacts of State or private actions which are contemporaneous with the consultation in process (50 CFR §402.02).

2.3.1 Action Area Overview

The San Francisco Bay portion of the action area includes areas that will be directly affected by dredging and disposal operations as well as areas affected by noise and turbidity during dredging and disposal. San Francisco Bay is the largest estuary on the U.S. West Coast, and the second largest in the United States (Conomos *et al*. 1985). It encompasses four sub-embayments: Central Bay, Suisun Bay, San Pablo Bay, and the South Bay. These four sub-embayments combined cover a total surface area of approximately 488 square miles and are referred to in this biological opinion as the San Francisco Estuary (or "Bay") (see Figure 1). Located about halfway up the California coast from the Mexican border, the San Francisco Estuary is the natural discharge point of 40 percent of California's freshwater outflow. The climate is Mediterranean; most precipitation falls in winter and spring as rain throughout the Central Valley and as snow in the Sierra Nevada and Cascade mountain ranges. The Bay receives an average of greater than 90 percent of its freshwater influx from the Delta (Conomos *et al*. 1985), with the remainder coming from over 450 tributary drainages (McKee *et al*. 2013). It also receives inputs from stormwater runoff, and wastewater from municipal and industrial sources that vary in volume depending on the location and seasonal weather patterns. The freshwater outflow pattern is seasonal; highest outflow occurs in winter and spring. Local watersheds adjacent to the Bay contribute approximately 56 percent of the sediment delivered to the Bay, with the Delta and coastal sources contributing the remaining sediment supply (Barnard *et al*. 2013). Current and wave patterns in the action area are largely generated by the tides interacting with the bottom and shoreline configurations.

The Regional Monitoring Program for Water Quality in the San Francisco Estuary (RMP) has conducted long-term water quality monitoring in the Bay since 1994. The following excerpt from the 2004-2005 annual monitoring report (Oram 2005) describes the long-term (1993-2005) patterns of temperature, salinity, and suspended particulate material within the action area:

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Fresh water flowing in through the Delta has a long-term mean salinity less than one part per thousand (ppt), a long-term mean temperature of approximately 16 deg C, and a long-term mean suspended particulate material (SPM) concentration of approximately 40 mg/L. Salinity increases and temperature decreases downstream towards Central Bay, where the long-term mean salinity is approximately 30 ppt and the long-term mean temperature is approximately 14.5 deg C. SPM initially increases downstream, reaching its long-term maximum in San Pablo Bay (approximately 65 mg/L), then decreases again towards Central Bay, where the longterm mean SPM is 10-20 mg/L.

Ambient turbidity conditions in San Francisco Bay are controlled by freshwater runoff and tidal cycles. San Francisco Bay is considered a naturally turbid estuary because of the influence of large river inputs of suspended particulates, mostly mineral sediments (Cloern and Jassby 2012). Following large storms, suspended sediment concentrations at the surface and bottom of San Francisco Bay have been observed to peak around 250 and 300 mg/L over a 5-day period, respectively (Schoelhammer 1996). Suspended sediment concentrations is greatest in spring when wind waves resuspend sediment delivered during high winter flows. As the supply of erodible sediment decreases (due to low freshwater input) into the summer and fall, suspended sediment concentrations also decreases (Schoellhamer 2002). While freshwater input and storms can result in significant seasonal variances in turbidity conditions in the Bay, tidal cycles are considered the primary physical factor driving variances in suspended sediment concentrations (Schoellhamer 2001). In San Francisco Bay, tides are semidiurnal (two high and two low tides per day), and have a range of about 5.5 ft in Suisun Bay and 6.5 ft at the Golden Gate and Central Bay.

Central Bay, Suisun Bay, San Pablo Bay, and the South Bay all have shallow areas with mud to sand bottom, and deeper channels with mainly sand bottom. The mean water depth of the Central Bay is approximately 40 feet while the South Bay, San Pablo Bay and Suisun Bay have mean depths of 16 feet or less. Shorelines vary from armored revetments to beaches to marsh, and all basins adjoin mainly urban and industrial areas. Most of the Bay floor is comprised of sand and mud, overlying metamorphic and sedimentary bedrock. Bottom sediments are mud-dominated in shallower, low tidal energy areas. Sand is prevalent in deeper high tidal energy areas, such as the deeper portions of Central Bay and Suisun Bay, particularly within the main tidal channels where large waveforms are present along the Bay floor (Barnard *et al*. 2013). Both wind and tidal currents are strong in many parts of the estuary. The Carquinez Strait and Golden Gate are narrow sections where the estuary penetrates the Coast Range and tidal currents are particular strong at these locations. Wind-driven waves throughout the estuary are particularly common during the summer and these waves re-suspend sediments and increase local turbidity. Salinity varies from freshwater values in Suisun Bay to oceanic values at the Golden Gate.

Outside the Golden Gate, the action area includes the San Francisco Main Ship Channel, the San Francisco Bar Channel Disposal Site (SF-8), and the nearshore zone off Ocean Beach. These areas are referred to in this biological opinion as the “nearshore” portion of the action area (see

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Figure 1). Further offshore, the action area includes ocean waters in the proximity of SF-DODS. SF-DODS is approximately 6 nautical miles west of the outer boundary of the Gulf of the Farallones National Marine Sanctuary, and approximately 49 nautical miles west of the Golden Gate (see Figure 1). Water depths at SF-DODS range between 8,000 and 10,000 feet (LTMS 1998).

Benthic species in the in-bay portion of the action area vary from Suisun Bay where freshwater-brackish species dominate the community to the Central Bay where marine species predominate. Freshwater-brackish species include oligochaetes, chironomids (midges), soft-shelled clams, so-called Asian clam species in the genus *Corbicula*, and amphipods (SFEP, 1992; Thompson *et al*., 2000). Farther west into San Pablo Bay, more estuarine conditions exist, and intertidal mud flats and marshes are extensive. Here, estuarine assemblages are prevalent. Common benthic species include ribbed mussels, Baltic clams, the introduced clam *Potamocorbula. amurensis*, California hornsnails, yellow shore crabs, amphipods, polychaete worms, and Bay mussels (*Mytilus* spp.). In the Central Bay, common benthic species consist of clams (including the overbite clam, *C. Amurensis* or *Corbula*), amphipods such as *Monocorophium* and *Ampelisca*, polychaete worms, and Bay mussels (SFEP, 1992). Mollusks comprise the greatest biomass of larger benthic species in the Bay (LTMS, 1998).

In the nearshore ocean portion of the action area, the benthic fauna includes various assemblages of polychaete worms, crustaceans (amphipods, crabs, and ostracods), molluscs (pelecypods, gastropods, and scaphopods); echinoderms (starfish, brittle stars, heart urchins, sea cucumber, and sea pens). Overall, the benthic community in the nearshore ocean portion of the action area is similar to those typically found in high-energy environments along the coast of Northern California.

The benthic community in the SF-DODS is composed of invertebrates that burrow in the substrate (benthic infauna), invertebrates that live on the surface of the substrate (epifauna), and fish that are closely associated with the substrate (demersal fish). The benthic community in the SF-DODS is found in depths ranging between 8,000 and 10,000 feet, where environmental conditions are relatively harsh due to low oxygen, low food abundance, no light, high pressure, and low temperature. As a result, the number of species and overall abundance of organisms in this area is relatively low compared to shallower areas on the continental shelf (LTMS, 1998). Benthic infauna at SF-DODS is dominated by polychaete worms and crustaceans such as amphipods. The epibenthic community is predominately composed of sea cucumbers, brittlestars, sea stars (echinoderms), and sea pens (cnidarians). Fifteen species of demersal fish have been collected in the SF-DODS region (LTMS, 1998). The most common species are rattails (Macrouridae), thornyheads (*Sebastolobus* sp.), finescale codling (*Antimora microlepis*), and eelpouts (Zoarcidae).

The action area of the LTMS Program consists of locations where maintenance dredging is conducted and dredged materials disposed within the San Francisco Bay Region. This comprises 11 federal navigation channels (Table 2 and Figure 1) and approximately 100 maintenance dredging sites associated with ports, marinas, and homeowners associations (Table 3 and Figure

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1). There are seven in-water disposal locations that are currently in use: Ocean Disposal (SF-DODS); San Francisco Bar (SF-8); Carquinez Strait (SF-9); San Pablo Bay (SF-10); Alcatraz (SF-11); Suisun Bay (SF-16); and Ocean Beach Demonstration Site (SF-17) (Figure 1).

From 2000 to 2014, between 20 and 45 dredging episodes have been reviewed by the DMMO and authorized by the Corps annually. The Corps also typically dredges 6-8 federal navigation channels per year. Table 4 presents the total annual volume of dredged material disposed by location for both non-Corps projects and the Corps-dredged federal navigation channels. Table 2 presents the past Corps navigation channel dredging by location, equipment type, frequency of dredging, volumes dredged, and materials placement site.

Since 2000, the in-bay LTMS disposal volume reduction targets were successfully met for each 3-year increment of the transition period through 2012. To date, in-Bay disposal has been reduced from 6.0 million cubic yards per year pre-1990 to approximately 1.0 million cubic yards in 2013 (Table 4).

2.3.1.1 Federal Navigation Channels

The Corps currently conducts operations and maintenance dredging of federal navigation channels in San Francisco Bay, California in conformance with the LTMS Program. The 11 federally-authorized channels are listed in Tables 2 and 5. The total surface area of these channels is 4,866 acres which is approximately 1.98 percent of the total surface area of San Francisco Bay. Six channels are dredged annually and five channels have non-annual dredging cycles.

The navigation channels are deeper channels cut into the bay floor to enable vessels to pass through to a port or other destination. Authorized or regulatory depths range from -6 feet mean low low water (MLLW) in the San Rafael Canal to -55 feet in the San Francisco Main Ship Channel. Authorized or regulatory depths for the 11 federal navigation channels are presented in Table 5.

Bottom sediments in the federal navigation channels at Richmond Harbor, San Rafael Creek, Napa River Channel, Oakland Harbor, San Leandro Marina, and Redwood City Harbor are typically marine clay-silt deposit termed “bay mud”. Federal navigation channels at the San Francisco Main Ship Channel, Suisun Bay Channel/New York Slough, and portions of Pinole Shoal Channel typically contain sediments that are greater than 80 percent sand. The remaining portion of Pinole Shoal typically contains less than 80 percent sand.

2.3.1.2 Marinas and Harbors

The LTMS Program currently provides for maintenance dredging activities at marinas, harbors and boat ramps within the San Francisco Bay Region. There are in excess of 50 marinas and harbors within the action area (Figure 1). These facilities typically contain floating docks,

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Table 4. Total Annual Volume of Dredged Material Disposed (includes both Corps and non-Corps projects)
Source: San Francisco Bay LTMS 12-Year Review, March 2012, and DMMO Annual Report 2013.

Site	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
In-Bay Disposal Total	880,000	2,041,936	1,887,083	1,890,000	1,312,829	1,473,253	1,816,866	1,249,338	1,512,098	1,107,859	1,139,780	1,661,074	821,153	987,268
SF-DODS Total	775,000	566,679	866,400	1,113,814	341,000	137,717	954,456	1,554,362	175,855	72,289	285,460	652,970	772,760	1,632,515
Upland Volume Total	2,294,676	1,028,256	650,051	646,337	869,452	4,718,716	1,558,487	1,527,549	2,587,097	2,688,264	591,595	971,368	1,014,561	553,066

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Table 5. Authorized or Regulatory Depth (MLLW) of Federal Navigation Channels in SF Bay Region
Source: Federal Navigation Channels draft EA/EIR, December 2014.

Federal Channel	Depth (feet below MLLW)
Richmond – Inner Harbor	-20 to -41
Outer Harbor	-45
San Francisco Harbor – Main Ship Channel	-55
Napa River Channel/Mare Island	-15 to -35
Petaluma River Channel (and Across the Flats*)	-8
San Rafael Creek Channel	-6 to -8
Pinole Shoal	-35
Suisun Bay Channel and New York Slough	-25 to -35
Oakland Inner and Outer Harbor	-18 to -50
San Leandro Marina	-8
Redwood City Harbor	-30

pontoons, and other mooring facilities for boats. A few marinas in the action area are located along shorelines in natural harbors; however, most marinas were constructed by excavation of the shoreline, landfill, or a combination of both. Many have vessel refueling, washing and repair facilities. Marinas are typically confined by jetties or breakwater structures to shelter boats from the effects of wind and waves. Tidal water circulation is often restricted within a marina by the configuration of jetties and breakwaters. Marinas and harbors within the action are typically dredged to maintain depths of -8 to -15 feet MLLW. Bottom sediments are generally fine marine clay-silt deposits.

2.3.1.3 Ports, Wharfs and Docks

San Francisco Bay is a hub of international commerce and its maritime development is extensive. Major cargo facilities exist at the ports of Oakland, San Francisco and Redwood City. Several large oil refineries are located in the San Francisco Bay Region and rely on shipping to move their petroleum products. Many other major and minor industries around the bay have developed port and wharf facilities for shipping products. The LTMS Program currently provides for these areas to be periodically dredged for the navigation and berthing of large vessels, including oil tankers and cargo ships. The shoreline and adjacent aquatic habitat in these areas are highly modified with the construction of piers, wharfs, bulkheads, and placement of landfill. Aquatic vegetation is typically lacking in these areas. Bottom substrate is generally fine-grain silt and clay.

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2.3.1.4 Disposal Sites

The four in-bay dredged material disposals sites at Carquinez Strait (SF-9), San Pablo Bay (SF-10), Alcatraz (SF-11), and Suisun Bay (SF-16) (Figure 1). The Carquinez Strait placement site is a 1,000-foot by 2,000-foot rectangle, approximately 10 to 55 feet deep, 0.9 mile west of the entrance to Mare Island Strait in eastern San Pablo Bay in Solano County. The San Pablo Bay placement site is a 1,500-foot by 3,000-foot rectangle, approximately 30 to 45 feet deep, 3.0 miles northeast of Point San Pedro in southern San Pablo Bay in Marin County. The Alcatraz placement site is a 1,000-foot-radius circular area, approximately 40 to 70 feet deep, approximately 0.3 mile south of Alcatraz Island in the Central Bay. Since at least 1972, SF-11 has been the most heavily used disposal site in San Francisco Bay. The Suisun Bay placement site is a single-user disposal site reserved for sand dredged by the Corps from the Suisun Channel and New York Slough projects only. The Suisun site is a 500-foot by 11,200-foot rectangle adjacent to the northern side of Suisun Bay Channel, approximately 1 mile upstream of the Interstate 680 Bridge. The depth at this site is approximately -30 feet MLLW.

The two nearshore disposal sites outside of the Golden Gate are San Francisco Bar Channel (SF-8) and Ocean Beach Nearshore/Demonstration site (SF-17). The San Francisco Bar Channel site is a 15,000- by 3,000-foot-wide rectangle 7,500 feet south of the San Francisco Bar Channel in the Pacific Ocean. Depths range from approximately -30 to -45 feet MLLW. Disposal is limited to sandy material dredged by Corps from the San Francisco Bar Channel. However, the easternmost portion of SF-8 is within the 3-mile limit, and sand from other San Francisco Bay Area dredging projects can be permitted there as beneficial reuse for beach nourishment.

The Ocean Beach Nearshore/Demonstration site is in waters of the Pacific Ocean adjacent to the south-of-Sloat-Boulevard stretch of Ocean Beach, and outside of the southern section of the San Francisco Bar. The site's eastern boundary is approximately 0.35 mile offshore from the back-beach bluff; its center is 4 miles southwest of SF-8; and the site's area is 3.3 square miles. Water depths along the shoreward boundary range from approximately -25 to -35 feet MLLW, and depths along the seaward boundary ranges from approximately -37 to greater than -50 feet MLLW. The Ocean Beach Demonstration site was selected due to its location where waves can potentially feed sediment toward Ocean Beach which may ultimately help mitigate ongoing shoreline erosion in the area.

The deepwater ocean disposal site at SF-DODS is 6.5-square nautical miles and located approximately 49 nautical miles west of the Golden Gate. It is the farthest offshore and deepest dredged materials disposal site in the United States. Water depths range for 8,000 to 10,000 feet. This disposal site is influenced by the California Current which is a broad offshore flow that transport cold, low-salinity, subarctic waters toward the equator. However, two northerly flows, the Coastal Countercurrent and the California Undercurrent also strongly influence the flow regime in the vicinity of the Farallon Islands. Semidiurnal and diurnal tides also account for a large amount of variability in currents offshore.

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2.3.2 Status of Species and Critical Habitat in Action Area

The following sections provide a brief summary of the population and critical habitat status of each listed species within the action area.

2.3.2.1 CCC Steelhead, CCV Steelhead, CV Spring-Run Chinook Salmon, and Sacramento River Winter-Run Chinook Salmon

The action area is used primarily as a migration corridor by listed CCC steelhead, CCV steelhead, CV spring-run Chinook salmon and Sacramento River winter-run Chinook salmon. Adult salmonids migrate from the Pacific Ocean through the San Francisco Bay estuary as they seek the upstream spawning grounds of their natal streams. Adult CCV steelhead migration through the Bay typically begins in fall and winter (McEwan and Jackson 1996). Adult CCC steelhead typically migrate through San Francisco Bay to their natal streams from December through April. Adult Sacramento River winter-run Chinook migrate through San Francisco Bay between December and May. Based on time of entry to natal tributaries in the Central Valley, adult Central Valley spring-run Chinook salmon enter the Bay from the ocean for their upstream migration between February and April.

Juvenile (smolt) salmonids migrate from their natal streams through San Francisco Bay estuary to the ocean. Emigration timing is highly variable among Sacramento River winter-run Chinook, CV spring-run Chinook, CCC steelhead and CCV steelhead smolts, but peak migrations downstream typically occur through the action area during the late winter and spring months. To assess juvenile salmonid outmigration behavior and timing, a series of studies were performed from 2006 through 2010 with Central Valley late fall-run Chinook salmon and CCV steelhead smolts. Smolt-sized juveniles originating from Coleman National Fish Hatchery were tagged with acoustic transmitters and released in the Sacramento River to monitor their downstream movement to ocean-entry at the Golden Gate. Results showed that smolts generally transited the Bay rapidly in 2 to 4 days, y*et al*so made repeated upstream movements, coinciding with incoming tidal flows (Hearn *et al.* 2013). Most Chinook and steelhead smolts were detected by acoustic receivers located over deep, channelized portions of the Bay (Hearn *et al* 2013). Smolts detected at nearshore, shallow sites such as marinas, or up tributaries generally returned to the main channel to finish their migration (Hearn *et al.* 2013).

During the course of their downstream migration, juvenile listed salmon and steelhead may utilize the estuary for seasonal rearing, but available information suggests that fish are actively migrating and currently they do not reside in the San Francisco Bay estuary (Hearn *et al*. 2010). Historically, the tidal marshes of San Francisco Bay provided a highly productive estuarine environment for juvenile anadromous salmonids. However, loss of habitat, changes in prey communities, and water-flow alterations and reductions have degraded habitat and likely limit the ability of the Bay to support juvenile rearing. MacFarlane and Norton (2002) found that fall-run Chinook experienced little growth, depleted condition, and no accumulation of lipid energy reserves during the relatively limited time the fish spent transiting the 40-mile length of the

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estuary. Sandstrom *et al*. (2013) found that CCC steelhead smolts emigrated more rapidly through the Bay than the Napa River and the ocean.

In contrast to demersal fish that are associated with the channel bottom, salmonids are pelagic fish and, as such, primarily occupy the water column and near surface when over deeper waters (Mari-Gold Environmental and Novo Aquatic Sciences 2009). Within the action area, listed salmon and steelhead are thought to typically display a preferential use of the middle and upper water column. Studies by Kjelson *et al.* (1982) in the Sacramento-San Joaquin Delta concluded juvenile Chinook salmon appear to prefer shallow water habitats near the shore and the upper portion of the water column (less than 10 feet deep).

2.3.2.2 CCC Steelhead and Sacramento River Winter-Run Chinook Salmon Critical Habitat

The portion of the action area located in San Francisco and San Pablo bays is designated critical habitat for CCC steelhead. PCE's essential for the conservation of CCC steelhead include estuarine areas free of obstruction and excessive predation with: (1) water quality, water quantity and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater; (2) natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels; and (3) juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation (70 FR 52488). Essential features of designated critical habitat for CCC steelhead in the action area include the estuarine water column, benthic foraging habitat, and food resources used by steelhead as part of their juvenile downstream migration and adult upstream migration. These essential features of estuarine PCEs of designated critical habitat within the action area are partially degraded and limited due to altered and diminished freshwater inflow, shoreline development, shoreline stabilization, non-native invasive species, discharge and accumulation of contaminants, loss of tidal wetlands, and periodic dredging for navigation.

The portion of the action area located in Suisun Bay, San Pablo and San Francisco Bay north of the San Francisco-Oakland Bay Bridge is designated critical habitat for Sacramento River winter-run Chinook salmon. Features of designated critical habitat for winter-run Chinook salmon in the action area essential for their conservation are habitat areas and adequate prey that are uncontaminated. These physical and biological features of designated critical habitat within the action area are degraded and limited. Habitat degradation in the action area is primarily due to altered and diminished freshwater inflow, shoreline development, shoreline stabilization, non-native invasive species, discharge and accumulation of contaminants, loss of tidal wetlands, and periodic dredging for navigation.

2.3.2.3 Green Sturgeon

Green sturgeon are iteroparous[4], and adults pass through the San Francisco Bay estuary during spawning, and post-spawning migrations. Pre-spawn green sturgeon enter the Bay between late

[4] They have multiple reproductive cycles over their lifetime.

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February and early May, as they migrate to spawning grounds in the Sacramento River (Heublein *et al*. 2009). Post-spawning adults may be present in the bay after spawning in the Sacramento River in the spring and early summer for months prior to emigrating into the ocean. Juvenile green sturgeon move into the Delta and San Francisco Estuary early in their juvenile life history, where they may remain for 2-3 years before migrating to the ocean (Allen and Cech 2007; Kelly *et al*. 2007). Sub-adult and non-spawning adult green sturgeon utilize both ocean and estuarine environments for rearing and foraging. Due to these life-history characteristics, juvenile, sub-adult and adult green sturgeon may be present in the action area year-round.

Little is known about green sturgeon distribution and abundance in the Bay, and what influences their movements (Kelly *et al*. 2007). Tracking of green sturgeon movements in the Bay indicate that sub-adults typically remain in shallower depths (less than 30 feet) and show no preference for temperature, salinity, dissolved oxygen, or light levels (Kelly *et al*. 2007). Observations also suggest that there are two main types of movements of sub-adult green sturgeon: directional and non-directional (Kelly *et al*. 2007). Tracking data suggests that directional movements typically occur near the surface of the water, while non-directional movements were associated with the bottom at depths up to 42 feet, indicating foraging behavior (Kelly *et al*. 2007) since green sturgeon are known to feed on benthic invertebrates and fish (Adams *et al*. 2002). Within the San Francisco Estuary, green sturgeon are encountered by recreational anglers and during sampling by CDFW in the shallow waters of San Pablo Bay. These fish are likely foraging on benthic prey and fish commonly found in soft-bottom habitats (ghost shrimp, crab, crangonid shrimp, and thalassinid shrimp) (Dumbauld *et al*. 2008).

As a demersal fish, green sturgeon are commonly associated with the channel bottom. Kelly *et al*. (2007) tracked the movements of several individual green sturgeon through the San Francisco Bay Estuary with ultrasonic telemetry. These observations concluded that non-directional movements, accounting for 63.4% of observations, were closely associated with the bottom, with individuals moving slowly while making frequent changes in direction and swim speed, or not moving at all. These non-direction movements recorded sturgeon swimming at bottom depths ranging from one foot to 80 feet; however, over 70% of sturgeon remained in shallow regions of the estuary less than 30 feet deep, and it was uncommon for sturgeon to swim at depths greater than 52 feet (Kelly *et al*. 2007). Directional movements, accounting for 36.6% of total observations, were typified by continuous and active swimming while holding a steady course for long periods of time. When all depth records from directional movements were grouped, Kelly *et al*. (2007) concluded that green sturgeon make directional movements near the water surface (in the upper 6 feet of the water column) and rarely ventured below 15 feet, despite the depth of the bottom exceeding 60 feet in depth.

The CDFW conducts regular surveys to estimate sturgeon (white and green) abundance, relative abundance, harvest rate, and survival rate in San Francisco Bay and the delta. They collect information from recreational and commercial fisherman as well as conduct annual sampling in Suisun and San Pablo bays. Data from 2012 and 2013 show that green sturgeon abundance is low in Suisun and San Pablo bays relative to white sturgeon abundance. Green sturgeon make up approximately 2-5 percent of the total reported sturgeon caught in the greater Bay and lower

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delta. Green sturgeon catches were highest in Suisun Bay and San Pablo Bay, with very few green sturgeon reported in Central San Francisco Bay. However, this may be due to variances in fishing efforts in different locations in the Bay. Nonetheless, based on the available data, NMFS believes green sturgeon abundance in the action area is low.

2.3.2.4 Green Sturgeon Critical Habitat

With the exception of the SF-DODS and upland disposal sites, the project's action area is located within designated critical habitat for the southern DPS of green sturgeon. PCEs for green sturgeon in estuarine areas are: food resources, water flow, water quality, migratory corridor, water depth, and sediment quality. These PCEs for green sturgeon critical habitat in the action area are degraded. Habitat degradation in the action area is primarily due to altered and diminished freshwater inflow, shoreline development, shoreline stabilization, non-native invasive species, discharge and accumulation of contaminants, loss of tidal wetlands, and periodic dredging for navigation.

2.3.3 Factors Affecting the Species Environment in the Action Area

The San Francisco Bay/Delta is one of the most human-altered estuaries in the world (Knowles and Cayan 2004). Major drivers of change in the Bay that are common to many estuaries are water consumption and diversion, human modification of sediment supply, introduction of nonnative species, sewage and other pollutant inputs, and climate shifts. Responses to these drivers in the Bay include shifts in the timing and extent of freshwater inflow and salinity intrusion, decreasing turbidity, restructuring of plankton communities, nutrient enrichment and metal contamination of biota, and large-scale food web changes (Cloern and Jassby 2012). Major factors affecting the species environment in the Bay are described below:

2.3.3.1 Reduced Amount and Altered Timing of Freshwater Flow

Following the gold rush of the mid 1800s, population growth and economic development in California required a stable water supply. Large water projects were developed to capture and transport runoff from wet regions to drier regions for agriculture and residential supplies (Nichols *et al*. 1986). Approximately 60 percent of runoff from the Delta and upstream watersheds reach the Bay (Cloern and Jassby 2012). Water exports from the Delta increased from 5 percent to 30 percent of the total runoff from the Delta between 1956 and 2003 (Cloern and Jassby 2012). In response to reduced freshwater flow, the salinity gradient in the Suisun Channel moves further upstream during the latter (i.e., drier) part of the year (Cloern and Jassby 2012). Researchers have identified several biological impacts of reduced inflow from the Delta to the Bay and altered salinity gradients in the North Bay, namely, large-scale population declines of native aquatic biota across trophic levels from phytoplankton (Alpine and Cloern 1992) to zooplankton (Winder *et al*. 2011) to pelagic fish (Sommer *et al*. 1997), and large shifts in biological communities (Winder and Jassby 2011).

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2.3.3.2 Changes to Sediment Supply

Major historical changes to the estuary were driven by extensive hydraulic mining in the western foothills of the Sierra Nevada Mountain Range between 1850 and 1900, when over 850 million cubic meters (m^3) of sediment was discharged into watersheds that drain to the Bay (Gilbert 1917). Sediment influxes into the Bay from hydraulic mining resulted in the extensive ecosystem alterations, including the development of extensive intertidal flats and tidal marshes (i.e., centennial marshes) (Jaffe *et al*. 2007), and widespread mercury contamination (David *et al*. 2009). Logging, urbanization, agriculture, and grazing within Bay area watersheds since the 1850s have also lead to increased sediment yields and pollution in the Bay. At the same time, the construction of dams, reservoirs, flood control structures, and bank protection in watersheds draining to the Bay in the 20^{th} century have concurrently trapped and/or reduced the transport of sediment to the Bay and reduced peak flows that transport sediment to the Bay (Barnard *et al*. 2013). It is estimated that these modifications have resulted in an approximately 50 percent reduction in suspended sediment flux to the Bay from 1957 to 2001 (Wright and Schoellhamer 2004). Since the 1950s, sediment loss trends have been documented in Central Bay, Suisun Bay, San Pablo Bay, and the mouth of the San Francisco Bay (Capiella *et al*. 1999; Fregoso *et al*. 2008; Hanes and Barnard 2007). It is estimated that dredging, aggregate (sand) mining, and borrow pit mining has permanently removed 200 million m^3 of sediment from the Bay over the last century (Barnard and Kvitek 2010). Bathymetric change analysis has shown that accretion and erosion within sand mining lease areas follows decreases and increases in sand mining activity, respectively, however a direct relationship between sand mining activity and the overall sand budget in Central San Francisco Bay, the San Francisco Bar and the outer coast beaches is still unclear (Barnard 2014). Reduced sediment supply to the Bay may result in the exposure of legacy contaminants (e.g., mercury) as surface sediments continue to erode (Jaffe *et al*. 2007), as well as reduce the sediment available to build tidal marshes as sea level rises (Stralberg *et al*. 2011).

2.3.3.3 Contaminants

Sediments within the Bay contain a substantial amount of contaminants from historical point and non-point sources. Contaminants often times are bound to sediments, and thus their distribution within the environment is driven by sediment dynamics in the Bay. In some areas of the Bay, contaminated sediments are being buried by cleaner sediments; in other areas, contaminated sediments or clean sediments overlying contaminated sediments are eroding. Remobilization of buried contaminants can occur through erosion of sediments, which can lead to contamination of the surface of the sediment layer and the water column. This is of particular concern for many legacy contaminants (e.g., the pesticide DDT) that no longer are supplied to an estuary in large quantities, compared to historic inputs, but continue to persist because the bottom sediment acts as a source, as in the case of San Francisco Bay (Cloern and Jassby 2012).

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2.3.3.4 Invasive Species and Ballast Water Effects

San Francisco Bay is considered one of the most invaded estuaries in the world (Cohen and Carlton 1998). Invasive species contribute up to 99 percent of the biomass of some of the communities in the Bay (Cloern and Jassby 2012). Invasive species can disrupt ecosystems that support native populations. While there have been numerous invasions in the Bay, the best documented and studied invasive is the non-native overbite clam *Corbula amurensis*. It is a small clam native to rivers and estuaries of East Asia that is believed to be introduced in the ballast waters of ships entering the Bay in the late 1980s. *C. amurensis* can utilize a broad suite of food resources and withstand a wide range of salinities, including a tolerance of salinities less than 1 ppt (Nichols *et al*. 1990). Its introduction has corresponded with a decline in phytoplankton and zooplankton abundance due to grazing by *C. amurensis* (Kimmerer *et al*. 1994). Prior to its introduction, phytoplankton biomass in the Bay was approximately three times what it is today (Cloern 1996; Cloern and Jassby 2012), and the zooplankton community has changed from one having large abundances of mysid shrimp, rotifers, and calanoid copepods to one dominated by copepods indigenous to East Asia (Winder and Jassby 2011).

The discharge of ballast water from large vessels (*i.e.*, container ships) is the major pathway for the introduction of invasive species in the San Francisco Estuary. Ballast water is taken on by a vessel to increase water draft, change the trim, regulate stability or maintain stress loads. When the ship reaches its destination, it commonly discharges ballast water containing the larvae of nonindigenous organisms. Under the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 as reauthorized and amended in the National Invasive Species Act of 1996, the United States Coast Guard (USCG) is the lead federal agency in implementing regulations to reduce or prevent the introduction of nonindigenous species via shipping activities in United States waters. On March 23, 2012 the USCG publish in the Federal Register standards for living organisms in ship's ballast water discharged in U.S. waters. This standard which took effect in 2013 establishes an allowable concentration of living organisms in ship's ballast water discharges for the purpose of preventing or reducing the introduction of nonindigenous species. The USCG's program also requires vessel operators to maintain records and report their discharges. USCG has the ability to board vessels to ensure vessel operators are treating and discharging ballast water in compliance with all requirements.

The State of California has also adopted regulations to prevent and reduce the release of nonindigenous species from commercial vessels to California waters. The Marine Invasive Species Act of 2003 requires vessels to adopt a ballast water management plan and maintain ballast water activity records. California's multi-agency Marine Invasive Species Program (MISP) is comprised of the State Lands Commission, CDFW, State Water Resources Control Board and the Board of Equalization. The policy and regulations developed for the California by the MISP include the action area of this consultation and are considered by the State to be the most practicably achievable standards for avoiding the discharge of nonindigenous species. Although the recently adopted USCG and State of California ballast water discharge standards are likely effective in preventing and reducing the harmful introduction of new nonindigenous species, the current suite of exotic plants and aquatic animals living in San Francisco Bay persist.

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2.3.3.5 Natural Ocean-Atmosphere Variations

Research indicates that the Bay is significantly influenced by ocean-atmosphere variations (i.e., the North Pacific Gyre Oscillation and the Pacific Decadal Oscillation). For example, following a strong El Nino event in 1997-1998 and an equally strong La Nina event in 1999, the ocean waters adjacent to San Francisco Bay cooled and upwelling intensity increased. Major changes in the Bay ensued, with record high populations of fish species that migrate from the ocean to the Bay (e.g. English sole, Dungeness crab). The increase in abundance of predators to the Bay led to large-scale trophic cascades in the Bay characteristic of a cool, high-production regime (Cloern and Jassby 2012). Such climate shifts occur at various intervals and have widespread implication on the annual mean abundance of biota in the Bay (see Figure 16: Cloern and Jassby 2012).

2.3.4 Previous Section 7 Consultations and Section 10 Permits in the Action Area

From 2000 through March 2015, pursuant to section 7 of the ESA, NMFS has conducted multiple interagency consultations within the action area of this project. These consultations were primarily related to sand mining, dredging, wetland restoration, shoreline stabilization, and maintenance of existing infrastructure along the shoreline (i.e. repair of wharves, docks and piers. For most of these projects NMFS determined that they were not likely to adversely affect listed salmonids or green sturgeon or their critical habitat. For those projects with adverse effects on listed salmonids and green sturgeon and/or critical habitat, NMFS determined that they were not likely to jeopardize the continued existence of listed salmonids or adversely modify critical habitat. Adverse effects that resulted from these projects are not anticipated to affect the current population status of listed salmonids or green sturgeon.

Research and enhancement projects resulting from NMFS' Section 10(a)(1)(A) research and enhancement permits and section 4(d) limits or exceptions could potentially occur in the action area. Salmonid and sturgeon monitoring approved under these programs includes juvenile and adult net surveys and tagging studies. In general, these activities are closely monitored and require measures to minimize take during the research activities. As of March 2015, no research or enhancement activities requiring Section 10(a)(1)(A) research and enhancement permits or section 4(d) limits have occurred in the action area.

2.4 Effects of the Action

The purpose of this section is to identify the direct and indirect effects of the proposed action, and any interrelated or interdependent activities, on CCC steelhead, CCV steelhead, CV spring-run Chinook salmon, Sacramento River winter-run Chinook salmon, and southern DPS green sturgeon; and designated critical habitat for Sacramento River winter-run Chinook salmon, CCC steelhead, and southern DPS green sturgeon. Our approach was based on knowledge and review of the ecological literature and other relevant materials. We used this information to gauge the likely effects of the proposed project via an exposure and response framework that focuses on

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what stressors (physical, chemical, or biotic), directly or indirectly caused by the proposed action, that salmonids and green sturgeon are likely to be exposed to. Next, we evaluated the likely response of salmonids and green sturgeon to these stressors in terms of changes to survival, growth, and reproduction, and changes to the ability of PCEs or physical and biological features to support the value of critical habitat in the action area. PCEs and physical and biological features, include sites essential to support one or more life stages of the species. These sites for migration, spawning, and rearing in turn contain physical and biological features that are essential to the conservation of the species. Where data to quantitatively determine the effects of the proposed action on salmonids, sturgeon, and their critical habitat, were limited or not available, our assessment of effects focused mostly on qualitative identification of likely stressors and responses.

2.4.1 Exposure to Dredge and Disposal Sites

The southern DPS of green sturgeon spawns in the upper Sacramento River system and all individuals must travel through the San Francisco Estuary to pass between the ocean and the Upper Sacramento River Basin. Additionally, the San Francisco Estuary provides important rearing and holding areas for juveniles, sub-adults and pre- and post-spawning adult green sturgeon. Threatened CCC steelhead that spawn within streams tributary to San Francisco, San Pablo and Suisun bays must also travel through the estuary to access the ocean as smolts and return as adults to their natal streams. For Central Valley listed anadromous salmonids (*i.e*, Sacramento winter-run Chinook, CV spring-run Chinook and CCV steelhead) all individuals must travel through the estuary to access the ocean as smolts and return as adults to their natal streams Non-smolting juvenile salmonids are extremely unlikely to be present in the action area due to their life cycle stage need for freshwater.

To assess the potential exposure of threatened green sturgeon and listed anadromous salmonids to dredging and disposal activities, we relied mainly on Hearn *et al's*. 2-year study with ultrasonic tags on fish (Hearn *et al*. 2010). In 2009 and 2010, the study placed tags on 500 Chinook salmon smolts, 500 steelhead smolts and adult green sturgeon tagged in previous studies were also utilized. Approximately 150 tag receivers were deployed at 24 sites throughout Suisun, San Pablo and Central San Francisco bays. Receiver sites included dredging locations, dredged material disposal sites, bridges, as well as shallow bay margin areas and deep water channels. Underwater ultrasonic receivers were also placed at nine marinas in the estuary (Martinez Marina, Vallejo Marina, Port Sonoma Marina, Berkeley Marina, Richmond Marina, Emeryville Marina, San Rafael Canal, Larkspur Ferry Terminal, and Suisun City Marina). The results provided information regarding (1) transit times through various reaches of the estuary; (2) occurrence and duration (*i.e*, "exposure") at various sites; and (3) pathways of downstream migrating smolts.

Results for salmonid smolts showed: (1) the overall transit time from the Benicia Bridge to the Golden Gate was normally less than six days (median 2.7 days); (2) exposure at dredge and disposal sites was variable – most fish were present for less than 30 minutes, but a significant number were detected from 1-20 hours; (3) over 80% of the Chinook salmon smolts were

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detected at either a dredge or disposal site; and (4) 77% of the steelhead smolts were detected at either a dredge or disposal site. Although the numbers were relatively small, Chinook or steelhead smolts were detected in 2009 or 2010 at the Larkspur Ferry Terminal, Port Sonoma Marina, Richmond Marina, Vallejo Marina, Martinez Marina, and Emeryville Marina. No tagged smolts were detected over the 2-year study in the San Rafael Canal, Berkeley Marina, or Suisun City Marina. Based on these results, Hearn *et al.* (2010) concluded that salmonid smolts did not reside at any of the sites within the estuary, rather they are "exposed" to dredge or disposal sites for some duration of time as they migrate through on their way to the ocean. This work confirmed that salmon and steelhead smolts are widely distributed throughout the San Francisco Estuary during their seaward migration; although their exposure times at the various dredge and disposal sites are relatively short (typically measured in minutes).

Hearn *et al.* (2010) also reports that 47 tagged adult green sturgeon were detected during the study period. Tagged green sturgeon were present in all sections of brackish water from the Golden Gate to Freeport throughout the year; although in greater numbers during the fall and winter period. The highest number of green sturgeon detections was in San Pablo Bay. With the exception of the Martinez Marina, green sturgeon were only briefly detected at the Richmond Marina and Vallejo Marina, and not detected in any of the other marina areas. Although green sturgeon were detected at both the Alcatraz (SF-11) and Carquinez Strait (SF-9) disposal sites, the medium exposure time was under 20 minutes. Green sturgeon presence at the San Pablo Bay disposal site (SF-10) was significantly greater and exposure times ranged from 5 minutes to 19.4 hours (Hearn *et al.* 2010).

2.4.2 Effects of Dredging and Disposal on Listed Fish

The potential impacts to estuarine and marine habitats from dredging and disposal activities conduct under the LTMS Program generally fall into three categories: (1) temporary degradation of water quality; (2) entrainment of aquatic organisms; and (3) periodic disturbance of fish and habitat. Permanent loss of habitat occurred when the action area's 11 federal navigation channels were initially established and dredged (see Table 2). Similarly, permanent habitat losses occurred at marinas, ports, wharfs, and docks when those facilities were initially constructed (see Table 3). Maintenance activities proposed under the LTMS Program will not result in permanent habitat loss in new areas, but it will continue to maintain existing disturbed areas in a degraded condition.

2.4.2.1 Water Quality (Contaminants and Suspended Sediment)

Dredging and in-bay disposal typically creates a sediment plume which degrades water quality in the immediate vicinity of the activity. Mechanical dredging (i.e., clamshell, excavator, environmental bucket) generates more suspended sediments throughout the water column than hydraulic dredges (Barnard 1978). Bottom sediments become suspended as the bucket contacts the bottom and when material washes from top and sides of the bucket as it passes up through the water column. Additional sediment is introduced into the water column as the bucket breaks the

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water surface, spillage of materials during barge loading, and intentional overflow of water from the barge in an attempt to increase the barge's effective load (Nightingale and Simenstad 2001).

Suction dredges operate a system of pipes and centrifugal pumps to produce a vacuum at the intake and atmospheric pressure forces water and sediments into the suction pipe. Since water and excavated sediments are collected by the pipe, suction dredges create significantly lower levels of suspended materials than mechanical dredging in the water column at the intake location. For disposal of dredged materials, suction dredges typically transport a slurry of sediments via by pipeline to an upland or beneficial reuse disposal site. Upland and beneficial reuse disposal sites are typically isolated from the waters of the San Francisco Estuary by levees, berms and other features; thus, no impacts to water quality in the presence of listed salmonids or sturgeon are anticipated with this type of disposal operation. However, in the hold of a hopper dredge, overflow of excess water poses a risk of increased turbidity as the suspended sediments are released into surrounding waters with overflow water. Hopper dredges may also dispose of dredged materials at an in-water disposal site by opening large doors at the bottom of the dredge.

Aquatic disposal via hopper dredge door opening is proposed at four in-bay locations, two nearshore locations, and one offshore location by the LTMS Program. With the exception the Ocean Beach Demonstration site, all the LTMS aquatic disposal sites are dispersive in that the material is expected to be dispersed either during placement or eroded from the bottom over time and transported away from the disposal site by currents. Aquatic disposal typically creates a sediment plume upon the release of dredged material and the physical behavior of the sediment plume is dependent on the nature of the dredged materials and the hydrodynamics of the disposal site.

The LTMS Program's DMMO process requires sediment testing prior to dredging episodes for the purpose of determining potential contaminant levels in dredged materials and selection of appropriate disposal sites. Based on sediment test results, the DMMO may impose measures at the dredge site as well as restrict disposal placement locations. This DMMO process is expected to continue to minimize the potential for water quality degradation and release of hazardous materials into the water column during maintenance dredging and aquatic disposal events. However, there may be impacts to listed species as described below.

2.4.2.1.1 Contaminants

Toxic metals and organics, pathogens, and viruses, absorbed or adsorbed to fine-grained particulates in the sediment, may become biologically available to aquatic organisms either in the water column or through food chain processes during dredging and aquatic disposal operations. Removal of surface sediments during dredging can also expose a new sediment layer which is more highly contaminated than previous surface sediments. The potential short-term effects of degraded water quality on fish include acute toxicity, subacute toxicity, and biological and other indirect effects such as avoidance (Jabusch *et al*. 2008). Potential long-term effects are associated with bioaccumulation of contaminants. Due to the year-round residency of juveniles in San Francisco Bay and their long life span, green sturgeon are subject to a higher risk of

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exposure and potential bioaccumulation. Due to their short period of residency in the action area, listed salmonids are significantly less vulnerable to impacts associated with contaminants released by dredging and disposal activities.

Dredged materials distributed throughout the water column can change the chemistry and the physical characteristics of the receiving water by introducing chemical constituents in suspended or dissolved form. Heavy metals (Cd, Cu, Hg, Ni, Pb, Zn, Ag, Cr, As), and organic contaminants (PAHs, PCBs, pesticides) are of particular concern. Additionally, dredge plumes have the potential to cause short-term changes in dissolved oxygen (DO), pH, hydrogen sulfide (H_2S), and ammonia. The rapid conversion to sulfates and nitrate can lead to drops in DO. The introduction of nutrients or organic material to the water column as a result of the discharge can lead to a high biochemical oxygen demand (BOD), which in turn can also lead to reduced dissolved oxygen, thereby potentially affecting the survival of many aquatic organisms. Increases in nutrients can favor one group of organisms such as polychaetes or algae to the detriment of other types.

Contaminants in an aquatic environment typically become available to fish via gill uptake or ingestion with food. The potential short-term effects of contaminant uptake on fish are primarily a function of the fish species, type of contaminant, its concentration in the sediment, the environmental conditions at the time of dredging (e.g., low oxygen or reducing environments), and the duration of the exposure (Jabusch *et al.* 2008).

To better understand the potential short-term effects of water quality impacts on fish during dredging in San Francisco Bay, the San Francisco Estuary Institute (SFEI) completed a literature review in 2008 for the Corps (Jabusch *et al.* 2008). The goal of the literature review was to synthesize and summarize knowledge of short-term water quality impacts due to dredging and disposal operations. Based on key findings by SFEI's literature review and best available information, the effects of the discharge of dredged materials in the water column during in-bay disposal include the following:

- Short-term changes in DO, pH, H_2S, and ammonia may occur in connection with sediment plumes caused by dredging and disposal activities. DO and pH effects are expected to be minimal in most San Francisco Bay conditions due to the small area affected by the discharge plumes in relation to the large area and water volume at the disposal sites. H_2S could be released from anoxic sediments that, if resuspended, would also cause DO depletion (or hypoxia) and releases of ammonia have the potential to result in toxicity. However, both ammonia and H_2S rapidly convert to less or nontoxic forms in the presence of oxygen (elemental sulfur, sulfates, and/or nitrate). Due to small area affected by the dredge plumes in comparison to the large, well-circulated aquatic area of the disposal sites, adverse effects to fish from short-term changes in DO, pH, H_2S, and ammonia are unlikely.

- In sediments, only a small fraction of the total amount of heavy metals and organic contaminants is dissolved. In case of heavy metals, releases during dredging may be

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largely due to the resuspension of fine particles from which the contaminants may be desorbed, and in case of organic contaminants, most of the chemical released into the dissolved phase would be expected to be bound to dissolved organic matter. Thus, the concentration of freely dissolved metal ions and organic contaminants that would be released and available for gill uptake by fish is presumably minor.

- Direct short-term effects on sensitive fish by contaminants associated with dredging plumes are probably fairly minor, especially in comparison with other potential impacts, such as the immediate physical effects of suspended solids on fish health.

- Long-term adverse effects on fish may occur from bioaccumulation of pollutants such as chlorinated hydrocarbons (e.g., PCBs, DDTs, dieldrin, chlordane, dioxins/furans), mercury, and many PAHs which are known contaminants present in sediments in San Francisco Bay. However, the DMMO process for evaluation of projects prior to dredging includes sediment bioaccumulation testing (see Section 1.3.1 of this Opinion). If contaminant levels in sediments exceed established thresholds, the materials are not disposed at in-bay aquatic sites. If residual layer contamination that would be exposed after maintenance dredging is greater than that in the overlying sediment, and exceeds the bioaccumulation trigger values, the Corps will adhere to a process for case-by-case review as outlined in the *Agreement on Programmatic EFH Conservation Measures for Maintenance Dredging Conducted Under the LTMS Program* (USACE and USEPA, 2011). These measures tie the sediment testing program to San Francisco Bay's existing Total Maximum Daily Loads for mercury and polychlorinated biphenyls, as well as to the established Regional Monitoring Program for San Francisco Bay. In general, the DMMO sediment testing and evaluation procedures for disposal of dredged materials contribute to pollution-reduction in San Francisco Bay.

Based on the above, adverse effects due to contaminants released by dredging and aquatic disposal activities conducted under the LTMS Program are unlikely on listed anadromous salmonids and green sturgeon. This is due to: 1) the small area affected by the discharge plumes in relation to the large area, 2) water volume and tidal circulation at the disposal sites, and 3) sediment testing and evaluation which ensures no in-Bay disposal of sediments that exceed bioaccumulation trigger values and which show bioaccumulation during testing. These factors either minimizes or avoid the chance of exposure and dilute toxic materials to such small amounts that even if exposure were to occur, effects to listed salmonids or green sturgeon would be insignificant.

2.4.2.1.2 Suspended Sediment Levels and Gill Injury

Turbidity is a natural characteristic of estuarine habitats and ambient levels of suspended sediment in San Francisco Bay typically range from ambient turbidity levels generally range from 17 to 290 mg/l (Rich 2011). Following large storms, suspended sediment concentrations may be as high as 300 mg/l (Schoelhammer 1996). During dredging operations, dredge

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equipment contacting sediments on the bay floor results in the resuspension of sediment into the water column. Aquatic disposal of dredged material also creates a plume of turbidity as sediments disperse and travel downward to the seafloor. The turbidity resulting from dredging and the placement of dredged material may affect aquatic organisms in a variety of ways including: respiration (clogging gills); reduced visibility for foraging; reduced ability to avoid predators; and altered movement patterns to avoid turbid waters (USACE and Reg. Board 2014). Suspended sediments have been shown to affect fish behavior, including avoidance responses, territoriality, feeding, and homing behavior. Wilber and Clarke (2001) found that suspended sediments result in cough reflexes, changes in swimming activity, and gill flaring. Suspended sediments can have other impacts, including abrasion to the body and gill clogging (Wilber and Clarke 2001). Generally, bottom-dwelling fish species are the most tolerant of suspended solids, and filter feeders are the most sensitive (USACE and Reg. Board 2014)

Studies have shown that exposure to suspended sediments in the water column can cause gill irritation and damage (Cordon and Kelly 1961, Servizi and Martens 1992; Newcombe and MacDonald 1991; Lake and Hinch 1999; Wilber and Clarke 2001). The size and shape of the suspended sediment particles as well as the duration of the exposure can be important factors in assessing the risks (Nightingale and Simenstad 2001). Studies by Birtwell *et al*. (1984) with Artic grayling (*Thymallus acticus*) and similar studies by Lake and Hinch (1999) with coho salmon (*Oncorhynchus kisutch*) both found 20% mortality at a concentration of 100,000 mg/L in natural and angular sediments. In concentrations greater than 4,000 mg/L, fish gills revealed erosion at the end of gill filament tips from both round and angular sediments (Nightingale and Simenstad 2001). Martens and Servizi (1993) found juvenile coho exposed to natural Fraser River suspended sediments for a period of 96 hours at concentrations of 16,000-41,000 mg/L showing an average of 1500 sediment particles lodged into gill epithelia with all such particles being of irregular and angular shapes.

Although these studies clearly show high levels of suspended sediments can result in gill injury and mortality, very few listed salmonids and green sturgeon would be expected to encounter suspended sediment concentrations of this magnitude during the implementation of the LTMS Program. Information regarding suspended sediment concentrations generated during dredging and disposal in San Francisco Bay suggest levels are typically be less than 450 mg/l in the sediment plume. Clark *et al*. (2004) monitored the operation of a 12-cubic yard closed bucket dredge at a channel depth between 12 and 13 meters in the Oakland Harbor with an acoustic doppler profiler and water samples. His results showed that suspended sediment concentrations as high as 275 mg/l can occur in the immediately proximity of the dredge and levels above ambient concentrations may be observed as far as 400 meters from the source. In general, Clark *et al.* (2004) reports that total suspended sediment concentrations decayed within short distances from the source.

Rich (2011) reports the results of suspended sediment monitoring at several locations: dredging activities in San Pablo Bay generated suspended sediment levels ranging from 20.3 to 251 mg/l; dredging in Oakland Outer Harbor generated suspended sediment concentrations ranging from 25 to 125 mg/l; dredged material disposal at Alcatraz generated concentrations ranging from 10

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to 290 mg/l; and knockdown operations at the Port of Redwood City generated concentrations ranging from 25 to over 450 mg/l. Corps studies of turbidity plumes at aquatic disposal sites has showed that turbidity levels generally return to ambient levels within 20 minutes (USACE and Reg. Board 2014). However, NMFS could find no estimates of suspended sediment concentrations at the point of discharge and levels are likely considerably higher directly beneath the doors at the bottom of a barge or hopper dredge during a disposal event.

Although information regarding direct effects is sparse, a few general conclusions can be drawn regarding the potential effects of suspended sediment concentrations during dredging on listed anadromous salmonids and green sturgeon. Bottom-dwelling (i.e., demersal) fish appear to have more tolerance for high suspended sediment levels than pelagic and or filter feeders (Rich 2011); thus, green sturgeon are likely to be less vulnerable to injury and mortality associated with elevated levels of suspended sediment. Anadromous salmonids are generally more sensitive to suspended sediment and turbidity; thus they are at greater risk of injury and mortality (Rich 2010). Suspended sediment concentrations that would typically be associated with dredging activities are considerably lower than those associated with levels that cause gill injury and mortality. Thus, no injury or mortality of listed salmonids or green sturgeon at dredging sites due to elevated levels of suspended sediment are anticipated during implementation of the LTMS Program. Behavioral impacts due to elevated suspended sediment levels at dredging sites are discussed below in Section 2.4.2.3.

In contrast to dredging locations, in-water disposal of dredged materials are expected to generate very high concentrations of suspended sediments for several minutes within a small area at the point of discharge (i.e., directly beneath the drop doors of a hopper dredge or barge). During an investigation of fish response to a dredged material disposal event at Alcatraz (SF-11), Burcyznski (1991) reports hydroacoustic survey techniques show a very dense sediment plume at the moment of discharge and the plume slowly sinks towards the bottom. If present at the site of release during the actual disposal event, green sturgeon and listed anadromous salmonids could be exposed to injurious or lethal levels of suspended sediment. Individual fish within the water column and directly underneath a hopper dredge or barge during the discharge event will be subjected to very high concentrations of suspended sediment. Concentrations may be at levels that result in injury and mortality due to gill injury, gill clogging, and body abrasion. Although the exact number of listed salmonids and green sturgeon exposed to these very high concentrations of suspended sediment cannot be determined with available information, NMFS expects it to be a very small number and only some of these individuals would be injured or killed on an annual basis. To be subject to injury or morality, an individual listed salmonid or sturgeon will need to present in the water column immediately under the doors of a hopper dredge or barge at the moment of discharge. Dredged material is expected to rapidly disperse as it travels 30+ feet from the water surface to the bay floor at disposal sites; accordingly concentrations of suspended sediment are expected to rapidly lessen with distance from the point of discharge.

As a pelagic species, listed anadromous salmonids commonly occur in the upper portion of the water column and they may be present at an in-bay disposal site during a dredged material

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placement event. However, the LTMS Program's in-water work window restricts most dredging and disposal activities to the period of June 1 through November 30. Since most disposal events will not occur during the migration season of listed anadromous salmonids, this measure is expected to significantly reduce this source of potential injury and mortality for listed salmonids. However, on an annual basis up to 50,000 cubic yards of material (i.e., 3 to 5% of the annual in-bay disposal volume) may be placed at an aquatic in-bay disposal site and some larger projects also can utilizing in-bay disposal sites outside the work window if they mitigate in the future by placement of a like volume of material at beneficial reuse site during the work window. This in-water disposal of dredged material during the period from December 1 through May 31 at the four in-bay sites is anticipated to result in the loss of a likely very small number of listed adult and smolt anadromous salmonids. Because of the restrictions on in-bay disposal, NMFS anticipates that in some years no salmonids will be injured or killed and those that are in other years will constitute a very, very small fraction of the number of these fish that migrate through the Bay, given the very small size (a few hundred square feet) and short duration (minutes) of high levels of suspended sediment in the disposal release compared to the size of the migration corridor (miles) and duration of migration period (months) in the bay.

Although green sturgeon are year-round residents within the San Francisco Estuary, this species is less likely to be injured or killed by high concentrations of suspended sediment during a disposal event. This is based on green sturgeon's higher tolerance of suspended sediment and water depths at the four in-bay disposal sites. Kelly *et al*. (2007) reports that green sturgeon are typically found in water depths less than 30 feet in depth. With the exception of a small portion of the Carquinez Strait disposal site (SF-9), the four San Francisco Bay aquatic disposal sites are greater than 30 feet in depth. As a demersal fish and preference for swimming along the bottoms of bays and estuaries at depths of less than 30 feet, green sturgeon would not typically be found at the LTMS in-bay disposal sites. However, there is a low risk that an individual green sturgeon could be within the water column and directly underneath a hopper dredge or barge during a disposal event. Green sturgeon have been observed swimming higher in the water column when transiting to other shallow locations in San Francisco Bay (i.e., directional movements) (Kelly *et al*. 2007). As with anadromous salmonids, the short-term and localized very high concentration of suspended sediments during a disposal event may result in injury or mortality of a small number of green sturgeon due to gill injury, gill clogging, or body abrasion. Although losses of threatened green sturgeon are anticipated during in-bay disposal events, NMFS expects the number will be very small. Due to their higher tolerance for suspended sediment and preference for shallow areas, NMFS believes fewer green sturgeon than salmonids will be lost during in-Bay dredging disposal events.

At the two nearshore aquatic disposal sites, green sturgeon and listed anadromous salmonids are unlikely to be adverse affected by disposal events because dredged material discharge at these sites is limited to sand. Due to the particle size and density of sand grains, suspended sediment levels are expected to be low and not result in concentrations that would injury or killed listed salmonids or green sturgeon. At the ocean disposal site, SF-DODS, green sturgeon and listed anadromous salmonids are unlikely to be present because the site is located beyond the continental shelf in waters between 8-10,000 feet in depth. As with the nearshore disposal sites,

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green sturgeon and listed anadromous salmonids are unlikely to be adverse affected by disposal events at SFDODS.

2.4.2.2 Entrainment

Reine and Clark (1998) define entrainment by hydraulic dredges as direct uptake of aquatic organisms by suction field at the draghead or cutterhead. In addition to hydraulic dredges, entrainment of aquatic organisms is possible with a mechanical dredge. As the bucket of a mechanical dredge collects material from the bottom, aquatic organism can be physically collected with the sediment material. Due to their sedentary behavior, benthic organisms are particularly vulnerable to entrainment by dredges. Demersal and epibenthic organism are also particularly susceptible to entrainment due to their behavior of residing or burrowing into bottom substrates. Other factors influencing the vulnerability of a species to entrainment include reaction time, swimming capability (*i.e.*, speed), and flight response. In general, smaller fish and young life stages have poorer swimming capabilities and, thus, are more vulnerable to entrainment by a dredge. As fish grow and mature, their swimming abilities improve and presumably their ability to avoid entrainment increases.

Although entrainment of fishes has been a concern linked to hydraulic dredging for several decades (Reine and Clarke 1998), information regarding entrainment rates of fish by dredging equipment along the Pacific Coast is limited. The following is a brief summary of fish entrainment studies at hydraulic dredging operations. No information regarding entrainment rates of fish by mechanical dredges was located by NMFS.

McGraw and Armstrong (1990) collected entrainment information during hydraulic dredging on 28 species over a 10-year period in Grey's Harbor, Washington. Trawl sampling was conducted simultaneously with dredging operations to determine if fish were able to avoid entrainment. Most species (e.g., slender sole, *Lyopsetta exilis*) had relatively low absolute entrainment rates approaching 0.001 fish/cy. Species with the highest entrainment rates during this study were the Pacific sanddab (*Citharichthys sordidus*), Pacific staghorn sculpin (*Leptocottus armatus*), and the Pacific sand lance (*Ammodytes hexapterus*) at 0.076, 0.092 and 0.594 fish/cy, respectively.

Larson and Moehl (1990) studied fish entrainment at hydraulic dredges during a 4-year study at the mouth of the Columbia River in Oregon. Entrainment rates ranged from <0.001 to 0.341 fish/cy for 14 species or taxonomic groups of fishes. The majority of fishes entrained were demersal; however, a few pelagic species were collected, including anchovy, herring, and smelt. Entrainment of anadromous fishes was limited to eulachon (*Thaleichthys pacificus*). Larson and Moehl (1990) concluded that it is unlikely that anadromous fishes are entrained in significant numbers by dredges, at least outside of constricted river areas.

Buell (1992) sampled fish entrained by the hydraulic dredge *R. W. Lofgren* on the Columbia River. He reported that with the exception of white sturgeon (*Acipenser transmontanus*), entrainment involved small numbers of a few fish species. The higher rates of entrainment for white sturgeon were attributed to one location known as the "sturgeon hole", a site with greater

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than average sturgeon densities. Overall, white sturgeon were entrained at a rate of 0.015 fish per cubic yard of dredging.

Taplin and Hanson (2006) evaluated salmon and steelhead entrainment at a hydraulic suction dredge used for sand mining in the Sacramento-San Joaquin Delta in 2006. Their results suggest that very few juvenile salmon (total of 8 juvenile fall-run Chinook salmon in this study) are entrained and this study was considered to overestimate vulnerability to entrainment due to the selected placement of the dredge head in the water column during sampling.

Woodbury and Swedberg (2008) evaluated fish entrainment rates by a hydraulic dredge with a 10-inch diameter intake at a small marina adjacent to San Pablo Bay over a two-year period between December 2006 and January 2008. Their sampling at the Port Sonoma Marina detected no entrainment of salmon, steelhead or sturgeon. During the first year of the study, some striped bass were entrained, but none were entrained during the second year for the study.

To assess potential entrainment rates of listed fish in the Sacramento-San Joaquin Delta, Mari-Gold Environmental Consulting and Novo Aquatic Sciences (2010) performed four years of fish community monitoring and five years of dredge entrainment monitoring in two deep water ship channels regularly dredged by the Corps (*i.e.*, Stockton Deepwater Ship Channel and the Sacramento River Deepwater Ship Channel). During the 5-year study period, 33 native and non-native fish species were encountered and the majority of the entrained species were demersal. No listed fish species were detected in the entrainment samples. Fish community monitoring did detect listed fish species within the dredging reach, although in relatively low numbers (Mari-Gold Environmental Consulting and Novo Aquatic Sciences 2010). Due in part to the low abundance of listed fish species, Mari-Gold Environmental Consulting and Novo Aquatic Sciences (2010) concluded rarity in the environment also decreases potential for entrainment.

Some dredge sites within the LTMS Program area are located at the mouths of known steelhead streams, specifically the Napa River/Mare Island Strait, Petaluma River, Larkspur/Corte Madera Creek, and Novato Creek. At these sites, the dredging occurs at the transition from open bay waters to the more confined channel of these tributary streams. As steelhead adults return to their natal streams in the winter months and steelhead smolts depart their natal streams in the late winter and spring, greater densities of individuals due to more constricted channels significantly increase the risk of entrainment during dredging. The superior swimming capabilities of adult steelhead likely allow them to avoid entrainment at the intake of a hydraulic dredge; however, downstream migrating smolts typically range from 150 to 250 mm in size and may be overcome by the intake velocities of a large hydraulic dredge. For this reason, the LTMS Program work windows are in place for all planned projects. Unplanned projects with unavoidable needs to complete a portion of their ongoing dredging outside the work window may be permitted by the LTMS agencies (i.e., Corps) at these locations near the mouth of steelhead streams, but NMFS expects these events would occur in December immediately following the closure of the work window on November 30. Since the cumulative allocation for extension of ongoing dredge projects into the work window is limited to 50,000 cubic yards of materials per year, dredging extensions are anticipated to be completed in December and no dredging activities are expected

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to continue at the mouths of steelhead streams during the peak smolt outmigration period in March, April and early May.

Based on the best available information, the entrainment of listed anadromous salmonids during dredging under the LTMS Program is expected to be very low for the following reasons. First, the San Francisco Estuary includes extensive areas of open water which allow fish to disperse over a greater area as they migrate through the estuary. Due to their low abundances, the potential for occurrence of listed fish species at an active dredge site is low. Second, anadromous salmonids are less likely to encounter the intake of a hydraulic dredge operating on the bay bottom because they are a pelagic species. The LTMS Program has established a best management practice that requires hydraulic pumps on suction dredges to only be turned on when the intake is on or within 3 feet of the seafloor. By avoiding the operation of a hydraulic intake in the upper and middle portion of the water column, listed salmonids are unlikely to encounter an operating intake near/on the seafloor. Third, the LTMS Program work windows are designed for most dredging projects to be conducted from June 1 through November 30 when few adult and juvenile listed salmonids are expected to be migrating through the San Francisco Estuary.

As a demersal species, green sturgeon would potentially be more vulnerable to entrainment during dredging; however, available information suggests the potential for green sturgeon entrainment by a suction dredge is low. Five years of entrainment sampling by Mari-Gold Environmental Consulting and Novo Aquatic Sciences (2010) in the Sacramento-San Joaquin Delta did not observed entrainment of any sturgeon, including the more common white sturgeon. All green sturgeon in the San Francisco Estuary are also relatively large in size (i.e., typically 18 inches in length or greater). Larger fish have stronger swimming capabilities and, thus, are less vulnerable to entrainment.

Given the ability of salmonids and green sturgeon to detect noise, turbidity, water velocities and other environmental cues, their own stimuli likely provides an effective protection against entrainment during dredging. Although some entrainment losses of juvenile listed anadromous salmonids and juvenile green sturgeon are anticipated, the number is expected to be very low and information is not available to precisely quantify the number of fish entrained during LTMS Program hydraulic dredging. Due to their larger body size and stronger swimming ability, no adult listed salmonids nor adult green sturgeon are expected to be entrained during dredging.

2.4.2.3 Behavior

Several researchers have assessed the behavioral effects of dredging on fish. Carlson *et al.* (2001) evaluated the effects of dredging activities in the lower Columbia River with hydroacoustic observations of anadromous salmonids. This research was conducted over a three-year period from 1995 through 1998 and documented several behavioral responses by downstream migrating juvenile salmonids to dredging and dredged material plumes. Responses were summarized as (a) fish that were oriented along the deep channel margin moved inshore when encountering a dredge; (b) most fish passing inshore moved offshore when encountering a

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dredge; and (c) fish assumed normal patterns shortly after encountering dredge and dredge plumes.

The sediment plume resulting from dredging and disposal will likely affect the behavior of listed anadromous salmonids and green sturgeon in several ways. Available information suggests pelagic fish, (including salmonids) demonstrate avoidance behaviors to dredging and dredge plumes, while epibenthic and sedentary species (including sturgeon) may be more neutral in their response. Laboratory tests performed by Gregory and Northcote (1993) exposed juvenile Chinook salmon to turbidity levels ranging from 1 to 810 NTUs, and they found that feeding rates were greatest at NTU levels ranging from 35 to 150 NTUs. Gregory (1993) also concluded that exposure to turbid water reduced the predator-avoidance recovery time for juvenile Chinook salmon.

In contrast to Gregory and Northcote (1993), Madej *et al*. (2007) found that juvenile steelhead and coho salmon had reduced feeding activity at relatively low turbidity levels of 25-45 NTUs. Reduced reactive distance to increasing turbidity levels from 17 to 63 NTUs was identified by DeYoung (2007). Bisson and Bilby (1982) detected avoidance response by coho salmon at turbidity levels of 70 NTUs. Sigler *et al*. (1984) examined steelhead and coho salmon fry and juvenile behavior in experimental channels and found fish emigrated from channels with higher sediment loads (100 to 300 NTUs). When fish were retained in channels with high turbidity, Sigler *et al*. (1984) concluded growth rates were significantly higher in clearer water channels when compared to turbid water channels.

Adult and smolt listed anadromous salmonids are expected to generally avoid sediment plumes associated with dredging when clearer open water areas are available adjacent to the plume. Green sturgeon are tolerant of high levels of suspended sediment and are less likely to be disturbed by the sediment plume associated with dredging activities. Because of their foraging behavior which exposes them to sediments and turbidity, green sturgeon may not react to higher levels of turbidity. Green sturgeon may not alter their direction of travel or other behaviors if they encounter turbidity and because of this lack of response, and their higher tolerance of turbidity (as evidenced by their foraging behavior) are unlikely to be adversely affected by the short term turbidity plumes generated by dredging and disposal. The expanse of open waters throughout the San Francisco Estuary are expected to provide ample opportunity for listed fish to avoid the immediately vicinity of an operating dredge and its associated sediment plume. Similarly, sediment plumes associated with dredging are not expected to result in reduced visibility for foraging or reduced ability to avoid predators because the plumes are temporary, localized, and fish will have the ability to avoid overlap with the area of elevated turbidity. Nightingale and Simenstad (1991) concluded that the primary determinant of risk level associated with behavioral effects on migrating fish lie in the spatial and temporal overlap with the area of turbidity, the degree of turbidity, the occurrence of fish, and the options available for fish to access open waters.

The upstream and downstream passage of listed fish through the San Francisco Estuary is not anticipated to be adversely affected by dredging and disposal activities. As stated above, most

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dredging and in-water disposal will be restricted to the period between June 1 and November 30 when few listed salmonids are expected to be migrating through San Francisco Bay. Additionally, it is anticipated that areas adjacent to active dredge sites will be available and provide for the migration of listed salmonids and green sturgeon. Findings presented by Carlson *et al*. (2001), Bisson and Bilby (1982), and Sigler *et a*l. (1984) indicate that juvenile salmonid migration behavior may be disrupted through an avoidance response when encountering dredging activity or a disposal-generated sediment plume, but migration behavior is expected to return to normal soon after encountering a dredge or dredge plume. Burczynski (1991) utilized hydroacoustic survey techniques to assess the behavioral response of fish to a dredged material disposal event at Alcatraz (SF-11) and concluded that fish tend to exhibit avoidance behavior for about two to three hours after dredged material placement. Burcyznski (1991) concluded fish community densities generally return to pre-disposal levels after about three hours. Thus, fish migration could be disrupted for a period of two to three hours; however, it is more likely that migrating fish will utilize portions of bay channels adjacent to active dredge sites that are unaffected by the dredging or disposal activity. Listed anadromous salmonids and green sturgeon are expected to successfully transit the Bay via routes around dredging/disposal sites and little to no delays or impediments to migration would occur. Based on the best available information, the most significant potential effect of dredging on the migration of listed anadromous salmonids or green sturgeon would be a delay of two to three hours, or a detour around the sediment plume. In both cases, the migration of listed salmonids and sturgeon is expected to be unimpaired by dredging and disposal activities conducted under the LTMS Program.

2.4.2.4 Noise

Underwater sound exposures are known to alter the behavior of fishes (see review by Hastings and Popper 2005) and extremely high levels can result in physical injury or mortality. Fish use their hearing abilities and sound to detect predators, locate prey and interact socially. Underwater noise generated by dredging activities originates primarily from the operation of the bucket or hydraulic intake and sounds generated by the engine and propeller of the vessel. Cargo ships and tug boats in San Francisco Bay have been estimated to generate sound levels ranging from 135 to 145 dB (re: 1 μPa) at a distance of 600 feet while background noise levels for the bay are estimated to range from 110 dB in quiet shallower areas to 125 dB in main shipping channels (J. Reyff, Illingworth and Rodkin, personal communication 2008).

Field studies by Clarke *et al*. (2003) and Dickerson *et al*. (2001) characterized underwater sounds produced by three common dredge types (bucket, hydraulic cutterhead, and hopper). Sources of underwater noise generated by dredging activities include both continuous (e.g., propellers, pumps, and generators) and repetitive sounds (e.g., the dredge bucket striking the channel bottom). Bucket dredges have a repetitive sequence of sounds generated by winches, bucket impact with the substrate, closing and opening of the bucket, and sounds associated with dumping of material into the barge. Cutterhead dredges have relatively continuous sounds made by the cutterhead rotating through the substrate. The studies of Clarke *et al*. (2003) and Dickerson *et al*. (2001) found that cutterhead dredging operations were relatively quiet compared

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to other sound sources in aquatic environments. Hopper dredges produce a combination of sounds from the engine and propeller, that are similar to those from large commercial vessels, and sounds of the draghead moving in contact with the substrate.

Fish may be injured or killed when exposed to very high levels of underwater sound, especially those generated by impulsive sound sources such as pile driving with impact hammers. Noise levels generated by LTMS Program dredging and disposal activities are not expected to rise to levels that result in hearing loss, physical injury, or mortality of listed fish. However, sound levels may be high enough above ambient levels to alter the behavior of fish in the vicinity of an active dredge operation. Behavioral changes would likely include startle responses and avoidance of the immediately area of dredging activity. Exposure to elevated underwater sound levels may also result in "agitation" of fishes indicated by a change in swimming behavior as detected by Shin (1995), or "alarm" detected by Fewtrell (2003). Other potential changes include reduced predator awareness and reduced feeding. The potential for behavioral effects varies by species and depends on a number of factors, including the sensitivity to sound, the type and duration of the sound, as well as life stages of fish that are present in the areas affected by underwater sound.

A study in Puget Sound, Washington suggests that noise created by pile driving operations disrupt juvenile pink and chum salmon (*Oncorhynchus spp.*) behavior (Feist *et al*. 1992). Though no underwater sound measurements are available from that study, comparisons between juvenile salmon schooling behavior in areas subjected to pile driving/construction and other areas where there was no pile driving/construction indicate that there were fewer schools of fish in the pile-driving areas than in the non-pile driving areas. Based on these observations, an active dredge operation may disrupt normal foraging, schooling, and migratory behaviors of juvenile anadromous salmonids. Similar behavior may be exhibited by threatened green sturgeon in response to noise generated by dredging activities.

Assuming the worst case scenario, elevated sound levels due to an active dredge operation would result in the departure of listed salmonids and green sturgeon from the immediate vicinity of the activity. Due to the relatively high ambient underwater noise levels in San Francisco Bay at marinas, wharfs, shipping channels and ports, the area of elevated underwater sound around an operating dredge is expected to be limited to a few hundred feet[5], but empirical data is lacking to adequately characterize sound emitted during dredging. If noise levels result in listed fish vacating the site of an active dredge operation, dredging will temporarily reduce the amount of available foraging habitat. As the dredging operation sequentially moves through the channel, marina, or dock dredging area, listed fish will be able to resume use of the area. Based on the number of acres of aquatic habitat in San Francisco, San Pablo and Suisun bays, the small size of the zone of behavioral effects at an active dredge operation, and the temporary nature of the noise from dredging activities, the fitness of individual salmonids or green sturgeon is unlikely to be reduced. Fish that move because of noise from dredging are expected to quickly find areas adjacent to dredging sites with habitat of similar or higher quality, because dredging will be

[5] Beyond this distance noise from the proposed action would likely reduce to ambient background levels.

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conducted around and beneath existing wharfs, docks, and piers, and within existing marinas and navigation channels. These areas are generally degraded by regular maritime activities including vessel traffic and previous dredging episodes; thus, adjacent areas that have been subject to less human-related disturbance are likely providing higher value foraging habitat for listed fish.

In summary, available information indicates elevated noise associated with operation of dredging and disposal equipment will not result in physiological adverse effects to listed fish. However, behavioral changes would likely include startle responses and avoidance of areas with operating dredge equipment. These behavioral effects are expected to be temporary and not adversely affect the fitness of listed salmonids or green sturgeon.

2.4.3 Effects on Designated Critical Habitat

Designated critical habitat for Southern DPS green sturgeon, CCC steelhead, and Sacramento River winter-run Chinook salmon occurs in the action area. Dredging and disposal activities may impact designated critical habitat for these species by altering water quality and foraging habitat PCEs within CCC steelhead critical habitat; water quality and foraging habitat physical and biological features for Sacramento River winter-run Chinook salmon critical habitat; and water quality, foraging habitat, and sediment quality PCEs within green sturgeon designated critical habitat.

Water Quality. The effects of dredging and disposal on water quality were discussed above in section 2.4.2.1 of this biological opinion and also apply to the critical habitat within the action area. As described above, the effects of the proposed project may result in increased levels of turbidity and the re-suspension of sediment-associated contaminants. NMFS does not expect the impacts on water quality will adversely affect PCEs or physical and biological features of Chinook salmon, steelhead, or green sturgeon because contaminants within the action area are not found at concentrations harmful to these species. Increases in turbidity levels will be temporary and water quality is expected to improve within 2-3 hours following individual dredging and disposal events.

Foraging Habitat. Dredging results in the removal of the top layer soft or sandy bottom habitat and removal of invertebrate prey species in that layer. Empirical research suggests that even in dynamic environments, anthropogenic disturbance to the biological community, combined with the physical alteration of habitat, results in a loss of ecological function over varying timescales (Oliver *et al*. 1977; Reish 1961; Thrush *et al*. 1995; Watling *et al*. 2001). Recovery of the disturbed habitat could take months to years (Gilkinson *et al*. 2005), or never return its pre-disturbed state (McConnaughey *et al*. 2000). Recovery time depends on the frequency of disturbance, sediment characteristics, and the level of environmental disturbance by waves and currents at the site.

Direct removal of prey resources (e.g., entrained with bottom sediments) during dredging has the potential to reduce the amount of preferred forage species at the dredge site and may also facilitate the establishment of invasive species to disturbed areas. At disposal sites, the

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placement of dredged material may result in the burial of fish forage species. Information on juvenile salmonid and green sturgeon foraging behavior in the bay is limited. As described in Section 2.3.2 of this Biological Opinion, research indicates that most juvenile salmonids use the estuary only during outmigration, and pass through the estuary rapidly. Subyearling Chinook are more likely to rear in the estuary than other species and life histories of salmonids. These fish appear to prefer shallow water habitats near the shore and within the upper portion of the water column (less than 10 feet deep) (Kjelson *et al*. 1982). Areas typically dredged for maintenance of the federal navigation channels and areas dredged at docks, wharfs and marinas are generally highly disturbed sites with degraded habitat values. Due to urbanization, highly modified shorelines and the presence of maritime facilities and activities, these dredge locations provide lower habitat values and reduced prey availability. The propeller wash of vessel traffic can disrupt the establishment of a stable benthic community in these areas. The proposed continuation of maintenance dredging at shallow water sites like marinas will not expand the footprint of disturbed area, but it will continue to subject these sites to periodic disturbance and maintain the existing degraded condition. Based on this information, NMFS concludes that dredging and disposal conducted under the LTMS Program will adversely affect salmonid critical habitat by continuing to preclude improvement in the quality of foraging habitat PCE within the action area.

At the LTMS in-water disposal sites, benthic organisms which may serve as prey for listed salmonids are buried by the periodic placement of dredged materials; however, the LTMS Program disposal sites are located in waters greater than 30 feet deep in San Francisco Bay and listed salmonids are not known to forage for prey at these depths. Therefore, impacts on salmonid prey species from dredging and disposal are likely minimal and NMFS does not expect PCEs or physical and biological features related to forage for listed Chinook salmon and steelhead will be adversely affected.

Little is known about green sturgeon feeding and prey resources in estuarine waters, but it is likely that they prey on demersal fish (e.g., sand lance) and benthic invertebrates similar to those that green sturgeon are known to prey upon in estuaries of Washington and Oregon (Dumbauld *et al*. 2008). Research indicates that San Francisco Bay is an important area for juvenile green sturgeon rearing and residence, although, the distribution of green sturgeon and their movements in the bay are not well known. Green sturgeon are known to be generalist feeders and may feed opportunistically on a variety of benthic species encountered. For example, the invasive overbite clam, *C. amurensis*, has become the most common food of white sturgeon, and for the green sturgeon that have been examined to date (CDFG 2002). Sub-adult and non-spawning adult green sturgeon reside in San Francisco Bay during the summer months. Recent results of acoustic tagging studies suggest this period of residence is typically 6 weeks (UC Davis 2014).

The periodic disturbance created by dredging activities may facilitate the establishment of invasive species, such as the overbite clam, in dredged areas and elsewhere in the bay. The act of removing mud and sandy-bottom habitat and the associated biotic assemblages during dredging creates an area of disturbance that is susceptible to recolonization by invasive species, often resulting in the displacement of native species. As a result, dredging may result in the

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increased distribution and abundance of invasive species in these areas, which in turn would reduce the amount of native prey resources available to green sturgeon at dredge sites.

While effects on benthic habitats and prey resources for green sturgeon are unclear, due to several factors NMFS does not expect dredging and dredged material disposal by the LTMS Program will prevent sturgeon from finding suitable forage at the quantities and quality necessary for normal behavior (e.g., maintenance, growth, reproduction). First, green sturgeon are generalist feeders and the reduction of certain prey species by dredging within navigation channels, marinas, docks and wharf areas is unlikely to affect availability of prey resources for green sturgeon throughout the bay. Second, while dredging will likely continue to help create conditions suitable for invasive species in the Bay, because invasive species are so ubiquitous in San Francisco Bay, dredging is not expected to result in significant changes to invasive species distributions or abundance. Third, the LTMS Program is limited to maintenance of existing shipping channel, marinas, docks, wharfs and similar man-made facilities. These areas have been modified by previous dredging episodes and maritime development. The proposed continuation of maintenance dredging at these sites will not expand the footprint of disturbed area, but it will continue to subject these sites to periodic disturbance and help maintain the existing degraded condition. Based on this information, NMFS concludes that dredging and disposal conducted under the LTMS Program will adversely affect green sturgeon critical habitat in the action area by continuing to preclude improvement in the quality of PCEs. NMFS notes that PCE quality is severely limited by urbanization and resulting tidal wetland loss in these areas by historic Bay fill practices. While maintenance dredging helps maintain marinas and navigation channels, the added degradation from maintenance dredging at marinas and channels is relatively minor.

Eelgrass (*Zostera marina*) and other species of submerged aquatic vegetation contribute important elements to foraging habitat for listed salmonids and green sturgeon in the San Francisco Estuary. Aquatic vegetation can function as an important structural environment for resident bay and estuarine species, offering refuge from predators and current velocity (Orth 1977, Peterson and Quammen 1982). Juvenile listed salmonids and green sturgeon likely benefit from the physical cover provided by eelgrass and other aquatic vegetation. Beds of submerged vegetation also provide a food source for listed fish because these areas commonly function as a nursery for many finfish and shellfish species (Hoffman 1986, Heck *et al.* 1989, Dean *et al.* 2000, Semmens 2008). Eelgrass beds supply organic material to nearshore environments, and their root systems stabilize area sediments. In San Francisco Bay, eelgrass beds are considered to be valuable shallow water habitat, providing shelter, feeding, or breeding habitat for many species of invertebrates, fishes, and some waterfowl.

Dredging and disposal activities may damage or destroy beds of submerged aquatic vegetation, including eelgrass. Direct removal of eelgrass can occur when eelgrass is growing within the dredge project footprint (Sabol *et al.* 2005). During the 2011 NMFS-Corps programmatic EFH consultation for the LTMS, dredge and disposal sites in close proximity to established eelgrass beds were identified. To address potential impacts, the *Agreement on Programmatic EFH Conservation Measures for Maintenance Dredging Conducted Under the LTMS Program*

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(USACE and USEPA, 2011) includes conservation and mitigation measures to avoid and minimize adverse effects to eelgrass beds from dredging operations. Eelgrass is likely uncommon within the dredge project footprint of LTMS Program project sites because LTMS activities are limited to maintenance dredging of existing facilities and these areas are unlikely to support eelgrass due to vessel traffic and periodic dredging. Thus, periodic dredging likely keeps eelgrass from expanding into areas of navigation channels and marinas.

Another impact to eelgrass and other species of submerged aquatic vegetation is susceptibility to damage by reduced light or partial burial resulting from the sediment plume during dredging or disposal. The distribution of eelgrass in the San Francisco Estuary is limited by turbidity levels and depth to which light can penetrate at levels high enough to sustain eelgrass growth (USACE and Reg. Board 2014). Sediment plumes generated by dredging and disposal may temporarily reduce the amount of light available to eelgrass and adversely affect the growth and survival of beds. The loss of eelgrass beds could decrease primary productivity, alter predator-prey interactions, change invertebrate assemblages, or reduce the density of benthic invertebrates. However, available information regarding dredge sediment plumes suggests impacts to eelgrass beds are unlikely to reach levels that result in the above impacts because dredge project sites are subject to tidal influence and elevated levels of turbidity are expected to be short-term, localized and quickly disperse from the area with tidal circulation. Dredging activities that occur within close proximity to established eelgrass beds in San Francisco Bay utilize minimization measures, such as silt curtains, to minimize and contain plumes of suspended sediments (USACE and USEPA 2011). Dredge disposal sites are located in waters that are too deep to support eelgrass. For these reasons, potential effects to eelgrass and other species of submerged aquatic vegetation is not expected to impair or degrade physical or biological features essential for the conservation of Sacramento River winter-run Chinook salmon or PCEs of designated critical habitat for green sturgeon and CCC steelhead.

Sediment Quality. As described above, research indicates that most juvenile salmonids use the estuary only during outmigration, stay within the upper portion of the watershed (less than 10 feet deep) (Kjelson *et al*. 1982), and pass through the estuary rapidly. Therefore, impacts on sediment quality from dredging and disposal are not expected to adversely affect PCEs of Chinook and steelhead.

Sediment quality PCEs for green sturgeon designated critical habitat consist of suitable chemical characteristics in sediments that are necessary for normal behavior, growth, and viability of all life stages of green sturgeon. The continuation of maintenance dredging by the LTMS Program has the potential to alter the physical, chemical, and biological sediment dynamics within dredged sites and material placement areas in the Bay. The bottom sediments in dredged areas may cause slumping or erosion of adjacent or nearby shallow water habitats through destabilization of channel forms, and may indirectly cause or contribute to erosion of shallow habitats upstream and downstream. By removing bottom material from one place in a system, a chain of transport events could be initiated, which removes sediment from elsewhere, as the local area attempts to reestablish equilibrium. Most areas of dredging disturbance will be replenished with new sediment over time. These physical alterations to benthic substrates could affect the

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chemical properties of the sediment and the biological communities present. The biological communities in dredging sites are accustomed to a dynamic environment with high velocity currents. However, as described above, even in dynamic environments, the ecological function of these communities may take months to years to recover (Gilkinson *et al*. 2005), or never return its pre-disturbed state (McConnaughey *et al*. 2000).

The association of green sturgeon to deep estuarine benthic habitats is not well understood. Information suggests that green sturgeon primarily aggregate in shallow mud-dominated areas of the estuary, and use deeper channels for migration or rapid movements at the surface (Kelly *et al*. 2007). Based on this information, NMFS assumes that alterations to benthic habitats in deeper navigation channels would not degrade PCEs of green sturgeon critical habitat to the extent that it would not support the normal behavior, growth, and viability of all life stages of green sturgeon in the action area. Marinas, docks and wharf areas are commonly shallow mud-dominate areas, but these sites are typically degraded due to a history of human disturbance, including urbanization and shoreline development, and generally offer lower habitat value to green sturgeon than adjacent undisturbed areas. Continued dredging in and around marinas, wharfs and docks would continue to prevent PCEs of green sturgeon critical habitat from improving in these areas.

2.4.4 Effects of Beneficial Re-use for Wetland Restoration

In addition to the placement of dredged materials at in-bay, nearshore, or ocean disposal sites, dredged materials may be placed at beneficial re-use sites to support the creation of tidal wetlands. Beneficial re-use sites and wetland restoration projects generally require permits from the Corps pursuant to the section 404 of the CWA. NMFS assumes that all upland beneficial re-use sites and tidal wetland restoration projects utilized by the LTMS Program have either completed section 7 consultation with NMFS and the Corps, or will undergo a consultation with NMFS and the Corps prior to the Corps' issuance of a CWA 404 permit.

Planned LTMS dredging projects that are performed outside of the work windows for listed anadromous salmonids (June 1 through November 30) are required by the LTMS Program to placed dredged materials at a beneficial reuse site that will provide future aquatic habitat benefits for San Francisco Bay native species. The placement of dredged materials at tidal wetland restoration sites are generally performed with the use of an offloader. During the offloading of dredged material from barges, water is typically pumped through a screened intake to create a slurry mixture of water and dredged material. The slurry mixture is transported by pipeline to the future wetland restoration site.

Future restoration sites around the margins of San Francisco Estuary are typically isolated from bay waters by perimeter levees. Dredged material placement activities within the existing perimeter levees will not affect ESA-listed fish or habitat, because the project area remains isolated from tidal sloughs and bay waters. Upon completion of construction and dredged material placement, wetland restoration sites will be opened to tidal influence by the breaching of the perimeter levees.

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Once completed, tidal wetland restoration sites are expected to benefit listed anadromous salmonids, green sturgeon and designated critical habitat by increasing the amount of tidal marshland around the San Francisco Estuary. Over time, some existing riprap shoreline areas will be replaced by levee breaches in several locations and the restoration of tidal action will create a network of intertidal channels extending into areas now separated from the bay waters by perimeter levees. Breaches are expected to adjust to the new hydrodynamic regime and the wetland areas will mature with marsh vegetation. Restored marsh plain and with tidal channels are anticipated to improve water quality and increase foraging opportunities for green sturgeon and salmonids. For these reasons, the placement of dredged materials at beneficial reuse sites for tidal wetland restoration projects are expected to benefit critical habitat of anadromous salmonids and green sturgeon.

2.5 Cumulative Effects

Cumulative effects are defined in 50 CFR § 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation". Many actions occurring in adjacent watersheds may affect the action area of this proposed project. Any future Federal actions will be reviewed through separate section 7 consultation processes and not considered here.

NMFS does not anticipate any cumulative effects in the action area other than those ongoing actions already described in the Environmental Baseline above, and resulting from climate change. Given current baseline conditions and trends, NMFS does not expect to see significant improvement in habitat conditions in the near future due to existing land and water development in San Francisco Bay. In the long term, climate change may produce temperature and precipitation changes that may adversely affect listed anadromous salmonids and green sturgeon habitat in the action area. Freshwater rearing and migratory habitat are most at risk to climate change. However, productivity in the San Francisco Bay is likely to change based on changes in freshwater flows, nutrient cycling, and sediment amounts (Scavia *et al*. 2002). This may result in altered trophic level interactions, introduction or survival of invasive species, emergence of harmful algal blooms, changes in timing of ecological events, all of which may cause decreases (or increases) in abundance of green sturgeon and salmonids as well as of their predators and competitors.

2.6 Integration and Synthesis

CCC and CCV steelhead, CV spring-run Chinook salmon, Sacramento River winter-run Chinook salmon, and southern DPS green sturgeon have experienced serious declines in abundance, and long-term population trends suggest a negative growth rate. Human-induced factors have reduced populations and degraded habitat, which in turn has reduced the population's resilience to natural events, such as droughts, floods, and variable ocean conditions. Global climate change presents another real threat to the long-term persistence of the population, especially when combined with the current depressed population status and human caused impacts. Within the

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project's action area in San Francisco Bay, San Pablo Bay, and Suisun Bay, the effects of shoreline development, industrialization, and urbanization are evident. These activities have introduced non-native species, degraded water quality, contaminated sediment, and altered the hydrology and fish habitat of the action area. As a result, forage species that listed salmonids and green sturgeon depend on have been reduced, and periodic releases of contaminants occur from ships, piers, adjacent land areas, and stormwater runoff.

Future dredging and disposal of dredged materials conducted under the LTMS Program and addressed by this biological opinion must be conducted in compliance with the following programmatic measures:

(1) The work window for dredging and disposal is June 1 through November 30.
(2) No dredging will be permitted from December 1 through May 31 upstream or within 1000 feet bayward of the mouths of Larkspur/Corte Madera Creek, Napa River Channel/Mare Island Strait, Petaluma River, and Novato Creek.
(3) Projects may plan work for the period outside the work window (December 1 through May 31) provided the project mitigates for its impacts by placing dredged material at a beneficial re-use site, such as tidal wetlands restoration site. If a project is unable to place all material dredged outside the work window at a beneficial re-use site, the LTMS Program measures allow for an equivalent volume of dredged material to be placed at a beneficial re-use site from a project conducted within the work windows during the following season. This exemption does not apply to dredge sites upstream or within 1000 feet bayward of the mouths of Larkspur/Corte Madera Creek, Napa River Channel/Mare Island Strait, Petaluma River, and Novato Creek.
(4) Projects that incur an unplanned and unavoidable need to complete a portion of an ongoing dredging operation outside of the work window, the LTMS agencies may approve up to 50,000 cubic yards of dredging and disposal per year for this purpose. This exemption may apply to dredge sites upstream or within 1000 feet bayward of the mouths of Larkspur/Corte Madera Creek, Napa River Channel/Mare Island Strait, Petaluma River, and Novato Creek.

Since dredging and disposal under the LTMS Program could occur at any time of year, CCC and CCV steelhead, CV spring-run Chinook salmon, Sacramento River winter-run Chinook salmon, and Southern DPS green sturgeon may be present during LTMS Program activities. Dredging and disposal have the potential to affect listed fish through degradation of water quality, entrainment, and reduction and alteration of foraging habitat. Sediment-associated contaminants re-suspended within dredge sediment plumes are not expected to occur at levels known to cause reductions in fitness to listed fish. At dredge sites, increases in turbidity will be temporary and levels are anticipated to not significantly exceed natural conditions typically encountered by listed fish in the San Francisco Estuary. During disposal events at in-bay aquatic site, suspended sediment concentrations are expected to be very high at the point of discharge and could result in gill injury, gill clogging and body abrasion to fish. Although the likelihood of listed fish presence concurrent with the aquatic discharge of dredged sediments by a barge or hopper dredge is low (see description in section 2.4.2.1), over the remaining 35-year term of LTMS

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Program a small number of listed anadromous salmonids and green sturgeon are expected to be injured or killed during in-bay disposal events. As described above in Section 2.4.2.1, NMFS is unable to precisely estimate the number of listed fish expected to be injured or killed by extremely high concentrations of suspended sediment during in-bay disposal events conducted under the LTMS Program.

Hydraulic dredging has the potential to entrain fish and other aquatic organisms in the suction pipe. Best management practices that require pumps to be turned on only when the intake is within three feet of the seafloor are expected to reduce the risk of listed fish from being entrained. However, a small number of listed smolt anadromous salmonids and juvenile green sturgeon may be entrained by hydraulic dredging activities conducted under the LTMS Program. NMFS assumes all fish entrained through a hydraulic dredge will be killed. As described above in Section 2.4.2.2, NMFS is unable to estimate the number of listed fish expected to be entrained during dredging activities conducted under the LTMS Program. However, NMFS expects that the number of listed fish entrained will be very small due to the timing of most dredging activities, the relatively small number of listed fish present when dredging occurs, and the project's minimization measures which reduce the chances that smolts or juvenile green sturgeon will be directly adjacent to suction dredges when these dredges are operating. Due to their larger body size and stronger swimming abilities, no adult listed salmonids nor adult green sturgeon are expected to be entrained during dredging.

Noise and the sediment plume generated by dredging and disposal activities will likely affect the behavior of listed anadromous salmonids and green sturgeon. Available information suggests pelagic fish, (i.e., listed salmonids) demonstrate avoidance behaviors to dredging and dredge plumes, while epibenthic and sedentary species (including sturgeon) may be more neutral in their response. In the San Francisco Estuary, ambient turbidity levels generally range from 10 to 180 NTUs and are primarily influenced by upstream sources of sediment, sediment input during storm events, and wind-inducted wave action. Adult and smolt listed anadromous salmonids are expected to generally avoid sediment plumes associated with dredging when clearer open water areas are available adjacent to the plume. Green sturgeon are tolerant of high levels of suspended sediment and are less likely to be disturbed by the sediment plume associated with dredging activities. Listed fish are unlikely to be adversely affected by the short term turbidity plumes and noise generated by dredging and disposal. The open expanse of waters throughout most of the action area are expected to provide ample opportunity for listed fish to avoid the immediately vicinity of an operating dredge and its associated sediment plume.

Designated critical habitat for Southern DPS green sturgeon, CCC steelhead, and Sacramento River winter-run Chinook salmon occurs in the action area. Dredging and disposal activities may adversely affect designated critical habitat for these species by altering water quality and foraging habitat PCEs within CCC steelhead and Sacramento River winter-run Chinook salmon critical habitat; and water quality, foraging habitat, and sediment quality PCEs within green sturgeon designated critical habitat. Dredging and disposal has occurred within the action area for over 100 years and available information indicates that dredging has temporary impacts on benthic habitat through the direct disturbance of epifauna, infauna, and demersal species. Long-

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term impacts to benthic and shoreline habitat appear to primarily be related to urbanization and the creation of the facilities that are now subject to periodic maintenance dredging under the LTMS Program. As a modern-day hub of international commerce, urbanization and maritime development are extensive in San Francisco. The filling of wetlands for housing and industries, and the creation of shipping channels, docks, port and wharf facilities has resulted in significant modifications to aquatic habitat and degraded conditions for listed fish and their native prey base. Since dredging occurs repeatedly at navigation channels, marinas, docks and wharfs, the temporary impacts would reoccur over the duration of the LTMS Program, to the extent that they are more appropriately considered chronic impacts. Despite these impacts, the current ecological distribution of listed salmonids and green sturgeon in the Bay suggest that areas subject to maintenance dredging are not of prime importance for foraging and LTMS Program activities will not adversely affect conditions for migration. Adverse effects to critical habitat by the LTMS dredging and disposal activities are not expected to result in an appreciable reduction in critical habitat value at the entire critical habitat designation scale for listed species, due largely to the small amount of critical habitat adversely affected and the remaining critical habitat nearby in San Francisco Bay and elsewhere that is undisturbed by dredging and is generally in much better condition.

Based on the above, a small number of CCC steelhead, CCV steelhead, CV spring-run Chinook, Sacramento River winter-run Chinook, and green sturgeon are expected to be adversely affected by the proposed LTMS Program. Although no data are available to quantify the amount of injury and mortality associated with future implementation of the LTMS Program, NMFS believes that, for the reasons stated herein, the potential level of injury and mortality to green sturgeon and listed anadromous salmonids by dredging and disposal activities in the San Francisco Estuary is very low. It is unlikely that the small potential loss of individuals as a result of the dredging and disposal conducted under the program will impact future adult returns, due to the large number of salmonids and green sturgeon unaffected by the project compared to the small number of fish likely affected by the project. Due to the relatively large number of juveniles produced by each spawning pair, adult salmonids and sturgeon in future years are expected to produce enough juveniles to replace the small number of individuals injured or killed during dredging and disposal activities. It is unlikely that the small potential loss of juveniles during implementation of the LTMS Program will impact future adult returns.

Regarding future climate change effects in the action area, California could be subject to higher average summer air temperatures and lower total precipitation levels. The Sierra Nevada snow pack is likely to decrease by as much as 70 to 90 percent by the end of this century under the highest emission scenarios modeled. Reductions in the amount of snowfall and rainfall would reduce stream flow levels in Northern and Central Coastal rivers. Estuaries may also experience changes in productivity due to changes in freshwater flows, nutrient cycling, and sediment amounts. For this project, dredging activities would occur over the next 35 years, and the above effects of climate change are likely to begin to be detected within that time frame.

For the LTMS Program, areas affected by dredging and disposal events are generally not of prime importance for foraging by listed fish due to extensive maritime development and changes

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in estuarine productivity associated with climate change at these sites would, thus, be of lesser significance. Changes in nutrient cycling and sedimentation amounts due to climate change will likely be difficult to detect at LTMS dredging and disposal sites because these locations are regularly disturbed by periodic dredging and placement of dredged sediments. Additionally, proposed dredging and disposal activities will not affect water temperature, freshwater flows, or tidal flows in the San Francisco Estuary. For these reasons, future LTMS Program activities conducted in accordance with the above programmatic measures will not exacerbate the effects of climate change.

Long-term benefits to tidal marsh habitat in the action area are expected through the LTMS Program's placement of dredged material at beneficial re-use sites. The program's measures which require placement of dredged sediments at beneficial re-use sites for all projects conducted outside the work window are expected to accelerate the completion of several large restoration projects. Once completed, tidal wetland restoration sites are expected to benefit listed anadromous salmonids, green sturgeon and designated critical habitat by increasing the productivity of prey species, expanding the amount of forage area, and improving water quality around the San Francisco Estuary.

2.7 Conclusion

After reviewing the best available scientific and commercial data, the current status of threatened CCC steelhead, threatened CCV steelhead, threatened CV spring-run Chinook salmon, endangered Sacramento River winter-run Chinook salmon, and threatened southern DPS green sturgeon, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS' biological opinion that the LTMS Program dredging and disposal activities in the San Francisco Bay Region are not likely to jeopardize the continued existence of threatened CCC steelhead, threatened CCV steelhead, threatened CV spring-run Chinook salmon, endangered Sacramento River winter-run Chinook salmon, and threatened southern DPS green sturgeon.

After reviewing the best available scientific and commercial data, the current status of Sacramento River winter-run Chinook salmon, CCC steelhead, and southern DPS green sturgeon critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS' opinion that the LTMS Program dredging and disposal activities in the San Francisco Bay Region are not likely to adversely modify or destroy critical habitat for CCC steelhead, Sacramento River winter-run Chinook salmon, and southern DPS green sturgeon.

2.8 Incidental Take Statement

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined by regulation to include significant

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habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). "Incidental take" is defined by regulation as takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant (50 CFR 402.02). Section 7(b)(4) and section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this incidental take statement.

2.8.1 Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take would occur in association with LTMS Program dredging and in-bay disposal activities. Incidental take in the form of injury and/or mortality of threatened CCC steelhead, threatened CCV steelhead, threatened CV spring-run Chinook salmon, endangered Sacramento River winter-run Chinook salmon, and threatened southern DPS green sturgeon is anticipated. Sediment plumes associated with operation of dredges and disposal events are expected to result in incidental take ranging from injury and mortality of adult and smolt listed anadromous salmonids and threatened green sturgeon. Entrainment at hydraulic dredges is expected to result in the mortality of juvenile listed salmonids and green sturgeon.

NMFS was not able to estimate the specific number of CCC steelhead, CCV steelhead, CV spring-run Chinook salmon, winter-run Chinook salmon, and green sturgeon that may be incidentally taken by the proposed action. Monitoring or measuring the number of listed fish actually injured and/or killed by high concentrations of suspended sediment and entrainment during dredging and disposal activities is not feasible. Entrained fish will be carried away in a slurry of dredged sediments and placed at a disposal site which renders their losses as undetectable. Therefore, the number of affected listed fish is difficult to quantify. Due to the difficulty in quantifying the number of listed fish that could be affected by the LTMS Program, a surrogate measure of take is necessary to establish a limit to the take exempted by this incidental take statement. For this action, compliance with the expected in-bay dredged material disposal volume limit is the best surrogate measure for incidental take associated with implementation of the LTMS Program. The amount of dredged material disposed in-bay provides a measure of the extent of dredging performed and sediment plumes at disposal sites. Since both these activities are sources of incidental take, annual in-bay disposal volumes will provide a meaningful measure to assess the incidental take of listed anadromous salmonids and green sturgeon. Therefore, NMFS will consider the extent of take exceeded if LTMS Program in-bay disposal of dredged material exceeds a volume limit of 1.5 million cubic yards per year[6].

[6] The in-bay disposal target volume is 1.25 million cubic yards; however a contingency volume of 250,000 cubic yards has been established for emergencies when sedimentation or other factors result in unanticipated material volumes.

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2.8.2 Effect of the Take

In the biological opinion, NMFS determined that the amount or extent of anticipated take, coupled with other effects of the proposed action, is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

2.8.3 Reasonable and Prudent Measures

"Reasonable and prudent measures" are nondiscretionary measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02). NMFS believes the following reasonable and prudent measures are necessary and appropriate to minimize take of CCC steelhead,CCV steelhead, CV spring-run Chinook salmon, and Sacramento River winter-run Chinook salmon:

1. Ensure dredging best management practices are properly implemented.

2. Prepare and submit annual reports regarding dredging and disposal activities performed under LTMS.

2.8.4 Terms and Conditions

The terms and conditions described below are non-discretionary, and the Corps and EPA must comply with them in order to implement the reasonable and prudent measures (50 CFR 402.14). The Corps and EPA has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this incidental take statement (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

The following terms and conditions implement reasonable and prudent measure 1:

a. The Corps and/or EPA must include as permit conditions in authorizations for dredging all appropriate LTMS Program measures and best management practices presented in October 2014 LTMS Program updated project description.

The following terms and conditions implements reasonable and prudent measure 2:

a. The Corps and/or EPA must provide the following information as an annual report to NMFS by June 15 of the following year. The reports shall be submitted to NMFS North Central Coast Office, Attention: NCCO Supervisor, 777 Sonoma Avenue, Room 325, Santa Rosa, California, 95404-6528. The report must contain, at a minimum, the following information:

    i. **Dredging Episode Data.** For each dredging episode conducted during the previous year: project location, start and end date of dredging, amount of

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material dredged, and disposal location(s).

2.9 Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02). NMFS has the following conservation recommendation:

1. Perform modifications to the Corps' hopper dredges, *Essayons* and the *Yaqunia,* which will allow these vessels to offload dredged materials via pipelines and pumps directly to an upland or beneficial reuse site.

2.10 Reinitiation Notice

This concludes formal consultation for the LTMS dredging and disposal activities in the San Francisco Bay Region, California.

As 50 CFR 402.16 states, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) the amount or extent of incidental taking specified in the incidental take statement is exceeded, (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action.

3.0 DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

The Data Quality Act (DQA) specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the opinion addresses these DQA components, documents compliance with the DQA, and certifies that this opinion has undergone pre-dissemination review.

3.1 Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended users of this opinion are the Corps of Engineers (Corps) and the U.S. Environmental Protection Agency (EPA). Other interested users could include San Francisco Bay Regional Water Quality Control Board and Bay Conservation and Development Commission. Individual copies of this opinion were provided to the Corps and EPA. This opinion will be posted on the Public Consultation Tracking System

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web site (https://pcts.nmfs.noaa.gov/pcts-web/homepage.pcts). The format and naming adheres to conventional standards for style.

3.2 Integrity

This consultation was completed on a computer system managed by NMFS in accordance with relevant information technology security policies and standards set out in Appendix III, 'Security of Automated Information Resources,' Office of Management and Budget Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

3.3 Objectivity

Information Product Category: Natural Resource Plan

Standards: This consultation and supporting documents are clear, concise, complete, and unbiased; and were developed using commonly accepted scientific research methods. They adhere to published standards including the NMFS ESA Consultation Handbook, ESA regulations, 50 CFR 402.01 et seq., and the MSA implementing regulations regarding EFH, 50 CFR 600.

Best Available Information: This consultation and supporting documents use the best scientific and commercial data available, as referenced in the References section. The analyses in this opinion contain more background on information sources and quality.

Referencing: All supporting materials, information, data and analyses are properly referenced, consistent with standard scientific referencing style.

Review Process: This consultation was drafted by NMFS staff with training in the ESA, and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

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4.0 REFERENCES

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
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In reply refer to:
2024-0130642-S7-001

February 7, 2025

Jessica M. Vargas
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San Francisco, California 94102-3404

Subject: Reinitiation of the Programmatic Formal Endangered Species Consultation on the Proposed Long-Term Management Strategy for Placement of Dredged Material in San Francisco Bay, California

Dear Jessica Vargas:

This letter is in response to the U.S. Army Corps of Engineers' (Corps/USACE) August 14, 2024, request for reinitiation of formal consultation with the U.S. Fish and Wildlife Service (Service/USFWS) on the 1999 and 2004 amended Programmatic Formal Endangered Species Consultation on the Proposed Long-Term Management Strategy for Placement of Dredged Material in San Francisco Bay, California (Service file numbers: 1-1-98-F-62 and 1-1-04-F-0199; 1999 Programmatic Biological Opinion and 2004 Amended Programmatic Biological Opinion/Amendment, respectively) to evaluate programmatic-level effects on the federally endangered San Francisco Bay-Delta distinct population segment (DPS) of the longfin smelt (longfin smelt/longfin smelt DPS; *Spirinchus thaleichthys*). The request was provided by the Corps on behalf of the Corps and the U.S. Environmental Protection Agency (EPA). This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq*.) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

In reviewing this reinitiation request, the Service has relied upon: (1) the 1999 and 2004 biological opinion and amended biological opinion; (2) the Corps' August 14, 2024, letter; (3) the *Programmatic Biological Assessment for San Francisco Bay-Delta Distinct Population Segment of Longfin Smelt Long-Term Management Strategy (LTMS) for the Placement of*

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Dredged Material in San Francisco Bay Region (BA) dated October 1, 2024; (4) several meetings and emails between the Service, Corps, EPA, and other stakeholders; and (5) other information available to the Service.

Background and Implementation

On March 12, 1999, the Service issued the Programmatic Biological Opinion to the Corps and EPA for the endangered salt marsh harvest mouse (*Reithrodontomys raviventris*), endangered California clapper rail (*Rallus longirostris obsoletus*; now taxonomically and regulatorily identified as the California Ridgway's rail [*Rallus obsoletus obsoletus*]), endangered California least tern (*Sterna antillarum browni*), then endangered and now delisted California brown pelican (*Pelecanus occidentalis*), threatened coastal population of the western snowy plover (*Charadrius alexandrinus nivosus*) (plover), threatened delta smelt (*Hypomesus transpacificus*) and its critical habitat, and the then threatened and now delisted Sacramento splittail (*Pogonichthys macrolepidotus*). On May 28, 2004, in response to a request to reinitiate consultation to reflect a change in Sacramento splittail listing status, clarification of species distribution, and refinement of protective measures during operations, the Service issued the 2004 Amended Programmatic Biological Opinion, which included removing longfin smelt protections from the Long-Term Management Strategy for Placement of Dredged Material program (LTMS/LTMS Program). Because the longfin smelt was not federally proposed or listed at the time, the longfin smelt was not part of either 1999 Programmatic Biological Opinion or 2004 Amended Programmatic Biological Opinion but was a part of the LTMS Program. These consultations are included as enclosures and incorporated by reference.

The BA and 1999 Programmatic Biological Opinion use the terms "LTMS agencies" and "resource agencies". The LTMS agencies are made up of EPA, Corps, San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), San Francisco Bay Conservation and Development Commission (BCDC), and State Water Resources Control Board (SWRCB). The resources agencies are made of up the Service, National Marine Fisheries Service (NMFS), and California Department of Fish and Wildlife (CDFW).

The purpose of the programmatic consultation was to expedite LTMS projects with relatively small effects on listed and proposed species and critical habitat. The Corps and EPA may request separate review under the Act for those projects which could not meet the requirements specified in the Programmatic Consultation Guidelines and Implementing Procedures (both restated below) in the 1999 Programmatic Biological Opinion or which exceed the programmatic threshold. Any project proposing to conduct dredging activities under the LTMS program is required to comply with the LTMS Programmatic Biological Opinion, as implemented through the LTMS Management Plan. At the time the 1999 Programmatic Biological Opinion was completed, many existing dredging projects already met the requirements specified by the Programmatic Biological Opinion and permits issued by the Corps' Dredge Material Management Office (DMMO) reflected that inclusion, but it is not explicitly stated in either the 1999 Programmatic Biological Opinion or 2004 Amended Programmatic Biological Opinion. Similarly, all current Corps navigation dredging projects existed and were analyzed programmatically, not individually. Initial implementation of the Programmatic Biological

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Opinion focused on evaluating actions as part of the LTMS program rather than on an individual basis.

All of the existing projects: (1) that occurred within the Action Area; (2) were able to meet minimization and mitigation measures; and (3) the impacts from the dredging activities were analyzed as effects of the action were essentially grandfathered under the Programmatic Biological Opinion without needing to follow the steps outlined in the Implementing Procedures below. Currently, as projects come up for permit renewal, i.e., every 10 years (non-Corps projects) and every 5 years (Corps projects), projects previously considered compliant with the Programmatic Biological Opinion that have no changes to project description are issued permits with no further consultation or communication. While a more formal tracking database could be created for reporting, the continued compliance with the Programmatic Biological Opinion is captured by the Corps and EPA in the administrative record for each issued permit. Because there is no formal tracking database or reporting, the Service has been unable to reevaluate the consultation annually per the 1999 Programmatic Biological Opinion to ensure that its continued application does not result in unacceptable effects on listed and proposed species and critical habitats. The Service has also noted inconsistent implementation over the years and between different divisions within the Corps. The *Environmental Baseline* attempts to capture the previous LTMS project consultations within and without the LTMS Programmatic Consultation.

Programmatic Consultation Guidelines in 1999 Formal Programmatic Consultation

Proposed projects that will receive consideration for inclusion under this programmatic consultation must meet the following criteria:

1. The projects must be reviewed and processed via the DMMO, which is comprised of representatives of the LTMS agencies.

2. Any adverse effects on listed and proposed species and their habitats resulting from the proposed project must be minor, as determined by the Service.

3. Any new upland and wetland disposal or reuse site(s) for dredged materials must be authorized to accept dredged materials through separate review under the Act.

Implementing Procedure in the 1999 Formal Programmatic Consultation

The LTMS agencies and Service will implement the following procedures when evaluating proposed dredging and dredged material disposal projects relative to this programmatic consultation:

1. Federal and non-Federal project proponents or the LTMS agencies will request a species list from the Service to determine whether any listed and proposed species and critical habitat occurs in the vicinity of the project site. To obtain a species list, applicants may submit a written or verbal request to the Service's Section 7 Biological Technician and provide a short project name, the name of the U.S. Geological Survey (USGS) 7:5 minute quadrangle(s) on which the project occurs, and a return address. Requests can be

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submitted in writing to the Service's Section 7 Biological Technician at 3310 El Camino Avenue, Suite 130, Sacramento, CA 95821, or by calling (916) 979-2753. The Service typically responds to requests for Species Lists within a few days of when they are received.

*Please note, the Service no longer has an office located at this address and has updated and automated the process to obtain an official species list using the Information for Planning and Consultation internet application available at: https://ipac.ecosphere.fws.gov/.

2. If any listed and proposed species and critical habitat are present in the vicinity of the proposed project site, the Corps will determine whether the proposed project may affect those species or destroy or adversely modify any critical habitat. If the Corps determines that the proposed project is not likely to adversely affect any listed and proposed species and is not likely to destroy or adversely modify any critical habitat, then the Corps will submit to the Service a written request for the Service's concurrence. If the Corps determines that the proposed project is likely to adversely affect any listed and proposed species and critical habitats, then the Corps will submit to the Service a request to append the proposed project to this programmatic biological opinion or will request separate endangered species consultation. The Service requires approximately 30 days to review and respond to these requests. For each project that may affect listed and proposed species and critical habitat, the Corps will submit information to the Service that adequately describes the proposed project, any species that may be affected, and the nature of the potential effects, as required under Part 402.14 (c) and (d) of the regulations governing interagency cooperation (51 FR 19957). Any proposed minimization measures should be incorporated into the project description.

   *Please note, the implementing regulations pertaining to interagency cooperation (50 CFR 402) have been revised several times since the 1986 regulations referenced above. The most recent revision final rule was published on April 5, 2024. The updated regulations are available online at: https://www.ecfr.gov/current/title-50/chapter-IV/subchapter-A/part-402.

3. The Service will review the proposed project and any proposed additional permit conditions to determine if the project proposed: (1) is not likely to adversely affect listed species or destroy or adversely modify critical habitat; (2) is appropriate to append to this programmatic biological opinion; or (3) will require separate formal consultation.

4. In our letter appending proposed projects to this programmatic biological opinion, we may issue additional terms and conditions to further minimize incidental take resulting from individual proposed projects.

LTMS projects not grandfathered into the 1999 Biological Opinion have been appended to the programmatic consultation or received separate consultation (see *Environmental Baseline*).

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Document Overview

The BA is organized in a manner that blends the project description with the Regional Dredged Material Management Plan (a potential future action currently in planning but not included in this reinitiation), background information, and previous implementation. However, the BA states the Corps and EPA propose to continue implementation of LTMS dredging and dredged material placement projects with no changes to the project description as presented in the Service's 1999 Programmatic Biological Opinion or 2004 Amended Programmatic Biological Opinion. This document will analyze the effects of the project, as previously described, on the longfin smelt DPS with the additional species-specific measures articulated in the BA. The non-project description components of the BA are captured in the following introductory paragraph or *Environmental Baseline* section in the Programmatic Biological Opinion below. Additionally, because the most recent amendment was 20 years ago for the 50-year program (1999-2049), this document will also update the *Status of the Species* and the *Environmental Baseline* sections for the salt marsh harvest mouse, California Ridgway's rail, California least tern, western snowy plover, and the delta smelt and its critical habitat. This document is intended to supplement, not replace, the 1999 Programmatic Biological Opinion or 2004 Amended Programmatic Biological Opinion.

Regional Dredged Material Management Plan

Per the BA, there is currently an effort underway to develop a new Federal Standard Base Plan for the 10 Federal navigation channels over the next 20 years, beginning in 2025, known as a Regional Dredged Material Management Plan (RDMMP). The stated benefit of a RDMMP is the flexibility to identify a regional Federal Standard Base Plan, recognizing the interconnectedness of the Federal channels and associated dredged material placement sites, and leveraging economic efficiency at a regional scale to increase beneficial use within the Federal Standard Base Plan. The Corps is currently drafting a RDMMP with the intent to maximize beneficial use of dredged material within the Federal Standard by realizing cost savings in certain navigation channels (e.g., Richmond Inner Harbor Channel) to be applied to the higher cost of beneficial use in other navigation channels (e.g., Oakland Harbor Federal Channel). Under the current Corps Operations and Maintenance dredging program, the No Action Alternative is defined as dredging Richmond Outer Harbor and Pinole Shoal every year via hopper dredging. In practice, the Corps only dredges one of these channels every year via hopper dredge due regulatory constraints. This is the Federal Standard Base Plan.

Under the new RDMMP, the Proposed Action will consist of phased implementation of a combination of alternatives. Alternative 1 takes one Federal dredging project planned for deep ocean disposal at SF-DODS and places it at a beneficial use site instead. Alternative 2 increases hopper dredging in the San Francisco Bay to offset the increased cost of beneficial use. The future Federal Standard Base Plan will consist of either the No Action Alternative, Alternative 1, or Alternative 2, or a combination of the three. The Corps and the SFBRWQCB published a Draft Environmental Assessment/Environmental Impact Report for public comment on October 30, 2024, to address the potential environmental effects of the maintenance dredging of federal

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navigation channels in San Francisco Bay and the associated placement of dredged materials for dredging years 2025 to 2034 (Corps and SFBRWQCB 2024). While the Corps discussed the RDMMP in the BA, it is still in the planning phase and not part of the current project description or this reinitiation and will not be discussed further.

Consultation History

Because activities from the initial issuance of the Programmatic Biological Opinion and Amendment span over 20 years, this section is not all inclusive of meetings or discussions but rather serves to provide a brief history of implementation of the consultation and recent discussions since the proposed listing rule for the longfin smelt. Throughout this time the Service has participated in various LTMS Management Committee and stakeholder meetings.

March 12, 1999	The Service issued the Programmatic Biological Opinion.
April 9, 2004	The Corps and EPA requested an amendment to the 1999 Programmatic Biological Opinion for changes to several species measures including removing longfin smelt protections as the species was not federally listed at the time.
May 28, 2004	The Service issued the Amended Programmatic Biological Opinion.
December 14, 2015	The Service issued a letter to the Corps' Regulatory Division appending the City of Napa's Upper Napa River Federal Navigation Channel Maintenance Dredging Project to the Amended Programmatic Biological Opinion for the delta smelt in response to their June 29, 2015 request.
September 23, 2016	The Service issued a letter to the Corps' Environmental B Section appending formally the Lower Napa River Federal Navigation Channel Project to the Amended Programmatic Biological Opinion for the delta smelt in response to their April 22, 2016 request.
April 2, 2024	The Service received an email from the Corps' DMMO with a draft of the BA.
April 30, 2024	The Service met with the Corps and EPA to discuss the draft BA.
May 3, 2024	The Service emailed comments on the draft BA to the Corps and EPA.
May 21, 2024	The Service met with the Corps to discuss the Service's comments on the draft BA.
June 20, 2024	The Service received an email from the EPA with a revised version of the draft BA.

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June 21, 2024	The Service issued a letter to the Corps' DMMO appending the Vulcan Landing Way Pier Dredging Project informally to the Amended Programmatic Biological Opinion for the California Ridgway's rail with a separate longfin smelt not likely to adversely affect conference concurrence in response to their May 28, 2024 request.
June 25, 2024	Non-regulatory representatives of the Service's Lodi Fish and Wildlife Office and San Francisco Bay-Delta Fish & Wildlife Office participated in a multi-agency meeting regarding LTMS and current science on longfin smelt DPS.
July 8, 2024	The EPA emailed meeting notes and power point presentation slide decks and scientific literature referenced in the June 25, 2024 meeting. The Service's Lodi Fish and Wildlife Office followed up with a clarifying email.
July 12, 2024	A follow-up multi-agency meeting was held to discuss longfin smelt DPS and LTMS implementation and conservation measures. The Service was unable to attend. Meeting notes were not provided to the Service.
August 13-14, 2024	The Service received the formal conference request for reinitiation and revised BA dated August 13, 2024 from the Corps over a series of emails.
August 27, 2024	The Service emailed the Corps an information request letter and the August 13, 2024 BA annotated with the Services comments and suggested edits.
October 1, 2024	The Service received a revised BA dated October 1, 2024 from the Corps.
October 30, 2024	The Service emailed the Corps, EPA, and other agencies copied on the October 1, 2024 email that review of the BA was complete and how the Service plans on incorporating the information in the BA into the biological opinion.

BIOLOGICAL OPINION

Description of the Proposed Action

The proposed action is unchanged from the 2004 Amended Programmatic Biological Opinion with the exception of specific longfin smelt DPS measures. The BA described the LTMS

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Program operations and maintenance dredging within San Francisco Bay, San Pablo Bay, and Suisun Bay (the Bay, not the Federal channel) as well as areas immediately outside the Golden Gate at San Francisco Bar and Ocean Beach, conducted by the Corps, other federal agencies, and non-Federal entities through the context of the LTMS Environmental Impact Statement/Programmatic Environmental Impact Report Alternative 3 (LTMS agencies 1998). Several dredging projects have individual consultations outside of the 2004 Amended Programmatic Biological Opinion and are not part of *Description of the Proposed Action*, but they are included in the *Environmental Baseline*.

The one non-longfin smelt DPS change to the *Description of the Proposed Action* is the inclusion of the Term and Condition b of the Revised Incidental Take Statement of NMFS' 2015 LTMS Biological Opinion included below for dredging outside of the work window. However, the Corps stated they "would re-consult with USFWS on any dredging occurring outside of the work windows shown in Attachment 3" of the BA (Figure 1).

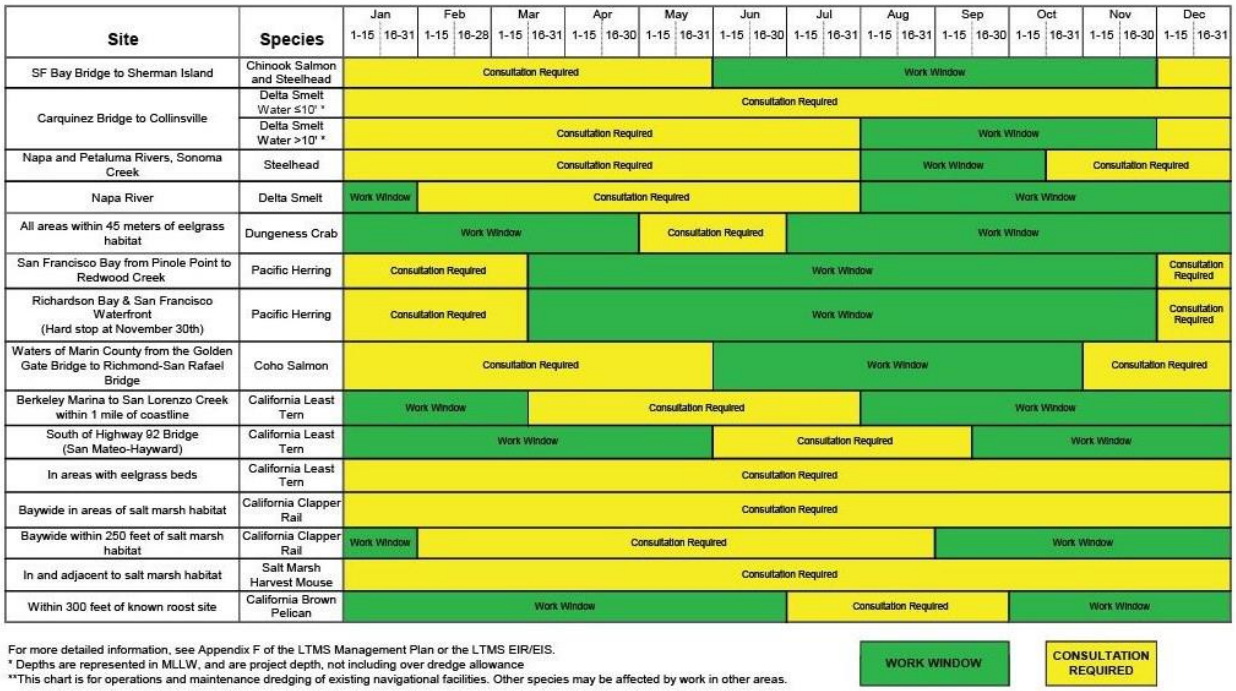

Figure 1. LTMS Environmental Work Windows Chart

As an additional note from the Corps related to Figure 1, the steelhead (*Oncorhynchus mykiss*) work window for Petaluma River has been extended to a November 30 end date after discussions with NMFS and CDFW.

<u>Term and Condition b of the Revised Incidental Take Statement of the NMFS 2015 LTMS Biological Opinion</u>

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"b. Dredging and disposal of dredged materials conducted or funded (in whole or in part) by the USACE must adhere to all appropriate LTMS Program measures and best management practices, including the following:

i. The work window for dredging and disposal is June 1 through November 30.

ii. No dredging will be permitted from December 1 through May 31 upstream or within 1,000 feet bayward of the mouths of Larkspur/Corte Madera Creek, Napa River Channel/Mare Island Strait, Petaluma River, and Novato Creek.

iii. Projects may plan work for the period outside the work window (December 1 through May 31) provided the project mitigates for its impacts by placing dredged material at a beneficial re-use site that will provide aquatic habitat benefits, such as a tidal wetlands restoration site. If a project is unable to place all material dredged outside the work window at a beneficial re-use site, the LTMS Program measures allow for an equivalent volume of dredged material to be placed at a beneficial re-use site from a project conducted within the work windows during the following season. This exemption does not apply to dredge sites upstream or within 1,000 feet bayward of the mouths of Larkspur/Corte Madera Creek, Napa River Channel/Mare Island Strait, Petaluma River, and Novato Creek.

iv. Projects that incur an unplanned and unavoidable need to complete a portion of an ongoing dredging operation outside of the work window, the LTMS agencies may approve up to 50,000 cubic yards of dredging and disposal per year for this purpose. This exemption may apply to dredge sites upstream or within 1,000 feet bayward of the mouths of Larkspur/Corte Madera Creek, Napa River Channel/Mare Island Strait, Petaluma River, and Novato Creek."

<u>Avoidance and Minimization Measures</u>

Best Management Practices (BMPs)

The Corps will continue to implement the following measures to avoid or minimize potential entrainment impacts by dredging:

- A worker education program will be developed for listed fish species that could be adversely impacted by hopper dredging. The program will include a presentation to all workers on biology, general behavior, distribution and habitat needs, sensitivity to human activities, legal protection status, and project-specific protective measures.

- Hopper dredging:

    - Pump priming, drag head clearing, and suction of water at the beginning and end of each hopper load will be conducted within 3 feet of the seafloor.

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- Hopper drag head suction pumps will be turned off when raising and lowering the drag arms from the seafloor.

- The drag head will remain in contact with the seafloor during suction dredging.

- The drag head water intake doors will be kept closed to the maximum extent practicable in locations most vulnerable to entraining smelt. In circumstances when the doors need to be opened to alleviate clogging, the doors will be opened incrementally (i.e., the doors will be opened in small increments and tested to see if the clog is removed) to ensure that doors are not fully opened unnecessarily.

New fish entrainment avoidance and minimization measures are identified below:

- Hydraulic dredging will be sequenced so that dredging of Pinole Shoal Channel will occur as close to the time period of August through October as possible, when the Corps assumes presence of longfin smelt in San Pablo Bay is expected to be at its lowest.
- The sea chest intakes on the *Essayons* will be screened with metal plate drilled with ½ inch diameter holes staggered 60 degrees vertical.
- The Corps will assess the feasibility and if possible, conduct a pilot installation of lights, sound devices, and/or water jets, or mild electrical field on the dragarms or dragheads of the *Essayons* for the purpose of deterring fish from approaching the dragheads.
- The Corps will develop a physical and numerical model of the flow field around a hopper dredge draghead including the draghead doors to complement earlier models of a doorless draghead (Bryant *et al.* 2020).
- Cutterhead pipeline dredging: Cutterhead dredges shall not be turned on until the suction dredge head is submerged in the sediment to minimize potential for entrainment of fish in the water column.

The following BMPs will be employed to avoid or minimize incidental take or adverse effects to the ecosystem:

- Dredging at each project location would be limited to the authorized depth.
- Knockdowns may be performed in all locations except the San Francisco Main Ship Channel. The volume of material above project design depth to be knocked down is not anticipated to exceed 15,000 cubic yards (cy) per year in each deep draft channel. Knockdowns are subject to the same sediment testing requirements and approvals as full dredging episodes.
- No overflow would be discharged from any barge during transportation, except for spillage incidental to clamshell dredge operations.
- Overflow from hopper-type suction dredges would be limited to no longer than 15 minutes at the dredge site during any one excavation action (cut). Overflow would be unrestricted when dredging material is greater than 80 percent sand.

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- Dredging and placement activities would be consistent with the work window requirements set out by NMFS and the Service in their respective LTMS biological opinions as amended.
- Dredging would stop immediately following any fuel or hazardous waste leaks or spills, and cleanup actions would be implemented.
- During dredging and placement activities, notes to mariners and navigational warning markers would be used as needed to prevent navigational hazards for recreational boaters.

Additionally, the following measures would be implemented for hydraulic dredging to protect longfin smelt and delta smelt (some of these repeat the measures from above):

- No dredging would occur in water ranging from 0 to 5 parts per thousand salinity between December 1 and June 30.
- At the beginning and end of each hopper load, pump priming, drag head clearing, and suction of water would be conducted within 3 feet of the seafloor.
- Hopper drag head suction pumps would be turned off when raising and lowering the drag arms from the seafloor when turning the dredge vessel.
- The Corps would implement a worker education program for listed fish species that could be adversely impacted by dredging. The program would include a presentation to all workers on biology, general behavior, distribution, and habitat needs, sensitivity to human activities, legal protection status, and project-specific protective measures. Workers would also be provided with written materials containing this information.
- The drag head, cutterheads, and pipeline intakes will remain in contact with the seafloor during suction dredging.
- The drag head water intake doors will be kept closed to the maximum extent practicable in locations most vulnerable to entraining smelt. In circumstances when the doors need to be opened to alleviate clogging, the doors will be opened incrementally (i.e., the doors will be opened in small increments and tested to see if the clog is removed) to ensure that doors are not fully opened unnecessarily.

Environmental Monitoring

Onboard fish entrainment monitoring will occur, as it has in past years, when the *Essayons* dredges Richmond Outer Harbor and Pinole Shoal Channel. This work will continue to provide information on longfin smelt life stage presence and entrainment during wet vs. dry years, tidal cycle, etc., and new information should the timing of dredging change due to new sequencing patterns. Note that alternate activities, such as wetland fish and fish prey monitoring were conducted when COVID restricted access to the *Essayons* in 2020-2022. The LTMS agencies will continue to work with the resource agencies to implement monitoring activities as deemed appropriate and necessary.

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Measures to Offset Incidental Take

Compensation

The Corps commits to compensating for impacts to longfin smelt and their habitat by beneficially reusing sediment at an upland beneficial use site that would restore habitat for longfin smelt within the San Francisco Bay. That sediment provided for beneficial reuse shall be sediment that would have otherwise been disposed of in-Bay or at SF-DODS.

The volume of sediment for this method of mitigation shall be calculated based on the following equation:

> X acres of restored habitat = (800 acres)(volume of dredged material in acre-feet) / 3.0 million acre-feet

The formula above is based on the CDFW formula used to calculate mitigation requirements for the Central Valley and State Water Projects entrainment impacts from hydraulically pumping water from the Delta, which is considered adequate mitigation for the water projects. The Corps and EPA determined this formula is appropriate because the mechanism causing the impacts to longfin smelt (i.e. entrainment from hydraulically pumping water) is similar. Please note, the BA did not discern from which regulatory document this calculation originated, whether it was derived specific to longfin smelt individuals or food web entrainment, or the complexities of implementation.

The acres derived from the CDFW equation above shall then be multiplied by: (19,000 cy/acre).

This conversion factor was derived from the ratio of sediment supplied for beneficial use to acres restored at the Hamilton Airfield Wetland Restoration (Service file numbers: 1-1-05-F-0068, 08ESMF00-2014-F-0281 and 2023-0001232-S7-001), Bair Island Restoration (Service file number: 1-1-00-F-0171), Montezuma Wetlands Restoration (Service file numbers: 1-1-99-F-12, 1-1-02-F-0175, 1-1-04-F-270, 81420-2008-F-1861, and 2022-0074267-S7-001), and Cullinan Ranch Restoration Projects (Service file numbers: SFB-2010-01 and 81420-2010-F-0182) (9,411 cy per acre) multiplied by 2 and rounded up to the nearest 1,000 cy. A multiplier of 2 was used to account for uncertainty in the placement location, timing of restoration, and success of restoration activities at the placement site. Rounding up to the nearest 1,000 cy reflects the accuracy in measuring volumes of dredge material given limitations associated with the dredge equipment. As an alternative to beneficial reuse, the Corps will purchase mitigation credits based on the CDFW formula from a Service approved mitigation bank or in lieu fee program, if available, that would provide habitat for longfin smelt. Although the Corps is the only dredger currently using a hopper dredge in the LTMS program area, any dredger under the LTMS program that proposes to utilize hydraulic dredge methods would be required to comply with this measure through conditions to their permit. Please note at this time, beneficial or adverse effects have not been analyzed specific to longfin smelt for the above named restoration projects (the Montezuma Wetlands Restoration Project consultation is currently in reinitiation) nor have the

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Corps and EPA proposed how they will track and report implementation and success of this measure.

Action Area

The Action Area is defined in 50 CFR § 402.02, as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." Neither the 1999 Programmatic Biological Opinion nor the 2004 Amended Biological Opinion articulated the Action Area. The BA defines the Action Area for this reinitiation with exclusion for areas that have separate LTMS program consultations. Separate consultations will be described in the *Environmental Baseline*. For this reinitiation, the Service defines the Action Area more broadly to incorporate the geographic extent of aquatic areas to be affected. Therefore, the Action Area for the LTMS program encompasses the marine and estuarine environment and bordering lands from the Pacific Ocean's continental shelf and slope west of the Golden Gate Bridge, San Francisco Bay, and the portion of the Sacramento-San Joaquin Delta west of Sherman Island. It also includes the wetlands and low upland areas that form a margin around San Francisco Bay and its tributaries in nine counties, including: Marin, Sonoma, Napa, Solano, Contra Costa, Alameda, Santa Clara, San Mateo and San Francisco counties. See Figure 2 for a general map and Figure 3 for a more detailed map of dredging and disposal sites.

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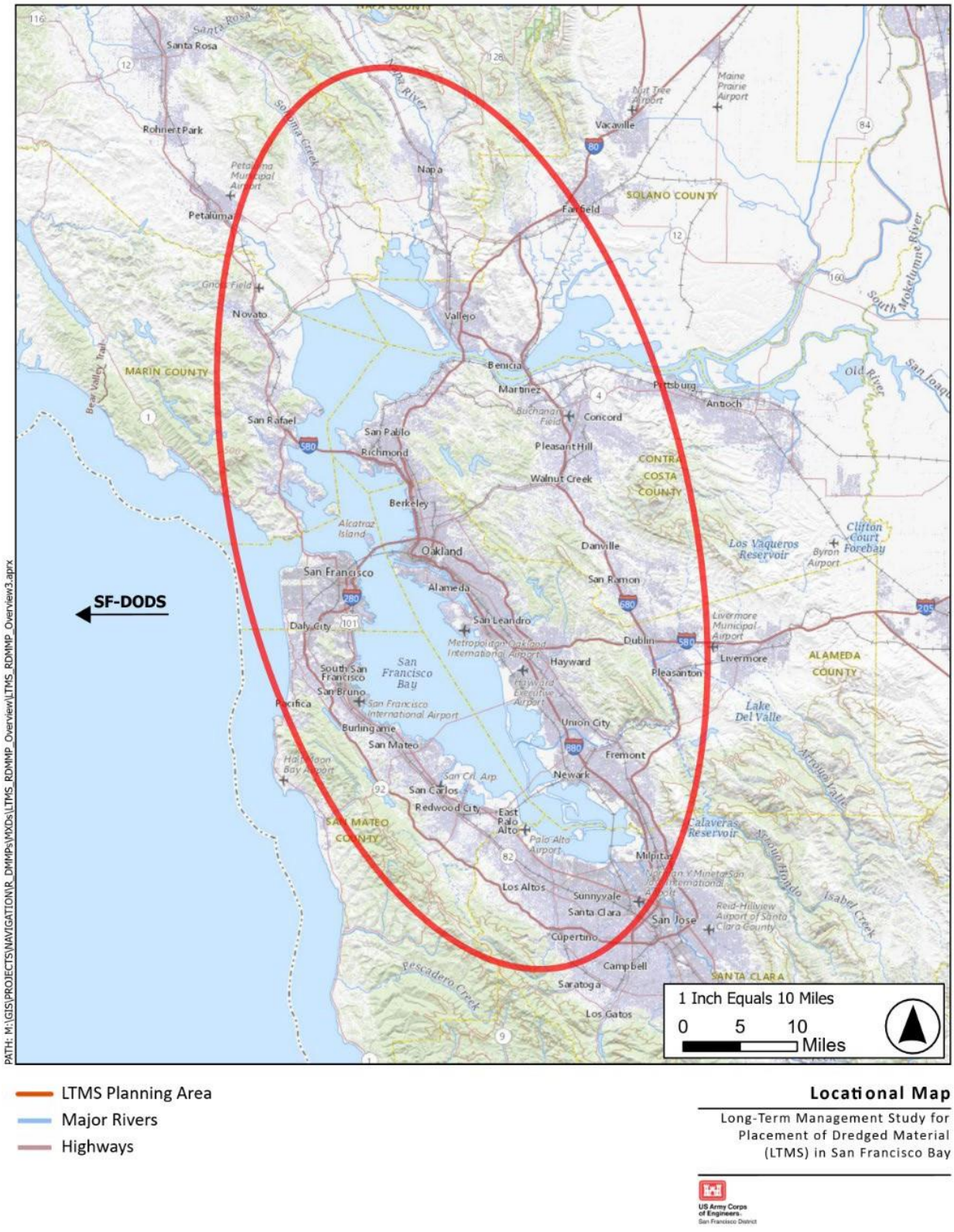
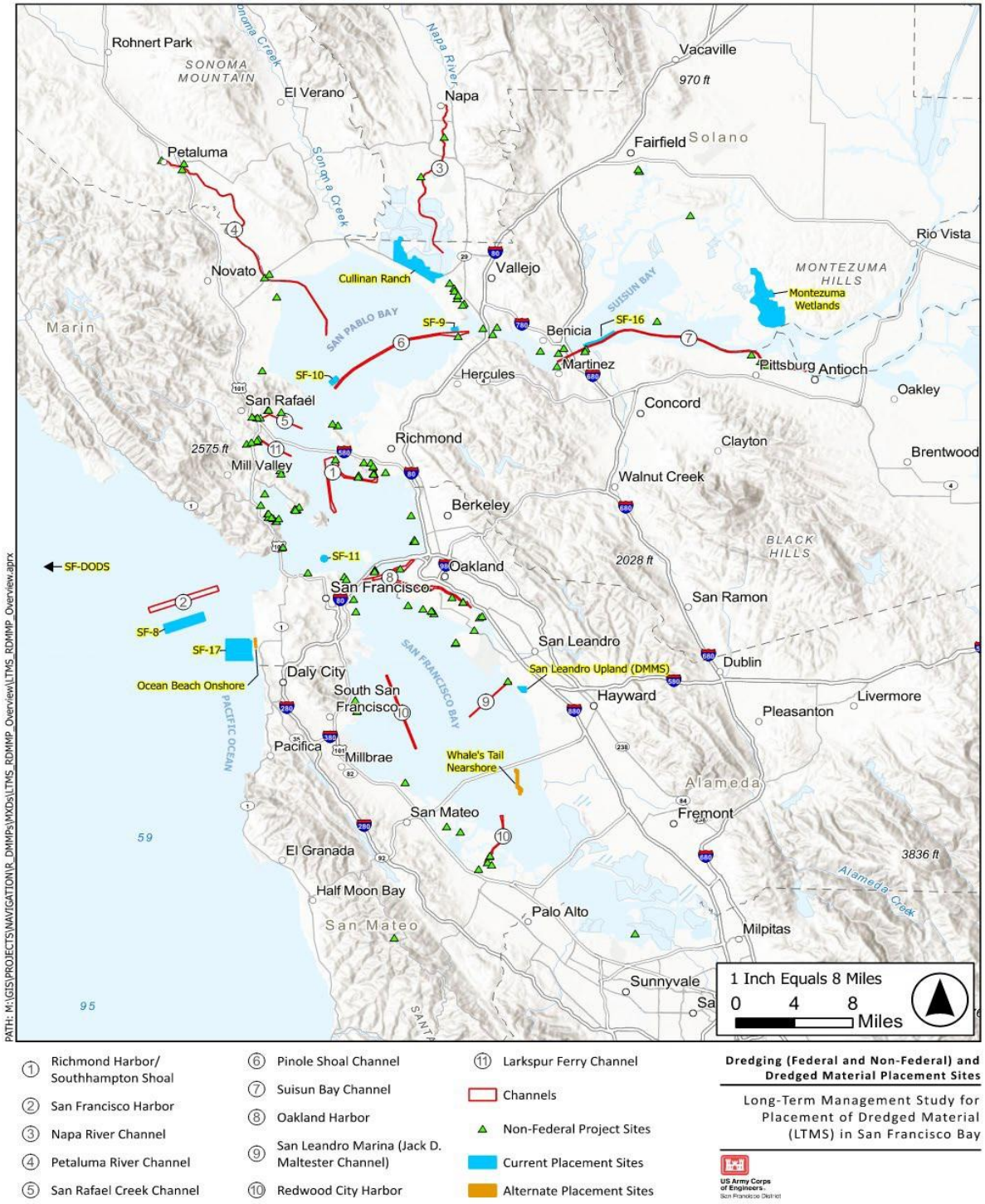


Figure 2. Locational Map of Long-Term Management Strategy Program Planning Area in San Francisco Bay



Note: Corps-dredged Suisun Bay and Oakland Harbor Federal Navigation Channels are not considered part of the proposed action because they have their own separate consultations with the Service; however, they are included for informational purposes only and considered part of the *Environmental Baseline*.

Figure 3. Long-Term Management Strategy Program Dredging (Federal and Non-Federal) and Current Dredged Material Placement Sites (upland disposal sites do not currently have consultations for the longfin smelt DPS).

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Analytical Framework for the Jeopardy Determination

Section 7(a)(2) of the Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR § 402.02).

The jeopardy analysis in this biological opinion considers the effects of the proposed Federal action, and any cumulative effects, on the rangewide survival and recovery of the listed species. It relies on four components: (1) the *Status of the Species*, which describes the current rangewide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the current condition of the species in the Action Area without the consequences to the listed species caused by the proposed action, the factors responsible for that condition, and the relationship of the Action Area to the survival and recovery of the species; (3) the *Effects of the Action*, which includes all effects that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action but that are not part of the action; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the Action Area on the species. The *Effects of the Action* and *Cumulative Effects* are added to the *Environmental Baseline* and in light of the status of the species, the Service formulates its opinion as to whether the proposed action is likely to jeopardize the continued existence of listed species.

Status of Species

As stated above, the statuses of the species and critical habitat have changed since the issuance of the 1999 Programmatic Biological Opinion and 2004 Amendment. Those changes are captured below with references to updated recovery plans, 5-year reviews, and other documents.

Longfin Smelt

The Service listed the longfin smelt DPS as endangered on July 30, 2024 (Service 2024a). For the comprehensive assessment of the longfin smelt DPS, please refer to the listing rule at https://www.govinfo.gov/content/pkg/FR-2024-07-30/pdf/2024-16380.pdf#page=1 and the *Species Status Assessment for the San Francisco Bay-Delta Distinct Population Segment of the Longfin Smelt* at https://ecos.fws.gov/ServCat/DownloadFile/253023 (Service 2024b). Critical habitat was proposed on January 15, 2025 (Service 2025; https://www.federalregister.gov/documents/2025/01/15/2024-29641/endangered-and-threatened-wildlife-and-plants-designation-of-critical-habitat-for-the-san-francisco).

California Ridgway's Rail

The status of California Ridgway's rail and information about its biology, ecology, distribution, and current threats is available in the *Recovery Plan for Tidal Marsh Ecosystems of Northern*

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and Central California (Service 2013). This document can be found at: https://ecos.fws.gov/docs/recovery_plan/TMRP/20130923_TMRP_Books_Signed_FINAL.pdf. It is identified by its previous name as the California clapper rail in this Recovery Plan as the species' common and scientific name was recently revised to reflect the currently accepted taxonomy and nomenclature (Service 2023a). Critical habitat has not been designated for this species. For the most recent comprehensive assessment of the species' range-wide status, please refer to the California clapper rail 5-year Review, available at: https://ecos.fws.gov/docs/five_year_review/doc6592.pdf (Service 2020a). No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species with loss of habitat being the most significant effect.

Salt Marsh Harvest Mouse

There are two subspecies of the salt marsh harvest mouse: the northern subspecies (*R. r. halicoetes*) and the southern subspecies (*R. r. raviventris*) both of which are listed as endangered. For the most recent comprehensive assessment of the species' range-wide status, please refer to the *Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California*, available at: https://ecos.fws.gov/docs/recovery_plan/TMRP/20130923_TMRP_Books_Signed_FINAL.pdf (Service 2013). Critical habitat has not been designated for this species. Threats evaluated during the drafting of the recovery plan and discussed in the final document have continued to act on the species since its publication, with loss of habitat being the most significant effect. For the most recent comprehensive assessment of the species' range-wide status, please refer to the salt marsh harvest mouse 5-year review at: https://ecos.fws.gov/docs/tess/species_nonpublish/3643.pdf (Service 2021). No change in the species' listing status was recommended in this 5-year review.

California Least Tern

The California least tern is a subspecies of the least tern. The California least tern was federally listed as endangered on October 13, 1970. Critical habitat has not been designated for this species. A detailed account of the taxonomy, ecology, and biology of the species is presented in the approved *Revised California Least Tern Recovery Plan* on April 2, 1980 (https://ecos.fws.gov/docs/recovery_plan/850927_w%20signature.pdf; Service 1985). For the most recent comprehensive assessment of the species' range-wide status, please refer to the 2020 California least tern 5-year review at https://ecos.fws.gov/docs/tess/species_nonpublish/3520.pdf (Service 2020b). No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species with loss of habitat and degradation being the most significant effect.

Western Snowy Plover

The western snowy plover is a small pale shorebird that nests on beaches and salt pannes in western North America. The Service listed the Pacific Coast population of the snowy plover (i.e., "western snowy plover") as a threatened species in 1993 because of a decline in the breeding population, loss of breeding habitat, and increased depredation by non-native predators. The Service designated critical habitat for the snowy plover in 2005 and revised the critical habitat

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designation in 2012. Information about the western snowy plover biology and ecology is available in the *Recovery Plan for the Pacific Coast Population of the Western Snowy Plover* (*Charadrius alexandrinus nivosus*), available at https://ecos.fws.gov/docs/recovery_plan /070924_2.pdf (Service 2007). For the most recent comprehensive assessment of the species' range-wide status, please refer to the western snowy plover 5-year Review, available at https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/19614.pdf (Service 2024c). No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species with loss of habitat and degradation being the most significant effect.

Delta Smelt

The Service listed the delta smelt as threatened on March 5, 1993 (Service 1993), and designated critical habitat for the species on December 19, 1994 (Service 1994). The delta smelt was one of eight fish species addressed in the *Recovery Plan for the Sacramento–San Joaquin Delta Native Fishes* (Service 1996). A 5-year status review of the delta smelt was completed on March 31, 2004 (Service 2004). The review concluded that delta smelt remained a threatened species. A subsequent 5-year status review recommended uplisting delta smelt from threatened to endangered (Service 2010a). A 12-month finding on a petition to reclassify the delta smelt as an endangered species was completed on April 7, 2010 (Service 2010b). After reviewing all available scientific and commercial information, the Service determined that re-classifying the delta smelt from a threatened to an endangered species was warranted but precluded by other higher priority listing actions (Service 2010c). The Service reviews the status and uplisting recommendation for delta smelt during its Candidate Notice of Review (CNOR) process. Each year it has been published, the CNOR has recommended the uplisting from threatened to endangered. Electronic copies of these documents are available at https://ecos.fws.gov/ecp/species/321. Please refer to the 2022 delta smelt Species Assessment and Listing Priority Assignment Form of the CNOR for the status of the species. Electronic copies of this document are available at https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/publication/4119.pdf (Service 2023).

Delta smelt is now considered a conservation-reliant species with most individuals completing a large majority of their life cycle in captivity at UC Davis' Fish Conservation and Culture Laboratory (FCCL; Lindberg *et al*. 2013). In December 2021, the Service, along with the CDFW, California Department of Water Resources, and U.S. Bureau of Reclamation, began experimentally releasing captively produced delta smelt into the Sacramento-San Joaquin River Delta in an experiment intended to help inform future supplementation of the species in the wild. For the past several years, most of the spawning population was composed of fish raised at FCCL. The actual numbers of fish released in each of the past three winters was 55,733 in Water Year (WY) 2022, 43,940 in WY2023, and 91,468 in WY2024 (Service unpublished). The number planned for release in WY2025 is circa 100,000. The actual number of spawning fish each year has likely been lower because some fish die before they finish maturing and start looking for opportunities to spawn. Because the delta smelt was nearly extirpated when experimental releases of captive-bred fish began in December 2021, it is unlikely that individuals without any FCCL ancestry still exist at this writing. This year's catch data do not indicate that

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the species' status has improved. Thus, the delta smelt now exists only as an integrated hatchery-wild population as envisioned in the *Delta Smelt Supplementation Strategy* (Service 2020).

Delta Smelt Critical Habitat

Legal Status

The Service designated critical habitat for the delta smelt on December 19, 1994 (Service 1994). The geographic area encompassed by the designation includes all water and all submerged lands below ordinary high water and the entire water column bounded by and contained in Suisun Bay (including the contiguous Grizzly and Honker Bays); the length of Goodyear, Suisun, Cutoff, First Mallard (Spring Branch), and Montezuma sloughs; and the existing contiguous waters contained within the legal Delta (as defined in section 12220 of the California Water Code) (Service 1994).

Conservation Role of Delta Smelt Critical Habitat

The Service's primary objective in designating critical habitat was to identify the key components of delta smelt habitat that support successful completion of the life cycle, including spawning, larval and juvenile transport, rearing, and adult migration back to spawning sites. Delta smelt are endemic to the Bay-Delta and the vast majority of wild-born individuals only live one year. Thus, regardless of annual hydrology, the Bay-Delta estuary must provide suitable habitat all year, every year but as detailed below, it no longer does. The primary constituent elements (PCEs) considered essential to the conservation of the delta smelt as they were characterized in 1994 are physical habitat, water, river flow, and salinity concentrations required to maintain delta smelt habitat for spawning, larval and juvenile transport, rearing, and adult migration (Service 1994). The Service recommended in its designation of critical habitat for the delta smelt that salinity in Suisun Bay should vary according to water year type, which it does (Hartman *et al.* 2024). For the months of February through June, salinity standards in support of aquatic resources were codified by the SWRCB "X2 standard" described in its water rights decision D-1641 and its current Water Quality Control Plan.

Description of the Primary Constituent Elements

PCE 1: "Physical habitat" is defined as the structural or underwater 'landscape' components of habitat (Service 1994). The underwater landscape of the Bay-Delta has been substantially changed with many of the changes having occurred decades ago during reclamation of the upper estuary's historical tidal marshes and dredging of its shipping channels (Figure 4). The area extending from Suisun Bay and marsh up the Sacramento River into the Cache Slough Complex has been called the "North Delta Arc" and is an area that most delta smelt have been collected from during monitoring of the estuary's fish assemblages (Stompe *et al*. 2023). Several fish habitat features common in nearshore and littoral zones of many aquatic systems are not known to be relevant to delta smelt, which avoid or have limited association with submerged aquatic vegetation and other forms of in-water structure. It has been hypothesized that delta smelt spawn in intertidal habitats because their nearest evolutionary relative, the surf smelt *Hypomesus pretiosus*, does (Bennett 2005). However, this has never been confirmed. Once the embryos

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hatch, the fish are believed to be generally planktonic and pelagic for the rest of their lives. However, short-term studies have shown delta smelt change their depth distribution in response to the tidal cycle moving into nearshore habitats when they do not want to be displaced downstream (e.g., Bennett and Burau 2015). Similar behaviors could facilitate their spawning 'migration' (Gross *et al*. 2021). To our knowledge, all free-swimming life stages of delta smelt predominantly use large, low velocity open-water areas, which has been recognized for a long time (Moyle *et al*. 1992). Thus, any role of landscape attributes for the free-swimming life stages of delta smelt is likely indirect via hydrodynamic processes (e.g., current speed (*Bever et al. 2016 p. 12*), resuspension of sediment (Bennett and Burau 2015), or in the generation of foraging microhabitats (Hammock *et al*. 2019a).

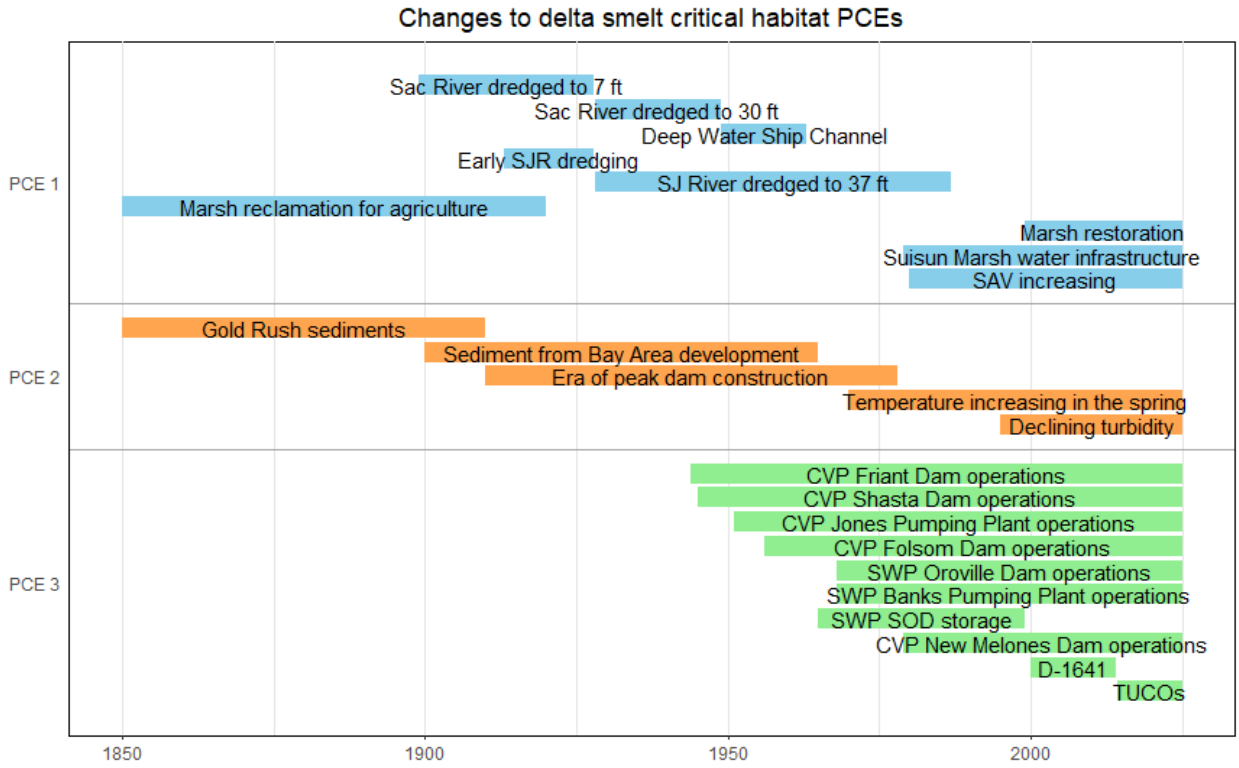

Figure 4: Drivers of Changes to Delta Smelt Critical Habitat PCEs

PCE 2: "Water" is defined as water of suitable quality to support survival and reproduction (Service 1994). Certain conditions of turbidity, water temperature, and prey density dominate the characterization of suitable "water" for delta smelt. Salinity has its own PCE (number 4). Contaminant exposure can degrade this PCE even when the basic habitat components of this PCE are otherwise suitable (Hammock *et al*. 2015; Stillway *et al*. 2024).

Turbidity: Turbidity is the measure of relative clarity of a liquid. It is an optical characteristic of water and is a measurement of the amount of light scattered by material suspended in the water when a light is shined through a water sample. The higher the intensity of scattered light, the higher the turbidity. Material that causes water to be turbid can include clay, silt, particulate organic matter, algae, dissolved colored organic compounds, and microscopic organisms. In the Bay-Delta, turbidity results mainly from sediment suspended in the water column and to a lesser

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degree phytoplankton ("suspended particulate matter"; Cloern and Jassby 2012).

It has been repeatedly suggested that turbidity is affecting delta smelt vulnerability to trawling more than it represents an important habitat attribute (Latour 2016; Peterson and Barajas 2018; Duarte and Peterson 2021; Hendrix *et al*. 2023). However, the association of delta smelt with turbid water has also been reported when sampling with gears other than trawls including the fish salvage facilities (Grimaldo *et al*. 2021) and large beach seines (Nobriga *et al*. 2005) that have little trouble capturing large numbers of fish in clear water. We do not argue that turbidity plays a role in vulnerability to capture but the totality of information available to us suggests that turbidity is an important element of delta smelt's pelagic habitat. This is conceptually supported by research elsewhere showing that turbidity plays an important role in structuring the foraging arenas of pelagic fish communities. Small fishes detect their prey over shorter distances than the larger fishes trying to eat them (Pangle *et al*. 2012). This means that turbidity does not impair the ability of small fishes to find their planktonic prey as much as it impairs the ability of larger predators to find small prey fish. As a result, small prey fish can hide in turbid water while still being able to search for and capture prey of their own. It is via this commonly occurring food web mechanism that we believe turbidity is an essential component of delta smelt's critical habitat. This hypothesis is supported for delta smelt by evaluation of otolith microstructure that documented faster growth in turbid water (Lewis *et al*. 2021).

The decline of water turbidity has had a large negative effect on delta smelt critical habitat suitability. The quantity of sediment delivered to the estuary increased substantially following the era of hydraulic gold mining in the watershed in the latter 19th century (Schoellhamer 2011). It increased again during rapid regional population growth and development after World War II. Since then, the delivery of new sediment to the estuary has declined in large part due to reservoirs and widespread levee-building. In addition, summertime phytoplankton production has been greatly diminished (Cloern and Jassby 2012). These changes have resulted in a general clearing of the estuary's waters; however, the clearing trend has been strongest in the freshwater Delta where expansive beds of SAV filter fine sediment from the water (Hestir *et al*. 2016; Work *et al*. 2021). Water exports from the South Delta may also have contributed to the trend toward clearer water by removing suspended sediment in exported water. However, the contribution of exports to the total suspended sediment budget in the estuary is small (Schoellhamer *et al*. 2012).

Water temperature: Several relevant temperature metrics for delta smelt are summarized in Figure 5. Air temperature is the primary driver of water temperature variation in the delta smelt critical habitat (Wagner *et al*. 2011). Water temperature in the Delta can be affected by flow volumes near inflowing water sources when inflows are low (Nobriga *et al*. 2021) but the effect dissipates as the water moves seaward toward Suisun Bay (Vroom *et al*. 2017).

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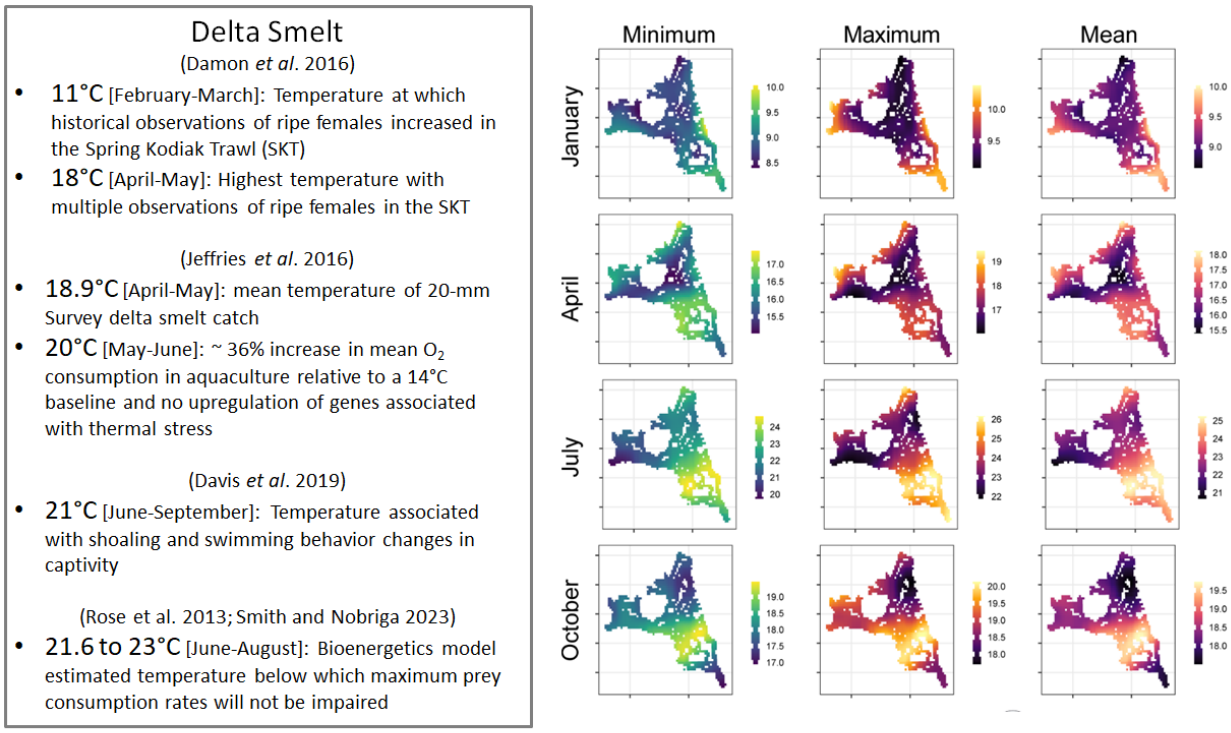

Figure 5: Summary of Selected Delta Smelt Life History Metrics Associated with Water Temperature

Food: The predominantly open-water habitat use of delta smelt is reflected in their "food" or diet composition, which is largely made up of planktonic and epibenthic crustaceans (Moyle *et al*. 1992; Slater and Baxter 2014; Hammock *et al*. 2017). Some epibenthic crustaceans (e.g., amphipods and mysids) ascend into the water column at times and are therefore available to predators foraging in open waters near the surface as delta smelt are believed to do most of the time (Moyle *et al*. 1992). A large majority of the identifiable prey of delta smelt larvae is copepods, particularly the early life stages of copepods (Nobriga 2002; Hobbs *et al*. 2006; Slater and Baxter 2014). Juvenile delta smelt feeding in the summer months also have copepod-dominated diets (Slater and Baxter 2014). Older juveniles and adults continue to prey extensively on copepods but have less reliance on them and greater diet diversity (Hammock *et al*. 2019a). All of delta smelt's major prey taxa (e.g., copepods, amphipods) are ubiquitously distributed, but which prey species are present at particular times and locations changes from early morning to mid-day, season to season, and has changed dramatically over time (Winder and Jassby 2011).

Contaminants: Delta smelt live in an environment that is chronically toxic to them, though the intensity of contaminant effects has been shown to vary in space and time (Hammock *et al*. 2015; Teh *et al*. 2020; Stillway *et al*. 2024).

The loading of some contaminants into the habitats occupied by delta smelt can be functions of freshwater flow (e.g., Kuivila and Moon 2004; Stillway *et al*. 2024) so in some instances, the impacts of contaminants can be thought of as freshwater flow mechanisms. However, the impacts of others may be more strongly related to where individuals are located (Hammock *et al*.

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2015), when and where they are foraging (Weston *et al*. 2019; Teh *et al*. 2020), or what salinity they occupy (Segarra *et al*. 2021). All of these complexities affect the quantities of potentially toxic substances that get ingested over the life span of the fish, ultimately affecting their growth and reproductive potential (e.g., White *et al*. 2017).

New inputs of contaminants that can contribute to accumulated toxicity and body burdens can occur at any time of year but are often associated with increased inflows to the Delta during the winter and spring (Bergamaschi *et al*. 2001; Weston *et al*. 2019). Increased gill lesion scores in delta smelt at Decker Island (Stillway *et al*. 2024) may have been associated with the Fall X2 action and increased liver lesions in the Toe Drain and Cache Slough (Stillway *et al*. 2024) with the Yolo Bypass food pulse experiment in 2019. Spatially, Cache Slough and Suisun Bay have been more frequently associated with biomarkers of contaminant exposure in delta smelt than Suisun Marsh, the Sacramento-San Joaquin River confluence, or the Sacramento Deepwater Ship Channel, but healthy and impaired fish have been collected from throughout the regularly occupied portion of critical habitat (Teh *et al*. 2020).

PCE 3: “River flow”. California has a Mediterranean climate with a pronounced wet and dry season that can be differentiated by the likelihood that the monthly volume of outflow from the Delta exceeds 1 billion cubic meters (~ 13,000-14,000 cubic feet per second or ~ 800 thousand acre feet per month; Figure 6). We use this threshold to differentiate our use of ‘wet season’ and ‘dry season’. Prior to significant human development of surface water storage and conveyance, the wet season spanned December through June, and the dry season was July through November. The probability that monthly outflows were lower than 1 billion cubic meters was nearly zero from January through May. The substantial year to year variability of California’s climate can still generate extreme flows similar to what occurred predevelopment. However, median contemporary outflow is lower than pre-development outflow from December through June, and generally higher or skewed toward the higher end of the historical distributions from July through November to avoid excessive salinity intrusion into the Delta. The contemporary estuary has a shorter wet season and a longer dry season than what occurred pre-development (Figures 6 and 7) and climate change is likely interacting with water use to convert May into a ‘dry season’ month as well.

Month	Circa 1850 probability that Delta outflow exceeded 1 billion m^3	Circa 2008 probability that Delta outflow exceeded 1 billion m^3	Approximation of present-day to anticipated circa 2037 flow regime
December			
January			
February			
March			
April			
May			
June			
July			

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August			
September			
October			
November			

Figure 6: Modeled Volumes of Delta Outflow. Source Gross *et al*. 2018.

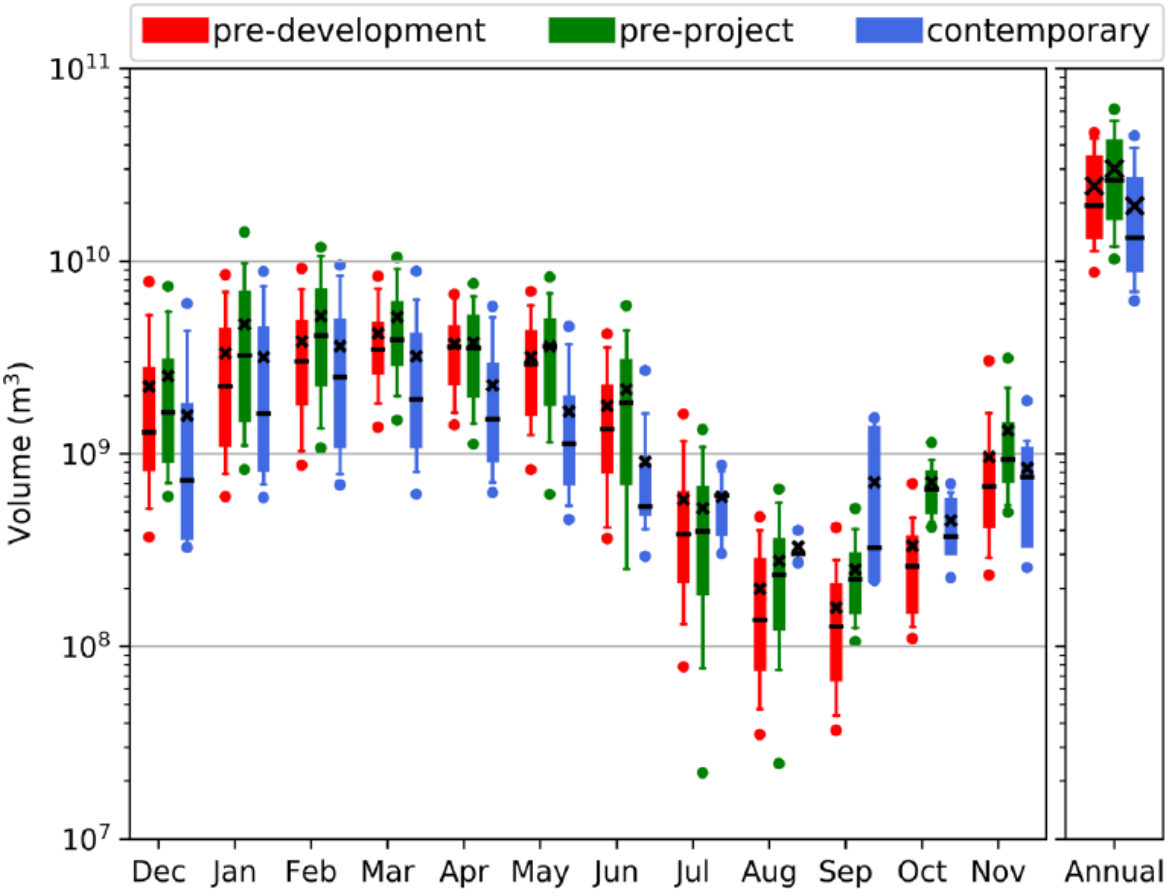

Figure 7: Conceptual Depiction of How Climate Change and Water Development Have Interacted to Change the Freshwater Flow Regime. Source: Gross *et al*. 2018.

"River flow" was originally described as critical to facilitate an extended spawning migration by adult fish and the subsequent transport of offspring to rearing habitats in the low-salinity zone (Service 1994). Both of these are now understood to be affected by combinations of tidal flows and river flows (e.g., Kimmerer *et al*. 2014; Bennett and Burau 2015; Gross *et al*. 2021). Historically, many delta smelt made a short spawning migration, but some did not (Hobbs *et al*. 2019). By a short migration we mean on the order of 50 kilometers or less. However, for the past several years, a large majority of the spawning population has been released from captivity using a variety of techniques, but most releases have occurred near the City of Rio Vista. The fish have been observed to rapidly disperse from release sites, but these movements should not be conflated with migration. To some degree, delta smelt larvae include an element of passive drift in their suite of behaviors but the variable timing of their return to the low-salinity zone (Hobbs

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et al. 2019) and their retention well upstream of X2 until they do (Dege and Brown 2004) suggest they have additional behaviors they can deploy to keep affiliated with desired habitat conditions.

Net water movements in the Delta have experienced strong time trends since water exports began (Hutton *et al*. 2019). In particular, cross-Delta flows have increased during the summer and fall, Rio Vista flows have decreased in the winter and spring and increased in the summer, and San Joaquin River flows have decreased year-round. The operations of the Central Valley Project and State Water Project were the largest contributor to these net flow changes except for Jersey Point flow in the spring, which is also strongly influenced by in-Delta irrigation demand (Hutton *et al*. 2019). The net flow changes ultimately influence the Delta outflow, which except in the summer, has been trending downward for more than 100 years (Hutton *et al*. 2017; Reis *et al*. 2019).

PCE 4: "Salinity". The salinity of estuary waters is determined by mixing of freshwater, which has very low salinity, and seawater, which typically has a salinity of about 33-34 practical salinity unit (psu). On average, the salinity of the upper estuary declines in a landward direction, and is most strongly influenced by Delta outflow, at least at time scales longer than a couple of weeks (Jassby *et al*. 1995). As such, the seasonal and interannual patterns in salinity track variation in Delta outflow as do spatial locations and intensity of turbulent mixing, water column stratification and other outcomes of fresh- and brackish water mixing that help aggregate sediment and planktonic organisms in the low-salinity zone (MacWilliams *et al*. 2015). Higher freshwater flow generally lowers the salinity of delta smelt critical habitat, so salinity is at its annual minimum during the highest flows of the wet season and typically reaches an annual maximum sometime in the August through October timeframe. The "Salinity" PCE helps define delta smelt nursery habitat because nursery habitat is defined in part, by a range of salinity (Service 1994). Most delta smelt spend at least some of their life in the low-salinity zone, which has been alternately defined in the literature as 0.5 to 5 or 0.5 to 6 psu. Both definitions were derived from interpretations of where historical phyto- and zooplankton densities were elevated due to hydrodynamic retention. These definitions of the low-salinity zone salinity range are approximations that should not be expected to precisely match where delta smelt occur (Kimmerer *et al*. 2013). Most delta smelt larvae occupy freshwater or very low salinity water to ~ 2 psu. The juveniles are mostly in freshwater to a salinity of ~ 4 psu, and the older sub-adults have been found in salinity up to ~ 20 psu but were still mostly associated with freshwater and the low-salinity zone to ~ 6 psu.

Environmental Baseline

Environmental Baseline refers to the condition of the listed species or its designated critical habitat in the Action Area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The *Environmental Baseline* includes the past and present impacts of all Federal, State, or private actions and other human activities in the Action Area, the anticipated impacts of all proposed Federal Projects in the Action Area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The impacts to listed species or designated critical habitat from ongoing Federal agency activities or existing Federal agency facilities that are not within the agency's discretion to modify are part of the *Environmental Baseline*.

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LTMS Program

The ongoing 50-year LTMS program covers all Federal and non-Federal operations and maintenance dredging and dredged material placement in the region. Dredging takes place at 10 Federal navigation channels (Table 1) and approximately 106 maintenance dredging sites associated with ports, marinas, and homeowners associations (Table 2); one open ocean disposal site (SF-DODS); and six in-water placement locations that are currently in use: San Francisco Bar (SF-8), Carquinez Strait (SF-9), San Pablo Bay (SF-10), Alcatraz (SF-11), Suisun Bay (SF-16), and the Ocean Beach Demonstration Site (expected to be formally designated as SF-17 by January 2025). Figure 3 presents locations of the federally maintained navigation channels, non-Federal navigation channels and dredged material placement sites. The Service attempted to capture all of the consultations for the LTMS program below but given the time frame of the 1999 Programmatic Biological Opinion not all consultations are electronically available.

Federal Dredging Projects

Table 1. Corps Maintained Federal Navigation Channels

Channel	Typical Dredging Recurrence Interval (years)	Range of Volume Dredged per Episode (cy)[1]	2019 -2023 Annual Average (mcy)	Total Surface Area (acres)
Richmond Inner Harbor	1	10,000 – 800,000	0.316	326
Richmond Outer Harbor	1	50,000 – 800,000	0.129	618
San Francisco Harbor – Main Ship Channel	1	50,000 – 700,000	0.371	1,204
Napa River Channel*	6-10	50,000 – 200,000[2]	0.327	163
Petaluma River Channel (and Across the Flats*)	4-7	50,000 – 300,000	0.560	315
San Rafael Creek Channel	4-7	10,000 – 400,000[2]	0.596	39
Pinole Shoal	1	50,000 – 600,000	0.125	879
Suisun Bay Channel and New York Slough[3]	1	50,000 – 500,000	0.143	788
Oakland Inner and Outer Harbor[4]	1	100,000 – 1,250,000	0.791	1,050
San Leandro Marina (Jack D. Maltester Channel)	4-6	100,000 – 200,000[2]	-	92
Redwood City Harbor	1-2 (Harbor Channel) 10 (San Bruno Channel)	10,000 – 700,000 (Harbor Channel) 30,000 (San Bruno Channel)	0.237 -	344 (Harbor Channel) 209 (San Bruno Channel)

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Larkspur Ferry Channel[5]	4-7	20,000 – 700,000	0.700	70

Notes:

cy = cubic yards; mcy = million cubic yards
* For areas not dredged since 2000, the last dredging event is reported.

1. Range of volume dredged per fiscal year. For areas not dredged recently, the last dredging event is reported.
2. Due to the lower frequency at which these channels are dredged, future dredge volumes could be greater.
3. Suisun Bay Channel and New York Slough dredging by the Corps is covered under a separate biological and conference opinion with the Service for delta smelt and longfin smelt (Service File No. 2024-0024863-S7-001). Clamshell-bucket is used as proposed by the Corps and restated in the Suisun Bay Channel Dredging Biological Opinion; aside from regularly scheduled maintenance, the Corps would take urgent action outside the work window, as needed, to remove the hazardous shoaling at Bulls Head Reach.
4. Oakland Inner and Outer Harbor dredging by the Corps is covered under a separate biological opinion with the Service for the California least tern (Service File No. 2022-0085090-S7-001). As of this writing, the Corps has not reinitiated to include the longfin smelt DPS.
5. Larkspur Ferry Channel was last dredged by the non-Federal sponsor, Golden Gate Bridge Highway and Transportation District in 2022.

Richmond Inner and Outer Harbor

The Corps has consulted several times separate from the LTMS Programmatic Biological Opinion and Amendment on Richmond Inner and Outer Harbor Federal Navigation Channel dredging and material disposal (Service file numbers: 81420-2000-I-3075 [not original number], 81420-2008-I-0984, 81420-2010-I-0667, and most recently in 2024 during this reinitiation).

Napa River Channel

On December 14, 2015, the Service issued a biological opinion (Service file number: 08FBDT00-2015-F-0034) to the Corps' San Francisco District Regulatory Division appending the City of Napa's Upper Napa River Federal Navigation Channel Maintenance Dredging (Corps file number: SPK-2013-001l7N) to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: l-l-04-F-0345). The City of Napa never used the Corps permit before it expired and the Corps, via the BA for this longfin smelt reinitiation, has withdrawn the consultation request.

On September 23, 2016, the Service issued a biological opinion (Service file number: 08FBDT00-2016-F-0144) to the Corps' San Francisco District Environmental B Section appending the Lower Napa River Federal Navigation Channel Project to the 1999 Programmatic Biological Opinion/2004 Amendment regarding effects to delta smelt. To date, the Corps has not reinitiated this consultation to include the longfin smelt DPS and this project is now included via this reinitiation.

Oakland Harbor

Previous consultations separate from the 1999 Programmatic Biological Opinion/2004 Amendment were issued in 2009, 2010 and 2019 (Service File Numbers: 81420-2009-F-0654,

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81420-2010-F-0561 and 08FBDT00-2018-F-0356) for dredging episodes outside of the California least tern LTMS work window.

On February 27, 2023, the Service issued a separate individual consultation for the effects of the Oakland Harbor Maintenance Dredging Project between 2023-2029 on the California least tern outside of the LTMS work windows (Service file number: 2022-0085090-S7-001). The Service recommended including the optional conference consultation process for the at the time proposed to be listed longfin smelt to which the Corps declined. To date, the Corps has not reinitiated this individual consultation to include the longfin smelt DPS.

Suisun Bay

Numerous separate individual and emergency consultations have been issued regarding the effects to delta smelt and its critical habitat for dredging the Suisun Bay Federal channel in Suisun Bay using both hydraulic and clamshell methods.

The Service issued biological opinions for hydraulic dredging in 2013 and 2014 (Service file numbers: 08FBDT00-2013-F-0022 and 08FBDT00-2014-F-0019). The Service issued biological opinions for clamshell dredging only in 2015, 2016, 2017, 2018, 2019 (for fiscal years 2019-2023) (Service file numbers: 08FBDT00-2015-F-0013-2, 08FBDT00-2016-F-0081, 08FBDT00-2017-F-0071, 08FBDT00-2018-F-0075, and 08FBDT00-2019-F-0071). The Service issued a biological opinion on the delta smelt and its critical habitat and a conference opinion on then proposed endangered longfin smelt DPS for Suisun Bay Channel Maintenance Dredging for Fiscal Years 2024-2029 (Service file number: 2024-0024863-S7-001). To date, the Service has not received a request to confirm the 2024 conference opinion to a final biological opinion.

Excessive shoaling typically occurs at Bulls Head Reach. The shoaling creates a major navigational hazard, especially for tankers carrying petroleum products or other hazardous material, and emergency dredging at Bulls Head Reach has been requested by bar pilots and the non-federal sponsor due to repeated occurrences of shoaling at a rate that is extremely faster than expected. Hopper dredging was used in 2000, 2003, 2009, 2010, 2012, 2021 and 2022 and clamshell dredging in 2020 for these emergency shoaling occurrences, many of which happened significantly earlier than the delta smelt work window. These advanced dredging episodes were not described as project actions in prior consultations and were not included in the 2019 biological opinion. The Corps requested emergency consultation for these episodes individually in 2020, 2021, and 2022.

Prior to these consultations, both delta smelt and longfin smelt had been recorded as entrained by hydraulic dredging via entrainment monitoring. As noted in the 2013 consultation, in 2011, entrainment monitoring for the longfin smelt was conducted on the *Essayons*. One hundred percent of the total, 220-hydraulically dredged hopper loads were sampled. The *Essayons* dredged the Richmond Outer/South Hampton area, Pinole Shoal, and the Suisun Bay Channel. A total of 11 longfin smelt were observed from seven hopper loads from all locations. Delta smelt were observed in three hopper loads, with one observed in the hopper itself. Delta smelt were taken (killed) in the Port Chicago (hopper flush) and New York Slough reaches (hopper load) of the Suisun Bay Channel.

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Redwood City Harbor

The Corps consulted on the maintenance dredging of the Redwood City Harbor Federal Channels in 2001 (Service file numbers: 1-1-01-I-3016 and 81420-2001-I-3106).

Larkspur Ferry Channel

In 2001, the Service issued a biological opinion to the Corps' San Francisco District Environmental Section appending the Larkspur Ferry Channel Maintenance Dredging Project to the 1999 Programmatic Biological Opinion for effects to the California clapper rail, salt marsh harvest mouse, and Sacramento splittail (Service file number: 1-1-01-F-156. The consultation has not been reinitiated to include the longfin smelt DPS and is now included via this reinitiation.

Non-Federal Dredging Projects

Table 2. San Francisco Bay Region Non-Corps Dredge Project Sites

Name	Latitude	Longitude	PBO Status*	Non-LTMS BOs**
Aeolian Yacht Club	37° 45.003' N	122° 14.079' W	PBO	
Alameda Point Channel	37° 46.441' N	122° 18.907' W	PBO	
Arques Shipyard and Marina	37° 52.064' N	122° 29.769' W	PBO	
Ballena Isla Marina	37° 45.978' N	122° 17.109' W	PBO	
Ballena Isla Townhomes	37° 46.149' N	122° 17.240' W	PBO	
Bel Marin Keys Community Services District	38° 5.686' N	122° 29.445' W	I	Service file:08FBDT00-2019-F-0190
Bellevue Channel (Belvedere Cove)	37° 52.337' N	122° 27.575' W	PBO	
Belvedere Land Company	37° 52.363' N	122° 27.584' W	PBO	
Benicia Marina	38° 2.597' N	122° 9.444' W	I-Appended to non-LTMS PBO	Service file: 81410-2010-F-0002-1
Benicia Port Terminal (AMPORTS)	38° 2.488' N	122° 8.087' W	I	Service file: 2023-0067345-S7-001
Berkeley Marina	37° 52.122' N	122° 18.972' W	PBO/I	2023-0110365-S7-001
Black Point Boat Launch Ramp	38° 6.880' N	122° 30.356' W	PBO	
Blu Harbor (pvsly Pete's Harbor)	37° 30.017' N	122° 13.348' W	NA	
Brickyard Cove Homeowners Association	37° 54.497' N	122° 22.799' W	PBO	
Brisbane Marina at Sierra Point	37° 40.462' N	122° 22.797' W	PBO	
C&H Sugar Company	38° 3.494' N	122° 13.083' W	PBO	
CA Maritime Academy	38° 3.976' N	122° 13.835' W	I-Appended to non-LTMS PBO	Service files: 2024-0040437-S7-001 and

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				81420-2009-F-1240
Castrol North American Consumer's Berth	37° 55.342' N	122° 22.367' W	PBO	
Chevron Rod and Gun	37° 57.617' N	122° 24.658' W	PBO	
Chevron, Richmond Long Wharf	37° 55.492' N	122° 24.766' W	PBO	
City of Emeryville Marina	37° 50.430' N	122° 18.750' W	PBO	
City of Napa, JFK Boat Ramp	38°15.929'N	122°17'.04'W	PBO	
City of Suisun Pierce Island Boat Ramp	38° 13.980' N	122° 2.249' W	PBO	
City of Sunnyvale Boat Ramp	37° 26.131' N	122° 1.622' W	PBO/I?	Service file: 81420-2009-I-0932-1
Clipper Yacht Harbor	37° 51.858' N	122° 29.543' W	PBO	
Conoco Philips, Richmond	37° 54.754' N	122° 21.875' W	PBO	
Conoco Philips, Rodeo Terminal	38° 3.421' N	122° 15.711' W	PBO	
Corinthian Yacht Club	37° 52.359' N	122° 27.406' W	PBO	
Corona Del Mar Homeowners Association	37° 45.832' N	122° 13.513' W	PBO	
Coyote Point Marina	37° 35.339' N	122° 19.012' W	PBO	
Emery Access Chanel	37° 50.563' N	122° 18.867' W	PBO	
Emery Cove Marina	37° 50.312' N	122° 18.628' W	PBO	
Exploratorium	37° 48.160' N	122° 23.902' W	PBO	
Foster City Lagoon	37° 32.647' N	122° 15.829' W	PBO/I?	Service file: 08FBDT00-2016-I-0146
Galilee Harbor	37° 51.759' N	122° 29.329' W	PBO	
Gallinas Creek	38° 1.023' N	122° 30.472' W	PBO	
Glen Cove Marina	38° 4.023' N	122° 12.790' W	I-Appended to non-LTMS PBO	Service files: 81420-2009-F-0995 and 08FBDT00-2020- F-0113
Greenbrae Marina Neighborhood	37° 56.540' N	122° 30.627' W	PBO	
Hanson Aggregates	37° 45.799' N	122° 13.439' W	PBO	
Harbor Bay Ferry Channel	37° 44.143' N	122° 15.479' W	PBO	
High Tide Boat Sales	37° 58.080' N	122° 30.718' W	PBO	
Jackson Property	37° 45.862' N	122° 13.526' W	PBO	
Johnson Property	37° 52.405' N	122° 27.644' W	PBO	
Kappas Marina – Richardson Bay Marina	37° 52.580' N	122° 30.262' W	PBO	
Kiewit Pacific Company	38° 5.477' N	122° 15.294' W	PBO/I?	Service file: 08FBDT00-2015-I-0018
Kinder Morgan, Richmond Terminal	37° 54.439' N	122° 21.817' W	PBO	
Larkspur Landing Ferry Terminal	37° 56.744' N	122° 30.551' W	PBO	Service file: 08FBDT00-2019-F-0184
Larkspur Marina	37° 56.417' N	122° 31.391' W	PBO	
Larkspur Sea Scout Base	37° 56.587' N	122° 30.699' W	PBO	
Levin-Richmond Terminal Corporation	37° 55.269' N	122° 22.017' W	PBO	
Loch Lomond Marina – Marina Village	37° 58.343' N	122° 28.867' W	PBO	
Lowrie Yacht Harbor	37° 58.037' N	122° 30.469' W	PBO	
Mare Island Shipyard	38° 5.796' N	122° 15.869' W	I***	Service files: 81420-2010-F-0607, 81420-2016-

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				F-0608, 2022-0007216-S7-001, 2022-0007216-S7-001-R001, 2022-0004215-S7-001, and 2022-0004215-S7-001-R001
Marin Rowing Association	37° 56.557' N	122° 31.026' W	PBO	
Marin Yacht Club	37° 58.315' N	122° 29.922' W	PBO	
Marina Bay Yacht Harbor	37° 54.804' N	122° 20.960' W	PBO	
Marina Plaza Harbor	37° 52.008' N	122° 29.706' W	PBO	
Marina Vista Canal and Homeowners Assoc.	37° 58.385' N	122° 29.754' W	PBO	
Martinez Marina	38° 1.629' N	122° 8.230' W	I- Appended to non-LTMS PBO	Service files: 81410-2012-F-0026-R001, 81410-2012-F-0026-R002, and 2022-0078674-S7-001
Martinez Shore Terminal	38° 2.748' N	122° 6.082' W	PBO	
Montezuma Harbor	38° 11.229' N	121° 58.230' W	I-Appended to non-LTMS PBO	Service files: 1-1-05-F-0199, 08FBDT00-2013-F-0030-R001, and 2022-0078657-S7-001
Napa Valley Marina	38° 13.245' N	122° 18.783' W	PBO	
Oakland Yacht Club	37° 47.021' N	122° 15.818' W	I	
Oyster Cove Marina	37° 39.821' N	122° 22.709' W	PBO	
Oyster Point Marina	37° 39.820' N	122° 22.682' W	PBO	
Paradise Cay Homeowners Assoc.	37° 54.825' N	122° 28.659' W	PBO	
Paradise Cay Yacht Club	37° 54.930' N	122° 28.590' W	PBO	
Petaluma Marina	38° 13.797' N	122° 36.811' W	PBO	
Pittsburg Marina	38° 2.143' N	121° 52.950' W	I-Appended to non-LTMS PBO	Service file: 08FBDT00-2019-F-0259
Plains Marketing (Martinez Shore Terminal)	38° 2.612' N	122° 6.142' W	PBO	
Point San Pablo Yacht Club	37° 57.818' N	122° 25.103' W	PBO	
Port of Oakland	37° 48.646' N	122° 19.715' W	PBO	
Port of Redwood City	37° 30.808' N	122° 12.576' W	PBO	
Port of Richmond	37° 54.729' N	122° 21.876' W	PBO	
Port of San Francisco	37° 48.022' N	122° 23.770' W	PBO	
Port Sonoma Marina	38° 7.060' N	122° 29.949' W	PBO	
Redwood City Harbor	37° 30.292' N	122° 12.420' W	PBO	

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Redwood Shores Lagoon	37° 32.315' N	122° 14.691' W	I?	Service files: 1-1-94-F-0062, 81420-2008-F-0949, and 81420-2008-F-0949-2
Richmond Yacht Club	37° 54.510' N	122° 23.015' W	PBO	
RMC Lonestar Cement Marina Terminal	37° 30.850' N	122° 12.522' W	PBO/I?	Service files: 1-1-00-I-762 and 1-1-00-I-1435
Ron Valantine Boat Dock	37° 46.160' N	122° 17.255' W	PBO	
Ryer Island Boat Harbor (Veneco)	38° 4.467' N	122° 0.713' W	PBO	
San Francisco Dry Dock	37° 45.801' N	122° 22.984' W	PBO	
San Francisco Marina (Golden Gate & St. Francis Yacht Clubs)	37° 48.410' N	122° 26.661' W	PBO	
San Francisco Yacht Club	37° 52.308' N	122° 27.735' W	PBO	
San Leandro Marina	37° 41.820' N	122° 11.485' W	PBO	
San Rafael Creek, Residential Berths (Canal)	37° 58.068' N	122° 30.680' W	PBO	
San Rafael Rock Quarry	37° 59.302' N	122° 26.838' W	PBO	
San Rafael Yacht Harbor	37° 58.134' N	122° 31.062' W	PBO	
Sausalito Marina Properties	37° 51.603' N	122° 29.044' W	PBO	
Sausalito Yacht Club/Harbor	37° 51.581' N	122° 28.877' W	PBO	
Schnitzer Steel	37° 47.628' N	122° 17.538' W	PBO	
Schoonmaker Point Marina	37° 51.859' N	122° 29.479' W	PBO	
Shamrock Materials	38° 13.515' N	122° 36.478' W	PBO	
Shell Terminal	38° 2.002' N	122° 7.380' W	PBO	
South Beach Yacht club	37° 46.804' N	122° 23.158' W	PBO	
Strawberry Recreation District	37° 53.311' N	122° 30.001' W	PBO	
Suisun City Marina	38° 14.056' N	122° 2.247' W	I	Service files: 08FBDT00-2018-I-0004 and 81420-2009-I-0110
Time Oil Terminal	37° 55.079' N	122° 21.856' W	PBO	
Timmers Landing	37° 54.554' N	122° 28.481' W	PBO	
Tosco Refinery	37° 54.926' N	122° 21.900' W	PBO	
US Army Reserve Center, Mare Island	38° 5.277' N	122° 15.468' W	PBO	
USCG Cutter Aspen Mooring and Approach	37° 48.612’ N	122° 21.637' W	NA	
USCG Integrated Support Command, Alameda	37° 46.753' N	122° 14.943' W	PBO	
USCG Station Golden Gate	37° 49.996' N	122° 28.581' W	PBO	
USCG Station Vallejo/Mare Island	38° 6.751’ N	122° 16.265’ W	I	Service file: 08FBDT00-2021-I-0036
USCG Station Yerba Buena Island	37° 48.568' N	122° 21.677' W	PBO	
USS Posco	38° 1.915' N	121° 52.250' W	I	
Valero Refinery Co. - Benicia Crude Dock	38° 2.676' N	122° 7.741' W	I	Service files: 1-1-03-I-1972, 08FBDT00-2013-I-0017, and 2023-

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				0129750-S7-001
Vallejo Marina	38° 6.424' N	122° 16.096' W	Appended to non-LTMS PBO	Service file number: 08FBDT00-2012-F-0037
Vallejo Yacht Club	38° 6.283' N	122° 16.063' W	Appended to non-LTMS PBO	Service file: 81420-2009-F-0122-1 and 08FBDT00-20 l 3-F-0045
Vulcan Materials	38° 13.442' N	122° 36.381' W	APBO	Service file: 2024-0047331-S7-001
WesPac Energy Pittsburg Terminal	38° 2.542’ N	121°53.565’ W	APBO	
WETA Central Bay Ferry Maintenance Facility	37° 46.275' N	122° 17.955' W	I?	
WETA Harbor Bay Terminal	37° 44.182’ N	122° 15.423’ W	NA	
WETA Vallejo Baylink Ferry Terminal	38° 6.001' N	122° 15.789' W		No consultation

Notes:
*PBO = included by DMMO in LTMS Programmatic Biological Opinion; APBO = Appended to PBO; I = Individual consultation; NA = project is not included in PBO and has no FWS consultation on file (No Effect). PBO=Programmatic Biological Opinion
**These project sites may also have other permits for activities not covered under the LTMS, such as dock repair. DMMO is working on gathering the information for separate permitting actions at each site that may also have a section 7 consultation on file.
***Permit or Permit modification ongoing or section 7 consultation ongoing as part of the permit process.

Please note, this table was copied from the BA with the Service’s additions to the notes the PBO Status* and Non-LTMS BOs columns. Some projects in Table 2 were listed as PBO but individual consultations and some have separate consultations for other activities which may also have a dredging component and have been included in the Non-LTMS column and the discussion below. For example, the Berkeley Marina Docks D & E Replacement Project (Service file number: 2023-0110365-S7-001) had a maintenance dredging component pursuant to the replacement activity that was analyzed in that specific consultation.

Ballena Isle Marina

The Service has two file numbers (81420-2000-I-1830 and 81420-2001-I-3493 [not original numbers]) for this marina dredging but could not find an electronic copy of either consultation.

Bel Marin Keys Community Services District

On February 3, 2020, the Service issued an individual concurrence and biological opinion to the Corps’ San Francisco District Regulatory Division for the Bel Marin Keys Community Services District's Bel Marin Keys Lagoon and Novato Creek Maintenance Dredging (Service file number: 08FBDT00-2019-F-0190) for effects to California clapper rail and salt marsh harvest mouse. Consultation has not been reinitiated to include the longfin smelt DPS.

Benicia Marina

SOLICITATION

On April 27, 2010, the Service issued a letter (Service file number: 81410-2010-F-0002-1) to the Corps' San Francisco District Regulatory Division appending the dredging project to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: l-l-04-F-0345). In 2001, the Service issued a concurrence letter for the Benicia Marina Maintenance Dredging Project (Service file number: 81420-2001-I-2597 [not original file number]), although an electronic copy is not available. Consultation has not been reinitiated to include the longfin smelt DPS.

Benicia Port Terminal (AMPORTS)

On February 15, 2024, the Service issued an individual biological and conference opinion on the AMPORTS Benicia Port Terminal Maintenance Dredging Project (Service file number: 2023-0067345-S7-001) for effects to the delta smelt and its critical habitat and the then proposed longfin smelt DPS as requested by the Corps' San Francisco DMMO Operations and Readiness Division on December 5, 2023. The Corps also requested emergency consultation and informal consultation in early 2023. To date, the Service has not received a request to confirm the 2024 conference opinion to a final biological opinion.

Berkeley Marina

On April 4, 2024, the Service issued a conference opinion to the Corps' San Francisco District Regulatory Division for the effects of the Berkeley Marina Docks D & E Replacement Project (Service file number: 2023-0110365-S7-001) on the then proposed longfin smelt DPS. The project had a maintenance dredging component pursuant to the replacement activity that was analyzed in that specific consultation.

Black Point Boat Launch Ramp

The Service has a historical database entry for consultation related to splittail (Service file number: 81420-2000-I-1348 [not original file number]) but could not find an electronic copy of the document.

CA Maritime Academy

On August 26, 2024, the Service issued a biological opinion to the U.S. Department of Transportation Maritime Administration for effects of the California State University Maritime Academy Waterfront Master Plan Phase 1 Project on the longfin smelt DPS (Service file number: 2024-0040437-S7-001). The project description included maintenance dredging not just dredging for the Phase 1 and as such was analyzed in the project-specific biological opinion.

On October 5, 2009, the Service issued a biological opinion (Service file number: 81420-2009-F-1240) to the Corps' San Francisco District Regulatory Division appending the California Maritime Academy Boat Basin Dredging Project to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small

SOLICITATION

Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: l-l-04-F-0345). Consultation has not been reinitiated to include the longfin smelt DPS.

City of Sunnyvale Boat Ramp

On July 17, 2009, the Service issued an informal concurrence letter (Service file number: 81420-2009-I-0932-1) to the Corps' San Francisco District Regulatory Division regarding effects from dredging the City of Sunnyvale's NASA-AMES boat ramp on California clapper rails and salt marsh harvest mice. Consultation has not been reinitiated to include the longfin smelt DPS.

Foster City Lagoon

On January 19, 2017, the Service issued an informal concurrence letter (Service file number: 08FBDT00-2016-I-0146) to the Corps' San Francisco District Regulatory Division regarding effects from the Foster City Lagoon Intake Dredging Intake Structure Dredging Project on the California clapper rail, salt marsh harvest mouse, western snowy plover, and California least tern. Consultation has not been reinitiated to include the longfin smelt DPS.

Glen Cove Marina

On October 5, 2009, the Service issued a biological opinion (Service file number: 81420-2009-F-0995) to the Corps' San Francisco District Regulatory Division appending the Glen Cove Marina Dredging Project (Corps File number: 2009-00120N) to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: l-l-04-F-0345).

On March 4, 2020, the Service issued a biological opinion (Service file number: 08FBDT00-2020- F-0113) to the Corps' San Francisco District DMMO Operations and Readiness Division appending the Glen Cove Marina Dredging Project (Corps File number: 2009-00120N) to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: l-l-04-F-0345). Consultation has not been reinitiated to include the longfin smelt DPS.

Kiewit Pacific Company

On May 20, 2015, the Service issued an informal concurrence letter (Service file number: 08FBDT00-2015-I-0018) to the Corps' San Francisco District Regulatory Division regarding effects from the Kiewit Infrastructure West Company Maintenance Dredging Project (Corps file number: 2014-00429S) on the delta smelt. Consultation has not been reinitiated to include the longfin smelt DPS.

Larkspur Landing Ferry Terminal

SOLICITATION

On June 14, 2019, the Service issued a biological opinion to the Corps' San Francisco District Regulatory Division for the Corte Madera Four-Acre Tidal Marsh Restoration Project (Service file number: 08FBDT00-2019-F-0184) regarding the effects to the California clapper rail and salt marsh harvest mouse. The project restored a former 4.3-acre dredge material fill site back to a tidal marsh to fulfill mitigation obligations to establish suitable tidal marsh habitat for California clapper rail in accordance with a 1988 Corps permit (the Service was not provided a copy) for dredging and a modification to ferry operations at the Larkspur Ferry Terminal.

Mare Island Shipyard

On May 14, 2010, Service issued a biological opinion to the Corps' San Francisco District Regulatory Division for the Mare Island Shipyard Dredging and Drydock Operations Project (Service file number: 81420-2010-F-0607) regarding the effects to the delta smelt. The Corps requested reinitiation on October 27, 2015, and on March 11, 2016, the Service issued an amended biological opinion (Service file number: 81420-2016-F-0608). Since then, the ownership changed and the consultation has been superseded by two separate consultations. On June 9, 2022, the Service issued a biological opinion to the Corps' San Francisco District DMMO Operations and Readiness Division for the Mare Island Dry Docks Maintenance Dredging Project (Service file number: 2022-0007216-S7-001 and Corps File Number: 2008-00311) and an amended biological opinion to include the longfin smelt DPS was issued on November 14, 2024 (Service file number: 2022-0007216-S7-001-R001). On June 28, 2022, the Service issued a biological opinion to the Corps' San Francisco District DMMO Operations and Readiness Division for the Lind Marine Maintenance Dredging Project (Service file number: 2022-0004215-S7-001and Corps File Number: 2020-00238) and an amended biological opinion to include the longfin smelt DPS was issued on November 21, 2024 (Service file number: 2022-0004215-S7-001-R001).

Martinez Marina

On October 29, 2012, the Service issued a biological opinion (Service file number: 81410-2012-F-0026-R001) to the Corps' San Francisco District Regulatory Division appending the Martinez Marina Maintenance Dredging Project (Corps File number: 2012-00070S) to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: l-l-04-F-0345) and for effects to the salt marsh harvest mouse. The Corps requested reinitiation on December 19, 2013, and the Service issued an amended consultation for the effects to the delta smelt and it's critical habitat, salt marsh harvest mouse, California clapper rail, and soft bird's-beak (*Cordylanthus m*ollis ssp. *mollis*). On September 20, 2022, the Service issued an informal concurrence (Service file number: 2022-0078674-S7-001) to the Corps' San Francisco District DMMO Operations and Readiness Division regarding effects of the dredging project on the delta smelt and its critical habitat. Consultation has not been reinitiated to include the longfin smelt DPS.

Montezuma Harbor

SOLICITATION

On August, 29, 2005, the Service issued a biological opinion (Service file number: 1-1-05-F-0199) to the Corps' San Francisco District Regulatory Division appending the Montezuma Harbor Maintenance Dredging Project (Corps file number: 29606S) to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: l-l-04-F-0345). On May 10, 2013, the Corps requested reinitiation for a time extension and the Service issued an amended consultation on June 11, 2013 (Service file number: 08FBDT00-2013-F-0030-R001). On August 19, 2022, the Corps' San Francisco DMMO Operations and Readiness Division requested formal consultation to append the project (Corps file number: SPN-2013-00141) to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: l-l-04-F-0345). The Service issued a biological opinion appending the project to the delta smelt programmatic biological opinion on September 9, 2022 (Service file number: 2022-0078657-S7-001). Consultation has not been reinitiated to include the longfin smelt DPS.

Oakland Yacht Club

Although Table 2 has the Oakland Yacht Club as having an independent consultation, the Service was not able to locate one in our files or tracking databases.

Pittsburg Marina

On July 31, 2019, the Service issued a biological opinion (Service file number: 08FBDT00-2019-F-0259) to the Corps' San Francisco District Regulatory Division appending the Pittsburg Marina Maintenance Dredging Project to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: l-l-04-F-0345). Consultation has not been reinitiated to include the longfin smelt DPS.

Redwood Shores Lagoon

In 1994, Service issued a biological opinion to the Corps for Redwood Shores Levee Rehabilitation Project/Redwood Shores Levee Upgrade Project (Service file number: 1-1-94-F-0062) which described various activities including excavation and sediment placement and their effects to the California clapper rail and salt marsh harvest mouse (the Service was not able to locate a signed digital copy). On July 3, 2008, the Service issued a biological opinion on the Proposed Preserve at Redwood Shores Residential Development and Conservation Area Project (Service file number: 81420-2008-F-0949) to the Corps' San Francisco District Regulatory Branch and an amendment on August 25, 2009, (Service file number: 81420-2008-F-0949-2) to include placing sediment hydraulically dredged from the Redwood Shores Lagoon System on a project restoration site. The Service is unaware of a consultation for maintenance dredging of the lagoon or consultation for the longfin smelt DPS.

RMC Lonestar Cement Marina Terminal

SOLICITATION

The Service's tracking database shows two file numbers (81420-2000-I-0762 and 81420-2000-I-1435; original file numbers: 1-1-00-I-762 and 1-1-00-I-1435) regarding informal consultation on the renovation of an existing cement processing facility and dredging of Redwood Creek adjacent to the facility for the California clapper rail, California least tern, and California brown pelican. The Service was not able to locate a signed digital copy of the informal concurrence letter to Corps' San Francisco District Regulatory Branch.

Suisun City Marina

On November 2, 2017, the Service issued an informal concurrence letter (Service file number: 08FBDT00-2018-I-0004) to the Corps' San Francisco District Regulatory Division regarding effects from the Suisun City Marina Maintenance Dredging Project on the delta smelt and its critical habitat. Previous informal consultation/correspondence (Service file number: 81420-2009-I-0110) occurred in late 2008 but the Service was unable to locate digital records. Consultation has not been reinitiated to include the longfin smelt DPS.

U.S. Coast Guard Station Vallejo/Mare Island

On April 15, 2008, the Service issued an informal concurrence letter (Service file number: 084120-2008-I-0521) to the U.S. Coast Guard regarding the effects of dredging at Coast Guard Station Vallejo on delta smelt. On December 7, 2020, the Service issued an informal concurrence letter (Service file number: 08FBDT00-2021-I-0036) to the Corps' San Francisco District DMMO Operations and Readiness Division regarding the effects from the U.S. Coast Guard Vallejo Station Maintenance Dredging Project (Corps file number: 2008-00049) on the delta smelt. Consultation has not been reinitiated to include the longfin smelt DPS.

USS Posco

Although Table 2 has the USS Posco as having an independent consultation, the Service was not able to locate one in our files or tracking databases specific to dredging.

Valero Refinery Co. - Benicia Crude Dock

The Service issued informal concurrence letters (Service file number: 1-1-03-I-1972 and 08FBDT00-2013-I-0017) on June 10, 2002, and June 19, 2013, respectively for the Valero Benicia Refinery Maintenance Dredging Project to the Corps' San Francisco District Regulatory Division. On February 2, 2024, the Service issued a biological opinion for delta smelt and its critical habitat and conference opinion on the then proposed longfin smelt DPS on the Valero Benicia Refinery Maintenance Dredging Project to the Corps' San Francisco District DMMO Operations and Readiness Division (Service file number: 2023-0129750-S7-001). To date, the Service has not received a request to confirm the conference opinion to a final biological opinion.

Vallejo Marina

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On September 17, 2012, the Service issued a biological opinion (Service file number: 08FBDT00-2012-F-0037) to the Corps' San Francisco District Regulatory Division appending the dredging project to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: l-l-04-F-0345). Consultation has not been reinitiated to include the longfin smelt DPS.

Vallejo Yacht Club

The Service issued biological opinions (Service file numbers: 81420-2009-F-0122-1 and 08FBDT00-20l3-F-0045) to the Corps' San Francisco District Regulatory Division appending the dredging project to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: l-l-04-F-0345). Consultation has not been reinitiated to include the longfin smelt DPS.

Vulcan Materials

On June 21, 2024, the Service issued an informal concurrence on the California Ridgway's rail and conference concurrence on the then proposed longfin smelt DPS to the Corps' San Francisco District DMMO Operations and Readiness Division to include/append the Vulcan Landing Way Pier Dredging Project under the informal consultation process in the LTMS Programmatic Biological Opinion/Amendment (Service file number: 2024-0047331-S7-001). To date, the Service has not received a request to confirm the conference concurrence to a final informal consultation concurrence.

WesPac Energy Pittsburg Terminal

Although Table 2 has the WesPac Energy Pittsburg Terminal as appended to the LTMS Programmatic Biological Opinion/Amendment, the Service was not able to locate the consultation our files or tracking databases.

WETA Central Bay Ferry Maintenance Facility

Although Table 2 has the WETA Central Bay Ferry Maintenance Facility as having an independent consultation, the Service was not able to locate one in our files or tracking databases.

WETA Vallejo Baylink Ferry Terminal

Although Table 2 has the WETA Vallejo Baylink Ferry Terminal as appended to the LTMS Programmatic Biological Opinion/Amendment, the Service was not able to locate the completed consultation in our files or tracking databases. The Corps determined no effect to delta smelt over numerous years after the 2015 consultation request to append, not to the LTMS Programmatic Biological Opinion, but to the December 1, 2004, Formal Programmatic

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Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: l-l-04-F-0345) and ultimately withdrew the consultation request. There is no consultation for either the delta smelt or the longfin smelt DPS for the WETA Vallejo Baylink Ferry Terminal.

Dredged Material Disposal Sites

Aquatic

In-Bay placement currently occurs at open water placement sites in Suisun Bay (SF-16), Carquinez Strait (SF-9), San Pablo Bay (SF-10), and near Alcatraz Island (SF-11). Ocean disposal occurs at the SF-DODS. Beneficial in-water placement occurs/will occur at the San Francisco Bar Channel (SF-8; Clean Water Act Section 404 disposal only), the Ocean Beach Demonstration Site (SF-17), and nearshore strategic placement sites (Whale's Tail and Emeryville Crescent Nearshore Sites). Placement of dredged materials at open water sites is accomplished by direct pipeline discharge, direct mechanical placement, or releasing from hopper dredges, scows, and barges through bottom doors.

The SF-8 disposal site is a 15,000- by 3,000-foot-wide rectangle 7,500 feet south of the San Francisco Bar Channel in the Pacific Ocean. Depths at SF-8 range from approximately 30 to 45 feet Mean Lower Low Water. Placement/disposal is limited to sandy material dredged by the Corps from the San Francisco Bar Channel. However, the easternmost portion of SF-8 is within the 3-mile limit, and sand from other San Francisco Bay Area dredging projects can be permitted there as beneficial use for beach nourishment. The trapezoidal portion of SF-8 that is within the 3-mile limit is approximately 3,000 feet long by 430 feet at its northern end. The southern-end portion is not considered as a beneficial reuse site.

The SF-9 disposal site is a 1,000-foot by 2,000-foot rectangle (approximately 46 acres), approximately 10 to 55 feet deep, 0.9 miles west of the entrance to Mare Island Strait in eastern San Pablo Bay in Solano County. Disposal is limited to 1 million cubic yards of dredged material per month and a maximum of 3 million cubic yards per year during wet or above-normal water flow years, and 2 million yards per year during all other years.

The SF-10 disposal site is a 1,500- by 3,000-foot rectangle (approximately 103 acres), approximately 30 to 45 feet deep, located 3.0 miles northeast of Point San Pedro in southern San Pablo Bay in Marin County. Site specific capacity is limited to 500,000 cubic yards of dredged material per year. SF-10 is a multi-user disposal site that is also used by two other Federal projects and other non-Federal projects.

The SF-11 disposal site is a 1,000-foot-radius circular area (approximately 72 acres), approximately 40 to 70 feet deep, located approximately 0.3 mile south of Alcatraz Island in the Central Bay. SF-11 is a multi-user site and is the most heavily used disposal site in the Bay.

The SF-16 disposal site located west of Roe Island and east of the Benicia Bridge is maintained for Corps use exclusively for material from dredging of the Suisun Bay and New York Slough

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Federal channels. This site extends parallel to the channel for about 4,000 feet and is approximately 200 feet wide (approximately 18.4 acres). Disposal is limited to 200,000 cubic yards per year.

The future SF-17 site is located in waters of the Pacific Ocean adjacent to the south-of-Sloat-Boulevard stretch of Ocean Beach where waves can potentially feed sediment toward the southern reach of Ocean Beach, which may ultimately help mitigate ongoing shoreline erosion in the area that threatens significant municipal infrastructure, including segments of the Great Highway and major sewer lines running underneath and alongside it. The Corps and EPA have been conducting a beach nourishment beneficial reuse pilot demonstration study at the Ocean Beach Near Shore Demonstration Site, which is encompassed by the future SF-17 placement site.

The SF-DODS is the deepest ocean dredged material disposal site in the United States. It is located off the Continental Shelf in approximately 8,200 to 9,800 feet of water, approximately 55 nautical miles offshore of San Francisco. It is approximately 6.5 square nautical miles (5,509 acres) in size.

Terrestrial

Upland/wetland beneficial use includes a wide variety of options that utilize the dredged material for some productive purpose, including new construction, levee maintenance, landfill cover, and marsh restoration. Some upland sites will be established as rehandling facilities, to dry dredged material for subsequent off-site use, or for confined disposal. Upland/wetland beneficial use sites typically have separate permits and individual section 7 consultations for restoration activities, which are not covered by the LTMS program. Although the LTMS program includes the dredging, transportation, and offloading of dredged material at the permitted beneficial use sites, the 1999 Programmatic Biological Opinion and 2024 Amendment did not address the effects of offloading dredged material in upland/wetland area to listed species.

The Montezuma Wetlands Restoration Project Site is a privately-owned restoration project located on the eastern edge of Suisun Marsh, north of the confluence of the Sacramento and San Joaquin Rivers near the town of Collinsville, in Solano County. A detailed description of the restoration activities and associated impacts to special status species and critical habitat are fully described in the Montezuma Wetland Restoration Project's biological opinions (Service file numbers: 1-1-99-F-12, 1-1-02-F-0175, 1-1-04-F-270, 81420-2008-F-1861 and 2022-0074267-S7-001). The consultation does not currently include the longfin smelt. Approximately 17.5 million cubic yards of dredged material are needed to raise site elevations. As of 2019, approximately 8 million cubic yards of dredged material have been placed at Montezuma Wetlands (https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/dredging.html).

The Cullinan Ranch Restoration Project Site is located along the northern shoreline of San Pablo Bay near the city of Vallejo in Solano and Napa Counties. A detailed description of the restoration activities and associated impacts to special status species and critical habitat are fully

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described in the May 7, 2010 intra-Service biological opinion (Service file numbers: SFB-2010-01 and 81420-2010-F-0182). The consultation does not currently include the longfin smelt.

Longfin Smelt DPS

The Action Area covers a large portion of the range of the longfin smelt DPS, excluding the eastern Delta and the majority of the DPS mapped area outside of the Golden Gate. Longfin smelt occur in the Action Area year-round and occur within the Federal dredging areas as well as the non-Federal dredging areas, although entrainment data is limited to the Federal dredging areas.

Adult longfin smelt spawn in low-salinity to freshwater habitats as early as November and historically spawning lasted until as late as June, although spawning more typically occurs from January to April in shoals of the Delta, Suisun Marsh and Suisun Bay and in tidal wetlands of South San Francisco Bay and San Pablo Bay when hydrological conditions favor spawning in more seaward regions. Longfin smelt larvae are at peak abundance in the San Francisco Estuary most commonly in January through April.

Juvenile and non-spawning adult longfin smelt are present throughout the San Francisco Estuary at all times of year, and the majority of the population is concentrated in Suisun, San Pablo, and Central San Francisco bays, as well as nearshore ocean waters during the summer months. The periods of occurrence and peak abundance of longfin smelt by life stage in San Francisco Estuary is presented in Table 3 (Table 5-1 in BA).

Table 3. Periods of Occurrence and Peak Abundance of Longfin Smelt in San Francisco Estuary

Life Stage	Month											
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Egg	Potentially occur		in shallows of Suisun and San Pablo				bays					
Larvae		Potentially occur		in shallows of		Suisun and San Pablo bays						
Juvenile	Potentially occur throughout San Francisco Estuary											
Adult		Potentially occur throughout San Francisco Estuary										

Notes:

= Unlikely to occur

= Period of potential occurrence for eggs

= Period of potential occurrence for larvae

= Period of potential occurrence for juveniles

= Period of potential occurrence for adults

= Period of peak abundance for eggs

= Period of peak abundance for larvae

= Period of peak abundance for juveniles

= Period of peak abundance for adults

Longfin smelt have been entrained in hydraulic hopper dredging as shown in entrainment monitoring on the *Essayons* as shown in Table 4 (Table 5-2 in BA). Samples are collected using an onboard sampling apparatus that diverts some of the dredge material slurry from both drag heads into a sampling "basket" where the material is then examined to search for any fish or

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invertebrates (Novotny *et al*. 2024 as cited in the BA). Not in this table is the result of the 2024 monitoring that resulted in one longfin smelt detection during the June 14 through July 1 Richmond Outer Harbor dredging event (Corps and SFBRWQCB 2024). Entrainment monitoring does not provide an estimate of total longfin smelt entrained by hydraulic dredging because, as stated in the BA, there is no way of determining sampling effort or the proportion of dredge material sampled in addition to rarity of the species and survey-based population estimates.

Table 4. Longfin Smelt Collected during Entrainment Monitoring Aboard Corps Hopper Dredge (*Essayons*) in Suisun Bay, Pinole Shoal in San Pablo Bay, and Richmond Outer Harbor

Year	Location	Monitoring Dates	Longfin Smelt Collected	Hopper Loads Monitored/Total Hopper Loads	Water Year Type*
2010	Pinole Shoal	06/15-06/21	0	32/62	Above Normal
2011	Pinole Shoal	07/16-07/19	3	32/32	Wet
	Richmond Outer Harbor	07/19-07/31 8/11	12	126/126	
	Suisun Bay	08/01-08/10	3	72/72	
2016	Pinole Shoal	9/26-10/03 10/08	0	41/41	Dry
	Richmond Outer Harbor	06/01-06/15	12	128/129	
	Richmond Outer Harbor	10/03-10/07 10/09-10/11	0	64/64	
2017	Pinole Shoal	06/11-06/21	49 + 7**	74/74	Wet
	Pinole Shoal	November***	3	NA	
2018	Richmond Outer Harbor	06/06-06/17	0	100/100	Below Normal
	Richmond Outer Harbor	10/01-10/19	30	184/184	
2019	Pinole Shoal	07/31 – 08/7	1	46/48	Wet
2023	Pinole Shoal	07/22 – 07/31	41	38/39	Wet

Notes:
Source for Water Year Types: https://cdec.water.ca.gov/reportapp/javareports?name=WSIHIST
*No Critically Dry or Normal water year types occurred for the years shown.
**49 longfin smelt were captured with the sampling apparatus; an additional 7 longfin smelt were netted directly from the hopper through an access port.
***Specific dates that dredging occurred are not available.
No entrainment monitoring occurred during the years 2020-2022 due to COVID-19 pandemic restrictions.
References: McGowan 2010; Gold *et al*. 2011, 2017a, b; Applied Marine Sciences. 2018; Novotny *et al*. 2018, 2019, 2024 as cited in BA

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California Ridgway's Rail

Similar to the *Status of the Species* section, the *Environmental Baseline* has changed since the issuance of the 1999 Programmatic Biological Opinion and 2004 Amendment. Because the Action Area encompasses almost all of the range of the California Ridgway's rail, please refer to the 2013 Recovery Plan (https://ecos.fws.gov/docs/recovery_plan/TMRP/20130923_TMRP_Books_Signed_FINAL.pdf) and the 2020 5-year review (https://ecos.fws.gov/docs/five_year_review/doc6592.pdf).

Salt Marsh Harvest Mouse

Similar to the *Status of the Species* section, the *Environmental Baseline* has changed since the issuance of the 1999 Programmatic Biological Opinion and 2004 Amendment. Because the Action Area encompasses almost all of the range of the salt marsh harvest mouse, please refer to the 2013 Recovery Plan (https://ecos.fws.gov/docs/recovery_plan/TMRP/20130923_TMRP_Books_Signed_FINAL.pdf) and the 2021 5-year review (https://ecos.fws.gov/docs/tess/species_nonpublish/3643.pdf).

California Least Tern

Similar to the *Status of the Species* section, the *Environmental Baseline* has changed since the issuance of the 1999 Programmatic Biological Opinion and 2004 Amendment. California least terns have several nesting sites within the Action Area including but not limited to Alameda Point, Montezuma Wetlands, and Eden Landing and forage in open waters near these sites. In the most recent 5-year review it was estimated that in 2016 the San Francisco Bay Area accounted for 13% of the total nesting population. Please refer to the 2020 5-year review for a comprehensive discussion of the status of California least terns in the San Francisco Bay Area (https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/3520.pdf).

Western Snowy Plover

Similar to the *Status of the Species* section, the *Environmental Baseline* has changed since the issuance of the 1999 Programmatic Biological Opinion and 2004 Amendment. Western snowy plovers have several nesting sites within the Action Area including most recently within Montezuma Wetlands. As noted in the 2024 5-year review, habitat for the western snowy plover in the San Francisco Bay Area (Recovery Unit 3 [RU3]) has decreased as salt ponds are restored to tidal marsh habitat but observed a record high of 368 breeding adults in 2023. This number, while showing an increase, is still below the 500 articulated in the 2007 Recovery Plan. Please refer to the 2024 5-year review for a comprehensive discussion of the status of western snowy plovers in the San Francisco Bay Area (https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/19614.pdf).

Delta Smelt and Delta Smelt Critical Habitat

Similar to the *Status of the Species* section, the *Environmental Baseline* has changed since the issuance of the 1999 Programmatic Biological Opinion and 2004 Amendment. The Action Area includes the western extent of the species range from Suisun Bay/Marsh to San Pablo Bay. Critical habitat occurs within Suisun Bay/Marsh to the Carquinez Bridge but does not extend further west and contains all of the Primary Constituent Elements described in the critical habitat designation but quality and amount vary depending on conditions as discussed in the *Status of the Critical Habitat* section.

Delta smelt can occur in the Suisun Bay year-round. The Suisun Bay and the Confluence of the Sacramento and San Joaquin Rivers are considered critical areas within delta smelt habitat and

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the San Francisco Bay Estuary for the survival of this species. Delta smelt were often observed in the highest densities in these areas (Merz *et al.* 2011). Delta smelt are also known to spawn in the Napa River in high outflow years. Since the 1999 and 2004 consultations, delta smelt have been recorded in surveys and in hydraulic dredging sampling at depths within the range of LTMS depths and delta smelt have been entrained in hydraulic dredging in Suisun Bay. As noted above, the delta smelt is now considered a conservation-reliant species dependent on brood stock releases.

Effects of the Action

Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action but that are not part of the action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action.

The LTMS Program will result in adverse effects to longfin smelt within the dredging footprint by interfering with feeding, movement, and/or other essential behaviors when dredging equipment is operating. Fish may be stressed, exhibiting alarm reactions and increased swimming speed due to dredging activities and the physical presence of dredge equipment. Their physiological and biological processes might be compromised due to dredging equipment noise and vibrations. Noise and sound wave pressure generated from the hopper dredge, propellers, pumps and engines, and equipment strikes, may cause barotrauma and hinder longfin smelt from their feeding and/or sheltering activities. It is likely that longfin smelt will be killed or severely injured by entrainment when dredge materials (sediment, slurry and water) are extracted during the dredging activity. Individual longfin smelt that are not killed are likely to suffer injuries that might reduce their survival and become more susceptible to predation. Dredging, material disposal and suspended sediment plumes may negatively affect benthic species, some of which are longfin smelt prey, resulting in decreased longfin smelt feeding ability. Dredging and disposal within the LTMS established work windows minimize effects to longfin smelt eggs and larvae. Beneficial reuse of appropriate dredged materials on tidal restoration sites in the Action Area, may have beneficial effects to longfin smelt and prey over the long term but were not specifically analyzed in the BA and do not directly minimize or compensate for entrainment. Additionally, dredging outside of the work windows is also permitted with added conditions like beneficial reuse that do not directly minimize or compensate for the potential increase in entrainment. Tidal restoration projects that have effects to listed species and receive beneficial reuse dredged materials should have undergone section 7 consultation with the appropriate Federal Action Agency prior to implementation.

<u>Hydraulic Dredging</u>

There are five federally maintained channels that could potentially be dredged by a hopper dredge: San Francisco Main Ship Channel, Richmond Harbor, Pinole Shoal, and San Bruno Channel. As shown in Table 4, LTMS Program hopper dredging entrains longfin smelt. In the BA, the Corps estimated annual impacts to the population based on variabilities in water year

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type, dredging duration, seasonal abundance and habitat variation among other factors shown in Table 5 (Table 5-3 in the BA).

Table 5. Estimated Percent (%) Impact to Annual Longfin Smelt Population based on Preferred Habitat and Duration of Hopper Dredging Operations by Region

Region	Total Area with Water Depth ≥ 23 ft at MSL (mean sea level)	Navigational Channels	Total Area of Navigational Channel (acres)	Duration of Dredging Operations (weeks)	Estimated Percent (%) Impact to Longfin Smelt Population based on Preferred Habitat and Duration of Hopper Dredging
A - San Francisco Harbor Region	57,822 acres	San Francisco Harbor Main Ship Channel	1,204	2	0.08
B – Richmond Harbor Region	17,304 acres	Richmond Harbor (Inner & Outer)	944	3	0.31
D – Pinole Shoal Region	10,732 acres	Pinole Shoal Channel	879	2	0.32
E – Redwood City Harbor Region	25,149 acres	Redwood City (San Bruno Channel Only)	344	2	0.05

The BA did not provide cutterhead dredging entrainment monitoring data for the LTMS program but used the Stockton and Sacramento Deepwater Ship Channel Maintenance Dredging Project entrainment and fish community monitoring as a proxy. No longfin smelt were detected in entrainment monitoring when detected in the adjacent fish community monitoring. It is difficult to draw any conclusions from this data as the amount of dredged material sampled ranged from 0.37 to 28 percent of the total volume dredged. As the cutterhead dredges have rotating blades or teeth to break up or loosen the bottom material so that it can be suctioned through the dredge, these activities will create water disturbance that is likely to cause fish to exhibit avoidance behavior and seek less disturbed areas. However, entrained fish likely would suffer physical injury and mortality.

Mechanical Dredging

Mechanical or clamshell dredging will result in adverse effects to longfin smelt within the dredging footprint by interfering with feeding, movement, and/or other essential behaviors when dredging equipment is operating. Fish may be stressed, exhibiting alarm reactions and increased swimming speed due to dredging activities and the physical presence of dredge equipment. Their physiological and biological processes might be compromised due to dredging equipment noise and vibrations. Longfin smelt are significantly more likely to be able to avoid a mechanical clamshell bucket and avoid entrainment than they would be if they were near the suction prism of a hopper dredge or hydraulic cutterhead. Longfin smelt are not strong swimmers compared to larger fish and would not be able to escape the suction power from a hydraulic dredging if they

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were within the suction prism. There is no suction effect from mechanical clamshell dredging and in the unlikely event that a longfin smelt were captured in the clamshell bucket as it was being lowered into the water column, they would be afforded the opportunity to escape through the water vents incorporated in the top of the clamshell bucket. There is no escape mechanism from hydraulic dredging equipment. Additionally, mechanical dredging generally is expected to entrain far fewer fish than hydraulic dredging because little water is removed along with the sediment and clamshell bucket scoops occur intermittently which may allow disturbed fish to leave the immediate area in the interim.

Disturbance of Benthic Habitat

As stated in the BA, dredging would directly impact benthic communities through physical disruption and direct removal of benthic organisms, resulting in the potential loss of most, if not all, organisms in the dredged area. Organisms immediately adjacent to the dredged channels may be lost because of smothering or burial from sediments resuspended in the water column during the dredging. Similarly, organisms in or immediately adjacent to the placement sites also may be lost because of smothering or burial from sediments during dredged material placement.

Additionally, during in-water placement in the San Francisco Bay, benthic organisms would suffer burial followed by prolonged exposure to anaerobic conditions after the dumping has ceased. This would result in mortality of most of the organisms in the burial footprint; however, this would be a short-term effect because benthic habitat is quickly recolonized. The existing benthic communities at the in-Bay placement sites have, over the years, reached an equilibrium that adjusts to the periodic placement of dredged material. Similarly, placement of dredged material (i.e., sand) at SF-17, SF-8, and along beach and intertidal habitat of Ocean Beach would cause temporary disturbance to benthic organisms; however, both the nearshore and the shore environment along the coast of Ocean Beach are dynamic and high-energy environments that experience rapid sediment flux. Organisms that inhabit sandy intertidal and subtidal habitat have adaptations for surviving in areas of high sediment flux. Although placement operations would cause burial of the less mobile benthic community, the impact of those operations will be episodic and short term. Studies on impacts of beach nourishment activities on the invertebrate community have shown that recovery of the benthic community at the beach and intertidal habitat generally takes place in on the order of a few weeks to months (Corps 2013 as cited in the BA).

Although longfin smelt are not benthic feeders, depending on location and timing, disturbance and loss of habitat and food web is likely to occur from dredging and in-water disposal.

Suspended Sediment

The proposed project could produce increased suspended sediments, otherwise known as turbidity, in the Action Area from clamshell dredging operations and placement of spoils at the disposal sites. A sediment plume results from excess sediment and other material entrained (e.g. air bubbles) being discharged back into the water during operations. Plumes typically have an increased suspended sediment concentration, thus elevated turbidity. The degree of sediment resuspension depends on the material, size and composition of the sediment being resuspended.

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Plume size, concentration, and duration of the plume depend on environmental and operational specific factors.

Suspended sediment may adversely affect fish species through smothering of eggs, clogging and erosion of gill membranes, and reduced feeding efficiency (Rowe *et al*. 2003). Because smelt species are mobile, they can avoid the localized areas of increased sedimentation/turbidity. Given the levels of short-term suspended sediment increases around maintenance dredging and dredged material placement activities, effects are expected to be minimal (LaSalle *et al*. 1991).

Exposure of fish to elevated suspended sediment concentrations could result in behavioral avoidance and exclusion from otherwise suitable habitat; disrupt movement and migration patterns; reduce feeding rates and growth; result in sublethal and lethal physiological stress, habitat degradation, or delayed hatching; and, under severe circumstances, could result in mortality (Newcombe and Jensen 1996; Clarke and Wilber 2000). The response of fish to suspended sediments varies among species and lifestages as a function of suspended particle size, particle shape, water velocities, suspended sediment concentrations, water temperature, depressed dissolved oxygen concentrations, contaminants, and exposure duration (O'Connor 1991; Sherk 1971; Newcombe and Jensen 1996). While longfin smelt already live in an environment with high background levels of turbidity it is possible that excessive sedimentation may exceed turbidity levels ideal for the longfin smelt DPS.

Sediments can either serve as a sink or as a source of contamination depending on hydrological conditions and the habitat type in which the sediment occurs (National Marine Fisheries Service [NMFS] 2003). Sediment can be habitat for many aquatic organisms and can contain various chemicals that are present in surface waters. Exposure to contaminated sediments may cause adverse effects to longfin smelt DPS. For example, an individual may swim through a plume of resuspended sediments or make contact with a contaminated substrate and thus absorb toxic substances via ingestion, gills, or the dermis (NMFS 2003). Sediment contaminant levels may be higher than those of the water column above, because of the tendency for contaminant levels to increase where discharge or sediment deposition occurs (EPA 1994). In addition to the PAHs, sediments in the Action Area may contain the following elements and compounds:

- Mercury is a dense silver-white metal that is liquid at room temperature. The environmental effects of mercury vary with its form, dose, pathway of exposure, and life stage of the affected organism. Neurotoxicity of mercury is well known and affects fish performance and survivability. Methyl mercury has the potential to biomagnify through the food chain in both freshwater and marine environments. Fish studies have revealed that accumulation of mercury in the brain was significant at 5 and 10 mg/kg dry food for methyl mercury (Corps 2004 as cited in Corps 2023 *Programmatic Biological Assessment for the Stockton Deep Water Ship Channel Maintenance Dredging and Bank Protection Project, Contra Costa, Sacramento, and San Joaquin Counties, California*).

- Pure nickel is a hard, silvery white metal and is very abundant in the environment. Nickel combined with other elements occurs naturally in the earth's crust, primarily combined with oxygen (oxides) or sulfur (sulfides) and is found in all soils. Nickel is considered to be an essential micronutrient with both deficiency and excess shown to reduce survival.

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Toxic effects in aquatic systems include tissue damage, genotoxicity, and growth reduction (Corps 2004 as cited in Corps 2023 *Programmatic Biological Assessment for the Stockton Deep Water Ship Channel Maintenance Dredging and Bank Protection Project, Contra Costa, Sacramento, and San Joaquin Counties, California*).

- Ammonia is a compound that is essential to living organisms and often occurs at elevated concentrations in lake, river, and wetland sediments. Ammonia is rapidly converted to ammonium, the non-toxic form, under aerobic conditions. The potential detrimental effects of any ammonia concentrations are minimized during winter conditions (Eddy 2005).

It is unclear what the magnitude and extent of the contaminant exposure from resuspended sediments will have on longfin smelt DPS individuals and their prey occurring in the Action Area. It is possible that fish swimming in highly sedimented water will ingest metal-bound sediments and may experience adverse effects to their gills and internal organs, harming their physiological processes, particularly the more developmentally sensitive longfin smelt DPS larvae and juveniles. Should liver, gill, kidney, and muscle function be reduced, longfin smelt DPS individuals in the Action Area may experience compromised immunity, poor fitness, and be susceptible to predation. Additionally, suspended sediment plumes may negatively affect benthic species, some of which are longfin smelt DPS prey, resulting in reduced feeding ability.

Hydroacoustics

Underwater sound pressure waves can harass and harm fish species (Hastings and Popper 2005; California Department of Transportation 2001). As the pressure wave passes through a fish, the swim bladder is rapidly squeezed due to the high pressure, and then rapidly expanded as the under-pressure component of the wave passes through the fish. This can cause adverse effects including rupture of the swim bladder, rupture of capillaries, internal hemorrhage, neurological stress, and auditory damage. Extreme sound waves can cause instantaneous death, latent death within minutes after exposure, or can occur several days later.

Elevated noise levels can cause sub-lethal injuries affecting survival and fitness. Similarly, if injury does not occur, noise may modify fish behavior that may make them more susceptible to predation. Fish suffering damage to hearing organs may suffer equilibrium problems and may have a reduced ability to detect predators and prey. Other types of sub-lethal injuries can place the fish at increased risk of predation and disease. Adverse effects on survival and fitness can occur even in the absence of overt injury. Exposure to elevated noise levels can cause a temporary shift in hearing sensitivity (referred to as a temporary threshold shift or TTS), decreasing sensory capability for periods lasting from hours to days (Hastings and Popper 2005; Popper and Hastings 2009; Hastings *et al.* 1996).

Per the BA, the scientific knowledge of the effects of dredge-generated noise and sound waves on fishes is limited and varies depending on the species. Hydroacoustic Effects from pile driving have been studied and can be used for comparison. To quantify the level of sound expected to cause harm, the Fisheries Hydroacoustic Working Group, an interagency working group that includes the Service, established interim criteria for evaluating underwater noise impacts from

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pile driving on fish. These criteria are defined in the document entitled "Agreement in Principal for Interim Criteria for Injury to Fish from Pile Driving Activities", dated June 12, 2008 (Fisheries Hydroacoustic Working Group 2008). This agreement identifies a peak sound pressure level (SPLs) of 206 decibels (dB) and an accumulated sound exposure level of 187 dB as thresholds for injury to fish ≥ to 2 grams (g). For fish less than 2 g, the accumulated sound exposure level threshold is reduced to 183 dB. Although there has been no formal agreement on a "behavioral" threshold, NMFS uses 150 dB-root mean square (RMS) as the threshold for adverse behavioral effects (NMFS 2017). Even though the above criteria were developed for pile driving, and the proposed action is dredging and disposal, it provides a reasonable means to analyze the expected increase in underwater sound pressures waves to the species.

Mechanical and hydraulic dredges produce a complex combination of repetitive sounds that may be intense enough to cause adverse effects on aquatic organisms, though the intensity, periodicity, and spectra of emitted sounds differ among the dredge types and the substrate being dredged. Clamshell dredges have a repetitive sequence of sounds generated by the winches, bucket impact with the substrate, closing and opening the bucket, and sounds associated with dumping the dredged material into the barge. The most intense sound impacts are produced during the bucket's impact with the substrate, with peak SPL of 124 dB measured 150 meters from the bucket strike location (Reine *et al*. 2002; Dickerson *et al*. 2001 as cited in the BA). Underwater noise is also generated by hydraulic dredging equipment, including rotating cutter heads, pumps, propellers, suction pipes, and the drag head contacting the channel bottom. Noise produced by hopper dredges fluctuates; the most intense sounds are produced during loading or unloading. While underway, continuous noise from hopper dredges operating in a variety of environments has been measured to range from 125 to 150 dB (Reine *et al.* 2012 as cited in the BA). A hydraulic cutterhead dredge can produce continuous noise in the range of 150 to 170 dB when measured 10 meters from the cutterhead (California Department of Water Resources 2013 as cited in the BA), with noise levels varying with dredge size and sediment type. This is comparable to underwater noise levels of 160 to 180 dB RMS produced by small boats and ships (MALSF 2009 as cited in the BA).

Effects may include behavioral changes, neurological stress, and temporary shifts in hearing thresholds. Injury to fish from peak noise (e.g., rupture of swim bladder) is not expected to occur, but behavioral effects (e.g., changes in feeding behavior, fleeing, startle responses) could occur. In comparison, commercial shipping vessels can produce continuous noise in the range of 180 to 189 dB (Reine and Dickerson 2014). Although dredging could produce underwater noise, it is comparable to that produced by commercial shipping vessels, which are common in the Federal channels but not necessarily for the non-Federal LTMS Program dredge areas.

Beneficial Dredged Material/Sediment Reuse

Dredged material that meets DMMO and project specific contaminant requirements has been and continues to be placed on restoration projects like the Montezuma Wetlands Restoration Project and Cullinan Ranch Restoration Project. While restoration projects like those above that may affect listed species have their own respective consultations, in general, the placement of appropriate dredged material on restoration projects has ecological benefits from increasing habitat and food web production to reducing effects of sea level rise. The placement of dredged

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material on restoration sites also reduces the time to complete fully functional restoration projects vs. natural sediment accretion but it may be years before habitat benefits are realized for longfin smelt. These general benefits are defined broadly and have not been analyzed at a local or temporal scale where they can be considered an offset for the direct impacts of entraining longfin smelt or their prey due to dredging activities.

Similarly, the proposed compensation measure to offset take has not been fully evaluated by the Corps and EPA specific to this project regarding feasibility, effects, implementation, tracking, reporting, and compliance.

Cumulative Effects

Cumulative Effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the Action Area considered in this biological opinion. Future Federal actions unrelated to the proposed project are not considered in this section, because they require separate consultation pursuant to section 7 of the Act.

Adverse effects to the longfin smelt DPS may result from point and non-point source chemical contaminant discharges within the Action Area. These contaminants include, but are not limited to, ammonia and free ammonium ion, numerous pesticides and herbicides from urban sources, and oil and gasoline product discharges. Oil and gasoline product discharges and aquatic invasive species may be introduced into waterways from shipping and boating activities and from urban activities and runoff. Implicated as potential stressors of longfin smelt DPS, these may adversely affect fish reproductive success and survival rates.

Conclusion

After reviewing the current *Status of the Species* for the longfin smelt DPS, the *Environmental Baseline* for the Action Area, the *Effects of the Action*, and the *Cumulative Effects*, it is the Service's biological opinion that the Reinitiation of the Programmatic Formal Endangered Species Consultation on the Proposed Long-Term Management Strategy for Placement of Dredged Material in San Francisco Bay, California is not likely to jeopardize the continued existence of the longfin smelt DPS. This conclusion is based primarily on: (1) the baseline condition that dredging and aquatic disposal events under the LTMS program have been on-going activities; (2) dredging within the LTMS Program work windows will minimize effects to eggs and larval longfin smelt; (3) while both methods are used, mechanical dredging is less likely to entrain longfin smelt; and (4) reuse of appropriate dredged material for use on San Francisco Estuary restoration sites, in general, is anticipated to improve habitat for the longfin smelt DPS over the long term.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm in the definition of “take” in the Act means an act which actually kills or injures wildlife. Such [an] act may include significant habitat modification or

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degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR 17.3) Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not the purpose of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the proposed protective measures and the terms and conditions of an incidental take statement and occurs as a result of the action as proposed.

The measures described below are non-discretionary, and must be undertaken by the Corps and EPA so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The Corps and EPA have a continuing duty to regulate the activity covered by this incidental take statement. If the Corps and EPA (1) fail to assume and implement the terms and conditions, or (2) fail to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps and EPA must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR § 402.14(i)(4)].

Amount or Extent of Take

The Service expects that incidental take of longfin smelt DPS will be difficult to detect or quantify for the following reasons: (1) the small size of fish at all life stages; (2) their turbid aquatic habitat makes them difficult to detect; and (3) the low likelihood of finding dead or impaired specimens. Because the species are wide-ranging and their distribution varies from one year to the next, take may vary from year to year. Additionally, losses of the species may be masked by seasonal fluctuations in numbers. Due to the difficulty in quantifying the number of longfin smelt DPS that will be taken as a result of numerous projects under the proposed action, we estimate up to 2 percent of the annual population may be subject to incidental take in the form of harm, capture, injury, and mortality as described in this biological opinion. Upon implementation of the Reasonable and Prudent Measure, incidental take associated with the project will become exempt from the prohibitions described under section 9 of the Act.

Effect of the Take

In the accompanying biological opinion, the Service determined that the level of anticipated take is not likely to jeopardize the continued existence of the longfin smelt DPS.

Reasonable and Prudent Measure

The Service has determined that the following Reasonable and Prudent Measure is necessary and appropriate to minimize the effects of the proposed project on the species:

1. Adverse effects to longfin smelt DPS shall be minimized to the full extent possible.

Terms and Conditions

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In order to be exempt from the prohibitions of section 9 of the Act, the Corps and EPA shall ensure compliance with the following term and condition, which implements the reasonable and prudent measure described above. This Term and Condition is non-discretionary.

1. The following Terms and Condition implement Reasonable and Prudent Measure Number One (1)

    a. The Corps, EPA, and/or applicant shall minimize the potential for harm or mortality of longfin smelt DPS resulting from project related activities by implementing the proposed project as described in the 1999 Programmatic Biological Opinion, 2004 Amended Programmatic Biological Opinion, BA, and summarized in the *Description of the Proposed Action* in this biological opinion.

    b. The Corps, EPA and/or applicant shall ensure that their contractors or operators comply with this biological opinion.

    c. The Corps and EPA shall provide the Service with an annual report including but not limited to information regarding dredge volumes, dredging schedules and schedule changes, bathymetry surveys, dredge logs, associated disposal information, and compensation implementation.

    d. The Corps and EPA shall provide the Service with an annual report of entrainment monitoring and an estimate of the proportion of the yearly population entrained.

Reporting Requirements

In order to monitor whether the amount or extent of incidental take anticipated from implementation of the project is approached or exceeded, the Corps shall adhere to the following reporting requirements. Should this anticipated amount or extent of incidental take be exceeded, the Corps must reinitiate formal consultation as per 50 CFR § 402.16.

1. The Service must be notified within 24 hours of the finding of any injured or dead listed species or any unanticipated damage to its habitat associated with the proposed project. When an injured or dead individual of the listed species is found, the Corps and EPA shall follow the steps outlined in the Salvage and Disposition of Individuals Taken section below.

2. Sightings of any listed or sensitive animal species shall be reported to the Service and the CNDDB (https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data).

Salvage and Disposition of Individuals

Dead individuals must be sealed in a resealable plastic bag containing a paper with the date and time when the animal was found, the location where it was found, and the name of the person

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who found it, and the bag containing the specimen frozen in a freezer located in a secure site, until instructions are received from the Service regarding the disposition of the dead specimen. The Service contact person is the Assistant Field Supervisor of the Endangered Species Division at (916) 930-2664.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species and the ecosystems upon which they depend. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and databases.

1. Maintain up-to-date knowledge and understanding of San Francisco Bay Estuary species biology, ecology, and status (best available science) to inform project design and species specific *Conservation Measures* to effectively minimize effects to listed species.

2. Utilize available training to maintain up-to-date understanding of the Act and its implementing regulations to ensure correct interpretation and implementation of section 7 consultation and the subsequent biological opinions and concurrence letters issued to the Corps.

3. Develop and implement noise studies that measure sound pressure waves generated from varying types of dredge equipment in the San Francisco Bay Estuary and their potential effects to federally listed fish and tidal marsh species.

4. Develop a database to track implementation and compliance of projects under the LTMS Programmatic Biological Opinion and LTMS projects with individual consultations.

5. Participate in recovery planning and implementation of conservation actions consistent with recovery planning documents.

6. Coordinate with the Service and other resource agencies during project planning in order to minimize effects to listed species and improve agency relationships.

7. Encourage or require the use of appropriate California native species in restoration efforts.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the San Francisco Bay-Delta Fish and Wildlife Office requests notification of the implementation of any conservation recommendations.

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REINITIATION – CLOSING STATEMENT

This concludes reinitiation on the Reinitiation of the Programmatic Formal Endangered Species Consultation on the Proposed Long-Term Management Strategy for Placement of Dredged Material in San Francisco Bay, California. All other information from the 1999 biological opinion and 2004 amendment remain the same. As provided in 50 CFR § 402.16,

(a) Reinitiation of consultation is required and shall be requested by the Federal agency, where discretionary Federal involvement or control over the action has been retained or is authorized by law and:

(1) If the amount or extent of taking specified in the incidental take statement is exceeded;

(2) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;

(3) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion or written concurrence; or

(4) If a new species is listed or critical habitat designated that may be affected by the identified action.

(b) An agency shall not be required to reinitiate consultation after the approval of a land management plan prepared pursuant to 43 U.S.C. 1712 or 16 U.S.C. 1604 upon listing of a new species or designation of new critical habitat if the land management plan has been adopted by the agency as of the date of listing or designation, provided that any authorized actions that may affect the newly listed species or designated critical habitat will be addressed through a separate action-specific consultation. This exception to reinitiation of consultation shall not apply to those land management plans prepared pursuant to 16 U.S.C. 1604 if:

(1) Fifteen years have passed since the date the agency adopted the land management plan prepared pursuant to 16 U.S.C. 1604; and

(2) Five years have passed since the enactment of Public Law 115-141 [March 23, 2018] or the date of the listing of a species or the designation of critical habitat, whichever is later.

Please address any questions or concerns regarding this biological opinion to Kim Squires, Section 7 Division Manager, at Kim_Squires@fws.gov. Please refer to Service file number 2024-0130642-S7-001 in any future correspondence regarding this project.

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Sincerely,

Donald Ratcliff
Field Supervisor

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San Francisco Bay Conservation and Development Commission
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January 21, 2026

Lt. Colonel Virgina R. Brickner
US Army Corps of Engineers, San Francisco District
450 Golden Gate Avenue, Fourth Floor
San Francisco, California 94902

SUBJECT: Letter of Agreement No. C2025.005.00

Dear Lt. Colonel Brickner:

On January 15, 2026, the San Francisco Bay Conservation and Development Commission (Commission) voted to conditionally concur with the US Army Corps of Engineers, San Francisco District's proposed four year maintenance dredging program of seven federal deep water channels and four shallow draft channels in San Francisco Bay, with the Commission's Coastal Zone Management Program, including deep water draft channels of: Oakland Entrance, Inner and Outer Harbor; Richmond Inner Harbor; Richmond Outer Harbor; Pinole Shoal; Suisun Bay and New York Slough; Redwood City Harbor; and San Bruno Shoal, and the shallow draft channels of: Petaluma River Channel and Petaluma Across the Flats; Napa Upper and Lower River Channel; and San Rafael Creek. It also authorized two sea trials should the *Essayons* or the *Joaquina* come into drydock for repairs in San Francisco Bay. The total volume proposed for dredging is between 9.43 million cubic yards and 17.647 million cubic yards (Mcy) of sediment from within the Bay. The sediment would either be disposed at four state- and federally-authorized in-Bay disposal sites, the San Francisco Bay Deep Ocean Disposal site outside the Commission's jurisdiction or be beneficially reused at a separately-authorized beneficially reuse site.

In the enclosed Letter of Agreement, the Commission concurs, as conditioned, with the USACE's determination that its proposed Operations and Maintenance Program for calendar years 2026 through 2029 is consistent to the maximum extent practicable with the Commission's Amended Management Program for San Francisco Bay. If the USACE does not agree with the conditions contained herein or fails to incorporate them into the Program, the USACE shall notify the Commission immediately of its refusal to agree or to incorporate the conditions into the Program or individual episodes and the conditional concurrence shall be converted into an objection. The USACE shall also notify the Commission if the USACE determines to go forward with the Program or individual project despite the Commission's objection.

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Please sign the enclosed Letter of Agreement and return it to our offices within 10 days of receipt. We look forward to working with you and your staff on the first implementation of beneficial reuse as part of the Federal Standard program. If you should have any questions regarding the attached Letter of Agreement or need any further assistance, please contact Brenda Goeden of my staff at 415-352-3623 or via email at brenda.goeden@bcdc.ca.gov.

Sincerely,

DocuSigned by:
Harriet Ross
FF0ABDCC800744A...

HARRIET LAI ROSS, Regulatory Director
For
LAWRENCE J. GOLDZBAND, Executive Director
San Francisco Bay Conservation and
Development Commission

Enc.

cc: Jessica Vargas, U.S. Army Corps of Engineers; <Jessica.M.Vargas@usace.army.mil>
Sahrye Cohen, U.S. Environmental Protection Agency; <Cohen.Sahrye@epa.gov>
Jazzy Graham-Davis, S.F. Bay Regional Water Quality Control Board;
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LETTER OF AGREEMENT FOR CONSISTENCY DETERMINATION NO. C2025.005.00

January 21, 2026

LT. Colonel Virginia R. Brickner
US Army Corps of Engineers, San Francisco District
450 Golden Gate Avenue, Fourth Floor
San Francisco, CA 94102

Email: Virginia.R.Brickner@usace.army.mil

On January 15, 2026, the San Francisco Bay Conservation and Development Commission, by a vote of 18 affirmative, 0 negative, and 0 abstentions, adopted the resolution pursuant to which this conditional Letter of Agreement was issued.

I. Authorization

A. Authorized Project

The San Francisco Bay Conservation and Development Commission (Commission) conditionally concurs with the determination of the US Army Corps of Engineers, San Francisco District (USACE) that, as further conditioned by the Commission herein, the USACE's 2026 through 2029 Maintenance and Operations Program (Program)[1] is consistent to the maximum extent practicable with the Commission's certified coastal management program under the federal Coastal Zone Management Act as follows:

In the Bay and Certain Waterways

1. Oakland Harbor Federal Channel

   Dredge an average of 750,000 cy and up to 1,225,000 cy of sediment each year from Oakland Inner and Outer Harbor channels to a depth of -50 feet MLLW, plus two feet over-dredge depth allowance annually for four years (Exhibit D);

[1] Program means all dredging and disposal activities proposed by the USACE for the 2026 through 2029 operations and maintenance activities. Project means individual dredging episode at a federal navigation channel and its associated disposal or beneficial use of dredged sediment.

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2. Richmond Inner Harbor Federal Channel

   Dredge an average of 300,000 cy and up to 630,000 cy of sediment each year from Richmond Inner Harbor channel to a depth of -38 feet MLLW, plus two feet over-dredge depth allowance annually for four years (Exhibit E);

3. Richmond Outer Harbor Federal Channel

   Dredge an average of 210,000 cy and up to 730,000 cy of sediment each year from Richmond Outer Harbor channel to a depth of -45 feet MLLW, plus two feet over-dredge depth allowance annually for four years (Exhibit F);

4. Pinole Shoal Federal Channel

   Dredge an average of 150,000 cy and up to 560,000 cy of sediment each year from Pinole Shoal channel to a depth of -35 feet MLLW, plus two feet over-dredge depth allowance, annually for four years (Exhibit G);

5. Suisun Channel and New York Slough Federal Channel

   Dredge an average of 150,000 cy and up to 355,000 cy of sediment each year from Suisun Bay channel to a depth of -35 feet MLLW, plus two feet over-dredge depth allowance annually for four (Exhibit H);

6. Redwood City Harbor Federal Channel

   Dredge and average of 180,000 cy and up to 650,000 cy of sediment each year from Redwood City Harbor to a depth of -30 feet MLLW, plus two feet over-dredge depth allowance annually (Exhibit I);

7. San Bruno Shoal Federal Channel

   Dredge up to 30,000 cy of sediment from San Bruno Shoal to a depth of -30 feet MLLW plus two feet of over dredge depth allowance, once during four years (Exhibit I);

8. Petaluma River and Across the Flats Federal Channel

   a. Dredge up to 150,000 cy of sediment from the Petaluma River to a depth of -8 feet MLLW, plus two feet over-dredge depth allowance, once during four years (Exhibit J);

   b. Dredge up to 70,000 cy of sediment from the Petaluma Across the Flats channel to a depth of -8 feet MLLW, plus two feet over-dredge depth allowance, once during four years (Exhibit K);

9. Upper and Lower Napa River Federal Channel

   Dredge up to 110,000 cy of sediment from the upper and lower Napa River channel to a depth of -9 feet MLLW, plus one foot of over dredge depth allowance once during four years (Exhibit L);

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10. San Rafael Creek Federal Channel

    Dredge up to 110,000 cy of sediment from the San Rafael Creek federal channel to a depth of -6 feet MLLW, plus two feet over-dredge depth allowance, once during four years (Exhibit M);

11. Sea Trials

    Conduct two "sea trials" of the federal hopper dredges, *Essayons* and/or *Yaquina*, after dry dock repairs or maintenance activities between January and March in the Pinole Shoal federal channel. The *Essayons* sea trial includes intake of 600,000 gallons of water for ship displacement calibration and dredging 3-5 loads (up to 12,000 cy of sediment) for load calibration. Sea Trials for the *Yaquina* include 1,500 gallons of water and 3-5 loads (up to 4,000 cy of sediment) for load calibration. Place the dredged sediment at the state and federally authorized San Francisco Bar (SF-8) disposal site, unless the sea state is prohibitive. If the sea state is unsafe, dispose of the dredged sediment at the San Pablo Bay (SF-10) or Alcatraz disposal site (SF-11); and

12. Beneficially reuse dredged sediment from the federal navigation channels at authorized beneficial reuse sites, or dispose of dredged sediment at the state and federally authorized Alcatraz (SF-11), San Pablo Bay (SF-10), Carquinez Strait (SF-9), and Suisun Bay (SF-16) disposal sites, or the San Francisco Deep Ocean Disposal Site (SFDODS) in accord with the approved Integrated Alternative Disposal Site Analysis (IAA) required in Special Condition II-C.

B. Date of Consistency Determination Request

This authority is generally pursuant to and limited by the consistency determination concurrence request dated July 8, 2025, including all accompanying and subsequently submitted correspondence and exhibits, subject to the modifications required by the Special and Standard Conditions included herein.

C. Deadlines for Commencing and Completing Authorized Work

Work authorized herein must commence prior to September 1, 2026, or this Letter of Agreement will lapse and become null and void. All work authorized herein must be completed by December 31, 2029, unless an extension of time is granted by amendment of this Letter of Agreement.

D. Project Summary

Within the San Francisco Bay Coastal Zone, and within the Commission's Bay, and certain water way jurisdictions, the USACE would maintenance dredge between a total of 9.43 and 17.647 million cubic yards of sediment over 4 years to maintain safe navigation for shipping, military, and recreation vessels. The program includes the following: dredging between a total of 1.755 and 4.22 million cubic yards (cy) of

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sediment annually from Suisun Bay, Pinole Shoal, Richmond Outer Harbor, Richmond Inner Harbor, Oakland Harbor, Redwood City Harbor federally authorized deep draft channels to depths ranging from minus 30 feet Mean Lower Low Water (MLLW) to minus 50 feet MLLW; one time dredging of up to 30,000 cy of sediment from San Bruno Shoal federally authorized deep draft channel; and one time dredging of between a total of 440,000 and 725,000 cy of sediment from San Rafael Creek, Petaluma River, Petaluma River "Across the Flats," and Napa Upper and Lower River federally authorized shallow draft channels with depths ranging from minus six feet MLLW to minus 9 feet MLLW as shown in Exhibit B.

Depending on equipment type, costs, timing, and funding availability, the USACE would beneficially reuse dredged sediment at authorized wetland restoration sites, dispose of between the dredged sediment at in-Bay disposal sites, and/or SFDODS.

The USACE's 2026-2029 Dredging Program is different than in previous years because it seeks to include beneficial reuse as part of its "Federal Standard." program. As described by USACE policy, the Federal Standard is the project or program which is the least costly dredged sediment alternative consistent with sound engineering practices and meeting environmental standards. To accomplish this, the USACE would increase in-Bay disposal to reduce ocean disposal while beneficially reusing sediment. The USACE would do this by using the cost savings from the change in SFDODS disposal to in-Bay disposal. The other potential alternative that the USACE would use to implement its Dredging Program would be to increase in-Bay disposal, increase the use of hydraulic hopper dredges, and decrease ocean disposal, and use the cost savings to beneficially reuse a portion of the program's sediment. As described, the USACE would phase its approach to this new program over four years. If successful, the USACE approach would result in between 1.087 (49%) and 3.627 (73%) million cy sediment disposed at in-Bay disposal sites annually; between 140,000 cy (6%) and 985,000 million cy (20%) of beneficial reuse annually; and 750,000 (34%) to 1.225 (25%) million cy disposed at the San Francisco Deep Ocean Disposal site (SFDODs) annually from the approximately 2.237 to 4.987 million cy of sediment dredged.

Since 2015, the USACE has disposed of between 362,000 cy and 988,000 cy of sediment at in-Bay disposal sites annually. The authorized program could result in a significant increase in in-Bay disposal – up to 3.627 million cy annually, if the maximum dredging and in-Bay disposal occurred. This could occur if no additional funding was available to support beneficial reuse or dredging outside of the environmental work windows did not occur. Dredging outside of the environmental work windows requires beneficial reuse of dredged sediment as mitigation for impacts to species. If the maximum or even average in-Bay disposal scenario occurred, it would likely lead to a shortage of in-Bay disposal volume available for other dredgers, including recreational marinas, ports, and refineries. If the USACE Dredging Program execution continuously exceeds the in-Bay

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disposal volume target limit set for the in the Long Term Management Strategy for Placement of Dredged Material in the Bay Region (LTMS) Management Plan the Commission would need to consider, and potentially institute in-Bay disposal volume allocations for all dredgers in accordance with the Commission's regulations.

In addition to dredging its federal channels, the USACE's federal hopper dredges need maintenance and enter dry dock for repairs. If this occurs during the next four years, the USACE may conduct two "sea trials" to calibrate its hopper dredges after dry dock maintenance repairs. The "sea trials" would include dredging of up to 20,000 cy of sediment and disposal of the sediment at the San Francisco Bar Channel outside the Commission's jurisdiction, or at the state and federally authorized San Pablo or Alcatraz in-Bay disposal sites.

1. Bay Fill

   As authorized and conditioned herein, the USACE 2026 through 2029 Operations and Maintenance Dredging Program would result in between 1.087 million cy and 3.627 million cubic yards of Bay fill annually, and up to 13.332 million cy over four years. The fill would occur through disposal of dredged sediment from federal deep and shallow water navigation channels at four state and federally authorized in-Bay disposal sites.

II. Special Conditions

The authorization made herein shall be subject to the following special conditions, in addition to the standard conditions in Part IV. If the USACE does not agree to comply with the following conditions or fails to incorporate them into its 2026-2029 Dredge Program, the USACE shall notify the Commission immediately of its refusal to agree or to incorporate any of the conditions into the Program, which would turn this conditional consistency determination concurrence into an objection.

A. Limits on Dredging

This Letter of Agreement authorizes maintenance dredging only within the federal channels and to the project depths and volumes described in Table 1 (Exhibit B) and within dredge footprints shown on Exhibits D through M.

The maximum volume of sediment authorized for deep draft channel dredging in 2026 through 2029 is 16.88 million cubic yards. The maximum volume authorized for shallow draft channels is 725,000 cy for 2026-2029. The total volume proposed to be dredged in individual years varies due to interannual variation in sediment deposition, funding, and infrequent dredging in shallow draft channels.

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In 2026 through 2029, the USACE would dredge between an estimated 1.755 million cy and 4.22 million cy from deep draft channels annually. It would dredge an estimated 110,000 cy and 280,000 cy of sediment from San Rafael Creek shallow draft channel in 2026. In 2027 through 2029, it would dredge between 120,000 cy to 210,000 cy of sediment from one to two shallow draft channels each year. San Bruno Shoal may be dredged up to 30,000 cy in any one year, as well as the two sea trials, should they be necessary and funded. No dredging in other areas or additional volume is authorized.

B. Limits on In-Bay Disposal

1. The USACE shall limit its in-Bay disposal volume to those shown in Tables 2 through 4 (Exhibit C), and work with the LTMS agencies through the Integrated Alternative Disposal Site Analysis (IAA) described in Special Condition II – C below.

2. The USACE shall limit its in-Bay disposal at individual sites (at the Alcatraz Island, San Pablo Bay, Carquinez Strait, and Suisun Bay Channel in-Bay disposal sites) to those consistent with the monthly and annual in-Bay disposal site limits included in regulation 14 C.C.R. 10602(e)(1). USACE will actively coordinate with the DMMO agencies to prevent breaches of in-Bay site limitations.

C. Integrated Alternative Disposal Analysis, Use of Funds, and Annual Schedule

Beginning in 2026, and no later than March 31st of each year, the USACE shall provide to the Commission an Integrated Alternative Disposal Site Analysis (IAA) for the year reflective of items 1 and 2 below, and its dredging schedule for the upcoming dredge season. By June 30th of any year, when necessary, USACE shall update the IAA to reflect changes in the USACE programming, funding, and equipment use and provide it to the Commission for review and approval.

1. IAA

   The USACE shall include in its IAA all dredging projects (deep and shallow draft) for the calendar year, and as many as five years, the practicability of beneficial reuse of its dredged sediment at wetland restoration sites, levee maintenance, and other beneficial reuse opportunities, as well as disposal options, when beneficial reuse is not practicable.

   a. USACE project includes the potential to utilize Water Resources and Development Act (WRDA) 2016 Section 1122, Water Resources and Development Act (WRDA) 2020, Section 125, and State Coastal Conservancy (SCC) funds to defray the cost of beneficial use. To the extent such funds will be used, USACE will document it in the IAA including which projects and how much beneficial use will be achieved. The USACE shall maximize beneficial reuse of dredged sediment when practicable.

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b. The USACE shall evaluate the practicability of combining placement of dredged sediment from the federal navigation channels with sediment from other USACE projects implementing beneficial reuse when both projects will occur at similar times or locations or will be performed by the same contractor. Further, the USACE shall evaluate contracting mechanisms that ensure contractors include consideration of beneficial use in their bid proposals.

2. Dredging Schedule

The dredge schedule should include all proposed projects for the calendar year and the estimated start and finish date, any projects anticipated to dredge outside of the environmental work windows, and the contracting schedule. Should the USACE's Dredging Program change, an updated schedule shall be provided to the Commission staff by June 30th of that same year.

D. Water Quality

1. Water Quality Certification and Waste Discharge Requirements

By January 31, 2026, and prior to the commencement of any dredging episode authorized herein, the USACE shall submit to the Executive Director a water quality certification, waste discharge requirements, or any other required approvals from the California Regional Water Quality Control Board, San Francisco Bay Region (Water Board).

2. Hazardous Materials and Fuels

The USACE and/or its contractor shall immediately stop, repair, and clean up any fuel or hazardous waste leaks or spills from dredging or disposal activities at the time of occurrence. The USACE and/or its contractor shall properly contain hazardous products and dispose of any unused or leftover hazardous products outside of the Commission's jurisdiction.

E. Sediment Quality

Sediment to be dredged, disposed, or beneficially reused shall be tested to ensure that it is physically, chemically and biologically suitable for the proposed disposal or beneficial reuse site. The sediment testing program shall be in accordance with the Inland Testing Manual or the Ocean Testing Manual, as modified for the San Francisco Bay Region, with Sampling and Analysis Plans and Result reports shall be submitted to the Dredged Material Management Office (DMMO) for review and approval two weeks prior to its meeting.

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1. Sampling Analysis Plans (SAP)

   USACE shall submit SAPs that are consistent with the protocols, advice and decisions of the DMMO and include the proposed sample locations, the most recent survey of the channel, and both the dredge reaches and sample composite areas that are clear and legible.

2. Sampling Analysis Results (SAR)

   USACE shall submit SARS in report form to the Commission staff and the DMMO for review and decision on the suitability of the sediment for the proposed disposal or placement site. The USACE shall abide by the decisions of the DMMO.

F. Dredging and Disposal Activity

1. Episode Approval, Disposal Report and Notice

   At least 30 days prior to contract award, the USACE shall submit to the Commission's Executive Director for review and approval the following information and documentation:

   a. Bathymetric Survey

      A signed and most recent bathymetric pre-dredge survey depicting the location of all areas authorized to be dredged, the proposed project depth including over-dredge depth based on MLLW, the actual volume of sediment proposed to be dredged based on the most recent survey, the results of sediment test analysis, and the proposed disposal or placement site, and the approximate date of project commencement.

   b. Sediment Disposal and Placement

      A written statement shall be submitted to the Commission's Executive Director with the following information: (1) the proposed disposal or placement site and quantity of sediment to be disposed or placed, and dates within which the disposal/placement episode is proposed; (2) if applicable, a discussion as to how the volume proposed for disposal is consistent with in-Bay disposal site limits and/or disposal site allocations; (3) the results of chemical and biological testing of sediment proposed for beneficial reuse or disposal; and (4) any changes to the IAA for the individual project, if any.

   c. Updated Information

      Within 15 days after the contract award, the USACE shall submit the latest bathymetric survey and written notification to the Commission that there are no changes to the project; or any revisions to the volume of sediment proposed for dredging, the disposal or placement site, and/or date of commencement from the initial submission.

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2. Authorization of Dredging, Disposal, and Beneficial Reuse

The authorization for the proposed dredging and in-Bay disposal or beneficial reuse shall become effective only if the Commission: (1) informs the USACE in writing that the proposed episode is consistent with the authorization provided herein, beneficial reuse or alternatives to in-Bay disposal options are infeasible, the volume proposed for in-Bay disposal is consistent with the disposal site limits, and the sediment is suitable for in-Bay disposal, beneficial reuse or ocean disposal; or (2) does not respond to the USACE's episode approval request within 30 days of its receipt. If the Commission determines that: (a) beneficial reuse of the sediment, upland or ocean disposal is feasible; (b) the sediment proposed for in-Bay disposal is not suitable for the Bay; or (c) the proposed in-Bay disposal is inconsistent with in-Bay disposal site limits, the Commission's concurrence for in-Bay disposal for that episode shall be terminated. The USACE shall adhere to any special conditions contained in the episode approval letter.

3. Post-Dredging Requirements

a. Within 60 days of the completion of all dredging projects funded in the same federal fiscal year, or by June 30th of the following calendar year, the USACE shall submit a signed post-bathymetric surveys to the Commission showing the actual area(s) and depths dredged including over-dredge depth based on MLLW; any dredging that occurred outside the authorized area or depths; the total volume of sediment dredged, the placement or disposal location(s), and the volume of sediment placed at each site; and the dates the dredging occurred.

G. **Environmental Work Windows**

Dredging, and dredged sediment disposal have impacts to the biological resources of the Bay. Therefore, the USACE shall undertake the following avoidance, minimization, and mitigation measures:

1. Seasonal Limitations

a. To reduce impacts to Bay species whose population are in decline, and specifically those that federal and state governments have listed as candidate, threatened or endangered, as well as those that use the Bay as spawning grounds, the USACE shall confine dredging and in-Bay disposal operations to the work windows consistent with Tables F-1 and F-2 of Appendix F, "In-Bay Disposal and Dredging" and Figures 3.2 and 3.3 of the Long-Term Management Strategy (LTMS) Management Plan (2001) programmatic biological opinions as amended by the U.S. Fish and Wildlife Service (USFWS) on February 7, 2025 and NOAA's National Marine Fisheries Service (NMFS) in July 2015.

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If dredging is necessary outside the environmental work windows, the USACE shall comply with the notification, monitoring, and conservation measures included in the appropriate biological opinions and this Letter of Agreement.

No work inconsistent with the time and location limits contained in these figures may be conducted without the written approval of an extension of time to complete dredging and beneficial reuse and disposal by the Executive Director. Such approval may only be issued after the Executive Director has sought the advice of the appropriate resource agencies and determined that dredging and disposal outside of the work window would be consistent with the Commission's Coastal Zone Management Program.

b. Should the USACE obtain new or amended biological opinions that would change the environmental work windows, the implementation of current biological opinions, terms and conditions, or conservation measures, the USACE shall provide them to the Commission for consideration. If the Commission determines that the new or amended biological opinion changes the USACE Dredging Program in a way that is inconsistent with the Letter of Agreement, the USACE shall work with the Commission staff to request and obtain necessary amendments to this Letter of Agreement.

2. Bay Tributaries

No dredging (mechanical or hydraulic) is permitted from December 1 through May 31 upstream of, or within 1000 feet bayward of the mouths of Larkspur/Corte Madera Creek, Napa River Channel/Mare Island Strait, Petaluma River, and Novato Creek without the written approval of an extension of time to complete dredging and beneficial reuse and disposal by the Executive Director. Such approval may only be issued after the Executive Director has sought the advice of the appropriate resource agencies and determined that dredging and disposal outside of the work window would be consistent with the Commission's Coastal Zone Management Program.

3. Mitigation for Dredging Outside of Environmental Work Windows

When circumstances necessitate that the USACE dredge before June 1st or after November 30th anywhere in the Bay, to mitigate for impacts to Bay resources the USACE shall place the sediment dredged after November 30th and before June 1st (or August 1st for the Oakland Harbor Project) of any year at a designated beneficial reuse site that will benefit fish habitat, consistent with the NMFS and USFWS amended LTMS Programmatic Biological Opinions.

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a. If a project is unable to place all sediment dredged outside the [environmental] work window at a beneficial reuse site, the LTMS Program [this Letter of Agreement's] measures [special conditions] allow for an equivalent volume of dredged sediment to be placed at a beneficial reuse site from a project conducted within the work windows during the following season. This exemption does not apply to dredge sites upstream or within 1,000 feet bayward of the mouths of Larkspur/Corte Madera Creek, Napa River Channel/Mare Island Strait, Petaluma River, and Novato Creek.

b. Projects that incur an unplanned and unavoidable need to complete a portion of an ongoing dredging operation outside of the work window, the LTMS agencies [the Commission] may approve up to 50,000 cubic yards of dredging and disposal per year for this purpose [cumulatively for all dredging projects]. This exemption may apply to dredge sites upstream or within 1,000 feet bayward of the mouths of Larkspur/Corte Madera Creek, Napa River Channel/Mare Island Strait, Petaluma River, and Novato Creek.

c. Special Condition II-G.3.a and b provide for dredging activities outside the NMFS environmental work window it does not necessarily include concerns that may be present from other resource agencies. Therefore, the Commission shall consider the additional species and advice and recommendations of all resource agencies when making the determination of whether or not to allow dredging outside the environmental work window.

H. **Hydraulic Dredging**

1. Limits on Hydraulic Dredging

To protect native, state and federally listed, candidate, and species of special concern, the USACE shall limit the use of a hydraulic dredge as follows:

a. Suisun Channel

No hydraulic dredging shall occur in Suisun Channel and clamshell dredging shall be limited to the months of August 1st through November 30th of any year.

b. Pinole Shoal

Hydraulic dredging in Pinole Shoal Channel shall be limited to the work window of August 1st through November 30th of any year to protect listed species and specifically to minimize impacts to longfin smelt and migrating salmonids.

c. Richmond Inner and Outer, and Oakland Harbors

No hydraulic dredging shall occur at Richmond Outer Harbor from December 1st to March 15th of any year to protect spawning herring, herring eggs, and larval herring.

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2. Overflow During Hopper Dredging

Return water overflow from hopper-type hydraulic dredges shall be limited to no longer than 15 minutes at the dredge site for each hopper load except in channels where the shoaled material contains greater than 80 percent sand. There is no overflow restriction if the dredged material is greater than 80 percent sand.

3. Minimization Measures

To reduce entrainment of fish and invertebrates, the USACE shall implement the following minimization measures when using a hydraulic dredge:

a. Salinity
No dredging would occur in water with salinity ranging from 0 to 5 parts per thousand between December 1st and June 30th of any year.

b. Worker Education Program

The USACE shall designate a qualified biologist to provide a worker education and training program regarding special status fish species that could be adversely impacted by dredging. The program would include a presentation to all workers on biology, general behavior, distribution and habitat needs, sensitivity to human activities, legal protection status, and project-specific protective measures for all special status species. The training program shall be conducted prior to the use of a hydraulic dredge in San Francisco Bay.

c. Drag Head Operation

At the beginning and end of each hopper load, pump priming, drag head clearing, and suction of water would be conducted within three feet of the seafloor. In addition, the following measures shall be implemented:

(1) Suction pumps shall be turned off when raising and lowering the drag arms from the seafloor;

(2) The drag head or cutter head shall maintain contact with the seafloor during dredging; and

(3) Opening water intake doors on the drag head shall be minimized. When necessary to alleviate clogging, the doors shall be opened incrementally, (i.e., the doors shall be opened in small increments and tested to see if the clog is removed) to ensure that doors are not fully opened unnecessarily.

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4. Entrainment Monitoring

To better understand the entrainment rate and the impact of hydraulic dredging on native and listed species, the USACE shall:

a. Monitor Hydraulic Dredging

(1) By March 31, 2026, USACE shall submit a four-year entrainment monitoring plan, acceptable to the Executive Director, that describes the collection and recording of entrainment of native and listed fish and macroinvertebrate species.

At a minimum, the plan shall include the following elements:

(a) On-board monitoring during active dredging;

(b) Sampling during all phases of the dredging cycle;

(c) Sampling both drag-arms to capture a greater percentage of the pump volume during active dredging;

(d) Sampling associated with flood/ebb tides and spring/neaptides;

(e) Visual monitoring of vessel hold for fish or macro invertebrates that are not captured by sampling screens during active dredging;

(f) Presence/absence monitoring in the immediate vicinity of the active dredge to determine effectiveness, if feasible; and

(g) Procedures for evaluating the effectiveness of the avoidance, minimization, and mitigation measures.

(2) Annual monitoring reports containing the above-described information along with any proposed updates to the monitoring plan shall be submitted to the Commission by January 31st of the year following the dredging and monitoring activities.

(3) The USACE shall report any special status species and natural communities detected during the entrainment monitoring to the California Natural Diversity Database (CNDDB). The CNNDB field survey form can be found at the following link: https://wildlife.ca.gov/Data/CNDDB/SubmittingData#44524420-pdf-field-survey-form.

b. Alternative to Entrainment Monitoring

If the USACE identifies monitoring that is more beneficial to species of concern, it may propose it to the Water Board and Commission staff for review and approval by February 28th of the year in which its implementation is proposed.

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5. Mitigation for Entrainment of Native and Listed Species

When the USACE uses a hydraulic dredge, it shall compensate for unavoidable take of native and listed species via entrainment by:

a. purchasing longfin smelt mitigation credits at a resource agency-approved habitat conservation bank; and/or

b. by beneficially reusing a volume of dredged sediment at a wetland restoration project that benefits fish habitat.

To calculate acreage of mitigation credits needed the USACE shall use the actual volume of water and sediment pumped by the hopper dredge in the equation below:

$$\text{Acres of mitigation req} = \frac{800 \text{ acres x Volume (water/sediment pumped by hopper dredge)}}{3.0 \text{ million acre-feet}}$$

To calculate the volume of dredged sediment required for beneficial reuse the USACE shall use the following equation and the acres of mitigation calculated with the previous equation:

$$\text{Volume of Beneficial Reuse (cy)} = \frac{\text{acres of mitigation required x \$1,325,000 per acre}}{\text{Incremental cost per cy}} \text{ x } 2$$

6. Mitigation Effectiveness

After implementing this mitigation requirement for three dredging seasons, the USACE shall compile the amount of sediment dredged using hydraulic dredges; the amount of water pumped through the system; the amount and typed of fish and macro invertebrates entrained; the amount of sediment beneficially reused; and the amount of wetlands (acres) restored as a result of this mitigation requirement. A three-year report shall be provided to the Commission by July 31, 2029 for review and consideration in its next evaluation of any future USACE hydraulic Dredging Program.

If the determination is made by the Commission or resources agencies that the mitigation provided is not sufficient to offset the impacts of the hydraulic dredging, a more appropriate mitigation program shall be developed for consideration of future authorization of future hydraulic dredging.

I. Species Protection

1. Take of Listed Species

This Letter of Agreement does not allow for the take, including incidental take, of any special status species. The USACE is required, as prescribed in the State and Federal Endangered Species Acts, to consult with or obtain appropriate take authorization from the appropriate agencies prior to undertaking dredging activities in San Francisco Bay which may affect any federally or state listed species and is not

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in compliance with the LTMS Programmatic Biological Opinions, or individual biological opinions currently in effect.

If the USACE initiates consultation with one or more resource agencies, it shall provide a copy of the amended or new biological opinion to the Commission staff for consideration and potential amendment to this Letter of Agreement as required by the Commission. The USACE shall use the appropriate protocols, as approved by the CDFW, NMFS, and/or USFWS, to ensure that project activities do not adversely affect rare, candidate, threatened and endangered species, as they are protected natural resources of San Francisco Bay and its tributaries.

2. Pacific Herring

Pacific herring is an important forage and commercial fishery species that spawns on hard surfaces, aquatic plants, and seaweed in San Francisco Bay. Should it become necessary to dredge within herring spawning habitat and outside of the herring work window (March 16th to November 30th of any year), the USACE shall implement the following measures:

a. A CDFW qualified and trained herring observer shall be present during all dredging or in-water work (day and night) and observing shall be his/her sole duty.

b. The herring observer shall monitor for herring spawn in 500-meter buffer zone surrounding active dredging and disposal activities. Observations may be conducted from the dredge, shore, or by a separate vessel, but must have a full view of the buffer zone around the dredging activity;

c. When there is a lag time of eight hours or more between dredging activities and following dredging at night, the herring observer shall conduct a shoreline survey within the 500-meter buffer zone at least one hour prior to the start of dredging;

d. If spawning Pacific herring are detected within 500 meters of the dredging site all in-water work shall stop immediately and Commission staff and CDFW shall be notified. If spawning occurs within the 500-meter buffer, work may not continue until spawning has ended and herring embryos have hatched (14-21 days). Dredging can restart with approval from CDFW and notification to the Commission staff;

e. The observer shall keep a daily log of observations, which shall be submitted to Commission staff and the CDFW on a weekly basis by 5:00 pm on Fridays; and

f. For Oakland and Richmond Inner Harbor dredging conducted outside the herring work window, the dredging contractor shall dredge the remaining sediment moving to the outer reaches and work towards the inner harbor to reduce disturbance to spawning activity.

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3. Eelgrass

   a. Eelgrass is a productive aquatic plant that provides significant habitat value for certain Bay species. Due to the presence of eelgrass beds in the vicinity of the Richmond and Oakland Harbor federal navigation channels, the USACE shall implement the USACE SF Bay Dredging Program Eelgrass Light Monitoring Plan 2024-2030 (Light Monitoring Plan), including turbidity minimization measures described in Table 1, Page 14 of the Light Monitoring Plan.

   b. With 60 days of completion of the post dredge eelgrass survey, the USACE shall provide a copy of the light monitoring report, inclusive of the pre-dredge and post dredge eelgrass surveys, and an analysis of any changes to the eelgrass beds within 250 meters of dredging activity.

   c. Should the USACE determine it is necessary to alter the Light Monitoring Plan, it shall provide proposed changes to the Commission for review and approval 30 days prior to implementing changes.

J. Management and Monitoring of In-Bay Disposal Sites

The USACE shall maintain administrative controls on disposal volumes at the in-Bay disposal sites to ensure that LTMS in-Bay disposal volume and the in-Bay disposal sites specific volumes are not exceeded. The USACE shall manage overall disposal volumes and disposal locations within each site in coordination with the LTMS agencies to prevent build-up of dredged materials at each of the sites.

1. The USACE shall continue bathymetric monitoring of the in-Bay disposal sites, monthly at SF-11, quarterly at SF-9, SF-10, and SF-16. The USACE shall provide these condition surveys within 60 days of their completion to the Commission staff.

2. Upon request of the LTMS agencies, the USACE shall provide analysis of the condition of the in-Bay disposal sites.

K. Reporting to the Commission

Beginning in 2027, and by March 31st of each year, the USACE shall brief the Commission at one of its regularly scheduled meetings on the outcome of the implementation of the Dredging Program for the previous year. The briefing shall include information and documentation on the amount of sediment dredged and beneficially reused, the volume of sediment disposed of, where the sediment was beneficially reused or disposed, the work completed in and out of the work window, the amount of mitigation required and implemented, the acres of habitat created through mitigation, and the funding that was available and was used for beneficial reuse of the USACE dredged sediment.

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L. Observation of Dredging and Disposal Operations

The USACE shall allow the Commission staff and representatives of other relevant state or federal agencies to come aboard the dredge or barge associated with any dredging or disposal episode and observe the operation(s) to ensure that these activities are consistent with the terms and conditions of this Letter of Agreement. Further, the Commission reserves the right to have post-dredging reports inspected by a reliable third-party with expertise in bathymetric mapping to verify the contents of the USACE pre and post dredge reports.

M. Changes to Commission Laws, Policies, and Regulations

If, at any time during the effective life of this Letter of Agreement, the Commission's laws, Bay Plan policies, or regulations are changed and are in effect as enforceable policies of the Commission's certified coastal management program under the federal Coastal Zone Management Act regarding dredging, dredged sediment disposal, and beneficial reuse, this Letter of Agreement shall become null and void unless the USACE agrees to amend its consistency determination, and agrees to new conditions to meet the new laws, policies, or regulations in a manner specified by or on behalf of the Commission, if appropriate.

III. Findings

Section 307 of the federal Coastal Zone Management Act (CZMA) states: "Each Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs." (16 USC § 1456(c)(1)(A).) Section 930 states: "consistent to the maximum extent practicable" means fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the Federal agency (15 CFR § 930.32(a)(1)).

This authorization is given on the basis of the Commission's findings and declarations that the work authorized as conditioned herein, is consistent to the maximum extent practicable with the Commission's federally-approved Amended Coastal Zone Management Program for San Francisco Bay, including the McAteer-Petris Act, the Suisun Marsh Preservation Act, and the *San Francisco Bay Plan (Bay Plan)*, and *Suisun Marsh Protection Plan,* and the Commission's regulations, all as amended, for the following reasons:

A. Bay Fill

Government Code Section 66605 of the McAteer-Petris Act provides that further filling of the Bay should be authorized only when public benefits from fill clearly exceed public detriment from the loss of the water areas and should be limited to water-oriented uses or minor fill for improving shoreline appearance or public access to the Bay; (b) That fill in the Bay and certain waterways for any purpose should be authorized only when no alternative upland location is available for such purpose; (c) That the water area authorized to be filled should be the minimum necessary to achieve the purpose of the

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fill; (d) That the nature, location and extent of any fill should be such that it will minimize harmful effects to the Bay Area, such as, the reduction or impairment of the volume surface area or circulation of water, water quality, fertility of marshes or fish or wildlife resources; (e) That public health, safety and welfare require that fill be constructed in accordance with sound safety standards which will afford reasonable protection to persons and property against the hazards of unstable geologic or soil conditions or of flood or storm waters; (f) That fill should be authorized when the filling would, to the maximum extent feasible, establish a permanent shoreline; and (g) That fill should be authorized when the applicant has such valid title to the properties in question that he may fill them in the manner and for the uses to be approved.

The federal navigation channels provide safe navigation and supports transport of commerce borne by deep and shallow draft vessels, including container and bulk cargo ships bringing goods into and out of ports and other shipping terminals. In addition, dredging provides navigation safety for military, transportation and recreation vessels. The Bay Area Ports and oil terminals are vital to the economic health of the region; the military terminals provide for national security; ferries provide mass transport, and the smaller channels provide recreational opportunities on the Bay and its tributaries. The disposal of the dredged sediment at in-Bay disposal sites, i.e., fill in the Bay, as part of the federal Dredging Program provides public benefits that clearly exceed public detriment because the use of these sites are necessary to provide safe navigation in the Bay.

The disposal of up to 13.332 million cy of sediment, Bay fill, authorized herein results from the dredging of federal navigation channels. While this is the total volume of in-Bay disposal proposed in its request for concurrence, through discussions, the USACE stated that it would not be feasible to dredge the maximum volumes proposed for each channel in any year because the program is limited by equipment availability, funding, time, and other environmental requirements. USACE notes that between 2000-2022 the most it dredged in one year was 2.6 million cy. During the same timeframe, the most it disposed of in-Bay in one year was 1.5 million cy. However, the USACE is currently proposing to increase in-Bay disposal beyond its historic volumes to divert sediment from the deep ocean disposal site and include beneficial reuse while ensuring the full program achieves the least cost alternative.

The use of in-Bay disposal sites will help balance the cost of maintaining these channels with the beneficial reuse of the sediment at restoration sites. Because the in-Bay disposal sites are limited in approvable volume, location and acreage in the Commission's regulations and are closely managed by the state and federal regulator agencies, the impacts from disposal are limited to those four areas within the Bay.

Section 66605, Part (b) states that fill in the Bay and certain waterways for any purpose should be authorized only when no alternative upland location is available for such purpose, and Part (c) states that the fill should be the minimum necessary to achieve the purpose of the fill. In developing its Regional Dredged Material Management Plan

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2025 (RDMMP), the USACE has examined its disposal needs for the next 20 years, consistent with its "Federal Standard"[2] regulation, and identified available beneficial reuse sites, in bay disposal sites, upland and ocean disposal sites. The RDMMP includes dredging, disposal, and beneficial reuse projects both within and outside the Commission's jurisdiction. The consistency determination submitted included the Main Ship Channel, the Ocean Beach Restoration Project, and two ocean disposal sites are with the Coastal Commission's jurisdiction, and therefore are not included herein.

Alternatives to in-Bay disposal include beneficial reuse at wetlands or other sites, ocean disposal, and upland disposal. Beneficial reuse sites, including wetland restoration sites are often located in diked baylands (within the Commission's shoreline band jurisdiction), provide an opportunity to use the dredged sediment as a resource, improve wetland habitat, and avoid Bay fill, but is often more expensive than in-Bay disposal of the sediment. The currently available sites are Montezuma Wetlands Restoration Project with approximately 13 million cubic yards of capacity remaining and Cullinan Ranch Restoration Project with approximately 1 million cubic yard capacity remaining. Montezuma and Cullinan Ranch both require a "tipping fee" for bringing sediment to the site that helps cover the costs of managing the sediment and restoration activities. The tipping fee and the distance to the beneficial reuse sites affect feasibility of these sites as alternatives to in-Bay disposal.

Disposal of the sediment at the deep ocean disposal site is more expensive than in-Bay disposal, requires ocean going scows, and 24 hours round trip to the site 55 miles out to sea. A closer ocean disposal site, the San Francisco Bar Channel, is approximately 3 miles outside of the Bay, but is limited to sandy sediment. Upland disposal sites are most often used for disposal of sediment from shallow draft channels. USACE has fiscal agreements with the local project sponsor for dredging of these channels which require the local government to provide an upland disposal site.

In developing the RDMMP, the USACE examined its full Dredging Program and the options for disposal or beneficial reuse available in 2025. In evaluating the current status, it established the Federal Standard sites and cost, approximately $1.434 billon, or approximately $72 million per year for the program. It also sought to maximize beneficial reuse of the dredged sediment in support of Congress' yet unfunded directive to beneficially reuse 70% of its sediment by 2030[3]. To maximize the beneficial reuse of sediment consistent with its Federal Standard policy, the USACE developed four alternatives to the current program (the no action alternative). The first alternative includes diverting sediment from the deep ocean disposal site and balancing the cost of the program by increasing in-Bay disposal and beneficially reusing a portion of the

[2] The USACE Federal Standard is defined as the least costly dredged material placement or disposal alternative or alternatives consistent with sound engineering practices that meets the environmental standards established by the 404(b)(1) evaluation process or ocean dumping criteria (33 CFR §335.7).

[3] Water Resources Development Act 2024, Section 1130.

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sediment. The second alternative includes increasing the use of hydraulic hopper dredges in the Bay, increasing in-Bay disposal, and reducing ocean disposal. These two options are considered consistent with the Federal Standard and are the basis of this USACE consistency determination request.

The USACE included two additional alternatives in its RDMMP program, one with a cost-sharing partner as allowed by the 2020 Water Resources Development Act, and one that maximizes beneficial reuse of sediment, which both increase the cost of the program, and therefore do not meet the Federal Standard requirements. The two alternatives not proposed would result in less Bay fill but require additional funding beyond the Federal Standard. If additional funding is provided, the USACE would reduce in-Bay disposal in favor of beneficial reuse. Special Condition II-C requires the submittal of an integrated alternative disposal site analysis (IAA) on an annual basis that will include available funding, more specific volumes of beneficial reuse, in-Bay, and ocean disposal volumes, and a discussion of how the proposal for the upcoming year would maximize beneficial reuse and minimize in-Bay disposal. The requirement provides the opportunity for the Commission to work more closely with the USACE with real-time information rather than the projections included herein without specific knowledge of needs, funding, and equipment availability for the upcoming dredge season. The submittal of the IAA will provide more information on an annual basis about feasible alternatives to in-Bay disposal and available funding for beneficial reuse.

Section 66605(d) states in part “That the nature, location and extent of any fill should be such that it will minimize harmful effects to the Bay Area, such as, the reduction or impairment of the volume surface area or circulation of water, water quality, fertility of marshes or fish or wildlife resources;…” The fill associated with this program is dredged sediment that has been tested, reviewed by the Commission, and shown to be suitable for aquatic disposal. The disposal sites are authorized for multiple entities to use by the state and federal governments and have been in use for decades. The USACE in conjunction with the U.S. Environmental Protection Agency, Water Board, and Commission staff monitor them for mounding that would create navigation hazards. Special Condition II-J requires the USACE to continue monitoring the disposal sites to ensure safe navigation is not impacted consistent with the Bay Plan’s Navigation Safety and Oil Spill Policy 1. The inclusion of Special Condition II-G, H, and I include minimization measures that further reduce impacts to Bay Resources, specifically fish and wildlife, and are discussed further in the Natural Resources section below.

Impacts to water quality from disposal of sediment at in-Bay disposal sites are considered limited and temporary and will be discussed further in the Dredging and Water Quality Section below. Impacts to wildlife from their use are also considered limited due to the already-disturbed nature of the sites. These sites are in use for approximately 6 months of the year and likely have minimal recovery of habitat and

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species when not in use. Because these sites are specially authorized for disposal of sediment, other areas of the Bay are not disturbed by disposal activities, thus localizing and minimizing effects to the Bay Area.

Sections 66605 (e) and (f) are not applicable as the fill authorized herein would not used in a construction project that would result in unsafe conditions, nor is it being used to construct a permanent shoreline. Regarding whether the USACE has valid title to the property (Section 66605(g)), the State Lands Commission (SLC) owns the submerged tidelands where the dredged sediment is disposed. The USACE does not obtain a lease for the dredging or disposal activities, but rather claimed federal navigational servitude[4], which SLC has accepted.

Based on the foregoing and as conditioned herein, the Commission concurs that 2026-2029 Operations and Maintenance Dredging Program is consistent to the maximum extent practicable with the McAteer-Petris Act Section 66605.

B. Natural Resource Protection

The Bay Plan includes policies to protect the Bay's natural resources. They include the Fish, Other Aquatic Organisms, and Wildlife (Fish and Wildlife) and Subtidal Areas Policies. Fish and Wildlife Policies 1 and 2 and Subtidal Areas Policy 2 direct the Commission to ensure the benefits of native and special status fish and wildlife, and the habitats needed to support them, including that tidal marshes, flats, and subtidal areas are conserved, restored, increased, and protected for current and future generations. Subtidal Areas Policies 1 and 2 direct the Commission to fully analyze dredging and filling projects to determine the local and Bay-wide effects on the spread of invasive species; tidal hydrology and sediment movement, fish and wildlife; aquatic plants; and the Bay's bathymetry. Together they require that projects within Subtidal Areas are designed to minimize and/or avoid any harmful effects and be only allowed if there is no feasible alternative; and if it provides substantial public benefits.

Modern cargo ships that call at Bay ports and terminals have grown larger, requiring depths of thirty to fifty feet to navigate safely. Because the Bay is shallow, particularly near the shoreline where refineries and ports offload cargo, and where recreational marinas and docks are located, there is no alternative to dredging navigation channels. In fact, Government Code Section 66663 of the McAteer-Petris Act states that because of the shallowness and high sedimentation rate of the Bay, dredging is essential to maintain navigational channels, and goes on to note the important public benefits of navigation dredging to the Bay Area. While there is no dispute that dredging is essential to the region, how the USACE implements the Dredging Program can minimize impacts of the dredging through various means. The Long Term Management Strategy for the

[4] The Commerce Clause: United States Constitution (Article I, Section 8, Clause 3).

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Placement of Dredged Material in the Bay Region (LTMS) Management Plan implements a number of minimization measures, including reduction of in-Bay disposal, environmental work windows, testing requirements, and alternative disposal site analysis requirements, among others. The LTMS Program and its minimization measures have been used as the basis for programmatic biological assessments and biological opinions of the resources agencies, including NOAA's National Marine Fisheries Service (NMFS), the US Fish and Wildlife Service (USFWS), and California Department to Fish and Wildlife (CDFW). The USACE states that it will adhere to the LTMS Program.

Dredging and dredged sediment disposal directly affects the natural resources of the Bay through water quality impacts (increased turbidity, chemistry), sediment removal (loss of habitat), wildlife impacts (removal through incidental capture and entrainment, burial, noise, loss of prey, respiration, etc.,). As described, the proposed Dredging Program would impact native and listed species, particularly fish and invertebrates, that other species rely on, as well as habitat.

Dredging by its very nature disturbs habitat and removes species, particularly those that live in or on the sediment, and have little ability to move from the area. The type of dredge used can impact fish and wildlife differently and to a greater or lesser degree. Clamshell dredging entrains less fish because it creates a pressure wave while descending through the water, pushing them away from the head. It still removes animals on and within the sediment. Hydraulic dredges, using suction, entrain fish, plankton, and larvae from the water column as well as from the sediment. From the *Essayons* monitoring report*s* the Commission can find a subset of fish that have been entrained, including state and federally listed salmonids, longfin and Delta smelt; managed fisheries species including anchovies, halibut, sturgeon, rockfish, a variety of flatfish, small sharks (spiny dogfish), and commercially important herring and Dungeness crab. Most invertebrates are not included in the monitoring program and therefore the rate of entrainment of these species is unknown. The USACE has not monitored entrainment by the small cutterhead dredges used in the shallow draft river channels. However, one small study by NMFS of a cutterhead dredge in Port Sonoma found that even while the cutterhead is inserted more deeply in the sediment, it still entrained small shrimp and crabs, and bottom dwelling fish including gobies, young flat fish, and some pelagic fish. Beyond the direct impacts to fish and wildlife that occurs from dredging, the indirect impacts to other species includes loss of prey within the dredged area until the invertebrate and fish community recover.

Once the sediment is dredged, it along with the animals it removes, is placed in a scow, the hull of a hopper dredge, or pumped through a pipeline to a disposal or beneficial reuse site. In the process many perish and those that survive may not be able to adapt to the new habitat or become easy prey. In addition, fish and wildlife living at the disposal or beneficial reuse site are buried or move away from the site to avoid

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temporarily reduced levels of oxygen, increases of suspended sediment, and other changes that result in respiratory issues.

The primary measures included in the consistency determination and this Letter of Agreement focus on reducing impacts to listed species and species of special concern. They include the reduction of in-Bay disposal to 1.25 million cubic yards, averaged on a three-year basis to account for interannual variation in dredging needs and sedimentation rates. The USACE states “Noting that in-bay placement volumes [proposed] suggest potential to exceed LTMS agency goals, the RDDMP acknowledges that at the triennial LTMS review, if the average in-bay disposal volume from the prior three years exceeds the in-bay targets plus the 250,000-cy contingency, the LTMS agencies will initiate consideration of allocations.” In addition, through email communication, the USACE stated [T]hat it is infeasible that the individual channel maximums would all be dredged simultaneously in any given year because the program is limited by equipment availability, cost, time, and other environmental requirements that would make this unachievable. For example, the maximum total volume the USACE has dredged across the entire program in any single year between 2000-2022 was only 2.6 million CY (excluding Main Ship Channel). The maximum total volume placed in-bay in any single year during that timeframe was only 1.5 million CY.”

The USACE 2026-2029 Dredging Program is much like it has been in years past, the same channels are proposed to be dredged to the same depths, but it differs in other ways. For the 2026-2029 Dredging Program, the USACE proposes to increase hydraulic hopper dredging from 1 federal channel per year to potentially 7 channels, though the actual number of channels that would use a hydraulic dredge is dependent on equipment availability, contracting, and schedule. In an effort to include beneficial reuse in its Federal Standard Program, and keep programmatic costs similar to the prior Federal Standard, USACE would also increase in-Bay disposal, potentially to 3.627million cy annually, but more likely 1.5 million cy. The increased in-Bay disposal would potentially increase impacts fish and wildlife at and near the in-Bay disposal sites by increasing suspended sediment load and changes to water quality more frequently or for longer periods of time.

The second primary measure of the LTMS Program to reduce impacts to species is the use of environmental work windows to reduce dredging and dredged sediment disposal to months of the year that species are less likely to be present in large numbers or at vulnerable life stages, such as migration, breeding, and spawning (including bird nesting season). The environmental work windows were established through programmatic consultations with the resources agencies in 1998 through consultation on the LTMS Program. The resources agencies have reconfirmed the environmental work windows through multiple amendments to their respective biological opinions. The majority of dredging projects within the Bay are subject to an environmental work window of June

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1st through November 30th. Oakland Harbor and the areas east of Carquinez Strait are subject to an environmental work window of August 1st to November 30th. USACE states in its consistency determination that "The projects will comply with the terms and conditions of the NMFS' and USFWS' biological opinions and conservation recommendations." Most notably, NMFS and USFWS amended their programmatic opinions in 2015 and 2025 respectively. In these amendments, they provided a provision to dredge outside the work window with beneficial reuse of the dredged sediment at a wetland restoration site that provides fish habitat benefits, with a focus on sediment being place in the same year unless infeasible. However, recognizing there are sometimes circumstances in which it is infeasible to complete the dredging activity in the work window, NMFS and USFWS have allowed, in these circumstances, that an equivalent volume of sediment not previously included in the regulatory agencies integrated alternative disposal site analysis to be beneficially reused the following year. The USFWS 2025 biological opinion references the NMFS 2025 biological opinion regarding dredging outside the environmental work window.

USACE, while agreeing to work in compliance with the biological opinions, appears to be proposing to use its hydraulic dredge to dredge fully outside the work window and dispose of the dredged sediment at in-Bay disposal sites due to the inability of the *Essayons* to pump sediment out of its hull and place it at a restoration site and the inefficiency of taking it to the ocean disposal site. To allow for in-Bay disposal outside of the environmental work windows (June 1 – November 30 and August 1 to November 30), USACE mitigate for impacts by beneficially reusing sediment from another USACE project in accord with the calculations included in Special Condition II-H.4.

Because this was a new proposal and did not appear covered by the NMFS and USFWS programmatic biological opinions (NMFS 2015 and USFWS 2025), Commission staff met with USACE and NMFS staff to further discuss this issue. NMFS clarified that the intent of its biological opinion was to allow work outside the work window with majority of the volume being beneficially reused. NMFS staff stated that the biological opinion did not analyze large volumes in-Bay disposal during the restricted period and directed the USACE and Commission staff to the analysis:

> "**Since most disposal events will not occur during the migration season of listed anadromous salmonids [per the LTMS Program], this measure is expected to significantly reduce this source of potential injury and mortality for listed salmonids. However, on an annual basis up to 50,000 cubic yards of material (i.e., 3 to 5% of the annual in-bay disposal volume) may be placed at an aquatic in-bay disposal site and some larger projects also can utilizing in-bay disposal sites outside the work window if they mitigate in the future by placement of a like volume of material at beneficial reuse site during the work window. This in-water disposal of dredged material during the period**

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> **from December 1 through May 31 at the four in-bay sites is anticipated to result in the loss of a likely very small number of listed adult and smolt anadromous salmonids.** Because of the restrictions on in-bay disposal, NMFS anticipates **that in some years no salmonids will be injured or killed** and those that are in other years will constitute a very, very small fraction of the number of these fish that migrate through the Bay, given the very small size (a few hundred square feet) and short duration (minutes) of high levels of suspended sediment in the disposal release compared to the size of the migration corridor (miles) and duration of migration period (months) in the bay."
>
> -Emphasis added by NMFS

In the discussions with USACE and NMFS, USACE requested that the Commission modify the special condition regarding work outside to the work window to mirror NMFS terms and conditions. Thus, Special Condition II-G.3. has been modified as requested consistent with the NMFS letter to USACE dated in its letter to USACE clarifying that the NMFS Amendment to the LTMS Programmatic Biological Opinion included the USACE projects. NMFS included an additional term and condition directed to the USACE in that letter. Special Condition II-G.3. has been modified consistent with that request with a few minor edits for clarity.

As described, increase in hydraulic dredging would entrain more fish and invertebrates of various life stages living in the water column and on or near the bottom. Increases in hydraulic dredging during the restricted period has potential to entrain more listed species during sensitive life stages due to their increased presence in the Bay. Special Condition II-G is included to reduce that impact. During the conversations regarding impacts to special status fish from dredging outside the environmental work window, USACE noted that it may reinitiate consultation with the resources agencies.

In reviewing the Bay Plan Subtidal Areas Policy 1, the potential to introduce or spread invasive species is likely limited. Much of the dredge equipment is regularly used in the Bay, but equipment brought from other locations are subject to the State Lands Commission's Marine Invasive Species Program. There is potential for sediment dredged from Suisun Bay and disposed of at the Carquinez Strait disposal site to spread invasive Asian clams, but this has not been observed to date. In considering potential impacts to tidal hydrology and sediment movement, continually removing sediment from one part of the Bay and disposing it in another part of the Bay does impact sediment movement and bathymetry, but it is unclear whether it impacts tidal hydrology. The most recent study by USGS on changes to Bay bathymetry, identified the Oakland federal channel as one of the most "erosive" sites in the Bay (Fregoso et.al, 2025)[5]. Furthermore, the study

[5] Contributions of Erosion, Deposition, and Human Activities to a Change in Sand Storage in the Bed of San Francisco Bay,

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concluded that the Bay keeps losing sediment and Bay floor continues lowering over time. From a physical perspective, when sediment is removed from an area, thereby creating a deeper area than naturally occurs, the water slows, allowing sediment to settle into the deeper area. Since the deepening of Oakland federal navigation channel to minus 50 feet MLLW, sediment continually deposits at significant rates, requiring significantly more dredging than when it was dredged to a shallower depth. Since its completion in 2010, there have been multiple episodes in which over 1 million cy of sediment were dredged, making it the highest removal rate of any dredging activity in the Bay.

Regarding potential impacts to aquatic plants, eelgrass is located near but not in the Oakland and Richmond Inner harbors federal channels. The USACE has conducted light monitoring for several years. Light monitoring determines whether the additional suspended sediment from dredging results in increased turbidity, thus, reducing light transmission through the water and impacting eelgrass photosynthesis. The other potential effect is whether enough sediment is removed adjacent to the eelgrass bed to cause erosion and reduce the ability of eelgrass to exist or expand its range. To date, the monitoring reports have not found significant reduction of light transmission. The potential to erode the adjacent substrate has not been evaluated. Special Condition II-I.3 is included so the Commission can continue to assess potential impacts to eelgrass beds from increased turbidity from dredging activities.

Together Subtidal Areas Policies 1 and 2 require projects to minimize and/or avoid any harmful effects. It directs the Commission to only authorize harmful projects if there is no feasible alternative and it would provide substantial public benefits. The review of the Dredging Program has determined there are no feasible alternatives and it provides substantial public benefits. As proposed, and if performed with the maximum use of hydraulic dredges or in-Bay disposal, the program would not minimize or avoid harmful effects. Because the full extent of the Dredging Program implementation is unknown, it is difficult to determine if the effects can be minimized. One available minimization measure is to minimize the impact of hydraulic dredging in favor of clamshell dredging to reduce entrainment. The USACE has argued that hydraulic dredging is faster than clamshell dredging, but USACE has provided no comparative analysis between the two when it comes to the primary difference in harmful effects, specifically entrainment of fish and wildlife.

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California, 1980s to 2010s Fregoso, Jaffe, Foxgrover, Woodrow, Kharrazi, Orzech

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As explained in the USACE/Water Board Environmental Assessment and Environmental Impact Report:

> "Fish are believed to be more susceptible to entrainment from hydraulic (i.e., hopper and cutterhead-pipeline) dredging than mechanical (i.e., clamshell) dredging (USACE and USEPA 2024). Under mechanical dredging, pressure waves caused as the dredge is dropped and lifted help push the fish away from the dredge, whereas hydraulic dredges pull the fish towards the dredge. Additionally, less water is removed during mechanical dredging. Demersal fish and crustaceans that live on the bottom are at higher risk of entrainment from both methods. Entrained fish likely would suffer direct injuries that may result in mortality. Green and white sturgeon are also at risk of entrainment, though research into how sturgeon are affected by dredging operations is limited (Balazik and Clarke 2024). Entrained crustaceans that may survive would be transported and released with dredged material, which could be in upland locations, or habitats that are less suitable to support the species."

The USACE has offered minimization measures for hydraulic dredging, which are required in Special Condition II – H.3. In its consistency determination USACE also states that dredging would occur within the environmental work windows set forth in the NOAA and USFWS amended LTMS Programmatic Biological Opinions (2015 and 2025 respectively). "The USACE will dispose of dredged material according to the LTMS work windows, which were established in coordination with the USFWS, NMFS, and CDFW. At times, unforeseen circumstances have required USACE to dredge outside of the work windows. During these times, USACE consults with the appropriate federal agency." It is important to note that the USACE regularly and consistently dredges outside of the work windows. When it does this, it takes the sediment dredged outside of the work windows to beneficial reuse as mitigation for this impact, consistent with NMFS's amended LTMS Programmatic Biological Opinion (2015) within the same year or the following year.

Special Condition II – G is included to require the mitigation through beneficial reuse but allows for the USACE to complete the mitigation before dredging outside the work window, and/or provide the mitigation in the following dredge season. Because of the sensitive life stages, specifically spawning and larval fish development, and likely high entrainment, Special Condition II – H.1, limits hydraulic dredging in channels within spawning areas to times of the year that spawning is not occurring. Herring primarily spawn in Central Bay. Richmond Harbor and Oakland Harbor federal channels are within the herring spawning grounds.

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The Commission staff met with the USACE and the California Department of Fish and Wildlife (CDFW) to further understand the potential impacts of hydraulic dredging in Richmond Inner and Outer Channels as well as the Oakland Channel outside the environmental work window and during herring spawning season. The USACE is requesting flexibility to take advantage of potential availability of the *Essayons* dredge outside of the environmental work window. CDFW staff raised significant concerns regarding entrainment of fish, eggs, and larval fish by hydraulic dredges working within the spawning area during the spawning season. CDFW noted that it manages critical fish species within this important commercial fishery and has 40 years of data documenting herring spawning and its population decline in San Francisco Bay. The Pacific Herring Fishery Management Plan describes the life cycle and ecology of this species, as well as the fishery, its management actions, and the population levels through 2019. As described, herring migrate vertically in the water column each day, migrating to the lower water column during the day where dredging would be taking place, and to the top of the water column at night. In addition, herring eggs and larval fish would not have the ability to withstand the suction forces of the dredge head. Therefore, the Commission has included Special Condition II-H.1. restrict hydraulic dredging during the herring spawning season in Richmond and Oakland federal navigation channels.

Based on the foregoing and as conditioned herein, the Commission concurs that 2026-2029 Operations and Maintenance Dredging Program is consistent to the maximum extent practicable with Bay Plan's Fish, Other Aquatic Organisms, and Wildlife and its Subtidal Areas policies.

C. Dredging and Water Quality

The McAteer Petris Act and the Bay Plan include policies to protect water quality, provide for, and minimize impacts from dredging in support of safe navigation. Section **66663.1** in summary, directs the Commission to: promote using dredged sediment as a resource, such as creating new wetlands and maintaining existing levees; protect Bay resources; and manage and assure monitoring of dredging and disposal activities. Bay Plan Dredging and Water Quality Policies further define how to implement dredging and dredged sediment disposal per the McAteer-Petris Act. Dredging Policy 1 states that dredgers shall collectively reduce disposal in the Bay and certain waterways over time to a maximum of one million cubic yards per year as described in the LTMS program, and if this cannot be accomplished, the Commission should consider and potentially impose allocations. Dredging Policy 2 directs the Commission to authorize projects that serve water-oriented uses, (as described above in the fill policy discussion), meets the water quality requirements of the Water Board, protects fisheries and Bay natural resources, and would dredge the minimum amount necessary for the project. Water Quality Policies 1 directs the Commission to protect water quality such that beneficial uses of

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the Bay, particularly fish and wildlife, are maintained and, where possible, conserve and restore tidal marshes to protect water quality.

Dredging Policy 3 states in summary that dredged sediment should not be disposed in the Bay and certain waterways unless disposal outside these areas is infeasible, and the Commission finds: the volume to be disposed of is consistent with applicable dredger disposal allocations and disposal site limits adopted by the Commission; disposal would be at a site designated by the Commission; the sediment quality is consistent with the advice of the Water Board and the Dredged Material Management Office (DMMO); and the timing of disposal is consistent with the advice of state and federal resources agencies. Water Quality Policy 2 directs the Commission to protect the Bay from harmful discharges of pollutants, consist with the Water Board's decisions and recommendations, and similar requirements of Dredging Policy 3.

In the USACE's consistency determination, it describes the amount of sediment dredged for each channel since 2006 and provides the average and the maximum volume dredged during this period to "bookend" the proposed project. For most of the projects within its program, the likely dredging scenario is near the average volume. However, if trends continue for Oakland Harbor, its volume may be better represented by the maximum volume dredged. The authorization section includes the range of potential dredge volumes for each project to allow for interannual variability associated with sedimentation rates, funding availability, and equipment availability. Similarly, the disposal of dredged sediment or its beneficial reuse would depend on many of the same factors.

The program, if implemented as currently described would substantially increase in-Bay disposal beyond the 1 million cubic yards described in Dredging Policy 1, especially if any other dredger required in-Bay disposal in the same year. In the past ten years, non-USACE dredgers disposed of between 230,000 and 635,000 cy per year. If the full program was implemented with in-Bay disposal volumes as described, the Commission would need to consider implementation of an allocations system would be warranted (given the success or lack thereof of voluntary efforts to meet the 1 million cubic yards target set by Dredging Policy 1). The USACE proposes to dispose of up to 3.627 million cubic yards of sediment at in-Bay disposal site in its maximum Dredging Program, with approximately twenty-percent beneficial reuse, or 985,000 cy. Its average programming would provide between 140,000 and 575,000 cy of beneficial reuse of sediment and between 1.087 and 1.402 million cy of in-Bay disposal. Both scenarios include only the federally funded program with no additional funds provided from other sources.

However, the question of whether the USACE would implement the program as proposed, and whether feasible alternatives to in-Bay disposal exist on an annual basis has not yet been determined. The USACE has provided assurances to the Commission

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within its consistency determination request that "Sediment will be dredged using mechanical and hydraulic methods and is proposed for placement at various sites, in compliance with the Long-Term Management Strategy (LTMS) and other applicable regional sediment management goals." (July 2025). It is also important to note that the USACE has recently been directed by Congress through the Water Resources Development Act 2024 to beneficially reuse seventy percent of its dredged sediment nationally. In the past three years, when additional funding was available, the USACE used that funding to increase beneficial reuse.

Special Condition II – C requires the USACE to provide an annual integrated alternative disposal site analysis to the Commission by March 31st of each year for review and approval. This document would include the proposed dredging, disposal, and beneficial reuse volumes for each year, with an analysis of why the proposal is feasible. Because this document would be prepared and provided in the same federal fiscal year as the dredging, the USACE will better understand the amount of allocated funds at that time. In addition, USACE would know whether there are additional funds available from other sources including funding from the State Coastal Conservancy or the Section 1122 program. Lastly, it would also have an idea of equipment availability and how to balance the equipment type and potential mitigation requirements. Special Condition II – K requires the USACE to provide an annual briefing to the Commission regarding how it is meeting the goals of maximally beneficially reusing sediment and includes specific criteria for this report. This report creates an accountability mechanism that will help the Commission analyze whether the USACE is complying with its Letter of Agreement and commitment to beneficial reuse.

Water quality concerns often arise regarding dredging and dredged sediment disposal or its beneficial reuse in wetland restoration projects. The USACE provides sampling and analysis plans and test results for each project proposed for dredging to the Dredged Material Management Office (DMMO) for review and determination of sediment suitability for in-Bay, ocean, and beneficial reuse in wetland restoration projects. The majority of the sediment is determined to be suitable for reuse and in-Bay disposal. When the DMMO determines that sediment is not suitable for beneficial reuse, then an alternative disposal site is used. This process, along with the testing program, and the Water Boards water quality certification/waste discharge requirements issued in December 2025, assure that the water quality of the Bay is protected and supports natural resources within the Bay. Special Conditions II – E and F require information regarding the sediment quality be submitted to the Commission for review and approval prior to each dredging episode to ensure that water quality and habitat quality is protected.

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Regarding protection of Bay species and adherence to the recommendations of the resource agencies, the USACE has stated that it will conduct dredging and dredged sediment disposal within the environmental work windows described in the LTMS Management Plan and the requirements of the LTMS Programmatic Biological Opinions issued by NMFS and USFWS in 2015 and 2025, respectively. At the same time, it commits to taking dredged sediment to beneficial reuse sites that provide fish habitat as mitigation for work outside of the work windows, either in the same year or the following dredge season. This practice is consistent with NMFS and USFWS's biological opinions because building wetlands improves the overall health of the Bay and provides both habitat and food to support native and listed species. Special Condition II – G requires the dredging within the work window and a process for evaluating time extensions to the windows, consistent with the resources agencies decisions. Special Condition II – H limits the timing and location of hydraulic dredging in areas of the Bay that are important spawning habitat for Pacific herring, longfin and Delta smelt. With these conditions in place, dredging and dredged sediment disposal is consistent with the advice and recommendations of the resources agencies.

Based on the foregoing and as conditioned herein, the Commission concurs that 2026-2029 Operations and Maintenance Dredging Program is consistent to the maximum extent practicable with Bay Plan's Dredging and Water Quality policies.

D. Mitigation

According to the Bay Plan Mitigation policies, projects should be designed to avoid adverse environmental impacts to Bay natural resources including water quantity and quality, circulation, wildlife, and habitats. When adverse impacts cannot be avoided, they should be minimized, and unavoidable avoidable adverse impacts to natural resources should be required. Mitigation Policy 5 states that amount and type of compensatory mitigation should be determined for each mitigation project based on a clearly identified rationale that includes an analysis of the probability of success; the expected time delay between the impact and the functioning of the mitigation site; and the type and quality of the ecological functions provided by the mitigation site as compared to the area impacted. Mitigation Policy 7 states that the mitigation should be provided prior to, or at the same time as the project causing the adverse impacts to the extent practicable.

The Mitigation Policies require avoidance of impacts first, minimization second, and mitigation to compensate for impacts that cannot be avoided. While dredging impacts cannot be avoided, the choice of dredge can minimize impacts due to entrainment in hydraulic dredges. As discussed in the Natural Resources section, the increase in hydraulic dredging proposed in the Regional Optimization Alternative would increase loss of native and listed species through entrainment compared to entrainment that

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would occur if a clamshell dredge was used. At this time, it is unknown whether the USACE will be able to contract with additional hydraulic dredges, or whether the *Essayons* or *Joaquina* will be available to dredge additional channels. Because the USACE has proposed this scenario and it is being authorized herein, the Commission must consider and determine necessary and appropriate minimization and mitigation measures for the full proposed Dredging Program.

USACE proposes to mitigate for impacts of hydraulic dredging by beneficially reusing sediment from another USACE project the same year at a wetland restoration site that provides fish habitat. Special Condition II – H.5 requires the use of an equation to calculate the amount of mitigation credits that would be provided if an appropriate mitigation bank is available. It also includes an equation to calculate the amount of dredged sediment to be beneficially reused if a mitigation bank is not available. Purchase of credit from a mitigation bank would satisfy the mitigation policies more fully as mitigation banks have restored the habitat in advance of the purchase of the credit, providing the benefits of the mitigation at the same time as the impact occurs.

However, if a mitigation bank is not available, the USACE commits to an alternate mitigation plan - beneficial reuse of dredged sediment. While the Commission agrees that beneficial reuse of dredged sediment at a restoration site will provide fish habitat, the mitigation included does not fully meet Mitigation Policy 7 because the benefits would likely be delayed by a few to several years. It is likely that the mitigation would be dependent on other non-USACE projects, or work outside the work windows by USACE to provide enough sediment to a site to raise the elevation sufficiently to breach the site. Special Condition II – H.6 requires an analysis of the effectiveness of the mitigation strategy be provided to the Commission after 3 years of program implementation to assist in determining whether the strategy is working or should be revised in future hydraulic Dredging Programming.

The USACE has also agreed to mitigate for dredging outside of environmental work windows by beneficially reusing sediment, or an equivalent volume of sediment in the following dredging season. This mitigation was originally included in NMFS 2015 amended LTMS Programmatic Biological Opinion. This mitigation program provides a one-to-one ratio of sediment removed and beneficially reused. At this rate, significant volumes of sediment have been used to restore wetlands, with likely breaching of one project in the near future. While dredging within the work windows would avoid additional impacts, due low populations of listed salmonids during that period, the required mitigation may provide additional wetland and fish habitat in the near future.

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Also of note, the USACE has committed to re-initiating formal consultation with NMFS and USFWS for the Regional Dredged Material Management Plan and its identified Regional Optimization alternative. Should either of these agencies require additional mitigation, the USACE shall comply with those requirements.

Based on the foregoing, the Commission concurs that as the 2026-2029 Operations and Maintenance Dredging Program as conditioned herein is consistent to the maximum extent practicable with Bay Plan's Mitigation policies.

E. Environmental Justice and Social Equity

The Commission's Environmental Justice and Social Equity Policy 3 states, in part that "Equitable, culturally-relevant community outreach and engagement should be conducted by project applicants to meaningfully involve potentially impacted communities for major projects in underrepresented and/or identified vulnerable and/or disadvantaged communities, and such outreach and engagement should continue throughout the Commission review and permitting processes. Evidence of how community concerns were addressed should be provided. If such previous outreach and engagement did not occur, further outreach and engagement should be conducted prior to Commission action.

The USACE's 2026 - 2029 Dredging Program identified several disadvantaged and vulnerable communities located within 1.5 miles of Richmond, Oakland, Pinole and Suisun Channels. West Oakland, southeast Richmond, Pittsburg, and Antioch were identified as the most socially vulnerable. According to the USACE, the preliminary concerns include air and water quality impacts, water contact recreation, and fishing. In addition, the USACE initiated tribal consultation, met with representatives from the Federated Indians of Graton Rancheria, and received comments from Confederated Villages of Lisjan and the Amah Mutsun Tribal Band. In response to these comments the consultation process is still active, with an additional 60 Tribes evaluating the potential presence of cultural resources and ways to avoid impacts on these resources.

In conducting its environmental and social justice outreach, the USACE describes in its NEPA document inviting approximately 110 community and faith-based organizations to a virtual public meeting on October 15, 2024 to provide information about the maintenance Dredging Program and the upcoming NEPA/CEQA process. Thirteen entities registered for the meeting, but only San Francisco Baykeeper, Acterra, San Francisco Bay Conservation and Development Commission, and Contra Costa Resource Conservation District representatives attended.

According to the USACE, during the summer of 2024, these 13 organizations were contacted and invited to meet with the outreach team individually to learn more about the RDMMP and to assist in identifying any future opportunities for placement sites that could benefit their community. The team held at least 10 such meetings.

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Based on the foregoing, the Commission concurs that as conditioned herein, the 2026-2029 Operations and Maintenance Dredging Program is fully consistent with Bay Plan's Social Equity and Environmental Justice policies.

F. Public Trust Uses

The dredging and disposal of dredged sediment authorized herein is occurring on and in tidelands of the State subject to the public trust. Dredging inherently is considered public trust use because it ensures navigability of shallow Bay waters. In-Bay disposal is a direct result of dredging, and in some cases is the only feasible option due to equipment, site availability, and funding availability. It does impact other public trust uses of the Bay and public trust needs because it impacts water quality, fish and wildlife habitat, and fisheries by entraining native and listed species, thus reducing fish and wildlife resources of the Bay. The project is consistent with public trust needs for safe navigation for ship transporting goods and recreational opportunities to the Bay for marinas and homeowners. Even so, the USACE has made a determination of federal navigational servitude for the federal channels and use of State tidelands, and the State Lands Commission, which maintains the Public Trust, has agreed with the determination.

Based on the foregoing, the Commission concurs that as conditioned herein, the 2026-2029 Operations and Maintenance Dredging Program is fully consistent with Bay Plan's enforceable policies regarding the public trust.

G. Coastal Zone Management Act

As described and conditioned herein, the San Francisco Bay Conservation and Development Commission finds the USACE 2026-2029 consistency determination consistent to the maximum extent practicable with the federal certified Coastal Zone Management Program for San Francisco Bay.

H. Environmental Review

The Coastal Zone Management Act does not require the USACE to conduct a National Environmental Policy Act (NEPA) review to submit a consistency determination under the CZMA. However, due to its own regulations and the regulations of the Water Board who is subject to the California Environmental Quality Act (CEQA), an integrated Environmental Assessment (EA) and Environmental Impact Report (EIR) was prepared for the USACE's 2026-2029 Operations and Maintenance Dredging Program entitled "San Francisco Bay Federal Channels Operation and Maintenance Dredging and Sediment Placement Activities, Dredging Years 2025 – 2034." The NEPA process found that the impacts were less than significant, and the CEQA process found that there were impacts that required mitigation, primarily impacts to listed species, and required mitigation for hydraulic dredging, thus reducing the impacts to less than significant.

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IV. Standard Conditions

A. Letter of Agreement Execution

This Letter of Agreement shall not take effect unless the USACE executes the original of this Letter of Agreement and returns it to the Commission within ten days after the date of the issuance of the Letter of Agreement. No work shall be done until the acknowledgment is duly executed and returned to the Commission.

B. Other Government Approvals

All required permissions from governmental bodies must be obtained before the commencement of work; these bodies include, but are not limited to, the U. S. Army Corps of Engineers, the Regional Water Quality Control Board, and the city or county in which the work is to be performed, whenever any of these may be required. This Letter of Agreement does not relieve USACE of any obligations imposed by State or Federal law, either statutory or otherwise.

C. Performed Work Must be Consistent with Application

Work must be performed in the precise manner and at the precise locations indicated in USACE's consistency determination request, as may have been modified by the terms of the Letter of Agreement and any plans approved in writing by or on behalf of the Commission.

D. Life of Authorization

Unless otherwise provided in this Letter of Agreement, all the terms and conditions of this Letter of Agreement shall remain effective for so long as the Letter of Agreement remains in effect.

E. Permission to Conduct Site Visit

The USACE shall grant permission to any member of the Commission's staff to conduct a site visit at the subject properties during and after performance of work to verify that the project is being and has been performed in compliance with the authorization and conditions contained herein. Site visits may occur during business hours without prior notice and after business hours with 24-hour notice.

F. Best Management Practices

1. Debris Removal
   All debris shall be removed to an authorized location outside the jurisdiction of the Commission. In the event that any such material is placed in any area within the Commission's jurisdiction, the USACE or their contractors shall remove such material, at their expense, within ten days after they have been notified by the Executive Director of such placement.

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2. Construction Operations

   All construction operations shall be performed to prevent construction materials from falling, washing or blowing into the Bay. In the event that such material escapes or is placed in an area subject to tidal action of the Bay, USACE or its contractors shall immediately retrieve and remove such material at their expense.

Executed at San Francisco, California, on behalf of the San Francisco Bay Conservation and Development Commission on the date first above written.

DocuSigned by:
Harriet Ross
FF0ABDCC800744A...

HARRIET LAI ROSS, Regulatory Director
For
LAWRENCE J. GOLDZBAND, Executive Director
San Francisco Bay Conservation and
Development Commission

HLR/BG/sr

cc: Jessica Vargas, U.S. Army Corps of Engineers; <Jessica.M.Vargas@usace.army.mil>
Sahrye Cohen, U.S. Environmental Protection Agency; <Cohen.Sahrye@epa.gov>
Jazzy Graham-Davis, S.F. Bay Regional Water Quality Control Board;
<Jazzy.Graham- Davis@Waterboards.ca.gov>
Marlene Schroeder, California State Lands Commission;
<Marlene.Schroeder@slc.ca.gov>
Kim Squires, US Fish and Wildlife Services; <Kim_Squires@fws.gov>
Claire Waggoner, <Claire.Waggoner@Wildlife.ca.gov>
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Ellie Covington, U.S. Army Corps of Engineers; <Ellie.L.Covington@usace.army.mil>
Julie Beagle, U.S. Army Corps of Engineers; <Julie.R.Beagle@usace.army.mil

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* *

Receipt acknowledged, contents understood and agreed to:

Executed at San Francisco, CA

On 26 January 2026

US Army Corps of Engineers
Permittee

Signature

Virginia R. Brickner
Print Name

Lieutenant Colonel, U.S. Army, Commanding
Title

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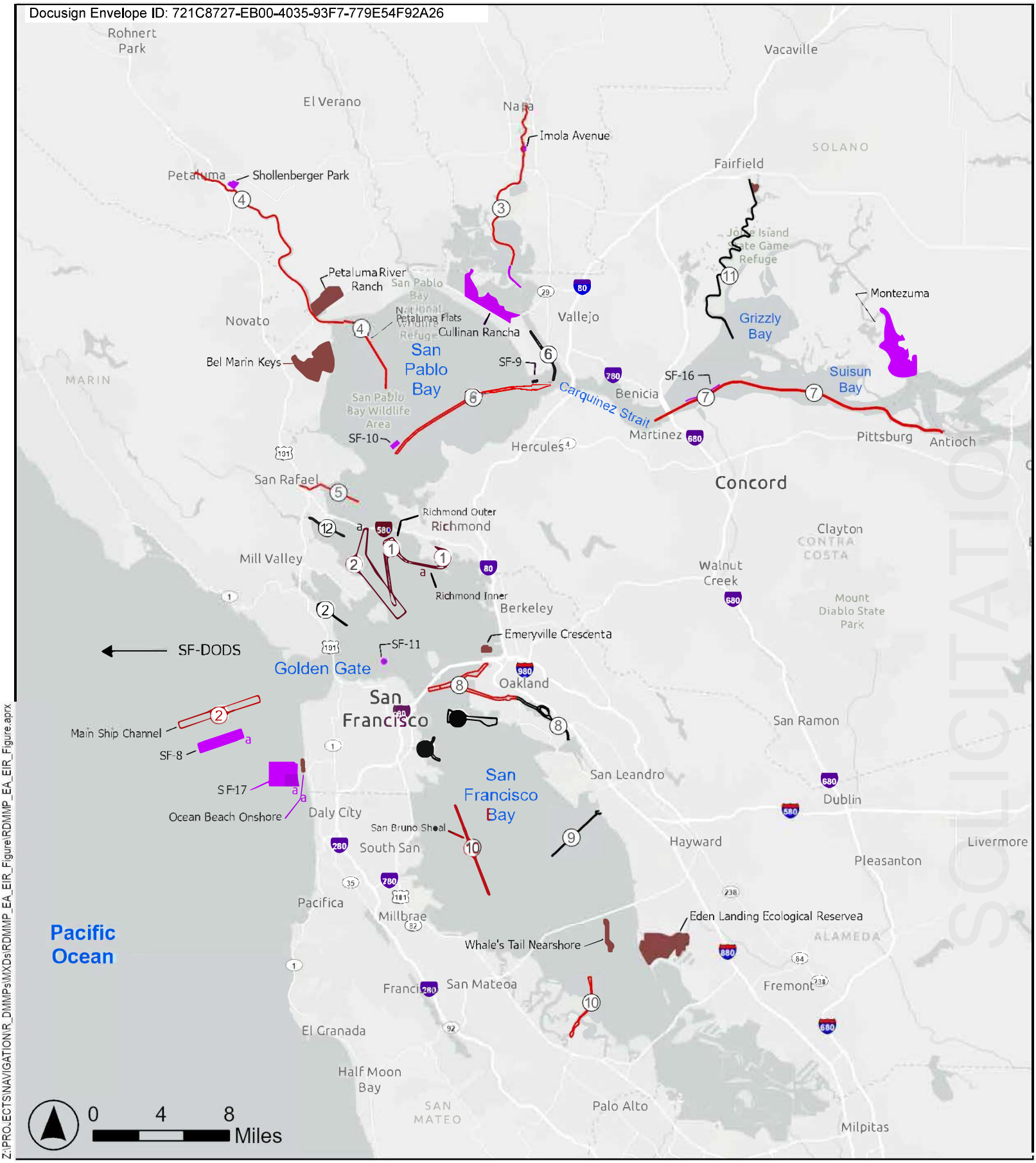

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Existing Disposal anda Beneficial Reusea Placement Sitesa

Potential Futurea Placement Sites

Included in Program

Not Included in Program

1. Richmond Harbor
2. San Francisco Harbor
3. Napa River Channel
4. Petaluma River Channel
5. San Rafael Creek Channel
6. San Pablo Bay / Mare Island Strait
7. Suisun Bay Channel
6. Oakland Harbor
9. San Leandro Marina (Jack D. Maltester Channel)
10. Redwood City Harbor
11. Suisun Slough Channel
12. Larkspur Ferry Channel

EXHIBIT A
BCDC Letter of Agreement No. C2025.005.00

Federal Navigation Channels EA/EIR U.S. Army Corps of Engineers Bay Area, California 2024

US Army Corps of Engineers
San Francisco District

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EXHIBIT B
BCDC Letter of Agreement No. C2025.005.00

***Table 1**. Proposed federal navigation channel dredging, depths, disposal/beneficial reuse and equipment type proposed between 2026 and 2029. The Deep draft channels would be dredged annually, the shallow draft and miscellaneous channels would be dredged once in any year. The USACE does not intend to dredge all shallow draft channels or miscellaneous channels in the same year, but without further definition of when these would be dredged the total dredge volume provided is for any one year summing all channels.*

The USACE states that it is infeasible that the individual channel maximums would all be dredged simultaneously in any given year because the program is limited by equipment availability, cost, time, and other environmental requirements that would make this unachievable. For example, the maximum total volume the USACE has dredged across the entire program in any single year between 2000-2022 was only 2.6 million CY. The maximum total volume placed in-bay in any single year during that timeframe was only 1.5 million CY. However, the USACE is currently proposing to increase in-Bay disposal beyond its historic volumes.

Project	Depth MLLW	Over Dredge	Average Volume cy	Maximum Volume cy	Equipment 2026/ 2027- 2029	Disposal or Reuse 2026	Disposal or Reuse 2027-29
Deep Draft Channels – Annual Dredging							
Oakland Harbor	-50 feet	2 feet	750,000	1,225,000	Clamshell/ Hydraulic	SFDODS	BRU & SF-11
Richmond Outer Harbor	-45 feet	2 feet	210,000	730,000	Hydraulic/ Clamshell	SF-10/SF-11	SF-10/SF-11
Richmond Inner Harbor	-38 feet	2 feet	300,000	630,000	Clamshell/ Hydraulic	SF-11 & BRU	SF-11
Pinole Shoal	-35 feet	2 feet	150,000	560,000	Hydraulic/ Clamshell	SF-9/SF-10	SF-9/SF-10
Suisun Channel	-35 feet	2 feet	165,000	425,000	Clamshell/ Clamshell	SF-16/SF-9	SF-16 & BRU
Redwood City Harbor	-30 feet	2 feet	180,000	650,000	Clamshell/ Clamshell	SF-11	SF-11
Shallow Draft Channels – 1 per four-year authorization period							
San Rafael Creek	-6 feet	2 feet	110,000	280,000	Clamshell/ Clamshell	SF-10/SF-11	SF-10/SF-11
Petaluma River	-8 feet	2 feet	150,000	210,000	Hydraulic/ Clamshell	Upland/BRU	Upland/BRU
Petaluma Across the Flats	-8 feet	2 feet	70,000	70,000	Clamshell/ Clamshell	SF-10	SF-10

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Upper and Lower Napa River	-9 feet	1 foot	110,000	165,000	Hydraulic/ Hydraulic	Upland/BRU	Upland/BRU
Miscellaneous							
Sea Trial 2 times			12,000	12,000	Hydraulic	SF-10/SF-11	SF-10/SF-11
San Bruno Shoal (as needed)	-30 feet	2 feet	30,000	30,000	Hydraulic/ Clamshell	SF-11	SF-11
Total			2.237 M	4.987 M			

SF-9 = Carquinez Strait in-Bay disposal site
SF-10 = San Pablo Bay in-Bay disposal site
SF-11 = Alcatraz in-Bay disposal site
SF-16 = Suisun Channel in-Bay disposal Site
SFDODS = San Francisco Deep Ocean disposal site
BRU = likely wetland restoration site
Upland = local project sponsor provided upland disposal site (not BRU)

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Table 2. *Proposed volumes of sediment for disposal or beneficial reuse of* ***deep draft channels*** *between 2026 and 2029.*

Site	2026 Average Volume cy (percentage)	2026 Maximum Volume cy (percentage)	2027 - 2029 Average Volume cy (percentage)	2027 - 2029 Maximum Volume cy (percentage)
In-Bay Disposal	865,000 (49%)	2,698,900 (64%)	1,180,000 (67%)	3,235,000 (77%)
Deep Ocean Disposal	750,000 (43%)	1,225,000 (29%)	0 (0%)	0 (0%)
Upland Disposal	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Beneficial Reuse	140,000 (8%)	296,100 (7%)	575,000 (33%)	985,000 (23%)
Total	**1,755,000**	**4,220,000**	**1,755,000**	**4,220,000**

Table 3*. Proposed volumes of sediment for disposal or beneficial reuse from* ***shallow draft*** *channels between 2026 and 2029. As noted, these channels would only be dredged once over four years.*

Site	2026 Average Volume cy (percentage)	2026 Maximum Volume cy (percentage)	2027 - 2029 Average Volume cy (percentage)	2027 - 2029 Maximum Volume cy (percentage)
In-Bay Disposal	180,000 (41%)	350,000 (48%)	180,000 (41%)	350,000 (48%)
Deep Ocean Disposal	0 (0%)	0 (%)	0 (0%)	0 (0%)
Upland Disposal	260,000 (59%)	375,000 (52%)	260,000 (59%)	375,000 (52%)
Beneficial Reuse	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Total	**440,000**	**725,000**	**440,000**	**725,000**

1 – San Rafael Creek, 2 – Napa River, 3 – Petaluma River, 4 – Petaluma Across the Flats

Table 4*. Proposed volumes of sediment for disposal or beneficial reuse from all channels (including San Bruno and the sea trials) between 2026 and 2029, noting all shallow draft channels would not be dredged in one year.*

Site	2026 Average Volume cy (percentage)	2026 Maximum Volume cy (percentage)	2027 - 2029 Average Volume cy (percentage)	2027 - 2029 Maximum Volume cy (percentage)
In-Bay Disposal	1,087,00 (49%)	3,090,900 (62%)	1,402,000 (63%)	3,627,000 (73%)
Deep Ocean Disposal	750,000 (34%)	1,225,000 (25%)	0 (0%)	0 (0%)
Upland Disposal	260,000 (12%)	375,000 (8%)	260,000 (12%)	375,000 (8%)
Beneficial Reuse	140,000 (6%)	296,100 (6%)	575,000 (26%)	985,000 (20%)
Total	**2,237,000**	**4,987,000**	**2,237,000**	**4,987,000**

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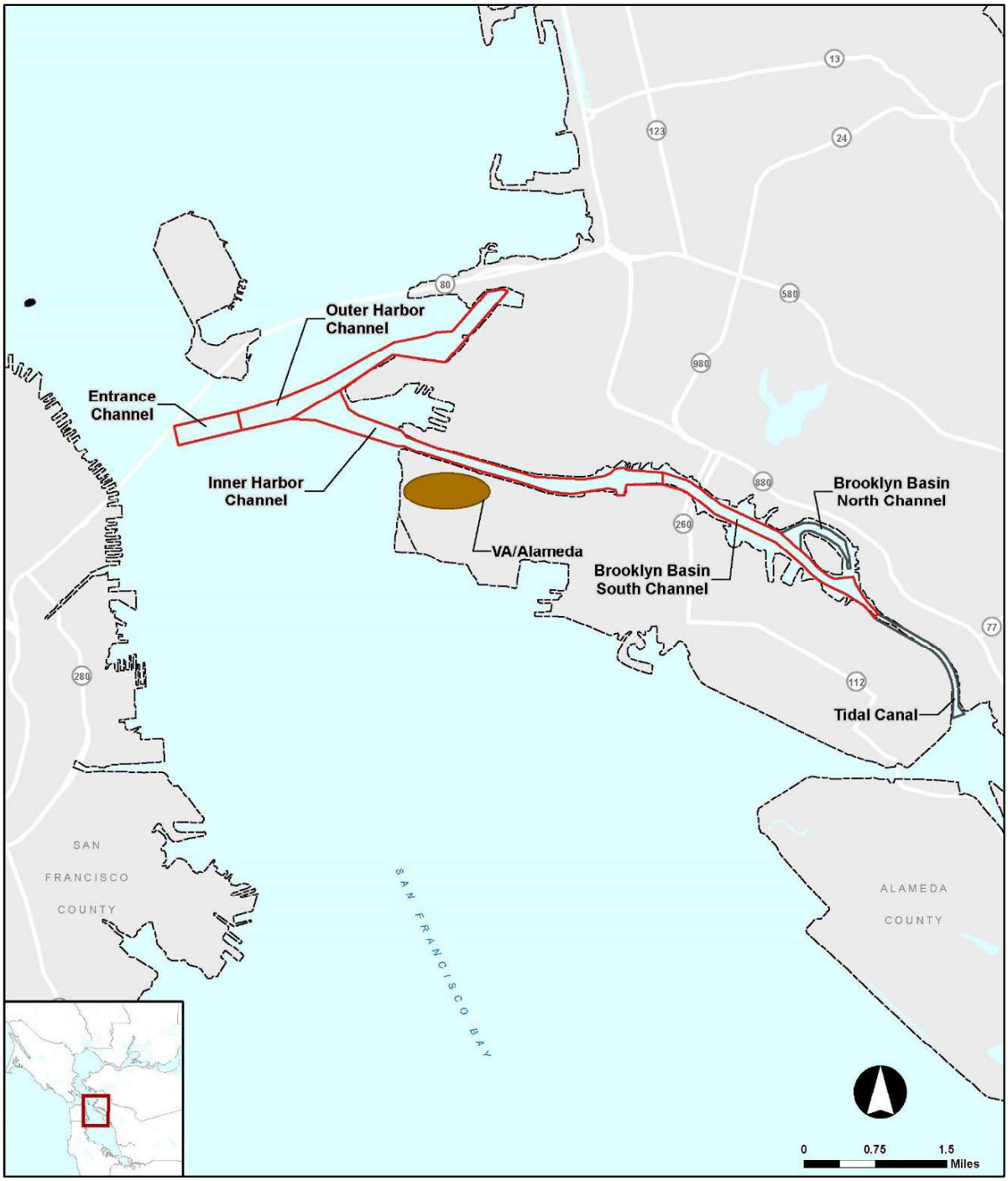

Exhibit D. **Oakland Harbor Entrance, Inner, and Outer Harbors**

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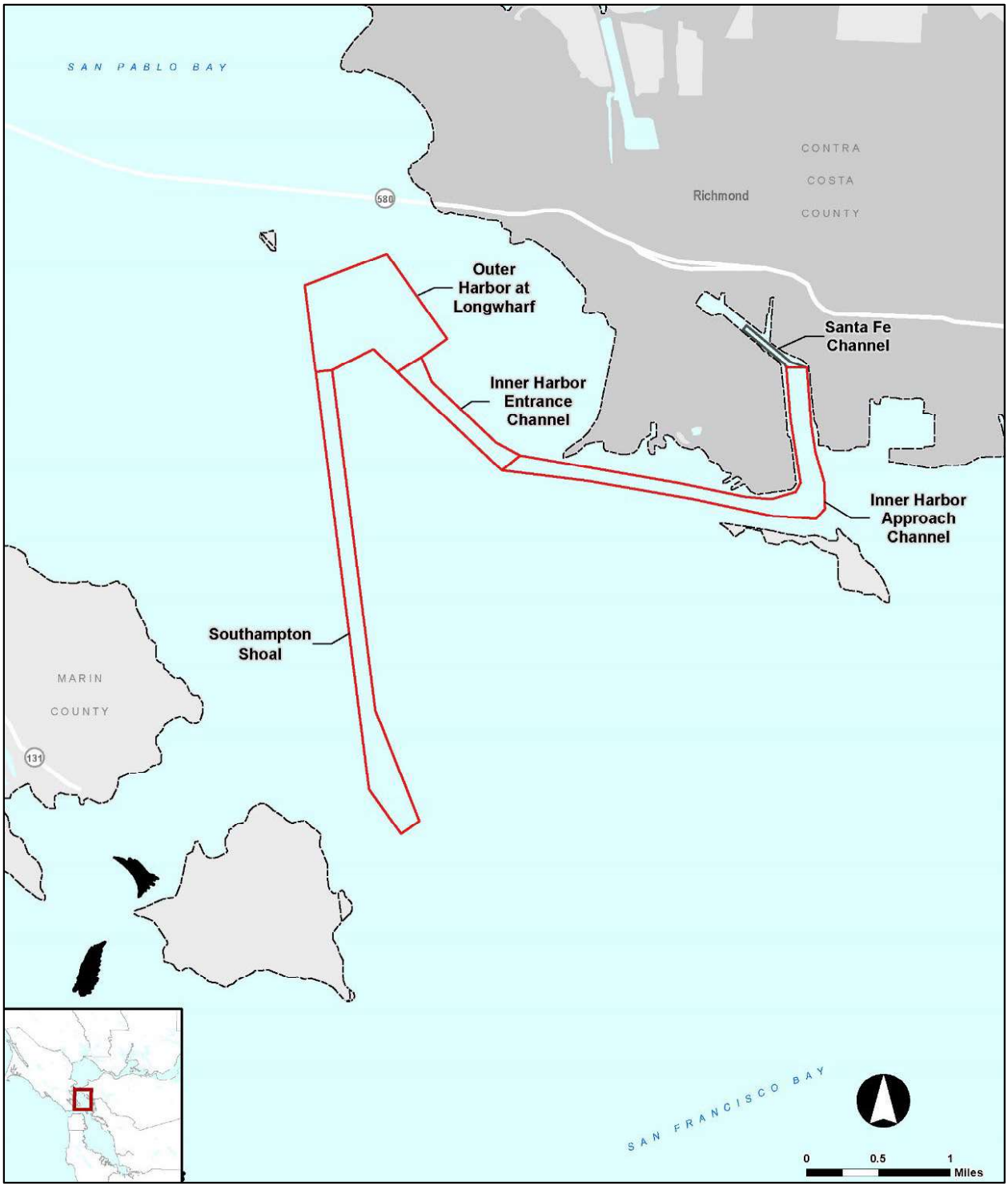

Exhibit E: Richmond Harbor (Southampton Shoal, Outer Harbor, and Inner Harbor)

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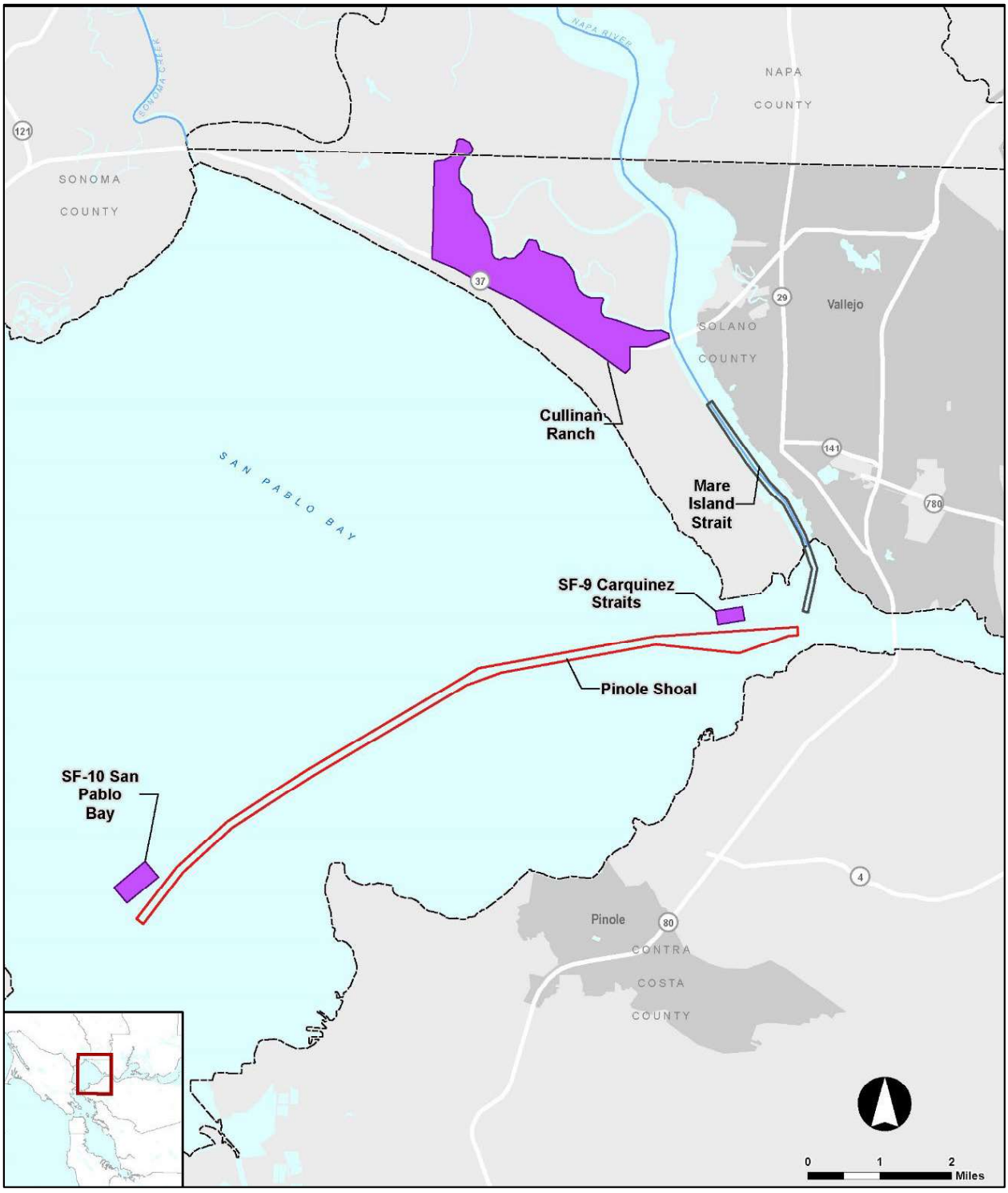

Exhibit F: Pinole Shoal Channel (also shown SF-9, SF-10, and Cullinan Ranch)

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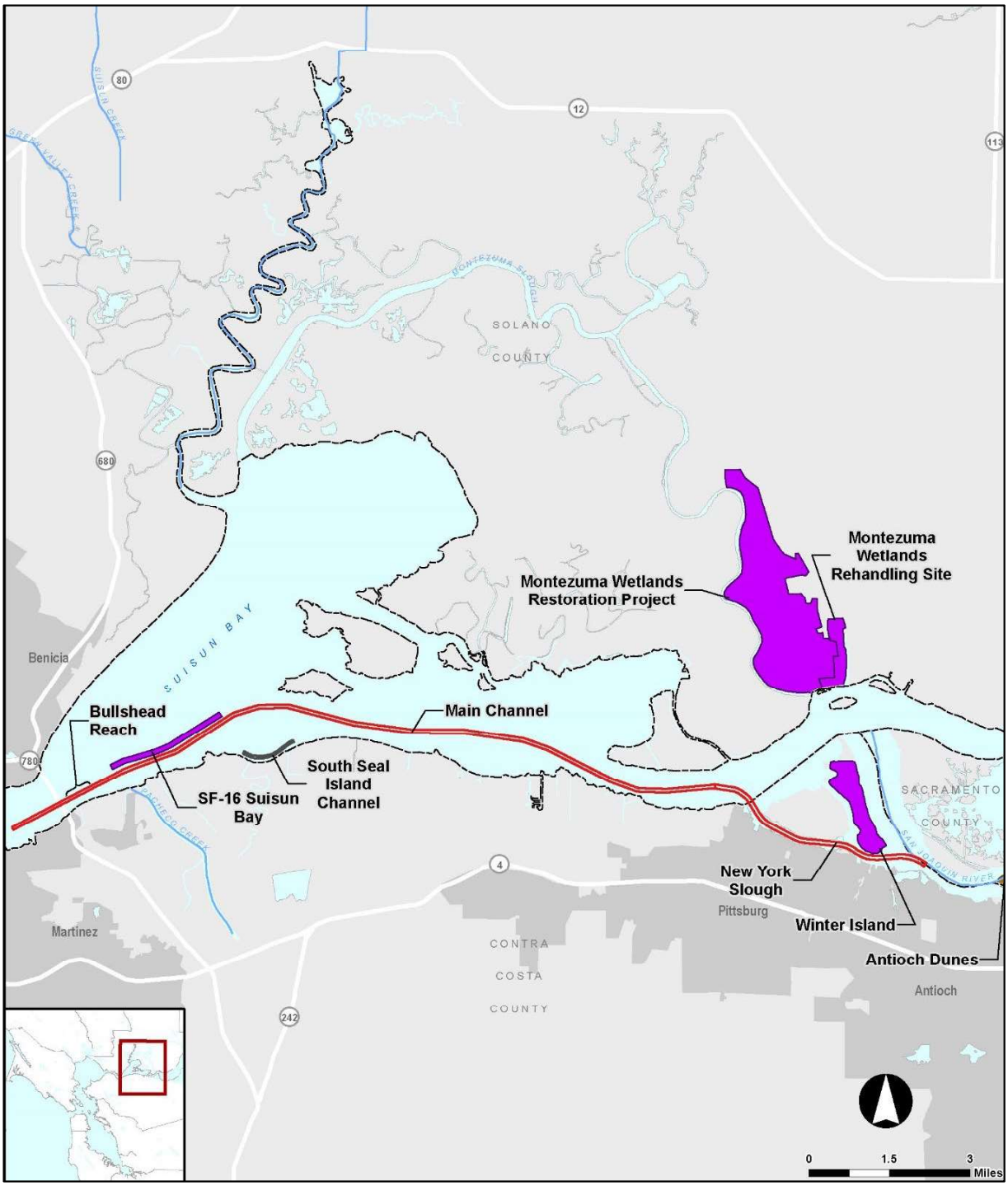

Exhibit G: Suisun Bay and New York Slough Channels (also shown SF-16, Montezuma Wetlands Restoration Project)

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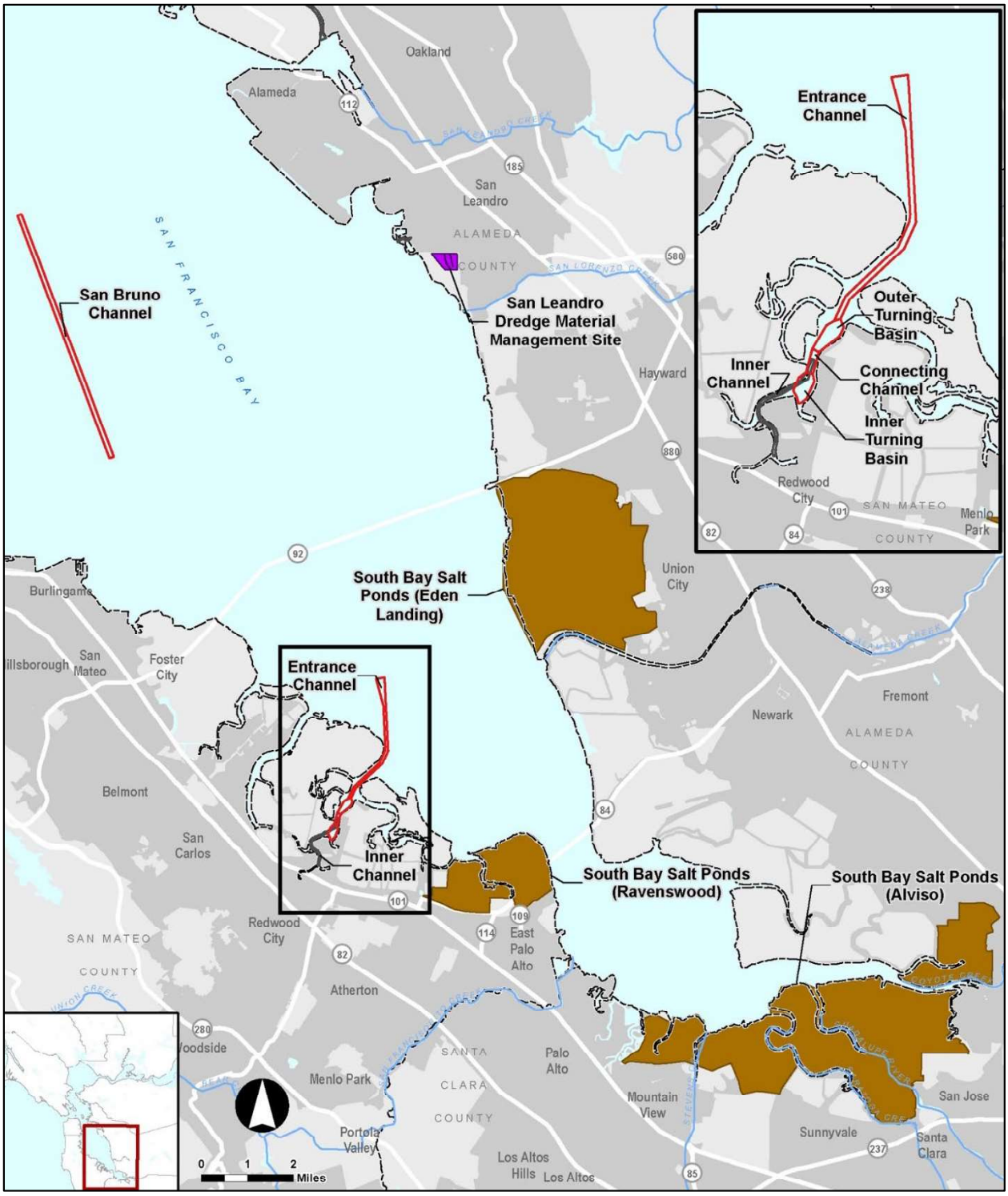

Exhibit H: Redwood City Harbor (also shown South Bay Salt Ponds)

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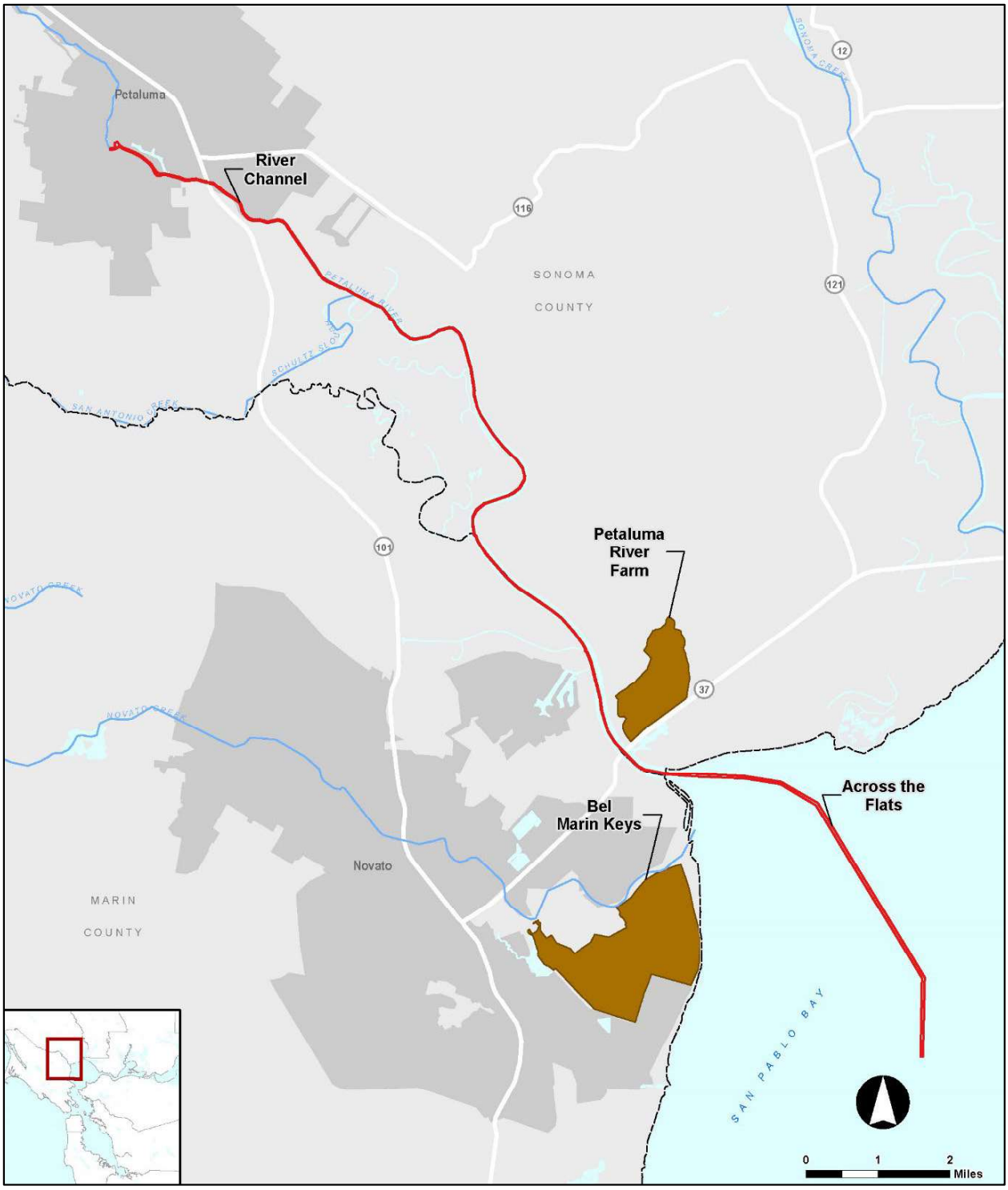

Exhibit I: Petaluma River Channel (also shown Bell Marin Keys)

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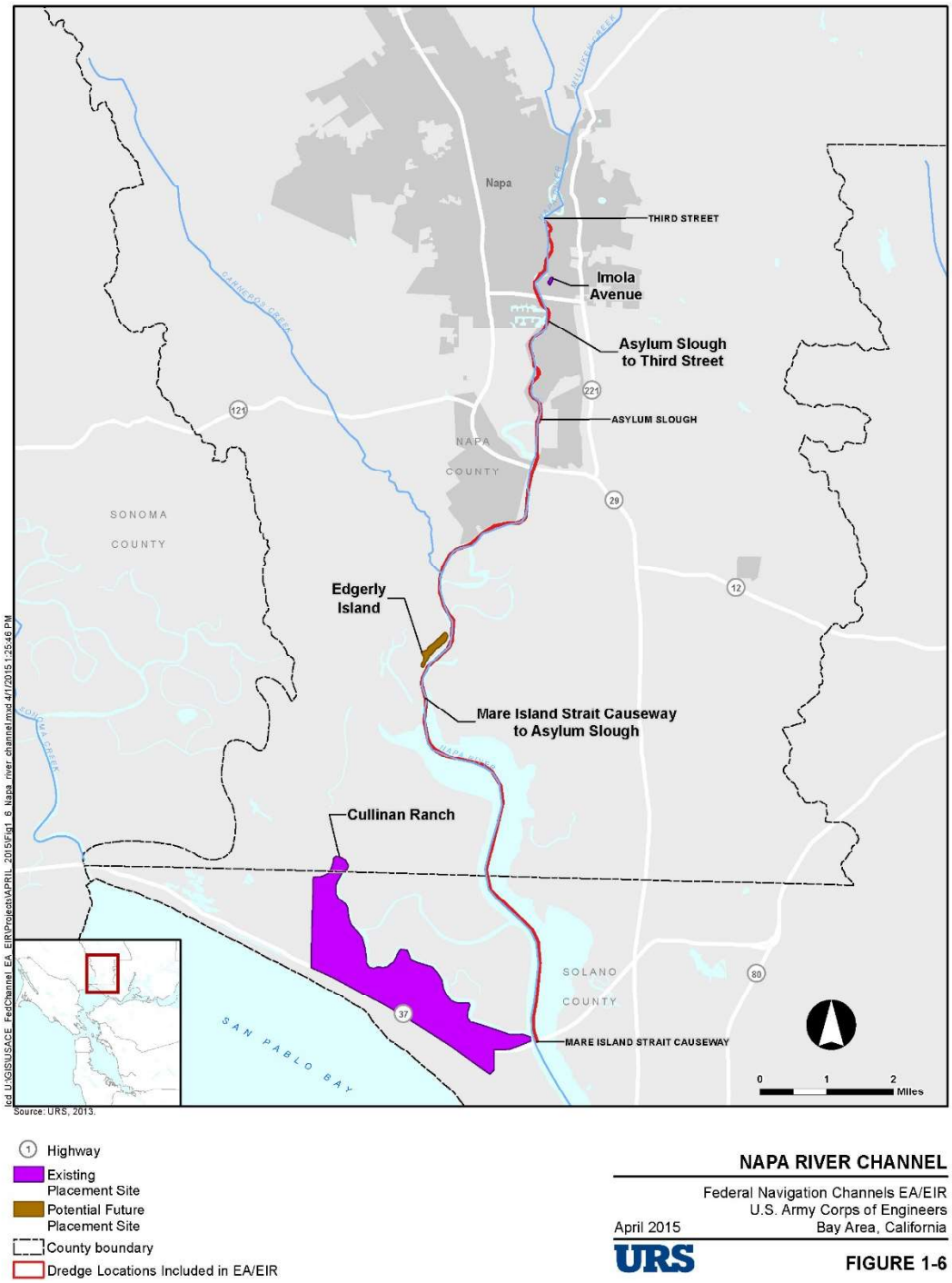

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Exhibit J: Napa River Channel (also showing Cullinan Ranch)

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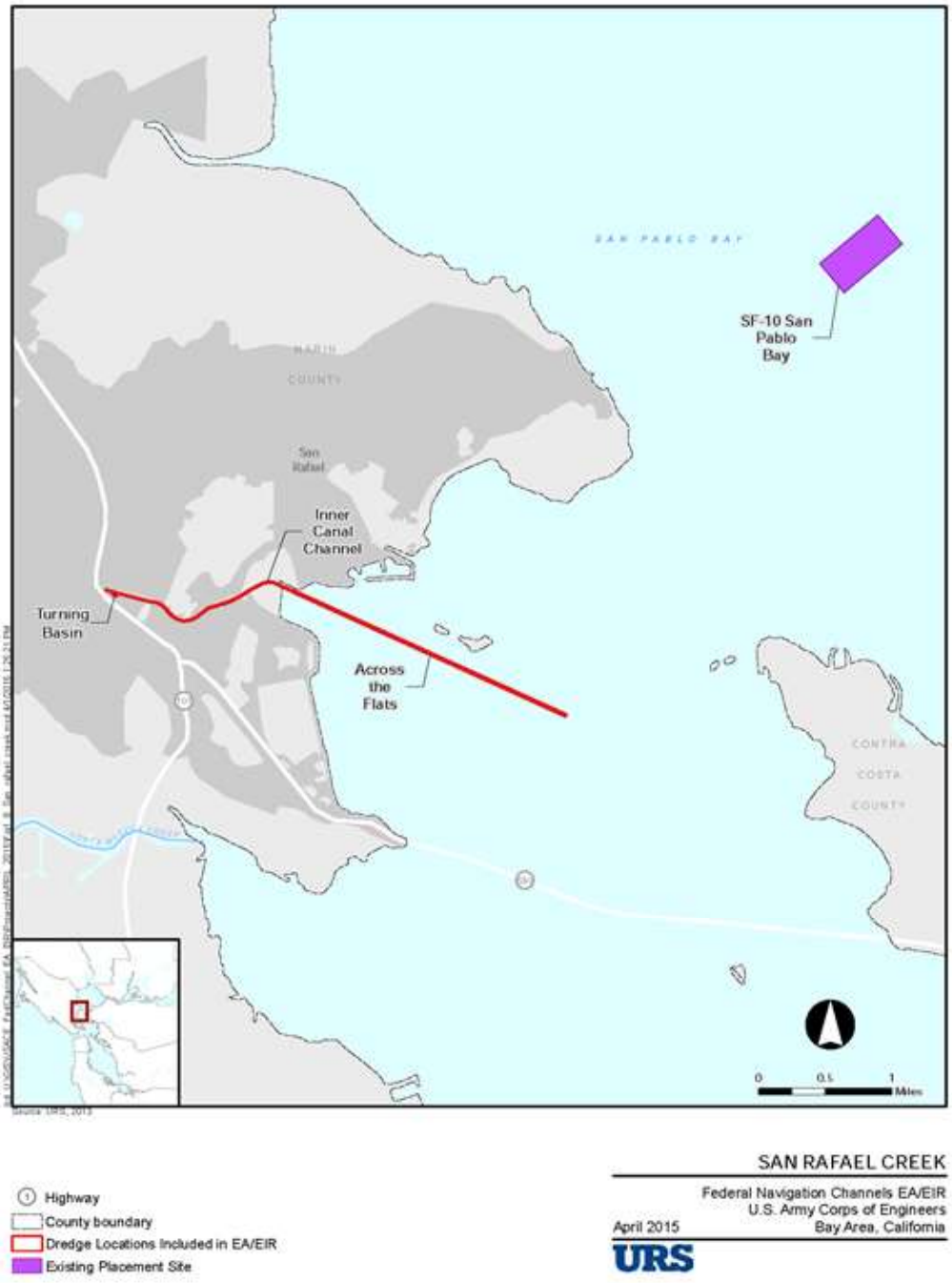

Exhibit K: San Rafael Creek and Across the Flats (San Pablo Bay disposal site also shown)

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Attachments to Section 01 57 19.86 43

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MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT
ESSENTIAL FISH HABITAT CONSULTATION

ACTION AGENCIES:	United States Army Corps of Engineers, South Pacific Division, San Francisco District (USACE) United States Environmental Protection Agency, Region IX (USEPA)
ACTION:	Operations and maintenance dredging in the San Francisco Bay area and associated dredged material placement
CONDUCTED BY:	National Marine Fisheries Service, Southwest Region
TRACKING NUMBER:	2009/06769
DATE ISSUED:	JULY 13, 2010

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I. STATUTORY AND REGULATORY INFORMATION

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996, establishes a national program to manage and conserve the fisheries of the United States through the development of federal Fishery Management Plans (FMPs), and federal regulation of domestic fisheries under those FMPs, within the 200-mile U.S. Exclusive Economic Zone ("EEZ"). 16 U.S.C. §1801 *et seq*. To ensure habitat considerations receive increased attention for the conservation and management of fishery resources, the amended MSA required each existing, and any new, FMP to "describe and identify essential fish habitat for the fishery based on the guidelines established by the Secretary under section 1855(b)(1)(A) of this title, minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat." 16 U.S.C. §1853(a)(7). Essential Fish Habitat (EFH) is defined in the MSA as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" 16 U.S.C. §1802(10). The components of this definition are interpreted at 50 C.F.R. §600.10 as follows: "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle.

Pursuant to the MSA, each federal agency is mandated to consult with NMFS (as delegated by the Secretary of Commerce) with respect to any action authorized, funded, or undertaken, or proposed to be, by such agency that may adversely affect any EFH under this Act. 16 U.S.C. §1855(b)(2). The MSA further mandates that where NMFS receives information from a Fishery Management Council or federal or state agency or determines from other sources that an action authorized, funded, or undertaken, or proposed to be, by any federal or state agency would adversely effect any EFH identified under this Act, NMFS has an obligation to recommend to such agency measures that can be taken by such agency to conserve EFH. 16 U.S.C. §1855(4)(A). The term "adverse effect" is interpreted at 50 C.F.R. §600.810(a) as any impact that reduces quality and/or quantity of EFH and may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce quantity and/or quality of EFH. In addition, adverse effects to EFH may result from actions occurring within EFH or outside EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

If NMFS determines that an action would adversely affect EFH and subsequently recommends measures to conserve such habitat, the MSA proscribes that the federal action agency that receives the EFH Conservation Recommendation must provide a detailed response in writing to NMFS within 30 days after receiving EFH Conservation Recommendations. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with NMFS EFH Conservation Recommendations, the federal agency must explain its reasons for not following the recommendations. 16 U.S.C. §1855(b)(4)(B).

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II. BACKGROUND AND CONSULTATION HISTORY

The Long Term Management Strategy (LTMS) for the Placement of Dredged Material in the San Francisco Bay was organized in 1990 to evaluate and address the potential direct, indirect and cumulative effect of dredging and aquatic disposal of dredged material in the San Francisco Bay. The LTMS agencies include USACE, USEPA, San Francisco Bay Conservation and Development Commission (BCDC), and San Francisco Bay Regional Water Quality Control Board. The LTMS agencies issued a final Environmental Impact Statement (EIS)/Programmatic Environmental Impact Report (EIR) in 1998 with its recommended program to reduce in-Bay disposal and increase beneficial reuse of dredged material, and signed the Record of Decision in 1999. The LTMS is a 50-year plan that covers all federal and non-federal operations and maintenance dredging and dredged material placement in the region. The LTMS EIS/EIR and subsequent Management Plan did not explicitly include EFH consultation. Coordination with NMFS regarding EFH consultation began in 2004, with an official request for consultation on July 21, 2009. Because of the LTMS agency partnership and at the request of the USEPA and USACE this programmatic consultation has included the state agencies.

2004 – 2007	USACE, USEPA, and NMFS began discussions for Programmatic EFH consultation.
November 2007	USACE provided NMFS with Draft EFH Assessment
February 4, 2008	NMFS submitted comments on Draft EFH Assessment to USACE, USEPA, and BCDC including requests for additional information. Additional information requests included: • Specific reports referenced in the document • Electronic data files presented in the document • Data missing from tables in the document
February 19, 2008	USEPA provided NMFS with three of the requested reports.
February 23, 2009	NMFS requested status update from USACE on EFH Assessment based on comments provided and restated additional information request from 2008 not yet received.
July 21, 2009	USACE and USEPA issued request for Programmatic EFH consultation for operations and maintenance dredging activities in San Francisco Bay and associated placement of dredged material.
August 2009	NMFS requested additional information: • Electronic data files presented in the document • Data missing from tables in the document
November 2009 - January 2010	USACE and NMFS coordinated to fill data gaps needed for analysis of action effects on EFH.

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February - May 2010	NMFS, USACE, USEPA, and BCDC met to discuss results of analyses and potential mitigation options.
May 1, 2010	NMFS provided a first draft of this document to USACE and USEPA for preliminary review.
May 21, 2010	USACE and USEPA comments received by NMFS (Appendix 6).
June 14, 2010	NMFS requested additional information from USACE and USEPA based on comments received.
June 17, 2010	Discussion regarding contaminant analysis and associated recommendations between USEPA and NMFS staff.
June 22, 2010	Additional information provided by USACE and USEPA.
July 13, 2010	Programmatic consultation concluded.

III. PROPOSED ACTION

A. Overview of Programmatic Consultation

This programmatic consultation applies to operations and maintenance dredging and dredged material placement/disposal projects within the defined geographic area (see section IV.A below) conducted by USACE (federally-authorized dredging projects) or by non-federal entities which USACE and USEPA review for authorization under section 10 of the Rivers and Harbors Act of 1899 (33 USC §403), section 404 of the Clean Water Act (33 USC §1344), and/or section 103 of the Marine Protection Research and Sanctuaries Act (33 USC §1401).

There are 7 in-water disposal sites and 123 maintenance dredging projects (15 generally maintained by USACE and 108 non-USACE) proposed for inclusion in this programmatic consultation (Table 1). Up to 10 additional non-federal maintenance dredging projects that have been previously authorized but are not explicitly named in Table 1 (referenced as "dummy" projects) may be covered by this programmatic consultation (see section V.D.1 for explanation of dummy projects). Some projects in Table 1 may not be covered if project-specific EFH Conservation Recommendations (*i.e.*, those recommendations related to eelgrass and contaminant levels, see section VII below) are not accepted.

Program activities are described in detail below, with certain limitations and restrictions. Specifically, this programmatic consultation will not cover the following: (1) any new or previously unauthorized dredging; (2) any deepening of areas below currently authorized depths plus allowable overdepth; (3) dredging for power plant maintenance; and (4) dredging for levee

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maintenance. Maintenance dredging of new or deepened areas following completion of initial work may be considered part of this consultation pending NMFS approval.

The time of coverage by this programmatic consultation matches the remaining duration of the LTMS Program. Originally a 50 year program, the LTMS has been in effect for 11 years, resulting in a 39 year lifetime for the current consultation. This programmatic consultation will cover the actions specified below until June, 2049. The USACE, USEPA, and NMFS will meet on the LTMS six year review cycle, or as needed, for the following purposes: (1) to evaluate and discuss the continued effectiveness of the programmatic consultation, (2) to ensure that activities authorized by the programmatic consultation continue to minimize adverse effects to EFH, and (3) to update procedures and project criteria, if necessary. The most recent LTMS six year review occurred in 2006, with the next review scheduled for 2012. An assessment of this programmatic consultation will occur in conjunction with the 2012 LTMS review, with subsequent assessments in 2018, 2024, 2030, 2036, 2042, and 2049.

At any time, NMFS may revoke or revise this programmatic consultation if it is determined that it is not being implemented as intended or if new information becomes available indicating a significant discrepancy in either the effects analysis or effectiveness of EFH Conservation Recommendations.

B. Actions

Below is a list of the actions currently employed for the purpose of maintaining previously dredged areas in San Francisco Bay:

1. Dredging

The dredging process involves the removal or excavation of bottom sediments from the aquatic environment in order to create or maintain waterways deep enough to support navigation, including access channels, turning basins, ports, and marinas. Dredging methods can be divided into two broad categories, mechanical and hydraulic (Gren 1976), differentiated primarily by the volume of water furnished with the dredged material. Mechanical dredges are commonly used for smaller, localized sites, and include clamshell, bucket, and excavator dredges. Hydraulic dredges remove and transport sediments by suction and pumping, which mixes large volumes of water with the sediment to form a slurry that is piped or barged to a disposal area. The most common hydraulic dredges include the cutterhead and the hopper dredge.

a. Mechanical dredging: Mechanical dredges remove bottom sediments by direct application of mechanical force to dislodge sediments, scooping the sediments from the bottom and placing them into a barge or scow for transport to a dredge disposal or reuse site.

i. Clamshell: A clamshell dredge employs a vertical loading grabber connected to wire rope which is lowered in the open position into the sediment, closed around the sediment load, and raised above the barge for deposit. Several diverse bucket configurations are available to be specifically tailored to the various sediment types.

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ii. Environmental bucket: An environmental bucket is similar to a conventional clamshell dredge; however the environmental bucket generally has features that include some combination of covers, exterior pulleys, and sealed joints, intended to reduce the amount of sediments that can spill or flow out of the bucket during dredging activities (Wang *et al*. 2002).

iii. Excavator: Excavator dredging involves a backhoe excavator mounted to a barge. The excavator bucket is lowered to the seafloor where it scoops up sediment, brings the sediment up through the water column in the open bucket, where it is deposited on the barge.

b. Hydraulic dredging: Hydraulic dredges remove bottom sediments by suction force and those sediments are transported in the liquid slurry form for transport to a dredge disposal site.

i. Cutterhead: Cutterhead dredges are equipped with a rotating cutter apparatus surrounding the intake end of a suction pipe. The revolving cutterhead helps to break up bottom sediments and facilitates the pumping of the sediment up through the pipe.

ii. Suction/Hopper: Suction or hopper dredges are equipped with a drag arm, long suction pipes with drag heads attached to the end. During active dredging, the drag arm is slowly dragged across the seafloor using the forward motion of the vessel. The sediment and water slurry is drawn up through the drag head and drag arm by on-board pumps and deposited within the hopper bin. Once full, dredging ceases and the vessel moves directly to the disposal site where dredged material is disposed through large doors at the bottom of the dredge.

2. Knockdown

Knockdowns employ an I-beam or other similar equipment to redistribute shoaled sediment into deeper areas within the dredging site. These are generally used for smoothing the bottom following conventional mechanical or hydraulic dredging, and for managing localized mounds without the need to mobilize a full dredging episode. Typically knockdowns are used to alleviate shoaling in marinas, ports, and in some navigational channels.

3. Disposal

During the dredging process the sediment removed from the seafloor must be transported to and disposed of at an alternate location. Dredged material may be deposited in several different location types, including in-Bay, offshore, and nearshore unconfined locations, and upland disposal locations.

a. In-Bay: In-Bay disposal sites are open water locations within the San Francisco Bay action area (as defined in section IV below) but limited to the estuarine waters inside the Golden Gate Bridge. There are currently four in-Bay sites approved for disposal, including SF-9 and SF-10 in San Pablo Bay, SF-11 in the Central Bay, and SF-16 in Suisun Bay.

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b. Offshore: Offshore disposal sites are open water locations within the San Francisco Bay action area (as defined in section IV below) located in the ocean waters outside of the Golden Gate Bridge, far from shore in deep water. There is currently one offshore, deep water site approved for placement of dredge material. SF-DODS (Deep Ocean Disposal Site) is located approximately 49 nautical miles offshore from the Golden Gate Bridge, encompassing an area of 4160 acres, at depths ranging from 2500 to 3000 meters.

c. Nearshore: Nearshore disposal sites are open water locations within the San Francisco Bay action area (as defined in Section IV below), located in the ocean waters outside the Golden Gate Bridge, but within 10 nautical miles of the Golden Gate Bridge. Currently there are two nearshore sites designated for placement of dredged material; these include SF-8 and SF-17 (under consideration) both located south of the Main Ship Channel.

d. Upland: Upland disposal includes any disposal site not located in the open waters of the San Francisco Bay action area (as defined in section IV below), and may include diked former baylands, wetlands surrounding the margins of the San Francisco Bay estuary, confined disposal facilities, rehandling facilities, levees requiring maintenance, sanitary landfills, construction sites, or sites suitable for habitat development (restoration, enhancement). Both mechanical and hydraulic equipment may be used to transport dredged material to an upland disposal site.

C. LTMS Environmental Protection Measures

Below is a list of the environmental protection measures implemented by the LTMS agencies to avoid or minimize adverse effects to EFH:

1. Reducing in-Bay disposal: Over the life of the San Francisco Bay LTMS, proposed 80 percent reductions in the volume of dredged material disposed of in the Bay will be achieved through the elimination of unnecessary dredging activities, and by maximizing reuse of dredged sediments. To date, in-Bay disposal has been reduced from 6.0 million cubic yards per year pre-1990 to less than 2.0 million cubic yards per year in 2009. The current level of annual in-Bay disposal is 1.64 million cubic yards.

2. Beneficial reuse of dredged material (habitat restoration): Dredged sediments that are determined to be suitable for reuse are used maximally to benefit the environment. The majority of beneficial reuse has been for restoring wetland ecosystems around San Francisco Bay (Table 2). Sediments are also being used to renourish eroded areas of coastline at Ocean Beach.

3. Dredged Material Management Office (DMMO) regulation on quality of sediments disposed in-Bay: Material to be dredged must be tested to determine wether it is suitable for the proposed disposal or reuse site.

Funding of scientific studies to improve knowledge about potential impacts of dredging and dredged material placement: To date, the San Francisco Bay LTMS has provided over $7 million in funding to support studies to investigate effects of dredging and dredge disposal on sensitive fish species, mercury contamination at wetland reuse sites, assessments of sediment

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resuspension associated with dredging activities and effect of turbidity on sensitive fish species. Information on how dredging has been modified or fish habitat has been protected as a result of these LTMS-funded studies has not been compiled for the purpose of this programmatic consultation.

The environmental protection measures described here and in the consultation initiation package as parts of the proposed action reduce or avoid adverse effects to EFH. The NMFS regards these environmental protection measures as integral components of the proposed action and expects that all proposed activities will be completed consistent with those measures. Any deviation from these environmental protection measures will be beyond the scope of this consultation and may require supplemental consultation to determine what effect the modified action is likely to have on EFH.

IV. ACTION AREA

The proposed activities occur within areas identified as EFH for various life stages of fish species managed with the following Fishery Management Plans (FMP) under the MSA:

Pacific Groundfish FMP – various rockfish, sole and sharks
Pacific Salmon FMP – Chinook salmon
Coastal Pelagic FMP – northern anchovy, Pacific sardine, mackerel, squid

In addition, some activities will occur within areas designated as Habitat Areas of Particular Concern (HAPC) for various federally managed fish species within the Pacific Groundfish FMP. HAPC are described in the regulations as subsets of EFH that are rare, particularly susceptible to human-induced degradation, especially ecologically important, or located in an environmentally stressed area. Designated HAPC are not afforded any additional regulatory protection under MSA; however, federal projects with potential adverse impacts to HAPC are more carefully scrutinized during the consultation process. As defined in the Pacific Groundfish FMP San Francisco Bay is designated as estuary HAPC. Submerged aquatic vegetation (SAV), such as eelgrass and widgeon grass, which occurs within the project footprint, is also designated as HAPC.

A. Geographic scope

The action area spans 11 counties, including Marin, Sonoma, Napa, Solano, Sacramento, San Joaquin, Contra Costa, Alameda, Santa Clara, San Mateo, and San Francisco Counties. The geographic scope of potential impacts included in this consultation comprises the estuarine waters of the San Francisco Bay region and portions of the Sacramento-San Joaquin Delta (Delta) west of Sherman Island. It also includes the wetlands and shallow intertidal areas that form a margin around the estuary and the tidal portion of its tributaries. Outside of the Golden Gate bridge, the action area includes ocean waters that encompass the San Francisco Main Ship Channel, the San Francisco Deep Ocean Disposal Site (SF-DODs), the San Francisco Bar Disposal Site (SF-8), the Ocean Beach near shore dredged material beneficial reuse site (SF-17), and the waters that are used by vessels en route to these sites. It does not include the

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mountainous or inland areas far removed from navigable waters. The action area defines the region where navigational dredging covered by the San Francisco Bay LTMS program may occur, where dredged material disposal and beneficial use sites are located and where additional disposal or beneficial use sites may be feasible. See Figure 1 for detailed representation of the action area and the geographic scope covered by this programmatic.

B. Habitat types

For the purposes of this programmatic consultation, habitats within the geographic scope of the proposed project are categorized and described as follows:

1. Soft bottom habitat

Soft bottom substrates are the most common substrate types in San Francisco Bay. They are characterized by a lack of large stable surfaces for plant and animal attachment. Exposure to wave and current action, temperature, salinity, and light penetration determine the composition and distribution of organisms within the sediments (USGS 1998). Two types of soft bottom substrate comprise the majority of the Bay bottom where dredging and disposal activities occur: sand and fine grain sediment.

a Sand benthic habitat: Bottom sediments that contain greater than 80% sand (particles 0.062 to 2.0 mm in diameter) are considered sand benthic habitat for the purposes of this document. Sand habitat is more dynamic than fine grain habitat due to greater movements of larger grain sediment by wave and current action. This reduces the amount of productivity and invertebrate species diversity in this habitat type, making it less valuable as foraging habitat for fish. However, sand substrate does provide benthic habitat for fish to reproduce, rear, and grow (NMFS 2007).

b Fine grain benthic habitat: Fine grain sediments include mud, silts, and clay (particles 0.001 to 0.062 mm in diameter). Bottom sediments that contain less than 80% sand are considered fine grain benthic habitat for the purposes of this document. Fine grain sediment is considered good foraging habitat for fish because, when undisturbed, it provides a substrate for invertebrate epifauna and infauna, upon which fish prey. Fine grain benthic habitat also provides substrate for fish to reproduce, rear, and grow (NMFS 2007).

2. Wetland habitat

There are numerous definitions for the term “wetland” with 19 recently identified by the San Francisco Estuary Institute (SFEI 2009). At the federal level both the US Fish and Wildlife Service (USFWS) and the Army Corps of Engineers (USACE) have specified unique definitions. The USFWS definition includes the following language:

> Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports hydrophytes, (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year.

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The USACE defines wetlands as follows:

> The term "wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

The USACE has established identification and delineation procedures for wetlands, specifically the USACE 1987 Wetland Manual and subsequent regional supplements (USACE 2010). According to the USACE definition and delineation methodology, areas that are not dominated by hydrophytes but that provide wetland beneficial uses and ecological services, such as tidal flats, are not necessarily identified as wetlands. However, tidal flats are known to provide productive shallow water habitat for epibenthic fishes (Sogard and Able 1991).

While all areas of a properly functioning wetland benefit fish in some way, there are specific components that are directly considered fish habitat. For the purposes this document, the following wetland components are considered fish habitat: tidal marsh, tidal flats, and tidal sloughs. Given the varying definitions for the term “wetland”, these wetland components that are important for fish survival, reproduction, and growth to maturity will be collectively referred to as “marsh complex” in subsequent sections.

Tidal marshes, which include brackish and salt marshes, are vegetated wetlands subject to tidal action that occur throughout much of the Bay extending from approximately Mean Sea level to the maximum height of the tides. Established tidal marshes provide an essential and complex habitat for many species of fish, other aquatic organisms and wildlife. Tidal marshes provide foraging habitat and refugia for fish (Boesch and Turner 1984). In the early 1800s, tidal marshes covered some 190,000 acres on the fringes of the Bay. Tidal marsh bordering the Bay now totals approximately 40,000 acres, a loss of approximately 80 percent of the Bay's historic tidal marshes.

Tidal flats occur from the elevation of the lowest tides to approximately Mean Sea Level and include mudflats, sandflats and shellflats. Mudflats comprise the largest area of tidal flat areas and support an extensive community of invertebrate aquatic organisms, such as diatoms, worms and shellfish, as well as fish that feed during higher tides, and plants such as algae and eelgrass. Of the 50,000 acres of tidal flats that historically occurred around the margins of the Bay, approximately 30,000 acres remain, a reduction of approximately 40 percent (Goals Project 1999).

Sloughs/channels are the primary paths of moving water through wetlands, providing fish access to productive foraging habitat. Sloughs are subtidal, allowing fish permanent access and offering a haven between tidal inundations of salt marshes. Slough habitat is used for more than just transit to productive wetlands as demonstrated by observations of greater species diversity in sloughs than in associated shallow tidal creeks (Desmond *et al*. 2000). Sloughs occur throughout the San Francisco Bay for example, Montezuma and Suisun Sloughs in Suisun Bay, branches off the lower portions of the Napa and Petaluma Rivers in the North Bay, branches off Corte Madera

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Creek in the Central Bay, and Redwood, Alviso, and Guadalupe Sloughs in the South Bay.

3. Eelgrass habitat

Eelgrass (*Zostera marina*) is a flowering vascular plant that grows both subtidally and intertidally in estuaries and in shallow coastal areas. Studies have shown that seagrasses, including eelgrass, are among the areas of highest primary productivity in the world (Herke and Rogers 1993, Hoss and Thayer 1993). In San Francisco Bay, eelgrass beds are considered to be a valuable shallow-water habitat, providing shelter, feeding, or breeding habitat for many species of invertebrates, fishes, and some waterfowl. Eelgrass beds supply organic material to nearshore environments, and their root systems stabilize area sediments. Intermittent eelgrass surveys suggest eelgrass abundance has varied greatly in San Francisco Bay in the last several decades. In the late 1920s, eelgrass was reported as an abundant species along the shores of San Francisco Bay (Setchell 1929). In 1987 a survey of the Bay found only 128 hectares of eelgrass, with much of the existing habitat exhibiting conditions of environmental stress (Wyllie-Echeverria and Rutten 1989, Wyllie-Echeverria 1990). In 2003 hydro acoustic surveys documented 1165.7 hectares of eelgrass, covering approximately 1 percent of San Francisco Bay (Merkel & Associates 2004).

As discussed above, eelgrass is designated as EFH for various federally-managed fish species within the Pacific Groundfish and Pacific Salmon Fisheries Management Plans (FMP) (PFMC 2008 and PFMC 1999). Eelgrass is also designated HAPC for various species within the Pacific Groundfish FMP. Eelgrass is also considered a special aquatic site under the 404 (b)(1) guidelines of the Clean Water Act (40 CFR Part 230.43). Under these guidelines, special aquatic sites are subject to greater protection than other waters of the United States, because of their significant contribution to the overall environment.

Other native submerged aquatic vegetation, such as widgeon grass (*Ruppia*) or sago pondweed (*Stuckenia* or *Potamogeton*) occurs within San Francisco Bay. While less is known about these species than is known about eelgrass, they likely provide primary productivity and organic material to nearshore environments and may provide shelter for invertebrates and fishes. Native submerged aquatic vegetation is designated as EFH for various federally-managed fish species within the Pacific Groundfish and Pacific Salmon FMPs and is designated HAPC for various species within the pacific Groundfish FMP (PFMC 2008 and PFMC 1999).

V. EFFECTS OF THE ACTION

A. Level of Effect

As described in Section I above, the term “adverse effect” is interpreted at 50 C.F.R. §600.810(a) as any impact that reduces quality and/or quantity of EFH. Impacts to marine habitats from dredging related activities can be placed into three categories: (1) permanent loss; (2) degradation; and (3) periodic disturbance. Generally, activities that lead to a permanent loss of habitat reduce the quantity of habitat, whereas habitat degradation and periodic disturbances result in a loss of habitat quality. The primary differences between the three categories are that recovery of habitat function can not occur from permanent loss, recovery may or may not occur

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from degradation, and recovery is possible from periodic disturbances (Deegan & Buchsbaum 2005).

These three categories are interpreted as a low, medium or high level of effect in the current analysis, as described below:

1. Low

A low level of effect arises from an action that is short term, infrequent, and small in area, and does not affect sensitive habitat types (*i.e.*, eelgrass). The effect is considered a *periodic disturbance*. While low level effects should be avoided or minimized when possible, compensation is generally not required.

2. Medium

A medium level of effect arises when an action occurs for a long time but in a small area or conversely when an action occurs for a short time but over a large area. A medium level of effect may also arise from an action that occurs for a moderate time over a medium area, or negatively affects sensitve habitat types (*i.e.*, eelgrass). The effect is usually considered *degradation of habitat*. Avoidance or minimization of medium level of effects is recommended. Mitigation for medium level effects may be required if effects can not be avoided or minimized.

3. High

A high level of effect arises from an action that occurs for a long time across a large area, or destroys a sensitive habitat type (*i.e.*, eelgrass). The effect is usually considered a *permanent loss*. Avoidance or minimization of high level of effects is recommended. Mitigation for high level effects will be required if effects can not be avoided or minimized.

B. Types of Effects

Types of effects that are expected to result from the proposed maintenance dredging and associated activities are described below. While there is overlap among some of the effects (for instance many of things affect the availability of prey) these are the generally accepted categories of the environmental effects of dredging on EFH (Hanson *et al.* 2003).

1. Direct removal/burial of organisms

a. Prey: Many EFH species forage on infaunal and bottom-dwelling organisms, such as polychaete worms, crustacean, and other EFH prey types. Dredging may adversely effect these prey species at the site by directly removing or burying these organisms (Newell *et al.* 1998, Van der Veer *et al.* 1985) and providing substrate for invasive species (see section V.B.8). Recolonization studies suggest that recovery (generally meaning the later phase of benthic community development after disturbance when species that inhabited the area prior to disturbance begin to re-establish) may not be quite as straightforward, and can be regulated by physical factors including particle size distribution, currents, and compaction/stabilization processes following disturbance. Rates of recovery listed in the literature range from several months to several years for estuarine muds (McCauley *et al.* 1976, Oliver *et al.* 1977, Currie & Parry 1996, Tuck *et al.*1998, Watling *et al.* 2001) to up to

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2 to 3 years for sands and gravels (Reish 1961, Thrush *et al.* 1995, Watling *et al.* 2001, Gilkinson *et al.* 2005). Recolonization can also take up to 1 to 3 years in areas of strong current but up to 5 to 10 years in areas of low current (Oliver *et al.* 1977). Thus, forage resources for fish that feed on the benthos may be substantially reduced before recovery is achieved. Based on available literature, NMFS will assume recovery of prey resources will not occur within one year.

b. Refugia: Dredging activities and the activities of associated equipment may directly damage or destroy spawning nursery and other sensitive habitats such as emergent marshes and subaquatic vegetation, including eelgrass. Direct removal of eelgrass can occur when eelgrass is growing within the project footprint to be dredged (Sabol *et al.* 2005). Eelgrass may be directly damaged by the dredging vessels and barges themselves. Impacts may result from the dredging vessel grounding, direct damage from propellers, and anchor scour. Eelgrass is also susceptible to damage by burial resulting from the sediments re-suspended during dredging, dredge material disposal, and from the prop wash associated with dredging vessels.

2. Turbidity/siltation

Dredging and dredge disposal activities may result in greatly elevated levels of fine-grained mineral particles, or suspended sediment concentration (SSC), and organic particles in the water column. The finer grain sediments, silts and clays, are more readily suspended and settle out slower than course sediments, such as sand and gravel. Dredging in areas with fine sediments are likely to have greater turbidity impacts than dredging in areas with coarse sediments (Sabol *et al.* 2005).

Turbidity plumes of suspended particulates reduce light penetration through the water column. Limited light availability has been identified as the primary factor controlling depth distribution, density, and productivity of eelgrass (Dennison & Alberte 1982, Dennison & Alberte 1985, Dennison & Alberte 1986, Zimmerman *et al*. 1991). Reductions in light available at the eelgrass canopy due to dredging-related turbidity may result in eelgrass loss, especially where eelgrass is growing at or near its lower depth limit. Even slight reductions in light availability result in lower rates of photosynthesis for subaquatic vegetation (Dennison 1987). Furthermore, phytoplankton productivity in the water column may be reduced as a result of elevated turbidity and increased light attenuation (Cloern 1987).

While fish in San Francisco Bay are exposed to naturally elevated concentrations of suspended sediments resulting from storm flow runoff events, wind and wave action, and benthic foraging activities of other aquatic organisms (Schoellhammer 1996), dredging induced concentrations of suspended sediments may be significantly elevated to have direct effects on fish behavior. If suspended sediment loads remain high for an extended period of time, fish may suffer increased larval mortality (Wilber & Clarke 2001), reduced feeding ability (Benfield & Minello 1996) and be prone to fish gill injury (Nightingale & Simenstad 2001a). Additionally, the contents of the suspended material may react with the dissolved oxygen in the water and result in short-term oxygen depletion to aquatic resources (Nightingale & Simenstad 2001).

3. Contaminant release

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Dredging can disturb aquatic habitats by resuspending bottom sediments and, thereby, recirculating toxic metals, hydrocarbons, hydrophobic organics, pesticides, pathogens, and nutrients into the water column (USEPA 2000, SFEI 2008). Any toxic metals and organics, pathogens, and viruses, absorbed or adsorbed to fine-grained particulates in the sediment, may become biologically available to organisms either in the water column or through food chain processes. Dredging can also expose sediments that are more highly contaminated than previous surface sediments causing degradation of benthic and water column habitat. For further discussion of contaminant effects see Appendix 1.

4. Release of oxygen consuming substances

The disposal of dredged material can change the chemistry and the physical characteristics of the receiving water at the disposal site by introducing chemical constituents in suspended or dissolved form. The introduction of nutrients or organic material to the water column as a result of the discharge can lead to a high biochemical oxygen demand (BOD), which in turn can lead to reduced dissolved oxygen, thereby potentially affecting the survival of many aquatic organisms. Increases in nutrients can favor one group of organisms such as polychaetes or algae to the detriment of other types.

5. Entrainment

Dredging may result in the direct uptake of aquatic species by the suction field generated at the draghead or cutterhead of a hydraulic dredge (Reine & Clarke 1998). Definitive information in the literature shows that elicit avoidance responses to the suction dredge entrainment occurs for both benthic and water column oriented species (Larson & Moehl 1990, McGraw & Armstrong 1990). However, demersal fish are more likely to become entrained because they reside on or in the bottom substrates (Reine & Clarke 1998). Entrainment of prey species is an adverse effect to EFH through the reduction in the quality of the habitat for managed species. Entrainment of demersal fish by mechanical dredges, though rare, has also been documented1. Disposal of dredged material may result in the direct uptake of aquatic species, both EFH species and their prey, when an offloader is used to transport material. Entrainment can occur when a pump intakes water to generate the slurry (typically an 80:20 mixture of water and dredged material) that an offloader requires for material transport.

6. Noise

Dredging equipment and dredging related activities can generate underwater sound pressure waves that may adversely affect the ecological functioning of EFH. Sources of these underwater sounds originate from vessel propellers, pumps, generators, and from dredge buckets and dragheads coming in contact with the substrate (Clarke *et al*. 2002, Dickerson *et al*. 2001). These pressure waves have been shown to injure and kill fish (*e.g.*,, CalTrans 2001, Longmuir & Lively 2001, Stotz & Colby 2001, Stadler, pers. obs. 2002). Injuries associated directly with dredging are poorly studied, but include rupture of the swimbladder and internal hemorrhaging (CalTrans 2001, Abbott & Bing-Sawyer 2002, Stadler, pers. obs. 2002). Sound pressure levels (SPL) 100 decibels (dB) above the threshold for hearing is thought to be sufficient to damage the auditory system in many fishes (Hastings 2002).

1 Personal communication from J. Crocker, National Marine Fisheries Service, Protected Resources Division, 55 Great Republic Drive, Gloucester, MA, 01930, February 2010.

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7. Adjacent habitat

Though dredging or disposal activities may be confined to a localized area, tides and currents can have a significant influence on the dispersal of suspended sediments into the adjacent areas. Indirect impacts to adjacent undredged areas may occur as a result of increased turbidity and possibly siltation associated with dredging activities (Sabol *et al.* 2005).

8. Invasive species

The introduction of exotic species into estuarine and marine habitats has been well documented (Rosecchi *et al*. 1993, Kohler & Courtenay 1986, Spence *et al*. 1996). Exotic fish, shellfish, pathogens, and plants can enter the environment from industrial shipping (*e.g.*, as ballast), recreational boating, aquaculture, biotechnology, and aquariums. Dredging activities contribute to the establishment of invasive species in several ways. Barges and hydraulic dredges that travel into San Francisco Bay carrying ballast waters from other areas can directly transport and introduce invasive species. The maintainence of shipping channels via dredging may indirectly lead to transport of invasive species by allowing large vessels (able to travel from far distances) access to the Bay. Additionally, the act of removing soft-bottom sediments and their associated biotic assemblages during dredging creates an area of disturbance which is extremely susceptible to recolinization by invasive species, often resulting in the displacement of native species. As a result, dredging can increase both the number of new invasive species entering the bay and the distribution and abundance of existing invasive species in the bay. Finally, disposal of non-native species with dredged materials at dipsersive in-Bay sites also allows increased distribution and abundances of existing invasive species.

The transportation of nonindigenous organisms to new environments can have many severe impacts on habitat (Omori *et al.* 1994). Long-term impacts of the introduction of nonindigenous and reared species can change the natural community structure and dynamics, lower the overall fitness and genetic diversity of natural stocks, and pass and/or introduce exotic lethal disease. Overall, exotic species introductions create five types of negative impacts: 1) habitat alteration, 2) trophic alteration, 3) gene pool alteration, 4) spatial alteration, and 5) introduction of diseases. Habitat alteration includes the excessive colonization of exotic species which preclude the growth of endemic organisms. The introduction of exotic species may alter community structure by predation on native species or by population explosions of the introduced species. Spatial alteration occurs when territorial introduced species compete with and displace native species. Although hybridization is rare, it may occur between native and introduced species and can result in gene pool deterioration. Non-native plants and algae can degrade coastal and marine habitats by changing natural habitat qualities. Introduced organisms increase competition with indigenous species or forage on indigenous species, which can reduce fish and shellfish populations. Long-term impacts from the introduction of nonindigenous and reared species can change the natural community structure and dynamics, lower the overall fitness and genetic diversity of natural stocks, and pass and/or introduce exotic lethal diseases. The introduction of exotic organisms also threatens native biodiversity and could lead to changes in relative abundances of species and individuals that are of ecological and economic importance. The introduction of bacteria, viruses, and parasites is another severe threat to EFH as it may reduce habitat quality. New pathogens or higher concentrations of disease can be spread throughout the environment resulting in deleterious habitat conditions.

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9. Alteration to hydrodynamic regimes and physical habitat

Dredging may modify current patterns and water circulation of the habitat by changing the direction or velocity of water flow, water circulation, or dimensions of the water body traditionally used by fish for food, shelter or reproductive purposes.

C. Effect by action

1. Dredging

Certain effects of dredging are ubiquitous and do not vary significantly in the level of intensity among the various equipment types. Acre-for-acre of bottom substrate disturbed, the effects of a hydraulic dredge are assumed equivalent to mechanical dredges in terms of the direct removal/burial of organisms, influencing invasive species abundance and distribution, and alteration of hydrodynamic regimes and physical habitat. However, for other effects, such as turbidity, noise, and entrainment, the nature of these direct and indirect effects, and the level of those effects vary by the types of equipment used, site specific conditions, and sediment type at the site.

a. Mechanical dredging: Mechanical dredges are moderately precise but typically generate more suspended sediments throughout the water column than hydraulic dredges. Sediments may become suspended due to the bucket's impact to the bottom, material washing from the top and side of the bucket as it passes through the water column, sediment spillage as it breaks the water surface, spillage of material during barge loading, and intentional overflow in an attempt to increase the barge's effective load (Nightingale & Simenstead 2001). A study characterizing the spatial extent of turbidity plumes during dredging operations in Oakland Harbor found the closed bucket dredge generated elevated concentration of suspended sediments. Ambient Total Suspended Sediment (TSS) concentrations were typicall less than 50 mg/l. While exact plume trajectories were dynamic, turbidity levels above ambient were detected up to 400 meters both up- and down-current from the source. But in general, significantly elevated TSS concentrations greater than 225 mg/l were detected up to 250 meters from the source (MEC Analytical Instruments, Inc. 2004).

In general, mechanical dredges produce a complex combination of several different types of repetitive sounds which may be intense enough to cause injury to fish, though the intensity, periodicity, and spectra of emitted sounds differ among the dredge types (Clarke *et al*. 2002, Dickerson *et al*. 2001). The most intense sound impacts are produced during the bucket's impact with the substrate, with peak sound pressure levels (SPL) of 124 dB measured 150 meters from the bucket strike location (Clarke *et al*. 2002). Entrainment is not an impact typically associated with mechanical dredges.

i. Clamshell: A clamshell dredge if properly maintained and operated may be effective in dredging sediments without resulting in excessive turbidity plumes. However, when not properly maintained or operated, clamshell dredges may generate significant concentrations of suspended sediment throughout the water column. Clamshell dredges have a repetitive sequence of sounds generated by the winches, bucket impact with the substrate, closing and opening the bucket, and sounds associated with dumping the

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dredged material into the barge. Although clamshell dredges generate less turbidity than excavator dredges, high turbidity is common during routine operations.

ii. Environmental bucket: Modifications to the traditional clamshell bucket design results in less sediment re-suspension than the traditional clamshell. The enclosed nature of this type of bucket is intended to reduce the amount of sediment that spills out of the bucket during digging, lifting through the water, or exiting the water surface. Hayes *et al*. (1984) found that environmental buckets provided up to 35 to 45 percent reduction of suspended sediment in the middle and upper water column compared to the conventional clamshell. Other than the reduction in suspended sediment, the effects of the environmental bucket are comparable to those of the traditional clamshell dredge.

iii. Excavator: Excavator dredges result in the highest suspended sediment concentrations throughout the water column, as much as 2.5 times higher than that of all other dredge equipment (LaSalle 1990). It is assumed that excavator dredges would produce sounds similar to those detailed for the clamshell dredge above.

b. Hydraulic dredging: Hydraulic dredges typically re-suspend less sediment than mechanical dredges. While overall turbidity may be lower, and tends to be lower through the water column, turbidity is still generated near the bottom. Sediments may be re-suspended as the cutter or the drag head moves across the bottom. Compared to mechanical dredges, hydraulic dredges are a source of continuous sounds, produced from a combination of vessel noise, *i.e.*, engine/propeller, pumps, generators, and the noise produced from the drag head's contact with the bottom (Clarke *et al*. 2002, Dickerson *et al*. 2001). While the sound produced by hydraulic dredges may not be severe enough to cause physiological damage to fish, it is likely significant enough to effect fish behavior. Entrainment of fish is a significant issue associated with hydraulic dredges. Entrainment can occur when a fish is trapped in the uptake of sediments and water being removed by the dredging machinery.

i. Cutterhead: Some hydraulic dredges use a revolving cutterhead to break up the sediment in order to facilitate removal. Cutterheads have the least precision of the various dredge equipment. There may be some re-suspension of bottom sediment by the movement of the cutterhead as it swings back and forth across the dredge site. These turbidity plumes are restricted to the lower water column closest to the bottom. In general the cutterhead dredge has the least affect on sediment re-suspension compared to other dredge equipment. The cutterhead itself does produce a continuous sound made by the cutter rotating through the substrate. Peak SPL for the cutterhead dredge were 100-110 dB in the frequency range of 70-1000 Hz approximately 500 meters from the source (Clarke *et al*. 2002).

ii. Suction/Hopper: Hopper dredges are considered the most precise compared with other dredge types. Under certain conditions, hopper dredges are prone to capturing high volumes of water when dredging fine grained materials. When a scow is loaded with overly liquidous dredge material it reduces the volume of material that may be carried within each scow load. The practice of "overflow", when the excess water is released from the scow during dredging to make room for more sediment material, results in the

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release of highly turbid water back into the water column. One of the hopper dredges used in San Francisco Bay, *The Essayons*, is fit with an anti-turbidity valve that may reduce turbidty during overflow.

Without overflow, hopper dredges follow cutterhead dredges as the second lowest turbidity generating dredge equipment. There is some sediment re-suspension due to the movement of the drag head as it moves across the dredge site, however, these turbidity plumes are restricted to the lower water column closest to the bottom. When hopper dredges overflow, unconfined sediments are returned to the water which results in a turbidity plume that extends down through the water column as these sediments settle out. According to Barnard (1978), turbidity resulting from the hopper dredge during overflow is comparable to that from a clamshell dredge.

Hopper dredges produce a combination of sounds from the engine/propeller, and from the sound of the draghead moving in contact with the substrate (Clarke *et al*. 2002, Dickerson *et al*. 2001). Peak SPL for the hopper dredge were 120-140 dB in the frequency range of 70-1000 Hz (Clarke *et al*. 2002, Dickerson *et al*. 2001).

2. Knockdown

The effects of knockdowns are somewhat different compared to other dredging techniques, as material is not removed completely but rather is redistributed within the area dredged. The burial of organisms, re-suspension of sediments and associated contaminants, and alteration to the hydrodynamic regime and physical habitat are the major effects associated with knockdowns. Based on the results of Clarke *et al*. (2004) the spatial and temporal extent and the magnitude of suspended sediment concentrations generated by knockdown dredges is site- and equipment-specific, but may generate high turbidity plumes. Though no reference was available on the subject, it is assumed that the noise resulting from a knockdown dredge would be similar to those produced by other dredge equipment while in contact with the sediment surface.

3. Disposal

The effects of in-water dredge material disposal can vary by location and type (*i.e.*,, in-Bay versus oceanic) of disposal site. In all cases, the unconsolidated particles discharged into the aquatic environment remain temporarily in suspension following discharge, creating a turbidity plume extending from the surface, through the water column, all the way to the bottom, and which may extend into adjacent habitats. The spatial and temporal extent of the turbidity plume resulting from disposal is specific to the sediment grain size of disposed material and the hydrodynamic regime of the site. Disposal sites differ in the nature of sediment dispersion due to differing current regimes among sites within the Bay and also between the Bay and the open ocean. Sediment dispersion will also vary with depth of the disposal site.

Disposing dredged material may adversely affect infaunal and bottom-dwelling organisms at the site by smothering immobile organisms, (*e.g.*,, invertebrate prey species) or forcing mobile animals (*e.g.*,, benthic oriented fish species) to migrate from the area. As discussed in section V.B.1 above, NMFS assumes recovery of prey resources will take 3 to 5 years, thus recovery of the benthic community is unlikely at disposal sites where disposal occurs with any frequency

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greater than annually. Based on records provided by USACE, all of the in-Bay and oceanic disposal sites are disposed at multiple times per year, indicating that these areas may be frequently disturbed.

In addition, erosion, slumping, or later displacement of sediment affects substrates in adjacent areas. The location, method, and timing of discharges may all influence the degree of impact on the substrate and receiving waters. The discharge of dredged material may change the chemistry and the physical characteristics at the disposal site by introducing chemical constituents in suspended or dissolved form. The level of contaminants approved for disposal varies among the different disposal sites.

a. In-Bay: In-Bay disposal sites are dispersive and located in areas where the dredged sediment is expected to be redistributed through the sediment transport system. These sites tend to be shallower than the offshore open-water disposal site and these shallower depths shorten the distance sediments travel in the currents before settling to the bottom. The exact nature of dispersal varies among the various in-Bay sites due to the bathymetry and hydrodynamic regime at each individual site. Disposal at in-Bay sites is limited to unconsolidated dredge materials that meet the standards for concentrations of contaminants proposed by the DMMO. Each of the in-Bay disposal sites are disturbed via disposal activities at least annually. Therefore in-Bay disposal sites are considered a permanently disturbed, or a high level effect.

b. Offshore: The one existing offshore disposal site is a deep water site. Because SF-DODs is located in the open ocean and in extremely deep water, sediments disposed there may disperse across a large area. SF-DODs is characterized by slow deposition with little to no sediment mass movement, making it a suitable location for dredge material disposal (Chin & Ota 2006). Studies have demonstrated that disposal of dredged material has had no regional impact or degradation of benthic infauna (Blake *et al*. 2009). Because SF-DODs is significantly deeper, and much more dispersive than the shallower in-Bay and nearshore disposal sites, bottom sediments are likely less disturbed. Therefore SF-DODs is not considered permanently disturbed. Sediments proposed for ocean disposal must also meet specific criteria for contaminants but in general the thresholds for offshore disposal are less conservative than those for in-Bay or nearshore disposal.

c. Nearshore: The two existing nearshore disposal sites are in deeper water than the in-Bay disposal sites, but not nearly as deep as the offshore site. The increased depth may result in sediments dispersing further than at in-Bay sites. However, both SF-8 and SF-17 were designated as disposal sites for clean sand only, therefore, these course sediments settle out of suspension faster than fine sediments disposed at other disposal sites. Furthermore, the location of SF-8 and SF-17 were chosen such that sediments would ultimately disperse towards an eroded area of the adjacent coastline. SF-8 and SF-17 are disposed at frequently enough to be considered permanently disturbed.

d. Upland: Upland disposal sites include a variety of disposal locations that each poses their own specific set of effects to EFH. Entrainment of aquatic species (fish, invertebrates, fish larvae, fish eggs) may occur if an offloader is used for upland disposal. Entrainment can

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occur when a pump intakes water to generate the slurry (typically an 80:20 mixture of water and dredged material) that an offloader requires for material transport. Offloaders may be equipped with screens to prevent entrainment of certain size fish, however entrainment of some prey species (*i.e.*, plankton) is unavoidable.

Typically, sediments with concentrations of contaminants deemed not suitable for in-Bay or offshore disposal are required to be disposed of at suitable upland sites, such as rehandling facilities or sanitary landfills. Sediments disposed of in upland beneficial reuse sites, such as wetland creation sites, must meet specific guidelines for contaminants.

D. Effects Analysis

1. Soft bottom habitat (prey loss)

In order to quantify the spatial extent of the effects of dredging and dredge disposal attributable to maintenance dredging in San Francisco Bay, an analysis was performed using GIS and project information provided by the USACE. Spatial data representing the shoreline of San Francisco Bay at Mean Sea Level was used to calculate the total two dimensional area of the Bay in acres. Polygons representing individual dredging projects and disposal locations (Figure 1, Table 1) were overlain onto spatial data to calculate the total two dimensional area of the Bay that is disturbed by dredging related activities in acres (Table 3). It must be acknowledged that calculated areas are estimates only and do not represent exact acreages disturbed. In some instances polygons representing specific projects may have covered a larger area than is actually dredged and in some instances a smaller area than is actually dredged. Calculated values were determined merely to provide a rough estimate of in-Bay disturbance caused by dredging related activities. Additionally, areas do not take into account volumes of sediment removed or disposed, nor movement of sediment into adjacent areas (*i.e.*,, turbidity).

Data associated with each dredging project was used to further refine calculations. Project associated data included the following: dredger affiliation (USACE or non-USACE), sediment type (fines or sand), and frequency of dredging. Frequency of dredging was consolidated into three categories: dredging occurs at least once a year (high level effect), dredging occurs every 1-2 years (medium level effect), and dredging occurs every 3 years or greater (low level effect). Again, uncertainty in each of the associated data categories must be acknowledged. Data was provided by the USACE or extrapolated from information provided to the DMMO since 2003. In general, the USACE dredge projects include the federal navigation channels. Other projects, such as the Larkspur Ferry Channel, are sometimes dredged by the USACE though not always. The sediment type category is a rough estimate of the type of sediment dredged from each project area. It is acknowledged that the sand sediment area dredged may be an overestimate due to projects being listed with sand sediment even though sand may not be present in the entire project area. Similarly, the area that is dredged with a frequency of at least once per year may be an overestimate due to the fact that while dredging may occur at the project site every year, the entire area may not be dredged. However, the area in this most frequently dredged category may be an underestimate should a project in one of the other categories need to dredge more frequently.

Ten additional polygons were included in the spatial analysis as “dummy projects” to account for

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maintenance dredging projects that were not on the list of projects provided by the USACE. Data associated with the dummy projects was generated using average values from data associated with non-USACE projects.

From the spatial analysis, total area of the Bay was calculated to be 285,786.2 acres. Total area of the Bay where disposal of dredged material occurs was calculated to be 550.2 acres. Total area of the Bay dredged was calculated to be 9,444.2 acres. Thus, our best estimate of the total area of the Bay disturbed by dredging and disposal activities was calculated to be 9,994.4 acres (or 3.5% of the Bay, Table 3).

Recovery rates of soft bottom benthic habitat (see section V.B.1 above) indicate that annual disturbance is a high level effect (Table 4), from which recovery is unlikely. All in-Bay disposal sites (550.2 acres total) are considered to be annually disturbed. Total area of the Bay dredged annually was calculated to be 3,314.9 acres. Thus, the best estimate of the total area of the Bay disturbed annually by dredging and disposal activities was calculated to be 3,865.1 acres (1.4% of the Bay). As previously mentioned, the annual nature of these disturbances indicates these areas are permanently disturbed, and subject to high level effects.

a. Sand benthic habitat: The total area of sand habitat disturbed annually was calculated to be 988.5 acres (Table 5). Annual disturbance is considered a high level effect, particularly in areas with high productivity, due to the loss of foraging habitat. Sand habitat functions primarily as area in which fish can reproduce, rear, and grow. Productivity may be lower in sand than in fine grain substrate. So, although annual disturbance of sand sediment does reduce the function of this habitat, it is considered to be a medium level effect. With the application of LTMS Environmental Protective Measure #2 (section III.C.2), beneficial reuse of sand sediment for beach nourishment, the effect to sand habitat is partially compensated for.

b. Fine grain benthic habitat: The total area of fine grain habitat that is dredged annually was calculated to be 2,326.4 acres. Including the area of in-Bay disposal sites increases this number to 2,876.6 acres. Given the high productivity in fine grain sediment, the annual disturbance of 2,876.6 acres is considered a high level effect to foraging habitat. Via LTMS Environmental Protective Measure #2 (section III.C.2), beneficial reuse of dredged sediment for wetland restoration, approximately 4,567 acres of wetlands have been or will be created (Table 2). Table 2 shows the total acreage for each LTMS wetland restoration project currently in progress. Each project is broken down with estimates for acreage of soft bottom habitat anticipated to be created over both the short- and long-term as the resorations sites develop. Via LTMS Environmental Protective Measure #2, 2,876.6 acres of the wetlands created may be applied to compensate for the 2,876.6 acres of fine grain habitat disturbed annually. This is considered partial compensation for the dreding-related impacts to fine grain habitat because only 509.5 acres of the wetlands created will become soft bottom habitat. Although the 509.5 acres of soft bottom habitat created within these restored wetlands will be highly productive soft bottom habitat, this value will not be realized for some time. Due to the out-of-kind nature of the majority of the acreage applied to fine grain benthic habitat loss and the delayed functioning of the in-kind acreage, additional EFH Conservation Recommendations have been made.

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2. Wetland habitat (prey and refugia loss)

Building on the analysis described above for soft bottom habitat, a further analysis was conducted to quantify the spatial extent of the effects of dredging to wetland habitat. In order to limit impacts to those affecting "marsh complex" habitat (defined in section IV.B.2 above) data layers representing tidal marsh, tidal flats (from figure 2.7, Goals Project 1999), and slough habitat[2] for San Francisco Bay were incorporated into the GIS developed for the soft bottom analysis. Acreage of "marsh complex" disturbed was calculated from the area of overlap of a dredge project footprint with tidal marsh, tidal flat, or slough habitat. Similar to the caveats described above, this analysis was conducted merely to provide a rough estimate of habitat disturbed and acreages should not be considered exact.

From the spatial analysis, the total area of wetland "marsh complex" that is dredged was calculated to be 525.5 acres. Of that, 143.2 acres are tidal marsh or tidal flat and 382.3 acres are slough habitat. Of the slough habitat, 101.7 acres are from Suisun Channel. Due to the valuable function of "marsh complex" as refugia and foraging habitat, disturbance of this habitat type is considered a high level effect. Via LTMS Environmental Protective Measure #2 (section III.C.2), beneficial reuse of dredged sediment for 4,567 acres wetland restoration, and after compensation for fine grain benthic habitat loss with 2,876.6 acres of that, approximately 1,690.4 acres of the wetland restoration may be applied to compensate for effects to wetland "marsh complex" habitat. Thus the effects to wetland "marsh complex" habitat are considered to be compensated for.

3. Eelgrass habitat (refugia loss)

Building on the analysis described above for soft bottom habitat, a further analysis was conducted to quantify the spatial extent of the effects of dredging to eelgrass habitat. Data layers representing known eelgrass locations identified in San Francisco Bay during surveys conducted in 2003 and 2009 were incorporated into the GIS developed for the soft bottom analysis (Merkel & Associates 2004; Merkel & Associates In preparation). As described in sections V.B.1 and 2 above, effects to eelgrass from dredging related activities may be indirect (via turbidity) or direct (via removal or burial).

a. Indirect eelgrass effects: Based on distances that significantly elevated concentrations of suspended seminents may travel (see section V.C.1.a above), and effects suspended sediments can have on eelgrass (see section V.B.2 above), a 250 meter buffer was placed around each dredge project footprint to determine which projects pose potential indirect effects to eelgrass. Any project with a 250 meter buffer that intersected with eelgrass was identified as having the potential to indirectly affect eelgrass through turbidity, the resulting increased shading, and consequently the loss of eelgrass from adjacent areas. A total of 40 projects (3 USACE and 37 non-USACE) were determined to have this potential (Table 6). Due to the valuable function of eelgrass habitat as refugia, foraging and nursery habitat, this is considered a high level effect.

[2] Personal communication from K. A. Schaeffer, National Marine Fisheries Service, Habitat Conservation Division, 777 Sonoma Ave., Santa Rosa, California, 95404, February 2010.

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b. Direct eelgrass effects: Acreage of existing eelgrass that could potentially be removed by dredging was calculated from the area of overlap of a dredge project footprint with known eelgrass locations. A total of 11 projects were identified that overlapped with known eelgrass. The total acreage of eelgrass that could potentially be removed by dredging was calculated to be 2.2 acres (Table 6).

Eelgrass in San Francisco Bay exhibits natural variability in its spatial distribution. To be protective of existing eelgrass and account for fluctuations in distribution, a 45 meter buffer was placed around eelgrass3. This distance was determined by best professional judgement of scientists experienced with eelgrass in San Francisco Bay and is not based on specific scientific data. Inclusion of the 45 meter buffer should account for local fluctuations in eelgrass distribution for the duration of this programmatic consultation. The buffer was clipped to remove any areas where it is not feasible for eelgrass to grow (*i.e.*, depths greater than 4 meters4). Acreage of eelgrass that could potentially be directly affected by dredging was then recalculated from the area of overlap of a dredge project footprint with the clipped eelgrass 45 meter buffer. A total of 22 projects were identified with the potential to directly affect eelgrass (Table 6). Total acreage of eelgrass that could potentially be directly affected was calculated to be 21.5 acres. Due to the valuable function of eelgrass habitat as refugia, foraging and nursery habitat, this is considered a high level effect.

4. Contaminants effects analysis

Because of a lack of data provided in the EFH Assessment for contaminant distribution and dredging projects in San Francisco Bay, a spatial analysis of contaminants as related to dredging and dredging-related activities was not feasible. Nevertheless, a review of the major contaminants, how exposure to them is affected by dredging and dredge material disposal, and related effects on EFH has revealed that current procedures for handing contaminated materials may not be sufficient. The action agencies have significant reserved discretionary authority to address the avenues of exposure and impact in order meet their obligations under the Magnuson-Stevens Act while meeting their primary goal to restore and maintain the chemical, physical and biological integrity of the Nation's waters as mandated by the Clean Water Act (For analysis of contaminant issues see Appendix 1). In general, current LTMS Environmental Protective Measures do not adequately compensate for adverse effects of contaminants on EFH, therefore additional mitigation is required.

5. Other effects

The effects of dredging related activities to turbidity and adjacent habitat are considered medium level (Table 4A). With the application of LTMS Environmental Protective Measure #1, the reduction of in-Bay disposal, these effects are partially compensated (Table 4B). Suction dredges and upland disposal can both cause entrainment, which primarily results in a loss of prey or degradation of foraging habitat. Originally considered a medium level effect (Table 4A), with the application of LTMS Environmental Protective Measure #2, beneficial reuse for the restoration of wetlands, this effect is partially compensated (Table 4B). Invasive species that

3 Personal communication from K. W. Merkel, Merkel and Associates, Inc., 5434 Ruffin Rd., San Diego, California, 92123, April 2010.

4 4 meters was chosen based on maximum depth that eelgrass was found in Richardson Bay by Merkel & Associates (2008). This depth is protective of eelgrass throughout San Francisco Bay.

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colonize the Bay as a result of dredging related activities are considered a medium level effect. No LTMS Environmental Protective Measures exist to reduce the level of this effect.

6. Area outside San Francisco Bay

Dredging of the Main Ship Channel by the USACE occurs annually outside of San Francisco Bay (Figure 1) with a footprint of approximately 1,203 acres. This area is considered highly dynamic sand benthic habitat, with limited function as foraging habitat. Dredging of the Main Ship Channel is considered a medium level effect (Table 4A). With the application of LTMS Environmental Protective Measure #2 (section III.C.2), beneficial reuse of sand sediment for beach nourishment, the effect to sand habitat is partially compensated (Table 4B).

Near shore disposal sites (SF-8 and SF-17) are annually disturbed outside of San Francisco Bay. The disposal of sand sediment at these sites is considered beneficial reuse for beach nourishment. Thus, disturbance at near shore disposal sites is considered a low level effect.

Offshore disposal (SF-DODS) occurs annually outside of San Francisco Bay. Studies conducted at the site have demonstrated a low effect level on the benthic community and water column (Blake *et al*. 2005; McGowan *et al*. 2003).

VI. EFH CONSERVATION RECOMMENDATIONS

As described in the above effects analysis, NMFS has determined that the proposed action would adversely affect EFH for various federally managed fish species within the Pacific Groundfish, Coastal Pelagic, and Pacific Salmonid FMPs. Therefore, pursuant to section 305(b)(4)(A) of the MSA, NMFS offers the following EFH Conservation Recommendations to avoid, minimize, mitigate, or otherwise offset the adverse effects to EFH.

A. Soft bottom habitat permanent disturbance (prey loss)

1. To minimize adverse effects to soft bottom benthic foraging habitat, NMFS recommends that the USACE and USEPA conduct a benthic recovery study. A benthic recovery study should be conducted in order to validate assumptions in the effects analysis that recovery of the benthic community occurs in areas that are dredged less frequently than once per year. The study should be conducted in representative areas within all regions of the Bay where dredging occurs, and should monitor benthic recovery for a minimum of 3 years. If the study indicates that benthic recovery takes 1-2 years, minimization or mitigation measures will be required to account for approximately 664 additional acres of soft bottom foraging habitat permanently disturbed. If the study indicates that benthic recovery takes longer than 3 years, minimization or mitigation measures will be required to account for up to 3,312.3 acres of soft bottom foraging habitat permanently disturbed. If the study indicates that benthic recovery takes one year or less, then effects may be considered accounted for by current LTMS Environmental Protective Measures and no further actions are required. Recovery of the benthic community will be considered to have occurred when species that inhabited the area prior to disturbance successfully re-establish. Study design subject to approval by NMFS. NMFS staff are available to assist with details of study design. A potential valid design has been developed by the USACE Waterways

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Experiment Station, Vicksburg, MS:
http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADP005482

2. To minimize adverse effects to soft bottom benthic foraging habitat, NMFS recommends that the USACE and USEPA encourage practices that reduce the frequency of dredging in an area when possible and when not in conflict with sensitive area (*i.e.,* eelgrass) recommendations. This may include:

a. Dredging areas to the authorized design depth (not including overdepth) in a single episode rather than dredging to lesser depths in multiple episodes.

b. Discouraging the initiation of dredging at times when it is unlikely that dredging will be completed in a single episode.

c. Rotating areas within a project footprint to be dredged when the entire area can not be dredged to the authorized design depth (not including overdepth) in a single episode. This would result in the dredging of one area to design depth in a single episode and dredging of another area to design depth in a subsequent episode rather than dredging smaller amounts from both areas simultaneously in multiple episodes.

3. To minimize or mitigate for uncompensated adverse effects to soft bottom benthic foraging habitat, NMFS recommends that the USACE and USEPA fund a single NMFS Fishery Biologist position to specialize in all dredge related activities. This position would help address loss of fish foraging habitat by allowing NMFS to actively participate in the LTMS Science Committee. With adequate NMFS representation on the LTMS Science Committee resources could be directed toward studies related to fish habitat and relevant habitat enhancement projects. This single NMFS position also compensates for outstanding adverse effects from contaminants and invasive species, and as such is also included in the EFH Conservation Recommendations for those effects. The funding of a single Fishery Biologist position would fufill all three recommendations (3, 9, and 11). The USACE, USEPA and NMFS are authorized to enter into an Interagency Reimburseable Agreement pursuant to the Economy Act (31 U.S.C. 1535) which provides that an agency may place an order with a major organizational unit within another agency for goods or services.

B. Eelgrass indirect effects (refugia loss)

4. To avoid and minimize adverse effects of turbidity on eelgrass, NMFS recommends that the following BMPs be implemented for any dredge project identified as having the potential to indirectly affect eelgrass (Table 6). To determine which BMP is appropriate for an individual project, a systematic approach has been developed as an easy to use flowchart (Appendix 2).

a. Avoidance: Under the following conditions, no turbidity effects are expected, therefore no additional minimization BMPs required:

i. Using a hydraulic dredge, no overflow,

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ii. Dredging in sand (>80% sand) substrate,

iii. Physical barriers or site-specific hydrodynamics prevent turbidity plumes from dispersing to the adjacent eelgrass.

b. Minimization: Under the following conditions, turbidity effects are expected, therefore additional minimization BMPs5 are required:

i. Using a mechanical dredge,

ii. Dredging in fine sediment (<80% sand) substrate,

iii. Currents may disperse suspended sediments to adjacent eelgrass.

Examples of turbidity minimization measures include silt curtains, light monitoring, and any other operational control, subject to NMFS approval.

(a) Silt Curtain: A silt curtain is an impermeable barrier typically constructed of a flexible reinforced thermoplastic material. It is used to contain the suspended sediment plume generated during dredging so that the sediments will settle out of suspension within a controlled area. The upper hem has floatation material and the lower hem has ballast material. They are most effective when they are not open and closed to allow equipment access to the dredging area, and operationally are limited to areas where currents are less than 1-2 knot.

(b) Light Monitoring: If light monitoring is appropriate for a given project, monitoring should be conducted both within adjacent eelgrass as well as at an appropriate reference area outside not influenced by turbidity above ambient for the area. Location of appropriate reference area will depend on project-specific conditions, and should be determined on a project-by-project basis. Monitoring should be conducted to determine the average daily period of irradiance-saturated photosynthesis (H_{sat}) during dredging for comparison with H_{sat} levels determined from scientific literature that are necessary for the maintenance of whole plant carbon balance and growth (Zimmerman *et al.* 1991) or levels within a nearby reference eelgrass bed that would experience comparable ambient water quality conditions, absent influence of turbidity generating activities. If H_{sat} is reduced below 5 hours (Zimmerman *et al.* 1991), or ambient levels at the control site, dredging should cease until turbidity dissipates, and further operational controls should be considered prior to resuming.

See Appendix 3, the San Francisco Bay Light Monitoring Survey Protocol, for further guidance. This protocol may be subject to change if new information becomes available

5 In addition to the turbidity minimizing BMPs proposed here, direct mitigation may also be considered, see VI.C MITIGATION below for further details.

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that supports modifications of protocol elements.

(c) Additional Operational Controls: The following list of operational BMPs should be employed maximally for all dredging projects. However, they should be applied more judiciously when indirect turbidity effects on eelgrass are possible. When implementation of any of the above avoidance and minimization BMPs is not feasible, then the following should be considered in combination with light monitoring to verify their effectiveness.

(i) Increased cycle time/ reduced bucket deployment: longer cycle times reduce the velocity of the ascending bucket through the water column, which reduces potential sediment wash from the bucket.

(ii) Consider alternate equipment: if all other avoidance and minimization measures have failed to effectively reduce turbidity effects on eelgrass, consider equipment with lower likelihood of generating turbidity, *e.g.*, use an environmental bucket instead of an excavator.

c. Exclusion: If USACE or USEPA determine that none of the above avoidance or minimization measures are implementable or provide sufficient turbidity reduction for a specific project, then that project is not covered by this programmatic consultation and must undergo individual consultation with NMFS.

C. Eelgrass direct effects (refugia loss)

5. In all cases where eelgrass is found directly in the dredge project area, NMFS recommends that every effort be made to avoid direct removal or burial. In cases where avoidance is not possible, impacts to eelgrass must be mitigated for to achieve no net loss of eelgrass or suitable eelgrass habitat. Populations of eelgrass are highly dynamic, and the exact location and extent of eelgrass beds can change across seasons and years. As discussed in V.D.3.b above, the 45 m buffer around the 2003/2009 mapped eelgrass extent accounts for areas between patches, temporal variation in bed extent, and area for potential bed expansion. Therefore, in all cases where the project area overlaps with the 45 m buffer around eelgrass (Table 6) NMFS recommends that the project must mitigate for those direct effects using one of the options described below.

Independent of which mitigation option is chosen, a mitigation plan shall be prepared in accordance with the U.S. Army Corps of Engineers' (USACE) 2004 Final Mitigation Guidelines and Monitoring Requirements, acknowledging that mitigation within subtidal and marine waters does not always fit well within all aspects of this guidance.

Mitigation Option #1
USACE and USEPA may establish an eelgrass mitigation bank to compensate for direct impacts to eelgrass within their project footprints that they are unable to avoid.

Mitigation Bank: Establishment of any "mitigation bank" must be consistent with the U.S.

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Army Corps of Engineers and U.S. Environmental Protection Agency Final Rule for Compensatory Mitigation for Losses of Aquatic Resources (33 CFR Parts 325 and 332, 40 CFR Part 230), and the Memorandum of Understanding Concerning Mitigation and Conservation Banking in California Between the California Resources Agency, California Department of Fish and Game, Corps, US Fish &Wildlife Service, NMFS, USEPA, and USDA Natural Resources Conservation Service.

Upon conclusion of this programmatic consultation and acceptance of this EFH Conservation Recommendation (VI.C.5.a), the USACE and USEPA will initiate the creation of a Mitigation Bank. During the period of time that the Mitigation Bank is becoming established, and until the time that Mitigation Bank is determined to be successfully established, projects with direct eelgrass effects will be subject to individual mitigation requirements (see VI.C.5.b below). The provisions of this recommendation are not subject to change upon changes in NMFS' Eelgrass Mitigation Policy.

a. Bank Requirements:

i. Size: there is no exact size requirement for the bank, but target size should be slightly larger than anticipated acreage for potential withdrawals. Based on the results of the spatial analysis, NMFS recommends that a 20 acre bank would be sufficient to support the projects covered by this programmatic with direct eelgrass effects based on a mitigation ratio of 1:1 (section V.D.3.b, Table 6). A target for bank density will be determined by NMFS staff prior to bank intitiation and will be based on average eelgrass density for San Francisco Bay.

ii. Location: The specific location of the eelgrass mitigation bank(s) shall be based on factors such as depth, sediment type, salinity, water quality, and currents. NMFS staff and other appropriate resource agencies should be involved in evaluating suitable sites and in making an ultimate site selection for restoration.

iii. Technique: Techniques for eelgrass mitigation shall be consistent with the best available technology at the time of mitigation implementation and shall be tailored to the specific needs of the mitigation site. However, it is understood that whatever techniques are employed, they must comply with the stated requirements and criteria. Eelgrass transplants have been highly successful in southern and central California, but have had mixed results in San Francisco Bay and northern California. Bare-root bundles, seed buoys, and transplants using frames are techniques that have been utilized with some success in northern portions of the state.

iv. Monitoring: Monitoring the success of eelgrass mitigation shall be completed for a period of at least five years. Monitoring shall determine the area of eelgrass and density of plants at the mitigation sites and shall be conducted at 0, 6, 12, 24, 36, 48, and 60 months. All monitoring work must be conducted during the active vegetative growth period, April through October, and should avoid the recognized low growth season for San Francisco Bay. Additional monitoring beyond the 60-month period may be required in those instances where stability of the mitigation site is questionable or where other

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factors may influence the long-term success of mitigation. The need for extended monitoring shall be evaluated and discussed with NMFS and the applicable permitting agencies.

A monitoring schedule that indicates when each of the required monitoring events will be completed shall be provided to NMFS prior to or concurrent with the initiation of the mitigation. Monitoring reports shall be provided to NMFS within 30 days after the completion of each required monitoring period.

v. Success criteria: The bank will be deemed successful when the target area reaches a density representative of the average eelgrass density in San Francisco Bay (to be determined by NMFS staff based on best available information). If the mitigation area fails to achieve continuous success over the last three monitoring years, the monitoring period shall be extended and corrective measures will be recommended and undertaken to address shortfalls. In some instances, simply extending the monitoring period may be appropriate. However, in other cases, it may be necessary to perform supplemental mitigation efforts, or otherwise supplement mitigation actions to address mitigation needs.

b. Bank use and restrictions:

i. Prior to completion of successfully established Bank: Individual projects will mitigate for the area of direct project overlap with mapped eelgrass (Table 6, direct no buffer). These mitigation activities will be subject to existing NMFS Eelgrass Mitigation Policies (Southern California Eelgrass Mitigation Policy, Appendix 4). No pre- or post-dredge survey will be required.

ii. After Bank determined successfully established:

(a) Individual projects will withdraw from Bank an area-based ratio of 1 to 1 for the entire area of project overlap with mapped eelgrass, plus the area of overlap for the 45 m buffer (Table 6, direct with 45 m buffer). Upon Bank withdrawal, this project's eelgrass mitigation exists in perpetuity.

(b) Individual projects that mitigated for area of direct overlap during Bank establishment phase, will be credited for that individual mitigation. Upon that project's reinitiating of dredging activities, they will be accountable for mitigating the remaining area encompassed by the 45 m buffer. Following withdrawal from the Bank an area-based ratio of 1 to 1 for the 45 m buffer area (minus the area of mitigation completed during bank establishment phase), this project's mitigation exists in perpetuity.

(c) Any individual project that has mitigated for eelgrass during the 10 years proceeding this programmatic will be credited for the area established during that individual mitigation effort. Upon that project's reinitiating of dredging activities, they will be accountable for mitigating the entire area of project overlap with mapped

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eelgrass (2003-2009 maximum extent), plus the area of overlap for the 45 m buffer, minus the area previously mitigated. Following withdrawal from the Bank an area-based ratio of 1 to 1 for that area, this project's mitigation exists in perpetuity.

(d) If withdrawals exceed total Bank size and Bank balance goes to zero, return to project by project direct mitigation (Mitigation Option #1, b.i) until a net positive area of Bank can be re-established.

Mitigation Option #2
The USACE and USEPA may continue to mitigate on a project by project basis:

a. For individual projects with eelgrass occurring in the project footprint, prior to the start of dredging operations, eelgrass and potential eelgrass habitat directly within and adjacent to the dredge footprint will be mapped and measured for area and density. The extent of adjacent areas to be mapped should be determined on project-by-project basis depending on site specific conditions. An area and density survey report of the eelgrass will be submitted to NMFS for approval within 30 days of the start of dredging activities.

b. To protect eelgrass outside the project footprint, BMPs to avoid and minimize indirect affects of turbidity (section VI.B.4, Appendix 2) will be strictly employed as appropriate.

c. Eelgrass directly adjacent to the dredge footprint will be marked with buoys to ensure vessel traffic/barges avoid those areas. Dredging equipment will not be located to the maximum extent possible, temporarily or at anchor, in eelgrass areas outside the project footprint.

d. If NMFS determines dredging has adversely impacted eelgrass in the project area based on monitoring observations or comparison of pre- and post-dredging surveys, the applicant must provide NMFS with an eelgrass Mitigation Plan within 60 days of completing the post-dredge survey. All Mitigation Plans that have not been previously approved by NMFS will be subject to any existing or forthcoming NMFS Eelgrass Mitigation Policies (currently the Southern California Eelgrass Mitigation Policy, Appendix 4).

Mitigation Option #3
Alternative mitigation plan: The USACE and USEPA may develop an alternative in-kind mitigation plan for impacts to eelgrass from dredge related activities subject to NMFS approval. This programmatic consultation will not cover projects listed in Table 6 with direct impacts to eelgrass as determined by direct overlap with the 45 m buffer until the alternative mitigation plan is approved by NMFS and implementation is successful. Until the alternative plan is developed, approved, and implemented, mitigation will be done on a project by project basis as described in Mitigation Option #2.

D. Turbidity

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6. Reduce in-Bay disposal: To avoid or minimize adverse effects from disposal related turbidity, NMFS recommends the USACE and USEPA further reduce in-Bay disposal. This may include:

a. Outfitting the USACE hopper dredges to be compatible with and to use offloader equipment for out-of-Bay placement of sediment.

b. Encouraging or facilitating non-federal dredge projects to use available offloaders for out-of-Bay placement of sediment.

E. Contaminants

7. Bioaccumulation testing: The action agencies have reserved discretionary authority to require bioaccumulation evaluations and/or alternatives to in-Bay disposal. This authority should be more clearly defined in the San Francisco Bay district with clear triggers in testing requirements and subsequent permitting decisions. If bioaccumulative contaminants (PCBs, PAHs, DDTs, dieldrin, chlordane, dioxins/furans, and mercury) are present in dredged material above ambient sediment levels in the vicinity of the proposed in-Bay disposal site or bioaccumulation triggers used elsewhere in the Northern Pacific, bioaccumulation testing needs to be required if the project proponent wishes to dispose of the material in-Bay. If testing confirms bioaccumulation of contaminants, then the dredged materials must be declared not suitable for unconfined in-Bay disposal and disposed of in an appropriate manner. This procedure is to remain in place until an acceptable protocol of sediment bioaccumulation triggers, or other tool, are developed and implemented following appropriate consultations.

8. Residuals: If dredging results in the exposure of new surface material having higher chemical concentrations than the sediment that was dredged or which exceeds the ambient concentration of surrounding areas for the contaminants of concern listed in EFH Conservation Recommendation #7 (above), then the parcel must be managed to prevent exposure to the contamination and further degradation of EFH if testing of the new sediments exposed shows toxicity or bioaccumulation of contaminants. This may warrant over-dredging and subsequent backfill to the planned project depth. The exact details will need to be determined on a case-by-case basis.

9. To minimize or mitigate for adverse effects to EFH from contaminants, NMFS recommends that the USACE and USEPA fund a single NMFS Fishery Biologist position to specialize in dredge related activities. This position would minimize adverse effects from contaminants by allowing NMFS to actively participate in the DMMO. With adequate NMFS representation in the DMMO, constituents of concerns and associated levels relevant to fish would be addressed. This single NMFS position also compensates for outstanding adverse effects to soft bottom benthic habitat and from invasive species, and as such is also included in the EFH Conservation Recommendations for those effects. The funding of a single Fishery Biologist position would fufill all three recommendations (3, 9, and 11). The USACE, USEPA and NMFS are authorized to enter into an Interagency Reimburseable Agreement pursuant to the Economy Act (31 U.S.C. 1535), which provides that an agency may place an order with a major organizational unit within another agency for goods or services.

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F. Invasives

10. To minimize adverse effects to EFH from invasive species, NMFS recommends that the USACE and USEPA establish a working group tasked with evaluating the feasibility of enhancing native benthic invertebrate species in the San Francisco estuary. The workgroup should assess methodology, enhancement sites, suitable species, and appropriate monitoring. Based on the outcome of the workgroup, a pilot project should be designed to determine if reintroduction of the native benthic invertebrate species into the estuary is feasible. If the results of the pilot determine that this is feasible, then a program should be implemented that will fully compensate for the annual impact to benthic habitat from dredging activities. If determined infeasible, or the scope does not fully compensate for impacts, then the USACE and USEPA will develop alternative measures to compensate for impacts to EFH.

11. To minimize or mitigate for adverse effects to EFH from invasive species, NMFS recommends that the USACE and USEPA fund a single NMFS Fishery Biologist position to specialize in dredge related activities. This position would account for adverse effects from invasive species by allowing NMFS to actively participate in the LTMS Science Committee. With adequate NMFS representation on the LTMS Science Committee resources could be directed toward studies related to fish habitat and relevant habitat enhancement projects. This single NMFS position also compensates for outstanding adverse effects to soft bottom benthic habitat and from contaminants, and as such is also included in the EFH Conservation Recommendations for those effects. The funding of a single Fishery Biologist position would fufill all three recommendations (3, 9, and 11). The USACE, USEPA and NMFS are authorized to enter into an Interagency Reimburseable Agreement pursuant to the Economy Act (31 U.S.C. 1535) which provides that an agency may place an order with a major organizational unit within another agency for goods or services.

G. Other Submerged Aquatic Vegetation

12. To avoid adverse effects to EFH and HAPC, in all cases where native submerged aquatic vegetation, other than eelgrass, (e.g., *Ruppia, Stuckenia/Potamogetan*), is found directly in the dredge project area, NMFS recommends that every effort be made to avoid direct removal or burial. In cases where avoidance is not possible, mitigation should occur to compensate for adverse effects:

a. For individual projects with native submerged aquatic vegetation occurring in the project footprint, prior to the start of dredging operations, native submerged aquatic habitat directly within and adjacent to the dredge footprint will be mapped and measured for area and density. The extent of adjacent areas to be mapped should be determined on project-by-project basis depending on site specific conditions. An area and density survey report of the native submerged aquatic vegetation will be submitted to NMFS for approval within 30 days of the start of dredging activities.

b. If NMFS determines dredging has adversely impacted native submerged aquatic vegetation in the project area based on monitoring observations or comparison of pre-

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and post-dredging surveys, the applicant must provide NMFS with a Mitigation Plan within 60 days of completing the post-dredge survey. The mitigation plan should be prepared in accordance with the U.S. Army Corps of Engineers' (USACE) 2004 Final Mitigation Guidelines and Monitoring Requirements, acknowledging that mitigation within subtidal and marine waters does not always fit well within all aspects of this guidance.

H. Reporting requirements

13. To avoid adverse effects to EFH that may occur from improper utilization of this programmatic consultation, NMFS recommends that the USACE provide annual reports to NMFS on all activities conducted under this programmatic consultation. Reports should be submitted to NMFS within 90 days of the end of each calendar year. Reports should include a summary of annual dredging activities (total number of projects dredged, total volumes of sediment disposed in Bay) and an EFH Dredge Programmatic Report Form (Appendix 5) for each project where active dredging occurred. Reports should also track the number of dummy projects used to ensure the allotted amount (10) is not exceeded.

14. To avoid adverse effects to EFH that may occur from improper utilization of this programmatic consultation, NMFS recommends that the USACE notify NMFS of the following:

a. When a project will indirectly impact eelgrass and which BMP is being used (inclusion of BMP in Public Notice and submission of notice to NMFS is satisfactory).

b. When a project will directly impact eelgrass and what mitigation is proposed.

c. When a project has contaminant loads above those indicated in EFH Conservation Recommendation 7, and how material will be disposed.

VII. STATUTORY RESPONSE REQUIREMENT

Please be advised that regulations (50 CFR 600.920(k)) to implement the EFH provisions of the MSA require your office to provide a written response to this letter within 30 days of its receipt and prior to the final action. A preliminary response is acceptable if final response cannot be completed within 30 days. Your final response must include a description of how the EFH Conservation Recommendations will be implemented and any other measures that will be required to avoid, mitigate, or offset the adverse impacts of the activity. If your response is inconsistent with our EFH Conservation Recommendations, you must provide an explanation for not implementing this recommendation at least 10 days prior to final approval of the action. This explanation must include scientific justification for any disagreements with NMFS over the anticipated effects of the action and the measures needed to avoid, minimize, mitigate, or offset such effects. If the final response is inconsistent with our project-specific EFH Conservation Recommendations (4, 5, 7, and 8), projects to which these recommendations apply will not be covered by the programmatic consultation and must be consulted on individually. However, the USACE and USEPA may propose and develop alternative EFH Conservation Recommendations

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subject to NMFS approval, to compensate for outstanding adverse effects.

VIII. SUPPLEMENTAL CONSULTATION

This concludes programmatic EFH consultation for operations and maintenance dredging in the San Francisco Bay area and associated dredged material placement. Pursuant to 50 CFR 600.920(l) of the EFH regulations, the USACE and USEPA must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH Conservation Recommendations.

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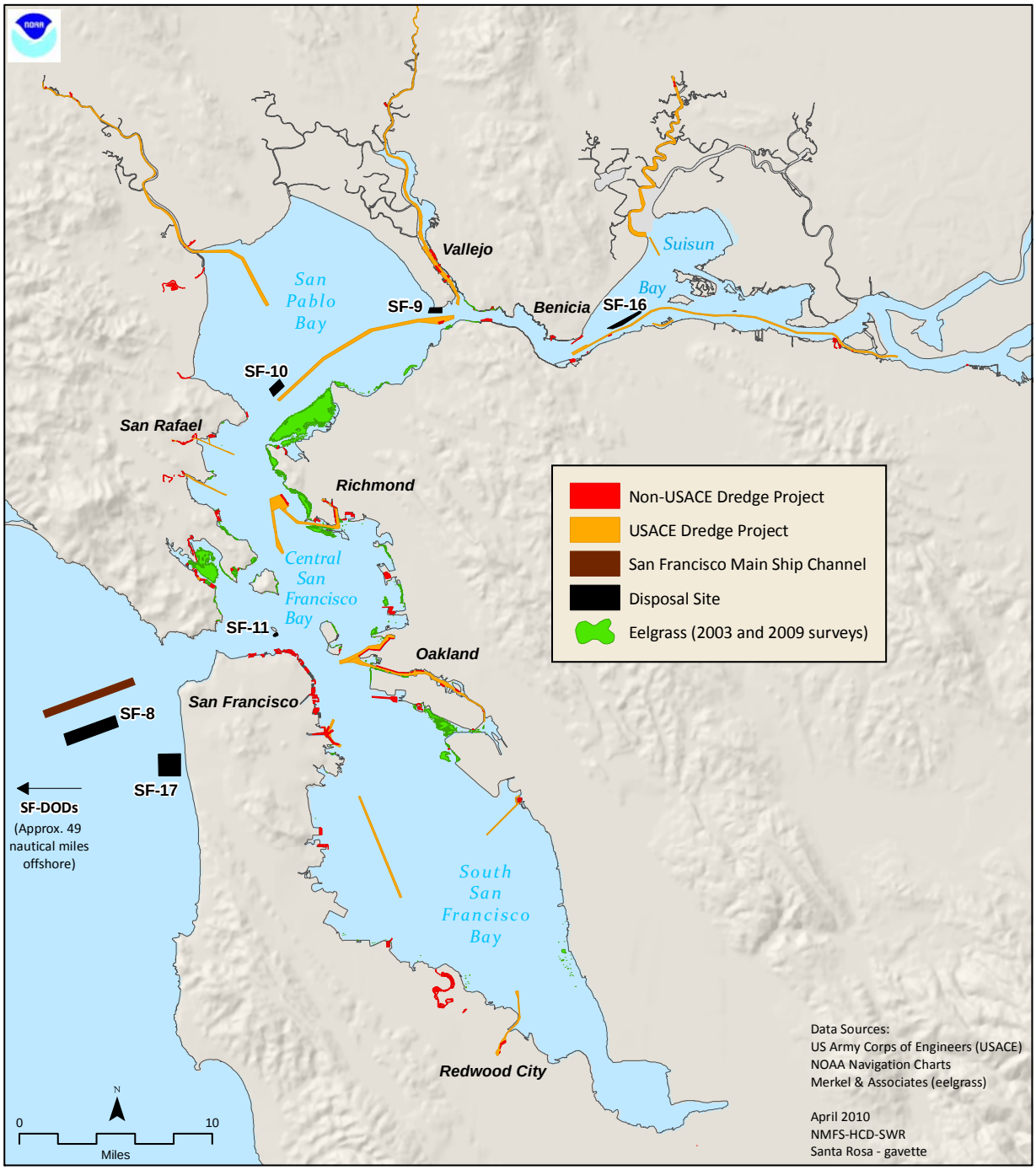

Figure 1. Action area covered by the EFH Programmatic Consultation for maintenance dredging in San Francisco Bay.

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Table 1. In-water disposal sites and dredge projects covered by this programmatic consultation. Latidudes and longitudes are provided for reference only and do not represent spatial extent of sites.

Name	Type	Latitude	Longitude
SF-DODS	Disposal (offshore)	37° 39.000' N	123° 29.000' W
SF-08	Disposal (nearshore)	37° 45.000' N	122° 36.000' W
SF-09	Disposal (in-Bay)	38° 03.667' N	122° 16.000' W
SF-10	Disposal (in-Bay)	38° 00.333' N	122° 25.000' W
SF-11	Disposal (in-Bay)	37° 49.333' N	122° 25.333' W
SF-16	Disposal (in-Bay)	38° 03.133' N	122° 05.700' W
SF-17	Disposal (nearshore)	37° 43.833' N	122° 31.000' W
Larkspur Ferry Channel	Dredge (USACE)	37° 56.156' N	122° 29.326' W
Napa River Channel	Dredge (USACE)	38° 8.882' N	122° 16.859' W
Oakland Harbor	Dredge (USACE)	37° 47.538' N	122° 17.848' W
Petaluma River Channel	Dredge (USACE)	38° 8.022' N	122° 30.056' W
Pinole Shoal - Mare Island Strait	Dredge (USACE)	38° 2.549' N	122° 19.732' W
Redwood City Harbor	Dredge (USACE)	37° 32.148' N	122° 11.806' W
Richmond Harbor	Dredge (USACE)	37° 55.297' N	122° 22.278' W
San Bruno Shoals	Dredge (USACE)	37° 39.745' N	122° 19.432' W
San Francisco Harbor, Islais Creek Shoal	Dredge (USACE)	37° 44.842' N	122° 22.209' W
San Leandro Marina	Dredge (USACE)	37° 41.085' N	122° 12.327' W
San Rafael Creek	Dredge (USACE)	37° 57.930' N	122° 29.172' W
Sausalito Bay Model	Dredge (USACE)	37° 51.920' N	122° 29.633' W
SF Main Ship Channel	Dredge (USACE)	37° 46.443' N	122° 36.249' W
Suisun Bay Channel	Dredge (USACE)	38° 3.699' N	122° 1.814' W
Suisun Slough Channel	Dredge (USACE)	38° 6.749' N	122° 3.493' W
Aeolian Yacht Club	Dredge (non-USACE)	37° 45.003' N	122° 14.079' W
Alameda Point Channel	Dredge (non-USACE)	37° 46.441' N	122° 18.907' W
Arques Shipyard and Marina	Dredge (non-USACE)	37° 52.064' N	122° 29.769' W
Ballena Isla Marina	Dredge (non-USACE)	37° 45.978' N	122° 17.109' W
Ballena Isla Townhomes	Dredge (non-USACE)	37° 46.149' N	122° 17.240' W
Bel Marin Keys Community Services District	Dredge (non-USACE)	38° 5.686' N	122° 29.445' W
Bellevue Channel (Belvedere Cove)	Dredge (non-USACE)	37° 52.337' N	122° 27.575' W
Belvedere Land Company	Dredge (non-USACE)	37° 52.363' N	122° 27.584' W
Benicia Marina	Dredge (non-USACE)	38° 2.597' N	122° 9.444' W
Benicia Port Terminal (Amport)	Dredge (non-USACE)	38° 2.488' N	122° 8.087' W
Berkeley Marina	Dredge (non-USACE)	37° 52.122' N	122° 18.972' W
Black Point Boat Launch Ramp	Dredge (non-USACE)	38° 6.880' N	122° 30.356' W
BP, Richmond Terminal	Dredge (non-USACE)	37° 54.439' N	122° 21.817' W
Brickyard Cove Homeowners Association	Dredge (non-USACE)	37° 54.497' N	122° 22.799' W
Brisbane Marina at Sierra Point	Dredge (non-USACE)	37° 40.462' N	122° 22.797' W
C&H Sugar Company	Dredge (non-USACE)	38° 3.494' N	122° 13.083' W
CA Maritime Academy	Dredge (non-USACE)	38° 3.976' N	122° 13.835' W
Castrol North American Consumer's Berth	Dredge (non-USACE)	37° 55.342' N	122° 22.367' W
Chevron Rod and Gun	Dredge (non-USACE)	37° 57.617' N	122° 24.658' W
Chevron, Richmond Longwharf	Dredge (non-USACE)	37° 55.492' N	122° 24.766' W
City of Emeryville Marina	Dredge (non-USACE)	37° 50.430' N	122° 18.750' W
City of Suisun Pierce Island Boat Ramp	Dredge (non-USACE)	38° 13.980' N	122° 2.249' W
City of Sunnydale Boat Ramp	Dredge (non-USACE)	37° 26.131' N	122° 1.622' W
Clipper Yacht Harbor	Dredge (non-USACE)	37° 51.858' N	122° 29.543' W
Coast Guard Station, Golden Gate	Dredge (non-USACE)	37° 49.968' N	122° 28.633' W

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Coast Guard Station, Yerba Buena Island	Dredge (non-USACE)	37° 48.685' N	122° 21.637' W
Coast Guard, Alameda Station	Dredge (non-USACE)	37° 46.780' N	122° 14.963' W
Conoco Philips, Richmond	Dredge (non-USACE)	37° 54.754' N	122° 21.875' W
Conoco Philips, Rodeo Terminal	Dredge (non-USACE)	38° 3.421' N	122° 15.711' W
Corinthian Yacht Club	Dredge (non-USACE)	37° 52.359' N	122° 27.406' W
Corona Del Mar Homeowners Association	Dredge (non-USACE)	37° 45.832' N	122° 13.513' W
Coyote Point Marina	Dredge (non-USACE)	37° 35.339' N	122° 19.012' W
Emery Access Chanel	Dredge (non-USACE)	37° 50.563' N	122° 18.867' W
Emery Cove Marina	Dredge (non-USACE)	37° 50.312' N	122° 18.628' W
Exploratorium	Dredge (non-USACE)	37° 48.160' N	122° 23.902' W
Foster City Lagoon	Dredge (non-USACE)	37° 32.647' N	122° 15.829' W
Galilee Harbor	Dredge (non-USACE)	37° 51.759' N	122° 29.329' W
Gallinas Creek	Dredge (non-USACE)	38° 1.023' N	122° 30.472' W
Glen Cove Marina	Dredge (non-USACE)	38° 4.023' N	122° 12.790' W
Greenbrae Marina Neighborhood	Dredge (non-USACE)	37° 56.540' N	122° 30.627' W
Hanson Aggregates	Dredge (non-USACE)	37° 45.799' N	122° 13.439' W
Harbor Bay Ferry Channel	Dredge (non-USACE)	37° 44.143' N	122° 15.479' W
High Tide Boat Sales	Dredge (non-USACE)	37° 58.080' N	122° 30.718' W
Jackson Property	Dredge (non-USACE)	37° 45.862' N	122° 13.526' W
Johnson Property	Dredge (non-USACE)	37° 52.405' N	122° 27.644' W
Kappas Marina	Dredge (non-USACE)	37° 52.580' N	122° 30.262' W
Kiewit Pacific Company	Dredge (non-USACE)	38° 5.477' N	122° 15.294' W
Larkspur Landing Ferry Terminal	Dredge (non-USACE)	37° 56.744' N	122° 30.551' W
Larkspur Marina	Dredge (non-USACE)	37° 56.417' N	122° 31.391' W
Larkspur Sea Scout Base	Dredge (non-USACE)	37° 56.587' N	122° 30.699' W
Levin-Richmond Terminal Corporation	Dredge (non-USACE)	37° 55.269' N	122° 22.017' W
Loch Lomond Marina	Dredge (non-USACE)	37° 58.343' N	122° 28.867' W
Lowrie Yacht Harbor	Dredge (non-USACE)	37° 58.037' N	122° 30.469' W
Mare Island Shipyard	Dredge (non-USACE)	38° 5.796' N	122° 15.869' W
Marin Rowing Association	Dredge (non-USACE)	37° 56.557' N	122° 31.026' W
Marin Yacht Club	Dredge (non-USACE)	37° 58.315' N	122° 29.922' W
Marina Bay Yacht Harbor	Dredge (non-USACE)	37° 54.804' N	122° 20.960' W
Marina Plaza Harbor	Dredge (non-USACE)	37° 52.008' N	122° 29.706' W
Marina Vista Canal and Homeowners Assoc.	Dredge (non-USACE)	37° 58.385' N	122° 29.754' W
Martinez Marina	Dredge (non-USACE)	38° 1.629' N	122° 8.230' W
Martinez Shore Terminal	Dredge (non-USACE)	38° 2.748' N	122° 6.082' W
Montezuma Harbor	Dredge (non-USACE)	38° 11.229' N	121° 58.230' W
Napa Valley Marina	Dredge (non-USACE)	38° 13.245' N	122° 18.783' W
Oakland Yacht Club	Dredge (non-USACE)	37° 47.021' N	122° 15.818' W
Oyster Cove Marina	Dredge (non-USACE)	37° 39.821' N	122° 22.709' W
Oyster Point Marina	Dredge (non-USACE)	37° 39.820' N	122° 22.682' W
Paradise Cay Homeowners Assoc.	Dredge (non-USACE)	37° 54.825' N	122° 28.659' W
Paradise Cay Yacht Club	Dredge (non-USACE)	37° 54.930' N	122° 28.590' W
Petaluma Marina	Dredge (non-USACE)	38° 13.797' N	122° 36.811' W
Petaluma River Turning Basin	Dredge (non-USACE)	38° 14.106' N	122° 38.262' W
Pittsburg Marina	Dredge (non-USACE)	38° 2.157' N	121° 52.964' W
Point San Pablo Yacht Club	Dredge (non-USACE)	37° 57.818' N	122° 25.103' W
Port of Oakland	Dredge (non-USACE)	37° 48.646' N	122° 19.715' W
Port of Redwood City	Dredge (non-USACE)	37° 30.808' N	122° 12.576' W
Port of Richmond	Dredge (non-USACE)	37° 54.729' N	122° 21.876' W
Port of San Francisco	Dredge (non-USACE)	37° 48.022' N	122° 23.770' W
Port Sonoma Marina	Dredge (non-USACE)	38° 7.060' N	122° 29.949' W
Redwood City Marina	Dredge (non-USACE)	37° 30.421' N	122° 12.727' W

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Redwood Shores Lagoon	Dredge (non-USACE)	37° 32.315' N	122° 14.691' W
Richmond Yacht Club	Dredge (non-USACE)	37° 54.510' N	122° 23.015' W
RMC Lonestar Cement Marina Terminal	Dredge (non-USACE)	37° 30.850' N	122° 12.522' W
Ron Valantine Boat Dock	Dredge (non-USACE)	37° 46.160' N	122° 17.255' W
Ryer Island Boat Harbor (Veneco)	Dredge (non-USACE)	38° 4.467' N	122° 0.713' W
San Francisco Dry Dock	Dredge (non-USACE)	37° 45.801' N	122° 22.984' W
San Francisco Marina (Golden Gate & St. Francis Yacht Clubs)	Dredge (non-USACE)	37° 48.410' N	122° 26.661' W
San Francisco Yacht Club	Dredge (non-USACE)	37° 52.308' N	122° 27.735' W
San Leandro Marina	Dredge (non-USACE)	37° 41.820' N	122° 11.485' W
San Rafael Creek, Residential Berths	Dredge (non-USACE)	37° 58.068' N	122° 30.680' W
San Rafael Rock Quarry	Dredge (non-USACE)	37° 59.302' N	122° 26.838' W
San Rafael Yacht Harbor	Dredge (non-USACE)	37° 58.134' N	122° 31.062' W
Sausalito Marina Properties	Dredge (non-USACE)	37° 51.603' N	122° 29.044' W
Sausalito Yacht Club	Dredge (non-USACE)	37° 51.581' N	122° 28.877' W
Schnitzer Steel	Dredge (non-USACE)	37° 47.628' N	122° 17.538' W
Schoonmaker Point Marina	Dredge (non-USACE)	37° 51.859' N	122° 29.479' W
Shamrock Materials	Dredge (non-USACE)	38° 13.515' N	122° 36.478' W
Shell Terminal	Dredge (non-USACE)	38° 2.002' N	122° 7.380' W
South Beach Yacht club	Dredge (non-USACE)	37° 46.804' N	122° 23.158' W
Strawberry Recreation District	Dredge (non-USACE)	37° 53.311' N	122° 30.001' W
Suisun City Marina	Dredge (non-USACE)	38° 14.056' N	122° 2.247' W
Time Oil Terminal	Dredge (non-USACE)	37° 55.079' N	122° 21.856' W
Timmers Landing	Dredge (non-USACE)	37° 54.554' N	122° 28.481' W
Tosco Refinery	Dredge (non-USACE)	37° 54.926' N	122° 21.900' W
US Army Reserve Center, Mare Island	Dredge (non-USACE)	38° 5.277' N	122° 15.468' W
USS Posco	Dredge (non-USACE)	38° 1.915' N	121° 52.250' W
Valero Refinery Co. - Benicia Crude Dock	Dredge (non-USACE)	38° 2.676' N	122° 7.741' W
Vallejo Ferry Terminal	Dredge (non-USACE)	38° 5.982' N	122° 15.808' W
Vallejo Marina	Dredge (non-USACE)	38° 6.424' N	122° 16.096' W
Vallejo Yacht Club	Dredge (non-USACE)	38° 6.283' N	122° 16.063' W
Dummy01—used for Napa Yacht Club	Dredge	NA	NA
Dummy02	Dredge	NA	NA
Dummy03	Dredge	NA	NA
Dummy04	Dredge	NA	NA
Dummy05	Dredge	NA	NA
Dummy06	Dredge	NA	NA
Dummy07	Dredge	NA	NA
Dummy08	Dredge	NA	NA
Dummy09	Dredge	NA	NA
Dummy10	Dredge	NA	NA

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Table 2. Wetland restoration projects that LTMS has created or contributed to. Wetland acres are the total estimated acres for the project. Short-term soft bottom acres are the estimated areas of the projects that will provide soft bottom benthic habitat for fish in the short-term future. Long-term soft bottom acres are the estimated areas of the projects that will provide soft bottom benthic habitat for fish in the long-term future as wetlands evolve.

Project	**Wetlands (acres)**	**Short-term soft bottom (acres)**	**Long-term soft bottom (acres)**
Hamilton Wetlands	570	14	383
Inner Bair Island	248	10	10
Montezuma Wetlands	1829	79.5	79.5
Sonoma Baylands	320	7	7
Bel Marin Keys V	1600	30	30
TOTAL	4567	140.5	509.5

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Table 3A. Area and percent of San Francisco Bay disturbed by dredging related activities.

Disturbance	Acres	Percent of Bay
Disposal	550.2	0.2%
USACE dredging	7636.1	2.7%
Non-USACE dredging	1808.1	0.6%
TOTAL	9994.4	3.5%

Table 3B. Area and percent of San Francisco Bay disturbed annually by dredging related activities.

Annual Disturbance	Acres	Percent of Bay
Disposal	550.2	0.2%
USACE dredging	2806.6	1.0%
Non-USACE dredging	508.3	0.2%
TOTAL	3865.1	1.4%

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Table 4A. Type (section V.B) and level (section V.A) of effect by action prior to application of LTMS Environmental Protective Measures. L = low, M = medium, H = high level of effect. A slash (*i.e.*,, L/H) indicates that a range of level of effects is possible, dependant on the area in which the action occurs. Red, yellow and blue colors highlight effects that will require avoidance, minimization, or mitigation measures.

	Frequency	**Prey loss** (foraging)	**Refugia loss** (area avoidance)	**Turbidity** (foraging, injury, area avoidance)	**Contaminants** (reproduction)	**O_2 loss** (injury, area avoidance)	**Entrainment** (foraging, area avoidance)	**Noise** (area avoidance)	**Adjacent habitat** (foraging, area avoidance)	**Invasives** (foraging)	**Physical habitat** (area avoidance)
Clamshell dredge	**0-1 yr**	**H**	**L/H**	**L/M**	**L/H**	**L**	**L**	**L**	**L**	**M**	**L**
	1-2 yr	**M**	**L/H**	**L/M**	**L/H**	**L**	**L**	**L**	**L**	**L**	**L**
	> 2 yr	**L**	**L/H**	**L/M**	**L/H**	**L**	**L**	**L**	**L**	**L**	**L**
Environmental bucket	**0-1 yr**	**H**	**L/H**	**L/M**	**L**	**L**	**L**	**L**	**L**	**M**	**L**
	1-2 yr	**M**	**L/H**	**L/M**	**L**	**L**	**L**	**L**	**L**	**L**	**L**
	> 2 yr	**L**	**L/H**	**L/M**	**L**	**L**	**L**	**L**	**L**	**L**	**L**
Excavator dredge	**0-1 yr**	**H**	**L/H**	**M**	**L/H**	**L**	**L**	**L**	**L**	**M**	**L**
	1-2 yr	**M**	**L/H**	**M**	**L/H**	**L**	**L**	**L**	**L**	**L**	**L**
	> 2 yr	**L**	**L/H**	**M**	**L/H**	**L**	**L**	**L**	**L**	**L**	**L**
Cutterhead dredge	**0-1 yr**	**H**	**L/H**	**L**	**L/M**	**L**	**L**	**L**	**L**	**M**	**L**
	1-2 yr	**M**	**L/H**	**L**	**L/M**	**L**	**L**	**L**	**L**	**L**	**L**
	> 2 yr	**L**	**L/H**	**L**	**L/M**	**L**	**L**	**L**	**L**	**L**	**L**
Suction dredge	**0-1 yr**	**H**	**L/H**	**L**	**L/M**	**L**	**M**	**L**	**L**	**M**	**L**
	1-2 yr	**M**	**L/H**	**L**	**L/M**	**L**	**M**	**L**	**L**	**L**	**L**
	> 2 yr	**L**	**L/H**	**L**	**L/M**	**L**	**M**	**L**	**L**	**L**	**L**
Knockdown	**0-1 yr**	**H**	**L/H**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**
	1-2 yr	**M**	**L/H**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**
	> 2 yr	**L**	**L/H**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**
In-Bay disposal	**annual**	**H**	**L/M**	**H**	**H**	**L**	**L**	**L**	**M**	**L**	**L**
Offshore disposal	**annual**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**
Upland disposal	**annual**	**L**	**L**	**L**	**L**	**L**	**M**	**L**	**L**	**L**	**L**

Table 4B. Type and level of effect by action after application of appropriate LTMS Environmental Protective Measures. L = low, M = medium, H = high level of effect. A slash (*i.e.*,, L/H) indicates that a range of level of effects is possible, dependant on the area in which the action occurs. 1 = reduce in-Bay disposal, 2 = wetland restoration, 3 = remove contaminants from Bay. Green color indicates effects that have been fully compensated by LTMS Environmental Protective Measures. Yellow and blue colors highlight effects with outstanding levels that will require avoidance, minimization, or mitigation measures (see conservation recommendations (CRs)).

	Frequency	Prey loss (foraging) CRs 1-3	Refugia loss (area avoidance) CRs 4-5	Turbidity (foraging, injury, area avoidance) CR 6	Contaminants (reproduction) CRs 7-9	O_2 loss (injury, area avoidance)	Entrainment (foraging, area avoidance)	Noise (area avoidance)	Adjacent habitat (foraging, area avoidance)	Invasives (foraging) CRs 10-11	Physical habitat (area avoidance)
Clamshell dredge	**0-1 yr**	**H-2**	**L/H**	**L/M-1***	**L/H-3**	**L**	**L**	**L**	**L**	**M**	**L**
	1-2 yr	**M-2**	**L/H**	**L/M-1***	**L/H-3**	**L**	**L**	**L**	**L**	**L**	**L**
	> 2 yr	**L**	**L/H**	**L/M-1***	**L/H-3**	**L**	**L**	**L**	**L**	**L**	**L**
Environmental bucket	**0-1 yr**	**H-2**	**L/H**	**L/M-1***	**L**	**L**	**L**	**L**	**L**	**M**	**L**
	1-2 yr	**M-2**	**L/H**	**L/M-1***	**L**	**L**	**L**	**L**	**L**	**L**	**L**
	> 2 yr	**L**	**L/H**	**L/M-1***	**L**	**L**	**L**	**L**	**L**	**L**	**L**
Excavator dredge	**0-1 yr**	**H-2**	**L/H**	**M-1***	**L/H-3**	**L**	**L**	**L**	**L**	**M**	**L**
	1-2 yr	**M-2**	**L/H**	**M-1***	**L/H-3**	**L**	**L**	**L**	**L**	**L**	**L**
	> 2 yr	**L**	**L/H**	**M-1***	**L/H-3**	**L**	**L**	**L**	**L**	**L**	**L**
Cutterhead dredge	**0-1 yr**	**H-2**	**L/H**	**L**	**L/M-3**	**L**	**L**	**L**	**L**	**M**	**L**
	1-2 yr	**M-2**	**L/H**	**L**	**L/M-3**	**L**	**L**	**L**	**L**	**L**	**L**
	> 2 yr	**L**	**L/H**	**L**	**L/M-3**	**L**	**L**	**L**	**L**	**L**	**L**
Suction dredge	**0-1 yr**	**H-2**	**L/H**	**L**	**L/M-3**	**L**	**M-2**	**L**	**L**	**M**	**L**
	1-2 yr	**M-2**	**L/H**	**L**	**L/M-3**	**L**	**M-2**	**L**	**L**	**L**	**L**
	> 2 yr	**L**	**L/H**	**L**	**L/M-3**	**L**	**M-2**	**L**	**L**	**L**	**L**
Knockdown	**0-1 yr**	**H-2**	**L/H**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**
	1-2 yr	**M-2**	**L/H**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**
	> 2 yr	**L**	**L/H**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**
In-Bay disposal	**annual**	**H-2**	**L/M**	**H-1**	**H-3**	**L**	**L**	**L**	**M-1**	**L**	**L**
Offshore disposal	**annual**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**
Upland disposal	**annual**	**L**	**L**	**L**	**L**	**L**	**M-2**	**L**	**L**	**L**	**L**

***Turbidity from these actions may still cause indirect impacts to eelgrass which must be avoided or mitigated for.

Table 5. Acres of dredging in San Francisco Bay by sediment type and frequency of dredging.

Dredge entity	Sediment type	Frequency of dredging (level of disturbance)			Total (all frequencies)	TOTAL
		0-1 year (high)	**1-2 years (medium)**	**3+ years (low)**		
USACE	Fines	1818.1	187.9	2512.0	4518.0	7636.1
	Sand+	988.5	1140.7	988.9	3118.1	
Non-USACE	Fines	508.3	475.8	800.3	1784.4	1788.4
	Sand	0.0	0.0	4.0	4.0	
Total (USACE & non-USACE)	Fines	**2326.4**	663.7	3312.3	6302.4	9424.5
	Sand	988.5	1140.7	992.9	3122.1	
TOTAL	Fines & sand	3314.9	1804.4	4305.2	9424.5	**9444.2∗**

+ This category does not include dredging of the Main Ship Channel as this area was not considered within San Francisco Bay for the spatial analysis.
∗ A third sediment type termed “shell-hash” is dredged by non-USACE every 3+ years adding 19.7 acres to the total acres dredged by non-USACE entities. To avoid confusion, this value is only included in the final total.

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Table 6. List of projects with potential direct and indirect impacts to eelgrass, and estimated acreage of eelgrass impacted for direct effects. Data presented here were derived from NMFS spatial analysis (V.D.3).

Name	Type	Potential direct effects		Potential indirect effects
		Acres of direct overlap with eelgrass	Acres of direct overlap with 45m buffer	Eelgrass within 250m of project
Richmond Harbor	Dredge (USACE)	0	0.003	yes
San Francisco Harbor	Dredge (USACE)	0	0	yes
Oakland Harbor	Dredge (USACE)	0	0	yes
Glen Cove Marina	Dredge (non-USACE)	0.01	2.94	yes
C&H Sugar Company	Dredge (non-USACE)	0	0	yes
San Rafael Rock Quarry	Dredge (non-USACE)	0	0	yes
Coast Guard Station, Golden Gate	Dredge (non-USACE)	0	0.51	yes
Sausalito Yacht Club	Dredge (non-USACE)	0	1.44	yes
Schoonmaker Point Marina	Dredge (non-USACE)	0	0.83	yes
Galilee Harbor	Dredge (non-USACE)	0	0.38	yes
Kappas Marina	Dredge (non-USACE)	0.01	1.66	yes
Strawberry Recreation District	Dredge (non-USACE)	0.29	1.03	yes
Clipper Yacht Harbor	Dredge (non-USACE)	0	0.35	yes
Paradise Cay Yacht Club	Dredge (non-USACE)	0	0	yes
Paradise Cay Homeowners Assoc	Dredge (non-USACE)	0	0	yes
Timmers Landing	Dredge (non-USACE)	0	0	yes
Corinthian Yacht Club	Dredge (non-USACE)	0	0	yes
San Francisco Yacht Club	Dredge (non-USACE)	0.01	4.32	yes
Belvedere Land Company	Dredge (non-USACE)	0.25	0.88	yes
Port of San Francisco	Dredge (non-USACE)	0	0	yes
CG Station, Yerba Buena Island	Dredge (non-USACE)	0.47	1.85	yes
Point San Pablo Yacht Club	Dredge (non-USACE)	0	0.39	yes
Berkeley Marina	Dredge (non-USACE)	0	0	yes
Richmond Yacht Club	Dredge (non-USACE)	0	0.18	yes
Aeolian Yacht Club	Dredge (non-USACE)	0	0.12	yes
Emery Cove Marina	Dredge (non-USACE)	0	0	yes
Port of Oakland	Dredge (non-USACE)	0	0	yes
Ballena Isla Townhomes	Dredge (non-USACE)	0.01	1.36	yes
Ron Valantine Boat Dock	Dredge (non-USACE)	0	0	yes
Redwood City Marina	Dredge (non-USACE)	0	0	yes
Coyote Point Marina	Dredge (non-USACE)	0	0	yes
Ballena Isla Marina	Dredge (non-USACE)	0	0	yes
Harbor Bay Ferry Channel	Dredge (non-USACE)	0	0.18	yes
Bellevue Channel	Dredge (non-USACE)	0.36	0.68	yes
Johnson Property	Dredge (non-USACE)	0.66	0.66	yes
Sausalito Marina Properties	Dredge (non-USACE)	0.08	0.83	yes
CA Maritime Academy	Dredge (non-USACE)	0.03	0.9	yes
Marina Bay Yacht Harbor	Dredge (non-USACE)	0	0.01	yes
Emery Access Chanel	Dredge (non-USACE)	0	0	yes
Chevron Rod and Gun	Dredge (non-USACE)	0	0	yes

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Appendix 1. Contaminant Analysis

Analysis of contaminant effects to species listed under the Endangered Species Act (ESA) and to Essential Fish Habitat (EFH) for species managed under the Magnuson-Stevens Act (MSA).

The action agencies for this project are the U.S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (EPA) Region IX. The USACE issues permits for maintenance dredging while the EPA sets sediment and water quality objectives, in conjunction with the State of California, to protect the beneficial uses of San Francisco Bay. The State must certify any dredging and disposal actions authorized by the USACE. EPA is integral in this process as a co-manager of the Long Term Management Strategy for dredging (LTMS) that was put in place to reduce the amount of dredged material disposed in-Bay and maximize the amount which is beneficially reused. The volumes sent to the ocean disposal site (SFDODs) were also expected to increase from previous levels (but remain within authorized volumes) with the adoption of the LTMS. Most of the beneficial reuse projects to date have involved the restoration or recreation of wetland habitat.

At question here are the potential effects of the USACE maintenance dredging program to ESA listed species (particularly green sturgeon) and EFH. The LTMS program sets a "40-40-20" goal as well as an overarching annual volume of allowable dredge material disposal within the Bay. Up to forty percent of the dredged materials may be disposed of in-Bay, another forty percent (minimum) is to be disposed of at an upland location and the final twenty percent (minimum) may go to SFDODs. A secondary goal of the LTMS is to maximize reuse over other disposal options. At this time, the overall volume goal (1.2 million cubic yards maximum disposed of in-Bay after 2012) of the LTMS program is nearly met while the percentage goals of the program have not been achieved. In general, a large percentage of dredged materials are still disposed of in-Bay while the ocean disposal site remains under utilized. Specific percentages can be pulled from the annual reports that the USACE has posted on their DMMO website.

One of NMFS' main concerns with the maintenance dredging program as proposed by the action agencies relates to contaminant levels in San Francisco Bay sediments and how the levels of contaminants in those sediments are considered in disposal decisions. The basic structure of the decision process is put forth in the Inland Testing Manual (EPA and USACE 1998). This national level guidance document presents a tiered structure for decision making and associated testing regimes. The document explicitly notifies the reader that it is only guidance and leaves significant room for best professional judgment in determining when advanced testing will be required. These allowances required development of the more site-specific guidance presented in the Guidelines for Implementing the Inland Testing Manual in the San Francisco Bay Region (EPA *et al*. 2001a). These two documents combine to produce an effects-based testing program that frequently requires proposed dredging projects to generate chemical specific concentration data for a proposed project.

<u>Water Column Toxicity Testing and Impacts</u>

The San Francisco Bay Guidelines document (EPA *et al*. 2001a) states that ten years of water

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column toxicity data from SF-09, SF-10 and SF-11 were examined and it was determined that water column toxicity was not significant. The Framework for Assessment of Potential Effects of Dredging on Sensitive Fish Species in San Francisco Bay document (LFR Levine Fricke 2004) summarizes USACE studies from the 1970s that found elevated levels of dissolved metals in disposal plumes in the Central Bay. However these elevated levels lasted for less than 1.5 hours. No data was presented in the EFH assessment to support this determination. The EFH Assessment does state that direct bioassay tests are conducted on the liquid-suspended phase of the dredged material. Presumably, this data and sediment concentration data is then evaluated using models that were developed at the national level (Short Term Fate of Dredged material model - STFATE). The output from the models is considered with a 100-fold safety factor applied to the predicted concentrations at the edge of its calculated (or predetermined) mixing zone in order to meet the State's narrative toxicity standard. Formal mixing zones have apparently never been defined for the disposal sites in Clean Water Act (CWA) terms.

Recent communication among cooperating agencies through informal consultation has clarified that if testing of a dredged material sample shows toxicity, that dredged material will be declared not suitable for aquatic disposal (Ross, B. pers. comm 2010a,b). Contaminant testing of the bulk sediments is also frequently conducted and these contaminant levels are entered into the USACE' models to examine the potential for water column toxicity during disposal caused by trace organic and inorganic contaminants. If the sediments pass these screening methods, it is unlikely that they will cause impacts sufficient to detrimentally affect EFH. Elevated levels of contaminants may cause species to leave the impacted area for a period of time, but any impacts to water column EFH will be intermittent and short-lived (Hansen *et al*. 1999a and 1999b).

Benthic Toxicity Testing and Impacts

Although not always required, benthic toxicity tests are frequently conducted due to known elevated levels of contaminants in San Francisco Bay at many of the sites which require periodic maintenance dredging. This benthic toxicity testing must account for three life history stages (filter feeder, deposit feeder and burrower) and usually is conducted using an approved amphipod and a *Mysid* shrimp or worm species. Typically, benthic toxicity testing generates acute mortality data, which does not provide information regarding the potential for bioaccumulation or food web effects (EPA *et al.* 2001b). Growth, development and reproduction tests are also sometimes conducted on an approved, appropriate invertebrate species which varies by salinity at the dredging site. Although there is not a clearly recorded policy for disposing of toxic sediments from maintenance dredging in SF Bay, informal consultation with the action agencies has clarified that sediments are barred from in-Bay disposal if there is any toxicity indicated by the testing (Ross, B., pers. comm.. 2010a,b).

Bioaccumulation Testing and Impacts

In San Francisco Bay, bioaccumulative pollutants such as chlorinated hydrocarbons (*e.g.*,, PCBs, DDTs, dieldrin, chlordane, dioxins/furans), mercury, and many PAHs are known contaminants present in sediments at problematic levels in many locations and especially along the Bay margins where some maintenance dredging occurs. Total Maximum Daily Load (TMDL) plans, required under the CWA, have been developed for PCBs and mercury

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and are in development for the other pollutants listed. The CWA Section 303(d) list of impaired waterbodies includes listings for the chlorinated hydrocarbons (*i.e.*,, chlordane, DDTs, dieldrin, and PCBs (dioxin-like)) that were made by EPA Region IX. These listings mean that those areas of San Francisco Bay do not have the capacity to assimilate additional contaminant loads. Additional measures are necessary to reduce levels in the bay in order to achieve unimpaired beneficial use. Beneficial uses currently impacted because of these contaminants include aquatic life, estuarine habitat, and recreational and sport fishing.

In regards to dredging, bioaccumulation tests may be recommended by the reviewing agencies (EPA, USACE, San Francisco Bay Conservation and Development Commission, California State Lands Commission and the San Francisco Bay Regional Water Quality Control Board) assembled through the DMMO process. Ultimately, the USACE is responsible for requiring the bioaccumulation tests as the permitting agency. It is not clear from the assessment documents provided for this consultation how often these tests are required in the absence of defined triggers. Although the SF Bay ITM guidelines (EPA *et al*. 2001a) and associated Response to Comments documents (EPA *et al*. 2001b) allude to the development of bioaccumulation triggers, screening levels, and to a national bioaccumulation model, it seems that these tools were never developed and are not utilized in the SF Bay district. They are not mentioned in the EFH assessment document, which instead states that bioaccumulation testing will be required on a best professional judgment basis.

Bioaccumulation triggers were developed in the Pacific Northwest, but are now being replaced with a more rigorous process for evaluating bioaccumulation potential (USACE *et al*. 2009). The Sediment Evaluation Framework for the Pacific Northwest (USACE *et al*. 2009) uses a "reason to believe" standard meaning, "a bioaccumulation evaluation is conducted if there is reason to believe chemicals present in the sediments may contribute to levels in the aquatic food chain that could be harmful to fish or shellfish, or to wildlife or humans eating fish or shellfish." In areas without sediment bioaccumulation triggers, or for individual chemicals for which bioaccumulation triggers have not been developed in the Pacific Northwest, a comparison to background concentrations is conducted. Exceedances of a bioaccumulation trigger, or (in the interim in the three participating USACE districts) elevations above background, can trigger the need for bioaccumulation testing. Sediments containing chemical concentrations below screening levels and bioaccumulation guidelines (or background, in the interim) are considered suitable for unconfined open-water disposal. The flipside of this statement is that sediments above screening levels and bioaccumulation guidelines (or background, in the interim) are not suitable for unconfined open-water disposal. At the least it indicates that a bioaccumulation study must be conducted to determine their status. This framework has been adopted by three USACE districts (Portland, Seattle and Walla Walla), the Northwest Division of the Army Corps, US EPA Region X, the States of Washington, Oregon and Idaho as well as the US Fish and Wildlife Service and NMFS Northwest Region. This seems to be a sound system to import to the San Francisco Bay area as well.

The following sections deal with bioaccumulative (or biotransformed) compounds found in elevated concentrations in San Francisco Bay sediments that may affect EFH and/or ESA listed species and their critical habitats. Just as the contaminants often co-occur, much of the

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reviewed, pertinent literature examines sites with multiple pollutants or end-points that may be affected by multiple contaminants. Studies which focus on Polycyclic Aromatic Hydrocarbons (PAHs) and chlorinated hydrocarbons (particularly Polychlorinated biphenyls (PCBs), but also chlorinated pesticides) are given prominence as these contaminants have been shown to be the most likely to detrimentally impact fish health in San Francisco Bay.

PAHs are known to cause cancer, reproductive anomalies, and immune dysfunction; to impair growth and development; and to cause other impairments in fish exposed to sufficiently high concentrations over periods of time (Johnson *et al.* 1999, Karrow *et al*. 1999, Johnson 2000, Stehr *et al.* 2000, Collier *et al.* 2002, Johnson *et al.* 2002, Sherry *et al*. 2005). Embyonic exposures can result in edema (swelling) of the yolk sac, hemorrhaging, disruption of cardiac function, enzyme induction, mutation of progeny, craniofacial and spinal deformities, neuronal cell death, anemia, reduced growth and impaired swimming (Barron *et al.* 2003, Billiard *et al.* 1999, 2002, Brinkworth *et al.* 2003, Marty *et al.* 1997: all cited in Barron *et al.* 2004, Incardona *et al.* 2004, 2005, Wassenberg and Di Giulio 2004a, 2004b). Exposure to sunlight has been observed to result in a 48-fold increase in toxicity of some PAHs to herring larvae (Barron *et al.* 2003), an increased medaka embryo failure rate (Diamond *et al*. 2006), impacts to invertebrates (Pelletier *et al.* 1997, Swartz *et al*. 1997) and in water column exposures as low as 2 µg/L becoming toxic to calanoid copepods (Duesterloh *et al.* 2002)). Several studies demonstrate that PAHs harm the egg-larval lifestage of Pacific herring (Vines *et al.* 2000, Carls *et al.* 1999), surf smelt (Misitano *et al.* 1994) and pink salmon (Heintz *et al.* 1999, Bue *et al*. 1998). Carls *et al.* (1999) showed that total dissolved PAH concentrations from weathered oil of 0.7 µg/L caused morphological malformations, genetic damage, inhibited swimming, decreased size and mortality of larval Pacific herring. Sublethal effects (such as yolk sac edema and delayed mortality) were observed at concentrations as low as 0.4 µg/L total dissolved PAH. Poston (2001) reviews several other studies of the effects of weathered crude oil and other PAHs or sources on various endpoints including the spawning success of pink salmon and herring.

The main exposure scenario of concern for PAHs occurs as they accumulate in sediments and are assimilated into the food web. It is the chronic and dietary exposures, particularly to the higher weight PAHs remaining in sediments, that cause many of the effects listed above (*i.e.*,, cancer, reproductive anomalies, immune dysfunction, growth and development impairment, and other impairments to fish over periods of time or exposed during their egg or larval life stages). PAHs bioaccumulate in many invertebrate species (Varanasi *et al.* 1989, 1992; Meador *et al.* 1995), but are metabolized significantly by many vertebrates (including fishes) where they are converted to water-soluble forms and excreted (Varanasi *et al.* 1989). Some of the intermediate metabolites in this process exhibit carcinogenic, mutagenic and cytotoxic properties. Metabolic capacity is generally very high in vertebrates, intermediate in crustaceans and limited in bivalves (Meador *et al.* 1995).

There is a significant debate over what level of PAHs in sediments causes the adverse effects discussed and how effectively environmental factors such as total organic carbon (TOC) in sediments mediates these effects. Attention to field studies is given in this review as these studies document effects in real environments that include TOC and potential confounding factors such as co-occurring contaminants. Research by scientists at the NMFS Northwest

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Fisheries Science Center (Johnson *et al.* 2002) suggested that a sediment threshold level for total PAH of 1 part per million (mg/kg dry weight) would protect estuarine, bottom dwelling fish (such as the English sole examined in the study), from detrimental effects (*e.g.*,, liver lesions, spawning inhibition and reduced egg viability). This level (1 mg/kg) was the lowest at which effects to English sole began to be observed and English sole is considered a relatively sensitive species making it appropriate to use in proposing protective levels. The author of this paper has also calculated degenerative lesion thresholds for starry flounder (1950 ng/g), which is found within San Francisco Bay and is an EFH managed species, for winter flounder (300 ng/g), which is an Atlantic species (Johnson, unpublished data). The background concentrations in large portions of San Francisco Bay are at or above the 1 mg/kg level (SFEI 2009). A model developed as part of this study (Johnson *et al*. 2002) predicted a 10-fold increase in DNA adducts (a complex formed when a carcinogen combines with DNA or a protein) at 5 mg/kg total PAH compared to control fish, resulting in liver disease to approximately 30% of the exposed fish and increasing failure to spawn. The increasing trend in liver lesions and negative reproductive effects at lower PAH concentrations, closer to the seven-year Bay-wide average concentration of 2.3 mg/kg, is evident in the study as well. Table three from that study (Johnson *et al*. 2002) has been reproduced below to present these trends.

Table 3. Estimated effect levels associated with increasing sediment PAH concentration for selected liver lesions and indicators of reproductive function in English sole.

PAH (ppb dry wt.)	Neoplasm prevalence	FCA prevalence	SDN prevalence	Proliferative lesion prevalence	Any lesion prevalence
Liver lesions					
50	0.00	0.01	0.00	0.02	0.00
100	0.00	0.02	0.00	0.02	0.00
1000	**0.00**	**0.06**	**0.01**	**0.08**	**0.09**
2000	0.00	0.07	0.12	0.11	0.18
3000	0.01	0.08	0.20	0.13	0.24
5000	0.03	0.09	0.27	0.14	0.31
10000	0.06	0.10	0.38	0.17	0.40
100000	0.16	0.14	0.75	0.26	0.71
Reproductive indicators					
PAH (ppb dry wt.)	Inhibited gonadal development prevalence	Inhibited spawning prevalence	Infertile proportion eggs of eggs spawned		DNA Damage (nmol adducts per mol nucleotides)
50	0.15	0.12	0.38		5
100	0.15	0.12	0.38		5
1000	**0.15**	**0.17**	**0.42**		**25**
2000	0.15	0.25	0.48		36
3000	0.15	0.30	0.51		43
5000	0.18	0.35	0.55		51
10 000	0.27	0.43	0.61		63
100 000	0.58	0.69	0.80		100

For all liver lesions, inhibited gonadal development, and inhibited spawning, the effect level is the proportion of fish estimated to be affected at the indicated sediment PAH concentration; for infertile eggs, the effect level is the proportion of eggs produced by an individual female that are estimated to be unfertile. Effect levels for liver lesions were calculated with hockey-stick regression. For reproductive indicators, effect levels at the sampling sites where PAH concentrations were lowest were used to estimate background effect levels (i.e. effect levels at PAH concentrations below 5000 ppb for inhibited gonadal development, and below 1000 ppb for inhibited spawning and infertile eggs).

The authors noted a concern that other carcinogenic contaminants (PCBs, chlorinated pesticides, and trace metals) were present in the sediments of the Puget Sound at the various study locations and may be significant confounding factors. However the study noted that

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PAH exposure was more highly correlated than PCB exposure with inhibited gonadal development, inhibited spawning, and reduced egg quality. PCBs and PAHs often co-occur at problematic levels in urbanized estuaries, and this is a common mixture of contaminants in San Francisco Bay (SFEI 2009) as will be shown in the following paragraphs. Therefore the study is extremely relevant in evaluating the proposed action.

There have been several studies conducted in San Francisco Bay that show effects to EFH and EFH managed species from elevated PAH and other chlorinated contaminant levels in sediments. PAH metabolites (flourescent aromatic compounds (FACs)) were measured in fish bile to show exposure to PAHs in starry flounder and white croaker in eight years of samples from San Francisco Bay (Stehr *et al.* 1997). The concentrations of both low and high molecular weight FACs were significantly higher in both species at all sites sampled compared to control fish from Bodega Bay. Three of the six sampling locations had geometric mean concentrations of PAHs in the sediment >1 mg/kg with the highest concentration found at Hunters Point at approximately 5 mg/kg. High molecular weight PAHs were significantly higher in the stomach contents of starry flounder at all six sampling sites compared to Bodega Bay and in the stomach of white croaker at three of the sites (Hunters Point, Oakland Estuary and Southampton Shoal). This exposure was highly correlated with the occurrence of liver lesions found in both of these species which were more prevalent in fish from San Francisco Bay compared to the control fish. These two species represent different foraging strategies and prey preferences. Starry flounder often completely bury themselves in sediment leading to increased chance of exposure to sedimented contaminants. Sediments at the sampling sites were also contaminated by PCBs and DDT at levels significantly above the control location.

Starry flounder were also examined in the 1980s (Spies and Rice 1988, Spies *et al.* 1988) with fish collected in the Central Bay (near Berkeley) and in San Pablo Bay. Sediment concentrations of PAHs from the Central Bay samples were reported at 4.6 ± 1.8 mg/kg while those from the San Pablo Bay sites were reported to be 2.6 ± 1.3 mg/kg. PAH levels in the Central Bay fish were nearly twenty times greater than the San Pablo Bay fish. The sites were also contaminated by PCBs with levels in San Pablo Bay at 9.3 ± 2.3 ng/g. Data from Oakland was used to estimate concentrations at the Central Bay site with PCB sediment concentrations at 61 ± 12 ng/g. The starry flounder from the Central Bay were found to have poorer reproductive success (percent viable eggs, fertilization and embryological success) than those from San Pablo Bay, but greater than 95% of the fish from both sites showed signs of inhibition of hepatic aryl hydrocarbon hydroxylase (AHH) activity. These enzymes mediate chemical transformations of compounds that are foreign to the body, thus facilitating their depuration and excretion (Gruger *et al*. 1977), and are important for maintaining fish health and reproductive fitness.

Gunther *et al.* (1997) examined speckled sanddabs exposed to sediments from San Pablo Bay, Castro Cove, and a control location and found a biomarker of chemical exposure (ethoxyresorufin-O-deethylase (EROD)) and cytochrome P4501A (CYP1A) induced toxicity at PAH concentrations as low as 1.2 mg/kg dry weight in the sediment. PCBs were also present in the sediments at levels as low as 12.8 ng/g dry weight. These sediments were toxic to the amphipod *Eohaustorius estuarius*.

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In San Francisco Bay, monitoring by the RMP program has established a Bay-wide average concentration for the seven year period from 2002 to 2008 of total PAHs at 2.3 mg/kg. This seven year average was higher in the Central Bay (3.6 mg/kg) which is heavily influenced by the urban centers, historical sources of contamination and the SF-11 dispersive disposal site. This multi-year average concentration was lower in San Pablo Bay (1.0 mg/kg) achieving the sediment threshold proposed by Johnson et al. (2002). In Suisun Bay, the average concentration was lower still at 0.50 mg/kg over the seven-year time period. SFEI (2009) notes that PAH concentrations have been quite variable from year to year and do not suggest an overall trend.

There have been several screening methods developed since the 1980s that examine potential threshold levels for effects across a broad range of species (*e.g.,* ER-Ms and ER-Ls, PELs and TELs, etc.). This suite of numbers is often used to evaluate contaminant levels in sediments, although their usefulness is frequently questioned as being both over-protective or under protective. There are more recent studies that are not built into the screening level databases (*e.g.,* anything published after the latest versions of the databases) and new methods being put into place to address these shortcomings. The information is presented here for comparative purposes. The Effects Range – Low (ER-L) for total PAHs is approximately 4 mg/kg, while the Threshold Effects Level (TEL - approximately 1.7 mg/kg) is closer to the threshold level suggested by Johnson *et al.* (2002). The concentrations of concern are even lower for total high molecular weight (HMW) PAHs, which typically remain in the sediments, with an ER-L of 1.7 mg/kg and a TEL of 0.66 mg/kg (Buchman 1999). These are environmentally realistic concentrations that may be exceeded in industrialized or urbanized areas; however, these are the levels where effects are predicted to begin. The Effects Range – Median (ER-M) for total PAHs is approximately 44.8 mg/kg (total HMW PAH = 9.6 mg/kg), while the Probable Effects Level (PEL) is approximately 16.7 mg/kg (total HMW PAHs = 6.7 mg/kg). Sediments with PAH levels above the lower thresholds warrant protection from additional contamination in order to protect the function of the sediment for EFH as well as ESA-listed species.

PCB concentration have declined significantly since the production and new use of the compounds was banned in the United States in the late 1970s (Davis *et al*. 2007, SFBRWQCB 2008). However there is still a significant reservoir of PCBs in sediment below current surface levels and in particularly contaminated locations around San Francisco Bay. Levels in surficial sediments Bay-wide averaged 6.6 ng/g over the five year period from 2004-2008 (SFEI 2009). The Central Bay averaged 8.0 ng/g during this period of time while San Pablo Bay averaged 4.4 ng/g and Suisun Bay was at 2.3 ng/g. These levels are well above the sediment level (0.75 ng/g dry weight) predicted as being necessary to achieve fish tissue concentration protective of human health (10 ng/g wet weight) and, by assumption, ecological risk criteria (Gobas and Arnot 2010, 2005).

Several studies that showed potential effects to fish species in San Francisco Bay from the bioaccumulation of PCBs and other contaminants have already been presented (Stehr *et al*. 1997, Spies and Rice 1998, Gunther *et al*. 1997). An additional study examining striped bass larval development (SFEI 2005 in Davis *et al.* 2007) showed that wild hatched striped bass

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(whose mothers spent most of their time in the San Francisco Bay) had significantly higher burdens of several pollutants including PCBs, chlorinated pesticides and PBDEs. Compared to eggs and larvae reared in a hatchery, the wild hatched striped bass produced larvae that had developmental problems (reduced growth, altered liver development, more rapid yoke sac depletion) that could lead to population level impacts.

Another study currently underway (SFEI 2009) found that topsmelt, an important prey item for piscivorous fish and wildlife, were taking up PCBs along six nearshore areas throughout the Bay at a surprisingly high level. This shows an unexpected avenue for PCBs entering the food web at existing environmental concentrations. A second year of data will be gathered in 2010.

A recent report (Kelley and Reyes 2009) prepared for the RMP examined endocrine disruption incidences and spatial patterns in San Francisco Bay. Utilizing shiner surfperch and staghorn sculpin, two prey items for many EFH managed species which occupy different ecological niches, the researchers found that endocrine system function has been significantly altered in fish from several different locations within San Francisco Bay. Elevated levels of PCBs, PAHs and chlorinated pesticides were found in fish tissues with compromised cortisol functions. Evidence of altered function in systems regulating the hormone cortisol were found at potentially dredged areas such as the Oakland Inner Harbor, the Richmond area and the San Francisco waterfront. Impacts to the thyroid system were also noted and were closely associated with exposure to PCBs and chlorinated pesticides. Abnormal regulation of cortisol levels impacts fish health by compromising immune systems (which led to increased parasitic infections in the study), reducing growth rates, and impairing physiological response to stressors such as poor water quality, life-threatening circumstances, crowding, etc. Cortisol regulates functions such as hepatic glucose release in response to energy demands, tissue repair functions and immune system function among others. Abnormal regulation of thyroid hormone levels impacts growth and development processes in all vertebrate animals (Kelley and Reyes 2009).

The concentration of PCBs allowed in dredged sediments disposed of in-Bay is regulated by the San Francisco Bay Regional Water Quality Control Board through the TMDL for PCBs in San Francisco Bay (SFBRWQCB 2008) which was approved by EPA Region IX on March 29, 2010. The TMDL states, "In order to ensure that buried PCBs are not being spread through the Bay via dredge material disposal at dispersive sites, sediments disposed of in-Bay should have total PCBs concentrations no greater than that in ambient surface sediments in the Bay. To provide this assurance, we propose that the PCB concentrations in dredged material disposed of in the Bay not exceed the 99th percentile of total PCBs concentration of the previous 10 years of Bay surface sediment samples collected through the RMP (excluding stations outside the Bay like the Sacramento River, San Joaquin River, Guadalupe River and Standish Dam stations)." At the time of this writing, the allowable concentration of PCBs in dredged material disposed of in-Bay appears to be 25.1 ng/g dry weight (Christian, B., pers. comm. 2010). This is more than three times higher than the Bay-wide average (6.6 ng/g) for the five year period between 2004-2008 calculated through the RMP (SFEI 2009), which provides the reference conditions for consideration in making disposal decisions (Ross, B., pers. comm. 2010a). This allowance of elevated contaminant levels in dredged material

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disposed of in-Bay, potentially without undergoing bioaccumulation testing, is not protective and will serve to prolong and exacerbate impacts to aquatic habitat function and fisheries through bioaccumulation.

Mercury

The element mercury and its compounds have no known normal metabolic function. Sublethal concentrations of mercury are known to adversely affect aquatic organisms through inhibition of reproduction, reduction in growth rate, increased frequency of histopathology, impairment in ability to capture prey and olfactory receptor function, alterations in blood chemistry and enzyme activities, disruption of thyroid function, chloride secretion and other metabolic and biochemical functions (Eisler 2000). Mercury levels are elevated in several sections of San Francisco Bay to the point that the waterbody is listed on EPA's Clean Water Act Section 303(d) list of impaired waters. Mercury remains a persistent contaminant in the sediments of San Francisco Bay and the concentrations in some fish remain elevated (Conaway *et al*. 2007). Several fish consumption advisories related to mercury in the Bay have been issued and mercury levels have been determined to be negatively impacting several bird species (SFBRWQCB 2006). Unfortunately the extent of effects of mercury and other contaminants on fish is not well understood because there have not been many studies of consequences of these long-term, low level exposures (Thompson *et al*. 2007).

Eisler (2000) summarized that at lower trophic levels, the efficiency of mercury transfer was low through natural aquatic food chains, but in animals of higher trophic levels, such as predatory fish and birds, the transfer was markedly amplified. However trends are not consistent between species and it is difficult to generalize (Eisler 2000). Total mercury concentrations in San Francisco Bay sediments have been decreasing with an overall 22% decrease in the North Bay, a 17% decrease in the Central Bay and 32% decrease in the South Bay from 1993-2001 (Conaway *et al*. 2007). Median concentrations in this paper (Conaway *et al*. 2007) were noted as highest where the estuary interfaced with urbanized areas (0.35 mg/kg), lowest in the rivers (0.10 mg/kg) and in-between in the Central Bay (0.22 mg/kg) and the Southern Sloughs (0.24 mg/kg). It must be noted however that variability in sediment concentrations is noted from year to year by the RMP (SFEI 2007). Conaway *et al*. (2007) instead links the lower sediment mercury concentrations to the transport of relatively lower-mercury sediment to the estuary from the Sacramento River and San Joaquin River watersheds. The paper concludes that there is a need to better understand and more effectively manage mercury in the estuary in light of the toxicological effects on human and wildlife health (Conaway et al. 2007).

Conaway *et al*. (2007) noted that mercury levels in monitored sport fish have not changed significantly and can not be linked to falling sediment concentrations. RMP monitoring has found mercury levels to be above the EPA approved fish tissue standard for the protection of human health of 0.2 mg/kg wet weight and the standard of 0.03 mg/kg in smaller fish (3-5 cm) that is meant to protect piscivorous wildlife. Concentrations in leopard sharks averaged about 0.80 mg/kg wet weight between 1997 and 2003 (SFEI 2007) while concentrations in striped bass were approximately 0.35 mg/kg wet weight (SFEI 2006). Median concentrations in white sturgeon were reported just above 0.3 mg/kg wet weight, California halibut median

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concentration were just below 0.3 mg/kg wet weight and white croaker concentrations were reported at the 0.2 mg/kg wet weight level using RMP data from 2003 (SFEI 2006).

There are several studies available that review mercury concentrations in tissues noted to have ecological effects to fish at levels currently found within the estuary that can be used to examine impacts to ESA listed fish and EFH. Matta *et al*. (2001) conducted a dietary study of mercury effects with mummichogs (an estuarine and coastal species) and found that tissue methylmercury concentrations of 0.5 mg/kg wet weight resulted in nearly 50% mortality of male fish. Mortality was increased over controls of 0.2 mg/kg, but not significantly, meaning that the threshold for effects is somewhere between 0.2 and 0.5 mg/kg. The draft methylmercury TMDL for the Sacramento-San Joaquin Delta Estuary (CVRWQCB 2010) notes that independent research demonstrates that most mercury (85%-100%) in fish muscle is methyl mercury.

Friedman et al. (1996) conducted a laboratory based dietary study of methylmercury effects to juvenile walleye where their lowest exposure group accumulated tissue methylmercury concentrations of 0.254 mg/kg. While the males exhibited signs of testicular atrophy, it was not to a degree significantly different that control fish. However, levels of plasma cortisol, which is important to mediating responses to stressors and for immune system function, were significantly lower than the control fish. Subsequent work by the author (Freidman *et al*. 2002 in USFWS 2003) with largemouth bass from reservoirs in New Jersey did not replicate these findings, potentially showing a difference between lab and field studies or species sensitivity.

Webber and Haines (2003) found altered predator avoidance in golden shiners with tissue methylmercury concentrations of 0.536 mg/kg wet weight. Golden shiners are a trophic level three fish with a diet of zooplankton and aquatic insects similar to Mississippi silversides and other San Francisco Bay forage fish.

The concentration of total mercury allowed in dredged sediments disposed of in-Bay is regulated by the San Francisco Bay Regional Water Quality Control Board through the Total Maximum Daily Load (TMDL) for Mercury in San Francisco Bay (SFBRWQCB 2006). The TMDL states, “The mercury concentration in dredged material disposed of in the Bay shall not exceed the 99th percentile mercury concentration of the previous 10 years of Bay sediment samples collected through the RMP (excluding stations outside the Bay like the Sacramento River, San Joaquin River, Guadalupe River and Standish Dam stations).” At the time of this writing, the allowable concentration of mercury in dredged material disposed of in-Bay is 0.53 parts per million (ppm) dry weight. This is more than twice the Bay-wide average for the seven year period between 2002-2008 calculated through the Regional Monitoring Plan (RMP) (SFEI 2009) which provides the reference conditions for consideration in making disposal decisions (Ross, B. pers. comm.. 2010a). The Bay-wide average concentration for total mercury is 0.24 ppm dry weight. This allowance of elevated contaminant levels in dredged material without undergoing bioaccumulation testing is not protective and will serve to prolong and exacerbate impacts to aquatic habitat function and fisheries through bioaccumulation.

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Dredging Residuals

Dredging operations alter the condition of the project site by exposing a new surface layer of bottom material to direct contact with biota and the water column. This newly exposed surface may have greater concentrations of contaminants than existed before dredging. Dredging residuals are also generated when contaminated sediments are resuspended during dredging and re-deposited on the surface of the project area where they may continue to be exposed to the aquatic community after the project is complete. Dredging residuals contribute to long-term risk at the site, potentially including bioaccumulative risk, if they are sufficiently thick and extensive (USACE *et al.* 2009).

A set process for evaluating and ensuring that EFH and ESA listed species are not detrimentally impacted by dredging residuals is not presented in the EFH assessment, but this situation has periodically occurred during the consultation process on maintenance dredging projects. The action agencies need establish a set protocol to address dredging residuals and contaminated new surface materials.

Conclusion

Dredging can transfer contaminated surface sediments and bring buried contaminants from the subsurface where they have limited bioavailability while in-Bay disposal practices reintroduce those contaminants to the biologically active surface layers of the Bay. The in-Bay disposal sites are managed to be dispersive, which means the contaminants are spread out to a large area as they resettle. This dispersion serves to dilute the contributions of "new" contaminants to the dispersion area and, in many cases, likely results in negligible increases in contaminant levels. However caution must be taken when dispersing bioaccumulative contaminants, particularly those at concentrations above known effect levels in the dredged material or the ambient sediments, or for which the Bay has been determined to have no assimilative capacity. The action agencies have significant reserved discretionary authority to address this avenue of impact in order meet their obligations under EFH and ESA regulations while meeting their primary goal to restore and maintain the chemical, physical and biological integrity of the Nation’s waters.

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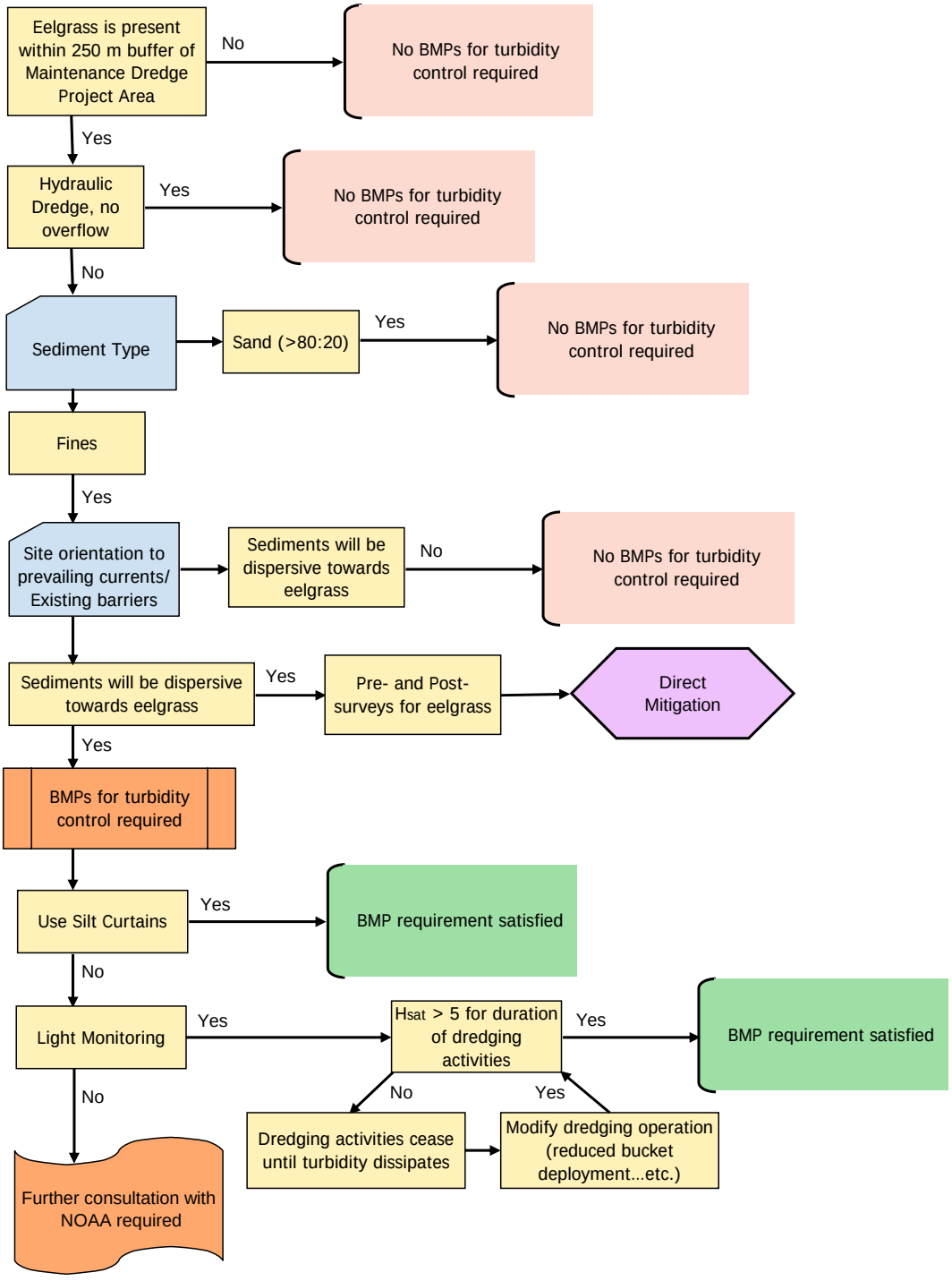
Appendix 2. Eelgrass Indirect Effects Flowchart

Flowchart depicting step-wise decision making process for avoidance, minimization, and implementation of Best Management Practices (BMPs) for indirect effects of turbidity on eelgrass.



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Appendix 3. Light Monitoring Protocol

National Marine Fisheries Service
Southwest Region Habitat Conservation Division
Santa Rosa Area Office

San Francisco Bay Light Monitoring Survey Protocol

Revised January 2010

The purpose of this protocol is to provide guidance to entities conducting activities in San Francisco (SF) Bay and northern California that may cause increases in turbidity above background levels and impact *Zostera marina* (eelgrass). Water column turbidity reduces the amount of light available for photosynthesis and consequently affects the depth distribution, density and productivity of eelgrass (Thayer *et al.* 1984; Zimmerman *et al.* 1991; Lee *et al.* 2007). Although eelgrass in SF Bay is adapted to growing in low light environments, if the period of irradiance-saturated photosynthesis (H_{sat}) decreases below 3-5 hours per day, the maintenance of whole plant carbon balance and growth period is negatively affected (Zimmerman *et al.* 1991). Due to high turbidity levels in SF Bay, eelgrass plants located at the deeper edges of established eelgrass beds are less likely to accumulate large carbon reserves making them unable to withstand 30 days of reduced light conditions (Zimmerman *et al.* 1991). This protocol was established to ensure consistent collection of light monitoring data, and to guide users on the appropriate application of such measurements.

NMFS Santa Rosa Office staff are available for guidance in the use of this protocol. The lead action agency should provide a detailed monitoring plan to NMFS for approval 60 days prior to the light monitoring survey.

Light survey during project activities:

Objective: Determine increased light attenuation associated with project activities in eelgrass beds.

1. During daylight project activities, photosynthetically active radiation (PAR) should be measured at selected sampling locations. These locations should include the deeper edges of established eelgrass beds near the project site. NMFS also recommends selecting a reference station at a similar depth, near eelgrass beds, but of adequate distance away from project activities and any other sources of turbidity. Reference stations should be selected with NMFS guidance and approval. A reference station will insure that project activities are not held responsible for lowered light conditions caused by natural variation. Sampling locations and frequency may vary due to site conditions and project activities and, therefore, should be approved by NMFS Santa Rosa Office staff 60 days before sampling occurs.
    a. Depth (meters) at mean lower low water and GPS coordinates should be recorded at each sampling location.

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b. PAR measurements should be recorded near the top of eelgrass plants (approximately 0.5 meters above the substrate).
c. Measurements of PAR should be recorded at regular intervals throughout the duration of daylight project activities, and should always include a measurement at the noon hour. Number of days, frequency and start/end time of measurements will depend on time of year and equipment available. If automated equipment is available, NMFS recommends measurements of PAR be taken every 10 minutes from sunrise to sunset daily, for a minimum of seven days. Increasing the frequency of PAR measurements will improve the accuracy of measurements (Banas et al. 2005).
d. The timing of flood and ebb tides should be recorded.

2. The maximum daily PAR measurement (I_m) should be used to calculate the daily period of irradiance-saturated photosynthesis (H_{sat}):

$$H_{sat} = D\left[1 - \frac{2}{\pi}\sin^{-1}\left(\frac{I_k}{I_m}\right)\right]$$

D = day length from sunrise to sunset6 (= time that PAR>10 µmol photon $m^{-2}s^{-1}$)
I_k = 35 µmoles photon m^{-2} s^{-1} (Zimmerman *et al*. 1991).
I_m = daily maximum PAR measurement (CHM2HILL 1998).

H_{sat} should be calculated after sampling completion each day, at each sampling location.

Minimization Measures and Reporting:

1. If the daily period of H_{sat} is above 5 hours at the reference site, but below 5 hours near the project site, then project activities should cease during daylight hours until turbidity levels reduce and daily H_{sat} increases above 5 hours (typically within a few tidal cycles).

2. If sampling did not occur at a reference station and the calculated daily period of H_{sat} is below 5 hours at eelgrass beds near the project area, then project activities should cease during daylight hours until turbidity levels reduce and daily H_{sat} increases above 5 hours (typically within a few tidal cycles).

3. If project activities are continually reducing H_{sat} below 5 hours, modifications to operating procedures should be considered (*e.g.*,, timing of dredging, type of gear, use of silt curtains…etc.) in order to minimize impacts to eelgrass as well as continuity of dredging operations.

6 Day length should not be calculated using theoretical sunrise and sunset estimates. Site-specific variability will great influence the actual day length at each site (*i.e.*, adjacent buildings or hills may shade an area for significant time at sunrise or sunset), as will daily climatic conditions. A minimum level of PAR will be set as 10 µmol photon $m^{-2}s^{-1}$, the light compensation point (H_{comp}) for eelgrass (Dennison and Alberte 1982), as a threshold level to determine actual day length hours.

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4. The results of the light monitoring studies should be provided to NMFS within 30 days of completion.

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Appendix 4. Southern California Eelgrass Mitigation Policy

SOUTHERN CALIFORNIA EELGRASS MITIGATION POLICY
(Adopted July 31, 1991)

Eelgrass (Zostera marina) vegetated areas are recognized as important ecological communities in shallow bays and estuaries because of their multiple biological and physical values. Eelgrass habitat functions as an important structural environment for resident bay and estuarine species, offering both predation refuge and a food source. Eelgrass functions as a nursery area for many commercially and recreational important finfish and shellfish species, including those that are resident within bays and estuaries, as well as oceanic species that enter estuaries to breed or spawn. Eelgrass also provides a unique habitat that supports a high diversity of non-commercially important species whose ecological roles are less well understood.

Eelgrass is a major food source in nearshore marine systems, contributing to the system at multiple trophic levels. Eelgrass provides the greatest amount of primary production of any nearshore marine ecosystem, forming the base of detrital-based food webs and as well as providing a food source for organisms that feed directly on eelgrass leaves, such as migrating waterfowl. Eelgrass is also a source of secondary production, supporting epiphytic plants, animals, and microbial organisms that in turn are grazed upon by other invertebrates, larval and juvenile fish, and birds.

In addition to habitat and resource attributes, eelgrass serves beneficial physical roles in bays and estuaries. Eelgrass beds dampen wave and current action, trap suspended particulates, and reduce erosion by stabilizing the sediment. They also improve water clarity, cycle nutrients, and generate oxygen during daylight hours.

In order to standardize and maintain a consistent policy regarding mitigating adverse impacts to eelgrass resources, the following policy has been developed by the Federal and State resource agencies (National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the California Department of Fish and Game). While the intent of this Policy is to provide a basis for consistent recommendations for projects that may impact existing eelgrass resources, there may be circumstances (*e.g.*,, climatic events) where flexibility in the application of this Policy is warranted. As a consequence, deviations from the stated Policy may be allowed on a case-by-case basis. This policy should be cited as the Southern California Eelgrass Mitigation Policy (revision 11).

For clarity, the following definitions apply. "Project" refers to work performed on-site to
accomplish the applicant's purpose. "Mitigation" refers to work performed to compensate for any adverse impacts caused by the "project". "Resource agencies" refers to National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), and the California Department of Fish and Game (CDFG).

1. **Mitigation Need.** Eelgrass transplants shall be considered only after the normal

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provisions and policies regarding avoidance and minimization, as addressed in the Section 404 Mitigation Memorandum of Agreement between the Corps of Engineers and Environmental Protection Agency, have been pursued to the fullest extent possible prior to the development of any mitigation program. Mitigation will be required for the loss of existing vegetated areas, loss of potential eelgrass habitat, and/or degradation of existing/potential eelgrass habitat. Mitigation for boat docks and/or related work is addressed in section 2.

2. **Boat Docks and Related Structures**. Boat docks, ramps, gangways and similar structures should avoid eelgrass vegetated or potential eelgrass vegetated areas to the maximum extent feasible. If avoidance of eelgrass or potential eelgrass areas is infeasible, impacts should be minimized by utilizing, to the maximum extent feasible, construction materials that allow for greater light penetration (*e.g.*,, grating, translucent panels, etc.). For projects where the impact cannot be determined until after project completion (*i.e.*,, vessel shading, vessel traffic) a determination regarding the amount of mitigation shall be made based upon two annual monitoring surveys conducted during the time period of August to October which document the changes in the bed (areal extent and density) in the vicinity of the footprint of the boat dock, moored vessel(s), and/or related structures. Any impacts determined by these monitoring surveys shall be mitigated per sections 3-12 of this policy. Projects subject to this section must include a statement from the applicant indicating their understanding of the potential mitigation obligation which may follow the initial two-year monitoring.

3. **Mitigation Map.** The project applicant shall map thoroughly the area, distribution, density and relationship to depth contours of any eelgrass beds likely to be impacted by project construction. This includes areas immediately adjacent to the project site which have the potential to be indirectly or inadvertently impacted as well as potential eelgrass habitat areas. Potential habitat is defined as areas where eelgrass would normally be expected to occur but where no vegetation currently exists. Factors to be considered in delineating potential habitat areas include appropriate circulation, light, sediment, slope, salinity, temperature, dissolved oxygen, depth, proximity to eelgrass, history of eelgrass coverage, etc.

Protocol for mapping shall consist of the following format:

1) Bounding Coordinates

Horizontal datum - Universal Transverse Mercator (UTM), NAD 83, Zone 11 is the preferred projection and datum. If another projection or datum is used, the map and spatial data must include metadata that accurately defines the projection and datum.

Vertical datum - Mean Lower Low Water (MLLW), depth in feet.

2) Units

Transects and grids in meters.

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Area measurements in square meters/hectares.

3) File format

A spatial data layer compatible with readily available geographic information system software must be sent to NMFS and any other interested resource agency when the area mapped has greater than 10 square meters of eelgrass. For those areas with less than 10 square meters, a table must be provided giving the bounding x,y coordinates of the eelgrass areas. In addition to a spatial layer or table, a hard-copy map should be included within the survey report. The projection and datum should be clearly defined in the metadata and/or an associated text file.

All mapping efforts must be completed during the active growth phase for the vegetation (typically March through October) and shall be valid for a period of 60 days with the exception of surveys completed in August - October. Surveys completed after unusual climatic events (*i.e.*,, high rainfall) may have modified requirements and surveyors should contact NMFS, CDFG, and USFWS to determine if any modifications to the standard survey procedures will be required. A survey completed in August - October shall be valid until the resumption of active growth (*i.e.*,, in most instances, March 1). After project construction, a post-project survey shall be completed within 30 days. The actual area of impact shall be determined from this survey.

4. **Mitigation Site.** The location of eelgrass transplant mitigation shall be in areas similar to those where the initial impact occurs. Factors such as, distance from project, depth, sediment type, distance from ocean connection, water quality, and currents are among those that should be considered in evaluating potential sites.

5. **Mitigation Size.** In the case of transplant mitigation activities that occur concurrent to the project that results in damage to the existing eelgrass resource, a ratio of 1.2 to 1 shall apply. That is, for each square meter adversely impacted, 1.2 square meters of new suitable habitat, vegetated with eelgrass, must be created. The rationale for this ratio is based on, 1) the time (*i.e.*,, generally three years) necessary for a mitigation site to reach full fishery utilization and 2) the need to offset any productivity losses during this recovery period within five years. An exception to the 1.2 to 1 requirement shall be allowed when the impact is temporary and the total area of impact is less than 100 square meters. Mitigation on a one-for-one basis shall be acceptable for projects that meet these requirements (see section 11 for projects impacting less than 10 square meters).

Transplant mitigation completed three years in advance of the impact (*i.e.*,, mitigation banks) will not incur the additional 20 percent requirement and, therefore, can be constructed on a one-for-one basis. However, all other annual monitoring requirements (see sections 8-9) remain the same irrespective of when the transplant is completed. Project applicants should consider increasing the size of the required mitigation area by 20-30 percent to provide greater assurance that the success criteria, as specified in Section 10, will be met. In addition, alternative contingent mitigation must be specified, and included in any required permits, to address situation where performance standards (see section 10) are not likely to be met.

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For potential eelgrass habitat, a ratio of 1 to 1 of equivalent habitat shall be created.

Degradation of existing eelgrass vegetated habitat that results in a reduction of density greater than 25 percent shall be mitigated on a one-for-one basis. For example, a 25 percent reduction in density of a 100 square meter (100 turions/meter) eelgrass bed to 75 turions/meter would require the establishment of 25 square meters of new eelgrass with a density at or greater than the pre-impact density. All other provisions of the Policy would apply.

6. **Mitigation Technique.** Techniques for the construction and planting of the eelgrass mitigation site shall be consistent with the best available technology at the time of the project. Donor material shall be taken from the area of direct impact whenever possible, but also should include a minimum of two additional distinct sites to better ensure genetic diversity of the donor plants. No more than 10 percent of an existing bed shall be harvested for transplanting purposes. Plants harvested shall be taken in a manner to thin an existing bed without leaving any noticeable bare areas. Written permission to harvest donor plants must be obtained from the California Department of Fish and Game. Plantings should consist of bare-root bundles consisting of 8-12 individual turions. Specific spacing of transplant units shall be at the discretion of the project applicant. However, it is understood that whatever techniques are employed, they must comply with the stated requirements and criteria.

7. Mitigation Timing. For off-site mitigation, transplanting should be started prior to or concurrent with the initiation of in-water construction resulting in the impact to the eelgrass bed. Any off-site mitigation project which fails to initiate transplanting work within 135 days following the initiation of the in-water construction resulting in impact to the eelgrass bed will be subject to additional mitigation requirements as specified in section 8. For on-site mitigation, transplanting should be postponed when construction work is likely to impact the mitigation. However, transplanting of on-site mitigation should be started no later than 135 days after initiation of in-water construction activities. A construction schedule which includes specific starting and ending dates for all work including mitigation activities shall be provided to the resource agencies for approval at least 30 days prior to initiating in-water construction.

8. **Mitigation Delay.** If, according to the construction schedule or because of any delays, mitigation cannot be started within 135 days of initiating in-water construction, the eelgrass replacement mitigation obligation shall increase at a rate of seven percent for each month of delay. This increase is necessary to ensure that all productivity losses incurred during this period are sufficiently offset within five years.

9. **Mitigation Monitoring.** Monitoring the success of eelgrass mitigation shall be required for a period of five years for most projects. Monitoring activities shall determine the area of eelgrass and density of plants at the transplant site and shall be conducted at initial planting, 6, 12, 24, 36, 48, and 60 months after completion of the transplant. All

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monitoring work must be conducted during the active vegetative growth period and shall avoid the winter months of November through February. Sufficient flexibility in the scheduling of the 6 month surveys shall be allowed in order to ensure the work is completed during this active growth period. Additional monitoring beyond the 60 month period may be required in those instances where stability of the proposed transplant site is questionable or where other factors may influence the long-term success of transplant.

The monitoring of an adjacent or other acceptable control area (subject to the approval of the resource agencies) to account for any natural changes or fluctuations in bed width or density must be included as an element of the overall program.

A monitoring schedule that indicates when each of the required monitoring events will be completed shall be provided to the resource agencies prior to or concurrent with the initiation of the mitigation (see attached monitoring and compliance summary form).

Monitoring reports shall be provided to the resource agencies within 30 days after the completion of each required monitoring period and shall include the summary sheet included at the end of this policy.

10. **Mitigation Success.** Criteria for determination of transplant success shall be based upon a comparison of vegetation coverage (area) and density (turions per square meter) between the **adjusted project impact area** (*i.e.*,, original impact area multiplied by 1.2) and **mitigation site(s)**. Extent of vegetated cover is defined as that area where eelgrass is present and where gaps in coverage are less than one meter between individual turion clusters. Density of shoots is defined by the number of turions per area present in representative samples within the original impact area, control or transplant bed. Specific criteria are as follows:

a. the mitigation site shall achieve a minimum of 70 percent area of eelgrass and 30 percent density as compared to the adjusted project impact area after the first year.

b. the mitigation site shall achieve a minimum of 85 percent area of eelgrass and 70 percent density as compared to the adjusted project impact area after the second year.

c. the mitigation site shall achieve a sustained 100 percent area of eelgrass bed and at least 85 percent density as compared to the adjusted project impact area for the third, fourth and fifth years.

Should the required eelgrass transplant fail to meet any of the established criteria, then a Supplementary Transplant Area (STA) shall be constructed, if necessary, and planted. The size of this STA shall be determined by the following formula:

$$STA = MTA \times (|At + Dt| - |Ac + Dc|)$$

MTA = mitigation transplant area.
At = transplant deficiency or excess in area of coverage criterion (%).

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Dt = transplant deficiency in density criterion (%).
Ac = natural decline in area of control (%).
Dc = natural decline in density of control (%).

The STA formula shall be applied to actions that result in the degradation of habitat (*i.e.*,, either loss of areal extent or reduction in density).

Five conditions apply:

1) For years 2-5, an excess of only up to 30% in area of coverage over the stated criterion with a density of at least 60% as compared to the project area may be used to offset any deficiencies in the density criterion.
2) Only excesses in area criterion equal to or less than the deficiencies in density shall be entered into the STA formula.
3) Densities which exceed any of the stated criteria shall not be used to offset any deficiencies in area of coverage.
4) Any required STA must be initiated within 120 days following the monitoring event that identifies a deficiency in meeting the success criteria. Any delays beyond 120 days in the implementation of the STA shall be subject to the penalties as described in Section 8.
5) Annual monitoring will be required of the STA for five years following the implementation and all performance standards apply to the STA.

11. **Mitigation Bank.** Any mitigation transplant success that, after five years, exceeds the mitigation requirements, as defined in section 10, may be considered as credit in a "mitigation bank". Establishment of any "mitigation bank" and use of any credits accrued from such a bank must be with the approval of the resource agencies and be consistent with the provisions stated in this policy. Monitoring of any approved mitigation bank shall be conducted on an annual basis until all credits are exhausted.

12. **Exclusions.**

1) Placement of a single pipeline, cable, or other similar utility line across an existing eelgrass bed with an impact corridor of no more than 1 meter wide may be excluded from the provisions of this policy with concurrence of the resource agencies. After project construction, a post-project survey shall be completed within 30 days and the results shall be sent to the resource agencies. The actual area of impact shall be determined from this survey. An additional survey shall be completed after 12 months to insure that the project or impacts attributable to the project have not exceeded the allowed 1 meter corridor width. Should the post-project or 12 month survey demonstrate a loss of eelgrass greater than the 1 meter wide corridor, then mitigation pursuant to sections 1-11 ofthis policy shall be required.

2) Projects impacting less than 10 square meters. For these projects, an exemption may be requested by a project applicant from the mitigation requirements as stated in this policy, provided suitable out-of-kind mitigation is proposed. A case-by-case evaluation

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and determination regarding the applicability of the requested exemption shall be made by the resource agencies.
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(last revised 08/30/05)

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Appendix 5. EFH Dredge Programmatic Report Form

Recommended EFH Dredge Programmatic Report Form to be cumulatively submitted for all dredge projects where active dredging occurred for each calendar year.

EFH Dredge Programmatic Report Form
20___ (calendar year)

1. Project name.
2. Was eelgrass within 250 m of project footprint?
    a. If yes, was BMP employed?
        i. If no, explain why not.
        ii. If yes, describe BMP.
3. Did project overlap with eelgrass?
    a. If yes, did appropriate mitigation occur?
        i. If no, explain why not.
        ii. If yes, describe (include acreage).
4. What were the sediment contaminant levels?
    a. PAH
    b. PCB
    c. Hg

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NOAA FISHERIES
West Coast Region

California Eelgrass Mitigation Policy and Implementing Guidelines

October 2014

Photo credit: www.Lorenz-Avelar.com

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I. National Marine Fisheries Service's (NMFS) California Eelgrass Mitigation Policy

A. Policy Statement

It is NMFS' policy to recommend **no net loss of eelgrass habitat function** in California.

For all of California, compensatory mitigation should be recommended for the loss of existing eelgrass habitat function, but only after avoidance and minimization of effects to eelgrass have been pursued to the maximum extent practicable. Our approach is congruous with the approach taken in the federal Clean Water Act guidelines under section 404(b)(1) (40 CFR 230). In absence of a complete functional assessment, eelgrass distribution and density should serve as a proxy for eelgrass habitat function. Compensatory mitigation options include comprehensive management plans, in-kind mitigation, mitigation banks and in-lieu-fee programs, and out-of-kind mitigation. While in-kind mitigation is preferred, the most appropriate form of compensatory mitigation should be determined on a case-by-case basis.

Further, it is the intent of this policy to ensure that there is no loss associated with delays in establishing compensatory mitigation. This should be accomplished by creating a greater amount of eelgrass than is lost, if the mitigation is performed contemporaneously or after the impacts occur. To achieve this, NMFS, in most instances, should recommend compensatory mitigation for vegetated and unvegetated eelgrass habitat be successfully completed at a ratio of at least 1.2:1 mitigation area to impact area. This ratio is based on present value calculation[1] using a discount rate of 0.03 (NOAA-DARP 1999). This ratio assumes that restored eelgrass habitat achieves habitat function comparable to existing eelgrass habitat within a period of three years or less (Hoffman 1986, Evans & Short 2005, Fonseca *et al.* 1990).

For ongoing projects, once mitigation has been successfully implemented to compensate for the loss of eelgrass habitat function within a specified footprint, NMFS should not recommend additional mitigation for subsequent loss of eelgrass habitat if 1) ongoing project activities result in subsequent loss of eelgrass habitat function within the same footprint for which mitigation was completed and 2) the project applicant can document that no new area of eelgrass habitat is impacted by project activities.

This policy does not address mitigation for potential eelgrass habitat. NMFS recognizes impacts to potential eelgrass habitat may preclude eelgrass movement or expansion to suitable unvegetated areas in the future, potentially resulting in declines in eelgrass abundance over time. In addition, it does not address other shallow water habitats. Regulatory protections in the estuarine/marine realm typically focus on wetlands and submerged aquatic vegetation. Mudflats, sandflats, and other superficially bare habitats do not garner the same degree of recognition and

[1] Present Value (PV) is a calculation used in finance to determine the present day value of an amount that is received at a future date. The premise of the equation is that receiving something today is worth more than receiving the same item at a future date; $PV = C_1/(1+r)^n$ where C_1= resource at period 1, r= interest or discount rate, n=number of periods.

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concern, even though these are some of the most productive and fragile ecosystems (Reilly *et al*. 1999). NMFS will continue to collaborate with federal and state partners on these issues.

B. Eelgrass Background and Information

Eelgrass species (*Zostera marina* L. and *Z. pacifica*) are seagrasses that occur in the temperate unconsolidated substrate of shallow coastal environments, enclosed bays, and estuaries. Eelgrass is a highly productive species and is considered to be a "foundation" or habitat forming species. Eelgrass contributes to ecosystem functions at multiple levels as a primary and secondary producer, as a habitat structuring element, as a substrate for epiphytes and epifauna, and as sediment stabilizer and nutrient cycling facilitator. Eelgrass provides important foraging areas and shelter to young fish and invertebrates, food for migratory waterfowl and sea turtles, and spawning surfaces for invertebrates and fish such as the Pacific herring. Eelgrass also provides a significant source of carbon to the detrital pool which provides important organic matter in sometimes food-limited environments (*e.g.*, submarine canyons). In addition, eelgrass has the capacity to sequester carbon in the underlying sediments and may help offset carbon emissions. Given the significance and diversity of the functions and services provided by seagrass, Costanza *et al.* (2007) determined seagrass ecosystems to be one of Earth's most valuable.

California supports dynamic eelgrass habitats that range in extent from less than 11,000 acres to possibly as much as 15,000 acres statewide. This is inclusive of estimates for poorly documented beds in smaller coastal systems as well as open coastal and insular areas. While among the most productive of habitats, the overall low statewide abundance makes eelgrass one of the rarest habitats in California. Collectively just five systems, Humboldt Bay, San Francisco Bay, San Diego Bay, Mission Bay and Tomales Bay support over 80 percent of the known eelgrass in the state. The uneven distribution of eelgrass resources increases the risk to this habitat and also contributes to its dynamic nature. Further, the narrow depth range within which eelgrass can occur further places this habitat at risk in the face of global climate change and sea level rise predictions.

Seagrass habitat has been lost from temperate estuaries worldwide (Duarte 2002, Lotze *et al.* 2006, Orth *et al.* 2006). While both natural and human-induced mechanisms have contributed to these losses, impacts from human population expansion and associated pollution and upland development is the primary cause (Short and Wyllie-Echeverria 1996). Human activities that affect eelgrass habitat distribution and abundance, including, but not limited to, urban development, harbor development, aquaculture, agricultural runoff, effluent discharges, and upland land use associated sediment discharge (Duarte 2008) occur throughout California. For example, dredging and filling; shading and alteration of circulation patterns; and watershed inputs of sediment, nutrients, and unnaturally concentrated or directed freshwater flows can directly and indirectly destroy eelgrass habitats. Conversely, in many areas great strides have been made at restoring water quality and expanding eelgrass resources through directed efforts at environmental improvements and resource enhancement. While improvements in eelgrass management have occurred overall, the importance of eelgrass both ecologically and economically, coupled with ongoing human pressure and potentially increasing degradation and losses associated with climate change, highlight the need to protect, maintain, and where feasible, enhance eelgrass habitat.

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C. Purpose and Need for Eelgrass Mitigation Policy

Eelgrass warrants a strong protection strategy because of the important biological, physical, and economic values it provides, as well as its importance to managed species under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). Vegetated shallows that support eelgrass are also considered special aquatic sites under the 404(b)(1) guidelines of the Clean Water Act (40 C.F.R. § 230.43). The National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) developed this policy to establish and support a goal of protecting this resource and its habitat functions, including spatial coverage and density of eelgrass habitats. This NMFS policy and implementing guidelines are being shared with agencies and the public to ensure there is a clear and transparent process for developing eelgrass mitigation recommendations.

Pursuant to the MSA, eelgrass is designated as an essential fish habitat (EFH) habitat area of particular concern (HAPC) for various federally-managed fish species within the Pacific Coast Groundfish Fishery Management Plan (FMP) (PFMC 2008). An HAPC is a subset of EFH that is rare, particularly susceptible to human-induced degradation, especially ecologically important, and/or located in an environmentally stressed area. HAPC designations are used to provide additional focus for conservation efforts.

This policy and guidelines support but do not expand upon existing NMFS authorities under the MSA, the Fish and Wildlife Coordination Act (FWCA), and the National Environmental Policy Act (NEPA). Pursuant to the EFH provisions of the MSA, FWCA, and obligations under the NEPA as a responsible agency, NMFS annually reviews and provides recommendations on numerous actions that may affect eelgrass resources throughout California. Section 305(b)(1)(D) of the MSA requires NMFS to coordinate with, and provide information to, other federal agencies regarding the conservation and enhancement of EFH. Section 305(b)(2) requires all federal agencies to consult with NMFS on all actions or proposed actions authorized, funded, or undertaken by the agency that may adversely affect EFH. Under section 305(b)(4) of the MSA, NMFS is required to provide EFH Conservation Recommendations to federal and state agencies for actions that would adversely affect EFH (50 C.F.R. § 600.925). NMFS makes its recommendations with the goal of avoiding, minimizing, or otherwise compensating for adverse effects to EFH. When impacts to NMFS trust resources are unavoidable, NMFS may recommend compensatory mitigation to offset those impacts. In order to fulfill its consultative role, NMFS may also recommend, among other things, the development of mitigation plans, habitat distribution maps, surveys and survey reports, progress milestones, monitoring programs, and reports verifying the completion of mitigation activities.

Eelgrass impact management and mitigation throughout California has historically been undertaken without a statewide strategy. Federal actions with impacts to eelgrass require considerable NMFS staff time for project review, coordination and development of conservation recommendations. As federal staff resources vary with budgets, and threats to aquatic resources remain steady or increase, regulatory streamlining and increased efficiency are crucial for continued protection of important coastal habitats, including eelgrass. The California Eelgrass Mitigation Policy (CEMP) is meant to increase efficiency of existing regulatory authorities in a

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programmatic manner, provide transparency to federal agencies and action proponents, and ensure that unavoidable impacts to eelgrass habitat are fully and appropriately mitigated. It is the intent of NMFS to collaborate with other federal, state, and local agencies charged with the protection of marine resources to seek a unified approach to actions affecting eelgrass such that consistency across agencies with respect to this resource may be enhanced.

D. Relevance to Other Federal and State Policies

Based on our understanding of existing federal and state policies regarding aquatic resource conservation, the CEMP does not conflict with existing policies and complements the federal and state wetland policies as described below. NMFS does not intend to make any recommendations, which, if adopted by the action agency and carried out, would violate other federal, state, or local laws. The CEMP also complements the NOAA Aquaculture Policy and National Shellfish Initiative and builds upon the NOAA Seagrass Conservation Guidelines and the Southern California Eelgrass Mitigation Policy.

1. Corps/EPA Mitigation Rule and supporting guidance

In 2008, the Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (Corps) issued revised regulations governing compensatory mitigation for authorized impacts to wetlands, streams, and other waters of the U.S. under Section 404 of the Clean Water Act. The regulations emphasize avoiding impacts to wetlands and other water resources. For unavoidable impacts, the rule incorporates Natural Resource Council recommendations to improve planning, implementing and managing wetland replacement projects, including: science-based assessment of impacts and compensation measures, watershed assessments to drive mitigation sites and plans, measurable and enforceable ecological performance standards for evaluating mitigation projects, mitigation monitoring to document whether the mitigation employed meets ecological performance standards, and complete compensation plans. The regulations also encourage the expansion of mitigation banking and in lieu fee agreements to improve the quality and success of compensatory mitigation projects.

The NMFS policy to recommend no net loss of eelgrass function and the eelgrass mitigation guidelines offered herein align with the provisions of the EPA and Corps mitigation rule, but provide more specific recommendations on how to avoid and minimize impacts to eelgrass and how to implement eelgrass surveys, assessments, mitigation, and monitoring.

2. State of California Wetland Conservation Policies

The 1993 State of California Wetlands Conservation Policy established a framework and strategy to ensure no overall net loss and long-term gain in the quantity, quality, and permanence of wetlands acreage and values in California in a manner that fosters creativity, stewardship, and respect for private property, reduce procedural complexity in administration of state and federal wetlands conservation programs, and encourage partnerships to make landowner incentive programs and cooperative planning efforts the primary focus of wetlands conservation and restoration.

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The State of California is also developing a Wetland and Riparian Area Protection Policy. The first phase of this effort was published as the "Preliminary Draft Wetland Area Protection Policy" with the purpose of protecting all waters of the State, including wetlands, from dredge and fill discharges. It includes a wetland definition and associated delineation methods, an assessment framework for collecting and reporting aquatic resource information, and requirements applicable to discharges of dredged or fill material. The draft specifies that dredge or fill projects will provide for replacement of existing beneficial uses through compensatory mitigation. The preliminary policy includes a determination that compensatory mitigation will sustain and improve the overall abundance, diversity and condition of aquatic resources in a project watershed area.

Based on the definition of wetlands included in these state wetland policies, the policies do not directly apply to subtidal eelgrass habitat, but may apply to intertidal eelgrass habitat. The NMFS policy of recommending no net loss to eelgrass habitat function and recommendations for compensatory mitigation for eelgrass impacts complement the state protection policies for wetlands.

3. NOAA Aquaculture Policy and National Shellfish Initiative

In 2011, NOAA released the National Marine Aquaculture Policy and the National Shellfish Initiative. The Policy encourages and fosters sustainable aquaculture development that provides domestic jobs, products, and services and that is in harmony with healthy, productive, and resilient marine ecosystems, compatible with other uses of the marine environment, and consistent with the National Policy for the Stewardship of the Ocean, our Coasts, and the Great Lakes (National Ocean Policy). The goal of the Initiative is to increase populations of bivalve shellfish in our nation's coastal waters—including oysters, clams, abalone, and mussels—through both sustainable commercial production and restoration activities. The Initiative supports shellfish industry jobs and business opportunities to meet the growing demand for seafood, while protecting and enhancing habitat for important commercial, recreational, and endangered and threatened species and species recovery. The Initiative also highlights improved water quality, nutrient removal, and shoreline protection as benefits from shellfish production and restoration. Both the Policy and the Initiative seek to improve interagency coordination for permitting commercial and restoration shellfish projects, as well as support research and other data collection to assess and refine conservation strategies and priorities.

The regulatory efficiencies, transparency, and compensation for impacts to eelgrass promoted by the CEMP directly support the National Aquaculture Policy statements and National Shellfish Initiative through: (1) protection of eelgrass, an important component of productive and resilient coastal ecosystems in California and habitat for wild species, and (2) improved coordination with federal partners regarding planning and permitting for commercial shellfish projects. Furthermore, research conducted under the direction of the National Shellfish Initiative could be informed by and also inform NMFS consultations regarding eelgrass impacts and mitigation in California.

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4. NOAA Seagrass Conservation Guidelines

The NOAA publication, "Guidelines for the Conservation and Restoration of Seagrasses in the United States and Adjacent Waters" (1998) was developed by Mark Fonseca of NOAA's Beaufort Laboratory along with Jud Kenworthy and Gordon Thayer and was funded by NOAA's Coastal Ocean Program. The document presents an overview of seagrass conservation and restoration in the United States, discusses important issues that should be addressed in planning seagrass restoration projects, describes different planting methodologies, proposes monitoring criteria and means for evaluation success, and discusses issues faced by resource managers. The CEMP considers information presented in the Fonseca *et al*. document, but deviates in some cases in order to provide reasonable and practicable guidelines for eelgrass conservation in California.

5. Southern California Eelgrass Mitigation Policy

In southern and central California, eelgrass mitigation has been addressed in accordance with the Southern California Eelgrass Mitigation Policy applied by NMFS, US Fish & Wildlife Service, California Department of Fish and Wildlife, California Coastal Commission, US Army Corps of Engineers, and other resource and regulatory agencies since 1991, and which has generally been effective at ensuring eelgrass impacts are mitigated in most circumstances. Given the success of the Southern California Eelgrass Mitigation Policy over its 20-year history, this policy reflects an expansion of the application of the Southern California policy with minor modifications to ensure a high standard of statewide eelgrass management and protection. This policy will supersede the Southern California Eelgrass Mitigation Policy for all areas of California upon its adoption.

II. Implementing Guidelines for California

This policy and guidelines will serve as the guidance for staff and managers within NMFS for developing recommendations concerning eelgrass issues through EFH and FWCA consultations and NEPA reviews throughout California. This policy will inform NMFS's position on eelgrass issues for California in other roles as a responsible, advisory, or funding agency or trustee. In addition, this document provides guidance to assist NMFS in performing its consultative role under the statutes described above. Finally, pursuant to NMFS obligation to provide information to federal agencies under Section 305(b)(1)(D) of the MSA, this policy serves that role by providing information intended to further the conservation and enhancement of EFH. Should this policy or guidelines be inconsistent with any formally-promulgated NMFS regulations, those formally-promulgated regulations will take precedence over any inconsistent provisions of this policy.

While many of the activities impacting eelgrass are similar across California, eelgrass stressors and growth characteristics differ between southern California (U.S./Mexico border to Pt. Conception), central California (Point Conception to San Francisco Bay entrance), San Francisco Bay, and northern California (San Francisco Bay to the California/Oregon border). The amount of scientific information available to base management decisions on also differs among areas within California, with considerably more information and history with eelgrass habitat management in southern California than the other regions. Gaps in region-specific scientific

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information do not override the need to be protective of eelgrass habitat while relying on the best information currently available from areas within and outside of California. Although the primary orientation of this policy is toward statewide use, where indicated below, specific elements of this policy may differ between southern California, central California, northern California and San Francisco Bay.

NMFS will continue to explore the science of eelgrass habitat and improve our understanding of eelgrass habitat function, impacts, assessment techniques, and mitigation efficacy. Approximately every 5 years, NMFS intends to evaluate monitoring and survey data collected by federal agencies and action proponents per the recommendations of these guidelines. NMFS managers will determine if updates to these guidelines are appropriate based on information evaluated during the 5-year review. Updates to these guidelines and supporting technical information will be available on the NMFS website.

The information below serves as a common starting place for NMFS recommendations to achieve no net loss of eelgrass habitat function. NMFS employees should not depart from the guidelines provided herein without appropriate justification and supervisory concurrence. However, the recommendations that NMFS ultimately makes should be provided on a case-by-case basis to provide flexibility when site specific conditions dictate. In the EFH context, NMFS recommendations are provided to the action agency, which has final approval of the action; in accordance with the MSA, the action agency may take up NMFS recommendations or articulate its reasons for not following the recommendations. In the FWCA context, NMFS makes recommendations which must be considered, but the action agency is ultimately responsible for the wildlife protective measures it adopts (if any). For these reasons, neither this policy nor its implementing guidelines are to be interpreted as binding on the public.

A. Eelgrass Habitat Definition

Eelgrass distribution fluctuates and can expand, contract, disappear, and recolonize areas within suitable environments. Vegetated eelgrass areas can expand by as much as 5 meters (m) and contract by as much as 4 m annually (Donoghue 2011). Within eelgrass habitat, eelgrass is expected to fluctuate in density and patch extent based on prevailing environmental factors (*e.g.*, turbidity, freshwater flows, wave and current energy, bioturbation, temperature, etc.). To account for seagrass fluctuation, Fonseca *et al.* (1998) recommends that seagrass habitat include the vegetated areas as well as presently unvegetated spaces between seagrass patches.

In addition, there is an area of functional influence, where the habitat function provided by the vegetated cover extends out into adjacent unvegetated areas. Those functions include detrital enrichment, energy dampening and sediment trapping, primary productivity, alteration of current or wave patterns, and fish and invertebrate use, among other functions. The influence of eelgrass on the local environment can extend up to 10 m from individual eelgrass patches, with the distance being a function of the extent and density of eelgrass comprising the bed as well as local biologic, hydrographic, and bathymetric conditions (Bostrom and Bonsdorff 2000, Bostrom *et al*. 2001, Ferrell and Bell 1991, Peterson *et al*. 2004, Smith *et al.* 2008, van Houte-Howes *et al.* 2004, Webster *et al*. 1998). Detrital enrichment will generally extend laterally as well as down slope from the beds, while fish and invertebrates that utilize eelgrass beds may move away from the

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eelgrass core to areas around the bed margins for foraging and in response to tides or diurnal cycles (Smith *et al*. 2008).

To encompass fluctuating eelgrass distribution and functional influence around eelgrass cover, for the purposes of this policy and guidelines, eelgrass habitat is defined as areas of vegetated eelgrass cover (any eelgrass within 1 m^2 quadrat and within 1 m of another shoot) bounded by a 5 m wide perimeter of unvegetated area (See Attachment 1 for a graphical depiction of this definition). Unvegetated areas may have eelgrass shoots a distance greater than 1 m from another shoot, and may be internal as well as external to areas of vegetated cover. For isolated patches and on a case-by-case basis, it may be acceptable to include an unvegetated area boundary less than or greater than 5 m wide. The definition excludes areas of unsuitable environmental conditions such as hard bottom substrates, shaded locations, or areas that extend to depths below those supporting eelgrass. Suitable depths can vary substantially depending upon site-specific conditions. In general, eelgrass does not extend deeper than 12 feet mean lower low water (MLLW) in most protected bays and harbors in Southern California, and is more limited in Central and Northern California embayments. However, eelgrass can grow much deeper in entrance channels and offshore areas

B. Surveying Eelgrass

NMFS may recommend action agencies conduct surveys of eelgrass habitat to evaluate effects of a proposed action. Eelgrass habitat should be surveyed using visual or acoustic methods and mapping technologies and scales appropriate to the action, scale, and area of work. Surveys should document both vegetated eelgrass cover as well as unvegetated areas within eelgrass habitat (See section II.A. for definition). Assessing impacts to eelgrass habitat relies on the completion of quality surveys and mapping. As such, inferior quality of surveys and mapping (*e.g.*, completed at an inappropriate scale or using inappropriate methods) may make proper evaluation of impacts impossible, and may result in a recommendation from NMFS to re-survey and re-map project areas. Also, to account for fluctuations in eelgrass habitat due to environmental variations, a reference site(s) should be incorporated into the survey (See section V.B.4 below for more details).

1. Survey Parameters

Because eelgrass growth conditions in California vary, eelgrass mapping techniques will also vary. Diver transects or boundary mapping may be suited to very small scale mapping efforts, while aerial and/or acoustic survey with ground-truthing may be more suited to larger survey areas. Aerial and above-water visual survey methods should be employed only where the lower limit of eelgrass is clearly visible or in combination with methods that adequately inventory eelgrass in deeper waters.

The survey area should be scaled as appropriate to the size of the potential action and the potential extent and distribution of eelgrass impacts, including both direct and indirect effects. The resolution of mapping should be adequate to address the scale of effects reasonably expected to occur. For small projects, such as individual boat docks, higher mapping resolution is appropriate in order to detect actual effects to eelgrass at a scale meaningful to the project size. At larger scales, the mapping resolution may be less refined over a larger area, assuming that

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minor errors in mapping will balance out over the larger scale. Survey reports should provide a detailed description of the survey coverage (*e.g.*, number, location, and type of samples) and any interpolation methods used in the mapping.

While many parameters may be useful to describe eelgrass habitat condition (*e.g.*, plant biomass, leaf length, shoot:root ratios, epiphytic loading), many are labor intensive and may be impractical for resource management applications on a day-to-day basis. For this reason, four parameters have been identified for use in eelgrass habitat surveys and assessment of effects of an action on eelgrass. These parameters that should be articulated in eelgrass surveys are: 1) spatial distribution, 2) areal extent, 3) percentage of vegetated cover, and 4) the turion (shoot) density.

a) Spatial Distribution

The spatial distribution of eelgrass habitat should be delineated by a contiguous boundary around all areas of vegetated eelgrass cover extending outward a distance of 5 m, excluding gaps within the vegetated cover that have individual plants greater than 10 m from neighboring plants. Where such separations occur, either a separate area should be defined, or a gap in the area should be defined by extending a line around the void along a boundary defined by adjacent plants and including the 5 meter perimeter. The boundary of the eelgrass habitat should not extend into areas where depth, substrate, or existing structures are unsuited to supporting eelgrass habitat.

b) Aerial Extent

The eelgrass habitat aerial extent is the quantitative area (*e.g.*, square meters) of the spatial distribution boundary polygon of the eelgrass habitat. The total aerial extent should be broken down into extent of vegetated cover and extent of unvegetated habitat. Areal extent should be determined using commercially available geo-spatial analysis software. For small projects, coordinate data for polygon vertices could be entered into a spreadsheet format, and area could be calculated using simple geometry.

c) Percent Vegetated Cover

Eelgrass vegetated cover exists when one or more leaf shoots (turions) per square meter is present. The percent bottom cover within eelgrass habitat should be determined by totaling the area of vegetated eelgrass cover and dividing this by the total eelgrass habitat area. Where substantial differences in bottom cover occur across portions of the eelgrass habitat, the habitat could be subdivided into cover classes (*e.g.*, 20% cover, 50% cover, 75% cover).

d) Turion (Shoot) Density

Turion density is the mean number of eelgrass leaf shoots per square meter within mapped eelgrass vegetated cover. Turion density should be reported as a mean ± the standard deviation of replicate measurements. The number of replicate measurements (n) should be reported along with the mean and deviation. Turion densities are determined only within vegetated areas of

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eelgrass habitat and therefore, it is not possible to measure a turion density equal to zero. If different cover classes are used, a turion density should be determined for each cover class.

2. Eelgrass Mapping

For all actions that may directly or indirectly affect eelgrass habitat, an eelgrass habitat distribution map should be prepared on an accurate bathymetric chart with contour intervals of not greater than 1 foot (local vertical datum of MLLW). Exceptions to the detailed bathymetry could be made for small projects or for projects where detailed bathymetry may be infeasible. Unless region-specific mapping format and protocols are developed by NMFS (in which case such region-specific mapping guidance should be used), the mapping should utilize the following format and protocols:

a) Bounding Coordinates

Horizontal datum - Universal Transverse Mercator (UTM), NAD 83 meters, Zone 11 (for southern California) or Zone 10 (for central, San Francisco Bay, and northern California) is the preferred projection and datum. Another projection or datum may be used; however, the map and spatial data should include metadata that accurately defines the projection and datum.

Vertical datum - Mean Lower Low Water (MLLW), depth in feet.

b) Units

Transects, grids, or scale bars should be expressed in meters. Area measurements should be in square meters.

c) File Format

A spatial data layer compatible with readily available commercial geographic information system software producing file formats compatible with ESRI® ArcGIS software should be sent to NMFS when the area mapped supports at least 10 square meters of eelgrass. For those areas supporting less than 10 square meters of eelgrass, a table may alternatively be provided giving the vertices bounding x, y coordinates of the eelgrass areas in a spreadsheet or an ASCII file format. In addition to a spatial layer and/or table, a hard-copy map should be included with the survey report. The projection and datum should be clearly defined in the metadata and/or an associated text file.

Eelgrass maps should, at a minimum, include the following:

- A graphic scale bar, north arrow, legend, horizontal datum and vertical datum;
- A boundary illustrating the limits of the area surveyed;
- Bathymetric contours for the survey area, including both the action area(s) and reference site(s) in increments of not more than 1 foot;
- An overlay of proposed action improvements and construction limits;
- The boundary of the defined eelgrass habitat including an identification of area exclusions based on physical unsuitability to support eelgrass habitat; and

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- The existing eelgrass cover within the defined eelgrass habitat at the time of the survey.

3. Survey Period

All mapping efforts should be completed during the active growth period for eelgrass (typically March through October for southern California, April through October for central California, April through October for San Francisco Bay, and May through September for northern California) and should be considered valid for a period of 60 days to ensure significant changes in eelgrass distribution and density do not occur between survey date and the project start date. The 60 day period is particularly important for eelgrass habitat survey conducted at the very beginning of the growing season, if eelgrass habitat expansion occurs as the growing season progresses. A period other than 60 days could be warranted and should be evaluated on a case-by-case basis, particularly for surveys completed in the middle of the growing season. However, when the end of the 60-day validity period falls outside of the region-specific active growth period, the survey could be considered valid until the beginning of the next active growth period. For example, a survey completed in southern California in the August-October time frame would be valid until the resumption of the active growth phase (i.e., in most instances, March 1). In some cases, NMFS and the action agency may agree to surveys being completed outside of the active growth period. For surveys completed during or after unusual climatic events (*e.g.*, high fluvial discharge periods, El Niño conditions), NMFS staff should be contacted to determine if any modifications to the common survey period are warranted.

4. Reference Site Selection

Eelgrass habitat spatial extent, aerial extent, percent cover and turion density are expected to naturally fluctuate through time in response to natural environmental variables. As a result, it is necessary to correct for natural variability when conducting surveys for the purpose of evaluating action effects on eelgrass or performance of mitigation areas. This is generally accomplished through the use of a reference site(s), which is expected to respond similarly to the action area in response to natural environmental variability. It is beneficial to select and monitor multiple reference sites rather than a single site and to utilize the average reference site condition as a metric for environmental fluctuations. This is especially true when a mitigation site is located within an area of known environmental gradients, and reference sites may be selected on both sides of the mitigation site along the gradient. Environmental conditions (*e.g.*, sediment, currents, proximity to action area, shoot density, light availability, depth, onshore and watershed influences) at the reference site(s) should be representative of the environmental conditions at the impact area (Fonseca *et al*. 1998). Where practical, the reference site(s) should be at least the size of the anticipated impact and/or mitigation area to limit the potential for minor changes in a reference site (*e.g.*, propeller scarring or ray foraging damage) overly affecting mitigation needs. The logic for site(s) selection should be documented in the eelgrass mitigation planning documents.

C. Avoiding and Minimizing Impacts to Eelgrass

This section describes measures to avoid and minimize impacts to eelgrass caused by turbidity, shading, nutrient loading, sedimentation and alteration of circulation patterns. Not all measures

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are equally suited to a particular project or condition. Measures to avoid or minimize impacts should be focused on stressors where the source and control are within the purview of the permittee and action agency. Action agencies in coordination with NMFS should evaluate and establish impact avoidance and minimization measures on a case-by-case basis depending on the action and site-specific information, including prevailing current patterns, sediment source, characteristics, and quantity, as well as the nature and duration of work.

1. Turbidity

To avoid and minimize potential turbidity-related impacts to eelgrass:

- Where practical, actions should be located as far as possible from existing eelgrass; and
- In-water work should occur as quickly as possible such that the duration of impacts is minimized.

Where proposed turbidity generating activities must occur in proximity to eelgrass and increased turbidity will occur at a magnitude and duration that may affect eelgrass habitat, measures to control turbidity levels should be employed when practical considering physical and biological constraints and impacts. Measures may include:

- Use of turbidity curtains where appropriate and feasible;
- Use of low impact equipment and methods (*e.g.*, environmental buckets, or a hydraulic suction dredge instead of clamshell or hopper dredge, provided the discharge may be located away from the eelgrass habitat and appropriate turbidity controls can be provided at the discharge point);
- Limiting activities by tide or day-night windows to limit light degradation within eelgrass habitat;
- Utilizing 24-hour dredging to reduce the overall duration of work and to take advantage of dredging during dark periods when photosynthesis is not occurring; or
- Other measures that an action party may propose and be able to employ to minimize potential for adverse turbidity effects to eelgrass.

NMFS developed a flowchart for a stepwise decision making process as guidance for action agencies to determine when to implement best management practices (BMPs) for minimizing turbidity from dredging actions as part of a programmatic EFH consultation in San Francisco Bay. The parameters considered in the flow chart are relevant to all marine areas of California. This document is posted on the NMFS West Coast Region web page (http://www.westcoast.fisheries.noaa.gov/habitat/habitat_types/seagrass_info/california_eelgrass.html) and may be used to evaluate avoidance and minimization measures for any project that generates increased turbidity.

2. Shading

A number of potential design modifications may be used to minimize effects of shading on eelgrass. Boat docks, ramps, gangways, and similar structures should avoid eelgrass habitat to the maximum extent feasible. If avoidance of eelgrass or habitat is infeasible, impacts should be minimized by utilizing, to the maximum extent feasible, design modifications and construction materials that allow for greater light penetration. Action modifications should include, but are not limited to:

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- Avoid siting over-water or landside structures in areas where shading of eelgrass habitat would occur;
- Maximizing the north-south orientation of the structure;
- Maximizing the height of the structure above the water;
- Minimizing the width and supporting structure mass to decrease shade effects;
- Relocating the structure in deeper water and limiting the placement of structures in shallow areas where eelgrass occurs to the extent feasible; and
- Utilizing light transmitting materials in structure design.

Construction materials used to increase light passage beneath the structures may include, but are not limited to, open grating or adequate spacing between deck boards to allow for effective illumination to support eelgrass habitat. The use of these shade reducing options may be appropriate where they do not conflict with safety, ADA compliance, or structure utility objectives.

NMFS developed a stepwise key as guidance for action agencies to determine which combination of modifications are best suited for minimizing shading effects from overwater structures on eelgrass as part of a programmatic EFH consultation in San Francisco Bay. The parameters considered in the flow chart are relevant to all marine areas of California. This document is posted on the West Coast Region web page (http://www.westcoast.fisheries.noaa.gov/habitat/habitat_types/seagrass_info/california_eelgrass.html) and may be used to evaluate avoidance and minimization measures for any project that results in shading.

3. Circulation patterns

Where appropriate to the scale and nature of potential eelgrass impacts, action parties should evaluate if and how the action may alter the hydrodynamics of the action area such that eelgrass habitat within or in proximity to the action area may be adversely affected. To maintain good water flow and low residence time of water within eelgrass habitat, action agencies should ensure actions:

- Minimize scouring velocities near or within eelgrass beds;
- Maintain wind and tidal circulation to the extent practical by considering orientation of piers and docks to maintain predominant wind effects;
- Incorporate setbacks on the order of 15 to 50 meters from eelgrass habitat where practical to allow for greater circulation and reduced impact from boat maneuvering, grounding, and propeller damage, and to address shading impacts; and
- Minimize the number of piles and maximize pile spacing to the extent practical, where piles are needed to support structures.

For large-scale actions in the proximity of eelgrass habitats, NMFS may request specific modeling and/or field hydrodynamic assessments of the potential effects of work on characteristics of circulation within eelgrass habitat.

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4. Nutrient loading

Where appropriate to the scale and nature of potential eelgrass impacts, the following measures should be considered for implementation to reduce the potential for excessive nutrient loading to eelgrass habitat:

- diverting site runoff from landscaped areas away from discharges around eelgrass habitat;
- implementation of fertilizer reduction program;
- reduction of watershed nutrient loading;
- controlling local sources of nutrients such as animal wastes and leach fields; and
- maintaining good circulation and flushing conditions within the water body.

Reducing nutrient loading may also provide opportunities for establishing eelgrass as mitigation for project impacts.

5. Sediment loading

Watershed development and changes in land use may increase soil erosion and increase sedimentation to downstream embayments and lagoons.

- To the extent practicable, maintain riparian vegetation buffers along all streams in the watershed.
- Incorporate watershed analysis into agricultural, ranching, and residential/commercial development projects.
- Increase resistance to soil erosion and runoff. Sediment basins, contour farming, and grazing management are examples of key practices.
- Implement best management practices for sediment control during construction and maintenance operations (*e.g.*, Caltrans 2003).

Reducing sediment loading may also provide opportunities for establishing eelgrass as mitigation for project impacts in systems for which sedimentation is a demonstrable limiting factor to eelgrass.

D. Assessing Impacts to Eelgrass Habitat

If appropriate to the statute under which the consultation occurs, NMFS should consider both direct and indirect effects of the project in order to assess whether a project may impact eelgrass. NMFS is aware that many of the statutes and regulations it administers may have more specific meanings for certain terms, including "direct effect" and "indirect effect", and will use the statutory or regulatory meaning of those terms when conducting consultations under those statutes.[2] Nevertheless, it is useful for NMFS to consider effects experienced

[2] In the EFH context, adverse effects include any impact that reduces quality and/or quantity of EFH, including direct or indirect physical, chemical, or biological alterations of the waters or substrate (50 CFR 600.910). The Council of Environmental Quality (CEQ) regulations regarding NEPA implementation (40 CFR 1508.8(a)) define direct and indirect impacts of an action for the purposes of NEPA. Other NMFS statutes provide their own definitions regarding effects.

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contemporaneously with project actions (both at the project site and away from the project site) and which might occur later in time.

Generally, effects to eelgrass habitat should be assessed using pre- and post-project surveys of the impact area and appropriate reference site(s) conducted during the time period of maximum eelgrass growth (typically March through October for southern California, April through October for central California, April through October for San Francisco Bay, and May through September for northern California). NMFS should consider the likelihood that the effects would occur before recommending pre- and post-project eelgrass surveys. The pre-construction survey of the eelgrass habitat in the action area and an appropriate reference site(s) should be completed within 60 days before start of construction. After construction, a post-action survey of the eelgrass habitat in the action area and at an appropriate reference site(s) should be completed within 30 days of completion of construction, or within the first 30 days of the next active growth period following completion of construction that occurs outside of the active growth period. Copies of all surveys should be provided to the lead federal agency, NMFS, and other interested regulatory and/or resource agencies within 30 days of completing the survey. The recommended timing of surveys is intended to minimize changes in eelgrass habitat distribution and abundance during the period between survey completion and construction initiation and completion. For example, a post-action survey completed beyond 30 days following construction or outside of the active growing season may show declines in eelgrass habitat as a result of natural senescence rather than the action.

The lead federal agency and NMFS should consider reference area eelgrass performance, physical evidence of impact, turbidity and construction activities monitoring data, as well as other documentation in the determination of the impacts of the action undertaken. Impact analyses should document whether the impacts are anticipated to be complete at the time of the assessment, or whether there is an anticipation of continuing eelgrass impacts due to chronic or intermittent effects. Where eelgrass at the impact site declines coincident with and similarly to decline at the reference site(s), the percentage of decline at the reference site should be deducted from the decline at the impact site. However, if eelgrass expands within the reference site(s), the impact site should only be evaluated against the pre-construction condition of the reference site and not the expanded condition. If an action results in increased eelgrass habitat relative to the reference sites, this increase could potentially be considered (subject to the caveats identified herein) by NMFS and the action agency as potential compensation for impacts to eelgrass habitat that occur in the future (see Section II. E. 3). An assessment should also be made as to whether impacts or portions of the impact are anticipated to be temporary. Information supporting this determination may be derived from the permittee, NMFS, and other resource and regulatory agencies, as well as other eelgrass experts.

For some projects, environmental planning and permitting may take longer than 60 days. To accommodate longer planning schedules, it may also be necessary to do a preliminary eelgrass survey prior to the pre-construction survey. This preliminary survey can be used to anticipate potential impacts to eelgrass for the purposes of mitigation planning during the permitting process. In some cases, preliminary surveys may focus on spatial distribution of eelgrass habitat only or may be a qualitative reconnaissance to allow permittees to incorporate avoidance and minimization measures into their proposed action or to plan for future mitigation needs. The pre-

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and post- project surveys should then verify whether impacts occur as anticipated, and if planned mitigation is adequate. In some cases, a preliminary survey could be completed a year or more in advance of the project action.

1. Direct Effects

Biologists should consider the potential for localized losses of eelgrass from dredging or filling, construction-associated damage, and similar spatially and temporally proximate impacts (these effects could be termed "direct"). The actual area of the impact should be determined from an analysis that compares the pre-action condition of eelgrass habitat with the post-action conditions from this survey, relative to eelgrass habitat change at the reference site(s).

2. Indirect Effects

Biologists should also consider effects caused by the action which occur away from the project site; furthermore, effects occurring later in time (whether at or away from the project site) should also be considered. Biologists should consider the potential for project actions to alter conditions of the physical environment in a manner that, in turn, reduce eelgrass habitat distribution or density (*e.g.*, elevated turbidity from the initial implementation or later operations of an action, increased shading, changes to circulation patterns, changes to vessel traffic that lead to greater groundings or wake damage, increased rates of erosion or deposition).

For actions where the impact cannot be fully determined until a substantial period after an action is taken, an estimate of likely impacts should be made prior to implementation of the proposed action based on the best available information (*e.g.*, shading analyses, wave and current modeling). A monitoring program consisting of a pre-construction eelgrass survey and three post-construction eelgrass surveys at the impact site and appropriate reference site(s) should be performed. The action party should complete the first post-construction eelgrass survey within 30 days following completion of construction to evaluate any immediate effects to eelgrass habitat. The second post-construction survey should be performed approximately one year after the first post-construction survey during the appropriate growing season. The third post-construction survey should be performed approximately two years after the first post-construction survey during the appropriate growing season. The second and third post-construction surveys will be used to evaluate if indirect effects resulted later in time due to altered physical conditions; the time frames identified above are aligned with growing season (attempting a survey outside of the growing season would show inaccurate results).

A final determination regarding the actual impact and amount of mitigation needed, if any, to offset impacts should be made based upon the results of two annual post-construction surveys, which document the changes in the eelgrass habitat (areal extent, bottom coverage, and shoot density within eelgrass) in the vicinity of the action, compared to eelgrass habitat change at the reference site(s). Any impacts determined by these monitoring surveys should be mitigated. In the event that monitoring demonstrates the action to have resulted in greater eelgrass habitat impacts than initially estimated, additional mitigation should be implemented in a manner consistent with these guidelines. In some cases, adaptive management may allow for increased success in eelgrass mitigation without the need for additional mitigation.

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E. Mitigation Options

The term mitigation is defined differently by various federal and State laws, regulations and policies. In a broad sense, mitigation may include a range of measures from complete avoidance of adverse effects to compensation for adverse effects by preserving, restoring or creating similar resources at onsite or offsite locations. The Corps and EPA issued regulations governing compensatory mitigation to offset unavoidable adverse effects to waters of the United States authorized by Clean Water Act section 404 permits and other permits issued by the Corps (73 FR 19594; April 10, 2008). For those regulations (33 CFR 332.2 and 40 CFR 230.92, respectively), the Corps and EPA, define "compensatory mitigation" as "the restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse effects which remain after all appropriate and practicable avoidance and minimization has been achieved."

When impacts to eelgrass would occur, the action agency should develop a mitigation plan to achieve no net loss in eelgrass function following the recommended steps in this policy. If NMFS determines a mitigation plan is needed, and it was not included with the EFH Assessment for the proposed action, NMFS may recommend, either as comments on the EFH Assessment or as an EFH Conservation Recommendation, that one be provided. Potential mitigation options are described below. The action agency should consider site specific conditions when determining the most appropriate mitigation option for an action.

1. Comprehensive management plans

NMFS supports the development of comprehensive management plans (CMPs) that protect eelgrass resources within the context of broader ecosystem needs and management objectives. Recommendations different from specific elements described below for in-kind mitigation may be appropriate where a CMP (*e.g.*, an enforceable programmatic permit, Special Area Management Plan, harbor plan, or ecosystem-based management plan) exists that is considered to provide adequate population-level and local resource distribution protections to eelgrass. One such CMP under development at the time these guidelines were developed is *City of Newport Beach Eelgrass Protection Mitigation Plan for Shallow Water in Lower Newport Bay: An Ecosystem Based Management Plan.* If satisfactorily completed and adopted, it is anticipated the protection measures for eelgrass within this area would be adequate to meet the objectives of this policy.

In general, it is anticipated that CMPs may be most appropriate in situations where a project or collection of similar projects will result in incremental but recurrent impacts to a small portion of local eelgrass populations through time (*e.g.*, lagoon mouth maintenance dredging, maintenance dredging of channels and slips within established marinas, navigational hazard removal of recurrent shoals, shellfish farming, and restoration or enhancement actions). In order to ensure that these alternatives provide adequate population-level and local resource distribution protections to eelgrass and that the plan is consistent with the overall conservation objectives of this policy, NMFS should be involved early in the plan's development.

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2. In-kind mitigation

In-kind compensatory mitigation is the creation, restoration, or enhancement of habitat to mitigate for adverse impacts to the same type of habitat. In most cases in-kind mitigation is the preferred option to compensate for impacts to eelgrass. Generally, in-kind mitigation should achieve a final mitigation ratio of 1.2:1 across all areas of the state, independent of starting mitigation ratios. A starting mitigation ratio is the ratio of mitigation area to impact area when mitigation is initiated. The final mitigation ratio is the ratio of mitigation area to impact area once mitigation is complete. The 1.2:1 ratio assumes: (1) there is no eelgrass function at the mitigation site prior to mitigation efforts, (2) eelgrass function at the mitigation site is achieved within three years, (3) mitigation efforts are successful, and (4) there are no landscape differences (*e.g.*, degree of urban influence, proximity to freshwater source), between the impact site and the mitigation site. Variations from these assumptions may warrant higher or lower mitigation ratios. For example, a higher ratio would be appropriate for an enhancement project where the mitigation site has some level of eelgrass function prior to the mitigation action.

Typically, in-kind eelgrass mitigation involves transplanting or seeding of eelgrass into unvegetated habitat. Successful in-kind mitigation may also warrant modification of physical conditions at the mitigation site to prepare for transplants (*e.g.*, alter sediment composition, depth, etc.). In some areas, other in-kind mitigation options such as removing artificial structures that preclude eelgrass growth may be feasible. If in-kind mitigation that does not include transplants or seeding is proposed, post-mitigation monitoring as described below should be implemented to verify that mitigation is successful.

Information provided below in Section II.F includes specific recommendations for in-kind mitigation, including site selection, reference sites, starting mitigation ratios, mitigation methods, mitigation monitoring and performance criteria. Many of the recommendations provided in these guidelines for eelgrass assessments, surveys, and mitigation may apply throughout the state even if a non-transplant mitigation option is proposed.

3. Mitigation banks and in-lieu-fee programs

In 2006 and 2011, the NMFS Southwest Region (merged with the Northwest Region in 2013 to form the West Coast Region) signed interagency Memorandum of Understandings that established and refined a framework for developing and using combined or coordinated approaches to mitigation and conservation banking and in-lieu-fee programs in California. Other signatory agencies include: the California Resources Agency, California Department of Fish and Wildlife, the Corps, the US Fish &Wildlife Service, the EPA, the Natural Resource Conservation Service, and the State Water Resources Control Board.

Under this eelgrass policy, NMFS supports the use of mitigation bank and in-lieu fee programs to compensate for impacts to eelgrass habitat, where such instruments are available and where such programs are appropriate to the statutory structure under which mitigation is recommended. Mitigation banks and in-lieu fee conservation programs are highly encouraged by NMFS in heavily urbanized waters. Credits should be used at a ratio of 1:1 if those credits have been established for a full three-year period prior to use. If the bank credits have been in place for a

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period less than three years, credits should be used at a ratio determined through application of the wetland mitigation calculator (King and Price 2004).

At the request of the action party, and only with approval of NMFS and other appropriate resource agencies and subject to the caveats below, surplus eelgrass area that, after 60-months, exceeds the mitigation needs, as defined in section II.F.6 Mitigation Monitoring and Performance Milestones, has the potential to be considered for future mitigation needs. Additionally, only with the approval of NMFS and other appropriate resource agencies and subject to the caveats below, eelgrass habitat expansion resulting from project activities, and that otherwise would not have occurred, has the potential to be considered for future mitigation needs. Exceeding mitigation needs does not guarantee or entitle the action party or action agency to credit such mitigation to future projects, since every future project must be considered on a case-by-case basis (including the location and type of impact) and viewed in light of the relevant statutory authorities.

4. Out-of-kind mitigation

Out-of-kind compensatory mitigation means the adverse impacts to one habitat type are mitigated through the creation, restoration, or enhancement of another habitat type. In most cases, out-of-kind mitigation is discouraged, because eelgrass is a rare, special-status habitat in California. There may be some scenarios, however, where out-of-kind mitigation for eelgrass impacts is ecologically desirable or when in-kind mitigation is not feasible. This determination should be made based on an established ecosystem plan that considers ecosystem function and services relevant to the geographic area and specific habitat being impacted. Any proposal for out-of-kind mitigation should demonstrate that the proposed mitigation will compensate for the loss of eelgrass habitat function within the ecosystem. Out-of-kind mitigation that generates services similar to eelgrass habitat or improves conditions for establishment of eelgrass should be considered first. NMFS and the federal action agency should be consulted early when out-of-kind mitigation is being proposed in order to determine if out-of-kind mitigation is appropriate, in coordination with other relevant resource agencies (e.g., California Department of Fish and Wildlife, California Coastal Commission, U.S. Fish and Wildlife Service)

F. In-kind Mitigation for Impacts to Eelgrass

As all mitigation project specifics will be determined on a case-by-case basis, circumstances may exist where NMFS staff will need to modify or deviate from the recommended measures described below before providing their recommendation to action agencies.

1. Mitigation Site Selection

Eelgrass habitat mitigation sites should be similar to the impact site. Site selection should consider distance from action, depth, sediment type, distance from ocean connection, water quality, and currents. Where eelgrass that is impacted occurs in marginally suitable environments, it may be necessary to conduct mitigation in a preferable location and/or modify the site to be better suited to support eelgrass habitat creation. Mitigation site modification should be fully coordinated with NMFS staff and other appropriate resource and regulatory agencies. To the extent feasible, mitigation should occur within the same hydrologic system

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(*e.g.*, bay, estuary, lagoon) as the impacts and should be appropriately distributed within the same ecological subdivision of larger systems (*e.g.*, San Pablo Bay or Richardson Bay in San Francisco Bay), unless NMFS and the action agency concur that good justification exists for altering the distribution based on valued ecosystem functions and services.

In identifying potentially suitable mitigation sites, it is advisable to consider the current habitat functions of the mitigation site prior to mitigation use. In general, conversion of unvegetated subtidal areas or disturbed uplands to eelgrass habitats may be considered appropriate means to mitigate eelgrass losses, while conversion of other special aquatic sites (*e.g.*, salt marsh, intertidal mudflats, and reefs) is unlikely to be considered suitable. It may be necessary to develop suitable environmental conditions at a site prior to being able to effectively transplant eelgrass into a mitigation area. Mitigation sites may need physical modification, including increasing or lowering elevation, changing substrate, removing shading or debris, adding wave protection or removing impediments to circulation.

2. Mitigation Area Needs

In-kind mitigation plans should address the components described below to ensure mitigation actions achieve no net loss of eelgrass habitat function. Alternative contingent mitigation should be specified and included in the mitigation plan to address situations where performance milestones are not met.

a) Impacts to Areal Extent of Eelgrass Habitat

Generally, mitigation of eelgrass habitat should be based on replacing eelgrass habitat extent at a 1.2 (mitigation) to 1 (impact) mitigation ratio for eelgrass throughout all regions of California. However, given variable degrees of success across regions and potential for delays and mitigation failure, NMFS calculated *starting* mitigation ratios using "The Five-Step Wetland Mitigation Ratio Calculator" (King and Price 2004) developed for NMFS Office of Habitat Conservation. The calculator utilizes methodology similar to Habitat Equivalency Analysis (HEA), which is an accepted method to determine the amount of compensatory restoration needed to provide natural resource services that are equivalent to loss of natural resource services following an injury (http://www.darrp.noaa.gov/economics/pdf/heaoverv.pdf). HEA is commonly used by NOAA during damage assessment cases, including those involving seagrass. Similar to HEA, the mitigation calculator is based on the "net present value" approach to asset valuation, an economics concept used to compare values of all types of investments, and then modified to incorporate natural resource services. Using the calculator allows for consistency in methodology for all areas within California, avoids arbitrary identification of size of the mitigation area, and avoids cumulative loss to eelgrass habitat that would likely occur with a standard 1:1 ratio (because of the complexity of eelgrass mitigation and the time for created eelgrass to achieve full habitat function).

The calculator includes a number of metrics to determine appropriate ratios that focus on comparisons of quality and quantity of function of the mitigation relative to the site of impact to ensure full compensation of lost function. (see Attachment 4). Among other metrics, the calculator employs a metric of likelihood of failure within the mitigation site based on regional mitigation failure history. As such, the mitigation calculator identifies a recommended starting

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mitigation ratio (the mitigation area to eelgrass impact area) based on regional history of success in eelgrass mitigation. Increased initial mitigation site size should be considered to provide greater assurance that the performance milestones, as specified in Section II.F.6, will be met. This is a common practice in the eelgrass mitigation field to reduce risk of falling short of mitigation needs (Thom 1990). Independent of starting mitigation ratio utilized for a given mitigation action, mitigation success should generally be evaluated against a ratio of 1.2:1.

The elevated starting mitigation ratio should be applied to the area of impact to vegetated eelgrass cover only. For unvegetated eelgrass habitat, a starting mitigation ratio of 1.2:1 is appropriate.

To determine the recommended starting mitigation ratio for each region, the percentage of transplant successes and failures was examined over the history of transplanting in the region. NMFS staff examined transplants projects over the past 25 years in all mitigation regions (see Attachment 6). Eelgrass mitigation in Southern California has a 35-year history with 66 transplants performed over that period. In the past 25 years, a total of 47 eelgrass transplants for mitigation purposes have been conducted in Southern California. Forty-three of these were established long enough to evaluate success for these transplants. The overall failure rate, with failure defined as not meeting success criteria established for the project, was 13 percent. Eelgrass mitigation within central California has a better history of successful completion than within southern California, San Francisco Bay, and northern California. However, the number of eelgrass mitigation actions conducted in this region is low and limited to areas within Morro Bay. While the success of eelgrass mitigation in central California has been high, the low number of attempts makes mitigation in this region uncertain. Eelgrass habitat creation/restoration in San Francisco Bay and in northern California has had varied success.

In all cases, best information available at the time of this policy's development was used to determine the parameter values entered into the calculator formula. As regional eelgrass mitigation success changes and the results of ongoing projects become available, the starting mitigation ratio may be updated. Updates in mitigation calculator inputs should not be made on an individual action basis, because the success or lack of success of an individual mitigation project may not reflect overall mitigation success for the region. Rather NMFS should re-evaluate the regional transplant history approximately every 5 years, increasing the record of transplant success in 5 year increments for new projects implemented after NMFS' adoption of these guidelines. If the 5-year review shows that new efforts are more successful than those from the beginning of the 25-year period, NMFS staff should consider removing early projects (*e.g.*, those completed 20 years prior) from the analysis.

On a case-by-case basis and in consultation with action agencies, NMFS may consider proposals with different starting mitigation ratios where sufficient justification is provided that indicates the mitigation site would achieve the no net loss goal. In addition, CMPs could consider different starting mitigation ratios, or other mitigation elements and techniques, as appropriate to the geographic area addressed by the CMP.

Regardless of starting mitigation ratio, eelgrass mitigation should be considered successful, if it meets eelgrass habitat coverage over an area that is 1.2 times the impact area with comparable

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eelgrass density as impacted habitat. Please note, delayed implementation, supplemental transplant needs, or NMFS and action agency agreement may result in an altered mitigation area. In the EFH consultation context, NMFS may recommend an altered mitigation area during implementation of the federal agency's mitigation plan following EFH consultation or NEPA review, or as an EFH Conservation Recommendation if the federal agency re-initiates EFH consultation.

(1) Southern California (Mexico border to Pt. Conception)

For mitigation activities that occur concurrent to the action resulting in damage to existing eelgrass habitat, a starting ratio of 1.38 to 1 (transplant area to vegetated cover impact area) should be recommended to counter the regional failure risk. That is, for each square meter of vegetated eelgrass cover adversely impacted, 1.38 square meters of new habitat with suitable conditions to support eelgrass should be planted with a comparable bottom coverage and eelgrass density as impacted habitat.

(2) Central California (Point Conception to mouth of San Francisco Bay).

For mitigation activities that occur concurrent to the action resulting in damage to existing eelgrass habitat, a starting ratio of 1.20 to 1 (transplant area to vegetated cover impact area) should be recommended based on a 0 percent failure rate over the past 25 years (4 transplant actions). It should however be noted that all of these successful transplants included a greater area of planting than was necessary to achieve success such that the full mitigation area would be achieved, even with areas of minor transplant failure.

(3) San Francisco Bay (including south, central, San Pablo and Suisun Bays).

For mitigation activities that occur concurrent to the action resulting in damage to the existing eelgrass bed resource, a ratio of 3.01 to 1 (transplant area to vegetated cover impact area) should be recommended based on a 60 percent failure rate over the past 25 years (10 transplant actions). That is, for each square meter adversely impacted, 3.01 square meters of new habitat with suitable conditions to support eelgrass should be planted with a comparable bottom coverage and eelgrass density as impacted habitat.

(4) Northern California (mouth of San Francisco Bay to Oregon border).

For mitigation activities that occur concurrent to the action resulting in damage to the existing eelgrass habitat, a starting ratio of 4.82 to 1 (transplant area to vegetated cover impact area) should be recommended based on a 75 percent failure rate over the past 25 years (4 transplant actions). That is, for each square meter of eelgrass habitat adversely impacted, 4.82 square meters of new habitat with suitable conditions to support eelgrass should be planted with a comparable bottom coverage and eelgrass density as impacted habitat.

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b) Impacts to Density of Eelgrass Beds

Degradation of existing eelgrass habitat that results in a permanent reduction of eelgrass turion density greater than 25 percent, and that is a statistically significant difference from pre-impact density, should be mitigated based on an equivalent area basis. The 25 percent and statistically significant threshold is believed reasonable based on supporting information (Fonseca *et al.* 1998, WDFW 2008), and professional practice under SCEMP. In these cases, eelgrass remains present at the action site, but density may be potentially affected by long-term chronic or intermittent effects of the action. Reduction of density should be determined to have occurred when the mean turion density of the impact site is found to be statistically different (α=0.10 and β=0.10) from the density of a reference and at least 25 percent below the reference mean during two annual sampling events following implementation of an action. The number of samples taken to describe density at each site (*e.g.*, impact and reference) should be sufficient to provide for appropriate statistical power. For small impact areas that do not allow for a sample size that provides statistical power, alternative methods for pre- and post- density comparisons could be considered. Mitigation for reduction of turion density without change in eelgrass habitat area should be on a one-for-one basis either by augmenting eelgrass density at the impact site or by establishing new eelgrass habitat comparable to the change in density at the impact site. For example, a 25 percent reduction in density of 100-square meters (100 turions/square meter) of eelgrass habitat to 75 turions/square meter should be mitigated by the establishing 25 square meters of new eelgrass habitat with a density at or above the 100 turions/square meter pre-impact density.

3. Mitigation Technique

In-kind mitigation technique should be determined on a case-by-case basis. Techniques for eelgrass mitigation should be consistent with the best available technology at the time of mitigation implementation and should be tailored to the specific needs of the mitigation site. Eelgrass transplants have been highly successful in southern and central California, but have had mixed results in San Francisco Bay and northern California. Bare-root bundles and seed buoys have been utilized with some mixed success in northern portions of the state. Transplants using frames have also been used with some limited success. For transplants in southern California, plantings consisting of bare-root bundles consisting of 8-12 individual turions each have proven to be most successful (Merkel 1988).

Donor material should be taken from the area of direct impact whenever practical, unless the action resulted in reduced density of eelgrass at the area of impact. Site selections should consider the similarity of physical environments between the donor site and the transplant receiver site and should also consider the size, stability, and history of the donor site (*e.g.*, how long has it persisted and is it a transplant site). Plants harvested should be taken in a manner to thin an existing bed without leaving any noticeable bare areas. For all geographic areas, no more than 10 percent of an existing donor bed should be harvested for transplanting purposes. Ten percent is reasonable based on recommendations in Thom *et al.* (2008) and professional practice under SCEMP. Harvesting of flowering shoots for seed buoy techniques should occur only from widely separated plants.

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It is important for action agencies to note that state laws and regulations affect the harvesting and transplantation of donor plants and permission from the state, where required, should be obtained; for example, California Department of Fish and Wildlife may need to provide written authorization for harvesting and transplanting donor plants and/or flowering shoots.

4. Mitigation Plan

NMFS should recommend that a mitigation plan be developed for in-kind mitigation efforts. During consultation, NMFS biologists should request that mitigation plans be provided at least 60 days prior to initiation of project activities to allow for NMFS review. When feasible, mitigation plans should be developed based on preliminary or pre-project eelgrass surveys. When there is uncertainty regarding whether impacts to eelgrass will occur, and the need for mitigation is based on comparison of pre- and post-project eelgrass surveys, NMFS biologists should request that the mitigation plan be provided no more than 60 days following the post-project survey to allow for NMFS review and minimize any delay in mitigation implementation.

At a minimum, the mitigation plan should include:

- Description of the project area
- Results of preliminary eelgrass survey and pre/post-project eelgrass surveys if available (see Section II.B.1 and II.B.2)
- Description of projected and/or documented eelgrass impacts
- Description of proposed mitigation site and reference site(s) (see Section II.B.4)
- Description of proposed mitigation methods (see Section II.F.3)
- Construction schedule, including specific starting and ending dates for all work including mitigation activities. (see Section II.F.5)
- Schedule and description of proposed post-project monitoring and when results will be provided to NMFS
- Schedule and description of process for continued coordination with NMFS through mitigation implementation
- Description of alternative contingent mitigation or adaptive management should proposed mitigation fail to achieve performance measures (see Section II.F.6)

5. Mitigation Timing

Mitigation should commence within 135 days following the initiation of the in-water construction resulting in impact to the eelgrass habitat, such that mitigation commences within the same eelgrass growing season as impacts occur. If possible, mitigation should be initiated prior to or concurrent with impacts. For impacts initiated within 90 days prior to, or during, the low-growth period for the region, mitigation may be delayed to within 30 days after the start of the following growing season, or 90 days following impacts, whichever is longer, without the need for additional mitigation as described below. This timing avoids survey completion during the low growth season, when results may misrepresent progress towards performance milestones.

Delays in eelgrass mitigation result in delays in ultimate reestablishment of eelgrass habitat functions, increasing the duration and magnitude of project impacts to eelgrass. To offset loss of eelgrass habitat function that accumulates through delay, an increase in successful eelgrass

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mitigation is needed to achieve the same compensatory habitat function. Because habitat function is accumulated over time once the mitigation habitat is in place, the longer the delay in initiation of mitigation, the greater the additional habitat area needed (i.e., mitigation ratio increasingly greater than 1.2:1) to offset losses. Unless a specific delay is authorized or dictated by the initial schedule of work, federal action agencies should determine whether delays in mitigation initiation in excess of 135 days warrant an increased final mitigation ratio. If increased mitigation ratios are warranted, NMFS should recommend higher mitigation ratios (see Attachment 7). Where delayed implementation is authorized by the action agency, the increased mitigation ratio may be determined by utilizing the Wetlands Mitigation Calculator (King and Price 2004) with an appropriate value for parameter D (See Attachment 4). Examples of delay multipliers generated using the Wetlands Mitigation Calculator are provided in Attachment 5.

Conversely, implementing mitigation ahead of impacts can be used to reduce the mitigation needs by achieving replacement of eelgrass function and services ahead of eelgrass losses. If eelgrass is successfully transplanted three years ahead of impacts, the mitigation ratio would drop from 1.2:1 to 1:1. If mitigation is completed less than three years ahead of impacts, the mitigation calculator can be used to determine the appropriate intermediate mitigation ratio.

6. Mitigation Monitoring and Performance Milestones

In order to document progress and persistence of eelgrass habitat at the mitigation site through and beyond the initial establishment period, which generally is three years, monitoring should be completed for a period of five years at both the mitigation site and at an appropriate reference site(s) (Section II.B.4. Reference Site Selection). Monitoring at a reference site(s) may account for any natural changes or fluctuations in habitat area or density. Monitoring should determine the area of eelgrass and density of plants at 0, 12, 24, 36, 48, and 60 months after completing the mitigation. These intervals will provide yearly updates on the establishment and persistence of eelgrass during the growing season. These monitoring recommendations are consistent with findings of the National Research Council (NRC 2001), the Corps requirements for compensatory mitigation (33 CFR 332.6(b)), and other regional resource policies (Corps 2010, Evans and Leschen 2010, SFWMD 2007).

All monitoring work should be conducted during the active eelgrass growth period and should avoid the recognized low growth season for the region to the maximum extent practicable (typically November through February for southern California, November through March for central California, November through March for San Francisco Bay, and October through April for northern California). Sufficient flexibility in the scheduling of the 6 month surveys should be allowed in order to ensure the work is completed during this active growth period. Additional monitoring beyond the 60-month period may be warranted in those instances where the stability of the proposed mitigation site is questionable, where the performance of the habitat relative to reference sites is erratic, or where other factors may influence the long-term success of mitigation. Mitigation plans should include a monitoring schedule that indicates when each of the monitoring events will be completed.

The monitoring and performance milestones described below are included as eelgrass transplant success criteria in the SCEMP. These numbers represent milestones and associated timelines

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typical of successful eelgrass habitat development based on NMFS' experience with: (1) conducting eelgrass surveys and monitoring and (2) reviewing mitigation monitoring results for projects implemented under SCEMP. Restored eelgrass habitat is expected to develop through an initial 3 year monitoring period such that, within 36 months following planting, it meets or exceeds the full coverage and not less than 85 percent of the density relative to the initial condition of affected eelgrass habitat. Restored eelgrass habitat is expected to sustain this condition for at least 2 additional years.

Monitoring events should evaluate the following performance milestones:

Month 0 – Monitoring should confirm the full coverage distribution of planting units over the initial mitigation site as appropriate to the geographic region.

Month 6 – Persistence and growth of eelgrass within the initial mitigation area should be confirmed, and there should be a survival of at least 50 percent of the initial planting units with well-distributed coverage over the initial mitigation site. For seed buoys, there should be demonstrated recruitment of seedlings at a density of not less than one seedling per four (4) square meters with a distribution over the extent of the initial planting area. The timing of this monitoring event should be flexible to ensure work is completed during the active growth period.

Month 12– The mitigation site should achieve a minimum of 40 percent coverage of eelgrass and 20 percent density of reference site(s) over not less than 1.2 times the area of the impact site.

Month 24– The mitigation site should achieve a minimum of 85 percent coverage of eelgrass and 70 percent density of reference site(s) over not less than 1.2 times the area of the impact site.

Month 36– The mitigation site should achieve a minimum of 100 percent coverage of eelgrass and 85 percent density of reference site(s) over not less than 1.2 times the area of the impact site.

Month 48– The mitigation site should achieve a minimum of 100 percent coverage of eelgrass and 85 percent density of reference site(s) over not less than 1.2 times the area of the impact site.

Month 60– The mitigation site should achieve a minimum of 100 percent coverage of eelgrass and 85 percent density of reference site(s) over not less than 1.2 times the area of the impact site.

Performance milestones may be re-evaluated or modified if declines at a mitigation site are also demonstrated at the reference site, and therefore, may be a result of natural environmental stressors that are unrelated to the intrinsic suitability of the mitigation site. In the EFH consultation context, NMFS should provide recommendations regarding modification of performance milestones as technical assistance during interagency coordination as described in

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the mitigation plan or as EFH Conservation Recommendations if the federal action agency re-initiates EFH consultation.

7. Mitigation Reporting

NMFS biologists should request monitoring reports and spatial data for each monitoring event in both hard copy and electronic version, to be provided within 30 days after the completion of each monitoring period to allow timely review and feedback from NMFS. These reports should clearly identify the action, the action party, mitigation consultants, relevant points of contact, and any relevant permits. The size of permitted eelgrass impact estimates, actual eelgrass impacts, and eelgrass mitigation needs should be identified, as should appropriate information describing the location of activities. The report should include a detailed description of eelgrass habitat survey methods, donor harvest methods and transplant methods used. The reports should also document mitigation performance milestone progress (see II.F.6. Mitigation Monitoring and Performance Milestones). The first report (for the 0-month post-planting monitoring) should document any variances from the mitigation plan, document the sources of donor materials, and document the full area of planting. The final mitigation monitoring report should provide the action agency and NMFS with an overall assessment of the performance of the eelgrass mitigation site relative to natural variability of the reference site to evaluate if mitigation responsibilities were met. An example summary is provided in Attachment 3.

8. Supplemental Mitigation

Where development of the eelgrass habitat at the mitigation site falls short of achieving performance milestones during any interim survey, the monitoring period should be extended and supplemental mitigation may be recommended to ensure that adequate mitigation is achieved. In the EFH consultation context, NMFS should provide recommendations regarding extended monitoring as technical assistance during interagency coordination as described in the mitigation plan or as EFH Conservation Recommendations if the federal action agency re-initiates EFH consultation. In some instances, an adaptive management corrective action to the existing mitigation area may be appropriate. In the event of a mitigation failure, the action agency should convene a meeting with the action party, NMFS, and applicable regulatory and/or resource agencies to review the specific circumstances and develop a solution to achieve no net loss in eelgrass habitat function.

As indicated previously, while in-kind mitigation is preferred, the most appropriate form of compensatory mitigation should be determined on a case-by-case basis. In cases where it is demonstrated that in-kind replacement is infeasible, out-of-kind mitigation may be appropriate over completion of additional in-kind mitigation. The determination that an out-of-kind mitigation is appropriate will be made by NMFS, the action agency, and the applicable regulatory agencies, where a regulatory action is involved.

G. Special Circumstances

Depending on the circumstances of each individual project, NMFS may make recommendations different from those described above on a case by case basis. For the scenarios described below,

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for example, NMFS could recommend a mitigation ratio or 1:1 or for use of out-of-kind mitigation. Because NMFS needs a proper understanding of eelgrass habitat in the project area and potential impacts of the proposed project to evaluate the full effects of authorized activities, NMFS should not make recommendations that diverge from these guidelines if they would result in surveys, assessments or reports inferior to those which might be obtained through the guidance in Section II. The area thresholds described below are taken from the SCEMP and/or reflect recommendations NMFS staff have repeatedly made during individual EFH consultations. These thresholds minimize impacts to eelgrass habitat quality and quantity, based on NMFS' experience with: (1) conducting eelgrass surveys and monitoring and (2) reviewing project monitoring results for projects implemented under SCEMP. The special circumstance included for shellfish aquaculture longlines is supported by Rumrill and Poulton (2004) and the NMFS Office of Aquaculture.

1. Localized Temporary Impacts

NMFS may consider modified target mitigation ratios for localized temporary impacts wherein the damage results in impacts of less than 100 square meters and eelgrass habitat is fully restored within the damage footprint within one year of the initial impact (e.g., placement of temporary recreational facilities, shading by construction equipment, or damage sustained through vessel groundings or environmental clean-up operations). In such cases, the 1.2:1 mitigation ratio should not apply, and a 1:1 ratio of impact to recovery would apply. A monitoring program consisting of a pre-construction eelgrass survey and three post-construction eelgrass surveys at the impact site and appropriate reference site(s) should be completed in order to demonstrate the temporary nature of the impacts. NMFS should recommend that surveys be completed as follows: 1) the first post-construction eelgrass survey should be completed within 30 days following completion of construction to evaluate direct effects of construction, 2) the second and third post-construction surveys should be performed approximately one year after the first post-construction survey, and approximately two years after the first post-construction survey, respectively, during the appropriate growing season to confirm no indirect, or longer term effects resulted from construction. A compelling reason should be demonstrated before any reduced monitoring and reporting recommendations are made.

2. Localized Permanent Impacts

a) If both NMFS and the authorizing action agencies concur, the compensatory mitigation elements of this policy may not be necessary for the placement of a single pipeline, cable, or other similar utility line across existing eelgrass habitat with an impact corridor of no more than 1 meter wide. NMFS should recommend the completion of pre- and post-action surveys as described in section II.B. and II.D. The actual area of impact should be determined from the post-action survey. NMFS should recommend the completion of an additional survey (after 1 year) to ensure that the action or impacts attributable to the action have not exceeded the 1-meter corridor width. NMFS should recommend that, if the post-action or 1 year survey demonstrates a loss of eelgrass habitat greater than the 1-meter wide corridor, mitigation should be undertaken.

b)) If both NMFS and the authorizing action agencies concur that the spacing of shellfish aquaculture longlines does not result in a measurable net loss of eelgrass habitat in the project

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area, then mitigation associated with local losses under longlines may not be necessary. NMFS should recommend the completion of pre- and post-action surveys as described in section II.B. and II.D. NMFS should recommend the completion of additional post-action monitoring surveys (to be completed approximately 1 year and 2 years following implementation of the action) to ensure that the action or impacts attributable to the action have not resulted in net adverse impacts to eelgrass habitat. NMFS should recommend that, if the 1-year or 2-year survey demonstrates measurable impact to eelgrass habitat, mitigation should be undertaken. c) NMFS should consider mitigation on a 1:1 basis for impacts less than 10 square meters to eelgrass patches where impacts are limited to small portions of well-established eelgrass habitat or eelgrass habitat that, despite highly variable conditions, generally retain extensive eelgrass, even during poor years. A reduced mitigation ratio should not be considered where impacts would occur to isolated or small eelgrass habitat areas within which the impacted area constitutes more than 1% of the eelgrass habitat in the local area during poor years.

c) If NMFS concurs and suitable out-of-kind mitigation is proposed, compensatory mitigation may not be necessary for actions impacting less than 10 square meters of eelgrass.

III. Glossary of Terms

Except where otherwise specified, the explanations of the following terms are provided for informational purposes only and are described solely for the purposes of this policy; where a NMFS statute, regulation, or agreement requires a different understanding of the relevant term, that understanding of the term will supplant these explanations provided below.

Compensatory mitigation – restoration, establishment, or enhancement of aquatic resources for the purposes of offsetting unavoidable authorized adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Ecosystem – a geographically specified system of organisms, the environment, and the processes that control its dynamics. Humans are an integral part of an ecosystem.

Ecosystem function – ecological role or process provided by a given ecosystem.

Ecosystem services – contributions that a biological community and its habitat provide to the physical and mental well-being of the human population (*e.g.*, recreational and commercial opportunities, aesthetic benefits, flood regulation).

Eelgrass habitat – areas of vegetated eelgrass cover (any eelgrass within 1 square meter quadrat and within 1 m of another shoot) bounded by a 5 m wide perimeter of unvegetated area

Essential fish habitat (EFH) – EFH is defined in the MSA as "...those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity."

EFH Assessment – An assessment as further explained in 50 C.F.R. § 600.920(e).

EFH Consultation – The process explained in 50 C.F.R. § 600.920

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EFH Conservation Recommendation – provided by the National Marine Fisheries Service (NMFS) to a federal or state agency pursuant to section 305(b)(4)(A) of the Magnuson-Stevens Act regarding measures that can be taken by that agency to conserve EFH. As further explained in 50 C.F.R. § 600.925, EFH Conservation Recommendations may be provided as part of an EFH consultation with a federal agency, or may be provided by NMFS to any federal or state agency whose actions would adversely affect EFH .

Habitat – environment in which an organism(s) lives, including everything that surrounds and affects its life, including biological, chemical and physical processes.

Habitat function – ecological role or process provided by a given habitat (*e.g.*, primary production, cover, food, shoreline protection, oxygenates water and sediments, etc.).

In lieu fee program – a program involving the restoration, establishment, and/or enhancement of aquatic resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation needs; an in lieu fee program works like a mitigation bank, however, fees to compensate for impacts to habitat function are collected prior to establishing an on-the-ground conservation/restoration project.

In-kind mitigation – mitigation where the adverse impacts to a habitat are mitigated through the creation, restoration, or enhancement of the same type of habitat.

Mitigation – action or project undertaken to offset impacts to an existing natural resource.

Mitigation bank – a parcel of land containing natural resource functions/values that are conserved, restored, created and managed in perpetuity and used to offset unavoidable impacts to comparable resource functions/values occurring elsewhere. The resource functions/values contained within the bank are translated into quantified credits that may be sold by the banker to parties that need to compensate for the adverse effects of their activities.

Out-of-kind mitigation – mitigation where the adverse impacts to one habitat type are mitigated through the creation, restoration, or enhancement of another habitat type

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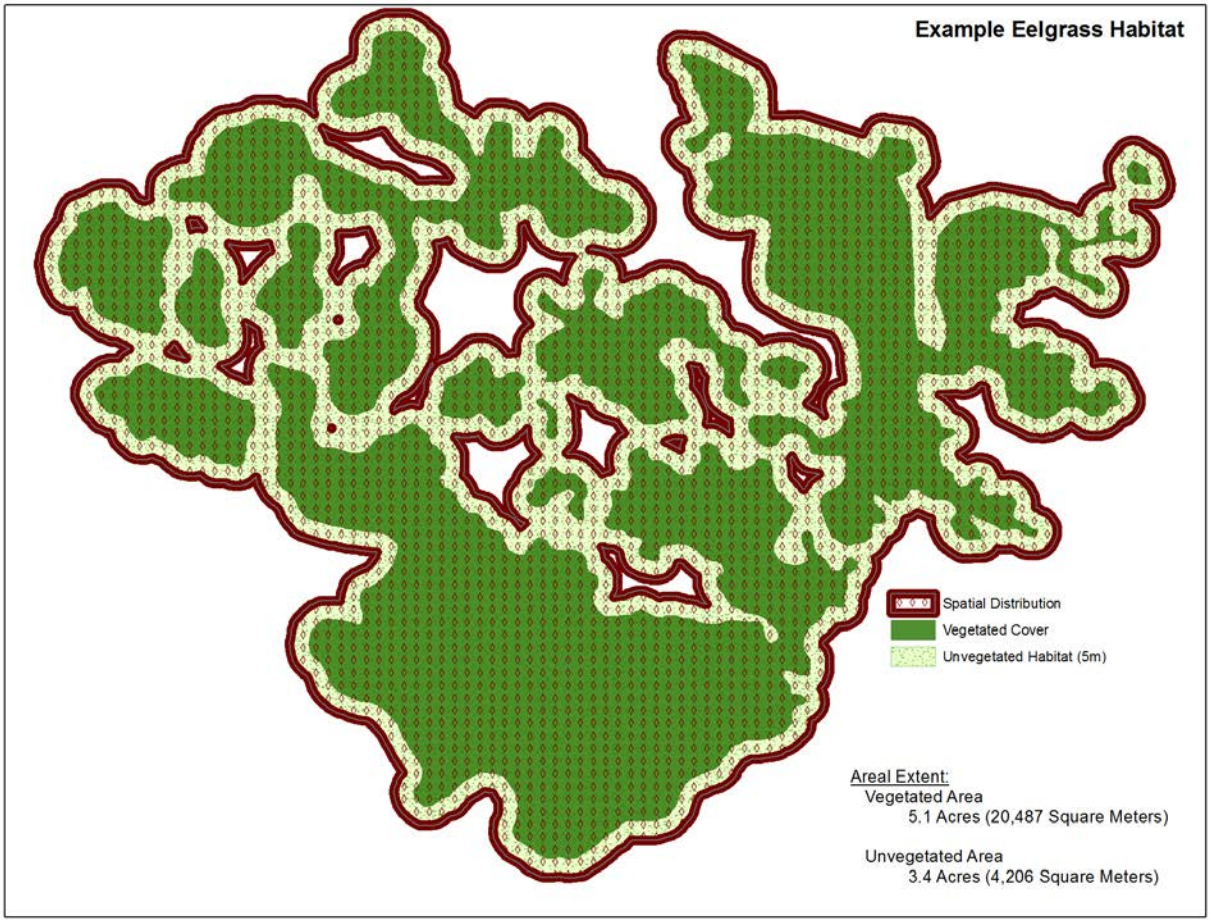
ATTACHMENT 1. Graphic depiction of eelgrass habitat definition including spatial distribution and aerial coverage of vegetated cover and unvegetated eelgrass habitat.



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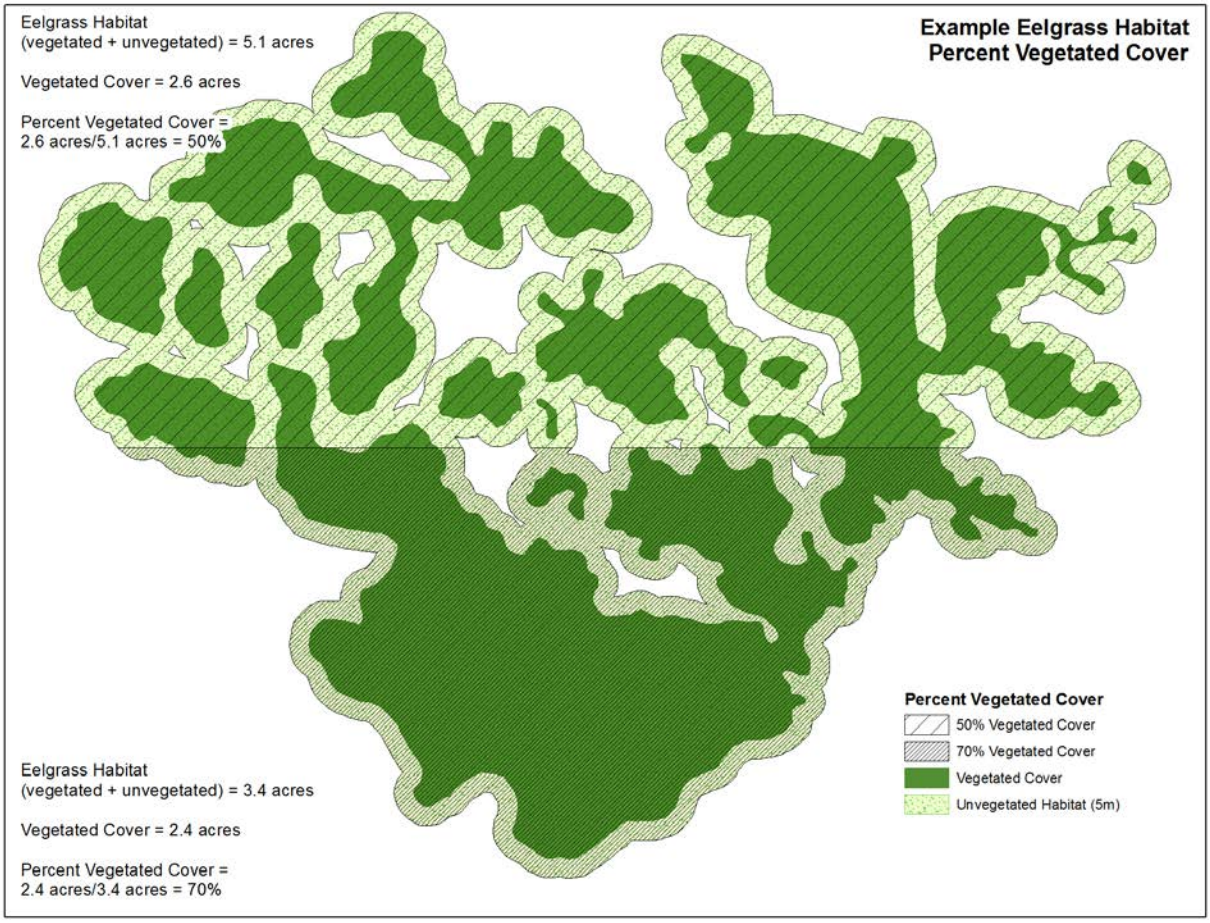
ATTACHMENT 2. Example Eelgrass Habitat Percent Vegetated Cover.



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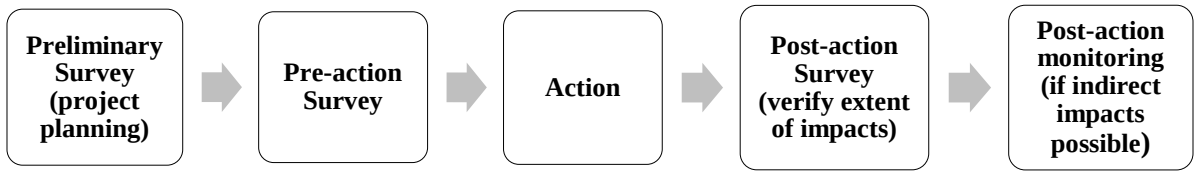
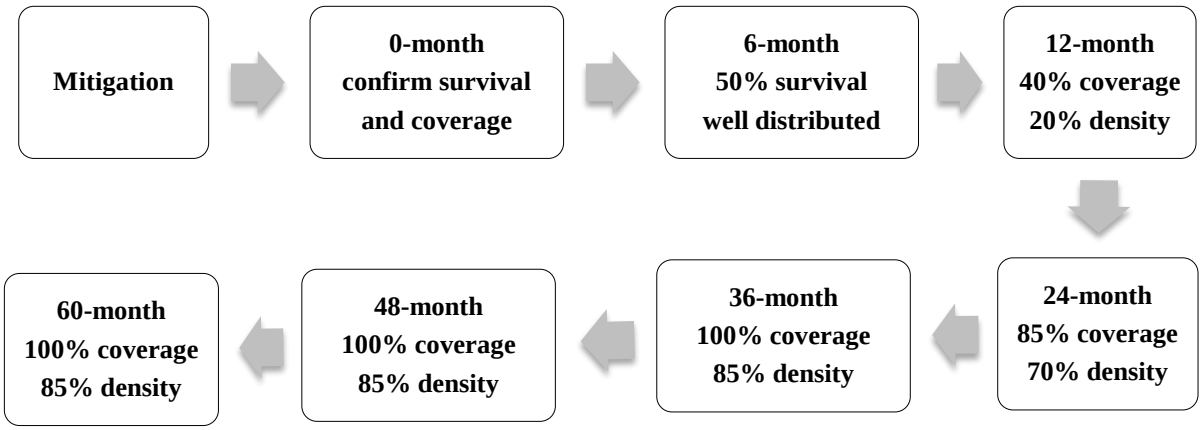
ATTACHMENT 3. Flow chart depicting timing of surveys and monitoring.

a) Eelgrass impact surveys



- All surveys should be completed during the growing season
- Surveys should be completed at the impact site and an appropriate reference site(s)
- A preliminary survey completed for planning purposes may be completed a year or more in advance of the action.
- Pre-action and post-action surveys should be completed within 60 days of the action.
- A survey is good for 60 days, or if that 60 day period extends beyond the end of growing season, until start of next growing season
- Two years of monitoring following the initial post-action monitoring event may be needed to verify lack or extent of indirect effects.
- Survey reports should be provided to NMFS and the federal action agency within 30 days of completion of each survey event

b) Eelgrass mitigation monitoring



- Mitigation should occur coincident or prior to the action
- All monitoring should be completed during the growing season
- Performance metrics for each monitoring event are compared to the 1.2:1 mitigation ratio
- Monitoring reports should be provided to NMFS and the federal action agency 30 days of completion of each monitoring event
- NMFS and action agency will evaluate if performance metrics met, and decide if supplemental mitigation or other adaptive management measures are needed

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ATTACHMENT 4. Eelgrass transplant monitoring report.

In order to ensure that NMFS is aware of the status of eelgrass transplants, action agencies should provide or ensure that NMFS is provided a monitoring report summary with each monitoring report. For illustrative purposes only, an example of a monitoring report summary is provided below.

ACTION PARTY CONTACT INFORMATION:

Action Name (same as permit reference):

(a) Action party Information

Name		Address	
Contact Name		City, State, Zip	
Phone		Fax	
Email			

MITIGATION CONSULTANT

Name		Address	
Contact Name		City, State, Zip	
Phone		Fax	
Email			

PERMIT DATA:

Permit	Issuance Date	Expiration Date	Agency Contact

EELGRASS IMPACT AND MITIGATION NEEDS SUMMARY:

Permitted Eelgrass Impact Estimate (m^2):			
Actual Eelgrass Impact (m^2):		On (post-construction date):	
Eelgrass Mitigation Needs (m^2):		Mitigation Plan Reference:	
Impact Site Location:			
Impact Site Center Coordinates (actionion &			

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datum):	
Mitigation Site Location:	
Mitigation Site Center Coordinates (actionion & datum):	

ACTION ACTIVITY DATA:

Activity	Start Date	End Date	Reference Information
Eelgrass Impact			
Installation of Eelgrass Mitigation			
Initiation of Mitigation Monitoring			

MITIGATION STATUS DATA:

	Mitigation Milestone	Scheduled Survey	Survey Date	Eelgrass Habitat Area (m^2)	Bottom Coverage (Percent)	Eelgrass Density (turions/m^2)	Reference Information
Month	**0**						
	6						
	12						
	24						
	36						
	48						
	60						

FINAL ASSESSMENT:

Was mitigation met?	
Were mitigation and monitoring performed timely?	
Were mitigation delay increases needed or were supplemental mitigation programs necessary?	

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ATTACHMENT 5. Wetlands mitigation calculator formula and parameters.

Starting mitigation ratios for each region within California were calculated using "The Five-Step Wetland Mitigation Ratio Calculator" (King and Price 2004) developed for NMFS Office of Habitat Conservation. The discrete time equation this method uses to solve for the appropriate mitigation ratio is as follows:

$$R = \frac{\sum_{t=0}^{T_{max}} (1+r)^{-t}}{(B(1-E)(1+L)-A)\left[\sum_{t=-D}^{C-D-1} \frac{(t+D)}{C(1+r)^t} + \sum_{C-D}^{T_{max}} (1+r)^{-t}\right] + \left[\sum_{t=-D}^{T_{max}} \frac{\left(1-(1-k)^{(t+D)}\right)}{(1+r)^{(t+D)}}\right](A(1+L))}$$

The calculator parameters in the above equation and values used to calculate starting mitigation ratios for CEMP are as follows:

Symbol	Calculator Parameter	Value
A	The level of habitat function provided at the mitigation site prior to the mitigation project	0%
B	The maximum level of habitat function that mitigation is expected to attain, if it is successful	100%
C	The number of years after construction that the mitigation project is expected to achieve maximum function	3 yrs
D	The number of years before destruction of the impacted wetland that the mitigation project begins to generate habitat function	0 yrs
E	The percent likelihood that the mitigation project will fail and provide none of the anticipated benefits	various*
L	The percent difference in expected habitat function based on differences in landscape context of the mitigation site when compared with the impacted wetland	0%
k	The percent likelihood that the mitigation site, in the absence purchase or easement would be developed in any future year	0%
r	The discount rate used for comparing gains and losses that accrue at different times in terms of their present value	3%**
Tmax	The time horizon used in the analysis (chosen to maintain 1.2:1 ratio at E=100% and other parameter values listed above).	13 yrs

* The value for E was based on regional history of success in eelgrass mitigation and varied between regions (see Attachment X).

** NOAA suggests the use of a 3 percent real discount rate for discounting interim service losses and restoration gains, unless a different proxy for the social rate of time preference is more appropriate. (NOAA-DARP 1999) We use this value here, because it is based on best available information and is consistent with the NOAA Damage Assessment and Restoration Program.

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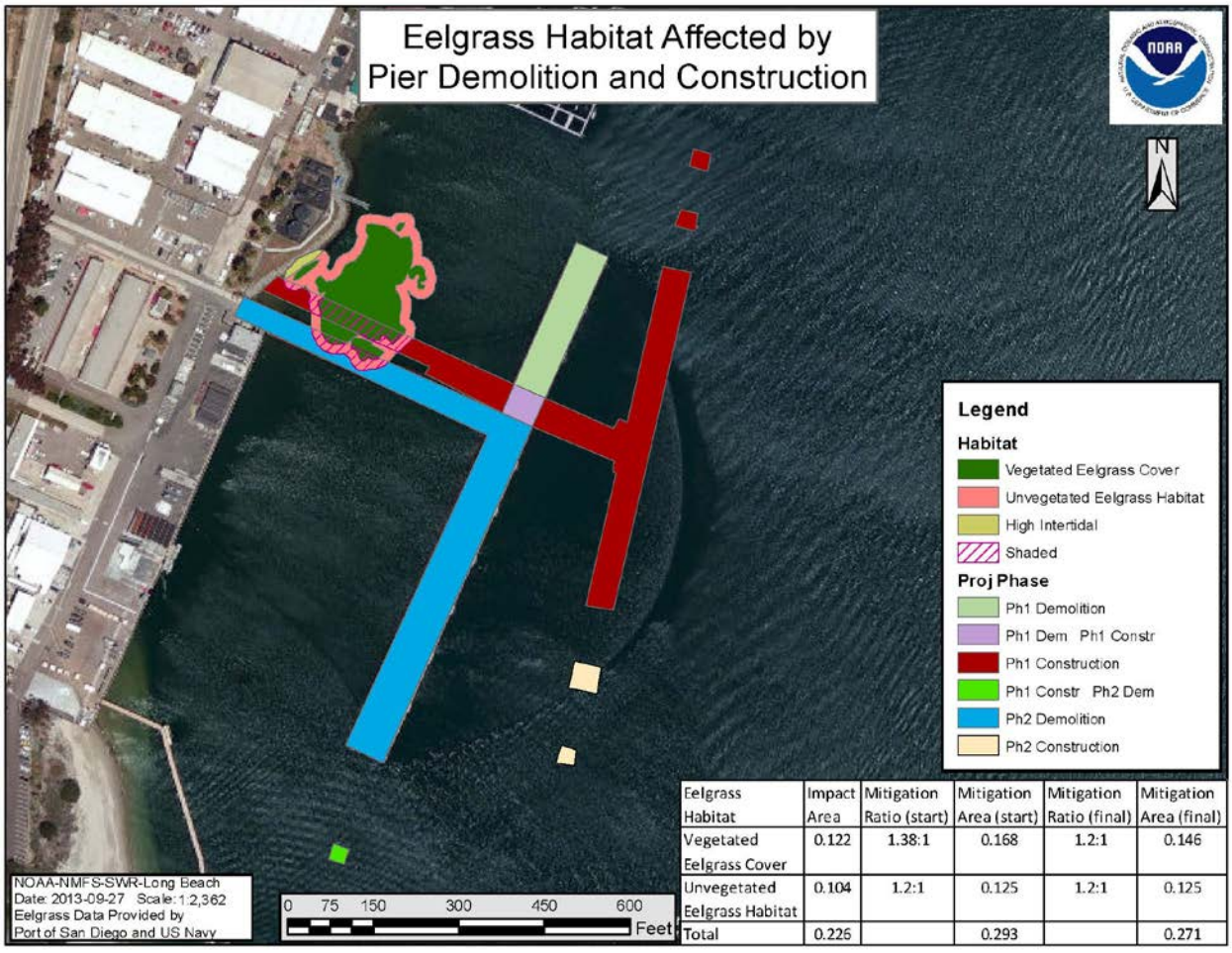
ATTACHMENT 6. Example calculations for application of starting and final mitigation ratios for impacts to eelgrass habitat in southern California.

In this example, a pier demolition and construction would impact 0.122 acres of vegetated eelgrass habitat (dark green) and 0.104 acres of unvegetated habitat (pink). Area of impact is indicated by purple hatch mark. Application of recommended starting mitigation ratio for southern California (1.38:1) and final mitigation ratio (1.2:1) to compute starting and final mitigation area for this example are shown in the table.



Eelgrass Habitat	Impact Area	Mitigation Ratio (start)	Mitigation Area (start)	Mitigation Ratio (final)	Mitigation Area (final)
Vegetated Eelgrass Cover	0.122	1.38:1	0.168	1.2:1	0.146
Unvegetated Eelgrass Habitat	0.104	1.2:1	0.125	1.2:1	0.125
Total	0.226		0.293		0.271

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ATTACHMENT 7. Example mitigation area multipliers for delay in initiation of mitigation activities.

Delays in eelgrass transplantation result in delays in ultimate reestablishment of eelgrass habitat values, increasing the duration and magnitude of project effects to eelgrass. The delay multipliers in the table below have been generated by altering the implementation start time within "The Five-Step Wetland Mitigation Ratio Calculator" (King and Price 2004).

MONTHS POST-IMPACT	DELAY MULTIPLIER (Percent of Initial Mitigation Area Needed)
0-3 mo	100%
4-6 mo	107%
7-12 mo	117%
13-18 mo	127%
19-24 mo.	138%
25-30 mo.	150%
31-36 mo	163%
37-42 mo.	176%
43-48 mo.	190%
49-54 mo.	206%
55-60 mo.	222%

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ATTACHMENT 8. Summary of Eelgrass Transplant Actions in California

See table starting next page.

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SUMMARY OF EELGRASS (*ZOSTERA MARINA*) TRANSPLANT PROJECTS IN CALIFORNIA

No.	Region	System	Location	Year	Size*	Type**	Consistent with Permit Conditions	Success Status***	Net Result****
Southern California Eelgrass Restoration History									
	Southern	San Diego Bay	North Island	1976	<0.1	SP	yes	no	-
	Southern	San Diego Bay	"Delta" Beach	1977	1.6	SP	yes	partial	-
	Southern	San Diego Bay	North Island	1978	<0.1	SP	yes	yes	+
	Southern	Newport Bay	Carnation Cove	1978	<0.1	SP	no	no	-
	Southern	Newport Bay	West Jetty	1980	<0.1	SP	yes	partial	0
	Southern	Mission Bay	multiple beaches	1982	<0.1	SP	no	partial	0
	Southern	LA/LB Harbor	Cabrillo Beach	1985	<0.1	BR	yes	yes	+
	Southern	Alamitos Bay	Peninsula	1985	<0.1	BR	yes	yes	+
	Southern	Huntington Hbr.	Main Channel	1985	<0.1	BR	yes	no	0
	Southern	Newport Bay	Upper	1985	<0.1	BR	yes	no	0
	Southern	Mission Bay	Sail Bay	1986	2.7	BR	yes	yes	+
	Southern	San Diego Bay	NEMS I	1987	3.8	BR	no	yes	+
	Southern	San Diego Bay	Chula Vista Wildlife Reserve	1987	<0.1	BR	yes	no	+[1]
	Southern	San Diego Bay	Harbor Island	1988	0.1	BR	yes	yes	+
	Southern	Huntington Harbour	Entrance Channel	1989	0.1	BR	no	yes	+
	Southern	San Diego Bay	Le Meridien Hotel	1990	<0.1	BR	yes	yes	+
	Southern	San Diego Bay	Embarcadero	1991	<0.1	BR	yes	yes	+[2]
	Southern	Mission Bay	Sea World Lagoon	1991	<0.1	BR	yes	yes	+
	Southern	San Diego Bay	Loew's Marina	1991	<0.1	BR	yes	yes	+
	Southern	San Diego Bay	NEMS 2	1993	<0.1	BR	yes	yes	+
	Southern	San Diego Bay	Sea Grant Study	1993	<0.1	BR	yes	yes	+
	Southern	Agua Hedionda Lagoon	Outer Lagoon	1993	<0.1	BR	yes	yes	+
	Southern	San Diego Bay	NEMS 5	1994	0.4	BR	yes	yes	+
	Southern	Mission Bay	South Shores Basin	1994	2.9	BR	yes	yes	+
	Southern	Talbert Marsh	Talbert Channel	1995	<0.1	BR	na	yes	+[4]
	Southern	Mission Bay	various sites	1995	4.8	BR	yes	yes	+
	Southern	Mission Bay	Ventura Cove[5]	1996	0.5	BR	yes	yes	+[6]
	Southern	Mission Bay	Santa Clara Cove	1996	<0.1	BR	yes	no	0[10]
	Southern	Mission Bay	West Mission Bay Drive Bridge	1996	<0.1	BR	no	yes	0[10]
	Southern	Mission Bay	De Anza Cove	1996	<0.1	BR	yes	yes	+
	Southern	Batiquitos Lagoon	all basins	1997	21.6[7]	BR	yes	yes	+[4]
	Southern	San Diego Bay	NEMS 5	1997	7.1	BR	yes	yes	+
	Southern	San Diego Bay	Convair Lagoon	1998	2.5	BR	yes	no	-[12]
	Southern	San Diego Bay	NEMS 6	1999	0.3	BR	yes	yes	+
	Southern	Aqua Hedionda	Bristol Cove	1999	0.3	BR	yes	yes	+
	Southern	Aqua Hedionda	Middle Lagoon and Inner Lagoon	1999	4	BR	yes	yes	+
	Southern	Newport Bay	Balboa Is.Grand Cana	1999	<0.1	BR	yes	yes	+
	Southern	Mission Bay	West Ski Island	2001	0.2	BR	yes	yes	+

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No.	Region	System	Location	Year	Size*	Type**	Consistent with Permit Conditions	Success Status***	Net Result****
	Southern	San Diego Bay	Expanded NEMS 6	2001	0.6	BR	yes	yes	+
	Southern	Newport Bay	USCG Corona del Mar	2002	<0.1	BR	yes	yes	+
	Southern	Huntington Harbour	Sunset Bay	2002	<0.1	BR	yes	yes	+
	Southern	San Diego Bay	Navy Enhancement Is.	2002	1	BR	yes	yes	+
	Southern	San Diego Bay	Coronado Bay Bridge	2003	0.3	BR	no	no	0
	Southern	LA Harbor	P300 Expansion Area	2003	5.9	BR	yes	partial	-[9]
	Southern	Newport Bay	Newport Bay Channel Dredging	2004	0.4	BR	yes	no	-
	Southern	San Diego Bay	South Bay Borrow Pit	2004	4.2	BR	yes	yes	pending[8]
	Southern	San Diego Bay	USCG ATC Pier	2004	0.1	BR	yes	yes	+
	Southern	San Diego Bay	South Bay Borrow Pit Sup.	2006	4.2	BR	yes	yes	pending[8]
	Southern	San Diego Bay	D Street Marsh	2006	0.3	BR	yes	pending	pending
	Southern	LA Harbor	P300 Supplement	2007	0.8	BR	yes	yes	pending
	Southern	San Diego Bay	Glorietta Bay Shoreline Park	2007	0.2	BR	yes	yes	pending
	Southern	Bolsa Chica	Pilot Eelgrass Restoration	2007	0.5	BR	yes	yes	+[4]
	Southern	San Diego Bay	Borrow Pit Supplement	2007	4.2	BR	yes	yes	pending[8]
	Southern	San Diego Bay	Sweetwater Silvergate Frac-out	2008	<0.1	BR	yes	yes	0[11]
	Southern	San Diego Bay	Harbor Drive Bridge/NTC Channel	2009	<0.1	BR	yes	pending	pending
Southern California Eelgrass Success Rate (1989-2009, Last 20 Years)								**87%**	**n=43**
Central California Eelgrass Restoration History									
	Central	Morro Bay	Anchorage Area	1985	<0.1	BR	no	yes	+
	Central	Morro Bay	Target Rock	1997	<0.1	BR	no	yes	+
	Central	Morro Bay	Morro Bay Launch Ramp	2000	<0.1	BR	yes	yes	+
	Central	Morro Bay	Mooring Area A1	2002	0.3	BR	yes	yes	+
	Central	Morro Bay	Western Shoal	2010	0.8	BR	yes	pending	pending
Central California Eelgrass Success Rate (1985-2009, Inadequate History to Exclude Older Projects)								**100%**	**n=4**
San Francisco Bay Eelgrass Restoration History									
	San Francisco Bay	San Francisco Bay	Richmond Training Wall	1985	<0.1	BR	NA	no	NA[4]
	San Francisco Bay	San Francisco Bay	Keil Cove and Paradise Cove	1989	0.1	Plugs	NA	partial	NA[4]
	San Francisco Bay	San Francisco Bay	Bayfarm Island/Middle Harbor Shoal	1998	0.1	BR and Plugs	NA	partial	NA[4]
	San Francisco Bay	San Francisco Bay	Bayfarm Island	1999	0.1	BR	NA	partial	NA[4]
	San Francisco Bay	San Francisco Bay	Brickyard Cove, Berkeley	2002	0.2	BR	yes	yes	+[13]
	San Francisco Bay	San Francisco Bay	Emeryville Shoals	2002	0.1	Mixed Test	NA	no	NA[4]
	San Francisco Bay	San Francisco Bay	Marin CDay, R&GC, Audubon	2006	0.6	Seed Bouy	NA	partial	pending[4]
	San Francisco Bay	San Francisco Bay	Marin CDay, R&GC, Audubon	2006	<0.1	mod. TERFS	NA	partial	pending[4]
	San Francisco Bay	San Francisco Bay	Marin CDay, R&GC, Audubon	2006	<0.1	Seeding	NA	no	NA[4]
	San Francisco Bay	San Francisco Bay	Clipper Yacht Harbor, Sausalito	2007	<0.1	Frames	yes	pending	pending
	San Francisco Bay	San Francisco Bay	Albany, Emeryville, San Rafael	2007	<0.1	BR	NA	partial	pending[4]
	San Francisco Bay	San Francisco Bay	Belvedere	2008	<0.1	Frames	yes	pending	pending
San Francisco Bay Eelgrass Success Rate (1985-2009, Inadequate History to Exclude Older Projects)								**40%**	**n=10**

No.	Region	System	Location	Year	Size*	Type**	Consistent with Permit Conditions	Success Status***	Net Result****
Northern California Eelgrass Restoration History									
	Northern	Humboldt Bay	Indian Island	1982	unknown	BR	unknown	no	-
	Northern	Bodega Harbor	Spud Point Marina	1984	1.3	BR	yes	no	-
	Northern	Humboldt Bay	Indian Island	1986	<0.1	BR	yes	no	-
	Northern	Humboldt Bay		1986	0.2	unknown	unknown	no	-
	Northern	Humboldt Bay	SR255 Bridge	2004	<0.1	BR	yes	no	-
	Northern	Humboldt Bay	Maintenance Dredging Project	2005	<0.1	BR	yes	yes	+
Northern California Eelgrass Success Rate (1982-2009, Inadequate History to Exclude Older Projects)								**25%**	**n=4**

* size in hectares
SP = sediment laden plug

** BR = bare root

*** success status is measured as yes, no, partial, pending, or unknown. Success rate is reported as percentage of sucessful over total completed within the past 25 years.
yes = 1, partial = 0.5, no = 0, and pending or unknown are not counted in either the numerator or denominator in determining success percentage.

**** + = net increase in eelgrass coverage, 0 = no change in eelgrass coverage, - = net decrease in eelgrass coverage

1 Transplant was initially adversely impacted by an unknown source of sediment and was deemed unsuitable.

2 The transplant declined initially and later recovered from what was determined to be a one time sedimentation event.

3 Transplant was experimental due to dense beds of the exotic muscle *Musculista senhousia*
which inhibited the growth of the transplant. Replacement transplant done elsewhere.
Transplant was completed in an area deemed unsuitable. Insufficient coverage required the construction of a remedial site.
Monitoring continues at both the initial and remedial sites.

4 Transplant was experimental.

5 Multiple sites.

6 Mitigation for marina at Princess Resort, project not built

7 Amount of eelgrass present within all basins as of 2000 mapping.

8 Regional eelgrass decline has resulted in die-offs both within restoration and reference areas equally full recovery had not occurred at the time of evaluation, yet project exceeds control-corrected requ

9 Original site was constructed as a plateau that was underfilled and anticipated to fall short of objectives. A supplemental
transplant was therefore completed when development began to exhibit shortfalls in area.

10 Shortfall mitigated by withdraw from established eelgrass mitigation bank.

11 Exception conditions from SCEMP requiring only replacement in place for unanticipated damage

12 Mitigated out-of-kind with non-eelgrass to satisfy permit requirements after shortfall in eelgrass mitigation.

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USACE SF Bay Dredging Program
Eelgrass Light Monitoring Plan
2026 - 2030

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U.S. Army Corps of EngineersSan Francisco District
Programs, Planning and Project Management Division
Environmental Navigation and Operations Section

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ACRONYMS AND ABBREVIATIONS

CY	cubic yards
dGPS	Differential Global Positioning System
DMMO	Dredged Material Management Office
GIS	Geographic Information System
GPS	Geographic Positioning System
HAPC	Habitat Area of Particular Concern
H_{SAT}	Period of irradiance-saturated photosynthesis
I_k	35 µmoles photon $m^{-2}s^{-1}$ (Zimmerman et al. 1991)
I_m	daily maximum PAR measurement (CHM2HILL 1998).
LTMS	Long-Term Management Strategy
NMFS	National Marine Fisheries Service
O&M	Operations and Maintenance
Oakland Harbor	Oakland Inner and Outer Harbor federal channels
PAR	Photosynthetic Active Radiation
QA/QC	Quality Assurance/Quality Control
USACE	United States Army Corps of Engineers

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PROJECT DESCRIPTION

The U. S. Army Corps of Engineers San Francisco District (USACE) will contract dredge its annual maintenance dredging of several channels that have eelgrass (*Zostera marina L.*) populations including Oakland Harbor Channel located in Alameda County, California and Richmond Harbor Channel in Contra Costa County, California (project). The dredging program includes dredging the federal navigation channels of Oakland and Richmond Harbors and disposing of dredged material (Figures 1A and 1B). Light monitoring is proposed as an adaptive management eelgrass protective measure in accordance with the Long-Term Management Strategy (LTMS) for Management of Dredged Material in San Francisco between the USACE) the U.S. Environmental Protection Agency (USEPA), and the National Marine Fisheries Service (NMFS) (July 13, 2010). Survey protocols will follow the San Francisco Bay Light Monitoring Survey Protocol prepared by NMFS (January 2010) and utilized in previous monitoring efforts.

PROJECT LOCATIONS

The **Oakland Inner and Outer Harbor** are located in the City of Oakland in Alameda County, California (Figure 1A). The project area consists of the ten identified reaches that run along the two main channels of Oakland Harbor. Eelgrass is present in three of the reaches requiring light monitoring during dredging operations.

2026 Revision Changes for Oakland Harbor Channel
The 2026 revision to this plan updates the reach names and boundaries that are now in use. Formerly there were four reaches with eelgrass present. After redrawing, the new Reach 3 now completely encompasses the eelgrass that overlapped the previous Reach 2 and Reach 3, whereas the new Reach 4 lies between the two Inner Harbor eelgrass populations and the new Reach 5 encompasses the eelgrass previously found in Reach 4. See Table 1 below which shows how this change breaks down. Please see Appendix B for original 2024 reach maps.

The **Richmond Inner Harbor** is located in Contra Costa County, California (Figure 1B). The project area consists of the Richmond Entrance Channel and Inner Harbor Channel. Eelgrass is present along much of the Point Potrero Channel Reach bounded on the southern edge by the Richmond Training Wall, a rock jetty protecting the channel from wave exposure and sediment infill along the southerly margin of the channel. Eelgrass extends along the federal channel north of the training wall from the westerly terminus of the training wall eastward. A small amount of eelgrass is also found on the shoreline of Richmond Harbor adjacent to the Ford Building Wharf.

The aerial extent of the eelgrass populations incident to the Oakland and Richmond Harbor channels expand during the growing season and contract in the dormant season due to die-off of young unestablished individuals, with no appreciable net change from year to year. While other eelgrass populations are known in San Francisco Bay, there are currently no other populations incident to a federal channel that USACE dredges regularly. However, if future work under the USACE SF Bay Federal Dredging Program requires eel grass light monitoring they may be added to this programmatic plan as needed with plan revisions.

2026 Revision Changes for Richmond Inner Harbor
Previously in the 2024 version of this plan there was monitoring performed in Reaches 4 to

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Reach 9. The updated reach boundaries include the major change of splitting the prior Reach 4 where eelgrass monitoring is required and adding the eastern monitoring area of the former Reach 4 into the new Reach 5, so as to reduce the number of reaches requiring monitoring to only Reaches 5 to 9 in the southern portion. A new population of eelgrass has been observed along the southeastern portion of the channel prompting monitoring of the southeast "elbow" of the channel. This new monitoring also precipitated the former Reach 9 and 10 to be further divided so that under the new reach boundaries these areas are named Reaches 10 to 13. Please see Table 1 below which shows the breakdown of how these reach names have shifted from the 2024 to 2026 revision. Also see appendix B for original 2024 reach maps.

Table 1. Reach Naming Conventions in the 2024 Plan vs 2026 Update.

Oakland Harbor		Richmond Inner Harbor	
2024	**2026**	**2024**	**2026**
Reach 2	Reach 3	Reach 4	Reach 5
Reach 3		Reach 5	Reach 6
	Reach 4	Reach 6	Reach 7
Reach 4	Reach 5	Reach 7	Reach 8
Reach 10	Reach 10	Reach 8	Reach 9
		Reach 9	Reach 10
			Reach 11
			Reach 12
		Reach 10	Reach 13

Green Shading indicates locations with eelgrass light monitoring.

LIGHT MONITORING PROGRAM

Background

Eelgrass Ecology

Eelgrass is a native angiosperm indigenous to the soft-bottom bays and estuaries of the Northern Hemisphere. It occurs along the Pacific coast of North America from the Bering Straits down to lower Baja California. Although it is naturally restricted to a very limited amount of suitable habitat, it is the most widely distributed marine angiosperm in the Northern Hemisphere (den Hartog 1970). Because of the presence of eelgrass within protected shallow coastal waters, it has historically suffered considerable losses to degradation of water quality, dredging and filling, shading by over water structures, and changes in circulation patterns. Eelgrass abundance has declined worldwide due to increased anthropogenic effects as well as climate induced changes (Short and Wyllie- Echeverria 1996).

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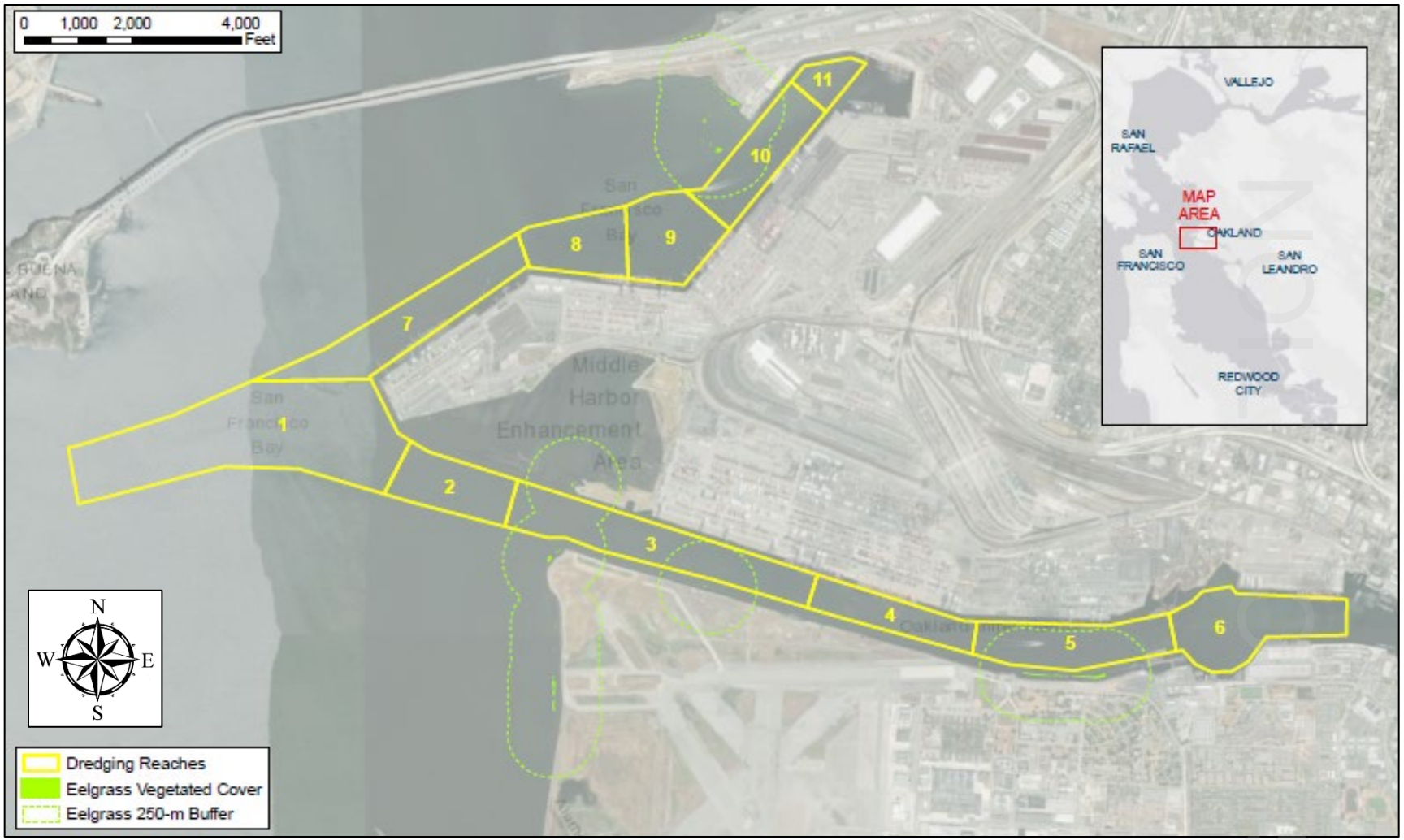

Figure 1A. Oakland Harbor Project Area (Merkel 2026)

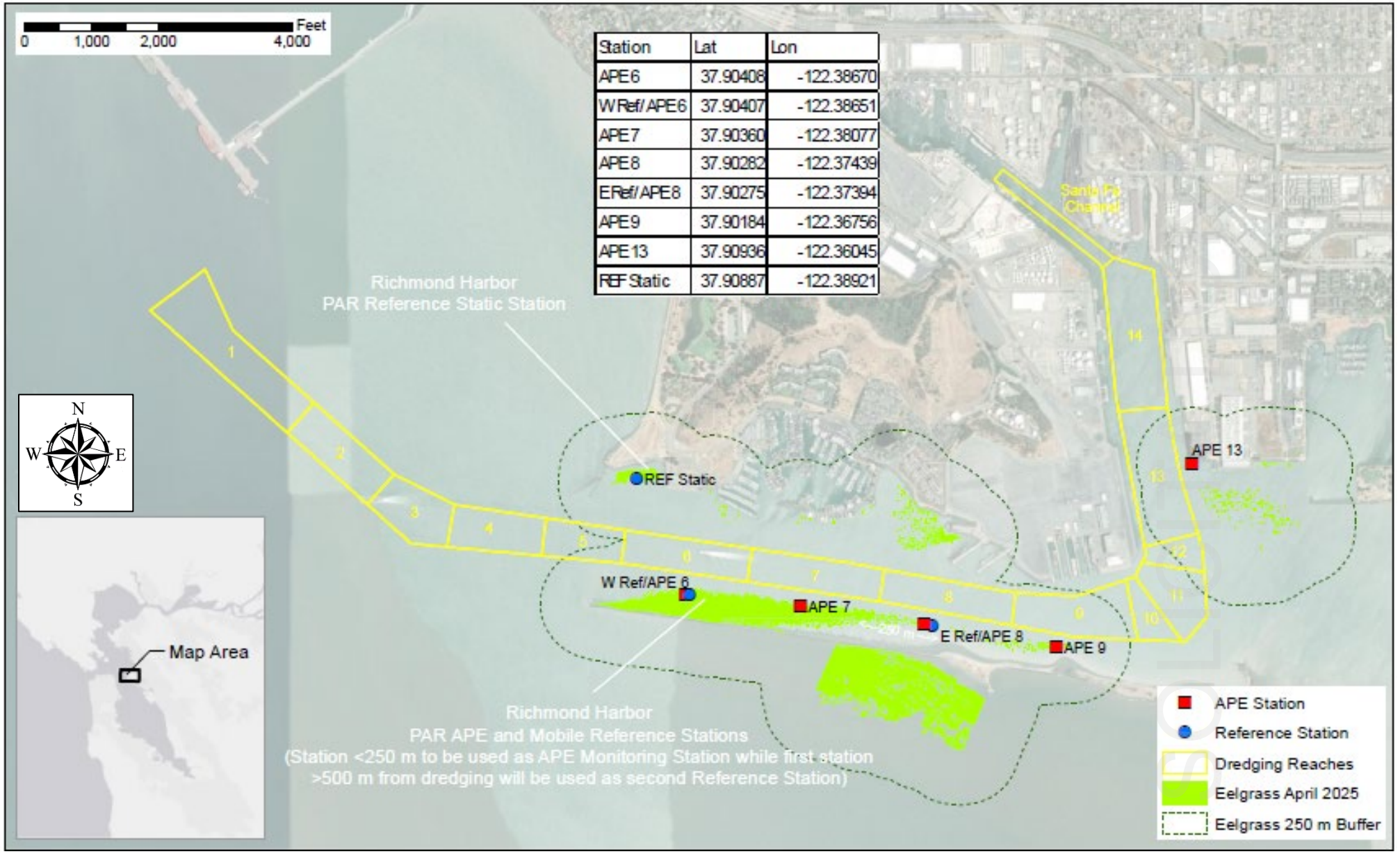

Figure 1B. Richmond Harbor Project Area (Merkel 2025)

Eelgrass has been termed a "foundation species" due to its habitat forming characteristics that create a unique biological and physical environment when it occurs in the forms of submerged or intertidal aquatic beds or larger meadows. Eelgrass beds function as important habitat for a variety of invertebrate, fish, and avian species. For many species, eelgrass beds are an essential biological habitat component for at least a portion of their life cycle, providing resting and feeding sites along the Pacific Flyway for avian species, and nursery sites for numerous species of fish. As submerged aquatic beds, eelgrass is given special status under the Clean Water Act, 1972 (as amended), Section 404(b)(1), "Guidelines for Specification of Disposal Sites for Dredged or Fill Material," Subpart E, "Potential Impacts on Special Aquatic Sites." It is also considered an important element of Essential Fish Habitat regulated under the Magnuson-Stevens Fishery Conservation and Management Act and has been designated as a Habitat Area of Particular Concern (HAPC) under the Act.

General Survey Requirements

There are a number of factors that can influence the distribution of eelgrass including water temperature, substrate type, salinity, wave energy and hydrodynamics, interspecific competition and biological controls (such as epiphytes), and light availability (Dennison and Alberte 1985, Dennison 1987, Masini *et al*. 1995, Marsh *et al.* 1986, Merkel & Associates 2000, Thom et al. 1990). As noted in previous studies, San Francisco Bay has a relatively small percentage of eelgrass coverage when compared to other bays and estuaries within California, and the beds that do exist are extremely dynamic (Caltrans and NMFS 2004, Merkel Associates 2005). Within the Bay, light regime is a major determinant of eelgrass distribution and eelgrass growth is restricted at the lower depths by light availability (Zimmerman *et al*. 1995). In fact, San Francisco Bay is so turbid that in 2014, 98.8 percent of all eelgrass occurred within a depth range from 0 to -6.6 feet (0.0 to -2.0 meters) MLLW and 80.9 percent of all eelgrass in the Bay occurred within a one-meter depth range from -1.6 to -4.9 feet (-0.5 to -1.5 meters) MLLW (Merkel & Associates 2015). This narrow depth distribution of eelgrass is a result of the high ambient turbidity environment of the Bay coupled with generally high wave energy. The high turbidity restricts light penetration, while higher wave energy restricts the capacity for plants to extend leaf tissue high into the water column to capture available light in shallower water.

Because of the critical importance of light availability for eelgrass growth in San Francisco Bay, the NMFS adopted a Light Monitoring Survey Protocol (Protocol) for the Bay as part of the LTMS for Management of Dredged Material in San Francisco Bay programmatic consultation for EFH (NMFS 2010) (Appendix A). Dredging projects can increase turbidity locally and reduce the light available to eelgrass. As a result, light monitoring is required for the duration of such projects as a protection measure for eelgrass when dredging occurs within 820 feet (250 meters) of eelgrass beds.

The NMFS Protocol considers that eelgrass whole plant carbon balance and growth period cannot be maintained when the period of irradiance-saturated photosynthesis (H_{sat}) decreases below three to five hours per day (NMFS 2010). As a result of the high ambient light stress that San Francisco Bay eelgrass is subjected to, the NMFS Protocol establishes impact minimization standards based on an assumed need of 5 hours of H_{sat} per day if unaffected reference sites in proximity to the project are receiving this level of light or more. Specifically, within the protocols, eelgrass impact minimization measures have been established as follows:

1. *If the daily period of H_{sat} is above 5 hours at the reference site, but below 5 hours near the project site, then project activities should cease during daylight hours until turbidity levels reduce and daily H_{sat} increases above 5 hours (typically within a few tidal cycles).*

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2. *If sampling did not occur at a reference station and the calculated daily period of Hsat is below 5 hours at eelgrass beds near the project area, then project activities should cease during daylight hours until turbidity levels reduce and daily Hsat increases above 5 hours (typically within a few tidal cycles).*
3. *If project activities are reducing H_{sat} below 5 hours, modifications to operating procedures should be considered (e.g., timing of dredging, type of gear, use of silt curtains…etc.) in order to minimize impacts to eelgrass as well as continuity of dredging operations.*
4. *The results of the light monitoring studies should be provided to NMFS within 30 days of completion.*

(NMFS 2010)

Monitoring Methods

Pre- and Post-Construction Population Survey

A pre-construction eelgrass population boundary survey will be completed no more than 14 days before dredging in an area that contains eelgrass within the 250 meters (820 feet) buffer of planned dredging locations (Figures 1A and 1B). A post-construction eelgrass population survey will be completed no more than 14 days after completing dredging in an area that contains eelgrass. The pre- and post-construction eel grass surveys will be carried out by contracted dredgers for habitat area and density using protocol from the California Eelgrass Mitigation Policy and Implementing Guidelines for delineating and mapping populations (NOAA 2014). In some instances, a pre-dredging survey conducted outside the eelgrass growing season may be used later as the pre-dredging survey occurring within the same dormant season; in these instances, the 14-day timeline for a pre-dredging survey would not apply. A post-dredge survey from one dredging season will not be used as a pre-dredge survey for the next dredging season.Surveys should be verified by the subject matter expert conducting the proposed light monitoring. In addition to the standard population survey results, a map of the eel grass population will also be provided which will include the dredging location(s) and light monitoring reference stations in order to ensure that light monitoring reference stations are best optimized for the light monitoring plan.

Oakland Harbor Dredge Survey and Reference Stations

Oakland Harbor eelgrass has historically occurred within 250 meters of the project area in three of the ten reaches: 3, 5, and 10 (Figures 2A through 2C). To monitor light, stations will be established in each of the three reaches, with a minimum of two dredge survey stations and one associated reference station for each reach. Dredge survey stations and reference stations will be selected for each reach based on the physical conditions of bathymetry and physical structure that may influence hydrology and turbidity within each reach. Reference stations will be located at a similar depth, within or near locations of surveyed eelgrass beds that are an adequate distance away from dredging to avoid dredge related turbidity. To the greatest extent possible, reference station locations will be located in areas with physical conditions that best approximate ambient conditions (e.g. absent dredging) at the associated survey station(s) present within each reach. Dredge survey stations will be established along the lower limit of eelgrass growth of eelgrass present within 250 meters of the project area, and reference stations will be established along the lower limit of eelgrass growth at adjacent reference locations. The total number of dredge survey and reference stations will vary within each reach of the project area, and will be dependent upon varying conditions present within the industrial port environment. While only one reference station is required per reach, every attempt will be made to establish two reference stations per reach in order to account for the

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variation expected in areas where man-made infrastructure could influence local turbidity.

Figures 2A through 2C illustrate approximate locations for dredge survey and reference stations within each of the four target reaches consistent with prior monitoring (Merkel & Associates 2026). The specific locations of the monitoring stations have been determined using the locations of eelgrass mapped by TDI in 2023. E elgrass boundaries will be determined in the field using a geographic positioning system (GPS) unit. The location of each established dredge survey and reference station will be marked with differential Global Positioning System (dGPS) at the time of initial deployment for reference during eelgrass boundary surveys. Modifications to proposed station locations may be made depending on field conditions. The following text describes the specific stations proposed within each reach of the project area.

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Figure 2A. 2023 Oakland Harbor Reach 3 PAR Sampling Locations *(Merkel 2026)*

Figure 2B. 2026 Oakland Harbor Reach 5 PAR Sampling Locations *(Merkel 2026)*

Figure 2C. 2026 Oakland Harbor Reach 10 PAR Sampling Locations *(Merkel 2026)*

Oakland Harbor Survey and Reference Stations by Reach

Reach 3

Three dredge survey stations and two reference station will be established within Reach 3. The dredge survey locations will be located along the south (3-Dredge-2 and 3-Dredge-1) shoreline of the Oakland Inner Harbor channel with one in the north side of the channel (3-Dredge-3). The reference station (3-Ref-1) will be located in the eelgrass bed to the south of the Oakland Inner Harbor Channel within the vicinity of, but outside of, the 250-meter buffer around the dredging reach. The reference station (3-Ref-2) will be located within the eelgrass bed lying south of the channel within the vicinity of, but outside of, the 250-meter buffer around the dredging reach. Please see Figure 2A.

Reach 5

Two dredge survey stations and two reference stations will be established within Reach 3. The dredge survey locations (5-Dredge-1 and 5-Dredge-2) will be located along the southern shoreline of the Oakland Inner Harbor Channel within the 250-meter dredge buffer. The two reference stations (3-Ref-1 and 3-Ref-2) will be established in the eelgrass bed located to the west in Reach 5 and outside of the 250-meter buffer area. Please see Figure 2B.

Reach 10

Two dredge survey stations and one reference stations will be established within Reach 10. The dredge survey locations (10-Dredge-1 and 10-Dredge-2) will be located in the middle of the channel and the northern shoreline of the Oakland Inner Harbor Channel within the 250-meter dredge buffer. The reference station (10- Ref-1) will be established in the eelgrass bed located on the northern side of Reach 10 and outside of the 250-meter buffer area. Please see Figure 2C.

Richmond Harbor Dredge Effects and Reference Stations

Eelgrass occurs within 250 meters of the project area over a considerable length of Richmond Harbor channel requiring monitoring for the reaches: 5, 6, 7, 8, 9, 11, 12, and 13. For this reason, light monitoring stations to be used for this investigation include mobile photosynthetic active radiation (PAR) stations that will move in conjunction with the active dredging progress. In addition to the two reference stations, a static reference that will be located at the deeper margin of eelgrass at the small cove at Point Richmond, and a second station that will be alternately located on the east and west end of the continuous bed present along the Richmond Harbor Training Wall. The locations and coordinates for the monitoring stations are provided on Figure 1.

The mobile dredge APE PAR stations (APE 6, 7, 8, 9, 13) and reference station (Ref Static) and alternative reference stations (E Ref and W Ref) will be selected based on the location of dredging activities at a given time. When dredging is occurring within 250 m of eelgrass at the west end of the training wall, the nearest identified Dredge APE station will be monitored as the effected station and the Point Richmond cove and eastern Training Wall reference stations (Ref Static) will be monitored as reference stations.

Reference and APE stations will be located at similar depths, within or near locations of surveyed eelgrass beds. Reference sites have been selected to be an adequate distance away from dredging to avoid dredge related turbidity. To the greatest extent possible, reference station locations have been located in areas with physical conditions that best approximate ambient conditions (e.g. absent

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dredging) at the associated survey station(s) present within each reach. Dredge survey stations will be established along the lower limit of eelgrass growth of eelgrass present within 250 meters of the project area.

The specific locations of the monitoring stations have been determined using the georeferenced locations of eelgrass mapped in 2023. Monitoring stations will be positioned using a handheld Geographic Positioning System (GPS) unit with sub-meter accuracy. The location of each established dredge survey and reference station will be marked with dGPS at the time of initial deployment. Modifications to proposed station locations may be made depending on field conditions to ensure that monitoring is at the edge of beds and that the depths of the monitored stations are similar between APE and reference sites.

Survey Equipment

Light monitoring will be conducted using Integrating PAR loggers for both the dredge survey station monitoring and the reference station monitoring. At each dredge survey station, a logger will be mounted 0.5 meter (1.64 feet) above the substrate on the lower edge of the eelgrass bed closest to the dredge channel (Figure 3A). At each reference station, a logger will be placed at the same elevation above the substrate at the lower depth limit for eelgrass growth. Loggers at all stations will be mounted on identical temporary moorings consisting of a base weighted PVC monopole frame with a floating marker buoy attached to a sinking line (Figure 3B).

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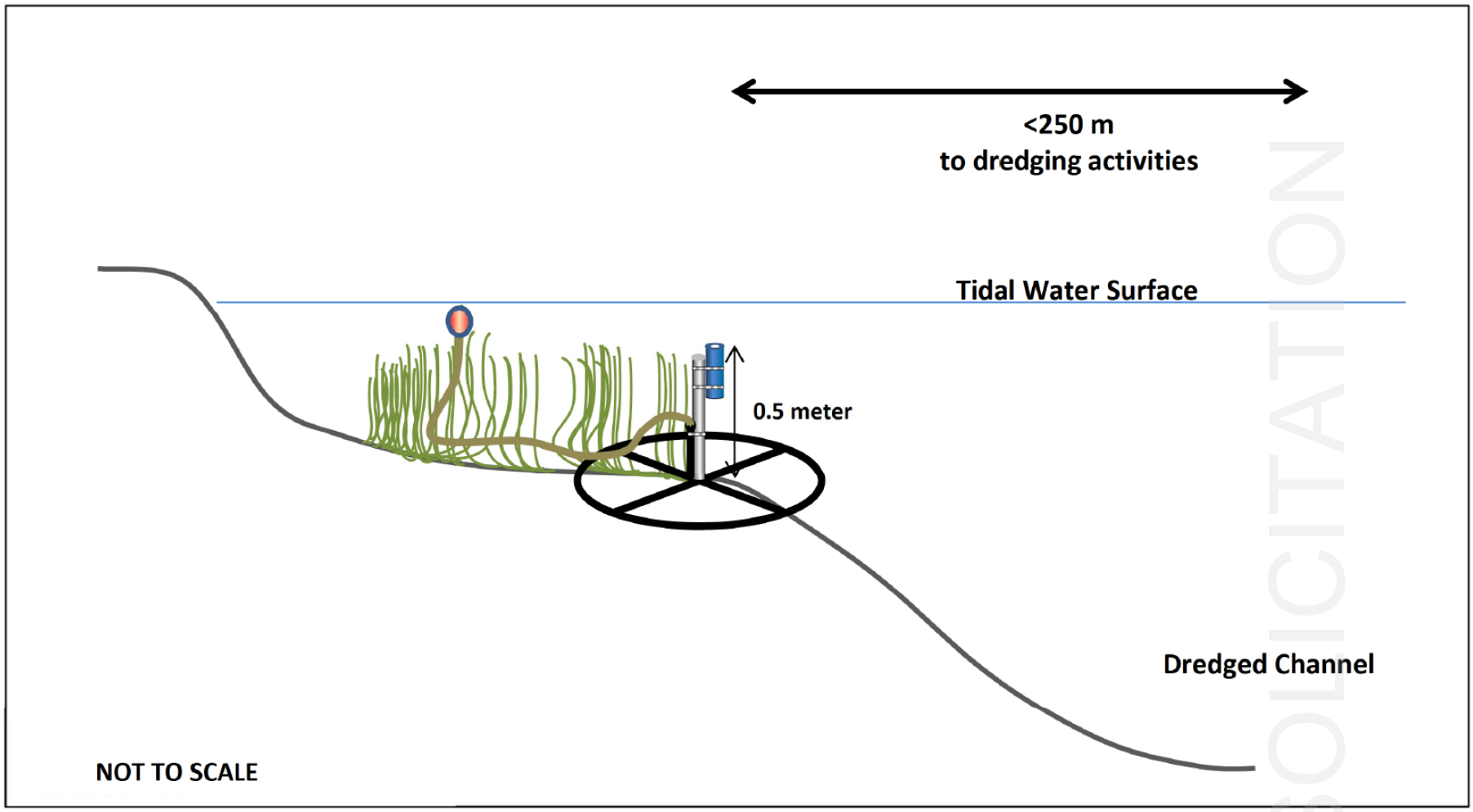

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Figure 3A. Placement of Survey Equipment (Merkel 2023)

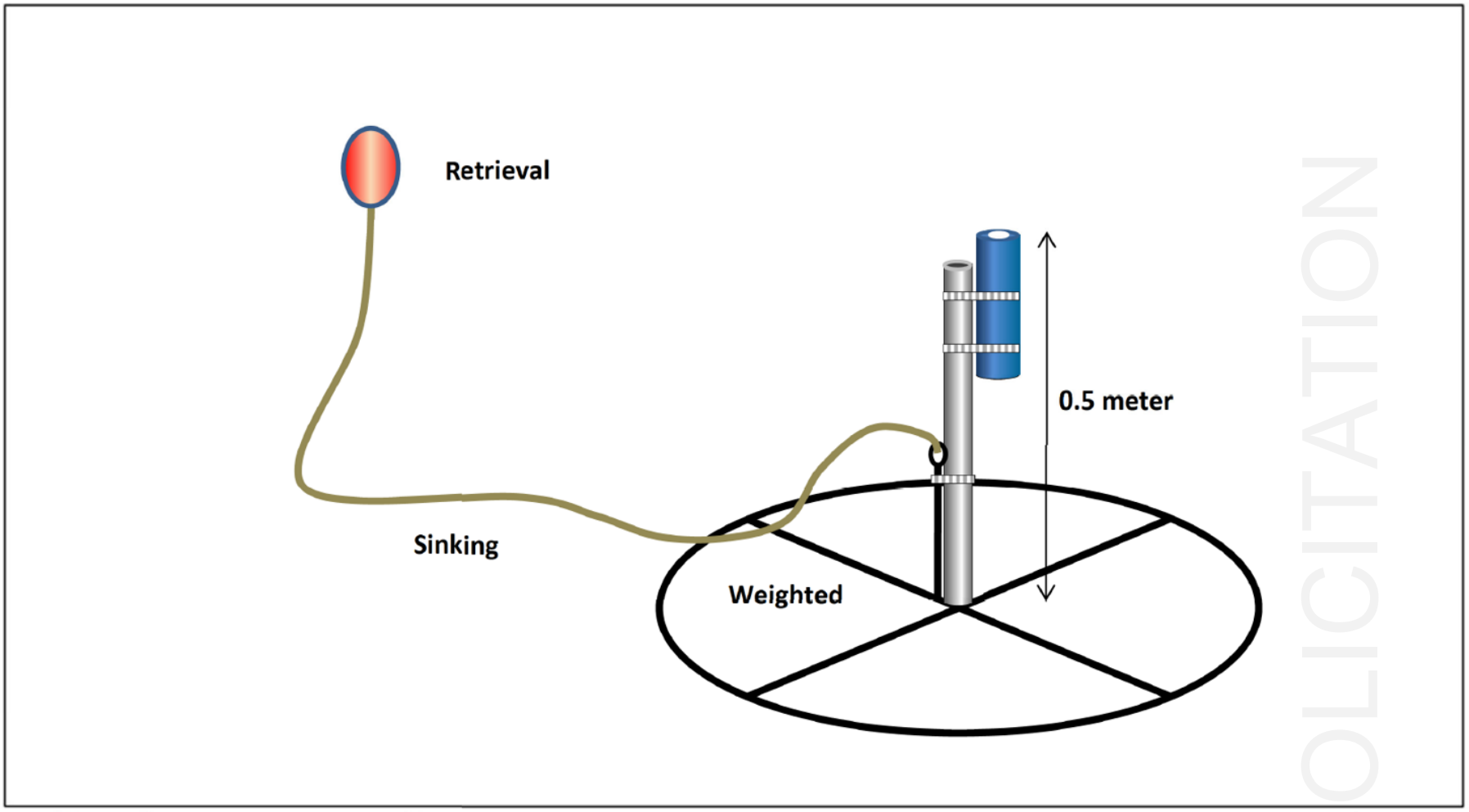

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Figure 3B. Schematic of Temporary Mooring for Survey Equipment. *(Merkel 2023)*

Each mooring will be free-standing on the Bay bottom to allow for daily retrieval, download, and maintenance of PAR loggers. Biologists will retrieve moorings from a boat, by pulling up floating markers and line. Moorings will be gently lowered back to the Bay bottom following data retrieval and maintenance.

The PAR loggers will be calibrated as needed (a minimum of once prior to implementation of dredging and associated monitoring of reach) according to manufacturer instructions (Banas 2005). To calibrate, the light sensor will be affixed to a PVC frame simultaneously with PAR loggers attached at equal height. The PVC frame with all loggers will be deployed at one survey dredge or reference station, and light data will be collected for a minimum period of thirty minutes. The Light Sensor Logger will be set to collect data at 1- second intervals for the duration of the calibration period, while the PAR loggers will be set to collect data at multi-minute intervals.

Following the calibration period, the PVC apparatus with all loggers will be retrieved and sensors will be downloaded. A unique calibration factor will be determined for each PAR logger using data from the Light Sensor. Calibrations will be calculated using the standardized methods according to the PAR manufacturer. The highest continuous values of the light readings will be used to calibrate the highest readings of the PAR loggers during the calibration period on a linear basis with zero light being the lower calibration points for both the PAR loggers and the light sensor. All calibration data will be recorded and provided in an appendix to the final light monitoring report.

Survey Timing

The survey team will be notified a minimum of 24 hours in advance when the dredge approaches the boundary of each reach nearing the 250-meter buffer. Following notification, survey biologists will travel to the appropriate reach by boat and will deploy the calibration equipment. Once calibration is complete, PAR loggers will be deployed at all dredge survey and reference locations for the reach where dredging is to occur.

Monitoring will be conducted daily during dredging activity in each reach where eelgrass is present within the 250-meter buffer. Monitoring timing may be modified depending on the season. San Francisco Bay has reduced hours of daylight and naturally low light levels during winter months. As such, monitoring during winter months will cease in a given reach if Hsat is less than five hours for three consecutive days at both the reference stations and sampling stations. If this occurs, it will be assumed that naturally low light conditions will be present at all times for the duration of dredging within a given reach, and that dredging operations are not substantively contributing to low light levels or shortfalls in H_{sat} required to meet plant metabolic demands.

Data Collection

As indicated above, light level data will be collected throughout the duration of daylight project activities within each reach where eelgrass occurs within the 250-meter buffer area.

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Data collected at each dredge survey and reference station will include:

1. Depth (feet) at Mean Lower Low Water (MLLW) and dGPS coordinates will be recorded at each monitoring location upon deployment, retrieval, and any relocation of monitoring equipment.
2. PAR measurements will be recorded at multi-minute intervals from sunrise to sunset and will include a measurement at 12 noon.
3. Start and end times will be recorded for each retrieval and deployment event.
4. The timing of flood and ebb tides, sunset and sunrise, will be recorded daily.

Additionally, during each sampling day, biologists will record the following observations:

- Name of project
- Date, location, and time of sampling or measurements
- Name of individual performing sampling or measurements
- Speed and direction of current
- Tidal stage
- General weather conditions and wind velocity
- Appearance of trash, floatable material, grease, oil slick, or other objectionable material
- Discoloration and extent of visible turbidity plumes
- Any distinguishable odors
- Quantity of material dredged the previous day
- Cumulative total amount of material dredged to date

Data Analysis and Reporting

PAR data will be downloaded daily from each of the dredge survey and reference stations for the reach with active dredging. H_{sat} values will be calculated using an excel macro, developed by M&A. Raw data will be downloaded from each data logger and exported into the macro along with the calibration coefficient calculated for each PAR logger (as described above). The raw logger data will be multiplied by the calibration coefficient for each individual PAR logger. All PAR values >10 µmol photon $m^{-2}s^{-1}$ will be extracted to produce a series of data to use within the H_{sat} equation.

The maximum daily PAR measurement (I_m) will be used to calculate the daily period of irradiance-saturated photosynthesis (H_{sat}) at each dredge survey and reference station for each dredging day using the following equation:

$$H_{sat} = D\left[1 - \frac{2}{\pi}\sin^{-1}\left(\frac{I_k}{I_m}\right)\right]$$

D = day length from sunrise to sunset (= time that PAR is >10 µmol photon $m^{-2}s^{-1}$)
I_k = 35 µmoles photon $m^{-2}s^{-1}$ (Zimmerman et al. 1991)
I_m = daily maximum PAR measurement (CHM2HILL 1998).

The daily H_{sat} values for each dredge survey station will then be compared to the values from the reference stations. The results of this comparison will determine actions taken as follows:

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- If daily H_{sat} values from both the dredge survey and associated reference stations are greater than five hours, it is assumed that dredging activities do not negatively affect light levels and dredging may continue unimpeded.
- If daily H_{sat} values from both the dredge survey and associated reference stations are less than five hours, it is assumed that factors outside of dredging activity (e.g. boat traffic, extreme tidal events) that can increase turbidity are affecting light levels and dredging may continue unimpeded.
- If H_{sat} values from dredge survey locations are below five hours, but H_{sat} values from associated reference stations are greater than five hours, then additional factors will be considered to determine whether the difference in light levels throughout the day is due to dredging activities. If it is determined that reduction of light levels at dredge survey stations is substantial and due to dredge activities, the minimization measures and reporting procedures outlined in the Light Monitoring Protocol (Appendix A) will be employed.

A summary of the thresholds used for analysis is provided in Table 1 below:

Table 2. Thresholds used for analysis of light monitoring sampling.

Reported H_{sat}	Action
Dredge survey station >5 hours	No effect on eelgrass, continue dredging
Dredge survey station <5 hours and reference station also <5 hours	Effect is likely outside of dredging operations control, continue dredging
Dredge survey station <5 hours and reference station >5 hours	Potential effect on eelgrass, investigate difference and pause dredging as warranted
Dredge survey station continuously <5 hours and reference station >5 hours	Modify operating procedures

Monitoring results will be maintained both electronically and in hard copy along with recorded field observations, calibration records, and equipment maintenance records. These will be available for inspection upon request.

A final project report will be prepared at the conclusion of dredging activities in all reaches. This report will consist of an introduction and project background, detailed monitoring and calibration methods, summary of results, discussion of factors that may lower H_{sat}, and actions taken (should thresholds for light levels be exceeded). The report will include calibration data, raw data tables for all dredge survey and reference stations for all reaches, eel grass pre and post construction populations maps, and daily field notes.

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Key Personnel

Contact information for personnel that will be responsible for implementing the eelgrass light monitoring program will vary with each dredging contract and will be submitted to NMFS with the pre-construction eel grass population survey. In general, positions such as ecologist, project manager, light monitors, project engineer, and quality control manager will be provided.

Quality Assurance/Quality Control

All field staff will be trained in the usage and maintenance of the light monitoring instrumentation and be familiar with monitoring protocol. Prior to implementation of the monitoring program, the Light Monitoring Project Manager will provide briefing on project-specific protocols, data format and naming standards, chains of communication, data management and storage, and reporting requirements outlined above.

The light monitoring instrumentation will be maintained per the manufacturer's specifications. Calibration will be conducted as described in this monitoring plan. A record of the calibration procedure will be kept for each calibration event and will be provided as an appendix to the final report. Raw data downloaded from PAR loggers will be backed up and saved on a network server each day for safekeeping should the field laptop become damaged.

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REFERENCES

Banas, D., P. Grillas, I. Auby, F. Lescuyer, E. Coulet, J. C. Moreteau & B. Millet. 2005. Short time scale changes in underwater irradiance in a wind-exposed lagoon (Vaccares lagoon, France): efficiency of infrequent field measurements of water turbidity or weather data to predict irradiance in the water column. Hydrobiologia, 551: 3-16.

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Masini, R. J., J. L. Cary, C. J. Simpson, and A. J. McComb. 1995. Effects of light and temperature on the photosynthesis of temperate meadow-forming seagrasses in Western Australia. Aquatic Botany 49:239-254.

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U.S. Army Corps of Engineers, San Francisco District.Merkel & Associates, Inc. 2015. San Francisco Bay Eelgrass Inventory. Prepared for National Marine Fisheries Service.

Merkel & Associates, Inc. 2005. Baywide Eelgrass (*Zostera marina* L.) Inventory in San Francisco Bay: Eelgrass Bed Characteristics and Predictive Eelgrass Model. Prepared for Caltrans in cooperation with NOAA Fisheries. September 2005.

Merkel & Associates, Inc. 2000. Environmental Controls on the Distribution of Eelgrass (Zostera marina L.) in South San Diego Bay: An assessment of the relative roles of light, temperature, and turbidity in dictating the development and persistence of seagrass in a shallow back-bay environment. January 2000.

National Oceanic and Atmospheric Administration (NOAA) 2014. California Eelgrass Mitigation Policy and Implementing Guidelines. October 2014. Available online at: https://media.fisheries.noaa.gov/dam-migration/cemp_oct_2014_final.pdf

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Appendix A. Light Monitoring Protocol (NMFS 2010)

Appendix 3. Light Monitoring Protocol

National Marine Fisheries Service
Southwest Region Habitat Conservation Division
Santa Rosa Area Office

San Francisco Bay Light Monitoring Survey Protocol

Revised January 2010

The purpose of this protocol is to provide guidance to entities conducting activities in San Francisco (SF) Bay and northern California that may cause increases in turbidity above background levels and impact *Zostera marina* (eelgrass). Water column turbidity reduces the amount of light available for photosynthesis and consequently affects the depth distribution, density and productivity of eelgrass (Thayer *et al.* 1984; Zimmerman *et al.* 1991; Lee *et al.* 2007). Although eelgrass in SF Bay is adapted to growing in low light environments, if the period of irradiance-saturated photosynthesis (H_{sat}) decreases below 3-5 hours per day, the maintenance of whole plant carbon balance and growth period is negatively affected (Zimmerman *et al.* 1991). Due to high turbidity levels in SF Bay, eelgrass plants located at the deeper edges of established eelgrass beds are less likely to accumulate large carbon reserves making them unable to withstand 30 days of reduced light conditions (Zimmerman *et al.* 1991). This protocol was established to ensure consistent collection of light monitoring data, and to guide users on the appropriate application of such measurements.

NMFS Santa Rosa Office staff are available for guidance in the use of this protocol. The lead action agency should provide a detailed monitoring plan to NMFS for approval 60 days prior to the light monitoring survey.

Light survey during project activities:

Objective: Determine increased light attenuation associated with project activities in eelgrass beds.

1. During daylight project activities, photosynthetically active radiation (PAR) should be measured at selected sampling locations. These locations should include the deeper edges of established eelgrass beds near the project site. NMFS also recommends selecting a reference station at a similar depth, near eelgrass beds, but of adequate distance away from project activities and any other sources of turbidity. Reference stations should be selected with NMFS guidance and approval. A reference station will insure that project activities are not held responsible for lowered light conditions caused by natural variation. Sampling locations and frequency may vary due to site conditions and project activities and, therefore, should be approved by NMFS Santa Rosa Office staff 60 days before sampling occurs.
    a. Depth (meters) at mean lower low water and GPS coordinates should be recorded at each sampling location.

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b. PAR measurements should be recorded near the top of eelgrass plants (approximately 0.5 meters above the substrate).
c. Measurements of PAR should be recorded at regular intervals throughout the duration of daylight project activities, and should always include a measurement at the noon hour. Number of days, frequency and start/end time of measurements will depend on time of year and equipment available. If automated equipment is available, NMFS recommends measurements of PAR be taken every 10 minutes from sunrise to sunset daily, for a minimum of seven days. Increasing the frequency of PAR measurements will improve the accuracy of measurements (Banas et al. 2005).
d. The timing of flood and ebb tides should be recorded.

2. The maximum daily PAR measurement (I_m) should be used to calculate the daily period of irradiance-saturated photosynthesis (H_{sat}):

$$H_{sat} = D\left[1 - \frac{2}{\pi}\sin^{-1}\left(\frac{I_k}{I_m}\right)\right]$$

D = day length from sunrise to sunset6 (= time that PAR>10 µmol photon $m^{-2}s^{-1}$)
I_k = 35 µmoles photon m^{-2} s^{-1} (Zimmerman *et al*. 1991).
I_m = daily maximum PAR measurement (CHM2HILL 1998).

H_{sat} should be calculated after sampling completion each day, at each sampling location.

Minimization Measures and Reporting:

1. If the daily period of H_{sat} is above 5 hours at the reference site, but below 5 hours near the project site, then project activities should cease during daylight hours until turbidity levels reduce and daily H_{sat} increases above 5 hours (typically within a few tidal cycles).

2. If sampling did not occur at a reference station and the calculated daily period of H_{sat} is below 5 hours at eelgrass beds near the project area, then project activities should cease during daylight hours until turbidity levels reduce and daily H_{sat} increases above 5 hours (typically within a few tidal cycles).

3. If project activities are continually reducing H_{sat} below 5 hours, modifications to operating procedures should be considered (*e.g.,*, timing of dredging, type of gear, use of silt curtains…etc.) in order to minimize impacts to eelgrass as well as continuity of dredging operations.

6 Day length should not be calculated using theoretical sunrise and sunset estimates. Site-specific variability will great influence the actual day length at each site (*i.e.,* adjacent buildings or hills may shade an area for significant time at sunrise or sunset), as will daily climatic conditions. A minimum level of PAR will be set as 10 µmol photon $m^{-2}s^{-1}$, the light compensation point (H_{comp}) for eelgrass (Dennison and Alberte 1982), as a threshold level to determine actual day length hours.

SOLICITATION

4. The results of the light monitoring studies should be provided to NMFS within 30 days of completion.

Literature Cited:

CH2MHILL. 1998. Richmond Harbor Eelgrass Monitoring Draft Report #1. Prepared for: U.S. Army Corps of Engineers, San Francisco District, Environmental Planning Section. January 1998.

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Hartog 1970). Because of the presence of eelgrass within protected shallow coastal waters, it has historically suffered considerable losses to degradation of water quality, dredging and filling, shading by over water structures, and changes in circulation patterns. Eelgrass abundance has declined worldwide due to increased anthropogenic effects as well as climate induced changes (Short and Wyllie- Echeverria 1996).

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Appendix B. Original 2024 Maps with Eelgrass Incidence for Prior Reach Naming Conventions

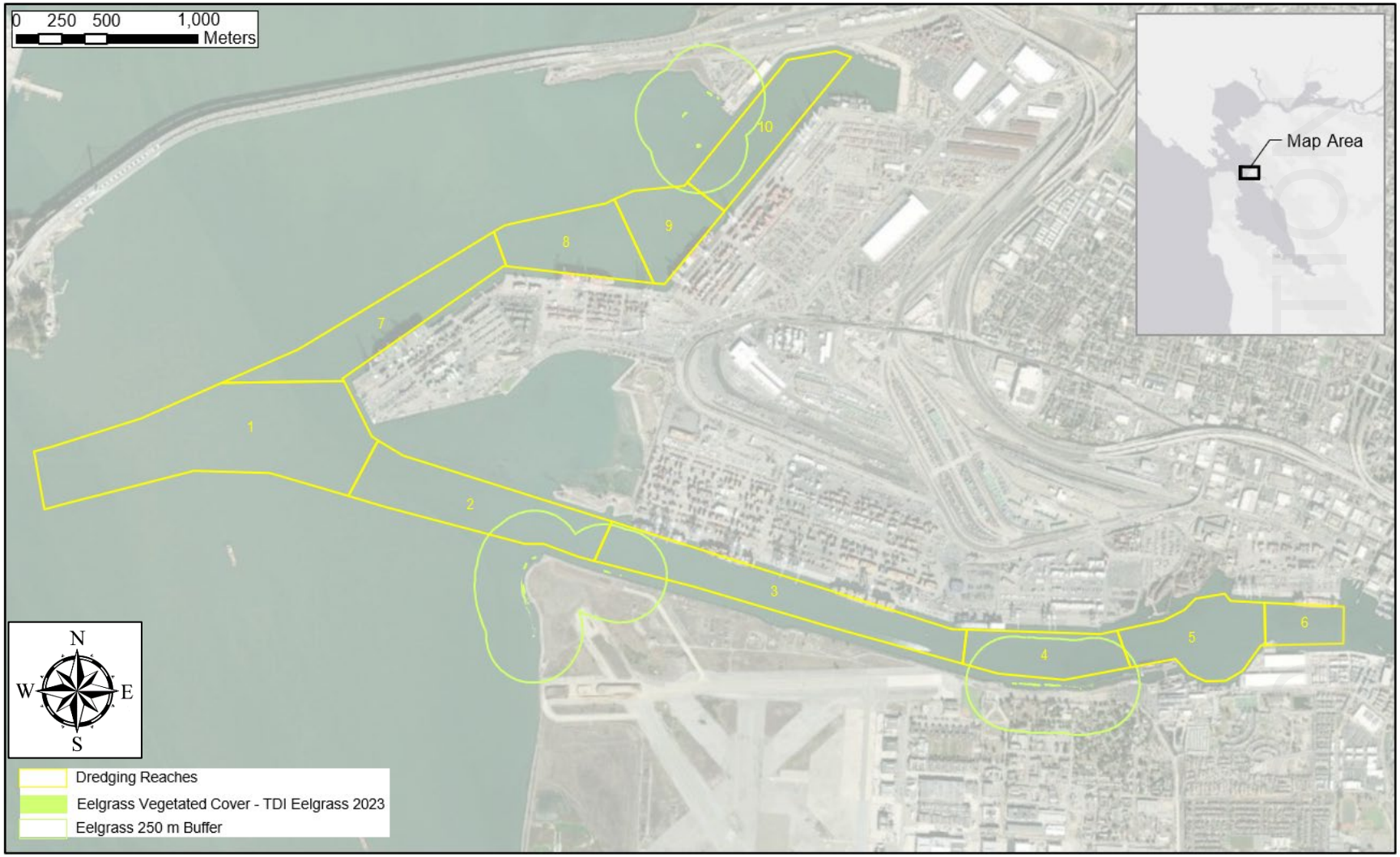

Figure 1A. Oakland Harbor Project Area (Merkel 2023)

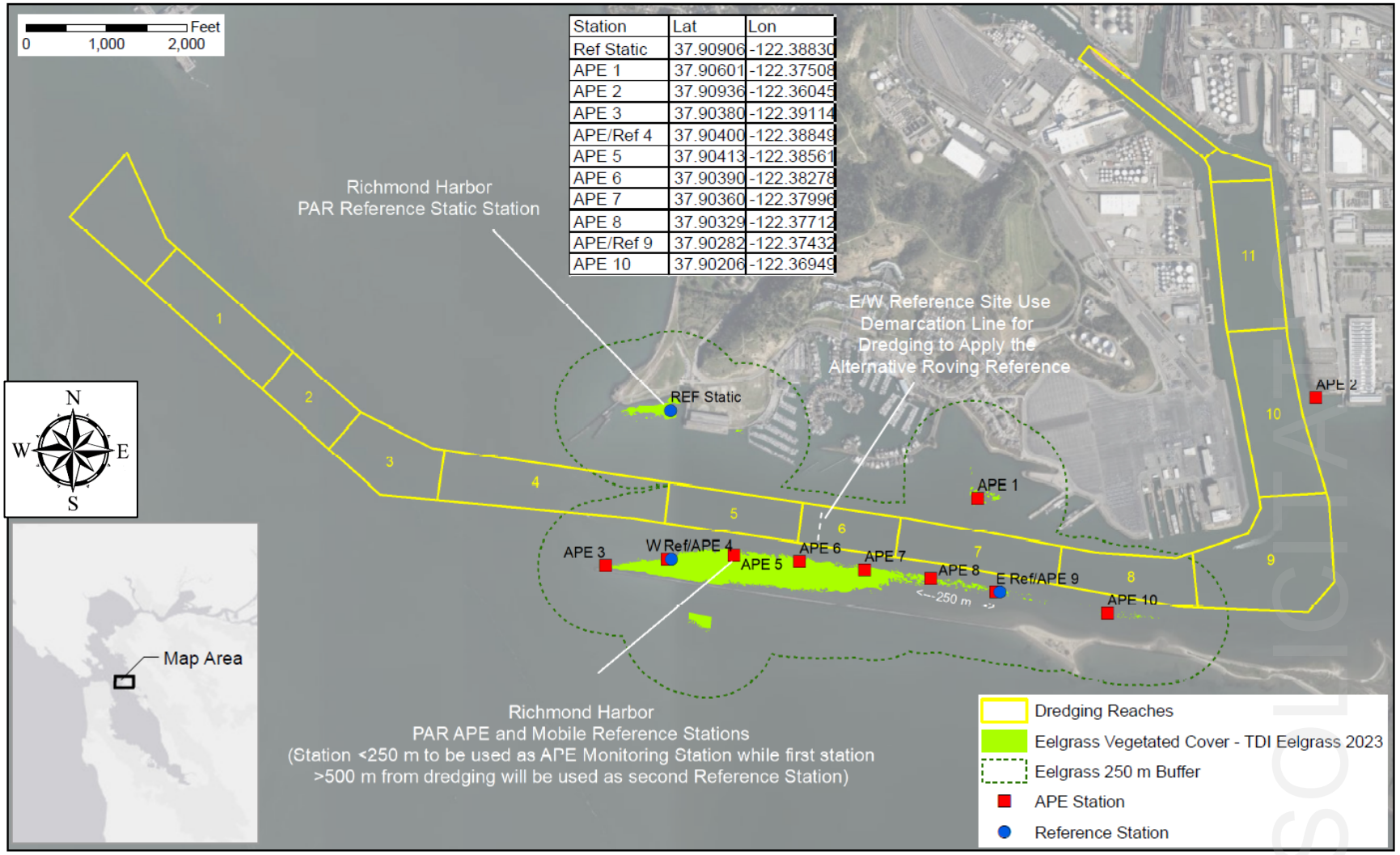

Figure 1B. Richmond Harbor Project Area (Merkel 2023)

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ATTACHMENT 1

DAILY BIOLOGICAL OBSERVATION LOG FOR DREDGE OPERATIONS DURING HERRING SPAWNING SEASON

- Observer Name _
- Date_ Start Time _ Stop Time_

- Describe dredging activities taking place during shift.
  - Towing scow to disposal site Time_
  - Positioning scow for filling Time_
  - Filling scow Time_
  - Positioning dredge Time_
  - Work stopped for crew change Time
  - Work stopped for maintenance Time_
  - Other_ _ Time_

- If evidence of a herring spawning event is observed within 500 meters of the dredge immediately notify the following individuals:

Jere Harper Administrative Contract Officer 415 289 3310

415 299 4029 jere.harper@usace.army.mil

Arn Aarreburg, Environmental Scientist 707 576 2889

Tessa Beach, Chief, Environmental Section 415 503 6713

Beth Campbell, Regional Fishery Biologist 415 503 6845

Chris Eng, Environmental Planner 415 503 6868

Jason Emmons, Environmental Manager 415 503 6824

Email of Environmental Staff: SPN-Dredging@usace.army.mil

- Mark the map with general location of where dredging took place and where bird/mammal/fish activity was observed.

  B = Birds D = Dredge F = Fish M = Marine Mammals
  S = Herring spawn

- Identified species, estimated number of individuals, and distance from construction.

		Distance
CA least tern	# _	_____
Cormorant	# _	_____

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CA sea lion	# _	_____
Pacific herring	# _	_____
Harbor seal	# _	_____
		Distance
Caspian tern	# _	_____
Other species		
-	# _	_____
-	# _	_____
-	# _	_____
-	# _	_____

- Record Environmental Conditions

  Tide: High_ Ebb_ Low_ Flood_

  Water temperature_ °F, or °C

  Wind direction_ Wind speed_ kts, or mph

- Describe behavior and activity.

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Attachment 1

Dredge Monitoring System Operational Requirements (DDLS)

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Sensor Calibration Procedures and Document Submittals

The third-party monitoring subcontractor shall provide dimensioned drawings of each dredge plant. Dimensions shall include vessel and bin lengths, depths, and widths. GPS, draft and bin sensor locations shall also be included in the drawings.

Barge and hopper ullage tables listing bin volume as a function of material level shall be submitted to the USACE. Barge and TSHD draft displacement tables indicating vessel displacement tonnage as a function of draft shall also be submitted. The ullage and displacement tables shall be certified by a licensed marine surveyor or architect. Ullage and draft information shall include a polynomial equation describing the volume versus tonnage.

A third-party monitoring contractor shall conduct calibrations of draft and bin sensors prior to the project start. Physical tape-measurements of draft and fluid level shall be conducted during the calibration of the electronic system. Sensors shall be calibrated such that electronic sensor measurements match physical measurements during a fill cycle of an empty scow or hopper with water. The test fill cycle shall be repeated until sensor data and physical measurements match to within 0.2 ft. The final calibration cycle shall be recorded electronically, plotted and submitted to the USACE for approval.

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Dredge Monitoring System Operational Requirements-(DDLS)

Questions concerning Dredge Monitoring specifications shall be directed through the U.S. Army Corps of Engineers San Francisco District, Engineering and Technical Services Division, Construction Services Branch at (415) 289-3347.

Automated Dredge Positioning and Tide system

The Contractor shall electronically monitor dredge position on a 24-hour basis at 2-minute intervals using a Global Positioning System capable of positional accuracy of less than 6 ft. Tides shall be monitored at the same time interval with an accuracy of +/- 0.1 feet. Data shall be recorded to a logging system aboard the dredge and downloaded wirelessly at 4-hour intervals to a third-party server. The logging system shall have battery backup to compensate for power interruptions. Downloads shall be performed automatically and monitored by a USACOE approved third-party subcontractor for reliability. A system shall be in place that processes incoming data automatically as it is received. The data shall be posted for viewing on a password-protected web site when it is received. The web site shall provide the following features:

1) Dredge position plot over an electronic NOS chart
2) Display of the dredging template limits
3) Color-coding of each dredge position fix per categories listed below (eg. dredging, dredge transiting, maintenance, weather delay).
4) Display of monitoring data for a user-selectable time period (mm/dd/yy to mm/dd/yy).
5) Download of data via FTP in a USACOE-approved format compatible with USACOE analysis software. (Reference "Data Download Requirements" section)

The third-party subcontractor shall perform frequent Quality Assurance and Quality Control of the data. Equipment maintenance, troubleshooting and calibration shall be conducted by the same third-party subcontractor.

The Contractor may procure website, data transfer and monitoring services from SAIC or an equivalent service. Information can be found on SAIC's website *www.adiss-afiss.com <http://www.adiss-afiss.com>* ***.***

Dredge Operators Log

Daily dredging "operator logs" shall be entered on a USACOE-approved web site. A 24-hour record of start and end times shall be recorded to the nearest minute for

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project time categories, and shall be entered to the web site for recording in an off-site database. At a minimum, time categories shall include the following:

1) Dredging
2) Moving Dredge
3) Maintenance
4) Crew Change
5) Repairs
6) Mobilize / Demobilize Equipment
7) Miscellaneous Non-Revenue
8) Standby for next shift
9) Weather Delay
10) Vessel Traffic
11) Material Agitation (dragging)
12) Shifting Scows
13) Standby for Scows

Operator Log data entry on the web site shall begin immediately following issuance of the contract Notice to Proceed and shall end upon completion of project demobilization. Data for the previous day shall be entered the following morning. A third-party subcontractor shall check data for Quality Assurance and Quality Control. The operator log data shall be made available for viewing in color-coded, graphical form on the web site.

The Contractor shall input final bathymetric QC and interim check survey volumes to the web site no later than 48 hours after completion of the survey. A third-party subcontractor shall check the data for Quality Assurance and Quality Control. The data shall be made available for viewing on the web site.

Prior to equipment mobilization, the Contractor shall submit for USACOE approval, a document from the third-party contractor describing the equipment, methods and past reliability statistics of the monitoring system proposed for use on the contract.

Dredge Plant Specific Monitoring Requirements

The type of dredge plant and method of material placement employed during the contract Operations shall dictate monitoring requirements beyond those listed in the previous paragraphs. Types of dredging equipment are described in detail in Engineer Manual 1110-2-5025 "Dredging and Dredged Material Disposal." Dredging equipment not listed below shall require submittal of a suitable monitoring schedule to the USACOE for approval prior to equipment mobilization.

Trailing Suction Hopper Dredge (TSHD):

Aquatic Disposal

The Contractor shall provide a means to measure and record vessel heading, drafts, bin levels and slurry velocities in addition to the vessel position. Hull position and heading of the vessel shall be monitored on a 24-hour basis using a Global Positioning System capable of position accuracy less than 6 ft. Sensors

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located fore and aft along the vessel centerline shall monitor vessel draft to an accuracy of +/- 0.1ft. Acoustic sensors located fore and aft along the vessel centerline shall monitor bin level to an accuracy of +/- 0.1ft. Slurry velocity shall be recorded by a magnetic flow / Doppler metering device approved and calibrated according to manufacturer's specifications. Slurry velocity shall be recorded on the discharge side of the dredge pump(s) in feet per second (accurate to 0.1 ft/s).

Position, heading, draft, bin and slurry velocity data shall be monitored at an interval of 10 seconds within 3,000 feet of the placement area and at 2 minute intervals at distances greater than 3,000 feet. Data will be displayed at the same intervals to a helmsman display within the TSHD wheelhouse. The display will include the dredging site, the appropriate placement site, marine sanctuary boundaries, as well as the correct NOS chart. The helmsman display will record electronic operator entries for the designated trip number, vessel identification, fore and aft vessel draft measurements (prior to departure from dredge site) and volume of material loaded. The system will log data internally and be equipped with a means to transfer the recorded data to a server computer for immediate processing and display. The web site shall be password-protected, and programmed with an automated alarm system to notify the Government should leakage or a misplacement of material occur during transit. The Project Manager shall report the incident to USACOE within 12 hours of occurrence.

Information displayed on the Internet will be similar to that displayed for the TSHD helmsman, and will be checked for accuracy and proper sensor operation by the approved third-party subcontractor. In the event the displacement and load capacity monitoring equipment malfunctions during the dredging operation, the Contractor shall immediately notify the Contracting Officer, and an alternative means of measurement shall be performed, as approved by the contracting officer. The use of an alternative measurement system shall not exceed a duration of seventy-two hours after equipment malfunction. If repairs are not accomplished within this period, the TSHD shall be removed from project use until repairs are completed and demonstrated to be fully operational. The Contractor shall be responsible for all costs associated with suspending the use of the TSHD due to monitoring equipment malfunction.

The TSHD operator shall monitor the helmsman display periodically and contact the Contractor Project Manager via phone in the event a loss of draft greater than 2 ft occurs during transit to the placement area.

A USACOE-approved third party subcontractor shall perform frequent Quality Assurance and Quality Control of the data. Equipment maintenance, troubleshooting and calibration shall be conducted by the same third-party subcontractor.

<u>Upland placement</u>

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Monitoring shall occur as directed in the TSHD Seafloor Placement Section. Data recording intervals shall be maintained at a fixed 2-minute interval throughout the dredging cycle.

Clamshell or Excavator Dredge:

Aquatic Material Placement via Tug/Scow

The Contractor shall provide a means to measure and record position, drafts, and bin-levels of each scow loaded by the dredge. Monitoring shall be continuous from initial loading through discharge at the disposal site. Hull position and heading of the scow shall be monitored using an onboard Global Positioning System capable of position accuracy less than 6 ft. Sensors located fore and aft along the vessel centerline shall monitor vessel draft to an accuracy of +/- 0.1 ft. Acoustic sensors located fore and aft along the vessel centerline shall monitor bin level to an accuracy of +/- 0.1ft.

Position, draft and bin levels shall be monitored and recorded at 10-second intervals within 3,000 feet of the placement area and at 2-minute intervals at distances greater than 3,000 feet. Data shall be transmitted wirelessly in real-time at the same intervals to a helmsman display within the wheelhouse of the towing vessel. The display will include the dredging site, the appropriate placement site, marine sanctuary boundaries, as well as the correct NOS chart.

Data recorded on the scow system will be downloaded daily to the third party server through either the helmsman display system or the automated dredge position and tide system. Either system will also record the scow identification, towing vessel identification, fore and aft vessel draft measurements (prior to departure from dredge site) and volume of material loaded. Either system will log data internally and be equipped with a means to transfer the recorded data wirelessly to an off-site server computer.

Data from each previous trip shall be uploaded to a third-party server prior to the start of each new trip. An automated system shall be in place to process and display the data on a USACOE-approved web site. The web site shall be password-protected, and programmed with an automated alarm system to notify the Government and Contractor should leakage or a misplacement of material occur during transit. Determination of leakage and placement information shall be derived from draft sensor data and position information.

Information displayed on the Internet will be similar to that displayed for the helmsman, and will be checked for accuracy and proper sensor operation by the approved third-party subcontractor. In the event the displacement and load capacity monitoring equipment malfunctions during the dredging operation, the Contractor shall immediately notify the Contracting Officer, and an alternative

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means of measurement shall be performed, as approved by the Contracting Officer. The use of an alternative measurement system shall not exceed a duration of seventy-two hours after equipment malfunction. If repairs are not accomplished within this period, the scow or tug shall be removed from project use until repairs are completed and demonstrated to be fully operational.

A USACOE-approved third party subcontractor shall perform frequent Quality Assurance and Quality Control of the data. Equipment maintenance, troubleshooting and calibration shall be conducted by the same third-party subcontractor.

Upland placement via Tug/Scow

Monitoring shall occur as directed in Section "Seafloor Material Placement via Tug/Scow". Data recording intervals shall be maintained at 2 minutes throughout the dredging, transit and discharge cycles.

Hydraulic Cutter-head Dredge:

Dredge monitoring and reporting requirements shall be carried out according to previous paragraphs. Two GPS units shall be incorporated. One GPS antenna shall be located near the pivot point of the suction ladder. The second GPS antenna shall be located at the stern of the dredge. Dimensions of the dredge and GPS antenna locations measured to the nearest 0.5 feet shall be provided to the USACOE.

Slurry velocity shall be recorded by magnetic flow / Doppler metering device approved for use by the USACOE and calibrated according to manufacturer's specifications prior to commencement of work. Slurry velocity shall be recorded on the discharge side of the dredge pump(s) in feet per second (accurate to 0.1 ft/s).

A USACOE-approved third party subcontractor shall perform frequent Quality Assurance and Quality Control of the data. Equipment maintenance, troubleshooting and calibration shall be conducted by the same third-party subcontractor.

Data Download Requirements:

Data File Naming Convention

Data for daily operations beginning at 0000 hours and concluding at 2400 hours shall be encompassed in files formatted with the following naming convention: DjjjYnn.bbb. "jjj" represents the Julian day, "nn represents the abbreviated year, and "bbb" represents the vessel name by a unique 3-character abbreviation. Processed and QA/QC'ed data files shall be made available for download within 8

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hours of collection. Data shall be made available for download in batches via a user-selection of a) starting and ending dates and b) vessel name.

Data Field Descriptions

1) Local time shall be output to the nearest second in military-style 24-hour format. The time data field will occupy 11 characters in an hour-minute-second form so that a typical time entry representing 1 minute and 30 seconds past 4 o'clock PM would appear as:

Time (local hour-minute-second)

16.	01.	30.

2) Horizontal dredging equipment positioning shall be provided in feet in California State Plane (Lambert coordinate) based on North American Datum 1983.

Northing and Easting Format

540000.	1400100.

3) Headings shall be recorded for position in positive degrees only from 0 to 360 degrees and to the nearest whole degree. 0 degrees shall equal true north and with a sign convention so that positive degrees are in a clockwise direction. Headings shall occupy a data field 4 characters long so that a typical entry of 90 degrees due east would be:

Heading (degrees)

0	9	0	.

4) The Government-furnished datum shall be used for all DDLS tide datum. Above datum (positive) tide values shall be entered into the DDLS data file with a positive sign (+) as the first tide data field character, and below datum tide values shall be entered into the DDLS data file with a negative sign (-) as the first tide data field character. DDLS tide data shall occupy a data field 4 characters in length with a typical below datum entry appearing as:

Tide (feet)

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-	1	.	0

5) Draft data will occupy two data fields with 4 characters each so that the DDLS entry would appear as:

Draft (fore and aft, respectively, in feet)

4.7	4.5

6) Hopper and barge bin levels are to be recorded upward positive values from the bottom of the hopper or barge bin. Hopper and barge material levels will occupy 2 data fields that are 4 characters long each. A typical barge or hopper level input would appear as:

Barge or Hopper Level (fore and aft, respectively, in feet)

3.8	3.9

7) Slurry velocity shall be recorded in feet per second in 3 significant digits. A typical velocity value in the output string would occupy a 4 character field and appear as:

Slurry Velocity (feet per second)

1	0	.	0

Output Format Example

A typical data file download from the web site would have the following properties:

File name:
"D214Y05.PS1" (The file would contain a 24-hour record of the 214th day of the year 2005 for the dredge plant with identified by the name "PS1")

Data Contained in the File:
"00. 02. 00. 530100. 1400100. 090. 15.0 1.15 -42.0 16.4 1.19 -41.1 15.5 14.9 12.4 12.9 +2.5"
"00. 04. 00. 530103. 1400104. 090. 15.0 1.14 -42.0 16.3 1.19 -41.1 15.5 14.8 12.3 12.9 +2.5"

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Attachment 2

Dredged Material Disposal Site Log

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DREDGE MATERIAL DISPOSAL SITE LOG

PROJECT: _____ **DISPOSAL SITE:** _____

CONTRACTOR: _____ **EPISODE:** _____

Date	Vessel Name	Scow Number	Episode Load Number	Dredge Site and Channel Reach Number	Time of Disposal	X Easting	Y Northing	Scow Volume at Dredge Site	Scow Volume at Disposal Site	Quantity Dredged (CY)	Running Total Quantity Dredged (CY)

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Attachment 3

Scow Certification Checklist

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SCOW CERTIFICATION CHECKLIST

CHECKLIST ITEM	RECORD DATA To be filled out and signed within 1 hour of departure time in No. 3	INITIALS	
		CONTR-ACTOR	INSP-ECTOR
1. Ocean Disposal Trip Number:			
2. Departure date to SF DODS:			
3. Departure time to SF DODS:			
4. Dredge Name/Area/Reach/Berth:			
5. Tug name:			
6. Tug Captain's name:			
7. Scow name:			
8. 80% bin capacity (cubic meters):			
9. Bin Cubic Meters hauled:			
10. Does the smoothed dredged material load line (including water) exceed the 80% bin capacity line (1):	☐ Yes ☐ No		
11. Scow fore draft avg./aft draft avg.:			
12. Average draft (2):			
13. A-B Line (not to be exceeded)			
14. Bin freeboard of material and/or water surface (3):			
15. NWS Coastal Marine Forecast (4) (out to 60 nm) (report wind, swell and RMS wave heights (5)) Use forecasted wave data to cover the transit route and for the anticip-ated duration of the transit to SF-DODS (or not less than 12 hrs.) Write in appropriate forecast periods (ie. Today, Tonight, Tomorrow)	Date/Time of Report: _____ Swell wave height: Wind wave height: RMS wave height: _____ Swell wave height: Wind wave height: RMS wave height: _____ Swell wave height: Wind wave height: RMS wave height:		
16. NWS Off-shore Waters Forecast (4) California Coast 60 nm - 250 nm offshore Pt. Arena to Pt. Conception Write-in appropriate forecast periods	Date/Time of Report: _____ Seas: Winds: _____ Seas: Winds: _____ Seas: Winds:		
17. NWS Buoy Report (6) *SF Buoy (46026)*	Time of Report: Wave height: Wave period:		
18. NWS Buoy Report (6) *Point Arena Buoy (46014)*	Time of Report: Wave height: Wave period:		

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SCOW CERTIFICATION CHECKLIST

CHECKLIST ITEM	RECORD DATA To be filled out and signed within 1 hour of departure time in No. 3	INITIALS CONTR-ACTOR	 INSP-ECTOR
19. Based on the wave period at SF Buoy of Item 17, and the RMS wave heights (5) of Item 15 above, check-off Items 19A through 19D Yes or No.			
Waves and Periods: A. 3 meters or less, any period:	☐ Yes ☐ No		
B. Greater than 3 meters and less than 5 meters with a period of 9 seconds or more:	☐ Yes ☐ No		
C. Greater than 3 meters and less than 5 meters with a period less than 9 seconds:	☐ Yes ☐ No		
D. Greater than 5 meters with any period:	☐ Yes ☐ No		
20. Scow DDLS functioning:	☐ Yes ☐ No		
21. EPS functioning on tug:	☐ Yes ☐ No		
22. Comments:			

23. Contractor's Signature:	Print Name:	Time/Date:
24. Inspector's Signature:	Print Name:	Time/Date:

25. The decision to proceed to the ocean disposal site based upon all available data including the recordings and calculations on this form, is also subject to the professional judgement of the Tug Captain as to the safety of the crew and vessel.

Tug Captain's Signature Print Name: Time/Date:

(1) If scow haul of dredged material and water, as verified by observation of bin material and waterline, exceeds the 80% binlimit line as painted on the bin, then the scow is not within specifications.

(2) If average draft exceeds the A-B Line limit (Item No. 13), then scow is not wihin specifications.

(3) Scows must be loaded to avoid risk of spillage under the expected sea state conditions. Federal law prohibits any spillage of material during transit to SF-DODS. Violations may result in fines.

(4) Use the most recent NWS Coastal Marine Forecast and Offshore Waters Forecast. Contractor may use radio (VHF WX) data, Navtex printout or internet data, but once a primary source is selected for the duration of the project and approved, an alternate method may only be used as an approved backup when the primary source is unavailable. Inspectors are required to retain hardcopy Navtex printout of NWS forecasts for end-of-year reproting. If Internet data is utilized, thefollowing websites are authorized: Coastal Marine Forecast (http://nimbo.wrh.noaa.gov/Monterey/SFOCWFSFO.html), Offshore 60 NM Forecast (http://nimbo.wrh.noaa.gov/Monterey/NFDOFFPZ6).

(5) RMS wave height is the calculated RMS sum of the predicted swell and wind wave heights which is equal to the square root of the sum of the squares of the swell wave and wind wave heights as follows:

$$\sqrt{((\text{Swell Wave hgt})^2 + (\text{Wind Wave hgt})^2)}$$

If a range of predicted swell wave height and/or wind wave height is given, use the average of the given range to calculate the RMS wave height, so long as the maximum value of any range does not exceed 5 meters.

(6) Use the most recent NWS buoy report. Call 1-228-688-1948 listen to instructions and use the buoy numbers listed in Items 17 and 18.

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WIND WAVE HEIGHTS (FT)

SWELL HEIGHT (FT)	0	1	2	3	4	5	6	7	8	9	10	11	12
	1	1.4	2.2	3.2	4.1	5.1	6.1	7.1	8.1	9.1	10.0	11.0	12.0
	2	2.2	2.8	3.6	4.5	5.4	6.3	7.3	8.2	9.2	10.2	11.2	12.2
	3	3.2	3.6	4.2	5.0	5.8	6.7	7.6	8.5	9.5	10.4	11.4	12.4
	4	4.1	4.5	5.0	5.7	6.4	7.2	8.1	8.9	9.8	10.8	11.7	12.6
	5	5.1	5.4	5.8	6.4	7.1	7.8	8.6	9.4	10.3	11.2	12.1	13.0
	6	6.1	6.3	6.7	7.2	7.8	8.5	9.2	10.0	10.8	11.7	12.5	13.4
	7	7.1	7.3	7.6	8.1	8.6	9.2	9.9	10.6	11.4	12.2	13.0	13.9
	8	8.1	8.2	8.5	8.9	9.4	10.0	10.6	11.3	12.0	12.8	13.6	14.4
	9	9.1	9.2	9.5	9.8	10.3	10.8	11.4	12.0	12.7	13.5	14.2	15.0
	10	10.0	10.2	10.4	10.8	11.2	11.7	12.2	12.8	13.5	14.1	14.9	15.6
	11	11.0	11.2	11.4	11.7	12.1	12.5	13.0	13.6	14.2	14.9	15.6	16.3
	12	12.0	12.2	12.4	12.6	13.0	13.4	13.9	14.4	15.0	15.6	16.3	17.0
	13	13.0	13.2	13..3	13.6	13.9	14.3	14.8	15.3	15.8	16.4	17.0	17.7
	14	14.0	14.1	14.3	14.6	14.9	15.2	15.7	16.1	16.6	17.2	17.8	18.4
	15	15.0	15.1	15.3	15.5	15.8	16.2	16.6	17.0	17.5	18.0	18.6	19.2
	16	16.0	16.1	16.3	16.5	16.8	17.1	17.5	17.9	18.4	18.9	19.4	20.0

CAN TOW REGARDLESS OF WAVE PERIOD AT SF BUOY

CAN TOW IF WAVE PERIOD AT SF BUOY IS GREATER THAN OR EQUAL TO 9 SECONDS

CANNOT TOW REGARDLESS OF WAVE PERIOD

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