Date: April 30, 2026

National Park Service
U.S. Department of the Interior
Grand Canyon National Park
Facility Management & Engineering

Backflow Prevention Assemblies Inspection And Testing

PR# 0044044526

Solicitation #:140P1526Q0089

1 DESCRIPTION OF WORK

This contract encompasses the annual testing and inspection of listed Backflow Prevention Assemblies (assemblies) throughout Grand Canyon National Park (see Attachment 1). The contractor shall conduct testing on all designated backflow prevention assemblies, record results (pass/fail determination), and identify deficiencies.

1.1 LOCATION

The work will be performed park-wide, covering:

- South Rim (accessible year-round)
- North Rim (closed to the public from December 1 to May 15)
- Inner Canyon locations (accessible via foot or helicopter)

1.2 BACKGROUND

Grand Canyon National Park operates a complex water distribution system requiring periodic testing and maintenance of backflow prevention assemblies to comply with regulatory standards. This contract supports the park's water safety program by ensuring all assemblies function correctly to prevent contamination.

2 AWARD

2.1 ANNUAL INSPECTION AND TESTING Inspect, and test Backflow Prevention Assemblies identified in Attachment 1. Provide individual and consolidated reports for each test. Provide a quote for correcting all identified deficiencies.

All reports on inspections must be submitted no later than 5 December 2026.

3 GOVERNMENT FURNISHED EQUIPMENT, MATERIALS, AND SERVICES

3.1 FLIGHT SERVICES

- Helicopter services (two round trips per inspection cycle) to and from inner canyon locations (Phantom Ranch, Havasupai Gardens, Manzanita, Roaring Springs) will be provided at no cost to the contractor for no more than 2 personnel.
- Flights for repairs will be negotiated on a case-by-case basis.
- Flight requests must be made four weeks in advance via Attachment 4.
- Flights may be delayed or canceled with short notice due to weather and priorities for search and rescue or firefighting support.

4 SUBMITTALS

4.1 REQUIRED SUBMITTALS FOR NOTICE TO PROCEED

- Schedule of Values
- Schedule
- Name, dates of qualifications, and certification numbers of certified tester(s)
- Test Report format or form

4.2 REQUIRED SUBMITTALS

- Individual backflow prevention assembly inspection and testing report (digital).
- Hard copy of each inspection report (printed on front and back of page), bound or in a three-ring binder.
- Consolidated testing report (Excel) with compliance summary (pdf).
- Report listing deficiencies, required repairs, and cost estimate.
- Testing equipment calibration certification.

5 ATTACHMENTS

The following attachments are included in the scope by reference.

1. Backflow Prevention Assembly List

2. Cross – Connection Control & Backflow Prevention Program
3. Flight Request Form

6 REQUEST FOR PROPOSAL INSTRUCTIONS

- Provide a detailed methodology for accomplishing, tracking, and reporting the testing and repairs. The procedures shall be in conformance with procedures established by the University of Southern California, Foundation for Cross Connection Control and Hydraulic Research, Manual of Cross Connection Control, 10th Edition and the Arizona Department of Environmental Quality (ADEQ).
- Submit a list of all current state-certified testers with names, dates, and certification numbers.
- Submit a list of no more than three references that include water purveyors.

7 SPECIFICATIONS

7.1 GENERAL

- The contractor shall maintain compliance with OSHA safety standards.
- The contractor shall provide proof of all required licenses and certifications.
- All deviations from these specifications must receive written approval from the CO prior to implementation.
- All annual testing and final testing will be compliant in accordance with applicable national, federal, state, and local codes, regulations, and guidelines.
- The contractor shall ensure all work complies with Arizona Administrative Code (A.A.C.) R18-4-215 regarding backflow prevention and cross-connection control, as enforced by the Arizona Department of Environmental Quality (ADEQ

7.2 INSPECTION AND TESTING

- All backflow prevention assembly testing shall conform to the standards set forth by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research and Arizona Department of Environmental Quality (ADEQ) regulations.
- All testing equipment must be properly calibrated and certified, with documentation provided in submittals.

- Tag all passing assemblies with a testing tag that provides the device serial number, date of the test, tester certification number, company name and contact information, and any additional chemicals.
- Any assembly containing lead must be noted as requiring replacement in order to comply with the Environmental Protection Agency's Lead and Copper Rule Improvements.

7.3 SCHEDULE

- The inspection schedule will reflect accomplishing all inspections within 45 days from the start of inspections.
- No inspections may be scheduled on federal holidays or weekends unless approved by the Contracting Officer's Representative. Submit requests no less than 3 weeks in advance.
- Inspections must occur between the hours of 0700 and 1800; for housing units, the hours shall be 0800 and 1700.

7.4 REPORTING

Provide individual reports for each backflow inspected, two pictures of each backflow inspected, and a consolidated report.

7.4.1 Individual reports

Digital backflow preventor assembly reports shall be submitted individually in pdf format along.

File names to match the Unique ID provided in Attachment 1 and include the date of the inspection in YYYYMMDD format. Example: 81634_02F_20260930.pdf

Grouped reports will not be accepted.

Information on individual reports to match information on the consolidated report.

Required information on the individual reports are:

- Unique ID
- File Number
- Connection Type
- Hazard type
- Manufacturer
- Size
- Model
- Serial number
- Test date
- Test results
- Pressure readings
- Test method
- Test equipment calibration date
- Test equipment serial number
- Corrective action required (if any)
- Name and ID of tester

7.4.2 Photograph requirements

Each inspected assembly requires two photographs to be delivered in jpg format with a size no less than 6 mega pixels.

One photograph to show the device information plate (showing serial number).

One photograph to show the side profile showing its location within the room or outside of a structure.

File names to match the Unique ID provided in Attachment 1 and include the date of the inspection in YYYYMMDD format. Examples: 81634_02F_20260930_1.jpg ; 81634_02F_20260930_2.jpg

7.4.3 Consolidated Report

- The consolidated report shall be submitted in Excel or CSV format. Use Attachment 1 as the format and basis of information required. The contractor is responsible for verifying all information as accurate, updating incorrect information, and completing missing information in each column for the assemblies identified within this contract.
- GPS coordinates (Latitude and Longitude) for the assembly location, projected in NAD 1983 UTM Zone 12N.
- Needed parts and repairs to bring the assembly into compliance if the assembly is out of compliance
- The identified corrective actions must include a description of the necessary repairs or replacements and parts required along with any special conditions or constraints.

7.5 ASSEMBLIES FOR FIRE SUPPRESSION SYSTEMS

Where assemblies serve fire suppression systems, all inspection and testing shall conform to National Fire Protection Association (NFPA) 25 and 72. Where any NFPA standard says "should", the contractor shall take it to mean "shall".

Unique ID	Inventory File #	Area	Building #	Building Name	Address	GPS	Elevation (feet)	Connection Type	Hazard Type	Use Codes	Room	Mfg.	Type	Size (inches)	Model#	Serial #	Install Date
83785_02P	2	South Rim	0323	Elementary School	Boulder St			P/D	Non-Health Hazard		BLDG 100 Boiler Room (Boiler room is located just beyond the back to the restroom.)	Wilkins	RP	0.75	975	131891	Unknown
83782_01P	3	South Rim	0227	Grand Canyon Old School Bldg	Boulder St			P/D	Non-Health Hazard		BLDG 200 Boiler Room						
83974_01P	4	South Rim	1452	Multi-Purpose Building	48 Boulder St			P/D	Non-Health Hazard		BLDG 300-Boiler Room	Wilkins	RP	0.75	975	S63303	Unknown
83974_02F	5	South Rim	1452	Multi-Purpose Building	48 Boulder St			Fire	Non-Health Hazard		BLDG 300 (Sprinkler Room) #306		RP				
83787_01P	6	South Rim	0324	High School	48 Boulder St			P/D	Non-Health Hazard		BLDG 400 Boiler Room #416		RP				
83787_02F	7	South Rim	0324	High School	48 Boulder St			Fire	Non-Health Hazard		BLDG 400 (Sprinkler Room)		RP				
83791_01P	8	South Rim						P/D	Non-Health Hazard		BLDG 500-Boiler Room	Wilkins	RP	0.75	975	122145	Unknown
84325_01F	9	South Rim	0862	School Maintenance Office	Center St			Fire	Non-Health Hazard		BLDG 600 (John Vest Maintenance and Transportation Facility Building) Boiler Room		RP				
83785_01F	1 FIRE	South Rim	0323	Elementary School	Boulder St			Fire	Non-Health Hazard		BLDG 100 (Access door is on the northwest corner of the building facing north. The device is located under the flooring in a crawlspace room.)	Watts	DC	4	770	1912	Unknown
81634_02F	13-2B Fire Main Line	South Rim	1576	NPS Warehouse	New NPS Maintenance Area	36° 1' 59" North, 112° 7' 45" West	6890	Fire	Non-Health Hazard		FMD Warehouse Bldg (Main Line)	Ames	DC	8	2000SS	131494-1202	Unknown
33514_01F	14B	South Rim	0103	Ranger Operations	Center St			Fire	Non-Health Hazard		River Operation	Ames	DC	4	Colt 2000	LL1983	Unknown
34552_08P	39H	South Rim	0444	Clinic	1 Clinic Road			P/D	Non-Health Hazard		Admin, Residence, 15662	Febco	DC	0.75		825YRP	Unknown
35073_01P	23-1B Main Line	South Rim	1516	La Petite	1 North Mohave			P/D	Non-Health Hazard		(KLC) Kaibab Learning Center / Child Care Center	Watts	DC	4	709	170633	Unknown
34552_02P	4-2B Boiler Room North	South Rim	0444	Clinic	1 Clinic Road			P/D	Non-Health Hazard		Boiler Room North	Watts	RP	0.75	009 M3	263727	Unknown
34552_03P	4-3B Boiler Room South	South Rim	0444	Clinic	1 Clinic Road			P/D	Non-Health Hazard		Fire Station #1, Boiler Room, South	Watts	RP	0.75	009 M3	277420	Unknown
225796_03F	25-3B	South Rim	1708	Science and Resource Mgmt Bldg	17 South Entrance Road	36° 3' 21" North, 112° 7' 13" West	6980	Fire	Non-Health Hazard		SRM Science Center - Dutton	Ames	DC	4	Maxim 200	MC0908	Unknown
33683_02F	31-2B FIRE	Desert View	0114	Tusayan Museum	Tusayan Ruins	36° 0' 50" North, 111° 51' 59" West	7200	Fire	Health Hazard		SR / DV - and Ruins Site, Ranger Office Building, Fire Suppression / Utility Room	Watts	DC	1	LF007M-1	194122	7/15/2024
33034_02F	42-2H FIRE	South Rim	0012	Single Family Res	12 Kaibab St	36° 3' 15" North, / 112° 8' 5" West	6950	Fire	Health Hazard		Kaibab 12	Ames	DC	1.25	2000B	13081	Unknown
34552_04F	4-4B FIRE Boiler Room Riser	South Rim	0444	Clinic	1 Clinic Road			Fire	Non-Health Hazard		Fire Station #1, Boiler Room Riser	Ames	DC	4	2000 SSF	2009050302	Unknown
35085_01P	5-1B	South Rim	1524	Maswik Transportation Center/BRO	Maswik Lodge Area	36° 3' 26" North, 112° 8' 35" West	6870	P/D	Non-Health Hazard		Maswik Transportation	Watts	RP	1	LF 009 M2	358441	5/20/2025
35085_02F	5-2B Fire	South Rim	1524	Maswik Transportation Center/BRO	Maswik Lodge Area			Fire	Non-Health Hazard		Maswik Transportation	Ames	RP	4	4000 SS	108470	Unknown
36340_03F	77-3H FIRE	South Rim	0024B	Duplex	1B Tonto St			Fire	Health Hazard		Tonto 1A	Watts	DC	1	077M1-QT	479995	Unknown
33007_02F	79-2H FIRE	South Rim	0007A	Garage & Shed	Tonto St	36° 3' 16" North, / 112° 7' 56" West	6950	Fire	Health Hazard		Tonto 9A	Watts	DC	0.75	007M3 QT	B06786	Unknown
35147_01F	85-1H FIRE Bypass	Desert View	1712	Eight-Plex Housing Unit	Desert View	36° 3' 16" North, / 112° 8' 18" West	6890	Fire	Health Hazard		DV Nankoweap (Bypass)	Ames	DC	0.75	Flowmatic DCVE	A2504	Unknown
33515_01P	8B	South Rim	0105	Visitor Center	South Entrance Rd	36° 3' 18" North, 111° 8' 19" West	6880	P/D	Non-Health Hazard		Federal Magistrate Court Center, Boiler Room	Wilkins	RP	1.5	Z975XL2	W419314	9/12/2023
34433_01P	9B	Desert View	0295	Ranger Station	Desert View	36° 2' 7" North, 111° 49' 49" West	7450	P/D	Non-Health Hazard		DV, GRCA East Park Entrance	Watts	RP	1	LF 009 M2	358440	5/19/2025
81635_01P	10-1B Main Line	South Rim	1577	NPS Vehicle Maintenance Building	New NPS Maintenance Area	36° 2' 2" North, 112° 7' 43" West	6890	P/D	Non-Health Hazard		FMD Auto Shop Bldg.	Watts	RP	1.25	LF 009 M2	43110	5/20/2025
81635_02P	10-2B Supply Line	South Rim	1577	NPS Vehicle Maintenance Building	New NPS Maintenance Area	36° 2' 2" North, 112° 7' 43" West	6890	P/D	Non-Health Hazard		FMD Auto Shop Bldg.	Wilkins	RP	0.75	975 XL2	ABT8565	6/15/2024
81635_03P	10-3B Glycol Tank	South Rim	1577	NPS Vehicle Maintenance Building	New NPS Maintenance Area	36° 2' 2" North, 112° 7' 43" West	6890	P/D	Health Hazard		FMD Auto Shop Bldg. System (Glycol) Make-Up Water / Mixing - Dosing Tank	Watts	RP	1.5	LF 009 QT	436223	5/19/2025
81635_04P	10-4B Washer	South Rim	1577	NPS Vehicle Maintenance Building	New NPS Maintenance Area	36° 2' 1" North, 112° 7' 43" West	6890	P/D	Non-Health Hazard		FMD Auto Shop Bldg.	Wilkins	RP	0.75	975 XL2	ABS3869	05/19/2025

81635_05P	10-5B Wash Bay	South Rim	1577	NPS Vehicle Maintenance Building	New NPS Maintenance Area	36° 2' 2" North, 112° 7' 44" West	6890	P/D	Non-Health Hazard		FMD Auto Shop Bldg., Wash Bay	Wilkins	RP	0.75	975 XL2	ABT8564	12/17/2024
35147_02F	85-2H FIRE Main	Desert View	1712	Eight-Plex Housing Unit	Desert View			Fire	Health Hazard		DV Nankoweap (Main)	Ames	DC	2.5	Colt 300 DCVE	DC-0820	Unknown
33167_01F	89H FIRE	South Rim	0050	Single Family Res	54 Juniper Hill	36° 3' 13" North, / 112° 8' 4" West	6950	Fire	Health Hazard		Juniper Hill 54	Ames	DC	1.25	2000 DC	013079	Unknown
33879_01F	90H FIRE	South Rim	0163	Single Family Res	60 Juniper Hill	36° 3' 13" North, / 112° 8' 6" West	6970	Fire	Health Hazard		Juniper Hill 60	Ames	DC	1.25	2000B	013078	Unknown
81633_03P	11-3B Boiler	South Rim	1575	NPS Shops/Office Building	New NPS Maintenance Area	36° 1' 59" North, 112° 7' 43" West	6840	P/D	Health Hazard		FMD Main Bldg. Mech. / Boiler Room #122A, Bldg. System (Glycol) Make-Up Water / Heated Water - Boilers 1 and 2 System, "Bottom Assembly"	Watts	RP	1	LF 009 M2-QT-FS	279247	12/17/2024
81633_04N	11-4B Main Line	South Rim	1575	NPS Shops/Office Building	New NPS Maintenance Area	36° 1' 59" North, 112° 7' 43" West	6890		Non-Health Hazard		FMD Custodial Room #112 - Bldg.	Watts	RP	1.5	LF 009 M2-QT	137622	12/17/2024
87774_02F	91-2H FIRE	South Rim	1580	101-108 Paiute St (Eight Plex), South Rim		36° 2' 56" North, / 112° 8' 6" West	6950	Fire	Health Hazard		Paiute Bldg 100	Ames	DC	2.5	Colt 200	LD-0353	Unknown
87775_02F	92-2H FIRE	South Rim	1581	201-208Paiute St (Eight Plex), South Rim		36° 2' 56" North, / 112° 8' 4" West	6950	Fire	Health Hazard		Paiute Bldg 200	Ames	DC	2.5	Colt 200	LD-0379	Unknown
81636_01P	12-1B	South Rim	1578	NPS Enclosed Vehicle Storage	New NPS Maintenance Area	36° 1' 58" North, 112° 7' 43" West	6890	P/D	Health Hazard		FMD Covered Storage Bldg. (Glycol) makeup tank in the next room.	Watts	RP	1.5	LF 009 M2-QT	457725	05/20/2025
87776_02F	93-2H FIRE	South Rim	1582	301-308 Paiute St (Eight Plex), South Rim		36° 2' 56" North, / 112° 8' 3" West	6960	Fire	Health Hazard		Paiute Bldg 300	Ames	DC	2.5	Colt 200	KJ-1663	Unknown
87777_02F	94-2H FIRE	South Rim	1583	401-408 Paiute St (Eight Plex), South Rim		36° 2' 55" North, / 112° 8' 1" West	6960	Fire	Health Hazard		Paiute Bldg 400	Ames	DC	2.5	Colt 200	LB-0589	Unknown
81634_01P	13-1B Main Line	South Rim	1576	NPS Warehouse	New NPS Maintenance Area	36° 1' 59" North, 112° 7' 45" West	6890	P/D	Non-Health Hazard		FMD Warehouse Bldg.	Watts	RP	1.25	LF 009 M2	33737	05/20/2025
87778_02F	95-2H FIRE	South Rim	1584	501-508 Paiute St (Eight Plex), South Rim		36° 2' 54" North, / 112° 8' 1" West	6960	Fire	Health Hazard		Paiute Bldg 500	Ames	DC	2.5	Colt 200	LB-0593	Unknown
81634_03F	13-3B Fire Pump	South Rim	1576	NPS Warehouse	New NPS Maintenance Area	36° 1' 59" North, 112° 7' 45" West	6890	Fire	Non-Health Hazard		FMD Warehouse Bldg. (Fire Pump)	Watts	RP	1	LF 009 M2-QT	344062	05/20/2025
87780_02F	96-2H FIRE	South Rim	1585	601-608 Paiute St (Eight Plex), South Rim		36° 2' 54" North, / 112° 8' 1" West	6960	Fire	Health Hazard		Paiute Bldg 600	Ames	DC	2.5	Colt 200	LA-2616	Unknown
235188_02F	97-2H FIRE	South Rim	1586	701-708 Paiute St (Eight Plex), South Rim		36° 2' 56" North, / 112° 8' 4" West	6950	Fire	Health Hazard		Paiute Bldg 700	Ames	DC	2.5	Colt 200	LA-2614	Unknown
235189_02F	98-2H FIRE	South Rim	1587	801-808 Paiute St (Eight Plex), South Rim		36° 2' 55" North, / 112° 8' 8" West	6940	Fire	Health Hazard		Paiute Bldg 800	Ames	DC	2.5	Colt 200	LC-0021	Unknown
34552_06F	4-6B FIRE Mech Room	South Rim	0444	Clinic	1 Clinic Road			Fire	Non-Health Hazard		Fire Station #1 Engine Bay - Mech Room	Wilkins	DC	4	350	J14447	Unknown
33515_02P	17B	South Rim	0105	Visitor Center	South Entrance Rd	36° 3' 18" North, 112° 7' 20" West	6970	P/D	Non-Health Hazard		GRCA Headquarters Bldg. Boiler Room (Northside Downstairs Outside)	Wilkins	RP	TBD	975 XL2	3749280	Unknown
34552_07P	4-7B Boiler Room East	South Rim	0444	Clinic	1 Clinic Road			P/D	Health Hazard		Fire Station #1 / GRCA Medical, Boiler Room East Wall / Main Water Line & Service Shut Valve		RP				
34433_02P	19B	Desert View	0295	Ranger Station	Desert View	36° 2' 35" North, 111° 49' 32" West	7470	P/D	Non-Health Hazard		DV, Tribal Welcome Center, Mechanical Room	Watts	RP	1.25	LF 009M2 QT	32103	12/8/2023
33514_02F	20B	South Rim	0103	Ranger Operations	Center St			Fire	Non-Health Hazard		Rangers Operation	Ames	DC	3	Maxim 200	EL1717	Unknown
	4-8B Boiler Room East	South Rim	0444	Clinic	1 Clinic Road			P/D	Health Hazard		Feeds dormitory. Fire Station #1 / GRCA Medical, Boiler Room East Wall / Main Water Line & Service Shut Valve		RP				
33681_01F	36B FIRE	North Rim	0111		1502 Administrative Offices			Fire	Non-Health Hazard								De-scoped from the CY-2025 Testing due to the Dragon Bravo Fire
33681_03P	101H	North Rim	0111	Trail Crew Bunkhouse	111 Admin. Loop Road	36° 12' 52" North, 112° 3' 43" West	8380	P/D	Non-Health Hazard		(Down hill to the southwest, on the northside of the road)	Febco	DC	8	850	F0303140730	Unknown
232907_01P	22-4B	South Rim	2027	Restroom, CVIP Commercial Bus Parking	Canyon View Information Plaza	36° 3' 31" North, 112° 6' 35" West	7050	P/D	Non-Health Hazard		GCVC, Contract Busing Parking Lot - Restroom Facilities	Watts	RP	1	LF 009 M2	358449	5/29/2025
35249_01P	22-5B East R/R	South Rim	2019	Comfort Station	Canyon View Information Plaza	36° 3' 32" North, 112° 6' 30" West	7090	P/D	Non-Health Hazard		GCVC, Kaibab (East) Restroom Facilities Bldg.	Watts	RP	1.5	LF 009 M2	143305	05/29/2025
35249_02P	22-6B West R/R	South Rim	2019	Comfort Station	Canyon View Information Plaza	36° 3' 31" North, 112° 6' 35" West	7050	P/D	Non-Health Hazard		GCVC, Kaibab (West) Restroom Facilities Bldg.	Watts	RP	1.5	LF 009 M2	144078	05/30/2025
35073_02P	23-2B	South Rim	1516	La Petite	1 North Mohave			P/D	Non-Health Hazard		(KLC) Kaibab Learning Center / Child Care Center, Boiler Room	Wilkins	RP	1.5	975 XL2	CFB2736	11/27/2023
83870_01P	24-1B	South Rim	0546	Visitor Contact Verkamps				P/D	Non-Health Hazard		Verkamps Visitor Center, Grand Canyon Conservatory, Boiler Room	Wilkins	RP	1.5	975 XL2	CFB2003	11/27/2023

225796_01P	25-1B	South Rim	1708	Science and Resource Mgmt Bldg	17 South Entrance Road	36° 3' 30" North, 112° 7' 13" West	6990	P/D	Non-Health Hazard		SRM Science Center - Dutton - Main Water Line	Wilkins	RP	1.5	975 XL2	3648962	Unknown
225796_02P	25-2B	South Rim	1708	Science and Resource Mgmt Bldg	17 South Entrance Road	36° 3' 30" North, 112° 7' 13" West	6990	P/D	Non-Health Hazard		SRM Science Center - Dutton - Men's Room / Janitorial Closet	Wilkins	RP	1	975 XL2	3652939	Unknown
35108_01P	26-1B	South Rim	1543	Engine Bay	Shuttle Bus Road			P/D	Non-Health Hazard		Wildland Fire Heliack Base Complex - Shop, Boiler Room	Wilkins	RP	1.5	975XL2	W437626	7/15/2024
35110_01P	27-1B	South Rim	1544	Helicopter Hangar	Shuttle Bus Road			P/D	Non-Health Hazard		Wildland Fire Heliack Base Complex - Helicopter Bay, Boiler Room	Wilkins	RP	1.5	975XL2	CFB 7614	7/15/2024
35113_01P	107-1H	North Rim	1546	Four-Plex Housing Unit	A Cliffrose Court	36° 12' 53" North, 112° 3' 47" West	8350	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	380866	08/15/2024
34119_01P	28-1B	South Rim	0273	Wildland Fire Office	YAKK Camp			P/D	Non-Health Hazard		Wildland Fire Heliack Base Complex - Fire Management Office, Boiler Room	Wilkins	RP	1.5	975XL2	CFB 5183	7/15/2024
35113_02F	107-2H FIRE	North Rim	1546	Four-Plex Housing Unit	A Cliffrose Court	36° 12' 53" North, 112° 3' 47" West	8350	Fire	Health Hazard		Utility Room		RP	1			
35113_03P	108-1H	North Rim	1546	Four-Plex Housing Unit	B Cliffrose Court	36° 12' 48" North, 112° 3' 46" West	8340	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	413107	08/12/2024
35113_04F	108-2H FIRE	North Rim	1546	Four-Plex Housing Unit	B Cliffrose Court	36° 12' 48" North, 112° 3' 46" West	8340	Fire	Health Hazard		Utility Room		RP	1			
33429_01P	30B	South Rim	0100	Grand Canyon Association	4 Tonto Street	36° 3' 19" North, / 112° 8' 13" West	6910	P/D	Health Hazard		Grand Canyon Conservatory Main Office, Crawl space behind green door	Febco	RP	0.75	LF 825Y	J015714	5/22/2025
35113_05P	109-1H	North Rim	1546	Four-Plex Housing Unit	C Cliffrose Court	36° 12' 48" North, 112° 3' 45" West	8320	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	413090	08/13/2024
35113_06F	109-2H FIRE	North Rim	1546	Four-Plex Housing Unit	C Cliffrose Court	36° 12' 48" North, 112° 3' 45" West	8320	Fire	Health Hazard		Utility Room, Utility Room		RP	1			
35113_07P	110-1H	North Rim	1546	Four-Plex Housing Unit	D Cliffrose Court	36° 12' 48" North, 112° 3' 46" West	8340	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	380842	08/12/2024
35113_08F	110-2H FIRE	North Rim	1546	Four-Plex Housing Unit	D Cliffrose Court	36° 12' 48" North, 112° 3' 46" West	8340	Fire	Health Hazard		Utility Room		RP	1			
35114_01P	111-1H	North Rim	1547	Eight-Plex Housing Unit	A Cliffrose Court	36° 12' 49" North, 112° 3' 44" West	8350	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	413101	08/14/2024
35114_02F	111-2H FIRE	North Rim	1547	Eight-Plex Housing Unit	A Cliffrose Court	36° 12' 49" North, 112° 3' 44" West	8350	Fire	Health Hazard		Utility Room		RP	1			
35114_03P	112-1H	North Rim	1547	Eight-Plex Housing Unit	B Cliffrose Court	36° 12' 48" North, 112° 3' 43" West	8350	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	375313	08/14/2024
35114_04F	112-2H FIRE	North Rim	1547	Eight-Plex Housing Unit	B Cliffrose Court	36° 12' 48" North, 112° 3' 43" West	8350	Fire	Health Hazard		Utility Room		RP	1			
35114_05P	113-1H	North Rim	1547	Eight-Plex Housing Unit	C Cliffrose Court	36° 12' 49" North, 112° 3' 44" West	8350	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	380854	08/14/2024
35114_06F	113-2H FIRE	North Rim	1547	Eight-Plex Housing Unit	C Cliffrose Court	36° 12' 49" North, 112° 3' 44" West	8350	Fire	Health Hazard		Utility Room		RP	1			
35114_07P	114-1H	North Rim	1547	Eight-Plex Housing Unit	D Cliffrose Court	36° 12' 49" North, 112° 3' 45" West	8350	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	419015	08/14/2024
33156_02F	7-2B FIRE	South Rim	0044	Community Building	Village Loop			Fire	Non-Health Hazard		Community Bldg. Grand Canyon Conservatory, Boiler Room		RP	4			
35073_03F	23-3B FIRE	South Rim	1516	La Petite	1 North Mohave			Fire	Non-Health Hazard		(KLC) Kaibab Learning Center		RP				
83870_02F	24-2B FIRE	South Rim	0546	Visitor Contact Verkamps				Fire	Health Hazard		Verkamps Visitor Center, Grand Canyon Conservatory Room		RP				
35108_02F	26-2B FIRE	South Rim	1543	Engine Bay	Shuttle Bus Road			Fire	Health Hazard		Wildland Fire Heliack Base Complex - Shop, Upstairs	Wilkins	RP	2.5	375	L06848	Unknown
35156_01P	3-1H	South Rim	1601	Single Family Res	1601 Barry Hance Cir	36° 2' 60" North, / 112° 7' 27" West	6970	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	457757	6/2/2025
35110_02F	27-2B FIRE	South Rim	1544	Helicopter Hangar	Shuttle Bus Road			Fire	Health Hazard		Wildland Fire Heliack Base Complex - Helicopter Bay, Upstairs	Wilkins	RP	2.5	375	LL11685	Unknown
35157_01P	4-1H	South Rim	1602	Single Family Res	1602 Barry Hance Cir	36° 2' 59" North, / 112° 7' 28" West	6970	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009	391331	10/25/2023
34119_02F	28-2B FIRE	South Rim	0273	Wildland Fire Office	YAKK Camp			Fire	Health Hazard		Wildland Fire Heliack Base Complex - Fire Management Office, Boiler Room	Watts	RP	3	909	1575801	Unknown
35158_01P	5-1H	South Rim	1603	Single Family Res	1603 Barry Hance Cir	36° 2' 58" North, / 112° 7' 26" West	6970	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	462719	6/2/2025
34980_01F	32B	Havasupai Gardens	1462	Laundry/First Aid/SAR Cache	Havasupai Gardens	36° 4' 32" North, 112° 7' 47" West	3870	Fire	Health Hazard		TCWL - HG PSAR Clinic Laundry	Watts	RP	1.5	LF009 M2	126535	Unknown
35159_01P	6-1H	South Rim	1604	Single Family Res	1604 Barry Hance Cir	36° 2' 58" North, / 112° 7' 28" West	6950	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	461103	6/2/2025

84298_02F	1-2H FIRE	South Rim	0844	Garage	Boulder Alley	36° 3' 13" North, 112° 8' 18" West	6910	Fire	Health Hazard		Apache 1		RP	1			
35160_01P	7-1H	South Rim	1605	Single Family Res	1605 Barry Hance Cir	36° 2' 57" North, / 112° 7' 26" West	6980	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	461088	6/2/2025
34617_02F	2-2H FIRE	South Rim	0809	Single Family Res	4 Apache St	36° 3' 15" North, 112° 8' 19" West	6900	Fire	Health Hazard		Apache 4		RP	1			
35161_01P	8-1H	South Rim	1606	Single Family Res	1606 Barry Hance Cir	36° 2' 57" North, / 112° 7' 28" West	6960	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	461097	6/2/2025
35156_02F	3-2H FIRE	South Rim	1601	Single Family Res	1601 Barry Hance Cir	36° 2' 59" North, / 112° 7' 26" West	6970	Fire	Health Hazard		Barry Hance		RP	1			
35162_01P	9-1H	South Rim	1607	Single Family Res	1607 Barry Hance Cir	36° 2' 56" North, / 112° 7' 25" West	6980	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009	391313	10/25/2023
35157_02F	4-2H FIRE	South Rim	1602	Single Family Res	1602 Barry Hance Cir	36° 2' 59" North, / 112° 7' 28" West	6970	Fire	Health Hazard		Barry Hance		RP	1			
35163_01P	10-1H	South Rim	1608	Single Family Res	1608 Barry Hance Cir	36° 2' 56" North, / 112° 7' 28" West	6980	P/D	Non-Health Hazard		Barry Hance	Wilkins	RP	1.5	975 XL2	W481736	Unknown
35158_02F	5-2H FIRE	South Rim	1603	Single Family Res	1603 Barry Hance Cir	36° 2' 58" North, / 112° 7' 26" West	6970	Fire	Health Hazard		Barry Hance		RP	1			
35159_02F	6-2H FIRE	South Rim	1604	Single Family Res	1604 Barry Hance Cir	36° 2' 58" North, / 112° 7' 28" West	6990	Fire	Health Hazard		Barry Hance		RP	1			
35160_02F	7-2H FIRE	South Rim	1605	Single Family Res	1605 Barry Hance Cir	36° 2' 57" North, / 112° 7' 26" West	6970	Fire	Health Hazard		Barry Hance		RP	1			
35165_01P	12-1H	South Rim	1610	Single Family Res	1610 Barry Hance Cir	36° 2' 55" North, / 112° 7' 27" West	6980	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	461132	6/2/2025
35161_02F	8-2H FIRE	South Rim	1606	Single Family Res	1606 Barry Hance Cir	36° 2' 57" North, / 112° 7' 28" West	6970	Fire	Health Hazard		Barry Hance		RP	1			
35166_01P	13-1H	South Rim	1611	Single Family Res	1611 Barry Hance Cir	36° 2' 54" North, / 112° 7' 25" West	6960	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	462839	6/2/2025
35162_02F	9-2H FIRE	South Rim	1607	Single Family Res	1607 Barry Hance Cir	36° 2' 56" North, / 112° 7' 25" West	6980	Fire	Health Hazard		Barry Hance		RP	1			
35167_01P	14-1H	South Rim	1612	Single Family Res	1612 Barry Hance Cir	36° 2' 54" North, / 112° 7' 27" West	6980	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009	391314	10/25/2023
35163_02F	10-2H FIRE	South Rim	1608	Single Family Res	1608 Barry Hance Cir	36° 2' 56" North, / 112° 7' 28" West	6980	Fire	Health Hazard		Barry Hance		RP	1			
35168_01P	15-1H	South Rim	1613	Single Family Res	1613 Barry Hance Cir	36° 2' 53" North, / 112° 7' 26" West	6970	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	462732	6/2/2025
35164_02F	11-2H FIRE	South Rim	1609	Single Family Res	1609 Barry Hance Cir	36° 2' 55" North, / 112° 7' 25" West	6960	Fire	Health Hazard		Barry Hance		RP	1			
35165_02F	12-2H FIRE	South Rim	1610	Single Family Res	1610 Barry Hance Cir	36° 2' 55" North, / 112° 7' 27" West	6990	Fire	Health Hazard		Barry Hance		RP	1			
35166_02F	13-2H FIRE	South Rim	1611	Single Family Res	1611 Barry Hance Cir	36° 2' 54" North, / 112° 7' 25" West	6970	Fire	Health Hazard		Barry Hance		RP	1			
35170_01P	17-1H	South Rim	1615	Single Family Res	1615 Barry Hance Cir	36° 2' 53" North, / 112° 7' 27" West	6980	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	461089	6/2/2025
35167_02F	14-2H FIRE	South Rim	1612	Single Family Res	1612 Barry Hance Cir	36° 2' 54" North, / 112° 7' 27" West	6980	Fire	Health Hazard		Barry Hance		RP	1			
35171_01P	18-1H	South Rim	1616	Single Family Res	1616 Barry Hance Cir	36° 2' 54" North, / 112° 7' 30' West	6990	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	391663	10/25/2023

35168_02F	15-2H FIRE	South Rim	1613	Single Family Res	1613 Barry Hance Cir	36° 2' 53" North, / 112° 7' 25" West	6980	Fire	Health Hazard		Barry Hance		RP	1			
35172_01P	19-1H	South Rim	1617	Single Family Res	1617 Barry Hance Cir	36° 2' 53" North, / 112° 7' 31' West	6980	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	462726	6/2/2025
35169_02F	16-2H FIRE	South Rim	1614	Single Family Res	1614 Barry Hance Cir	36° 2' 54" North, / 112° 7' 29" West	6990	Fire	Health Hazard		Barry Hance		RP	1			
35173_01P	20-1H	South Rim	1618	Single Family Res	1618 Barry Hance Cir	36° 2' 55" North, / 112° 7' 31' West	6980	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	461102	6/3/2025
35170_02F	17-2H FIRE	South Rim	1615	Single Family Res	1615 Barry Hance Cir	36° 2' 53" North, / 112° 7' 27" West	6990	Fire	Health Hazard		Barry Hance		RP	1			
35174_01P	21-1H	South Rim	1619	Single Family Res	1619 Barry Hance Cir	36° 2' 54" North, / 112° 7' 32' West	6980	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	386106	10/25/2023
35171_02F	18-2H FIRE	South Rim	1616	Single Family Res	1616 Barry Hance Cir	36° 2' 54" North, / 112° 7' 30' West	6990	Fire	Health Hazard		Barry Hance		RP	1			
35175_01P	22-1H	South Rim	1620	Single Family Res	1620 Barry Hance Cir	36° 2' 56" North, / 112° 7' 33' West	6990	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	462814	6/3/2025
35172_02F	19-2H FIRE	South Rim	1617	Single Family Res	1617 Barry Hance Cir	36° 2' 53" North, / 112° 7' 31' West	6990	Fire	Health Hazard		Barry Hance		RP	1			
35176_01P	23-1H	South Rim	1621	Single Family Res	1621 Barry Hance Cir	36° 2' 55" North, / 112° 7' 32' West	6990	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	460565	6/3/2025
35173_02F	20-2H FIRE	South Rim	1618	Single Family Res	1618 Barry Hance Cir	36° 2' 55" North, / 112° 7' 31' West	6980	Fire	Health Hazard		Barry Hance		RP	1			
35237_01P	24-1H	South Rim	1622	Single Family Res	1622 Barry Hance Cir	36° 2' 58" North, / 112° 7' 30' West	6990	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	391335	10/25/2023
35174_02F	21-2H FIRE	South Rim	1619	Single Family Res	1619 Barry Hance Cir	36° 2' 54" North, / 112° 7' 32' West	6980	Fire	Health Hazard		Barry Hance		RP	1			
35238_01P	25-1H	South Rim	1623	Single Family Res	1623 Barry Hance Cir	36° 2' 57" North, / 112° 7' 32' West	6990	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	391665	10/25/2023
35175_02F	22-2H FIRE	South Rim	1620	Single Family Res	1620 Barry Hance Cir	36° 2' 56" North, / 112° 7' 30' West	6980	Fire	Health Hazard		Barry Hance		RP	1			
35240_01P	26-1H	South Rim	1624	Single Family Res	1624 Barry Hance Cir	36° 2' 59" North, / 112° 7' 30' West	6960	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	462811	6/3/2025
35176_02F	23-2H FIRE	South Rim	1621	Single Family Res	1621 Barry Hance Cir	36° 2' 55" North, / 112° 7' 32' West	6980	Fire	Health Hazard		Barry Hance		RP	1			
35241_01P	27-1H	South Rim	1626	Single Family Residence	1626 Barry Hance Cir	36° 2' 60" North, / 112° 7' 31' West	6960	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	457733	6/3/2025
35237_02F	24-2H FIRE	South Rim	1622	Single Family Res	1622 Barry Hance Cir	36° 2' 58" North, / 112° 7' 30' West	6990	Fire	Health Hazard		Barry Hance		RP	1			
34736_01P	28-1H	South Rim	1225	Single Family Res	1225 Bob Mahn St	36° 2' 45" North, / 112° 7' 32' West	6970	P/D	Non-Health Hazard		Bob Mahn	Watts	RP	1.5	LF 009 QT	457724	6/3/2025
35238_02F	25-2H FIRE	South Rim	1623	Single Family Res	1623 Barry Hance Cir	36° 2' 57" North, / 112° 7' 32' West	6990	Fire	Health Hazard		Barry Hance		RP	1			
68641_01P	29H	South Rim	1227	Single Family Res	1227 Bob Mahn St			P/D	Non-Health Hazard		Bob Mahn						
68637_01P	30-1H	South Rim	1228	Single Family Res	1228 Bob Mahn St	36° 2' 45" North, / 112° 7' 30' West	6980	P/D	Non-Health Hazard		Bob M+B456:B463ahn	Watts	RP	1.5	LF 009 QT	460563	6/3/2025
35240_02F	26-2 H FIRE	South Rim	1624	Single Family Res	1624 Barry Hance Cir	36° 2' 59" North, / 112° 7' 30' West	6990	Fire	Health Hazard		Barry Hance		RP	1			
34741_01P	31-1H	South Rim	1299	Duplex	95 A/B Havasupai	36° 2' 47" North, / 112° 7' 32' West	6960	P/D	Non-Health Hazard		Bob Mahn 1229	Watts	RP	1.5	LF 009 QT	391291	10/25/2023
35241_02F	27-2H FIRE	South Rim	1626	Single Family Residence	1626 Barry Hance Cir	36° 2' 60" North, / 112° 7' 31' West	6990	Fire	Health Hazard		Barry Hance		RP	1			
34743_01P	32-1H	South Rim	1231	Single Family Res	1231 Bob Mahn St	36° 2' 48" North, / 112° 7' 32' West	6990	P/D	Non-Health Hazard		Bob Mahn	Watts	RP	1.5	LF 009 QT	461095	6/3/2025
34736_02F	28-2H FIRE	South Rim	1225	Single Family Res	1225 Bob Mahn St	36° 2' 45" North, / 112° 7' 32' West	6970	Fire	Health Hazard		Bob Mahn		RP	1			
34747_01P	33-1H	South Rim	1232	Single Family Res	1232 Bob Mahn St	36° 2' 47" North, / 112° 7' 30' West	6970	P/D	Non-Health Hazard		Bob Mahn	Watts	RP	1.5	LF 009 QT	462721	6/3/2025
68637_02F	30-2H FIRE	South Rim	1228	Single Family Res	1228 Bob Mahn St	36° 2' 45" North, / 112° 7' 30' West	6980	Fire	Health Hazard		Bob Mahn		RP	1			
34748_01P	34-1H	South Rim	1233	Single Family Res	1233 Bob Mahn St	36° 2' 49" North, / 112° 7' 31' West	6960	P/D	Non-Health Hazard		Bob Mahn	Watts	RP	1.5	LF 009 QT	391661	10/26/2023
34741_02F	31-2H FIRE	South Rim	1299	Duplex	95 A/B Havasupai	36° 2' 47" North, / 112° 7' 32' West	6960	Fire	Health Hazard		Bob Mahn 1229		RP	1			
34749_01P	35-1H	South Rim	1234	Single Family Res	1234 Bob Mahn St	36° 2' 48" North, / 112° 7' 29' West	6980	P/D	Non-Health Hazard		Bob Mahn	Watts	RP	1.5	LF 009 QT	391293	10/26/2023

34743_02F	32-2H FIRE	South Rim	1231	Single Family Res	1231 Bob Mahn St	36° 2' 48" North, / 112° 7' 31' West	6970	Fire	Health Hazard		Bob Mahn		RP	1			
34751_01P	36H	South Rim	1235	Single Family Res	1235 Bob Mahn St			P/D	Non-Health Hazard		Bob Mahn	Watts	RP	1.5	9	32835	
34747_02F	33-2H FIRE	South Rim	1232	Single Family Res	1232 Bob Mahn St	36° 2' 48" North, / 112° 7' 30' West	6970	Fire	Health Hazard		Bob Mahn		RP	1			
34748_02F	34-2H FIRE	South Rim	1233	Single Family Res	1233 Bob Mahn St	36° 2' 49" North, / 112° 7' 31' West	6960	Fire	Health Hazard		Bob Mahn		RP	1			
34756_01P	38-1H	South Rim	1237	Single Family Res	1237 Bob Mahn St	36° 2' 51" North, / 112° 7' 30' West	6980	P/D	Non-Health Hazard		Bob Mahn	Watts	RP	1.5	LF 009 QT	460567	6/3/2025
34749_02F	35-2H FIRE	South Rim	1234	Single Family Res	1234 Bob Mahn St	36° 2' 48" North, / 112° 7' 29' West	6980	Fire	Health Hazard		Bob Mahn		RP	1			
34755_01P	37-1H	South Rim	1236	Single Family Res	1236 Bob Mahn St	36° 2' 50" North, / 112° 7' 29' West	6980	P/D	Non-Health Hazard		Bob Mahn	Watts	RP	1.5	LF 009 QT	461093	6/3/2025
87766_01P	40-1H	Desert View	1701	Eight-Plex Housing Unit	Desert View	36° 2' 11" North, / 111° 49' 30" West	7480	P/D	Non-Health Hazard		DV Cedar Mountain (Main)	Wilkins	RP	2	975 XL2	AC09066	11/2/2023
34755_02F	37-2H FIRE	South Rim	1236	Single Family Res	1236 Bob Mahn St	36° 2' 50" North, / 112° 7' 29' West	6970	Fire	Health Hazard		Bob Mahn		RP	1			
34689_01P	41-1H	South Rim	1140	Single Family Residence	50 Juniper Hill	36° 3' 13" North, / 112° 8' 6" West	6950	P/D	Non-Health Hazard		Juniper 50	Watts	RP	1.5	LF 009 QT	460560	6/4/2025
34756_02F	38-2H FIRE	South Rim	1237	Single Family Res	1237 Bob Mahn St	36° 2' 48" North, / 112° 7' 29' West	6980	Fire	Health Hazard		Bob Mahn		RP	1			
33034_01P	42-1H	South Rim	0012	Single Family Res	12 Kaibab St	36° 3' 15" North, / 112° 8' 5" West	6950	P/D	Non-Health Hazard		Kaibab 12	Watts	RP	1.5	LF 009 QT	70932	Unknown
34689_02F	41-2H FIRE	South Rim	1140	Single Family Residence	50 Juniper Hill	36° 3' 13" North, / 112° 8' 6" West	6950	Fire	Health Hazard		Juniper 50		RP	1			
33037_01P	43-1H	South Rim	0013	Single Family Res	13 Kaibab St	36° 3' 15" North, / 112° 8' 5" West	6950	P/D	Non-Health Hazard		Kaibab 13	Watts	RP	1.5	LF 009 QT	386107	10/26/2023
33037_02F	43-2H FIRE	South Rim	0013	Single Family Res	13 Kaibab St	36° 2' 48" North, / 112° 7' 29' West	6980	Fire	Health Hazard		Kaibab 13		RP	1			
36048_01P	44H	South Rim	0017	Single Family Res	17 Kaibab St			P/D	Non-Health Hazard		Kaibab 17		RP	1.5			
33128_01P	45-1H	South Rim	0019A	Garage & Shed	Kaibab St	36° 3' 15" North, / 112° 8' 2" West	6950	P/D	Non-Health Hazard		Kaibab 19	Watts	RP	1.5	LF 009 QT	462832	6/4/2025
33128_02F	45-2H FIRE	South Rim	0019A	Garage & Shed	Kaibab St	36° 3' 15" North, / 112° 8' 2" West	6950	Fire	Health Hazard		Kaibab 19		RP	1			
33130_01P	46-1H	South Rim	0021	Single Family Res	21 Kaibab St	36° 3' 16" North, / 112° 8' 0" West	6960	P/D	Non-Health Hazard		Kaibab 21	Wilkins	RP	1.5	975 XL2	W420409	Unknown
33130_02F	46-2H FIRE	South Rim	0021	Single Family Res	21 Kaibab St	36° 3' 16" North, / 112° 8' 0" West	6960	Fire	Health Hazard		Kaibab 21		RP	1			
34691_02F	51-2H FIRE	South Rim	1202	Single Family Res	1202 Randy Thompson Cir	36° 2' 46" North, / 112° 7' 30" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34692_02F	52-2H FIRE	South Rim	1203	Single Family Res	1203 Randy Thompson Cir	36° 2' 49" North, / 112° 7' 36" West	6950	Fire	Health Hazard		Randy Thompson		RP	1			
34693_02F	53-2H FIRE	South Rim	1204	Single Family Res	1204 Randy Thompson Cir	36° 2' 48" North, / 112° 7' 34" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34694_02F	54-2H FIRE	South Rim	1205	Single Family Res	1205 Randy Thompson Cir	36° 2' 49" North, / 112° 7' 36" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34695_02F	55-2H FIRE	South Rim	1206	Single Family Res	1206 Randy Thompson Cir	36° 2' 49" North, / 112° 7' 34" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34696_02F	56-2H FIRE	South Rim	1207	Single Family Res	1207 Randy Thompson Cir	36° 2' 50" North, / 112° 7' 36" West	6950	Fire	Health Hazard		Randy Thompson		RP	1			
34698_02F	57-2H FIRE	South Rim	1208	Single Family Res	1208 Randy Thompson Cir	36° 2' 49" North, / 112° 7' 34" West	6960	Fire	Health Hazard		Randy Thompson		RP	1			
34699_02F	58-2H FIRE	South Rim	1209	Single Family Res	1209 Randy Thompson Cir	36° 2' 51" North, / 112° 7' 35" West	6960	Fire	Health Hazard		Randy Thompson		RP	1			
33681_02P	49-1H	South Rim	0111	Trail Crew Bunkhouse	NR Administration Area	36° 3' 19" North, / 112° 8' 5" West	6930	P/D	Non-Health Hazard		NPS Laundry Bldg.	Wilkins	RP	1	975 XL2	ABA48560	6/6/2025
34690_01P	50H	South Rim	1201	Single Family Res	1201 Randy Thompson Cir			P/D	Non-Health Hazard		Randy Thompson						

34691_01P	51-1H	South Rim	1202	Single Family Res	1202 Randy Thompson Cir	36° 2' 46" North, / 112° 7' 30" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009	391322	10/26/2023
34702_02F	59-2H FIRE	South Rim	1210	1210 Randy Thompson Cir	1210 Randy Thompson Cir	36° 2' 50" North, / 112° 7' 33" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34692_01P	52-1H	South Rim	1203	1203 Randy Thompson Cir	1203 Randy Thompson Cir	36° 2' 49" North, / 112° 7' 36" West	6950	P/D	Non-Health Hazard		Randy Thompson	Wilkins	RP	1.5	LF 009 QT	462812	6/5/2025
34704_02F	60-2H FIRE	South Rim	1211	1211 Randy Thompson Cir	1211 Randy Thompson Cir	36° 2' 52" North, / 112° 7' 34" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34693_01P	53-1H	South Rim	1204	1204 Randy Thompson Cir	1204 Randy Thompson Cir	36° 2' 48" North, / 112° 7' 34" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	461107	6/4/2025
34706_02F	61-2H FIRE	South Rim	1212	1212 Randy Thompson Cir	1212 Randy Thompson Cir	36° 2' 51" North, / 112° 7' 32" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34694_01P	54-1H	South Rim	1205	1205 Randy Thompson Cir	1205 Randy Thompson Cir	36° 2' 48" North, / 112° 7' 34" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	462716	6/5/2025
34708_02F	62-2H FIRE	South Rim	1213	1213 Randy Thompson Cir	1213 Randy Thompson Cir	36° 2' 53" North, / 112° 7' 33" West	6960	Fire	Health Hazard		Randy Thompson		RP	1			
34695_01P	55-1H	South Rim	1206	1206 Randy Thompson Cir	1206 Randy Thompson Cir	36° 2' 49" North, / 112° 7' 34" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	461120	6/5/2025
34712_02F	63-2H FIRE	South Rim	1214	1214 Randy Thompson Cir	1214 Randy Thompson Cir	36° 2' 52" North, / 112° 7' 33" West	6960	Fire	Health Hazard		Randy Thompson		RP	1			
34696_01P	56-1H	South Rim	1207	1207 Randy Thompson Cir	1207 Randy Thompson Cir	36° 2' 50" North, / 112° 7' 36" West	6950	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009	391662	10/26/2023
34714_02F	64-2H FIRE	South Rim	1215	1215 Randy Thompson Cir	1215 Randy Thompson Cir	36° 2' 50" North, / 112° 7' 26" West	6980	Fire	Health Hazard		Randy Thompson		RP	1			
34698_01P	57-1H	South Rim	1208	1208 Randy Thompson Cir	1208 Randy Thompson Cir	36° 2' 49" North, / 112° 7' 34" West	6960	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	462729	6/5/2025
34718_02F	65-2H FIRE	South Rim	1216	1216 Randy Thompson Cir	1216 Randy Thompson Cir	36° 2' 50" North, / 112° 7' 26" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34720_02F	66-2H FIRE	South Rim	1217	1217 Randy Thompson Cir	1217 Randy Thompson Cir	36° 2' 50" North, / 112° 7' 24" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34721_02F	67-2H FIRE	South Rim	1218	1218 Randy Thompson Cir	1218 Randy Thompson Cir	36° 2' 53" North, / 112° 7' 33" West	6960	Fire	Health Hazard		Randy Thompson		RP	1			
34702_01P	59-1H	South Rim	1210	1210 Randy Thompson Cir	1210 Randy Thompson Cir	36° 2' 50" North, / 112° 7' 33" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009	393346	10/26/2023
34722_02F	68-2H FIRE	South Rim	1219	1219 Randy Thompson Cir	1219 Randy Thompson Cir	36° 2' 49" North, / 112° 7' 25" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34723_02F	69-2H FIRE	South Rim	1220	1220 Randy Thompson Cir	1220 Randy Thompson Cir	36° 2' 48" North, / 112° 7' 27" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34725_02F	70-2H FIRE	South Rim	1221	1221 Randy Thompson Cir	1221 Randy Thompson Cir	36° 2' 48" North, / 112° 7' 24" West	6960	Fire	Health Hazard		Randy Thompson		RP	1			
34706_01P	61-1H	South Rim	1212	1212 Randy Thompson Cir	1212 Randy Thompson Cir	36° 2' 51" North, / 112° 7' 32" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	461092	6/5/2025
34728_02F	71-2H FIRE	South Rim	1222	1222 Randy Thompson Cir	1222 Randy Thompson Cir	36° 2' 47" North, / 112° 7' 27" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34708_01P	62-1H	South Rim	1213	1213 Randy Thompson Cir	1213 Randy Thompson Cir	36° 2' 53" North, / 112° 7' 33" West	6960	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	462714	6/5/2025

34730_02F	72-2H FIRE	South Rim	1223	1223 Randy Thompson Cir	1223 Randy Thompson Cir	36° 2' 47" North, / 112° 7' 27" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34712_01P	63-1H	South Rim	1214	1214 Randy Thompson Cir	1214 Randy Thompson Cir	36° 2' 52" North, / 112° 7' 33" West	6960	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	462722	6/5/2025
34731_02F	73-2H FIRE	South Rim	1224	1224 Randy Thompson Cir	1224 Randy Thompson Cir	36° 2' 46" North, / 112° 7' 28" West	6960	Fire	Health Hazard		Randy Thompson		RP	1			
34714_01P	64-1H	South Rim	1215	1215 Randy Thompson Cir	1215 Randy Thompson Cir	36° 2' 50" North, / 112° 7' 26" West	6980	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	975 XL2	W405408	Unknown
33132_02F	74-2H FIRE	South Rim	0023	23 Tapeats Circle	23 Tapeats Circle	36° 3' 17" North, / 112° 7' 58" West	6960	Fire	Health Hazard		Tapeats 23		RP	1			
34718_01P	65-1H	South Rim	1216	1216 Randy Thompson Cir	1216 Randy Thompson Cir	36° 2' 50" North, / 112° 7' 26" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009	393343	10/27/2023
33136_02F	75-2H FIRE	South Rim	0025	25 Tapeats Circle	25 Tapeats Circle	36° 3' 15" North, / 112° 7' 58" West	6950	Fire	Health Hazard		Tapeats 25		RP	1			
33138_02F	76-2H FIRE	South Rim	0027	Single Family Res	27 Tapeats Circle	36° 3' 16" North, / 112° 7' 56" West	6950	Fire	Health Hazard		Tapeats 27		RP	1			
36338_02F	78-2H FIRE	South Rim	0006B	Duplex	7 A Tonto St	36° 3' 17" North, / 112° 8' 9" West	6920	Fire	Health Hazard		Tonto 7A		RP	1.5			
34721_01P	67-1H	South Rim	1218	Single Family Res	1218 Randy Thompson Cir	36° 2' 53" North, / 112° 7' 33" West	6960	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	462715	6/5/2025
33003_02F	78-4H FIRE	South Rim	0006C	Garage & Shed	Tonto St	36° 3' 17" North, / 112° 8' 10" West	6920	Fire	Health Hazard		Tonto 7B		RP	1.5			
34722_01P	68-1H	South Rim	1219	Single Family Res	1219 Randy Thompson Cir	36° 2' 49" North, / 112° 7' 25" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	462720	6/10/2025
32967_02F	80-2H FIRE	South Rim	0004A	Garage & Shed	Tonto St	36° 3' 18" North, / 112° 3' 18" West	6930	Fire	Health Hazard		Tonto 10		RP	1			
34723_01P	69-1H	South Rim	1220	Single Family Res	1220 Randy Thompson Cir	36° 2' 48" North, / 112° 7' 27" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	461108	6/5/2025
32968_02F	81-2H FIRE	South Rim	0005	12 Tonto St	12 Tonto St	36° 3' 16" North, / 112° 7' 56" West	6950	Fire	Health Hazard		Tonto 12		RP	1			
34725_01P	70-1H	South Rim	1221	1221 Randy Thompson Cir	1221 Randy Thompson Cir	36° 2' 48" North, / 112° 7' 24" West	6960	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	461105	6/5/2025
87774_01N	91-1H	South Rim	1580	101-108 Paiute St (Eight Plex), South Rim		36° 2' 56" North, / 112° 8' 6" West	6950		Non-Health Hazard		Paiute Bldg 100	Febco	RP	2			
34728_01P	71-1H	South Rim	1222	1222 Randy Thompson Cir	1222 Randy Thompson Cir	36° 2' 47" North, / 112° 7' 27" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	461106	6/6/2025
87775_01N	92-1H	South Rim	1581	201-208Paiute St (Eight Plex), South Rim		36° 2' 56" North, / 112° 8' 4" West	6950		Non-Health Hazard		Paiute Bldg 200	Febco	RP	2			
34730_01P	72-1H	South Rim	1223	1223 Randy Thompson Cir	1223 Randy Thompson Cir			P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	391664	10/27/2023
87776_01N	93-1H	South Rim	1582	301-308 Paiute St (Eight Plex), South Rim		36° 2' 56" North, / 112° 8' 3" West	6960		Non-Health Hazard		Paiute Bldg 300	Febco	RP	2			
34731_01P	73-1H	South Rim	1224	1224 Randy Thompson Cir	1224 Randy Thompson Cir	36° 2' 46" North, / 112° 7' 28" West	6960	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	460568	6/6/2025
87777_01N	94-1H	South Rim	1583	401-408 Paiute St (Eight Plex), South Rim		36° 2' 55" North, / 112° 8' 1" West	6960		Non-Health Hazard		Paiute Bldg 400	Febco	RP	2			
87778_01N	95-1H	South Rim	1584	501-508 Paiute St (Eight Plex), South Rim		36° 2' 55" North, / 112° 8' 1" West	6960		Non-Health Hazard		Paiute Bldg 500	Febco	RP	2			Unknown
87780_01N	96-1H	South Rim	1585	601-608 Paiute St (Eight Plex), South Rim		36° 2' 54" North, / 112° 8' 1" West	6960		Non-Health Hazard		Paiute Bldg 600	Febco	RP	2			

33136_01P	75-1H	South Rim	0025	25 Tapeats Circle	25 Tapeats Circle	36° 3' 15" North, / 112° 7' 58" West	6950	P/D	Non-Health Hazard		Tapeats 25	Wilkins	RP	1.5	975 XL2	W407462	2015
235188_01N	97-1H	South Rim	1586	701-708 Paiute St (Eight Plex), South Rim		36° 2' 56" North, / 112° 8' 4" West	6950		Non-Health Hazard		Paiute Bldg 700	Febco	RP	2			
235189_01N	98-1H	South Rim	1587	801-808 Paiute St (Eight Plex), South Rim		36° 2' 55" North, / 112° 8' 8" West	6940		Non-Health Hazard		Paiute Bldg 800	Febco	RP	2			
36050_01F	99H FIRE	Phantom Ranch	0091	River Ranger Station	Phantom Ranch	36° 5' 57" North, / 112° 5' 38" West	6980	Fire	Health Hazard		TCWL - PR	Watts	RP	1.5	U009 M2	05225	Unknown
35114_08F	114-2H FIRE	North Rim	1547	Eight-Plex Housing Unit	D Cliffrose Court	36° 12' 49" North, 112° 3' 45" West	8350	Fire	Health Hazard		Utility Room		RP	1			
35114_09P	115-1H	North Rim	1547	Eight-Plex Housing Unit	E Cliffrose Court	36° 12' 49" North, 112° 3' 43" West	8340	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	384956	08/14/2024
35114_10F	115-2H FIRE	North Rim	1547	Eight-Plex Housing Unit	E Cliffrose Court	36° 12' 49" North, 112° 3' 43" West	8340	Fire	Health Hazard		Utility Room		RP	1			
35114_11P	116-1H	North Rim	1547	Eight-Plex Housing Unit	F Cliffrose Court	36° 12' 49" North, 112° 3' 43" West	8340	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	380839	08/14/2024
35114_12F	116-2H FIRE	North Rim	1547	Eight-Plex Housing Unit	F Cliffrose Court	36° 12' 49" North, 112° 3' 43" West	8340	Fire	Health Hazard		Utility Room		RP	1			
35114_13P	117-1H	North Rim	1547	Eight-Plex Housing Unit	G Cliffrose Court	36° 12' 49" North, 112° 3' 45" West	8340	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	380836	08/14/2024
35114_14F	117-2H FIRE	North Rim	1547	Eight-Plex Housing Unit	G Cliffrose Court	36° 12' 49" North, 112° 3' 45" West	8340	Fire	Health Hazard		Utility Room		RP	1			
33007_01P	79-1H	South Rim	0007A	Garage & Shed	Tonto St	36° 3' 16" North, / 112° 7' 56" West	6950	P/D	Non-Health Hazard		Tonto 9A	Watts	RP	1.5	LF 009	391660	10/27/2023
35114_15P	118-1H	North Rim	1547	Eight-Plex Housing Unit	H Cliffrose Court	36° 12' 48" North, 112° 3' 44" West	8340	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	375310	08/14/2024
35114_16F	118-2H FIRE	North Rim	1547	Eight-Plex Housing Unit	H Cliffrose Court	36° 12' 48" North, 112° 3' 44" West	8340	Fire	Health Hazard		Boiler System / Utility Room		RP	1			
32968_01P	81-1H	South Rim	0005	Single Family Res	12 Tonto St	36° 3' 16" North, / 112° 7' 56" West	6950	P/D	Non-Health Hazard		Tonto 12	Watts	RP	1.5	LF 009 QT	462818	6/9/2025
255316_01F	83H FIRE	South Rim				36° 3' 13" North, / 112° 8' 27" West	6890	Fire	Health Hazard		Apache 21	Watts	RP	1	LF 009 M2 QT	358446	6/10/2025
83989_02P	35B	North Rim	1525		EDR Area	36° 12' 26" North, 112° 3' 27" West	8320	P/D	Non-Health Hazard		(EDR), Fir Road and Wrangler Road (Down hill to the west, on the northside of the road, near the cardboard packer)	Febco	DC	8	850	F0212301252	De-scoped from the CY-2025 Testing due to the Dragon Bravo Fire
87759_01P	34-1B	North Rim	1153	Emergency Management Services (EMS), Station 3	6219 AZ Highway 67	36° 12' 55" North, 112° 3' 32" West	8370	P/D	Non-Health Hazard		Boiler System / Utility Room, North side of building.	Watts	RP	1	009 M2 QT	A02582	De-scoped from the CY-2025 Testing due to the Dragon Bravo Fire
87759_02P	34-2B	North Rim	1153	Emergency Management Services (EMS), Station 3	6219 AZ Highway 67	36° 12' 55" North, 112° 3' 30" West	8420	P/D	Non-Health Hazard			Watts	RP	2.5	009	23204	De-scoped from the CY-2025 Testing due to the Dragon Bravo Fire
87759_03F	34-3B FIRE	North Rim	1153	Emergency Management Services (EMS), Station 3	6219 AZ Highway 67	36° 12' 55" North, 112° 3' 30" West	8420	Fire	Non-Health Hazard				RP				De-scoped from the CY-2025 Testing due to the Dragon Bravo Fire
34567_01P	2WU	Havasupai Gardens	0484	Pumphouse South	Havasupai Gardens	36° 3' 26" North, 112° 7' 36" West	3810	P/D	Non-Health Hazard		TCWL - HG Havasupai Gardens - Pumphouse-South	Watts	RP	1	LF 009 M2	304235	10/30/2023
108280_01P	1B	South Rim	1705	Comfort Station A, Bright Angel Trailhead		36° 3' 26" North, 112° 8' 36" West	6860	P/D	Non-Health Hazard		Bright Angel Trailhead Water Bottle Fill Station	Febco	DC	1	850	HC90317	Unknown
108280_02P	2B	South Rim	1705	Comfort Station A, Bright Angel Trailhead		36° 3' 26" North, 112° 8' 35" West	6870	P/D	Non-Health Hazard		Bright Angel Trailhead Irrigation System	Febco	DC	1	850	HC90320	Unknown
84001_02F	6B Fire	South Rim	1266	Camper Services Bldg	Mather Campground	36° 3' 2" North, 112° 7' 16" West	6970	Fire	Health Hazard		Kiosk	Wilkins	DC	1	950XL	1746410	Unknown
81635_06F	10-6B Fire	South Rim	1577	NPS Vehicle Maintenance Building	New NPS Maintenance Area			Fire	Non-Health Hazard		FMD Auto Shop Bldg	Ames	DC	4	2000 SSF	200310 0901	Unknown

81633_06F	11-6B Fire	South Rim	1575	NPS Shops/Office Building	New NPS Maintenance Area	36° 1' 59" North, 112° 7' 45" West	6890	Fire	Non-Health Hazard		FMD Custodial Room #112 - Bldg	Ames	DC	4	2000 SSF	128958-0802	Unknown
81636_03F	12-3B FIRE	South Rim	1578	NPS Enclosed Vehicle Storage	New NPS Maintenance Area			Fire	Non-Health Hazard		FMD Covered Storage Bldg	Ames	DC	4	2000 SSF	200155 1201	Unknown
35096_01F	18B	South Rim	1536	Engineering Office/Dutton/SRM	NPS Maint Area			Fire	Health Hazard		14 Fee Operations	Ames	DC	2.5	Colt 200	RL-1606	Unknown
34577_03F	21-2B FIRE	South Rim	0533	Kolb Studio	Village Loop			Fire	Non-Health Hazard		Grand Canyon Conservatory	Watts	DC	2.5	709	102904	Unknown
243934_01F	25-4B FIRE	South Rim	1709	Science and Resource Management Warehouse (Dutton)	17 South Entrance Road	36° 3' 22" North, 112° 7' 12" West	7010	Fire	Non-Health Hazard		SRM Storage - Mcgee	Ames	DC	4	Colt 200	MC1525	Unknown
33680_01F	29-1B FIRE	South Rim	0110	Yavapai Observation Station	Yavapai Point	36° 3' 58" North, 112° 7' 3" West	7090	Fire	Non-Health Hazard		Yavapai Musuem, Grand Canyon Conservatory	Wilkins	DC	4	350	V06577	Unknown
33680_02F	29-2B Bypass	South Rim	0110	Yavapai Observation Station	Yavapai Point	36° 3' 58" North, 112° 7' 3" West	7090	Fire	Non-Health Hazard		Yavapai Museum, Grand Canyon Conservatory	Wilkins	DC	0.75	950 XL	2223193 XLD	Unknown
34115_03F	37B FIRE	South Rim	0272	Maintenance Building	Albright Ave			Fire	Health Hazard		DC, Grand Canyon Conservatory Warehouse (McKee Warehouse Compound Area), Fire riser		RP				
84040_02F	47-1H FIRE	South Rim	1100	Yavapai Lodge West #6	Yavapai Lodge Area	36° 2' 57" North, / 112° 8' 14" West	6930	Fire	Health Hazard		Mohave	Watts	DC	1.5	007 M2	83313	Unknown
34618_01F	82H FIRE	South Rim	0810	Single Family Res	2 Apache St	36° 3' 16" North, / 112° 8' 18" West	6890	Fire	Health Hazard		Apache 2	Wilkins	DC	0.75	350XL	A503447	Unknown
34503_01F	100H FIRE	South Rim	0368	4 Unit Apartment (Hermits Circle)	368 ABCD Sunset Dr	36° 3' 8" North, / 112° 7' 55" West	6970	Fire	Health Hazard		Sunset 368	Watts	DC	1	007 M1QT	479666	Unknown
34552_01P	4-1B Main	South Rim	0444	Clinic	1 Clinic Road			P/D	Non-Health Hazard		Main Entry Outside	Watts	RP	4	957	XI-0270	11/1/2023
60971_01F	86H FIRE	Havasupai Gardens	0875	Trail Crew Bunkhouse	Havasupai Gardens	36° 4' 32" North, 112° 7' 46" West	3870	Fire	Health Hazard		TCWL - HG Havasupai Gardens	Watts	RP	1.5	U009 M2	5218	Unknown
33422_01F	87H FIRE	Havasupai Gardens	1460	Ranger Residence	Havasupai Gardens	36° 4' 33" North, 112° 7' 46" West	3860	Fire	Health Hazard		TCWL - HG Havasupai Gardens	Watts	RP	1.5	LF 009 M2QT	008206	Unknown
33422_02F	88H FIRE	Havasupai Gardens	1460	Utility Bunkhouse	Havasupai Gardens	36° 4' 33" North, 112° 7' 47" West	3880	Fire	Health Hazard		TCWL - HG Havasupai Gardens Utilities Operator House	Watts	RP	1.5	U009 M2	005321	Unknown
35153_01F	84-1H FIRE Bypass	Desert View	1707	Four-Plex Housing Unit	1494 Colter	36° 2' 10" North, / 111° 49' 33" West	7460	Fire	Health Hazard		DV Colter Lane 1494 (Bypass)	Ames	DC	0.75	Flowmatic DCVE	A2536	Unknown
35153_02F	84-2H FIRE Main	Desert View	1707	Four-Plex Housing Unit	1494 Colter	36° 2' 10" North, / 111° 49' 33" West	7460	Fire	Health Hazard		DV Colter Lane 1494 (Main)	Ames	DC	2.5	Colt 300	DC-0818	Unknown
108280_03P	3B	South Rim	1705	Comfort Station A, Bright Angel Trailhead				P/D	Non-Health Hazard		Bright Angel Trailhead Restrooms	Wilkins	RP	3	375	L79313	Unknown
34552_05P	4-5B Mech Room	South Rim	0444	Clinic	1 Clinic Road			P/D	Non-Health Hazard		Fire Station #1 Engine Bay - Mech Room	Watts	RP	2.5	009	19298	10/1/2023
33156_01P	7-1B	South Rim	0044	Community Building	Village Loop			P/D	Non-Health Hazard		Community Bldg. Grand Canyon Conservatory Boiler Room	Febco	RP	0.75	825Y	A137844	Unknown
35072_01P	15-1B	South Rim	1511	Museum Collection Building	NPS Maint Area			P/D	Non-Health Hazard		Museum Collection Boiler Room (Southeast Backside Bldg.)	Watts	RP	1	009 QT	64231	Unknown
35072_02P	15-2B	South Rim	1511	Museum Collection Building	NPS Maint Area			P/D	Non-Health Hazard		Musuem Collections Bathroom	Watts	RP	1.5	009M2QT	33035	Unknown
35072_03P	16B	South Rim	1511	Museum Collection Building	NPS Maint Area			P/D	Non-Health Hazard		Sanitation Truck Wash Rack	Watts	RP	0.75	909	515127	Unknown
34577_02P	21-1B	South Rim	0533	Kolb Studio	Village Loop			P/D	Non-Health Hazard		Grand Canyon Conservatory, Boiler Room	Febco	RP	0.75	825Y	A210251	Check on lead and copper level
83949_01P	22-2B	South Rim	2022	GCA Bookstore	Canyon View Information Plaza	36° 0' 30" North, 112° 6' 33" West	7100	P/D	Non-Health Hazard		GCVC Bookstore, Grand Canyon Conservatory	Febco	RP	1	825Y	A206788	Unknown
35243_02P	22-3B	South Rim	2000	Orientation Building	Canyon View Information Plaza	36° 3' 32" North, 112° 6' 33" West	7110	P/D	Non-Health Hazard		GCVC, Orientation Bldg., 25911	Watts	RP	0.75	909	509697	7/23/2023
84298_01P	1-1H	South Rim	0844	Garage	Boulder Alley	36° 3' 13" North, 112° 8' 18" West	6910	P/D	Non-Health Hazard		Apache 1	Watts	RP	1.5	009QT	443917	Unknown
35164_01P	11-1H	South Rim	1609	Single Family Res	1609 Barry Hance Cir	36° 2' 55" North, / 112° 7' 25" West	6960	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	009 QT	369142	Unknown
87766_02F	40-2H FIRE	Desert View	1701	Eight-Plex Housing Unit	Desert View	36° 2' 11" North, / 111° 49' 30" West	7480	Fire	Health Hazard		DV Cedar Mountain	Ames	RP	1.25	4000 B	1127	Unknown
84090_01P	47-2H	South Rim	1382	Six-Plex Townhouse	1101-1106 Mohave St	36° 2' 57" North, / 112° 8' 14" West	6930	P/D	Non-Health Hazard		Mohave 1101	Watts	RP	1.5	009 QT	229750	Unknown

84041_01P	47-3H	South Rim	1103	Ice Plant	Mather Campground	36° 2' 57" North, / 112° 8' 14" West	6930	P/D	Non-Health Hazard		Mohave	Watts	RP	1.5	009 QT	255806	Unknown
84042_26P	47-4H	South Rim	1104	Maswik Lodge South 1	Maswik Lodge Area	36° 2' 57" North, / 112° 8' 13" West	6930	P/D	Non-Health Hazard		Mohave	Watts	RP	1.5	009 QT	255785	Unknown
84059_01P	47-5H	South Rim	1105	Maswik Lodge South 2	Maswik Lodge Area	36° 2' 57" North, / 112° 8' 13" West	6940	P/D	Non-Health Hazard		Mohave	Watts	RP	1.5	009 QT	441775	Unknown
84062_01P	47-6H	South Rim	1108	Maswik Lodge South 5	Maswik Lodge Area	36° 2' 56" North, / 112° 8' 13" West	6920	P/D	Non-Health Hazard		Mohave	Watts	RP	1.5	009 QT	257826	Unknown
33022_01P	48-1H	South Rim	0009	Single Family Res	9 Navajo St	36° 3' 19" North, / 112° 8' 5" West	6930	P/D	Non-Health Hazard		Navajo 9	Watts	RP	1.5	009 QT	366231	Unknown
33022_02F	48-2H FIRE	South Rim	0009	Single Family Res	9 Navajo St	36° 3' 19" North, / 112° 8' 5" West	6930	Fire	Health Hazard		Navajo 9	Ames	DC	1	2000B	18933	Unknown
34720_01P	66-1H	South Rim	1217	Single Family Res	1217 Randy Thompson Cir	36° 2' 50" North, / 112° 7' 24" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	009 QT	438999	2013
33132_01P	74-1H	South Rim	0023	Single Family Res	23 Tapeats Circle	36° 3' 17" North, / 112° 7' 58" West	6960	P/D	Non-Health Hazard		Tapeats 23	Watts	RP	1.5	009 QT	331640	Unknown
33138_01P	76-1H	South Rim	0027	Single Family Res	27 Tapeats Circle	36° 3' 16" North, / 112° 7' 56" West	6950	P/D	Non-Health Hazard		Tapeats 27	Watts	RP	1.5	975	399730	Unknown
36340_01P	77-1H	South Rim	0024B	Duplex	1B Tonto St	36° 3' 16" North, / 112° 8' 12" West	6910	P/D	Non-Health Hazard		Tonto 1A	Watts	RP	1.5	009 QT	366554	Unknown
36340_02P	77-2H	South Rim	0024B	Duplex	1B Tonto St	36° 3' 16" North, / 112° 8' 12" West	6910	P/D	Non-Health Hazard		Tonto 1B	Watts	RP	1.5	009 QT	367659	Unknown
36338_01P	78-1H	South Rim	0006B	Duplex	7 A Tonto St	36° 3' 17" North, / 112° 8' 9" West	6920	P/D	Non-Health Hazard		Tonto 7A	Watts	RP	1.5	009 QT	371197	Unknown
33003_01P	78-3H	South Rim	0006C	Garage & Shed	Tonto St	36° 3' 17" North, / 112° 8' 10" West	6920	P/D	Non-Health Hazard		Tonto 7B	Watts	RP	1.5	009QT	71015	Unknown
32967_01P	80-1H	South Rim	0004A	Garage & Shed	Tonto St	36° 3' 18" North, / 112° 3' 18" West	6930	P/D	Non-Health Hazard		Tonto 10	Watts	RP	1.5	009 QT	443899	Unknown
99678_02P	3WU	South Rim				36° 3' 2" North, 112° 7' 55" West	6980	P/D	Non-Health Hazard		Lapp Loop Truck Fill	Wilkins	RP	3	375	L86229	Unknown
81633_01P	11-1B Glycol Tank	South Rim	1575	NPS Shops/Office Building	New NPS Maintenance Area	36° 1' 59" North, 112° 7' 43" West	6840	P/D	Health Hazard		FMD Main Bldg. Mech. / Boiler Room #122A, Bldg. System (Glycol) Make-Up Water / Mixing - Dosing Tank, "Overhead"	Watts	RP	1.5	LF 009 QT	457741	05/19/2025
81633_02P	11-2B Chiller	South Rim	1575	NPS Shops/Office Building	New NPS Maintenance Area	36° 1' 59" North, 112° 7' 43" West	6840	P/D	Health Hazard		FMD Main Bldg. Mech. / Boiler Room #122A, Bldg. System (Glycol) Make-Up Water / Chiller Water System, "Top Assembly"	Watts	RP	1	LF009M2-QT-FS	299190	12/17/2024
81633_05N	11-5B	South Rim	1575	NPS Shops/Office Building	New NPS Maintenance Area	36° 1' 58" North, 112° 7' 43" West	6890		Non-Health Hazard		FMD Main Bldg. Housing Maintenance / Quarters Shop Room #102, Bldg., Appliance Testing Station.	Watts	RP	0.75	LF009M2-QT	105128	
81636_02P	12-2B	South Rim	1578	NPS Enclosed Vehicle Storage	New NPS Maintenance Area			P/D	Non-Health Hazard		FMD Covered Storage Bldg.	Watts	DC	1	007 M1	276028	
35243_01P	22-1B Pump Station	South Rim	2000	Orientation Building	Canyon View Information Plaza	36° 3' 32" North, 112° 6' 33" West	7110	P/D	Non-Health Hazard		GCVC, Potable & Pumping Station Bldg.	Watts	RP	2	LF 009 M2	283374	05/30/2025
33683_01P	31-1B	Desert View	0114	Tusayan Museum	Tusayan Ruins	36° 0' 50" North, 111° 51' 59" West	7200	P/D	Non-Health Hazard		SR / DV - and Ruins Site, Ranger Office Building, Boiler / Utility Room.	Watts	RP	1.5	LF009M2	142464	7/15/2024
34617_01P	2-1H	South Rim	0809	Single Family Res	4 Apache St	36° 3' 15" North, 112° 8' 19" West	6900	P/D	Non-Health Hazard		Apache 4	Wilkins	RP	1.5	975 XL2	W407466	8/3/2015
35169_01P	16-1H	South Rim	1614	Single Family Res	1614 Barry Hance Cir	36° 2' 54" North, / 112° 7' 29" West	6980	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	462725	6/2/2025
34699_01P	58-1H	South Rim	1209	Single Family Res	1209 Randy Thompson Cir	36° 2' 51" North, / 112° 7' 35" West	6960	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	461121	6/5/2025
34704_01P	60-1H	South Rim	1211	Single Family Res	1211 Randy Thompson Cir	36° 2' 52" North, / 112° 7' 34" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	009 QT	346501	Unknown

99678_01P	1WU	South Rim				36° 2' 3" North, 112° 7' 46" West	6900	P/D	Non-Health Hazard		FMD - Fire Hydrant - Water Truck Fill Location (North side of the FMD Compound)	Wilkins	RP	1.5	975 XL2	ACC 4695	Unknown
34574_01P	5WU	Phantom Ranch	0491	Wastewater Treatment Plant PR	Phantom Ranch	36° 12' 55" North, 112° 3' 32" West	8370	P/D	Non-Health Hazard		TCWL - PR WWTP - Tool Room	Watts	RP	1	LF 009 M2 QT	358439	6/12/2025
34560_01P	6WU	South Rim	0467	Control Building	WW Treatment Plant			P/D	Non-Health Hazard		WWTP - Pump Room	Watts	RP	1	LF 009 M2 QT	191549	Unknown
34056_01P	7WU	South Rim	0228	Reclaimed Water Pumphouse	WW Treatment Plant	36° 2' 59" North, 112° 9' 6" West	6800	P/D	Non-Health Hazard		WWTP - Bldg	Watts	RP	1	LF 009 M2 QT	357968	5/22/2025
99678_03P	8WU	South Rim				36° 2' 57" North, 112° 7' 58" West	6950	P/D	Non-Health Hazard		Water Truck Fill Station	Wilkins	RP	3	375ASTR	56359C	5/22/2025
34577_01P	21 Place Saver	South Rim	0533	Kolb Studio	Village Loop			P/D	Non-Health Hazard		Grand Canyon Conservatory FMSS#						

Master Backflow Inventory

Unique ID	Inventory File #	Area	Building #	Building Name	Address	GPS	Elevation (feet)	Connection Type	Hazard Type	Use Codes	Room	Mfg.	Type	Size (inches)	Model#	Serial #	Install Date	2026 Test Date	2026 Test Results	2026 Tester Name & ID	2026 Corrective Action Required	Compliant	Cost of Corrective Action	Comments
34124_01P	1	HOAL	0277	Albright Building A	Albright Ave			P/D	Non-Health Hazard		Albright A-Boiler Room (Main Water Supply Line)	Wilkins	RP	2	975 XL	W163153	Unknown							
34124_02P	2	HOAL	0277	Albright Building A	Albright Ave			P/D	Non-Health Hazard		Albright A-Boiler Room (Boiler Water Supply Line)	Wilkins	RP	1	975 XL	2051889	Unknown							
34124_03F	3	HOAL	0277	Albright Building A	Albright Ave			Fire	Non-Health Hazard		Albright A-Boiler Room	Watts	DC	1.5	QT 007 M2	A04516	Unknown							
34126_01P	4	HOAL	0278	Albright Building B	Albright Ave			P/D	Non-Health Hazard		Albright B- Boiler Room (Main Water Supply Line)	Wilkins	RP	2	975 XL	W163152	Unknown							
34126_02P	5	HOAL	0278	Albright Building B	Albright Ave			P/D	Non-Health Hazard		Albright B- Boiler Room (Boiler Water Supply Line)	Wilkins	RP	1	975 XL2	4565637	Unknown							
34126_03F	6	HOAL	0278	Albright Building B	Albright Ave			Fire	Non-Health Hazard		Albright B- Boiler Room	Watts	DC	1.5	QT 007 M2	A04533	Unknown							
34420_01P	7	HOAL	0286	Albright Building C	Albright Ave			P/D	Non-Health Hazard		Albright C-Boiler Room (Main Water Supply Line)	Wilkins	RP	2	975 XL2	4358886	Unknown							
34420_02P	8	HOAL	0286	Albright Building C	Albright Ave			P/D	Non-Health Hazard		Albright C-Boiler Room (Boiler Water Supply Line)	Wilkins	RP	1	975 XL2	4102508	Unknown							
34420_03F	9	HOAL	0286	Albright Building C	Albright Ave			Fire	Non-Health Hazard		Albright C-Boiler Room	Watts	DC	1.5	QT 007 M2	A04754	Unknown							
34549_01P	10	HOAL	0438	Albright Building D	Albright Ave			P/D	Non-Health Hazard		Albright D-Boiler Room (Main Water Supply Line)	Wilkins	RP	2	975 XL2	W163096	Unknown							
34549_02P	11	HOAL	0438	Albright Building D	Albright Ave			P/D	Non-Health Hazard		Albright D-Boiler Room (Boiler Water Supply Line)	Wilkins	RP	1	975 XL2	4565626	Unknown							
34549_03F	12	HOAL	0438	Albright Building D	Albright Ave			Fire	Non-Health Hazard		Albright D-Boiler Room	Watts	DC	1.5	QT 007 M2	A04501	Unknown							
34550_01P	13	HOAL	0439	Albright Building E	Albright Ave			P/D	Non-Health Hazard		Albright E-Boiler Room (Main Water Supply Line)	Wilkins	RP	2	975 XL	W163154	Unknown							
34550_02P	14	HOAL	0439	Albright Building E	Albright Ave			P/D	Non-Health Hazard		Albright E-Boiler Room (Boiler Water Supply Line)	Wilkins	RP	1	975 XL	4102501	Unknown							
34550_03F	15	HOAL	0439	Albright Building E	Albright Ave			Fire	Non-Health Hazard		Albright E-Boiler Room	Watts	DC	1.5	QT 007 M2	24043	Unknown							
34122_01F	16	HOAL	0276	Kowski Hall (Albright Training Ctr)	Albright Ave			Fire	Non-Health Hazard		Albright Main Bldg.	Wilkins	DC	4	350	J18802	Unknown							

Unique ID	Inventory File #	Area	Building #	Building Name	Address	GPS	Elevation (feet)	Connection Type	Hazard Type	Use Codes	Room	Mfg.
34124_01P	1	HOAL	0277	Albright Building A	Albright Ave			P/D	Non-Health Hazard		Albright A-Boiler Room (Main Water Supply Line)	Wilkins
34124_02P	2	HOAL	0277	Albright Building A	Albright Ave			P/D	Non-Health Hazard		Albright A-Boiler Room (Boiler Water Supply Line)	Wilkins
34124_03F	3	HOAL	0277	Albright Building A	Albright Ave			Fire	Non-Health Hazard		Albright A-Boiler Room	Watts
34126_01P	4	HOAL	0278	Albright Building B	Albright Ave			P/D	Non-Health Hazard		Albright B- Boiler Room (Main Water Supply Line)	Wilkins
34126_02P	5	HOAL	0278	Albright Building B	Albright Ave			P/D	Non-Health Hazard		Albright B- Boiler Room (Boiler Water Supply Line)	Wilkins
34126_03F	6	HOAL	0278	Albright Building B	Albright Ave			Fire	Non-Health Hazard		Albright B- Boiler Room	Watts
34420_01P	7	HOAL	0286	Albright Building C	Albright Ave			P/D	Non-Health Hazard		Albright C-Boiler Room (Main Water Supply Line)	Wilkins
34420_02P	8	HOAL	0286	Albright Building C	Albright Ave			P/D	Non-Health Hazard		Albright C-Boiler Room (Boiler Water Supply Line)	Wilkins
34420_03F	9	HOAL	0286	Albright Building C	Albright Ave			Fire	Non-Health Hazard		Albright C-Boiler Room	Watts
34549_01P	10	HOAL	0438	Albright Building D	Albright Ave			P/D	Non-Health Hazard		Albright D-Boiler Room (Main Water Supply Line)	Wilkins
34549_02P	11	HOAL	0438	Albright Building D	Albright Ave			P/D	Non-Health Hazard		Albright D-Bolier Room (Boiler Water Supply Line)	Wilkins
34549_03F	12	HOAL	0438	Albright Building D	Albright Ave			Fire	Non-Health Hazard		Albright D-Boiler Room	Watts
34550_01P	13	HOAL	0439	Albright Building E	Albright Ave			P/D	Non-Health Hazard		Albright E-Boiler Room (Main Water Supply Line)	Wilkins
34550_02P	14	HOAL	0439	Albright Building E	Albright Ave			P/D	Non-Health Hazard		Albright E-Boiler Room (Boiler Water Supply Line)	Wilkins
34550_03F	15	HOAL	0439	Albright Building E	Albright Ave			Fire	Non-Health Hazard		Albright E-Boiler Room	Watts
34122_01F	16	HOAL	0276	Kowski Hall (Albright Training Ctr)	Albright Ave			Fire	Non-Health Hazard		Albright Main Bldg.	Wilkins

Type	Size (inches)	Model#	Serial #	Install Date	2026 Test Date	2026 Test Results	2026 Tester Name & ID	2026 Corrective Action Required	Compliant	Cost of Corrective Action
RP	2	975 XL	W163153	Unknown						
RP	1	975 XL	2051889	Unknown						
DC	1.5	QT 007 M2	A04516	Unknown						
RP	2	975 XL	W163152	Unknown						
RP	1	975 XL2	4565637	Unknown						
DC	1.5	QT 007 M2	A04533	Unknown						
RP	2	975 XL2	4358886	Unknown						
RP	1	975 XL2	4102508	Unknown						
DC	1.5	QT 007 M2	A04754	Unknown						
RP	2	975 XL2	W163096	Unknown						
RP	1	975 XL2	4565626	Unknown						
DC	1.5	QT 007 M2	A04501	Unknown						
RP	2	975 XL	W163154	Unknown						
RP	1	975 XL	4102501	Unknown						
DC	1.5	QT 007 M2	24043	Unknown						
DC	4	350	J18802	Unknown						

Comments

Grand Canyon National Park

Cross – Connection Control & Backflow Prevention Program

May 06, 2024

Developed By: GARY LIPPARD Digitally signed by GARY LIPPARD Date: 2024.05.06 12:17:53 -07'00'

Gary L. Lippard, GRCA - USRO / Cross-Connection Control Coordinator Specialists, Date

Reviewed By: PATRICK PERRY Digitally signed by PATRICK PERRY Date: 2024.05.08 16:06:29 -07'00'

Patrick Perry, GRCA - Deputy Chief of Facilities for Water Utilities Branch Date

Approved By: JAMES STONE Digitally signed by JAMES STONE Date: 2024.05.08 16:12:49 -07'00'

J. Treacy Stone, P.E. GRCA - Chief of Facility Management & Engineering Date

GRCA, Facility Management and Engineering Division, Water Utility Branch
P.O. Box 129, 1575 Shuttle Bus Road
Grand Canyon, AZ 86023

Public Water Supply System ID A0403702
Population served: 6,000 (est.)

Original document: 06/10/2015
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Introduction

The legal authority (enabling legislation) that the US Department of Interior, National Park Service (agency) has for the establishment of the Cross Connection Control / Backflow Prevention Program. As outlined within the Federal Safe Drinking Water Act, Amendments of 1996. Then, based on this is the State of Arizona enactment that establishes the states privacy in the control of water within the State of Arizona. Cross-Connection Control is defined in the rules of the Arizona Department of Environmental Quality (ADEQ), of the State of Arizona, Title 18 Chapter 4, of the Arizona Administrative Code (AAC) as follows:

Means a physical connection between a Public Water System (PWS), and any source of water or other substance that may lead to pollution or contamination of the water provided by the Public Water System (PWS) through backflow.

Consequently, either cross-connection or the chance of backflow must be eliminated to prevent degrading the high quality of water that the NPS - GRCA Facility Management and Engineering Division, Water Utility Branch strives to maintain.

The following is the NPS - GRCA Facility Management and Engineering Division, Water Utility Branch's Policy on Cross-Connection Control / Backflow Prevention Program.

It is only through education and commitment can the NPS - GRCA Facility Management and Engineering Division, Water Utility Branch can control the hazards presented by cross connections within its public drinking water supply. NPS - GRCA Facility Management and Engineering Division, Water Utility Branch Services supports this policy and its enforcement and will offer its assistance to all who share the responsibility to provide and maintain safe drinking water.

Chapter 1 - Overview

Purpose

The purpose of this Policy is to protect the National Park Service, Grand Canyon National Park's public potable water supply from the possibility of contamination or pollution. This policy is to promote the control and/or elimination of existing backflow / cross-connections, actual or potential, between its customers usage and the public water supply; and to provide for the maintenance of a continuing program of the backflow / cross-connection control which will systematically and effectively prevent the contamination of the potable water distribution system. This Policy is intended to prevent delivered water **(water that has passed beyond the public water system and into the private distribution systems of customers)** from re-entering the public distribution system and being subsequently re-delivered to customers.
This allows persons active in piping design and installation to incorporate and install appropriate backflow prevention assemblies correctly.

The following is from United States Environmental Protection Agency (USEPA), Cross Connection Control Manual. Public health officials have long been concerned about cross connections and backflow connections in plumbing systems and in public drinking water supply distribution systems. Such cross connections, which make possible the contamination of potable water, are ever present dangers. One example of what can happen is an epidemic that occurred in Chicago, Illinois in 1933. Old, defective, and improperly designed plumbing and fixtures permitted the contamination of drinking water. As a result. 1,409 persons contracted amebic dysentery; there were 98 deaths. This epidemic, and others resulting from contamination introduce into a water supply through improper plumbing, made clear the responsibilities of public health officials and water purveyors for exercising controls over public water distribution systems and all plumbing systems connected to them. This responsibility includes advising and instructing plumbing installers in the recognition and elimination of cross connections.

- To protect the public potable water supply serving the Grand Canyon National Park (GRCA) Water Utility from the possibility of contamination or pollution by isolating, at the source, such contaminants or pollutants which could backflow or back-siphon into the public water system.

- To promote the elimination or control of existing cross-connections, actual or potential, between potable water system, and non-potable water system.

- To provide for the maintenance of a continuing program of cross-connection control, which will systematically and effectively prevent the contamination or pollution of all potable water systems.

Causes of Backflow

The causes of backflow are not usually eliminated completely since backflow is often initiated by accident or unexpected circumstances. However, some causes of backflow can be partially

controlled by good design and informed maintenance. Listed below are the major causes of backflow as outlined under the two types: backsiphonage and backpressure.

1. **Backsiphonage –** is caused by reduced or negative pressure being created in the supply piping. The principal causes of backsiphonage are:

    a. Line repair or break which is lower than a service point. This will allow negative pressures to be created by water trying to flow to a lower point in the system.
    b. Undersized piping **–** if water is withdrawn from a pipe at a very high velocity, the pressure in the pipe is reduced and the pressure differential created can cause water to flow into the pipe from a contaminated source.
    c. Lowered pressure in water main due to a high-water withdrawal rate such as firefighting activities, water main flushing, water main breaks, etc.
    d. Reduced main pressure on suction side of a booster pump.

2. **Backpressure –** may cause backflow to occur where a potable water system is connected to a non-potable system of piping, and the pressure in the non-potable system exceeds that in the potable system. The principal causes of back pressure are:

    a. Booster pump systems designed without backflow prevention assemblies.
    b. Potable water connections to Boilers, Fire Sprinkler (Suppression) and/or any other pressure systems, without backflow prevention assemblies.
    c. Connections with other systems which may at times have a higher pressure.
    d. Water stored in tanks or plumbing systems which, by virtue of their elevation, would create head pressures enough to cause backflow, if pressure were lowered in the public system.

Cross-Connection Program Description

The National Park Service, Grand Canyon National Park's Cross Connection Control / Backflow Prevention Program is a containment program as defined by Arizona State Regulation, R18-4-215 and the United States Environmental Protection Agency, Office of Water, Cross-Connection Control Manual (4606M) EPA 816-R-03-022, United States Public Health Services, NPS - Office of Public Health, Common Cross-Connections and Recommended Backflow Prevention Devices, November 2021, Reference Manual 83-A (RM-83-A) . This program is housed within the GRCA Facility Management and Engineering Division, Water Utility Branch and has the following duties:

- Administer testing or handles contracts to test and maintain approximately **177** Park owned assemblies annually. Also handles the repairs via contract and/or inhouse of same devices.
- Track annual tests of **258** **NPS-GRCA** and **Commercial Services / Partnerships / ~~WASO - Albright Training Center,~~** managed and maintained assemblies.
- Inspect service connections to ensure compliance with ordinances, rules, regulations, and laws, related to backflow devices.
- Review business surveys and enforce provisions of backflow rules.

- Prepare and submit reports of activities and findings.
    1. **NPS-GRCA, Commercial Services Division -** *Aramark, ~~Bright Angel Bike Shop and Café~~, Delaware North, Xanterra*. **Annual Testing and Repair contract, Deadline August 31st of each year.**
    2. **NPS-GRCA, Partnerships Services Division -** *Grand Canyon Unified School District, Grand Canyon Conservatory.* **Annual Testing and Repair contract, Deadline August 31st of each year.**
    3. **~~NPS-WASO - Albright Training Center,~~ Annual Testing and Repair contract, Deadline August 31st of each year.**
    4. **NPS-GRCA -** *Buildings, Housing, Water Utilities* **Annual Testing and Repair contract, Deadline August 31st of each year.**
    5. **NPS-GRCA-FMD-CCC Program Testing / Repair / Program Review and ADEQ Reporting Deadline Oct 30th of the reporting year.**
- Inspect existing cross connection control devices, to ensure proper, and adequate protection, and installation requirements.
- Develop and review, NPS - GRCA Facility Management and Engineering Division, Water Utility Branch, standard details for the installation of backflow prevention assemblies; maintain current listings of approved backflow prevention assemblies.
- Maintain accurate database of all testing (digital-paper reports), testers, and certifications of third-party companies and NPS personnel.
- Maintain photograph documentation of testing devices; one side profile digital picture of location (Time and Date ID), one digital picture of device identification plate (Time and Date ID). This applies to all backflow device testing Park (GRCA) wide.
- Review for compliance with State and/or Federal rules and recommends revisions to Grand Canyon National Park Cross – Connection Control & Backflow Prevention Program, as appropriate (Annually Jan. to Dec. of each year) to conform to changes in State and/or Federal legislation.
- Review for compliance with State and/or Federal rules and recommends revisions to Grand Canyon National Park Cross – Connection Control & Backflow Prevention Program - Emergency Incident Response Plan, as appropriate (Annually Jan. to Dec. of each year) to conform to changes in State and/or Federal legislation.
- Meet and confer with other local and state agencies on rule making and compliance matters. (Networking / Training with other outside professional groups)
- Investigate backflow incidents and water quality complaints in conjunction with Water Production / Distribution personnel.

Chapter 2 - Responsibilities

Cross Connection Control and Backflow Prevention Program

The responsibilities of Grand Canyon National Park Cross – Connection Control & Backflow Prevention Program, in accordance with State Law R18-4-215, AAC are as follows:

1. To protect Grand Canyon National Park's Public Water Supply, ADEQ - ID A0403702 from the possibility of contamination by isolating within the customers' Private Water Systems, contaminants or pollutants which could, under adverse conditions, backflow through uncontrolled cross-connections, into the Public Water System (PWS).
2. To ensure the containment of Boiler, Fire Suppression, Water Softening Treatment Systems, Livestock Water Tanks, Restaurants, RV Waste Disposal Stations, RV Water Connections Stations **Reclaim Water**, and Irrigation backflow assemblies. That are located on Commercial, Park Operations and Housing properties, are correctly installed and functioning correctly.
3. To provide a continuing inspection program, of the cross-connection control / backflow, which will systematically and effectively control all **actual** or **potential** cross-connecting which may be installed in the future.
4. To educate customers / Park visitors about the dangers of possible cross-connects found on internal plumbing systems.

The GRCA Chief of Facility Management & Engineering shall be responsible for the protection of the public potable water distribution systems from contamination or pollution through the water service connection. If, in the judgment of the Chief of Facility Management & Engineering (and/or Authorize Designees), the United States Public Health Service (USPHS) (Recommendation), Coconino County Health Dept., or the Arizona Department of Environmental Quality (ADEQ) (Regulatory Agency Requirements), an approved backflow prevention assembly is required for the safety of the water system. The GRCA Chief of Facility Management & Engineering and/or designated representatives, shall give written notice to have an appropriate backflow prevention assembly installed. Failure to comply in a timely manner constitute a ground for discontinuing the water service until such device(s) has been properly installed.

Customers

The customers' responsibility starts at the point of delivery from the public potable water system (i.e., Water Meter or non-metered dedicated Fire Suppression line) and includes all their internal water systems. The customer, at their own expense, shall install, operate, test (digital-paper reports), and maintain approved backflow prevention assemblies, as directed by the Grand Canyon National Park. The customer shall maintain accurate records of tests and repairs made to backflow prevention assemblies and provide Grand Canyon National Park with copies of such records.

Annual Testing / Repair Records Package: For each individual device shall consist of fully completed Backflow Prevention Assembly Test form (digital-paper reports), **(fail / passing with repairs / replacement listed, final passing)** (2) two pictures (digital-paper reports) - (1) one picture of the device information plate, & (1) one picture side profile including #1 / #2 isolation valves.

All communication shall be conveyed through the NPS - GRCA Commercial Services Division **-** *Aramark, ~~Bright Angel Bike Shop and Café~~, Delaware North, Xanterra*, NPS - GRCA Partnerships Division **–** *Grand Canyon Unified School District, Grand Canyon Conservatory*, and NPS **–** ~~WASO Albright Training Center~~. They will communicate back and forth, all information to the GRCA Facility Management and Engineering Division, ~~Deputy Chief of Facilities for~~ Water Utilities Branch.

In the event of accidental pollution or contamination of the public or customers' potable water system due to backflow on or from customer's premises, the owner shall promptly take steps to confine further spread of pollution or contamination within the customers' premises and shall immediately notify the Grand Canyon National Park, of the hazard. This is so that the Emergency Incident Response Plan, can be implemented, and proper notifications to ADEQ can be made.

Backflow Prevention Assembly (Repairer) Installers

The installers' responsibility is to properly install backflow prevention assemblies in accordance with the manufacturers' installation instructions and any additional instructions approved by the Grand Canyon National Park. All backflow devices shall be installed as close as possible to the water meter box with a heated enclosure (Hot Box) or heated structure, unless otherwise approved by Grand Canyon National Park.

The installation location shall be done in accordance with approved plans. Any revisions made to the locations of the backflow device, must be submitted to the Grand Canyon National Park, GRCA Facility Management and Engineering Division, Water Utility Branch, Cross Connection Coordinator for approval. The installer is also responsible for ensuring an assembly is working properly, when it is installed and have a certified tester verify **"passing"** results.

Backflow Prevention Assembly Testers

Backflow testers are required to accurately report (digital-paper reports) the findings from the annual, installation, or repair test reports to the GRCA Facility Management and Engineering Division, Utility Branch within **5 business days** of completing the test. This applies to both Contract Backflow Prevention Companies and NPS Certified Staff.

Tester Requirements:

All backflow testers must be certified by a recognized certifying authority. The GRCA Facility Management and Engineering Division, Utility Branch recognizes the following certificates issued by:

- American Backflow Prevention Association (ABPA).

- Piping Industry Progress & Education Fund (PIPE).
- The International Association of Plumbing and Mechanical Officials (IAPMO)
- The American Society of Sanitary Engineers (ASSE).
- All American Backflow Prevention (AABP).

Tester Equipment:
Each backflow prevention assembly tester shall have properly calibrated and operating equipment to be used in the evaluation of the performance of the assembly they are testing. Each tester conducting test within the Grand Canyon National Park, shall provide the GRCA Facility Management and Engineering Division, Utility Branch with Testing Device Calibration Report, documentation (digital-paper reports) annually.

Test equipment used on any system other than **Potable Water** backflow prevention assemblies, **shall not** be used to test such assemblies. All **Reclaim Water** backflow prevention devices, testing equipment, and reports, shall be identified as **Non-Potable - Reclaim Water.**

It is the responsibility of the tester to keep certification(s) and equipment calibration current and on file with the GRCA Facility Management and Engineering Division, Utility Branch – CCC Office.

Backflow Protection:
GRCA Facility Management and Engineering Division, Water Utility Branch – CCC Office, is responsible for protecting the quality of public water supply. To prevent contamination of the public water supply by backflow and cross connection, the GRCA – FMD – WUB - CCC Office has identified types of developments requiring backflow prevention, and approved types of devices to prevent backflow.

Premises Requiring a Backflow Preventer:
(A) When any of the following items or activities are present or conducted on a premises served by the public potable water supply system, a potential hazard to the public potable water supply system shall be presumed, and the user shall insure that a backflow preventer or air gap, of the type specified for that item or activity herein, is in place at each service connection for that premises. The backflow prevention device should be located as close as possible to the water meter, and if necessary, installed in a hot box. All backflow assemblies shall be installed above ground. Installation in a vault will be prohibited, in less equipped with an adequately sized floor drain.:

1. Aircraft service and repair shop: Reduced Pressure Principle Backflow Prevention Assembly (RPA)
2. Animal veterinary / boarding facilities: RPA
   Note: stock tanks with automatic filling devices are required to have an air gap, two times the diameter of the discharge. The measurement of air gap shall start from the top of the tank unrestricted overflow **(Flood Level Rim)** and the overflow must be two times the diameter of the water line discharge. At no time is the discharge point to be ever submerged and/or blocked (Water) in the tank. Main service line to facility as close as

possible to the meter, an RP **(located within a hot box, if necessary)** will be required to be installed downstream from the meter.

3. Automotive Repair / Service Shops, (with steam cleaners, acid cleaning equipment, or solvent facilities): RPA
4. Auxiliary water systems, public or private: RPA
5. Buildings greater than three stories in height or greater than 34 feet in height from curb level: Double Check Valve Backflow Prevention Assembly (DCVA)
6. Buildings used for commercial or industrial purposes where one service connection supplies more than on tenant or occupant of the building: RPA
7. Buildings where the user's water supply system is in violation of the Uniform Plumbing Code as adopted by the Park: RPA
8. Buildings with house pumps and or potable water storage tanks: DCVA
9. Buildings with landscape fountains, ponds, or baptismal tanks: RPA
10. Buildings with sewage ejectors: RPA
11. Car wash facilities: RPA
12. Cooling towers, boilers, chillers, and other heating and cooling systems utilizing potable water: RPA
13. Chemical storage facilities: RPA
14. Chemically treated **(Water Softening)** potable or non-potable **(Reclaim Water)** water systems: RPA
15. Commercial laundries: RPA
16. Fire hydrant / water meters connected to an irrigation system or any other use included in the Irrigation Systems Subsection: RPA
17. Fire hydrant / water meters, water tanker supply locations: RPA
18. Fire sprinkler systems connected to potable water systems only. No tanks or reservoirs. No additives of any kind. In-line booster pumps are ok. DCVA
19. Fire systems with a storage tank: RPA***
20. Fire sprinkler systems connected to an auxiliary water supply or with FDC's within 1,700 feet of an auxiliary supply: RPA***
21. fire systems with chemical additives: RPA***

*** This RP is to be installed on the fire line outside of the building **not on the riser**.

22. Government owned or operated facilities not open, for inspection **(for LE security reasons)** by the Water Utility: RPA
23. Hospitals and Clinics: RPA
24. Irrigation systems, except as described in Subparagraphs a.-e.: Pressure Vacuum Breaker (PVB)
    a. Premises where non-potable **(Reclaim Water)** water, is used for irrigation: RPA
    b. Systems utilizing fertilizer or pesticide injection systems: RPA
    c. Systems interconnected by more than one service connection: RPA
    d. Systems using potable water with non-potable **(Reclaim Water)** water piping: RPA
    e. Systems designed and constructed capable of inducing backpressure at the service connection: RPA
25. Laboratories using toxic and/or nontoxic materials: RPA
26. Medical and dental buildings, behavioral health centers, engaged in the diagnosis, care or treatment of human illness: RPA

27. Mobile home parks served by master meters: DCVA
28. Multiple (Trailer Village) service connections (1) sanitary yard hydrants equipped with vacuum breaker on individual trailer connections) interconnected for potable uses: (1) on the main line: RPA
29. Oil and gas storage facilities: RPA
30. Portable insecticide or herbicide spray tanks: RPA or Air Gap (AG)
31. Premises served by water meters 3" or greater in size (vault meters): DCVA
32. Premises where a cross-connection is maintained or where a cross-connection previously occurred within a user's premises: RPA
33. Restaurants: RPA
34. RV Dump Stations; (main water supply line) holding tank (Black and Gray Water) disposal: RPA
35. RV Dump Stations; (potable or non-potable water towers supply lines) holding tank (Black and Gray Water) disposal: Atmospheric Vacuum Breaker (AVB)
36. Schools, colleges, and universities: RPA
37. Shopping centers served by master meters: RPA
38. Sewage collection or treatment facilities: RPA
39. Waterfront facilities: RPA
40. Water trucks, water tanks or hydraulic sewer cleaning equipment: RPA or AG

(B) When two or more of the items or activities listed in Subsection A are present or conducted on the same premises and served by the same service connection, the user shall install the most restrictive backflow preventer at the service connection. For purposes of this Subsection the order of most restrictive to least restrictive backflow preventers shall be as follows:

1. Reduced Pressure Principle Backflow Prevention Assembly (RPA)
2. Pressure Vacuum Breaker Assembly (PVB)
3. Double Check Valve Backflow Prevention Assembly (DCVA)

(C) GRCA Facility Management and Engineering Division, Water Utility Branch – CCC Office shall perform site surveys of all new water users and existing water users to determine if the degree of hazard requires a backflow prevention assembly to be installed. If an assembly is required, the user shall comply with the standards set forth in this Chapter within a period of time as determined by the Water Utility Branch – CCC Office, based upon the degree of hazard.

(D) A change of type of use shall require the Water Utility Branch – CCC Office to conduct a new survey of use. If the survey determines a backflow prevention assembly is required, installation shall be completed by the user before the Park may grant the change.

Approved Backflow Prevention Devices:

The following types of backflow prevention devices are approved for use within the Grand Canyon National Park, Facilities Maintenance Division, Water Utilities Branch service area:

- Reduced Pressure Principle Device, (RP)
- Reduced Pressure Principle - Detector Backflow Prevention Assembly (RPDA)

- Reduced Pressure Principle Detector Backflow Prevention Assembly – Type II (RPDA-II)
- Double Check Valve Assembly, (DC)
- Double Check - Detector Backflow Prevention Assembly, (DCDA)
- Double Check - Detector Backflow Prevention Assembly – Type II, (DCDA-II)
- Air Gap Separation, (AG)
- Pressure Vacuum Breaker Backsiphonage Prevention Assembly, (PVB)
- Spill Resistant Vacuum Breaker Backsiphonage Prevention Assembly, (SVB)
- Atmospheric Vacuum Breaker Backsiphonage Prevention Assembly, (AVB)

Chapter 3 - Test Report Submission

It shall be the duty of the customer, at any commercial premises where approved backflow assemblies are installed, to have thorough inspections and operational tests made at least once a year, **(Deadline: August 31st of each calendar year)** or more often as directed by the GRCA Facility Management and Engineering Division, Water Utility Branch. The tests shall be at the expense of the customer and be performed by a properly certified backflow tester.

- All communication shall be conveyed through the NPS - GRCA – Commercial Services Division and Partnerships Division. They will in turn communicate back and forth all information to the GRCA Facility Management and Engineering Division, Deputy Chief of Facilities for Water Utilities Branch.

Test Submission:
The tester shall submit the **Annual Testing / Repair Records Packages** to the GRCA Facility Management and Engineering Division, Utility Branch, GRCA - Backflow / Cross-Connection Control Coordinator, within **5 business days** of test completion.

- Submit report to the GRCA Facility Management and Engineering Division, Utility Branch, for entry into the database excel spreadsheet system. This will include temporary construction backflow tests reports. **(Very detailed; typed or legible print)**

- Test reports shall be filled out completely, with all necessary data as follows:

➢ Water Purveyor ➢ Assembly Service Street Address & NPS - Inventory Location Identifier ➢ Backflow Location Notes ➢ Device; Annual Tests, New Installation, Retest, Replacement ➢ Test Results; (PSID) and Repair Information ➢ Additional comments ➢ Testers Certificate No. & Expiration Date ➢ Two (2) pictures; One (1) of the Device	➢ Device Information: Service Type, (boiler, fire suppression, etc.) Device Type, Serial No., Manufacturer, Model, Size, Water Meter Serial Number. ➢ Type of use and hazard ➢ Test Date ➢ **Pass** or **Fail** ➢ Test Company Information ➢ Testers Name (printed) & Signature ➢ Test Kit (Potable Water or **Reclaim Water**) Model, Certification date, Serial Number. The reclaim water backflow

Information Plate, & One (1) of the Side Profile (Showing isolation valves #1 & #2) of the location, in the room.	testing kit shall be marked with a label **"Reclaim Water"** on the box.

Testing Notifications:
The Park will send out an 1st Annual Backflow Testing / Repair / Replacement **(E-Mail)** reminder by **January 15th** of each reporting year. On **May 1st** of each reporting year, the Park will send out a 2nd Annual Backflow Testing / Repair / Replacement **(E-Mail)** reminder. This will be the last reminder for the year.

The following is a four (4) stepped measured / escalation of enforcement for a Non-Compliance event.

1. If the Park, has not received the annual backflow testing / repair documentation by **August 31st** the customer will be found in **"Non Compliance"** with this policy. After the due date **(August 31st)** has passed, an **"PASS DUE"** notice will be sent out by E-Mail.

2. If the Park, has not received the annual backflow testing / repair documentation by **September 15th** the customer will be found in **"Delinquency"** with this policy. After the 2nd Pass Due date **(September 15th)** has passed, an **"2nd PASS DUE"** notice will be sent out by E-Mail.

3. If the Park, has not received the annual backflow testing repair documentation by **September 25th** the customer will be sent by E-mail, an**"Final Notice - Water Service Termination"**. Should the customer / location fail to report test results, there will be an escalation of enforcement per this NPS - Grand Canyon National Park, Cross Connection Control / Backflow Prevention Program. This will result in the termination **(Locking Out or Water Meter Remove)** of water service to the location. This is done in the Public Health interest, State and Federal Regulations, and security of the Public Water Utility.

4. Upon notification of a backflow tester (to be scheduled with the GRCA - Cross Connection Coordinator) on site, water service will be restored for testing purposes. If the device test results in a **"Pass Report"**, water service will be fully restored back to service.

Chapter 4 - Cross Connections Surveys and Inspections

Surveys

Due to changes in models or components of equipment, methods of manufacturing and additions to plants, buildings, etc., water use requirements undergo continual change. New cross-connections may be installed, and existing protection may be by-passed, removed, or become otherwise **ineffective**; therefore, a periodic site survey by GRCA Facility Management and Engineering Division, Water Utility Branch, Cross Connection Coordinator, will be required.

These inspections will be on the customer's premises and may consist of, but are not limited to:

1. Notifying customer, commercial services, partnership services, of an onsite inspection.
2. Visual check for Cross-connection. (actual or potential)
3. Verify that the proper device has been installed in relation to potential hazards, to the utility.
4. Verify backflow device is installed and working properly.
5. Verification of test results, NPS-GRCA may accompany the backflow prevention assembly tester during the time of testing. This would require advanced notification to the GRCA Cross connection coordinator, of anticipated time of testing.
6. Assessment for installation of a backflow device, or if none is present.
7. Review all fire suppression systems and associated backflow prevention device requirements and proper application review.
8. Review all livestock watering tanks for proper backflow prevention device requirements and proper application review.
9. If in the judgment of the GRCA - Cross Connection Coordinator an approved backflow device is required to protect the Park Water Utility (Public Water System (PWS), from any contamination or pollution. GRCA - Cross Connection Coordinator, shall give notice in writing per email that the customer is to install the properly approved backflow prevention device within 90 days. And failure or refusal or inability on the part of the customer to install said device or devices within 90 days shall constitute grounds for discontinuing water service to the premise until such device or devices have been properly installed.

Proposed Construction

All new construction plans and specifications for commercial facilities, operations buildings, and housing shall be reviewed by GRCA Facility Management and Engineering Division, Water Utility Branch, Cross Connection Coordinator, to determine the degree of potential cross-connection hazard. At the time of plan review, backflow prevention requirements in accordance with this policy will be made.

New and Existing Facilities

In order to determine the degree of hazard to the public potable water system, a survey will be made of the customers' presently installed water system. This survey does not need to be a detailed inspection of the location or disposition of the water mains but can be confined to establishing the water uses on the premises for the existence of cross-connections, and the availability of auxiliary or **non-potable (Reclaim Water)** water supplies. On-site inspections are done on new and existing facilities and should any devices or plumbing change be required. A notification will be sent, and a follow-up inspection will be completed, at a later date.

Chapter 5 - Cross-Connection Hazards and Required Protections

Type of Backflow Protection Required

An approved backflow prevention assembly of the type designated shall be installed on each water service connection to commercial, operations buildings, and housing facilities. The GRCA Facility Management and Engineering Division, Water Utility Branch uses the most current edition (10th) of the USC-FCCCHR Manual of Cross-Connection Control for list of approved assemblies.

Parallel Installations

All backflow prevention assemblies with test cocks are required to be tested annually. Testing requires a water shutdown usually lasting five (5) to twenty (20) minutes. For facilities that require an uninterrupted supply of water, provisions shall be made for a "parallel installation" of backflow prevention assemblies.

During testing, one assembly is left on while the other is being tested. GRCA Facility Management and Engineering Division, Utility Branch will not accept an unprotected bypass around a backflow assembly when the assembly needs testing, repair, or replacement.

Chapter 6 - Backflow Incident Investigation

The GRCA Facility Management and Engineering Division, Water Utility Branch shall submit a written cross-connection incident report to ADEQ, Coconino Health Dept., and the USPHS, within 5 business days after a cross-connection problem occurs that results in contamination of the public water system.

If a backflow incident were to occur, ADEQ, Coconino Health Dept., and the USPHS, must be notified (Ariz. Admin. Code § R18-4-211-A) within five (5) business days with the following information:

1. Date/Time of discovery of the cross-connection incident,
2. Nature of the cross-connection incident,
3. Affected area,
4. Cause of the cross-connection incident,
5. Public health impact,
6. Date and text of any public health advisory issued,
7. Corrective action taken, and
8. Date of completion of each corrective action.

Internally, the practice will be to follow these steps:

- Locate the source,
- Contact Water Distribution Supervisor / Crew, to isolate source to protect the water distribution system from further contamination,

- Notify the GRCA - Backflow / Cross-Connection Control Coordinator, Management, and the GRCA - Regulatory Compliance Office, Management will contact ADEQ,
- Determine the extent of the spread,
- Notification of the public, if necessary,
- Take corrective action to remove hazard from the distribution system,
- Restore service to the customers.

Chapter 7 - Fire Sprinkler Systems

Plans and permits for fire sprinkler (suppression) systems are processed through the GRCA Facility Management and Engineering Division, Utility Branch, and the GRCA Fire Department. Commercial properties are required to have a testable backflow assembly, if the GRCA Fire Department deems a sprinkler system necessary. The GRCA Fire Department will do a rough and final fire sprinkler (suppression) systems inspection on new construction and/or remodeling construction. This inspection is to verify that the construction complies with state of Arizona fire codes and NPS specifications.

GRCA - Cross Connection Coordinator performs the rough and final inspection of the related backflow prevention device. Before the system can be placed into service a backflow prevention tester has to complete a backflow prevention assembly test form (**Passing**) with two pictures. Backflow prevention devices are required to be installed between the potable water main and the fire sprinkler (suppression) systems, commercial and housing units.

Chapter 8 - Boiler Systems

All commercial, Park operations, and housing utilizing boiler systems for heating require a Reduce Pressure Principle Backflow Prevention Assembly, (RP) for water supply line to the unit. The device size will be determined by the supply line to the boiler.

Chapter 9 - Removal Requirements

It shall be unlawful for any person to alter, modify, bypass, or remove a backflow preventer without the written approval of GRCA Facility Management and Engineering Division, Water Utility Branch - Cross Connection Coordinator. The property owner must contact the GRCA Facility Management and Engineering Division, Water Utility Branch prior, to removing the backflow assembly. A site survey will be completed to assess the actual or potential for cross-connections if the backflow were to be removed. If none are found, the GRCA Facility Management and Engineering Division, Water Utility Branch - Cross Connection Coordinator, will issue a written report documenting the findings.

If the property owner has already removed the backflow, a site survey must be completed to assess the water usage and the status of the removal. The device and piping shall be removed as close as possible to the main service connection. Under no circumstances shall the GRCA Facility Management and Engineering Division, Water Utility Branch, give approval if only the device has been removed and the water lines are open to the air. Grand Canyon National Park

has the right to require the backflow device be reinstalled to protect the Park's potable water distribution system.

Once the removal is completed to the satisfaction of the Park, it can be removed from the database. If there has been a change in owner/tenant or a water use change, the Park can require a backflow device to be reinstalled.

Chapter 10 - Discontinuance of Water Services

As stated in Chapter 3, a reminder E-mail will be sent on **September 26th**. The Park will then generate and send by email, a **"Final Notice - Water Service Termination"**. This email notification will be sent to the business/property owner as part of the escalating enforcement. If the deadline has passed without communication, a **"Notice of Violation" (NOV)** will be issued to the legal authority for the business/owner of the property. The GRCA - Chief of Facility Management & Engineering, will be notified of the violation and the possibility of water disconnect.

Once the **"Notice of Violation" (NOV)** deadline has passed, a call will be placed to the NPS legal authority that the water service to the address will be discontinued. The Park's Commercial Services Supervisor and the FMD Chief of Facilities will be notified of the discontinuance. The Cross Connection Coordinator will place a door hanger at the address notifying the occupant of the discontinuance to happen in **24 hours**. If Commercial Services Division and/or GRCA Facility Management and Engineering Division, Water Utility Branch is not contacted within the time period, the water will be shut off until the violation is resolved.

Chapter 11 – Sources of Information about Cross-Connection Control

American Society of Sanitary Engineering
ASSE International Office
901 Canterbury, Suite A
Westlake, OH 44145
(440) 835-3040

American Backflow Prevention Association (ABPA)
100 N. 20th Street, Suite 200
Philadelphia, PA 19103
(979) 846-7606

American Water Works Association
6666 West Quincy Ave.
Denver, CO 80235-3098
(800) 366-0107

University of Southern California, Foundation for Cross-Connection Control and Hydraulic Research
KAP – 200 University Park MC-2531
Los Angeles, CA 90089-2531
(866) 545-6340

Chapter 12 – Definitions and Cross-Connection Control Industry Terminology

Absolute Pressure:
Is the total combination of gage pressure and atmospheric pressure.

Accessible:
Assemblies must be installed having access for testing, maintenance, and repair.

Administrative Authority:
The official office, board, department, or agency authorized by law to administer and enforce regulation and or code requirements. This includes a duly authorized representative of the Administrative Authority. The state administrative authority sets the minimum standards for a Cross-Connection Control Program.

Air Gap (AG)
The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture, or other device and the flood level rim of the vessel. An approved air gap shall be at least double the diameter of the supply pipe, measured vertically, above the overflow rim of the vessel; by physical separation and in no case less than one inch. The relief valve on a RP assembly must be piped to a drain through an air gap. Examples: (Kitchen faucet, bathroom faucet, drains going into a floor sink)

Approved:
Accepted by the GRCA Chief of Facility Management & Engineering as meeting an applicable specification stated or cited in this ordinance, or as suitable for the proposed use. (Meeting certain standards like USC, ABPA, or ASSE)

As-built Drawings:
Blueprint drawings that are modified to reflect the actual piping, configuration and location.

Aspirator:
The means by which liquids are sucked into a piping system. It's the velocity of liquid in the pipe that creates a vacuum or low pressure on the sides of the pipe which allows backsiphonage to occur. (Small tee inlet, water main break)

Assembly:
An assemblance of one or more approved body components, including approved,

shutoff valves, test cocks and check valves. A Y configured reduced pressure assembly has less head loss than an inline assembly.

Atmospheric Pressure:
Is the pressure exerted by the earth's atmosphere at sea level (14.7 psi)
Atmospheric vacuum breaker (AVB): the AVB consists of a float check, a check seat, and an air inlet port. A shutoff valve immediately upstream may or may not be an integral part of the device. The AVB is designed to allow air to enter the downstream water line to prevent backsiphonage. This unit may never be subjected to a backpressure condition, have a downstream shutoff valve, or be installed where it will be in continuous operation for more than 12 hours in a 24-hour period. (AVB's must be installed a minimum of 6 inches above all downstream piping. AVB's are used on lab sinks, janitor sinks, hose bibs, they are not approved, for service protection. AVB's can only be assumed as working by taking it apart and inspecting)

Authority having Jurisdiction:
The agency, organization, office or individual responsible for
approving materials, equipment, work installation, or procedure. (Local authorities: NPS, United States Public Health Service (USPHS)(Recommendation), Coconino County Health Dept., or the Arizona Department of Environmental Quality (ADEQ) (Regulatory Agency Requirement)

Auxiliary Water Supply (Reclaim Water):
Any water supply on or available to the premises, other than the National Park Service approved potable water system, will be considered an auxiliary water supply. These auxiliary waters may include water from another purveyor's public potable water supply or any natural source(s) such as a well, spring, river, lake, stream, etc., or **"Reclaim Water"** or "recycled" or "used water" or "industrial fluids". These waters may be contaminated or polluted, or they may be objectionable and constitute an unacceptable water source over which the National Park Service has no sanitary control. Water users that maintain an auxiliary water supply must provide backflow protection.

Backflow:
The reversal of the normal flow of a liquid, gas, or other substance in a potable
water distribution piping system because of a cross connection. This can be caused by either backpressure or backsiphonage. The #1 cause of a backflow, cross connection is the common garden hose.

Backflow Preventer:
An assembly, device, or method that prohibits the backflow of water into the potable water supply systems. The primary reason for installing a BPA is to prevent backflow. A bypass around a BPA installation is not allowed under any circumstance without the same backflow protection. **(Assembly low rates differ with the size and type)**

Back Pressure:
The flow of water or other liquids, mixtures, or substances under pressure into the pipes of a potable water supply from any source(s) other than the intended source. This backpressure, that would be higher on the water user's side than on the supply side may be caused by a pump,

elevated tank, boiler, air or steam pressure, pressure sprayers, high-rise buildings. (Back pressure is one form of backflow)

Backsiphonage:
The flow of water or other liquids, mixtures, or substances into the distribution pipes of a potable water supply from any source(s) other than its intended source caused by the reduction of pressure in the potable water supply system. This backflow caused by negative, sub atmospheric or reduced pressure in the supply piping. It is when the demand exceeds supply. May be caused by a hose submerged in a liquid, fire pumper truck, broken water main or fire hydrant, venturi effect or the same thing as sucking liquid through a straw. (Backsiphonage is one form of backflow)

Ball Valve:
A quick opening valve with a spherical gate providing a tight shut off. Ball valves on backflow assemblies shall be fully ported and resilient seated.

Barometric Loop:
A looped piping arrangement (35 ft. in height (at sea level) in which the water flows over the loop at the top. This method of backflow prevention is only capable of protecting against back-siphonage since backpressure could drive water backward over the loop.

Bypass:
A piping arrangement that is designed to go around an installed backflow prevention assembly. (Any bypass line must have the same backflow protection as the main line)

Certified Backflow-Prevention Assembly Tester:
A person who has demonstrated competence to test, repair, and maintain backflow-prevention assemblies as evidenced by certification which is recognized by the approving authority. (As a tester are responsible to register yourself, your test gauge and submit field test results to the administrative authority)

Check Valve:
Is a Non-Testable device that is designed to control the direction of flow.

Chief of Facility Management & Engineering:
The GRCA Chief of Facility Management & Engineering oversees the park maintenance and is invested with the authority and responsibility (and/or Authorize Designees) for the implementation of an effective cross-connection control program and for the provisions of this policy.

Customer or Consumer:
The owner, operator, or customer receiving service from a Public Water System. (PWS)

Containment Protection:
A water purveyor's policy to protect the public water system by installing a backflow assembly at the water meter. (Also known as service protection, secondary protection or point of service protection)

Contamination Hazard:
An impairment of a potable water supply by the introduction or admission of any foreign substance that degrades the quality and creates a health hazard. (Also known as a high hazard or health hazard) This can be sewage, industrial fluids, waste liquids, chemical compounds, biological such as pesticides, herbicides, and giardia. An actual or potential hazard to the public health through poisoning or through the spread of disease. Proper backflow protection for a contaminant is a RP assembly.

Critical Level:
A reference line representing the level of the check valve seat within a backflow assembly. It is used to establish the height of the unit above the highest outlet or flood level rim. If it is not marked on the backflow preventer, the bottom of the assembly is the critical level. The critical level is established by the testing lab.

Cross Connection:
A physical connection or arrangement of piping, fixtures between two otherwise separate piping systems. Or a potential connection between any part of a potable water system and any other environment containing pollutants or contaminants in a manner that, under any circumstances, would allow such substances to enter the potable water system. Other substances may be gases, liquids, or solids, such as chemicals, water products, steam, water from other sources (potable or non-potable), Bypass arrangements, jumper connections, dummy section of pipe, spools, swing connections, or changeover assemblies / devices, sliding multiport tube and other temporary or permanent connecting arrangements through which backflow may occur are cross connections. (Two types of cross-connections are Direct and Indirect. An internal CCC Program may be administered by the local health department)

Cross Connection – Controlled:
A connection between a potable a potable water system and a nonportable assembly properly installed and maintained. So that it will continuously afford the protection commensurate with the degree of hazard.

Cross Connection Control by Containment:
The installation of an approved backflow prevention assembly at the water service connection to any building where it is physically and economically infeasible to find and permanently eliminate or control all actual or potential cross connections to the water system within the facilities assigned to the Facility Manager **(NPS, Concessionaires, or Partners)** included in their land assignment; or, it shall mean the installation of an approved backflow prevention assembly on the service line leading to and supplying a portion of a building's water system where there are actual or potential cross connections which cannot be effectively eliminated or controlled at the point of the cross connection.

Cross Connection Control Specialist:
A person who has demonstrated competence to inspect premises for cross-connections and determine the method of backflow protection for any on site hazards by completing a course of study and passing a written exam. (The Cross-Connection Control Specialist must be able to supervise a Cross-Connection Control Program, have good customer relation skills, be able to inform and educate customers by scheduling appointments for inspection. (No cold calls)

Cross Connection Control Survey:
An inspection to determine the degree of hazard and recommend the proper backflow protection. (If access is denied then the installation of a RP assembly is required at the service connection)

Degree of Hazard:
The term is derived from an evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable water system. The assessment of the on-site hazard, it could be a (low hazard, non-health hazard, pollution hazard) or (high hazard, health hazard, contamination hazard) (Hydraulics are always considered when assessing the degree of hazard) (The administrative authority will determine the degree of hazard and require the proper backflow protection)

- **Hazard – Health.** Any condition, device, or practice in the water supply and its operation which could create, or in the judgment of the GRCA Chief of Facility Management & Engineering, Public Health Service, or the appropriate area regulatory officials, may create a danger to the health and well-being of the water consumer.

- **Hazard – Plumbing.** A plumbing type cross-connection in a consumer's potable water system that has not been property protected by an approved air gap or approved backflow prevention assembly.

- **Hazard – Pollution.** An actual or potential threat to the physical properties of the water system or the potability of the water supply which would constitute a nuisance, be aesthetically objectionable, or could cause damage to the system or its appurtenances but would not be dangerous to health.

- **Hazard – System.** An actual or potential threat of severe damage to the physical properties of the potable water system, or of a pollution or contamination which would have a protracted effect on the quality of the potable water in the system.

Deputy Chief of Facilities for Water Utilities Branch:
The GRCA Deputy Chief of Facilities for Water Utilities Branch oversees the park water and wastewater operations / maintenance and is invested with the authority and responsibility (and/or Authorize Designees) for the implementation of an effective cross-connection control program and for the provisions of this policy. The Deputy Chief of Facilities for Water Utilities Branch serves as the supervisor for the Cross-Connection Control Specialist.

Device:
Is a backflow preventer that is Non-Testable; it must be disassembled and inspected to insure it's working properly. (AVB, Dual Check, Hose Bibb Vacuum Breaker)

Differential Pressure Gage:
A pressure gage that measures two pressures (a low pressure and a high pressure) and indicates the difference in the two pressures. (Gages should be calibrated annually. They can be mechanical or digital)

Direct Cross-Connection:
A cross-connection that is subject to both backpressure and backsiphonage. It is a rigid permanent connection to a contaminant or pollution source.

Double Check Valve Assembly (DCVA or DC):
An assembly composed of two independently acting, internally loaded check valves, including tightly closing resilient-seated, fully ported shutoff valves located at each end of the assembly and fitted with 4 properly located resilient-seated, fully ported test cocks. This assembly shall only be used to protect against a non-health hazard (that is, a pollutant). (The checks must be drip tight in the direction of flow, max head loss 10 psi, if it is found connected to a high hazard then notify the admin authority)
The entire assembly shall meet the design and performance specifications as determined by the, Foundation for Cross Connection Control at USC for backflow prevention assemblies. To be approved, these assemblies must be readily accessible for in-line testing and maintenance.

Double Check-Detector Backflow Prevention Assembly (DCDA):
A backflow assembly specially designed assembly composed of a line-size approved double check valve assembly with a bypass containing a specific water meter and an approved double check valve assembly. The meter shall register accurately for only very low rates of flow up to 3 gpm (gallons per minute) and shall show a registration for all rates of flow. This assembly shall only be used to protect against a non-health hazard (that is, a pollutant).

Dual Check:
A Non-Testable backflow device with two check valves and no test cocks.

Effective Opening:
The minimum cross-sectional area at the point of water supply discharge, measured or expressed in terms of the diameter of a circle, or if the opening is not circular, the diameter of a circle of equivalent cross-sectional area. **(Don't confuse with an air gap, which is determined by the size of the effective opening)**

Expansion Tank:
A tank used for safely controlling the expansion of water. (An expansion tank or other method of controlling thermal expansion must be addressed when installing a backflow assembly on the water service) When a BPA is installed a closed system is created.

Fire Department Connection: (FDC or Siamese Connection)
A connection through which a fire department can introduce supplemental water with or without the addition of other chemical fire retarding agents by the means of a pump into a sprinkler system, standpipe, or other fire suppression system.

Fire Protection Systems (Water Based):
Sprinkler system is a system of underground and overhead piping hydraulically designed and constructed to which sprinkler heads are attached for extinguishing fire.

1. **Wet Pipe System:** A sprinkler system containing water and connected to a water supply.

2. **Antifreeze System:** A wet pipe sprinkler system containing antifreeze.

3. **Dry Pipe System:** A sprinkler system containing air or nitrogen under pressure and connected to a water supply. A sprinkler head opening allows the air or nitrogen to be released from the system and water to enter the system. Dry pipe systems are to be always maintained dry. Exception: During non-freezing conditions, the system can be left wet if the only other option is to remove the system from service while waiting for parts or during repair activities.

4. **Deluge System:** A sprinkler system having open sprinkler heads connected to a water supply. The sprinkler system piping is dry until the fire detection system opens the water supply valve to the system.

5. **Pre-Action System:** A sprinkler system containing air that may or may not be under pressure and connected to a water supply but having a supplemental detection system in the area of the sprinklers that would open a supply valve allowing water to flow into the system and to be discharged by any open sprinkler.

6. **Combined Dry Pipe-Pre-Action System:** A sprinkler system containing air under pressure with a supplemental detection system installed in the area of the sprinklers. The detection system actuates tripping devices that open water inlet and air exhaust valves, which generally precedes the opening of the sprinklers. The detection system additionally serves as a fire alarm system.

7. **Standpipe System:** A piping system having valves, hose connections, and allied equipment installed within a premises, building or structure where the hose connections are located in a manner to discharge water through an attached hose and nozzle to extinguish a fire. These systems maybe wet or dry and may or may not be directly connected to a drinking water supply system. They may also be combined with a sprinkler system.

   There are three classes of standpipe systems.

   - Class I service provides 2 ½ in. hose stations from a standpipe or combined riser.
   - Class II service provides 1 ½ in. hose stations from a standpipe, combined riser, or sprinkler system. Exception: A minimum 1 in. hose may be used

for Class II Light Hazard Occupancies if investigated, listed, and authorized by the authority having jurisdiction.

- Class III service provides 1 ½ in. and 2 ½ in. hose connections or 1 ½ in. or 2 ½ in. hose stations from a standpipe or combination riser.

8. **Foam-Water Sprinkler and Spray Systems:** a special fire protection system pipe-connected to a source of foam concentrate and to a water supply. The system may discharge the foam agent before, after or with the water over the area to be protected.

Fire system classes: The 6 AWWA classes of fire systems

1. **Class 1 A fire system fed directly from a public water supply with line pressure only.**
2. **Class 2 A fire system fed directly from a public water supply with line pressure assisted with a booster pump.**
3. **Class 3 A fire system fed directly from a public water supply with line pressure, system has potable water storage tank, and has a booster pump.**
4. **Class 4 A fire system fed directly from a public water supply with line pressure, system has an auxiliary water supply. (i.e.: well, reclaimed water supply system)**
5. **Class 5 A fire system fed directly from a public water supply with line pressure, system has unapproved storage or well supply.**
6. **Class 6 A fire system fed directly from a public water supply with line pressure, system has chemical injection.**

Fire System General Information:

When testing a backflow assembly on a fire system, tamper switches may be an integral part of the shut off valves on the backflow assembly and may activate and sound an alarm when closed or opened. Notification of the premise owner, Alarm company and fire department are required before shutting off and testing the assembly. Fire codes may require a forward flow test on the backflow assembly to verify the assembly will allow the designed rate of flow.
According to AWWA standard practice all fire hydrants must be installed on 6" or larger water mains and the supply pressure can't drop below 20 psi, if this happens negative pressure can develop and create a backsiphonage condition. Example when a fire pumper truck is taking more water than the system can supply.

Flood Level Rim:

Is the level from which liquid in plumbing fixtures, appliances, or vats could overflow to the floor, when all drain and overflow openings built into the equipment are obstructed. (Air gaps are measured from the flood rim)

Gauge Pressure:

Pressure that is registered on a gauge, does not consider atmospheric pressure.

Health Hazard:

A cross connection or potential cross connection involving a contaminate that could if exposed or introduced into the potable water supply, cause death, illness, or spread disease, or have a high probability of causing such effects. (High hazard, contamination hazard, 3 types of health

hazards—chemical, biological, physical (airs and gasses) (Education on and identifying health hazards is an essential part of a CCC program) (boiler feed with or without chemicals)

Indirect Cross-Connection:
A potential or existing cross-connection that is created but is not constructed to be permanent and is subject to backsiphonage only. (Most common is a hose attached to potable water outlet and submerged in a non-potable liquid)

Industrial Fluids System:
Any system containing a fluid or solution, which may be chemically, biologically, or otherwise contaminated or polluted in a form or concentration such as would constitute a health, system, pollution, or plumbing hazard if introduced into an approved water supply. This may include, but not be limited to: pollution or contaminated waters, all type of processed waters and "used water" or **"Reclaim Water"** originating from the public potable water system which may be deteriorated in sanitary quality; chemicals in fluid form; plating acids and alkalizes; circulating cooling waters connected to an open cooling tower and/or cooling towers that are chemically or biologically treated or stabilized with toxic substances; contaminated natural waters such as from wells, springs, streams, rivers, irrigation canals, or systems, etc; oils, gases, gaseous fluids used in industrial or other purposes or for firefighting purposes, recirculating hot water systems, hot water heating systems, solar systems with antifreeze solutions, and charged fire systems.

Inspection:
A visual examination of backflow protection equipment, materials, workmanship, or portion thereof to verify installation and operational performance.

Inspector:
An individual working for or under the authority having jurisdiction empowered to ensure code compliance.

Inter Connection:
Any connection between the water meter and the service protection backflow assembly. (None allowed)

Internal Isolation:
Fixture isolation and/or isolation of an area or zone. Isolation at the fixture means installing an approved backflow preventer at the source of the potential contamination within a specific area. (Internal protection, primary protection, point of use protection) (An internal CCC Program should be administered by a local health department)

Irrigation Water:
Water utilized for plant life.

Listed-Classified-Approved:
Materials, equipment, fixtures, and other products included in a list published by an agency or organization that has successfully evaluated the item and determined compliance with the

agencies established material and or performance standards. (Agencies such as ASSE, FM, UL, ANSI, USC)

Maintenance:
Work performed or repairs made to keep equipment operable and in compliance.

Negative Pressure:
Is pressure that is below zero psi gauge or below 14.7 psi atmospheric.

Non-Health Hazard:
A cross connection or potential cross connection involving any substance that generally would not be a health hazard but would constitute a nuisance, or be aesthetically objectionable, if introduced into the potable water supply. (Also called Low hazard, pollution hazard, taste, odor, color change in water)

Physical Location Code System:

- BA/TR - Bright Angel Trail
- CVIP – Canyon Visitor Interpretive Pavilion
- DV - Desert View
- FMD - Facility Management Division
- GCUSD - Grand Canyon Unified School District
- HG - Havasupai Garden
- HR - Hermits Rest
- HQ - Head Quarters
- NR - North Rim
- PR - Phantom Ranch
- RSP – Roaring Springs Pumphouse
- SRM - Science and Resource Management
- SR - South Rim
- WTP - Water Treatment Plant
- WWTP - Wastewater Treatment Plant
- 1.5-M/RH - 1.5 Mile Resthouse
- 3-M/RH - 3 Mile Resthouse

Plumbing System:
All potable water and distribution pipes, fixtures, traps, drainage pipe, gas pipe, water treating or using equipment, vent pipe, including joints, connections, devices, receptacles, and appurtenances within the property lines of a premises.

Pollution Hazard:
The presence of any foreign substance (organic, inorganic, or biological) in water that tends to degrade its quality so as to constitute a non-health hazard, low hazard or impair the usefulness of the water. (Taste, color, odor, low hazard, non-health hazard)

Potable Water:
Water that is safe for human consumption as described by the public health authority having jurisdiction and meets EPA standards.

Non-Potable Water:
Water which is not safe for human consumption, or which is of questionable quality.

Premises Isolation:
Preventing backflow into a public water system from a user's premises by installing a suitable backflow preventer at all of the user's potable water connections. (Also called Service Protection, Secondary Protection, Containment Protection)

Pressure Vacuum Breaker Assembly (PVB):
An assembly consisting of an independently operating internally loaded check valve, an independently operating loaded air inlet valve located on the discharge side of the check valve, with properly located resilient-seated test cocks and tightly closing resilient-seated shutoff valves attached at each end of the assembly designed to operate under pressure for prolonged periods of time to prevent backsiphonage. (The pressure vacuum breaker may not be subjected to backpressure. 1psi min on air inlet and check, max head loss 10psi, protects against backsiphonage only, must be 12" above all downstream piping & outlets, will protect against low and high hazards)

Readily Accessible:
The assembly is capable of being reached for testing and maintenance without the removal of a panel, door, or any other structure. (Need to have room to work on and test UPC recommends 12" clearance on all sides)

Rated Flow:
All backflow assemblies have a normal rate of flow, it is usually a balance between the head loss and flow rate. (The higher the flow rate the higher the head loss)

Reclaimed Water:
Water that, as a result of treatment of wastewater, is suitable for a direct beneficial use or a controlled use that would not otherwise occur.

Reduced Pressure Principle Assembly
An assembly of two independently acting approved check valves together with a hydraulically operating, mechanically independent differential pressure relief valve located between the check valves and at the same time below the first check valve. The unit shall include properly located resilient seated test cocks and resilient seated shut-off valves at each end of the assembly. The entire assembly shall meet the design and performance specification as determined by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California (USC). University Park, Los Angeles, CA 90089., for backflow prevention assemblies. The assembly shall operate to maintain the pressure in the zone between the two check valves at an acceptable level less than the pressure on the potable water supply side of the

assembly. At cessation of a normal flow the pressure between the two check valves shall be less than the pressure on the public supply side of the assembly.
In case of leakage of either of the check valves, the differential relief valve shall operate to maintain the reduced pressure in the zone between the check valves by discharging to the atmosphere. When the inlet pressure is (2) two pounds per square inch (PSI) or less, the relief valve shall be open to the atmosphere.

To be approved, these assemblies must be readily accessible (No items are to be stored around and/or on the assembly) for in-line testing and maintenance and be installed in a location where no part of the assembly will be submerged.

Reduced Pressure Principle Backflow Prevention Assembly (RPBA, RP, RPA, RPZ):
These units consist of two tightly closing resilient-seated shutoff valves, four properly located resilient-seated test cocks, two independently acting internally loaded approved check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the two check valves and below the first check valve. (Relief valve is closed by system pressure, #1 spring loading is 5psi, #2 spring loading is 1psi, relief spring loading is 2psi, spring loadings are different and are not interchangeable, install 12" above any flood rim, a Y configured assembly has less head loss than an inline one)

Reduced Pressure Principle Detector Backflow Prevention Assembly (RPDA): A backflow assembly specially designed assembly composed of a line-size approved reduced pressure principle backflow prevention assembly with a bypass containing a specific water meter and an approved reduced pressure principle backflow prevention assembly. The meter shall register accurately for only very low rates of flow up to 3 gpm and shall show a registration for all rates of flow. This assembly shall be used to protect against a non-health hazard (that is, a pollutant) or a health hazard (that is, a contaminant). **The RPDA is primarily used on fire sprinkler systems.**

Relief Valve:
An automatic valve that opens and closes at a preset value.
Service Connection: the piping connection between the water purveyors' main and a user's system. **(Must be a minimum of ¾ inch)**

Service Protection:
Refers to the backflow protection installed on the water supply line to a premise as close to the service connection to the public water system as possible. (Containment protection, secondary protection, point of service protection)

Spill Resistant Pressure Vacuum Breaker (SVB):
A backflow assembly containing an independently operating internally loaded check valve and independently operating loaded air inlet valve located on the discharge side of the check valve. The assembly is to be equipped with a properly located resilient seated test cock, a properly located bleed/vent valve, and tightly closing resilient seated shutoff valves attached at each end of the assembly. (This assembly is designed to protect against both a non-health hazard (that is, a pollutant) or a health hazard (that is, a contaminant) under a backsiphonage condition only.

Minimum air inlet loading 1psi, check valve 1psi, max head loss 10psi, protection of low and high hazards, backsiphonage only, must be installed 12" above all downstream piping and outlets)

Submerged Inlet:
An inlet pipe opening which is below the flood rim level of the receptacle.
Test cock: a valve that is used to provide access to a backflow assembly for testing.

Testing:
A procedure to determine the operational and functioning status of a backflow preventer. (Tester responsibility, submit test results to the administrative authority)

Test Equipment:
An electronic or mechanical instrument recognized by the authority having jurisdiction to test the operational performance of a backflow preventer. must be calibrated annually and calibration submitted to the administrative authority (NPS-GRCA-FMD-CCC Office).

Thermal Expansion:
Is an increase in volume of a liquid due to an increase in temperature. When water is heated in a closed vessel the pressure increases, this can cause your water heater to discharge after a BPA is installed. (Closing the system)

Union:
A three-part coupling device used to join pipe. A dielectric union is for dissimilar metals.

Vacuum:
Any space in a water supply system from which water has been displaced by water vapor, air, or other gases when the pressure is less than the prevailing atmospheric pressure.
(A vacuum relief valve should never be used as a BPA) A perfect vacuum at sea level can lift water 33.9 feet.

Venturi:
The narrowing of a section of pipe used to create a vacuum for the injecting of chemicals.
(Venturi effect caused by high velocity through a narrow section of pipe)

Water Hammer:
The hammering noises and severe shocks that may occur in a pressurized water system when flow is stopped abruptly by the rapid closure of a valve or faucet.

Water Meter:
The point of connection from the public water system to the private water system. (This would be the starting point for assessing the degree of hazard)

Water Purveyor:
The owner or operator of a public water system. (The water purveyor is the enforcement authority for requiring the installation of backflow protection)

Water Service Types:

- **Combined:** A combined water service is a water service that is used for more than one purpose. The domestic potable water service enters a building to feed the domestic needs and also is used for a fire sprinkler system. **NOTE:** Depending on the type of fire service, a separate backflow assembly may be needed in addition to the service protection backflow assembly.
- **Commercial:** A commercial water service is similar to an industrial water service, as it may supply several high hazard waters uses on site.
- **Critical:** Customers may require an uninterrupted continuous supply of water. When that is the case, assemblies may be installed parallel with each other the size of the cross-sectional areas of the backflow assemblies need to equal that of the water meter. **Example:** One two-inch meter with two 2" backflow assemblies.
- **Dual:** Similar to a combined service where the water use may be used for domestic and fire protection.
- **Industrial:** An industrial water service usually feeds a manufacturing facility with several high hazard water uses on site.
- **Multiple:** Multiple water services are just that, there is more than one water service on a site. The services may be tied together in a loop or serve individual buildings on site. Multiple water services may also be a combination of different services such as a domestic water service, fire water service, separate irrigation meter, reclaimed water supply or any other auxiliary water supply on site.
- **Restricted:** A water service where access is denied. This type of service will require the installation of a RP assembly at the meter.

Appendix: A,

Ariz. Admin. Code § 18-4-215

Ariz. Admin. Code § 18-4-215
Current through Register Vol. 29, No. 5, February 3, 2023

Section R18-4-215 - Backflow Prevention

A. A public water system shall protect its system from contamination caused by backflow through unprotected cross-connections by requiring the installation and periodic testing of backflow-prevention assemblies. Required backflow-prevention assemblies shall be installed as close as practicable to the service connection.

B. A public water system shall ensure that a backflow-prevention assembly is installed whenever any of the following occur:

1. A substance harmful to human health is handled in a manner that could permit its entry into the public water system. These substances include chemicals, chemical or biological process waters, water from public water supplies that has deteriorated in sanitary quality, and water that has entered a fire sprinkler system. A Class 1 or Class 2 fire sprinkler system is exempt from the requirements of this Section;

2. A source of water supply exists on the user's premises that is not accepted as an additional source by the public water system or is not approved by the Department;

3. An unprotected cross-connection exists, or a cross-connection problem has previously occurred within a user's premises; or

4. There is a significant possibility that a cross-connection problem will occur and entry to the premises is restricted to the extent that cross-connection inspections cannot be made with sufficient frequency or on sufficiently short notice to ensure that unprotected cross-connections do not exist.

C. Unless a cross-connection problem is specifically identified, or as otherwise provided in this Section, the requirements of this Section shall not apply to single-family residences used solely for residential purposes.

D. A backflow-prevention assembly required by this Section shall comply with the following:

1. If equipped with test cocks, it shall have been issued a certificate of approval by:

a. The University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USC-FCCCHR), or

b. A third-party certifying entity that is unrelated to the product's manufacturer or vendor and is approved by the Department.

2. If not equipped with test cocks, it shall be approved by a third-party certifying entity that is unrelated to the product's manufacturer or vendor and is approved by the Department.

E. The minimum level of backflow protection that is provided to protect a public water system shall be the level recommended in Section 7.2 of the Manual of Cross-Connection Control, Ninth Edition, USC-FCCCHR, KAP-200 University Park MC-2531, Los Angeles, CA, 90089-2531, December 1993, (and no future editions or amendments), incorporated by reference and on file with the Department. The types of backflow prevention that may be required, listed in decreasing order according to the level of protection they provide, include: an air-gap separation (AG), a reduced pressure principle backflow prevention (RP) assembly, a pressure vacuum breaker

(PVB) assembly, and a double check valve (DC) assembly. Nothing contained in this Section shall prevent a public water system from requiring the use of a higher level of protection than the level required by this subsection.

1. A public water system may make installation of a required backflow-prevention assembly a condition of service. A user's failure to comply with this requirement shall be sufficient cause for the public water system to terminate water service.

2. Specific installation requirements for backflow prevention include the following:

a. Any backflow prevention required by this Section shall be installed in accordance with the manufacturer's specifications.

b. For an AG installation, all piping between the user's connection and the receiving tank shall be entirely visible unless otherwise approved in writing by the public water system.

c. An RP assembly shall not be installed in a meter box, pit, or vault unless adequate drainage is provided.

d. A PVB assembly may be installed for use on a landscape water irrigation system if the irrigation system conforms to all of the criteria listed below. An RP assembly is required whenever any of the criteria are not met.

i. The water use beyond the assembly is for irrigation purposes only;

ii. The PVB is installed in accordance with the manufacturer's specifications;

iii. The irrigation system is designed and constructed to be incapable of inducing backpressure; and

iv. The injection of chemical pesticides and fertilizers, chemigation, is not used or provided in the irrigation system.

F. Each backflow-prevention assembly required by this Section shall be tested at least annually, or more frequently if directed by the public water system or the Department. Each assembly shall also be tested after installation, relocation, or repair. An assembly shall not be placed in service unless it has been tested and is functioning as designed. The following provisions shall apply to the testing of backflow-prevention assemblies:

1. Testing shall be in accordance with procedures described in Section 9 of the Manual of Cross-Connection Control. The public water system shall notify the water user when testing of backflow-prevention assemblies is needed. The notice shall specify the date by which the testing must be completed, and the results forwarded to the public water system.

2. Testing shall be performed by a person who is currently certified as a "general" tester by the California-Nevada Section of the American Water Works Association (CA-NV Section, AWWA), the Arizona State Environmental Technical Training (ASETT) Center, or other certifying authority approved by the Department.

3. When a backflow-prevention assembly is tested and found to be defective, it shall be repaired or replaced in accordance with the provisions of this Section.

G. A public water system shall maintain records of backflow-prevention assembly installations and tests performed on backflow-prevention assemblies in its service area. Records shall be retained by the public water system for at least three years and shall be made available for review by the Department upon request. These records shall include an inventory of backflow-prevention assemblies required by this Section and, for each assembly, all of the following information:

1. Assembly identification number and description,
2. Location,
3. Date of tests,
4. Description of repairs and recommendations for repairs made by the tester, and
5. The tester's name and certificate number.

H. A public water system shall submit a written cross-connection incident report to the Department and the local health authority within five business days after a cross-connection problem occurs that results in contamination of the public water system. The report shall address all of the following:

1. Date and time of discovery of the unprotected cross-connection,
2. Nature of the cross-connection problem,
3. Affected area,
4. Cause of the cross-connection problem,
5. Public health impact,
6. Date and text of any public health advisory issued,
7. Each corrective action taken, and
8. Date of completion of each corrective action.

I. An individual with direct responsibility for implementing a backflow prevention program for a water system serving more than 50,000 persons, or an individual with direct responsibility for implementing a backflow prevention program for a for a water system serving 50,000 or fewer persons if the Department has determined that such a need exists, shall be licensed as a "cross-connection control program specialist" by the CA-NV Section, AWWA, the ASETT Center, or another certifying authority approved by the Department.

Historical Note;
Ariz. Admin. Code § R18-4-215

Adopted effective August 8, 1991 (Supp. 91-3). Section repealed; new Section adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Section R18-4-215 repealed; new Section renumbered from R18-4-115 and amended by final rulemaking at 14 A.A.R. 2978, effective August 30, 2008 (Supp. 08-3).

Appendix: B,

List of NPS – GRCA – Backflow Repair / Tester Specialists &
2024 Backflow Gauge Testing Equipment Calibration Reports:

NPS – GRCA, List of Backflow Repair / Testers:

1. Chad Larrieu, ABPA Certificate #03-211175, expires 11/13/2024
2. ~~Sherryl Johnson, ABPA Certificate #03-1198, expires 05/16/2023~~
3. ~~Colton Lindbom, ASSE – IAPMO BPI Certificate #48054, expires 04/03/2024~~

NPS – GRCA, 2024 Backflow Gauges Testing Equipment Calibration Reports:

Appendix: C,

United States Environmental Protection Agency (USEPA) Cross-Connection Control Manual

Appendix: D,

United States Environmental Protection Agency (USEPA) Cross-Connection Control; A Best Practices Guide

Appendix: E,

American Water Works Association (AWWA) M-14 Backflow / Cross-Connection Control; A Best Practices Guide

Appendix: F,

United States Public Health Services, NPS - Office of Public Health, Common Cross-Connections and Recommended Backflow Prevention Devices Field Guide / Manual, November 2021

GRAND CANYON NATIONAL PARK
PROJECT FLIGHT REQUEST FORM

Flight Request # _____
(assigned by aviation staff)

To be completed by the person requesting the flight.

Name:_____ Division/Office:_____

Work Telephone:_____ Email:_____

FLIGHT INFORMATION Email requests to email provided

Platform : ☐Airplane (Galen Howell) ☐Helicopter (GRCA_Helibase) ☐UAS (GRCA_Helibase)

Detailed Flight Description:

FLIGHT JUSTIFICATION- Why can't this mission be done without aviation support?
Explanation:

HAS COMPLIANCE BEEN COMPLETED FOR THIS FLIGHT? ☐YES ☐NO
DOES THIS FLIGHT MEET MINIMUM REQUIREMENTS ANALYSIS (MRA)? ☐YES (attach to form) NO

Helicopter flights will only be scheduled between the hours of 9:00 AM and 4:30 PM unless otherwise approved by aviation management staff.

Day, date, and time flight is requested: _____

Passenger Manifest: (include yourself if you are going)

Name	Weight	Aircrewmember Expiration Date

Cargo: (ie: plumbing tools 75 pounds)

Description	Weight

Are sling (i.e., external) loads required?
☐NO ☐YES
if yes, how many?_____ approximate weights:1\ 2\ 3\ 4\ 5\

FISCAL INFORMATION- Flights will not start without a valid GRCA charge code. (IAA) agreements must also provide IAA number below. Charge codes must be legible.

Account number(s) to be charged:

Interagency Agreement#_____

Fiscal Information Point of Contact Name:_____

Work Telephone:_____ Email:_____

TRIP REQUESTOR MUST INITIAL AND SIGN BELOW

_____ Approval of this Flight Request Form indicates authorization to charge any premium pay (i.e., overtime, hazard pay, etc.) incurred during the accomplishment of this mission to the account number provided in the Fiscal Information section.

_____ _____

Trip Requestor's Signature Date

- Flights will not occur unless the park's aviation management personnel have this fully completed, signed, and approved Flight Request Form in their possession prior to flight time.
- All passengers must be at the departure location (South Rim Helibase, Grand Canyon Airport, or other appropriate location) at least 15 minutes prior to flight departure.
- If the flight is postponed or cancelled because of weather, aircraft maintenance, etc., this authorization is good for five (5) working days from the day, date, and time listed in the Flight Data section. A new Flight Request Form is not needed.

THIS SECTION TO BE COMPLETED BY DIVISION CHIEF OR DESIGNATED REPRESENTATIVE

The above requested flight is the most appropriate tool for the job. I certify that all passengers are current and in compliance with required basic aviation safety training. I have reviewed the fiscal information and certify that it is a valid GRCA account.

_____

Division Chief's Signature Name Printed Date

Forward approved flight requests to the Superintendent's Office for final review and disposition.

HELIBASE USE ONLY: RECEIVED BY:_____ **DATE:**_____

CONFIRMED/SCHEDULED BY:_____

Unique ID	Inventory File #	Area	Building #	Building Name	Address	GPS	Elevation (feet)	Connection Type	Hazard Type	Use Codes	Room	Mfg.	Type	Size (inches)	Model#	Serial #	Install Date
83785_02P	2	South Rim	0323	Elementary School	Boulder St			P/D	Non-Health Hazard		BLDG 100 Boiler Room (Boiler room is located just beyond the back to the restroom.)	Wilkins	RP	0.75	975	131891	Unknown
83782_01P	3	South Rim	0227	Grand Canyon Old School Bldg	Boulder St			P/D	Non-Health Hazard		BLDG 200 Boiler Room						
83974_01P	4	South Rim	1452	Multi-Purpose Building	48 Boulder St			P/D	Non-Health Hazard		BLDG 300-Boiler Room	Wilkins	RP	0.75	975	S63303	Unknown
83974_02F	5	South Rim	1452	Multi-Purpose Building	48 Boulder St			Fire	Non-Health Hazard		BLDG 300 (Sprinkler Room) #306		RP				
83787_01P	6	South Rim	0324	High School	48 Boulder St			P/D	Non-Health Hazard		BLDG 400 Boiler Room #416		RP				
83787_02F	7	South Rim	0324	High School	48 Boulder St			Fire	Non-Health Hazard		BLDG 400 (Sprinkler Room)		RP				
83791_01P	8	South Rim						P/D	Non-Health Hazard		BLDG 500-Boiler Room	Wilkins	RP	0.75	975	122145	Unknown
84325_01F	9	South Rim	0862	School Maintenance Office	Center St			Fire	Non-Health Hazard		BLDG 600 (John Vest Maintenance and Transportation Facility Building) Boiler Room		RP				
83785_01F	1 FIRE	South Rim	0323	Elementary School	Boulder St			Fire	Non-Health Hazard		BLDG 100 (Access door is on the northwest corner of the building facing north. The device is located under the flooring in a crawlspace room.)	Watts	DC	4	770	1912	Unknown
81634_02F	13-2B Fire Main Line	South Rim	1576	NPS Warehouse	New NPS Maintenance Area	36° 1' 59" North, 112° 7' 45" West	6890	Fire	Non-Health Hazard		FMD Warehouse Bldg (Main Line)	Ames	DC	8	2000SS	131494-1202	Unknown
33514_01F	14B	South Rim	0103	Ranger Operations	Center St			Fire	Non-Health Hazard		River Operation	Ames	DC	4	Colt 2000	LL1983	Unknown
34552_08P	39H	South Rim	0444	Clinic	1 Clinic Road			P/D	Non-Health Hazard		Admin, Residence, 15662	Febco	DC	0.75		825YRP	Unknown
35073_01P	23-1B Main Line	South Rim	1516	La Petite	1 North Mohave			P/D	Non-Health Hazard		(KLC) Kaibab Learning Center / Child Care Center	Watts	DC	4	709	170633	Unknown
34552_02P	4-2B Boiler Room North	South Rim	0444	Clinic	1 Clinic Road			P/D	Non-Health Hazard		Boiler Room North	Watts	RP	0.75	009 M3	263727	Unknown
34552_03P	4-3B Boiler Room South	South Rim	0444	Clinic	1 Clinic Road			P/D	Non-Health Hazard		Fire Station #1, Boiler Room, South	Watts	RP	0.75	009 M3	277420	Unknown
225796_03F	25-3B	South Rim	1708	Science and Resource Mgmt Bldg	17 South Entrance Road	36° 3' 21" North, 112° 7' 13" West	6980	Fire	Non-Health Hazard		SRM Science Center - Dutton	Ames	DC	4	Maxim 200	MC0908	Unknown
33683_02F	31-2B FIRE	Desert View	0114	Tusayan Museum	Tusayan Ruins	36° 0' 50" North, 111° 51' 59" West	7200	Fire	Health Hazard		SR / DV - and Ruins Site, Ranger Office Building, Fire Suppression / Utility Room	Watts	DC	1	LF007M-1	194122	7/15/2024
33034_02F	42-2H FIRE	South Rim	0012	Single Family Res	12 Kaibab St	36° 3' 15" North, / 112° 8' 5" West	6950	Fire	Health Hazard		Kaibab 12	Ames	DC	1.25	2000B	13081	Unknown
34552_04F	4-4B FIRE Boiler Room Riser	South Rim	0444	Clinic	1 Clinic Road			Fire	Non-Health Hazard		Fire Station #1, Boiler Room Riser	Ames	DC	4	2000 SSF	2009050302	Unknown
35085_01P	5-1B	South Rim	1524	Maswik Transportation Center/BRO	Maswik Lodge Area	36° 3' 26" North, 112° 8' 35" West	6870	P/D	Non-Health Hazard		Maswik Transportation	Watts	RP	1	LF 009 M2	358441	5/20/2025
35085_02F	5-2B Fire	South Rim	1524	Maswik Transportation Center/BRO	Maswik Lodge Area			Fire	Non-Health Hazard		Maswik Transportation	Ames	RP	4	4000 SS	108470	Unknown
36340_03F	77-3H FIRE	South Rim	0024B	Duplex	1B Tonto St			Fire	Health Hazard		Tonto 1A	Watts	DC	1	077M1-QT	479995	Unknown
33007_02F	79-2H FIRE	South Rim	0007A	Garage & Shed	Tonto St	36° 3' 16" North, / 112° 7' 56" West	6950	Fire	Health Hazard		Tonto 9A	Watts	DC	0.75	007M3 QT	B06786	Unknown
35147_01F	85-1H FIRE Bypass	Desert View	1712	Eight-Plex Housing Unit	Desert View	36° 3' 16" North, / 112° 8' 18" West	6890	Fire	Health Hazard		DV Nankoweap (Bypass)	Ames	DC	0.75	Flowmatic DCVE	A2504	Unknown
33515_01P	8B	South Rim	0105	Visitor Center	South Entrance Rd	36° 3' 18" North, 111° 8' 19" West	6880	P/D	Non-Health Hazard		Federal Magistrate Court Center, Boiler Room	Wilkins	RP	1.5	Z975XL2	W419314	9/12/2023
34433_01P	9B	Desert View	0295	Ranger Station	Desert View	36° 2' 7" North, 111° 49' 49" West	7450	P/D	Non-Health Hazard		DV, GRCA East Park Entrance	Watts	RP	1	LF 009 M2	358440	5/19/2025
81635_01P	10-1B Main Line	South Rim	1577	NPS Vehicle Maintenance Building	New NPS Maintenance Area	36° 2' 2" North, 112° 7' 43" West	6890	P/D	Non-Health Hazard		FMD Auto Shop Bldg.	Watts	RP	1.25	LF 009 M2	43110	5/20/2025
81635_02P	10-2B Supply Line	South Rim	1577	NPS Vehicle Maintenance Building	New NPS Maintenance Area	36° 2' 2" North, 112° 7' 43" West	6890	P/D	Non-Health Hazard		FMD Auto Shop Bldg.	Wilkins	RP	0.75	975 XL2	ABT8565	6/15/2024
81635_03P	10-3B Glycol Tank	South Rim	1577	NPS Vehicle Maintenance Building	New NPS Maintenance Area	36° 2' 2" North, 112° 7' 43" West	6890	P/D	Health Hazard		FMD Auto Shop Bldg. System (Glycol) Make-Up Water / Mixing - Dosing Tank	Watts	RP	1.5	LF 009 QT	436223	5/19/2025
81635_04P	10-4B Washer	South Rim	1577	NPS Vehicle Maintenance Building	New NPS Maintenance Area	36° 2' 1" North, 112° 7' 43" West	6890	P/D	Non-Health Hazard		FMD Auto Shop Bldg.	Wilkins	RP	0.75	975 XL2	ABS3869	05/19/2025

81635_05P	10-5B Wash Bay	South Rim	1577	NPS Vehicle Maintenance Building	New NPS Maintenance Area	36° 2' 2" North, 112° 7' 44" West	6890	P/D	Non-Health Hazard		FMD Auto Shop Bldg., Wash Bay	Wilkins	RP	0.75	975 XL2	ABT8564	12/17/2024
35147_02F	85-2H FIRE Main	Desert View	1712	Eight-Plex Housing Unit	Desert View			Fire	Health Hazard		DV Nankoweap (Main)	Ames	DC	2.5	Colt 300 DCVE	DC-0820	Unknown
33167_01F	89H FIRE	South Rim	0050	Single Family Res	54 Juniper Hill	36° 3' 13" North, / 112° 8' 4" West	6950	Fire	Health Hazard		Juniper Hill 54	Ames	DC	1.25	2000 DC	013079	Unknown
33879_01F	90H FIRE	South Rim	0163	Single Family Res	60 Juniper Hill	36° 3' 13" North, / 112° 8' 6" West	6970	Fire	Health Hazard		Juniper Hill 60	Ames	DC	1.25	2000B	013078	Unknown
81633_03P	11-3B Boiler	South Rim	1575	NPS Shops/Office Building	New NPS Maintenance Area	36° 1' 59" North, 112° 7' 43" West	6840	P/D	Health Hazard		FMD Main Bldg. Mech. / Boiler Room #122A, Bldg. System (Glycol) Make-Up Water / Heated Water - Boilers 1 and 2 System, "Bottom Assembly"	Watts	RP	1	LF 009 M2-QT-FS	279247	12/17/2024
81633_04N	11-4B Main Line	South Rim	1575	NPS Shops/Office Building	New NPS Maintenance Area	36° 1' 59" North, 112° 7' 43" West	6890		Non-Health Hazard		FMD Custodial Room #112 - Bldg.	Watts	RP	1.5	LF 009 M2-QT	137622	12/17/2024
87774_02F	91-2H FIRE	South Rim	1580	101-108 Paiute St (Eight Plex), South Rim		36° 2' 56" North, / 112° 8' 6" West	6950	Fire	Health Hazard		Paiute Bldg 100	Ames	DC	2.5	Colt 200	LD-0353	Unknown
87775_02F	92-2H FIRE	South Rim	1581	201-208Paiute St (Eight Plex), South Rim		36° 2' 56" North, / 112° 8' 4" West	6950	Fire	Health Hazard		Paiute Bldg 200	Ames	DC	2.5	Colt 200	LD-0379	Unknown
81636_01P	12-1B	South Rim	1578	NPS Enclosed Vehicle Storage	New NPS Maintenance Area	36° 1' 58" North, 112° 7' 43" West	6890	P/D	Health Hazard		FMD Covered Storage Bldg. (Glycol) makeup tank in the next room.	Watts	RP	1.5	LF 009 M2-QT	457725	05/20/2025
87776_02F	93-2H FIRE	South Rim	1582	301-308 Paiute St (Eight Plex), South Rim		36° 2' 56" North, / 112° 8' 3" West	6960	Fire	Health Hazard		Paiute Bldg 300	Ames	DC	2.5	Colt 200	KJ-1663	Unknown
87777_02F	94-2H FIRE	South Rim	1583	401-408 Paiute St (Eight Plex), South Rim		36° 2' 55" North, / 112° 8' 1" West	6960	Fire	Health Hazard		Paiute Bldg 400	Ames	DC	2.5	Colt 200	LB-0589	Unknown
81634_01P	13-1B Main Line	South Rim	1576	NPS Warehouse	New NPS Maintenance Area	36° 1' 59" North, 112° 7' 45" West	6890	P/D	Non-Health Hazard		FMD Warehouse Bldg.	Watts	RP	1.25	LF 009 M2	33737	05/20/2025
87778_02F	95-2H FIRE	South Rim	1584	501-508 Paiute St (Eight Plex), South Rim		36° 2' 54" North, / 112° 8' 1" West	6960	Fire	Health Hazard		Paiute Bldg 500	Ames	DC	2.5	Colt 200	LB-0593	Unknown
81634_03F	13-3B Fire Pump	South Rim	1576	NPS Warehouse	New NPS Maintenance Area	36° 1' 59" North, 112° 7' 45" West	6890	Fire	Non-Health Hazard		FMD Warehouse Bldg. (Fire Pump)	Watts	RP	1	LF 009 M2-QT	344062	05/20/2025
87780_02F	96-2H FIRE	South Rim	1585	601-608 Paiute St (Eight Plex), South Rim		36° 2' 54" North, / 112° 8' 1" West	6960	Fire	Health Hazard		Paiute Bldg 600	Ames	DC	2.5	Colt 200	LA-2616	Unknown
235188_02F	97-2H FIRE	South Rim	1586	701-708 Paiute St (Eight Plex), South Rim		36° 2' 56" North, / 112° 8' 4" West	6950	Fire	Health Hazard		Paiute Bldg 700	Ames	DC	2.5	Colt 200	LA-2614	Unknown
235189_02F	98-2H FIRE	South Rim	1587	801-808 Paiute St (Eight Plex), South Rim		36° 2' 55" North, / 112° 8' 8" West	6940	Fire	Health Hazard		Paiute Bldg 800	Ames	DC	2.5	Colt 200	LC-0021	Unknown
34552_06F	4-6B FIRE Mech Room	South Rim	0444	Clinic	1 Clinic Road			Fire	Non-Health Hazard		Fire Station #1 Engine Bay - Mech Room	Wilkins	DC	4	350	J14447	Unknown
33515_02P	17B	South Rim	0105	Visitor Center	South Entrance Rd	36° 3' 18" North, 112° 7' 20" West	6970	P/D	Non-Health Hazard		GRCA Headquarters Bldg. Boiler Room (Northside Downstairs Outside)	Wilkins	RP	TBD	975 XL2	3749280	Unknown
34552_07P	4-7B Boiler Room East	South Rim	0444	Clinic	1 Clinic Road			P/D	Health Hazard		Fire Station #1 / GRCA Medical, Boiler Room East Wall / Main Water Line & Service Shut Valve		RP				
34433_02P	19B	Desert View	0295	Ranger Station	Desert View	36° 2' 35" North, 111° 49' 32" West	7470	P/D	Non-Health Hazard		DV, Tribal Welcome Center, Mechanical Room	Watts	RP	1.25	LF 009M2 QT	32103	12/8/2023
33514_02F	20B	South Rim	0103	Ranger Operations	Center St			Fire	Non-Health Hazard		Rangers Operation	Ames	DC	3	Maxim 200	EL1717	Unknown
	4-8B Boiler Room East	South Rim	0444	Clinic	1 Clinic Road			P/D	Health Hazard		Feeds dormitory. Fire Station #1 / GRCA Medical, Boiler Room East Wall / Main Water Line & Service Shut Valve		RP				
33681_01F	36B FIRE	North Rim	0111		1502 Administrative Offices			Fire	Non-Health Hazard								De-scoped from the CY-2025 Testing due to the Dragon Bravo Fire
33681_03P	101H	North Rim	0111	Trail Crew Bunkhouse	111 Admin. Loop Road	36° 12' 52" North, 112° 3' 43" West	8380	P/D	Non-Health Hazard		(Down hill to the southwest, on the northside of the road)	Febco	DC	8	850	F0303140730	Unknown
232907_01P	22-4B	South Rim	2027	Restroom, CVIP Commercial Bus Parking	Canyon View Information Plaza	36° 3' 31" North, 112° 6' 35" West	7050	P/D	Non-Health Hazard		GCVC, Contract Busing Parking Lot - Restroom Facilities	Watts	RP	1	LF 009 M2	358449	5/29/2025
35249_01P	22-5B East R/R	South Rim	2019	Comfort Station	Canyon View Information Plaza	36° 3' 32" North, 112° 6' 30" West	7090	P/D	Non-Health Hazard		GCVC, Kaibab (East) Restroom Facilities Bldg.	Watts	RP	1.5	LF 009 M2	143305	05/29/2025
35249_02P	22-6B West R/R	South Rim	2019	Comfort Station	Canyon View Information Plaza	36° 3' 31" North, 112° 6' 35" West	7050	P/D	Non-Health Hazard		GCVC, Kaibab (West) Restroom Facilities Bldg.	Watts	RP	1.5	LF 009 M2	144078	05/30/2025
35073_02P	23-2B	South Rim	1516	La Petite	1 North Mohave			P/D	Non-Health Hazard		(KLC) Kaibab Learning Center / Child Care Center, Boiler Room	Wilkins	RP	1.5	975 XL2	CFB2736	11/27/2023
83870_01P	24-1B	South Rim	0546	Visitor Contact Verkamps				P/D	Non-Health Hazard		Verkamps Visitor Center, Grand Canyon Conservatory, Boiler Room	Wilkins	RP	1.5	975 XL2	CFB2003	11/27/2023

225796_01P	25-1B	South Rim	1708	Science and Resource Mgmt Bldg	17 South Entrance Road	36° 3' 30" North, 112° 7' 13" West	6990	P/D	Non-Health Hazard		SRM Science Center - Dutton - Main Water Line	Wilkins	RP	1.5	975 XL2	3648962	Unknown
225796_02P	25-2B	South Rim	1708	Science and Resource Mgmt Bldg	17 South Entrance Road	36° 3' 30" North, 112° 7' 13" West	6990	P/D	Non-Health Hazard		SRM Science Center - Dutton - Men's Room / Janitorial Closet	Wilkins	RP	1	975 XL2	3652939	Unknown
35108_01P	26-1B	South Rim	1543	Engine Bay	Shuttle Bus Road			P/D	Non-Health Hazard		Wildland Fire Heliack Base Complex - Shop, Boiler Room	Wilkins	RP	1.5	975XL2	W437626	7/15/2024
35110_01P	27-1B	South Rim	1544	Helicopter Hangar	Shuttle Bus Road			P/D	Non-Health Hazard		Wildland Fire Heliack Base Complex - Helicopter Bay, Boiler Room	Wilkins	RP	1.5	975XL2	CFB 7614	7/15/2024
35113_01P	107-1H	North Rim	1546	Four-Plex Housing Unit	A Cliffrose Court	36° 12' 53" North, 112° 3' 47" West	8350	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	380866	08/15/2024
34119_01P	28-1B	South Rim	0273	Wildland Fire Office	YAKK Camp			P/D	Non-Health Hazard		Wildland Fire Heliack Base Complex - Fire Management Office, Boiler Room	Wilkins	RP	1.5	975XL2	CFB 5183	7/15/2024
35113_02F	107-2H FIRE	North Rim	1546	Four-Plex Housing Unit	A Cliffrose Court	36° 12' 53" North, 112° 3' 47" West	8350	Fire	Health Hazard		Utility Room		RP	1			
35113_03P	108-1H	North Rim	1546	Four-Plex Housing Unit	B Cliffrose Court	36° 12' 48" North, 112° 3' 46" West	8340	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	413107	08/12/2024
35113_04F	108-2H FIRE	North Rim	1546	Four-Plex Housing Unit	B Cliffrose Court	36° 12' 48" North, 112° 3' 46" West	8340	Fire	Health Hazard		Utility Room		RP	1			
33429_01P	30B	South Rim	0100	Grand Canyon Association	4 Tonto Street	36° 3' 19" North, / 112° 8' 13" West	6910	P/D	Health Hazard		Grand Canyon Conservatory Main Office, Crawl space behind green door	Febco	RP	0.75	LF 825Y	J015714	5/22/2025
35113_05P	109-1H	North Rim	1546	Four-Plex Housing Unit	C Cliffrose Court	36° 12' 48" North, 112° 3' 45" West	8320	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	413090	08/13/2024
35113_06F	109-2H FIRE	North Rim	1546	Four-Plex Housing Unit	C Cliffrose Court	36° 12' 48" North, 112° 3' 45" West	8320	Fire	Health Hazard		Utility Room, Utility Room		RP	1			
35113_07P	110-1H	North Rim	1546	Four-Plex Housing Unit	D Cliffrose Court	36° 12' 48" North, 112° 3' 46" West	8340	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	380842	08/12/2024
35113_08F	110-2H FIRE	North Rim	1546	Four-Plex Housing Unit	D Cliffrose Court	36° 12' 48" North, 112° 3' 46" West	8340	Fire	Health Hazard		Utility Room		RP	1			
35114_01P	111-1H	North Rim	1547	Eight-Plex Housing Unit	A Cliffrose Court	36° 12' 49" North, 112° 3' 44" West	8350	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	413101	08/14/2024
35114_02F	111-2H FIRE	North Rim	1547	Eight-Plex Housing Unit	A Cliffrose Court	36° 12' 49" North, 112° 3' 44" West	8350	Fire	Health Hazard		Utility Room		RP	1			
35114_03P	112-1H	North Rim	1547	Eight-Plex Housing Unit	B Cliffrose Court	36° 12' 48" North, 112° 3' 43" West	8350	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	375313	08/14/2024
35114_04F	112-2H FIRE	North Rim	1547	Eight-Plex Housing Unit	B Cliffrose Court	36° 12' 48" North, 112° 3' 43" West	8350	Fire	Health Hazard		Utility Room		RP	1			
35114_05P	113-1H	North Rim	1547	Eight-Plex Housing Unit	C Cliffrose Court	36° 12' 49" North, 112° 3' 44" West	8350	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	380854	08/14/2024
35114_06F	113-2H FIRE	North Rim	1547	Eight-Plex Housing Unit	C Cliffrose Court	36° 12' 49" North, 112° 3' 44" West	8350	Fire	Health Hazard		Utility Room		RP	1			
35114_07P	114-1H	North Rim	1547	Eight-Plex Housing Unit	D Cliffrose Court	36° 12' 49" North, 112° 3' 45" West	8350	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	419015	08/14/2024
33156_02F	7-2B FIRE	South Rim	0044	Community Building	Village Loop			Fire	Non-Health Hazard		Community Bldg. Grand Canyon Conservatory, Boiler Room		RP	4			
35073_03F	23-3B FIRE	South Rim	1516	La Petite	1 North Mohave			Fire	Non-Health Hazard		(KLC) Kaibab Learning Center		RP				
83870_02F	24-2B FIRE	South Rim	0546	Visitor Contact Verkamps				Fire	Health Hazard		Verkamps Visitor Center, Grand Canyon Conservatory Room		RP				
35108_02F	26-2B FIRE	South Rim	1543	Engine Bay	Shuttle Bus Road			Fire	Health Hazard		Wildland Fire Heliack Base Complex - Shop, Upstairs	Wilkins	RP	2.5	375	L06848	Unknown
35156_01P	3-1H	South Rim	1601	Single Family Res	1601 Barry Hance Cir	36° 2' 60" North, / 112° 7' 27" West	6970	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	457757	6/2/2025
35110_02F	27-2B FIRE	South Rim	1544	Helicopter Hangar	Shuttle Bus Road			Fire	Health Hazard		Wildland Fire Heliack Base Complex - Helicopter Bay, Upstairs	Wilkins	RP	2.5	375	LL11685	Unknown
35157_01P	4-1H	South Rim	1602	Single Family Res	1602 Barry Hance Cir	36° 2' 59" North, / 112° 7' 28" West	6970	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009	391331	10/25/2023
34119_02F	28-2B FIRE	South Rim	0273	Wildland Fire Office	YAKK Camp			Fire	Health Hazard		Wildland Fire Heliack Base Complex - Fire Management Office, Boiler Room	Watts	RP	3	909	1575801	Unknown
35158_01P	5-1H	South Rim	1603	Single Family Res	1603 Barry Hance Cir	36° 2' 58" North, / 112° 7' 26" West	6970	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	462719	6/2/2025
34980_01F	32B	Havasupai Gardens	1462	Laundry/First Aid/SAR Cache	Havasupai Gardens	36° 4' 32" North, 112° 7' 47" West	3870	Fire	Health Hazard		TCWL - HG PSAR Clinic Laundry	Watts	RP	1.5	LF009 M2	126535	Unknown
35159_01P	6-1H	South Rim	1604	Single Family Res	1604 Barry Hance Cir	36° 2' 58" North, / 112° 7' 28" West	6950	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	461103	6/2/2025

84298_02F	1-2H FIRE	South Rim	0844	Garage	Boulder Alley	36° 3' 13" North, 112° 8' 18" West	6910	Fire	Health Hazard		Apache 1		RP	1			
35160_01P	7-1H	South Rim	1605	Single Family Res	1605 Barry Hance Cir	36° 2' 57" North, / 112° 7' 26" West	6980	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	461088	6/2/2025
34617_02F	2-2H FIRE	South Rim	0809	Single Family Res	4 Apache St	36° 3' 15" North, 112° 8' 19" West	6900	Fire	Health Hazard		Apache 4		RP	1			
35161_01P	8-1H	South Rim	1606	Single Family Res	1606 Barry Hance Cir	36° 2' 57" North, / 112° 7' 28" West	6960	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	461097	6/2/2025
35156_02F	3-2H FIRE	South Rim	1601	Single Family Res	1601 Barry Hance Cir	36° 2' 59" North, / 112° 7' 26" West	6970	Fire	Health Hazard		Barry Hance		RP	1			
35162_01P	9-1H	South Rim	1607	Single Family Res	1607 Barry Hance Cir	36° 2' 56" North, / 112° 7' 25" West	6980	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009	391313	10/25/2023
35157_02F	4-2H FIRE	South Rim	1602	Single Family Res	1602 Barry Hance Cir	36° 2' 59" North, / 112° 7' 28" West	6970	Fire	Health Hazard		Barry Hance		RP	1			
35163_01P	10-1H	South Rim	1608	Single Family Res	1608 Barry Hance Cir	36° 2' 56" North, / 112° 7' 28" West	6980	P/D	Non-Health Hazard		Barry Hance	Wilkins	RP	1.5	975 XL2	W481736	Unknown
35158_02F	5-2H FIRE	South Rim	1603	Single Family Res	1603 Barry Hance Cir	36° 2' 58" North, / 112° 7' 26" West	6970	Fire	Health Hazard		Barry Hance		RP	1			
35159_02F	6-2H FIRE	South Rim	1604	Single Family Res	1604 Barry Hance Cir	36° 2' 58" North, / 112° 7' 28" West	6990	Fire	Health Hazard		Barry Hance		RP	1			
35160_02F	7-2H FIRE	South Rim	1605	Single Family Res	1605 Barry Hance Cir	36° 2' 57" North, / 112° 7' 26" West	6970	Fire	Health Hazard		Barry Hance		RP	1			
35165_01P	12-1H	South Rim	1610	Single Family Res	1610 Barry Hance Cir	36° 2' 55" North, / 112° 7' 27" West	6980	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	461132	6/2/2025
35161_02F	8-2H FIRE	South Rim	1606	Single Family Res	1606 Barry Hance Cir	36° 2' 57" North, / 112° 7' 28" West	6970	Fire	Health Hazard		Barry Hance		RP	1			
35166_01P	13-1H	South Rim	1611	Single Family Res	1611 Barry Hance Cir	36° 2' 54" North, / 112° 7' 25" West	6960	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	462839	6/2/2025
35162_02F	9-2H FIRE	South Rim	1607	Single Family Res	1607 Barry Hance Cir	36° 2' 56" North, / 112° 7' 25" West	6980	Fire	Health Hazard		Barry Hance		RP	1			
35167_01P	14-1H	South Rim	1612	Single Family Res	1612 Barry Hance Cir	36° 2' 54" North, / 112° 7' 27" West	6980	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009	391314	10/25/2023
35163_02F	10-2H FIRE	South Rim	1608	Single Family Res	1608 Barry Hance Cir	36° 2' 56" North, / 112° 7' 28" West	6980	Fire	Health Hazard		Barry Hance		RP	1			
35168_01P	15-1H	South Rim	1613	Single Family Res	1613 Barry Hance Cir	36° 2' 53" North, / 112° 7' 26" West	6970	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	462732	6/2/2025
35164_02F	11-2H FIRE	South Rim	1609	Single Family Res	1609 Barry Hance Cir	36° 2' 55" North, / 112° 7' 25" West	6960	Fire	Health Hazard		Barry Hance		RP	1			
35165_02F	12-2H FIRE	South Rim	1610	Single Family Res	1610 Barry Hance Cir	36° 2' 55" North, / 112° 7' 27" West	6990	Fire	Health Hazard		Barry Hance		RP	1			
35166_02F	13-2H FIRE	South Rim	1611	Single Family Res	1611 Barry Hance Cir	36° 2' 54" North, / 112° 7' 25" West	6970	Fire	Health Hazard		Barry Hance		RP	1			
35170_01P	17-1H	South Rim	1615	Single Family Res	1615 Barry Hance Cir	36° 2' 53" North, / 112° 7' 27" West	6980	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	461089	6/2/2025
35167_02F	14-2H FIRE	South Rim	1612	Single Family Res	1612 Barry Hance Cir	36° 2' 54" North, / 112° 7' 27" West	6980	Fire	Health Hazard		Barry Hance		RP	1			
35171_01P	18-1H	South Rim	1616	Single Family Res	1616 Barry Hance Cir	36° 2' 54" North, / 112° 7' 30' West	6990	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	391663	10/25/2023

35168_02F	15-2H FIRE	South Rim	1613	Single Family Res	1613 Barry Hance Cir	36° 2' 53" North, / 112° 7' 25" West	6980	Fire	Health Hazard		Barry Hance		RP	1			
35172_01P	19-1H	South Rim	1617	Single Family Res	1617 Barry Hance Cir	36° 2' 53" North, / 112° 7' 31' West	6980	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	462726	6/2/2025
35169_02F	16-2H FIRE	South Rim	1614	Single Family Res	1614 Barry Hance Cir	36° 2' 54" North, / 112° 7' 29" West	6990	Fire	Health Hazard		Barry Hance		RP	1			
35173_01P	20-1H	South Rim	1618	Single Family Res	1618 Barry Hance Cir	36° 2' 55" North, / 112° 7' 31' West	6980	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	461102	6/3/2025
35170_02F	17-2H FIRE	South Rim	1615	Single Family Res	1615 Barry Hance Cir	36° 2' 53" North, / 112° 7' 27" West	6990	Fire	Health Hazard		Barry Hance		RP	1			
35174_01P	21-1H	South Rim	1619	Single Family Res	1619 Barry Hance Cir	36° 2' 54" North, / 112° 7' 32' West	6980	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	386106	10/25/2023
35171_02F	18-2H FIRE	South Rim	1616	Single Family Res	1616 Barry Hance Cir	36° 2' 54" North, / 112° 7' 30' West	6990	Fire	Health Hazard		Barry Hance		RP	1			
35175_01P	22-1H	South Rim	1620	Single Family Res	1620 Barry Hance Cir	36° 2' 56" North, / 112° 7' 33' West	6990	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	462814	6/3/2025
35172_02F	19-2H FIRE	South Rim	1617	Single Family Res	1617 Barry Hance Cir	36° 2' 53" North, / 112° 7' 31' West	6990	Fire	Health Hazard		Barry Hance		RP	1			
35176_01P	23-1H	South Rim	1621	Single Family Res	1621 Barry Hance Cir	36° 2' 55" North, / 112° 7' 32' West	6990	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	460565	6/3/2025
35173_02F	20-2H FIRE	South Rim	1618	Single Family Res	1618 Barry Hance Cir	36° 2' 55" North, / 112° 7' 31' West	6980	Fire	Health Hazard		Barry Hance		RP	1			
35237_01P	24-1H	South Rim	1622	Single Family Res	1622 Barry Hance Cir	36° 2' 58" North, / 112° 7' 30' West	6990	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	391335	10/25/2023
35174_02F	21-2H FIRE	South Rim	1619	Single Family Res	1619 Barry Hance Cir	36° 2' 54" North, / 112° 7' 32' West	6980	Fire	Health Hazard		Barry Hance		RP	1			
35238_01P	25-1H	South Rim	1623	Single Family Res	1623 Barry Hance Cir	36° 2' 57" North, / 112° 7' 32' West	6990	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	391665	10/25/2023
35175_02F	22-2H FIRE	South Rim	1620	Single Family Res	1620 Barry Hance Cir	36° 2' 56" North, / 112° 7' 30' West	6980	Fire	Health Hazard		Barry Hance		RP	1			
35240_01P	26-1H	South Rim	1624	Single Family Res	1624 Barry Hance Cir	36° 2' 59" North, / 112° 7' 30' West	6960	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	462811	6/3/2025
35176_02F	23-2H FIRE	South Rim	1621	Single Family Res	1621 Barry Hance Cir	36° 2' 55" North, / 112° 7' 32' West	6980	Fire	Health Hazard		Barry Hance		RP	1			
35241_01P	27-1H	South Rim	1626	Single Family Residence	1626 Barry Hance Cir	36° 2' 60" North, / 112° 7' 31' West	6960	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	457733	6/3/2025
35237_02F	24-2H FIRE	South Rim	1622	Single Family Res	1622 Barry Hance Cir	36° 2' 58" North, / 112° 7' 30' West	6990	Fire	Health Hazard		Barry Hance		RP	1			
34736_01P	28-1H	South Rim	1225	Single Family Res	1225 Bob Mahn St	36° 2' 45" North, / 112° 7' 32' West	6970	P/D	Non-Health Hazard		Bob Mahn	Watts	RP	1.5	LF 009 QT	457724	6/3/2025
35238_02F	25-2H FIRE	South Rim	1623	Single Family Res	1623 Barry Hance Cir	36° 2' 57" North, / 112° 7' 32' West	6990	Fire	Health Hazard		Barry Hance		RP	1			
68641_01P	29H	South Rim	1227	Single Family Res	1227 Bob Mahn St			P/D	Non-Health Hazard		Bob Mahn						
68637_01P	30-1H	South Rim	1228	Single Family Res	1228 Bob Mahn St	36° 2' 45" North, / 112° 7' 30' West	6980	P/D	Non-Health Hazard		Bob M+B456:B463ahn	Watts	RP	1.5	LF 009 QT	460563	6/3/2025
35240_02F	26-2 H FIRE	South Rim	1624	Single Family Res	1624 Barry Hance Cir	36° 2' 59" North, / 112° 7' 30' West	6990	Fire	Health Hazard		Barry Hance		RP	1			
34741_01P	31-1H	South Rim	1299	Duplex	95 A/B Havasupai	36° 2' 47" North, / 112° 7' 32' West	6960	P/D	Non-Health Hazard		Bob Mahn 1229	Watts	RP	1.5	LF 009 QT	391291	10/25/2023
35241_02F	27-2H FIRE	South Rim	1626	Single Family Residence	1626 Barry Hance Cir	36° 2' 60" North, / 112° 7' 31' West	6990	Fire	Health Hazard		Barry Hance		RP	1			
34743_01P	32-1H	South Rim	1231	Single Family Res	1231 Bob Mahn St	36° 2' 48" North, / 112° 7' 32' West	6990	P/D	Non-Health Hazard		Bob Mahn	Watts	RP	1.5	LF 009 QT	461095	6/3/2025
34736_02F	28-2H FIRE	South Rim	1225	Single Family Res	1225 Bob Mahn St	36° 2' 45" North, / 112° 7' 32' West	6970	Fire	Health Hazard		Bob Mahn		RP	1			
34747_01P	33-1H	South Rim	1232	Single Family Res	1232 Bob Mahn St	36° 2' 47" North, / 112° 7' 30' West	6970	P/D	Non-Health Hazard		Bob Mahn	Watts	RP	1.5	LF 009 QT	462721	6/3/2025
68637_02F	30-2H FIRE	South Rim	1228	Single Family Res	1228 Bob Mahn St	36° 2' 45" North, / 112° 7' 30' West	6980	Fire	Health Hazard		Bob Mahn		RP	1			
34748_01P	34-1H	South Rim	1233	Single Family Res	1233 Bob Mahn St	36° 2' 49" North, / 112° 7' 31' West	6960	P/D	Non-Health Hazard		Bob Mahn	Watts	RP	1.5	LF 009 QT	391661	10/26/2023
34741_02F	31-2H FIRE	South Rim	1299	Duplex	95 A/B Havasupai	36° 2' 47" North, / 112° 7' 32' West	6960	Fire	Health Hazard		Bob Mahn 1229		RP	1			
34749_01P	35-1H	South Rim	1234	Single Family Res	1234 Bob Mahn St	36° 2' 48" North, / 112° 7' 29' West	6980	P/D	Non-Health Hazard		Bob Mahn	Watts	RP	1.5	LF 009 QT	391293	10/26/2023

34743_02F	32-2H FIRE	South Rim	1231	Single Family Res	1231 Bob Mahn St	36° 2' 48" North, / 112° 7' 31' West	6970	Fire	Health Hazard		Bob Mahn		RP	1			
34751_01P	36H	South Rim	1235	Single Family Res	1235 Bob Mahn St			P/D	Non-Health Hazard		Bob Mahn	Watts	RP	1.5	9	32835	
34747_02F	33-2H FIRE	South Rim	1232	Single Family Res	1232 Bob Mahn St	36° 2' 48" North, / 112° 7' 30' West	6970	Fire	Health Hazard		Bob Mahn		RP	1			
34748_02F	34-2H FIRE	South Rim	1233	Single Family Res	1233 Bob Mahn St	36° 2' 49" North, / 112° 7' 31' West	6960	Fire	Health Hazard		Bob Mahn		RP	1			
34756_01P	38-1H	South Rim	1237	Single Family Res	1237 Bob Mahn St	36° 2' 51" North, / 112° 7' 30' West	6980	P/D	Non-Health Hazard		Bob Mahn	Watts	RP	1.5	LF 009 QT	460567	6/3/2025
34749_02F	35-2H FIRE	South Rim	1234	Single Family Res	1234 Bob Mahn St	36° 2' 48" North, / 112° 7' 29' West	6980	Fire	Health Hazard		Bob Mahn		RP	1			
34755_01P	37-1H	South Rim	1236	Single Family Res	1236 Bob Mahn St	36° 2' 50" North, / 112° 7' 29' West	6980	P/D	Non-Health Hazard		Bob Mahn	Watts	RP	1.5	LF 009 QT	461093	6/3/2025
87766_01P	40-1H	Desert View	1701	Eight-Plex Housing Unit	Desert View	36° 2' 11" North, / 111° 49' 30" West	7480	P/D	Non-Health Hazard		DV Cedar Mountain (Main)	Wilkins	RP	2	975 XL2	AC09066	11/2/2023
34755_02F	37-2H FIRE	South Rim	1236	Single Family Res	1236 Bob Mahn St	36° 2' 50" North, / 112° 7' 29' West	6970	Fire	Health Hazard		Bob Mahn		RP	1			
34689_01P	41-1H	South Rim	1140	Single Family Residence	50 Juniper Hill	36° 3' 13" North, / 112° 8' 6" West	6950	P/D	Non-Health Hazard		Juniper 50	Watts	RP	1.5	LF 009 QT	460560	6/4/2025
34756_02F	38-2H FIRE	South Rim	1237	Single Family Res	1237 Bob Mahn St	36° 2' 48" North, / 112° 7' 29' West	6980	Fire	Health Hazard		Bob Mahn		RP	1			
33034_01P	42-1H	South Rim	0012	Single Family Res	12 Kaibab St	36° 3' 15" North, / 112° 8' 5" West	6950	P/D	Non-Health Hazard		Kaibab 12	Watts	RP	1.5	LF 009 QT	70932	Unknown
34689_02F	41-2H FIRE	South Rim	1140	Single Family Residence	50 Juniper Hill	36° 3' 13" North, / 112° 8' 6" West	6950	Fire	Health Hazard		Juniper 50		RP	1			
33037_01P	43-1H	South Rim	0013	Single Family Res	13 Kaibab St	36° 3' 15" North, / 112° 8' 5" West	6950	P/D	Non-Health Hazard		Kaibab 13	Watts	RP	1.5	LF 009 QT	386107	10/26/2023
33037_02F	43-2H FIRE	South Rim	0013	Single Family Res	13 Kaibab St	36° 2' 48" North, / 112° 7' 29' West	6980	Fire	Health Hazard		Kaibab 13		RP	1			
36048_01P	44H	South Rim	0017	Single Family Res	17 Kaibab St			P/D	Non-Health Hazard		Kaibab 17		RP	1.5			
33128_01P	45-1H	South Rim	0019A	Garage & Shed	Kaibab St	36° 3' 15" North, / 112° 8' 2" West	6950	P/D	Non-Health Hazard		Kaibab 19	Watts	RP	1.5	LF 009 QT	462832	6/4/2025
33128_02F	45-2H FIRE	South Rim	0019A	Garage & Shed	Kaibab St	36° 3' 15" North, / 112° 8' 2" West	6950	Fire	Health Hazard		Kaibab 19		RP	1			
33130_01P	46-1H	South Rim	0021	Single Family Res	21 Kaibab St	36° 3' 16" North, / 112° 8' 0" West	6960	P/D	Non-Health Hazard		Kaibab 21	Wilkins	RP	1.5	975 XL2	W420409	Unknown
33130_02F	46-2H FIRE	South Rim	0021	Single Family Res	21 Kaibab St	36° 3' 16" North, / 112° 8' 0" West	6960	Fire	Health Hazard		Kaibab 21		RP	1			
34691_02F	51-2H FIRE	South Rim	1202	Single Family Res	1202 Randy Thompson Cir	36° 2' 46" North, / 112° 7' 30" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34692_02F	52-2H FIRE	South Rim	1203	Single Family Res	1203 Randy Thompson Cir	36° 2' 49" North, / 112° 7' 36" West	6950	Fire	Health Hazard		Randy Thompson		RP	1			
34693_02F	53-2H FIRE	South Rim	1204	Single Family Res	1204 Randy Thompson Cir	36° 2' 48" North, / 112° 7' 34" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34694_02F	54-2H FIRE	South Rim	1205	Single Family Res	1205 Randy Thompson Cir	36° 2' 49" North, / 112° 7' 36" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34695_02F	55-2H FIRE	South Rim	1206	Single Family Res	1206 Randy Thompson Cir	36° 2' 49" North, / 112° 7' 34" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34696_02F	56-2H FIRE	South Rim	1207	Single Family Res	1207 Randy Thompson Cir	36° 2' 50" North, / 112° 7' 36" West	6950	Fire	Health Hazard		Randy Thompson		RP	1			
34698_02F	57-2H FIRE	South Rim	1208	Single Family Res	1208 Randy Thompson Cir	36° 2' 49" North, / 112° 7' 34" West	6960	Fire	Health Hazard		Randy Thompson		RP	1			
34699_02F	58-2H FIRE	South Rim	1209	Single Family Res	1209 Randy Thompson Cir	36° 2' 51" North, / 112° 7' 35" West	6960	Fire	Health Hazard		Randy Thompson		RP	1			
33681_02P	49-1H	South Rim	0111	Trail Crew Bunkhouse	NR Administration Area	36° 3' 19" North, / 112° 8' 5" West	6930	P/D	Non-Health Hazard		NPS Laundry Bldg.	Wilkins	RP	1	975 XL2	ABA48560	6/6/2025
34690_01P	50H	South Rim	1201	Single Family Res	1201 Randy Thompson Cir			P/D	Non-Health Hazard		Randy Thompson						

34691_01P	51-1H	South Rim	1202	Single Family Res	1202 Randy Thompson Cir	36° 2' 46" North, / 112° 7' 30" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009	391322	10/26/2023
34702_02F	59-2H FIRE	South Rim	1210	1210 Randy Thompson Cir	1210 Randy Thompson Cir	36° 2' 50" North, / 112° 7' 33" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34692_01P	52-1H	South Rim	1203	1203 Randy Thompson Cir	1203 Randy Thompson Cir	36° 2' 49" North, / 112° 7' 36" West	6950	P/D	Non-Health Hazard		Randy Thompson	Wilkins	RP	1.5	LF 009 QT	462812	6/5/2025
34704_02F	60-2H FIRE	South Rim	1211	1211 Randy Thompson Cir	1211 Randy Thompson Cir	36° 2' 52" North, / 112° 7' 34" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34693_01P	53-1H	South Rim	1204	1204 Randy Thompson Cir	1204 Randy Thompson Cir	36° 2' 48" North, / 112° 7' 34" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	461107	6/4/2025
34706_02F	61-2H FIRE	South Rim	1212	1212 Randy Thompson Cir	1212 Randy Thompson Cir	36° 2' 51" North, / 112° 7' 32" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34694_01P	54-1H	South Rim	1205	1205 Randy Thompson Cir	1205 Randy Thompson Cir	36° 2' 48" North, / 112° 7' 34" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	462716	6/5/2025
34708_02F	62-2H FIRE	South Rim	1213	1213 Randy Thompson Cir	1213 Randy Thompson Cir	36° 2' 53" North, / 112° 7' 33" West	6960	Fire	Health Hazard		Randy Thompson		RP	1			
34695_01P	55-1H	South Rim	1206	1206 Randy Thompson Cir	1206 Randy Thompson Cir	36° 2' 49" North, / 112° 7' 34" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	461120	6/5/2025
34712_02F	63-2H FIRE	South Rim	1214	1214 Randy Thompson Cir	1214 Randy Thompson Cir	36° 2' 52" North, / 112° 7' 33" West	6960	Fire	Health Hazard		Randy Thompson		RP	1			
34696_01P	56-1H	South Rim	1207	1207 Randy Thompson Cir	1207 Randy Thompson Cir	36° 2' 50" North, / 112° 7' 36" West	6950	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009	391662	10/26/2023
34714_02F	64-2H FIRE	South Rim	1215	1215 Randy Thompson Cir	1215 Randy Thompson Cir	36° 2' 50" North, / 112° 7' 26" West	6980	Fire	Health Hazard		Randy Thompson		RP	1			
34698_01P	57-1H	South Rim	1208	1208 Randy Thompson Cir	1208 Randy Thompson Cir	36° 2' 49" North, / 112° 7' 34" West	6960	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	462729	6/5/2025
34718_02F	65-2H FIRE	South Rim	1216	1216 Randy Thompson Cir	1216 Randy Thompson Cir	36° 2' 50" North, / 112° 7' 26" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34720_02F	66-2H FIRE	South Rim	1217	1217 Randy Thompson Cir	1217 Randy Thompson Cir	36° 2' 50" North, / 112° 7' 24" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34721_02F	67-2H FIRE	South Rim	1218	1218 Randy Thompson Cir	1218 Randy Thompson Cir	36° 2' 53" North, / 112° 7' 33" West	6960	Fire	Health Hazard		Randy Thompson		RP	1			
34702_01P	59-1H	South Rim	1210	1210 Randy Thompson Cir	1210 Randy Thompson Cir	36° 2' 50" North, / 112° 7' 33" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009	393346	10/26/2023
34722_02F	68-2H FIRE	South Rim	1219	1219 Randy Thompson Cir	1219 Randy Thompson Cir	36° 2' 49" North, / 112° 7' 25" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34723_02F	69-2H FIRE	South Rim	1220	1220 Randy Thompson Cir	1220 Randy Thompson Cir	36° 2' 48" North, / 112° 7' 27" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34725_02F	70-2H FIRE	South Rim	1221	1221 Randy Thompson Cir	1221 Randy Thompson Cir	36° 2' 48" North, / 112° 7' 24" West	6960	Fire	Health Hazard		Randy Thompson		RP	1			
34706_01P	61-1H	South Rim	1212	1212 Randy Thompson Cir	1212 Randy Thompson Cir	36° 2' 51" North, / 112° 7' 32" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	461092	6/5/2025
34728_02F	71-2H FIRE	South Rim	1222	1222 Randy Thompson Cir	1222 Randy Thompson Cir	36° 2' 47" North, / 112° 7' 27" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34708_01P	62-1H	South Rim	1213	1213 Randy Thompson Cir	1213 Randy Thompson Cir	36° 2' 53" North, / 112° 7' 33" West	6960	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	462714	6/5/2025

34730_02F	72-2H FIRE	South Rim	1223	1223 Randy Thompson Cir	1223 Randy Thompson Cir	36° 2' 47" North, / 112° 7' 27" West	6970	Fire	Health Hazard		Randy Thompson		RP	1			
34712_01P	63-1H	South Rim	1214	1214 Randy Thompson Cir	1214 Randy Thompson Cir	36° 2' 52" North, / 112° 7' 33" West	6960	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	462722	6/5/2025
34731_02F	73-2H FIRE	South Rim	1224	1224 Randy Thompson Cir	1224 Randy Thompson Cir	36° 2' 46" North, / 112° 7' 28" West	6960	Fire	Health Hazard		Randy Thompson		RP	1			
34714_01P	64-1H	South Rim	1215	1215 Randy Thompson Cir	1215 Randy Thompson Cir	36° 2' 50" North, / 112° 7' 26" West	6980	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	975 XL2	W405408	Unknown
33132_02F	74-2H FIRE	South Rim	0023	23 Tapeats Circle	23 Tapeats Circle	36° 3' 17" North, / 112° 7' 58" West	6960	Fire	Health Hazard		Tapeats 23		RP	1			
34718_01P	65-1H	South Rim	1216	1216 Randy Thompson Cir	1216 Randy Thompson Cir	36° 2' 50" North, / 112° 7' 26" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009	393343	10/27/2023
33136_02F	75-2H FIRE	South Rim	0025	25 Tapeats Circle	25 Tapeats Circle	36° 3' 15" North, / 112° 7' 58" West	6950	Fire	Health Hazard		Tapeats 25		RP	1			
33138_02F	76-2H FIRE	South Rim	0027	Single Family Res	27 Tapeats Circle	36° 3' 16" North, / 112° 7' 56" West	6950	Fire	Health Hazard		Tapeats 27		RP	1			
36338_02F	78-2H FIRE	South Rim	0006B	Duplex	7 A Tonto St	36° 3' 17" North, / 112° 8' 9" West	6920	Fire	Health Hazard		Tonto 7A		RP	1.5			
34721_01P	67-1H	South Rim	1218	Single Family Res	1218 Randy Thompson Cir	36° 2' 53" North, / 112° 7' 33" West	6960	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	462715	6/5/2025
33003_02F	78-4H FIRE	South Rim	0006C	Garage & Shed	Tonto St	36° 3' 17" North, / 112° 8' 10" West	6920	Fire	Health Hazard		Tonto 7B		RP	1.5			
34722_01P	68-1H	South Rim	1219	Single Family Res	1219 Randy Thompson Cir	36° 2' 49" North, / 112° 7' 25" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	462720	6/10/2025
32967_02F	80-2H FIRE	South Rim	0004A	Garage & Shed	Tonto St	36° 3' 18" North, / 112° 3' 18" West	6930	Fire	Health Hazard		Tonto 10		RP	1			
34723_01P	69-1H	South Rim	1220	Single Family Res	1220 Randy Thompson Cir	36° 2' 48" North, / 112° 7' 27" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	461108	6/5/2025
32968_02F	81-2H FIRE	South Rim	0005	12 Tonto St	12 Tonto St	36° 3' 16" North, / 112° 7' 56" West	6950	Fire	Health Hazard		Tonto 12		RP	1			
34725_01P	70-1H	South Rim	1221	1221 Randy Thompson Cir	1221 Randy Thompson Cir	36° 2' 48" North, / 112° 7' 24" West	6960	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	461105	6/5/2025
87774_01N	91-1H	South Rim	1580	101-108 Paiute St (Eight Plex), South Rim		36° 2' 56" North, / 112° 8' 6" West	6950		Non-Health Hazard		Paiute Bldg 100	Febco	RP	2			
34728_01P	71-1H	South Rim	1222	1222 Randy Thompson Cir	1222 Randy Thompson Cir	36° 2' 47" North, / 112° 7' 27" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	461106	6/6/2025
87775_01N	92-1H	South Rim	1581	201-208Paiute St (Eight Plex), South Rim		36° 2' 56" North, / 112° 8' 4" West	6950		Non-Health Hazard		Paiute Bldg 200	Febco	RP	2			
34730_01P	72-1H	South Rim	1223	1223 Randy Thompson Cir	1223 Randy Thompson Cir			P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	391664	10/27/2023
87776_01N	93-1H	South Rim	1582	301-308 Paiute St (Eight Plex), South Rim		36° 2' 56" North, / 112° 8' 3" West	6960		Non-Health Hazard		Paiute Bldg 300	Febco	RP	2			
34731_01P	73-1H	South Rim	1224	1224 Randy Thompson Cir	1224 Randy Thompson Cir	36° 2' 46" North, / 112° 7' 28" West	6960	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	460568	6/6/2025
87777_01N	94-1H	South Rim	1583	401-408 Paiute St (Eight Plex), South Rim		36° 2' 55" North, / 112° 8' 1" West	6960		Non-Health Hazard		Paiute Bldg 400	Febco	RP	2			
87778_01N	95-1H	South Rim	1584	501-508 Paiute St (Eight Plex), South Rim		36° 2' 55" North, / 112° 8' 1" West	6960		Non-Health Hazard		Paiute Bldg 500	Febco	RP	2			Unknown
87780_01N	96-1H	South Rim	1585	601-608 Paiute St (Eight Plex), South Rim		36° 2' 54" North, / 112° 8' 1" West	6960		Non-Health Hazard		Paiute Bldg 600	Febco	RP	2			

33136_01P	75-1H	South Rim	0025	25 Tapeats Circle	25 Tapeats Circle	36° 3' 15" North, / 112° 7' 58" West	6950	P/D	Non-Health Hazard		Tapeats 25	Wilkins	RP	1.5	975 XL2	W407462	2015
235188_01N	97-1H	South Rim	1586	701-708 Paiute St (Eight Plex), South Rim		36° 2' 56" North, / 112° 8' 4" West	6950		Non-Health Hazard		Paiute Bldg 700	Febco	RP	2			
235189_01N	98-1H	South Rim	1587	801-808 Paiute St (Eight Plex), South Rim		36° 2' 55" North, / 112° 8' 8" West	6940		Non-Health Hazard		Paiute Bldg 800	Febco	RP	2			
36050_01F	99H FIRE	Phantom Ranch	0091	River Ranger Station	Phantom Ranch	36° 5' 57" North, / 112° 5' 38" West	6980	Fire	Health Hazard		TCWL - PR	Watts	RP	1.5	U009 M2	05225	Unknown
35114_08F	114-2H FIRE	North Rim	1547	Eight-Plex Housing Unit	D Cliffrose Court	36° 12' 49" North, 112° 3' 45" West	8350	Fire	Health Hazard		Utility Room		RP	1			
35114_09P	115-1H	North Rim	1547	Eight-Plex Housing Unit	E Cliffrose Court	36° 12' 49" North, 112° 3' 43" West	8340	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	384956	08/14/2024
35114_10F	115-2H FIRE	North Rim	1547	Eight-Plex Housing Unit	E Cliffrose Court	36° 12' 49" North, 112° 3' 43" West	8340	Fire	Health Hazard		Utility Room		RP	1			
35114_11P	116-1H	North Rim	1547	Eight-Plex Housing Unit	F Cliffrose Court	36° 12' 49" North, 112° 3' 43" West	8340	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	380839	08/14/2024
35114_12F	116-2H FIRE	North Rim	1547	Eight-Plex Housing Unit	F Cliffrose Court	36° 12' 49" North, 112° 3' 43" West	8340	Fire	Health Hazard		Utility Room		RP	1			
35114_13P	117-1H	North Rim	1547	Eight-Plex Housing Unit	G Cliffrose Court	36° 12' 49" North, 112° 3' 45" West	8340	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	380836	08/14/2024
35114_14F	117-2H FIRE	North Rim	1547	Eight-Plex Housing Unit	G Cliffrose Court	36° 12' 49" North, 112° 3' 45" West	8340	Fire	Health Hazard		Utility Room		RP	1			
33007_01P	79-1H	South Rim	0007A	Garage & Shed	Tonto St	36° 3' 16" North, / 112° 7' 56" West	6950	P/D	Non-Health Hazard		Tonto 9A	Watts	RP	1.5	LF 009	391660	10/27/2023
35114_15P	118-1H	North Rim	1547	Eight-Plex Housing Unit	H Cliffrose Court	36° 12' 48" North, 112° 3' 44" West	8340	P/D	Non-Health Hazard		Boiler System / Utility Room	Watts	RP	1.5	LF009-QT-FS	375310	08/14/2024
35114_16F	118-2H FIRE	North Rim	1547	Eight-Plex Housing Unit	H Cliffrose Court	36° 12' 48" North, 112° 3' 44" West	8340	Fire	Health Hazard		Boiler System / Utility Room		RP	1			
32968_01P	81-1H	South Rim	0005	Single Family Res	12 Tonto St	36° 3' 16" North, / 112° 7' 56" West	6950	P/D	Non-Health Hazard		Tonto 12	Watts	RP	1.5	LF 009 QT	462818	6/9/2025
255316_01F	83H FIRE	South Rim				36° 3' 13" North, / 112° 8' 27" West	6890	Fire	Health Hazard		Apache 21	Watts	RP	1	LF 009 M2 QT	358446	6/10/2025
83989_02P	35B	North Rim	1525		EDR Area	36° 12' 26" North, 112° 3' 27" West	8320	P/D	Non-Health Hazard		(EDR), Fir Road and Wrangler Road (Down hill to the west, on the northside of the road, near the cardboard packer)	Febco	DC	8	850	F0212301252	De-scoped from the CY-2025 Testing due to the Dragon Bravo Fire
87759_01P	34-1B	North Rim	1153	Emergency Management Services (EMS), Station 3	6219 AZ Highway 67	36° 12' 55" North, 112° 3' 32" West	8370	P/D	Non-Health Hazard		Boiler System / Utility Room, North side of building.	Watts	RP	1	009 M2 QT	A02582	De-scoped from the CY-2025 Testing due to the Dragon Bravo Fire
87759_02P	34-2B	North Rim	1153	Emergency Management Services (EMS), Station 3	6219 AZ Highway 67	36° 12' 55" North, 112° 3' 30" West	8420	P/D	Non-Health Hazard			Watts	RP	2.5	009	23204	De-scoped from the CY-2025 Testing due to the Dragon Bravo Fire
87759_03F	34-3B FIRE	North Rim	1153	Emergency Management Services (EMS), Station 3	6219 AZ Highway 67	36° 12' 55" North, 112° 3' 30" West	8420	Fire	Non-Health Hazard				RP				De-scoped from the CY-2025 Testing due to the Dragon Bravo Fire
34567_01P	2WU	Havasupai Gardens	0484	Pumphouse South	Havasupai Gardens	36° 3' 26" North, 112° 7' 36" West	3810	P/D	Non-Health Hazard		TCWL - HG Havasupai Gardens - Pumphouse-South	Watts	RP	1	LF 009 M2	304235	10/30/2023
108280_01P	1B	South Rim	1705	Comfort Station A, Bright Angel Trailhead		36° 3' 26" North, 112° 8' 36" West	6860	P/D	Non-Health Hazard		Bright Angel Trailhead Water Bottle Fill Station	Febco	DC	1	850	HC90317	Unknown
108280_02P	2B	South Rim	1705	Comfort Station A, Bright Angel Trailhead		36° 3' 26" North, 112° 8' 35" West	6870	P/D	Non-Health Hazard		Bright Angel Trailhead Irrigation System	Febco	DC	1	850	HC90320	Unknown
84001_02F	6B Fire	South Rim	1266	Camper Services Bldg	Mather Campground	36° 3' 2" North, 112° 7' 16" West	6970	Fire	Health Hazard		Kiosk	Wilkins	DC	1	950XL	1746410	Unknown
81635_06F	10-6B Fire	South Rim	1577	NPS Vehicle Maintenance Building	New NPS Maintenance Area			Fire	Non-Health Hazard		FMD Auto Shop Bldg	Ames	DC	4	2000 SSF	200310 0901	Unknown

81633_06F	11-6B Fire	South Rim	1575	NPS Shops/Office Building	New NPS Maintenance Area	36° 1' 59" North, 112° 7' 45" West	6890	Fire	Non-Health Hazard		FMD Custodial Room #112 - Bldg	Ames	DC	4	2000 SSF	128958-0802	Unknown
81636_03F	12-3B FIRE	South Rim	1578	NPS Enclosed Vehicle Storage	New NPS Maintenance Area			Fire	Non-Health Hazard		FMD Covered Storage Bldg	Ames	DC	4	2000 SSF	200155 1201	Unknown
35096_01F	18B	South Rim	1536	Engineering Office/Dutton/SRM	NPS Maint Area			Fire	Health Hazard		14 Fee Operations	Ames	DC	2.5	Colt 200	RL-1606	Unknown
34577_03F	21-2B FIRE	South Rim	0533	Kolb Studio	Village Loop			Fire	Non-Health Hazard		Grand Canyon Conservatory	Watts	DC	2.5	709	102904	Unknown
243934_01F	25-4B FIRE	South Rim	1709	Science and Resource Management Warehouse (Dutton)	17 South Entrance Road	36° 3' 22" North, 112° 7' 12" West	7010	Fire	Non-Health Hazard		SRM Storage - Mcgee	Ames	DC	4	Colt 200	MC1525	Unknown
33680_01F	29-1B FIRE	South Rim	0110	Yavapai Observation Station	Yavapai Point	36° 3' 58" North, 112° 7' 3" West	7090	Fire	Non-Health Hazard		Yavapai Musuem, Grand Canyon Conservatory	Wilkins	DC	4	350	V06577	Unknown
33680_02F	29-2B Bypass	South Rim	0110	Yavapai Observation Station	Yavapai Point	36° 3' 58" North, 112° 7' 3" West	7090	Fire	Non-Health Hazard		Yavapai Museum, Grand Canyon Conservatory	Wilkins	DC	0.75	950 XL	2223193 XLD	Unknown
34115_03F	37B FIRE	South Rim	0272	Maintenance Building	Albright Ave			Fire	Health Hazard		DC, Grand Canyon Conservatory Warehouse (McKee Warehouse Compound Area), Fire riser		RP				
84040_02F	47-1H FIRE	South Rim	1100	Yavapai Lodge West #6	Yavapai Lodge Area	36° 2' 57" North, / 112° 8' 14" West	6930	Fire	Health Hazard		Mohave	Watts	DC	1.5	007 M2	83313	Unknown
34618_01F	82H FIRE	South Rim	0810	Single Family Res	2 Apache St	36° 3' 16" North, / 112° 8' 18" West	6890	Fire	Health Hazard		Apache 2	Wilkins	DC	0.75	350XL	A503447	Unknown
34503_01F	100H FIRE	South Rim	0368	4 Unit Apartment (Hermits Circle)	368 ABCD Sunset Dr	36° 3' 8" North, / 112° 7' 55" West	6970	Fire	Health Hazard		Sunset 368	Watts	DC	1	007 M1QT	479666	Unknown
34552_01P	4-1B Main	South Rim	0444	Clinic	1 Clinic Road			P/D	Non-Health Hazard		Main Entry Outside	Watts	RP	4	957	XI-0270	11/1/2023
60971_01F	86H FIRE	Havasupai Gardens	0875	Trail Crew Bunkhouse	Havasupai Gardens	36° 4' 32" North, 112° 7' 46" West	3870	Fire	Health Hazard		TCWL - HG Havasupai Gardens	Watts	RP	1.5	U009 M2	5218	Unknown
33422_01F	87H FIRE	Havasupai Gardens	1460	Ranger Residence	Havasupai Gardens	36° 4' 33" North, 112° 7' 46" West	3860	Fire	Health Hazard		TCWL - HG Havasupai Gardens	Watts	RP	1.5	LF 009 M2QT	008206	Unknown
33422_02F	88H FIRE	Havasupai Gardens	1460	Utility Bunkhouse	Havasupai Gardens	36° 4' 33" North, 112° 7' 47" West	3880	Fire	Health Hazard		TCWL - HG Havasupai Gardens Utilities Operator House	Watts	RP	1.5	U009 M2	005321	Unknown
35153_01F	84-1H FIRE Bypass	Desert View	1707	Four-Plex Housing Unit	1494 Colter	36° 2' 10" North, / 111° 49' 33" West	7460	Fire	Health Hazard		DV Colter Lane 1494 (Bypass)	Ames	DC	0.75	Flowmatic DCVE	A2536	Unknown
35153_02F	84-2H FIRE Main	Desert View	1707	Four-Plex Housing Unit	1494 Colter	36° 2' 10" North, / 111° 49' 33" West	7460	Fire	Health Hazard		DV Colter Lane 1494 (Main)	Ames	DC	2.5	Colt 300	DC-0818	Unknown
108280_03P	3B	South Rim	1705	Comfort Station A, Bright Angel Trailhead				P/D	Non-Health Hazard		Bright Angel Trailhead Restrooms	Wilkins	RP	3	375	L79313	Unknown
34552_05P	4-5B Mech Room	South Rim	0444	Clinic	1 Clinic Road			P/D	Non-Health Hazard		Fire Station #1 Engine Bay - Mech Room	Watts	RP	2.5	009	19298	10/1/2023
33156_01P	7-1B	South Rim	0044	Community Building	Village Loop			P/D	Non-Health Hazard		Community Bldg. Grand Canyon Conservatory Boiler Room	Febco	RP	0.75	825Y	A137844	Unknown
35072_01P	15-1B	South Rim	1511	Museum Collection Building	NPS Maint Area			P/D	Non-Health Hazard		Museum Collection Boiler Room (Southeast Backside Bldg.)	Watts	RP	1	009 QT	64231	Unknown
35072_02P	15-2B	South Rim	1511	Museum Collection Building	NPS Maint Area			P/D	Non-Health Hazard		Musuem Collections Bathroom	Watts	RP	1.5	009M2QT	33035	Unknown
35072_03P	16B	South Rim	1511	Museum Collection Building	NPS Maint Area			P/D	Non-Health Hazard		Sanitation Truck Wash Rack	Watts	RP	0.75	909	515127	Unknown
34577_02P	21-1B	South Rim	0533	Kolb Studio	Village Loop			P/D	Non-Health Hazard		Grand Canyon Conservatory, Boiler Room	Febco	RP	0.75	825Y	A210251	Check on lead and copper level
83949_01P	22-2B	South Rim	2022	GCA Bookstore	Canyon View Information Plaza	36° 0' 30" North, 112° 6' 33" West	7100	P/D	Non-Health Hazard		GCVC Bookstore, Grand Canyon Conservatory	Febco	RP	1	825Y	A206788	Unknown
35243_02P	22-3B	South Rim	2000	Orientation Building	Canyon View Information Plaza	36° 3' 32" North, 112° 6' 33" West	7110	P/D	Non-Health Hazard		GCVC, Orientation Bldg., 25911	Watts	RP	0.75	909	509697	7/23/2023
84298_01P	1-1H	South Rim	0844	Garage	Boulder Alley	36° 3' 13" North, 112° 8' 18" West	6910	P/D	Non-Health Hazard		Apache 1	Watts	RP	1.5	009QT	443917	Unknown
35164_01P	11-1H	South Rim	1609	Single Family Res	1609 Barry Hance Cir	36° 2' 55" North, / 112° 7' 25" West	6960	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	009 QT	369142	Unknown
87766_02F	40-2H FIRE	Desert View	1701	Eight-Plex Housing Unit	Desert View	36° 2' 11" North, / 111° 49' 30" West	7480	Fire	Health Hazard		DV Cedar Mountain	Ames	RP	1.25	4000 B	1127	Unknown
84090_01P	47-2H	South Rim	1382	Six-Plex Townhouse	1101-1106 Mohave St	36° 2' 57" North, / 112° 8' 14" West	6930	P/D	Non-Health Hazard		Mohave 1101	Watts	RP	1.5	009 QT	229750	Unknown

84041_01P	47-3H	South Rim	1103	Ice Plant	Mather Campground	36° 2' 57" North, / 112° 8' 14" West	6930	P/D	Non-Health Hazard		Mohave	Watts	RP	1.5	009 QT	255806	Unknown
84042_26P	47-4H	South Rim	1104	Maswik Lodge South 1	Maswik Lodge Area	36° 2' 57" North, / 112° 8' 13" West	6930	P/D	Non-Health Hazard		Mohave	Watts	RP	1.5	009 QT	255785	Unknown
84059_01P	47-5H	South Rim	1105	Maswik Lodge South 2	Maswik Lodge Area	36° 2' 57" North, / 112° 8' 13" West	6940	P/D	Non-Health Hazard		Mohave	Watts	RP	1.5	009 QT	441775	Unknown
84062_01P	47-6H	South Rim	1108	Maswik Lodge South 5	Maswik Lodge Area	36° 2' 56" North, / 112° 8' 13" West	6920	P/D	Non-Health Hazard		Mohave	Watts	RP	1.5	009 QT	257826	Unknown
33022_01P	48-1H	South Rim	0009	Single Family Res	9 Navajo St	36° 3' 19" North, / 112° 8' 5" West	6930	P/D	Non-Health Hazard		Navajo 9	Watts	RP	1.5	009 QT	366231	Unknown
33022_02F	48-2H FIRE	South Rim	0009	Single Family Res	9 Navajo St	36° 3' 19" North, / 112° 8' 5" West	6930	Fire	Health Hazard		Navajo 9	Ames	DC	1	2000B	18933	Unknown
34720_01P	66-1H	South Rim	1217	Single Family Res	1217 Randy Thompson Cir	36° 2' 50" North, / 112° 7' 24" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	009 QT	438999	2013
33132_01P	74-1H	South Rim	0023	Single Family Res	23 Tapeats Circle	36° 3' 17" North, / 112° 7' 58" West	6960	P/D	Non-Health Hazard		Tapeats 23	Watts	RP	1.5	009 QT	331640	Unknown
33138_01P	76-1H	South Rim	0027	Single Family Res	27 Tapeats Circle	36° 3' 16" North, / 112° 7' 56" West	6950	P/D	Non-Health Hazard		Tapeats 27	Watts	RP	1.5	975	399730	Unknown
36340_01P	77-1H	South Rim	0024B	Duplex	1B Tonto St	36° 3' 16" North, / 112° 8' 12" West	6910	P/D	Non-Health Hazard		Tonto 1A	Watts	RP	1.5	009 QT	366554	Unknown
36340_02P	77-2H	South Rim	0024B	Duplex	1B Tonto St	36° 3' 16" North, / 112° 8' 12" West	6910	P/D	Non-Health Hazard		Tonto 1B	Watts	RP	1.5	009 QT	367659	Unknown
36338_01P	78-1H	South Rim	0006B	Duplex	7 A Tonto St	36° 3' 17" North, / 112° 8' 9" West	6920	P/D	Non-Health Hazard		Tonto 7A	Watts	RP	1.5	009 QT	371197	Unknown
33003_01P	78-3H	South Rim	0006C	Garage & Shed	Tonto St	36° 3' 17" North, / 112° 8' 10" West	6920	P/D	Non-Health Hazard		Tonto 7B	Watts	RP	1.5	009QT	71015	Unknown
32967_01P	80-1H	South Rim	0004A	Garage & Shed	Tonto St	36° 3' 18" North, / 112° 3' 18" West	6930	P/D	Non-Health Hazard		Tonto 10	Watts	RP	1.5	009 QT	443899	Unknown
99678_02P	3WU	South Rim				36° 3' 2" North, 112° 7' 55" West	6980	P/D	Non-Health Hazard		Lapp Loop Truck Fill	Wilkins	RP	3	375	L86229	Unknown
81633_01P	11-1B Glycol Tank	South Rim	1575	NPS Shops/Office Building	New NPS Maintenance Area	36° 1' 59" North, 112° 7' 43" West	6840	P/D	Health Hazard		FMD Main Bldg. Mech. / Boiler Room #122A, Bldg. System (Glycol) Make-Up Water / Mixing - Dosing Tank, "Overhead"	Watts	RP	1.5	LF 009 QT	457741	05/19/2025
81633_02P	11-2B Chiller	South Rim	1575	NPS Shops/Office Building	New NPS Maintenance Area	36° 1' 59" North, 112° 7' 43" West	6840	P/D	Health Hazard		FMD Main Bldg. Mech. / Boiler Room #122A, Bldg. System (Glycol) Make-Up Water / Chiller Water System, "Top Assembly"	Watts	RP	1	LF009M2-QT-FS	299190	12/17/2024
81633_05N	11-5B	South Rim	1575	NPS Shops/Office Building	New NPS Maintenance Area	36° 1' 58" North, 112° 7' 43" West	6890		Non-Health Hazard		FMD Main Bldg. Housing Maintenance / Quarters Shop Room #102, Bldg., Appliance Testing Station.	Watts	RP	0.75	LF009M2-QT	105128	
81636_02P	12-2B	South Rim	1578	NPS Enclosed Vehicle Storage	New NPS Maintenance Area			P/D	Non-Health Hazard		FMD Covered Storage Bldg.	Watts	DC	1	007 M1	276028	
35243_01P	22-1B Pump Station	South Rim	2000	Orientation Building	Canyon View Information Plaza	36° 3' 32" North, 112° 6' 33" West	7110	P/D	Non-Health Hazard		GCVC, Potable & Pumping Station Bldg.	Watts	RP	2	LF 009 M2	283374	05/30/2025
33683_01P	31-1B	Desert View	0114	Tusayan Museum	Tusayan Ruins	36° 0' 50" North, 111° 51' 59" West	7200	P/D	Non-Health Hazard		SR / DV - and Ruins Site, Ranger Office Building, Boiler / Utility Room.	Watts	RP	1.5	LF009M2	142464	7/15/2024
34617_01P	2-1H	South Rim	0809	Single Family Res	4 Apache St	36° 3' 15" North, 112° 8' 19" West	6900	P/D	Non-Health Hazard		Apache 4	Wilkins	RP	1.5	975 XL2	W407466	8/3/2015
35169_01P	16-1H	South Rim	1614	Single Family Res	1614 Barry Hance Cir	36° 2' 54" North, / 112° 7' 29" West	6980	P/D	Non-Health Hazard		Barry Hance	Watts	RP	1.5	LF 009 QT	462725	6/2/2025
34699_01P	58-1H	South Rim	1209	Single Family Res	1209 Randy Thompson Cir	36° 2' 51" North, / 112° 7' 35" West	6960	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	LF 009 QT	461121	6/5/2025
34704_01P	60-1H	South Rim	1211	Single Family Res	1211 Randy Thompson Cir	36° 2' 52" North, / 112° 7' 34" West	6970	P/D	Non-Health Hazard		Randy Thompson	Watts	RP	1.5	009 QT	346501	Unknown

99678_01P	1WU	South Rim				36° 2' 3" North, 112° 7' 46" West	6900	P/D	Non-Health Hazard		FMD - Fire Hydrant - Water Truck Fill Location (North side of the FMD Compound)	Wilkins	RP	1.5	975 XL2	ACC 4695	Unknown
34574_01P	5WU	Phantom Ranch	0491	Wastewater Treatment Plant PR	Phantom Ranch	36° 12' 55" North, 112° 3' 32" West	8370	P/D	Non-Health Hazard		TCWL - PR WWTP - Tool Room	Watts	RP	1	LF 009 M2 QT	358439	6/12/2025
34560_01P	6WU	South Rim	0467	Control Building	WW Treatment Plant			P/D	Non-Health Hazard		WWTP - Pump Room	Watts	RP	1	LF 009 M2 QT	191549	Unknown
34056_01P	7WU	South Rim	0228	Reclaimed Water Pumphouse	WW Treatment Plant	36° 2' 59" North, 112° 9' 6" West	6800	P/D	Non-Health Hazard		WWTP - Bldg	Watts	RP	1	LF 009 M2 QT	357968	5/22/2025
99678_03P	8WU	South Rim				36° 2' 57" North, 112° 7' 58" West	6950	P/D	Non-Health Hazard		Water Truck Fill Station	Wilkins	RP	3	375ASTR	56359C	5/22/2025
34577_01P	21 Place Saver	South Rim	0533	Kolb Studio	Village Loop			P/D	Non-Health Hazard		Grand Canyon Conservatory FMSS#						

Master Backflow Inventory

Unique ID	Inventory File #	Area	Building #	Building Name	Address	GPS	Elevation (feet)	Connection Type	Hazard Type	Use Codes	Room	Mfg.	Type	Size (inches)	Model#	Serial #	Install Date	2026 Test Date	2026 Test Results	2026 Tester Name & ID	2026 Corrective Action Required	Compliant	Cost of Corrective Action	Comments
34124_01P	1	HOAL	0277	Albright Building A	Albright Ave			P/D	Non-Health Hazard		Albright A-Boiler Room (Main Water Supply Line)	Wilkins	RP	2	975 XL	W163153	Unknown								
34124_02P	2	HOAL	0277	Albright Building A	Albright Ave			P/D	Non-Health Hazard		Albright A-Boiler Room (Boiler Water Supply Line)	Wilkins	RP	1	975 XL	2051889	Unknown								
34124_03F	3	HOAL	0277	Albright Building A	Albright Ave			Fire	Non-Health Hazard		Albright A-Boiler Room	Watts	DC	1.5	QT 007 M2	A04516	Unknown								
34126_01P	4	HOAL	0278	Albright Building B	Albright Ave			P/D	Non-Health Hazard		Albright B- Boiler Room (Main Water Supply Line)	Wilkins	RP	2	975 XL	W163152	Unknown								
34126_02P	5	HOAL	0278	Albright Building B	Albright Ave			P/D	Non-Health Hazard		Albright B- Boiler Room (Boiler Water Supply Line)	Wilkins	RP	1	975 XL2	4565637	Unknown								
34126_03F	6	HOAL	0278	Albright Building B	Albright Ave			Fire	Non-Health Hazard		Albright B- Boiler Room	Watts	DC	1.5	QT 007 M2	A04533	Unknown								
34420_01P	7	HOAL	0286	Albright Building C	Albright Ave			P/D	Non-Health Hazard		Albright C-Boiler Room (Main Water Supply Line)	Wilkins	RP	2	975 XL2	4358886	Unknown								
34420_02P	8	HOAL	0286	Albright Building C	Albright Ave			P/D	Non-Health Hazard		Albright C-Boiler Room (Boiler Water Supply Line)	Wilkins	RP	1	975 XL2	4102508	Unknown								
34420_03F	9	HOAL	0286	Albright Building C	Albright Ave			Fire	Non-Health Hazard		Albright C-Boiler Room	Watts	DC	1.5	QT 007 M2	A04754	Unknown								
34549_01P	10	HOAL	0438	Albright Building D	Albright Ave			P/D	Non-Health Hazard		Albright D-Boiler Room (Main Water Supply Line)	Wilkins	RP	2	975 XL2	W163096	Unknown								
34549_02P	11	HOAL	0438	Albright Building D	Albright Ave			P/D	Non-Health Hazard		Albright D-Boiler Room (Boiler Water Supply Line)	Wilkins	RP	1	975 XL2	4565626	Unknown								
34549_03F	12	HOAL	0438	Albright Building D	Albright Ave			Fire	Non-Health Hazard		Albright D-Boiler Room	Watts	DC	1.5	QT 007 M2	A04501	Unknown								
34550_01P	13	HOAL	0439	Albright Building E	Albright Ave			P/D	Non-Health Hazard		Albright E-Boiler Room (Main Water Supply Line)	Wilkins	RP	2	975 XL	W163154	Unknown								
34550_02P	14	HOAL	0439	Albright Building E	Albright Ave			P/D	Non-Health Hazard		Albright E-Boiler Room (Boiler Water Supply Line)	Wilkins	RP	1	975 XL	4102501	Unknown								
34550_03F	15	HOAL	0439	Albright Building E	Albright Ave			Fire	Non-Health Hazard		Albright E-Boiler Room	Watts	DC	1.5	QT 007 M2	24043	Unknown								
34122_01F	16	HOAL	0276	Kowski Hall (Albright Training Ctr)	Albright Ave			Fire	Non-Health Hazard		Albright Main Bldg.	Wilkins	DC	4	350	J18802	Unknown								

Grand Canyon National Park

Cross – Connection Control & Backflow Prevention Program

May 06, 2024

Developed By: GARY LIPPARD Digitally signed by GARY LIPPARD Date: 2024.05.06 12:17:53 -07'00'

Gary L. Lippard, GRCA - USRO / Cross-Connection Control Coordinator Specialists, Date

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J. Treacy Stone, P.E. GRCA - Chief of Facility Management & Engineering Date

GRCA, Facility Management and Engineering Division, Water Utility Branch
P.O. Box 129, 1575 Shuttle Bus Road
Grand Canyon, AZ 86023

Public Water Supply System ID A0403702
Population served: 6,000 (est.)

Original document: 06/10/2015
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Introduction

The legal authority (enabling legislation) that the US Department of Interior, National Park Service (agency) has for the establishment of the Cross Connection Control / Backflow Prevention Program. As outlined within the Federal Safe Drinking Water Act, Amendments of 1996. Then, based on this is the State of Arizona enactment that establishes the states privacy in the control of water within the State of Arizona. Cross-Connection Control is defined in the rules of the Arizona Department of Environmental Quality (ADEQ), of the State of Arizona, Title 18 Chapter 4, of the Arizona Administrative Code (AAC) as follows:

Means a physical connection between a Public Water System (PWS), and any source of water or other substance that may lead to pollution or contamination of the water provided by the Public Water System (PWS) through backflow.

Consequently, either cross-connection or the chance of backflow must be eliminated to prevent degrading the high quality of water that the NPS - GRCA Facility Management and Engineering Division, Water Utility Branch strives to maintain.

The following is the NPS - GRCA Facility Management and Engineering Division, Water Utility Branch's Policy on Cross-Connection Control / Backflow Prevention Program.

It is only through education and commitment can the NPS - GRCA Facility Management and Engineering Division, Water Utility Branch can control the hazards presented by cross connections within its public drinking water supply. NPS - GRCA Facility Management and Engineering Division, Water Utility Branch Services supports this policy and its enforcement and will offer its assistance to all who share the responsibility to provide and maintain safe drinking water.

Chapter 1 - Overview

Purpose

The purpose of this Policy is to protect the National Park Service, Grand Canyon National Park's public potable water supply from the possibility of contamination or pollution. This policy is to promote the control and/or elimination of existing backflow / cross-connections, actual or potential, between its customers usage and the public water supply; and to provide for the maintenance of a continuing program of the backflow / cross-connection control which will systematically and effectively prevent the contamination of the potable water distribution system. This Policy is intended to prevent delivered water **(water that has passed beyond the public water system and into the private distribution systems of customers)** from re-entering the public distribution system and being subsequently re-delivered to customers.
This allows persons active in piping design and installation to incorporate and install appropriate backflow prevention assemblies correctly.

The following is from United States Environmental Protection Agency (USEPA), Cross Connection Control Manual. Public health officials have long been concerned about cross connections and backflow connections in plumbing systems and in public drinking water supply distribution systems. Such cross connections, which make possible the contamination of potable water, are ever present dangers. One example of what can happen is an epidemic that occurred in Chicago, Illinois in 1933. Old, defective, and improperly designed plumbing and fixtures permitted the contamination of drinking water. As a result. 1,409 persons contracted amebic dysentery; there were 98 deaths. This epidemic, and others resulting from contamination introduce into a water supply through improper plumbing, made clear the responsibilities of public health officials and water purveyors for exercising controls over public water distribution systems and all plumbing systems connected to them. This responsibility includes advising and instructing plumbing installers in the recognition and elimination of cross connections.

- To protect the public potable water supply serving the Grand Canyon National Park (GRCA) Water Utility from the possibility of contamination or pollution by isolating, at the source, such contaminants or pollutants which could backflow or back-siphon into the public water system.

- To promote the elimination or control of existing cross-connections, actual or potential, between potable water system, and non-potable water system.

- To provide for the maintenance of a continuing program of cross-connection control, which will systematically and effectively prevent the contamination or pollution of all potable water systems.

Causes of Backflow

The causes of backflow are not usually eliminated completely since backflow is often initiated by accident or unexpected circumstances. However, some causes of backflow can be partially

controlled by good design and informed maintenance. Listed below are the major causes of backflow as outlined under the two types: backsiphonage and backpressure.

1. **Backsiphonage –** is caused by reduced or negative pressure being created in the supply piping. The principal causes of backsiphonage are:

    a. Line repair or break which is lower than a service point. This will allow negative pressures to be created by water trying to flow to a lower point in the system.
    b. Undersized piping – if water is withdrawn from a pipe at a very high velocity, the pressure in the pipe is reduced and the pressure differential created can cause water to flow into the pipe from a contaminated source.
    c. Lowered pressure in water main due to a high-water withdrawal rate such as firefighting activities, water main flushing, water main breaks, etc.
    d. Reduced main pressure on suction side of a booster pump.

2. **Backpressure –** may cause backflow to occur where a potable water system is connected to a non-potable system of piping, and the pressure in the non-potable system exceeds that in the potable system. The principal causes of back pressure are:

    a. Booster pump systems designed without backflow prevention assemblies.
    b. Potable water connections to Boilers, Fire Sprinkler (Suppression) and/or any other pressure systems, without backflow prevention assemblies.
    c. Connections with other systems which may at times have a higher pressure.
    d. Water stored in tanks or plumbing systems which, by virtue of their elevation, would create head pressures enough to cause backflow, if pressure were lowered in the public system.

Cross-Connection Program Description

The National Park Service, Grand Canyon National Park's Cross Connection Control / Backflow Prevention Program is a containment program as defined by Arizona State Regulation, R18-4-215 and the United States Environmental Protection Agency, Office of Water, Cross-Connection Control Manual (4606M) EPA 816-R-03-022, United States Public Health Services, NPS - Office of Public Health, Common Cross-Connections and Recommended Backflow Prevention Devices, November 2021, Reference Manual 83-A (RM-83-A) . This program is housed within the GRCA Facility Management and Engineering Division, Water Utility Branch and has the following duties:

- Administer testing or handles contracts to test and maintain approximately **177** Park owned assemblies annually. Also handles the repairs via contract and/or inhouse of same devices.
- Track annual tests of **258** **NPS-GRCA** and **Commercial Services / Partnerships / ~~WASO - Albright Training Center,~~** managed and maintained assemblies.
- Inspect service connections to ensure compliance with ordinances, rules, regulations, and laws, related to backflow devices.
- Review business surveys and enforce provisions of backflow rules.

- Prepare and submit reports of activities and findings.
    1. **NPS-GRCA, Commercial Services Division -** *Aramark, ~~Bright Angel Bike Shop and Café~~, Delaware North, Xanterra*. **Annual Testing and Repair contract, Deadline August 31st of each year.**
    2. **NPS-GRCA, Partnerships Services Division -** *Grand Canyon Unified School District, Grand Canyon Conservatory.* **Annual Testing and Repair contract, Deadline August 31st of each year.**
    3. **~~NPS-WASO - Albright Training Center,~~ Annual Testing and Repair contract, Deadline August 31st of each year.**
    4. **NPS-GRCA -** *Buildings, Housing, Water Utilities* **Annual Testing and Repair contract, Deadline August 31st of each year.**
    5. **NPS-GRCA-FMD-CCC Program Testing / Repair / Program Review and ADEQ Reporting Deadline Oct 30th of the reporting year.**
- Inspect existing cross connection control devices, to ensure proper, and adequate protection, and installation requirements.
- Develop and review, NPS - GRCA Facility Management and Engineering Division, Water Utility Branch, standard details for the installation of backflow prevention assemblies; maintain current listings of approved backflow prevention assemblies.
- Maintain accurate database of all testing (digital-paper reports), testers, and certifications of third-party companies and NPS personnel.
- Maintain photograph documentation of testing devices; one side profile digital picture of location (Time and Date ID), one digital picture of device identification plate (Time and Date ID). This applies to all backflow device testing Park (GRCA) wide.
- Review for compliance with State and/or Federal rules and recommends revisions to Grand Canyon National Park Cross – Connection Control & Backflow Prevention Program, as appropriate (Annually Jan. to Dec. of each year) to conform to changes in State and/or Federal legislation.
- Review for compliance with State and/or Federal rules and recommends revisions to Grand Canyon National Park Cross – Connection Control & Backflow Prevention Program - Emergency Incident Response Plan, as appropriate (Annually Jan. to Dec. of each year) to conform to changes in State and/or Federal legislation.
- Meet and confer with other local and state agencies on rule making and compliance matters. (Networking / Training with other outside professional groups)
- Investigate backflow incidents and water quality complaints in conjunction with Water Production / Distribution personnel.

Chapter 2 - Responsibilities

Cross Connection Control and Backflow Prevention Program

The responsibilities of Grand Canyon National Park Cross – Connection Control & Backflow Prevention Program, in accordance with State Law R18-4-215, AAC are as follows:

1. To protect Grand Canyon National Park's Public Water Supply, ADEQ - ID A0403702 from the possibility of contamination by isolating within the customers' Private Water Systems, contaminants or pollutants which could, under adverse conditions, backflow through uncontrolled cross-connections, into the Public Water System (PWS).
2. To ensure the containment of Boiler, Fire Suppression, Water Softening Treatment Systems, Livestock Water Tanks, Restaurants, RV Waste Disposal Stations, RV Water Connections Stations **Reclaim Water**, and Irrigation backflow assemblies. That are located on Commercial, Park Operations and Housing properties, are correctly installed and functioning correctly.
3. To provide a continuing inspection program, of the cross-connection control / backflow, which will systematically and effectively control all **actual** or **potential** cross-connecting which may be installed in the future.
4. To educate customers / Park visitors about the dangers of possible cross-connects found on internal plumbing systems.

The GRCA Chief of Facility Management & Engineering shall be responsible for the protection of the public potable water distribution systems from contamination or pollution through the water service connection. If, in the judgment of the Chief of Facility Management & Engineering (and/or Authorize Designees), the United States Public Health Service (USPHS) (Recommendation), Coconino County Health Dept., or the Arizona Department of Environmental Quality (ADEQ) (Regulatory Agency Requirements), an approved backflow prevention assembly is required for the safety of the water system. The GRCA Chief of Facility Management & Engineering and/or designated representatives, shall give written notice to have an appropriate backflow prevention assembly installed. Failure to comply in a timely manner constitute a ground for discontinuing the water service until such device(s) has been properly installed.

Customers

The customers' responsibility starts at the point of delivery from the public potable water system (i.e., Water Meter or non-metered dedicated Fire Suppression line) and includes all their internal water systems. The customer, at their own expense, shall install, operate, test (digital-paper reports), and maintain approved backflow prevention assemblies, as directed by the Grand Canyon National Park. The customer shall maintain accurate records of tests and repairs made to backflow prevention assemblies and provide Grand Canyon National Park with copies of such records.

Annual Testing / Repair Records Package: For each individual device shall consist of fully completed Backflow Prevention Assembly Test form (digital-paper reports), **(fail / passing with repairs / replacement listed, final passing)** (2) two pictures (digital-paper reports) - (1) one picture of the device information plate, & (1) one picture side profile including #1 / #2 isolation valves.

All communication shall be conveyed through the NPS - GRCA Commercial Services Division **-** *Aramark, ~~Bright Angel Bike Shop and Café~~, Delaware North, Xanterra*, NPS - GRCA Partnerships Division **–** *Grand Canyon Unified School District, Grand Canyon Conservatory*, and NPS – ~~WASO Albright Training Center~~. They will communicate back and forth, all information to the GRCA Facility Management and Engineering Division, ~~Deputy Chief of Facilities for~~ Water Utilities Branch.

In the event of accidental pollution or contamination of the public or customers' potable water system due to backflow on or from customer's premises, the owner shall promptly take steps to confine further spread of pollution or contamination within the customers' premises and shall immediately notify the Grand Canyon National Park, of the hazard. This is so that the Emergency Incident Response Plan, can be implemented, and proper notifications to ADEQ can be made.

Backflow Prevention Assembly (Repairer) Installers

The installers' responsibility is to properly install backflow prevention assemblies in accordance with the manufacturers' installation instructions and any additional instructions approved by the Grand Canyon National Park. All backflow devices shall be installed as close as possible to the water meter box with a heated enclosure (Hot Box) or heated structure, unless otherwise approved by Grand Canyon National Park.

The installation location shall be done in accordance with approved plans. Any revisions made to the locations of the backflow device, must be submitted to the Grand Canyon National Park, GRCA Facility Management and Engineering Division, Water Utility Branch, Cross Connection Coordinator for approval. The installer is also responsible for ensuring an assembly is working properly, when it is installed and have a certified tester verify **"passing"** results.

Backflow Prevention Assembly Testers

Backflow testers are required to accurately report (digital-paper reports) the findings from the annual, installation, or repair test reports to the GRCA Facility Management and Engineering Division, Utility Branch within **5 business days** of completing the test. This applies to both Contract Backflow Prevention Companies and NPS Certified Staff.

Tester Requirements:
All backflow testers must be certified by a recognized certifying authority. The GRCA Facility Management and Engineering Division, Utility Branch recognizes the following certificates issued by:

- American Backflow Prevention Association (ABPA).

- Piping Industry Progress & Education Fund (PIPE).
- The International Association of Plumbing and Mechanical Officials (IAPMO)
- The American Society of Sanitary Engineers (ASSE).
- All American Backflow Prevention (AABP).

Tester Equipment:
Each backflow prevention assembly tester shall have properly calibrated and operating equipment to be used in the evaluation of the performance of the assembly they are testing. Each tester conducting test within the Grand Canyon National Park, shall provide the GRCA Facility Management and Engineering Division, Utility Branch with Testing Device Calibration Report, documentation (digital-paper reports) annually.

Test equipment used on any system other than **Potable Water** backflow prevention assemblies, **shall not** be used to test such assemblies. All **Reclaim Water** backflow prevention devices, testing equipment, and reports, shall be identified as **Non-Potable - Reclaim Water.**

It is the responsibility of the tester to keep certification(s) and equipment calibration current and on file with the GRCA Facility Management and Engineering Division, Utility Branch – CCC Office.

Backflow Protection:
GRCA Facility Management and Engineering Division, Water Utility Branch – CCC Office, is responsible for protecting the quality of public water supply. To prevent contamination of the public water supply by backflow and cross connection, the GRCA – FMD – WUB - CCC Office has identified types of developments requiring backflow prevention, and approved types of devices to prevent backflow.

Premises Requiring a Backflow Preventer:
(A) When any of the following items or activities are present or conducted on a premises served by the public potable water supply system, a potential hazard to the public potable water supply system shall be presumed, and the user shall insure that a backflow preventer or air gap, of the type specified for that item or activity herein, is in place at each service connection for that premises. The backflow prevention device should be located as close as possible to the water meter, and if necessary, installed in a hot box. All backflow assemblies shall be installed above ground. Installation in a vault will be prohibited, in less equipped with an adequately sized floor drain.:

1. Aircraft service and repair shop: Reduced Pressure Principle Backflow Prevention Assembly (RPA)
2. Animal veterinary / boarding facilities: RPA
   Note: stock tanks with automatic filling devices are required to have an air gap, two times the diameter of the discharge. The measurement of air gap shall start from the top of the tank unrestricted overflow **(Flood Level Rim)** and the overflow must be two times the diameter of the water line discharge. At no time is the discharge point to be ever submerged and/or blocked (Water) in the tank. Main service line to facility as close as

possible to the meter, an RP **(located within a hot box, if necessary)** will be required to be installed downstream from the meter.

3. Automotive Repair / Service Shops, (with steam cleaners, acid cleaning equipment, or solvent facilities): RPA
4. Auxiliary water systems, public or private: RPA
5. Buildings greater than three stories in height or greater than 34 feet in height from curb level: Double Check Valve Backflow Prevention Assembly (DCVA)
6. Buildings used for commercial or industrial purposes where one service connection supplies more than on tenant or occupant of the building: RPA
7. Buildings where the user's water supply system is in violation of the Uniform Plumbing Code as adopted by the Park: RPA
8. Buildings with house pumps and or potable water storage tanks: DCVA
9. Buildings with landscape fountains, ponds, or baptismal tanks: RPA
10. Buildings with sewage ejectors: RPA
11. Car wash facilities: RPA
12. Cooling towers, boilers, chillers, and other heating and cooling systems utilizing potable water: RPA
13. Chemical storage facilities: RPA
14. Chemically treated **(Water Softening)** potable or non-potable **(Reclaim Water)** water systems: RPA
15. Commercial laundries: RPA
16. Fire hydrant / water meters connected to an irrigation system or any other use included in the Irrigation Systems Subsection: RPA
17. Fire hydrant / water meters, water tanker supply locations: RPA
18. Fire sprinkler systems connected to potable water systems only. No tanks or reservoirs. No additives of any kind. In-line booster pumps are ok. DCVA
19. Fire systems with a storage tank: RPA***
20. Fire sprinkler systems connected to an auxiliary water supply or with FDC's within 1,700 feet of an auxiliary supply: RPA***
21. fire systems with chemical additives: RPA***

*** This RP is to be installed on the fire line outside of the building **not on the riser**.

22. Government owned or operated facilities not open, for inspection **(for LE security reasons)** by the Water Utility: RPA
23. Hospitals and Clinics: RPA
24. Irrigation systems, except as described in Subparagraphs a.-e.: Pressure Vacuum Breaker (PVB)
    a. Premises where non-potable **(Reclaim Water)** water, is used for irrigation: RPA
    b. Systems utilizing fertilizer or pesticide injection systems: RPA
    c. Systems interconnected by more than one service connection: RPA
    d. Systems using potable water with non-potable **(Reclaim Water)** water piping: RPA
    e. Systems designed and constructed capable of inducing backpressure at the service connection: RPA
25. Laboratories using toxic and/or nontoxic materials: RPA
26. Medical and dental buildings, behavioral health centers, engaged in the diagnosis, care or treatment of human illness: RPA

27. Mobile home parks served by master meters: DCVA
28. Multiple (Trailer Village) service connections (1) sanitary yard hydrants equipped with vacuum breaker on individual trailer connections) interconnected for potable uses: (1) on the main line: RPA
29. Oil and gas storage facilities: RPA
30. Portable insecticide or herbicide spray tanks: RPA or Air Gap (AG)
31. Premises served by water meters 3" or greater in size (vault meters): DCVA
32. Premises where a cross-connection is maintained or where a cross-connection previously occurred within a user's premises: RPA
33. Restaurants: RPA
34. RV Dump Stations; (main water supply line) holding tank (Black and Gray Water) disposal: RPA
35. RV Dump Stations; (potable or non-potable water towers supply lines) holding tank (Black and Gray Water) disposal: Atmospheric Vacuum Breaker (AVB)
36. Schools, colleges, and universities: RPA
37. Shopping centers served by master meters: RPA
38. Sewage collection or treatment facilities: RPA
39. Waterfront facilities: RPA
40. Water trucks, water tanks or hydraulic sewer cleaning equipment: RPA or AG

(B) When two or more of the items or activities listed in Subsection A are present or conducted on the same premises and served by the same service connection, the user shall install the most restrictive backflow preventer at the service connection. For purposes of this Subsection the order of most restrictive to least restrictive backflow preventers shall be as follows:

1. Reduced Pressure Principle Backflow Prevention Assembly (RPA)
2. Pressure Vacuum Breaker Assembly (PVB)
3. Double Check Valve Backflow Prevention Assembly (DCVA)

(C) GRCA Facility Management and Engineering Division, Water Utility Branch – CCC Office shall perform site surveys of all new water users and existing water users to determine if the degree of hazard requires a backflow prevention assembly to be installed. If an assembly is required, the user shall comply with the standards set forth in this Chapter within a period of time as determined by the Water Utility Branch – CCC Office, based upon the degree of hazard.

(D) A change of type of use shall require the Water Utility Branch – CCC Office to conduct a new survey of use. If the survey determines a backflow prevention assembly is required, installation shall be completed by the user before the Park may grant the change.

Approved Backflow Prevention Devices:

The following types of backflow prevention devices are approved for use within the Grand Canyon National Park, Facilities Maintenance Division, Water Utilities Branch service area:

- Reduced Pressure Principle Device, (RP)
- Reduced Pressure Principle - Detector Backflow Prevention Assembly (RPDA)

- Reduced Pressure Principle Detector Backflow Prevention Assembly – Type II (RPDA-II)
- Double Check Valve Assembly, (DC)
- Double Check - Detector Backflow Prevention Assembly, (DCDA)
- Double Check - Detector Backflow Prevention Assembly – Type II, (DCDA-II)
- Air Gap Separation, (AG)
- Pressure Vacuum Breaker Backsiphonage Prevention Assembly, (PVB)
- Spill Resistant Vacuum Breaker Backsiphonage Prevention Assembly, (SVB)
- Atmospheric Vacuum Breaker Backsiphonage Prevention Assembly, (AVB)

Chapter 3 - Test Report Submission

It shall be the duty of the customer, at any commercial premises where approved backflow assemblies are installed, to have thorough inspections and operational tests made at least once a year, **(Deadline: August 31st of each calendar year)** or more often as directed by the GRCA Facility Management and Engineering Division, Water Utility Branch. The tests shall be at the expense of the customer and be performed by a properly certified backflow tester.

- All communication shall be conveyed through the NPS - GRCA – Commercial Services Division and Partnerships Division. They will in turn communicate back and forth all information to the GRCA Facility Management and Engineering Division, Deputy Chief of Facilities for Water Utilities Branch.

Test Submission:
The tester shall submit the **Annual Testing / Repair Records Packages** to the GRCA Facility Management and Engineering Division, Utility Branch, GRCA - Backflow / Cross-Connection Control Coordinator, within **5 business days** of test completion.

- Submit report to the GRCA Facility Management and Engineering Division, Utility Branch, for entry into the database excel spreadsheet system. This will include temporary construction backflow tests reports. **(Very detailed; typed or legible print)**

- Test reports shall be filled out completely, with all necessary data as follows:

➢ Water Purveyor ➢ Assembly Service Street Address & NPS - Inventory Location Identifier ➢ Backflow Location Notes ➢ Device; Annual Tests, New Installation, Retest, Replacement ➢ Test Results; (PSID) and Repair Information ➢ Additional comments ➢ Testers Certificate No. & Expiration Date ➢ Two (2) pictures; One (1) of the Device	➢ Device Information: Service Type, (boiler, fire suppression, etc.) Device Type, Serial No., Manufacturer, Model, Size, Water Meter Serial Number. ➢ Type of use and hazard ➢ Test Date ➢ **Pass** or **Fail** ➢ Test Company Information ➢ Testers Name (printed) & Signature ➢ Test Kit (Potable Water or **Reclaim Water**) Model, Certification date, Serial Number. The reclaim water backflow

Information Plate, & One (1) of the Side Profile (Showing isolation valves #1 & #2) of the location, in the room.	testing kit shall be marked with a label **"Reclaim Water"** on the box.

Testing Notifications:
The Park will send out an 1st Annual Backflow Testing / Repair / Replacement **(E-Mail)** reminder by **January 15th** of each reporting year. On **May 1st** of each reporting year, the Park will send out a 2nd Annual Backflow Testing / Repair / Replacement **(E-Mail)** reminder. This will be the last reminder for the year.

The following is a four (4) stepped measured / escalation of enforcement for a Non-Compliance event.

1. If the Park, has not received the annual backflow testing / repair documentation by **August 31st** the customer will be found in **"Non-Compliance"** with this policy. After the due date **(August 31st)** has passed, an **"PASS DUE"** notice will be sent out by E-Mail.

2. If the Park, has not received the annual backflow testing / repair documentation by **September 15th** the customer will be found in **"Delinquency"** with this policy. After the 2nd Pass Due date **(September 15th)** has passed, an **"2nd PASS DUE"** notice will be sent out by E-Mail.

3. If the Park, has not received the annual backflow testing repair documentation by **September 25th** the customer will be sent by E-mail, an **"Final Notice - Water Service Termination"**. Should the customer / location fail to report test results, there will be an escalation of enforcement per this NPS - Grand Canyon National Park, Cross Connection Control / Backflow Prevention Program. This will result in the termination **(Locking Out or Water Meter Remove)** of water service to the location. This is done in the Public Health interest, State and Federal Regulations, and security of the Public Water Utility.

4. Upon notification of a backflow tester (to be scheduled with the GRCA - Cross Connection Coordinator) on site, water service will be restored for testing purposes. If the device test results in a **"Pass Report"**, water service will be fully restored back to service.

Chapter 4 - Cross Connections Surveys and Inspections

Surveys

Due to changes in models or components of equipment, methods of manufacturing and additions to plants, buildings, etc., water use requirements undergo continual change. New cross-connections may be installed, and existing protection may be by-passed, removed, or become otherwise **ineffective**; therefore, a periodic site survey by GRCA Facility Management and Engineering Division, Water Utility Branch, Cross Connection Coordinator, will be required.

These inspections will be on the customer's premises and may consist of, but are not limited to:

1. Notifying customer, commercial services, partnership services, of an onsite inspection.
2. Visual check for Cross-connection. (actual or potential)
3. Verify that the proper device has been installed in relation to potential hazards, to the utility.
4. Verify backflow device is installed and working properly.
5. Verification of test results, NPS-GRCA may accompany the backflow prevention assembly tester during the time of testing. This would require advanced notification to the GRCA Cross connection coordinator, of anticipated time of testing.
6. Assessment for installation of a backflow device, or if none is present.
7. Review all fire suppression systems and associated backflow prevention device requirements and proper application review.
8. Review all livestock watering tanks for proper backflow prevention device requirements and proper application review.
9. If in the judgment of the GRCA - Cross Connection Coordinator an approved backflow device is required to protect the Park Water Utility (Public Water System (PWS), from any contamination or pollution. GRCA - Cross Connection Coordinator, shall give notice in writing per email that the customer is to install the properly approved backflow prevention device within 90 days. And failure or refusal or inability on the part of the customer to install said device or devices within 90 days shall constitute grounds for discontinuing water service to the premise until such device or devices have been properly installed.

Proposed Construction

All new construction plans and specifications for commercial facilities, operations buildings, and housing shall be reviewed by GRCA Facility Management and Engineering Division, Water Utility Branch, Cross Connection Coordinator, to determine the degree of potential cross-connection hazard. At the time of plan review, backflow prevention requirements in accordance with this policy will be made.

New and Existing Facilities

In order to determine the degree of hazard to the public potable water system, a survey will be made of the customers' presently installed water system. This survey does not need to be a detailed inspection of the location or disposition of the water mains but can be confined to establishing the water uses on the premises for the existence of cross-connections, and the availability of auxiliary or **non-potable (Reclaim Water)** water supplies. On-site inspections are done on new and existing facilities and should any devices or plumbing change be required. A notification will be sent, and a follow-up inspection will be completed, at a later date.

Chapter 5 - Cross-Connection Hazards and Required Protections

Type of Backflow Protection Required

An approved backflow prevention assembly of the type designated shall be installed on each water service connection to commercial, operations buildings, and housing facilities. The GRCA Facility Management and Engineering Division, Water Utility Branch uses the most current edition (10th) of the USC-FCCCHR Manual of Cross-Connection Control for list of approved assemblies.

Parallel Installations

All backflow prevention assemblies with test cocks are required to be tested annually. Testing requires a water shutdown usually lasting five (5) to twenty (20) minutes. For facilities that require an uninterrupted supply of water, provisions shall be made for a "parallel installation" of backflow prevention assemblies.

During testing, one assembly is left on while the other is being tested. GRCA Facility Management and Engineering Division, Utility Branch will not accept an unprotected bypass around a backflow assembly when the assembly needs testing, repair, or replacement.

Chapter 6 - Backflow Incident Investigation

The GRCA Facility Management and Engineering Division, Water Utility Branch shall submit a written cross-connection incident report to ADEQ, Coconino Health Dept., and the USPHS, within 5 business days after a cross-connection problem occurs that results in contamination of the public water system.

If a backflow incident were to occur, ADEQ, Coconino Health Dept., and the USPHS, must be notified (Ariz. Admin. Code § R18-4-211-A) within five (5) business days with the following information:

1. Date/Time of discovery of the cross-connection incident,
2. Nature of the cross-connection incident,
3. Affected area,
4. Cause of the cross-connection incident,
5. Public health impact,
6. Date and text of any public health advisory issued,
7. Corrective action taken, and
8. Date of completion of each corrective action.

Internally, the practice will be to follow these steps:

- Locate the source,
- Contact Water Distribution Supervisor / Crew, to isolate source to protect the water distribution system from further contamination,

- Notify the GRCA - Backflow / Cross-Connection Control Coordinator, Management, and the GRCA - Regulatory Compliance Office, Management will contact ADEQ,
- Determine the extent of the spread,
- Notification of the public, if necessary,
- Take corrective action to remove hazard from the distribution system,
- Restore service to the customers.

Chapter 7 - Fire Sprinkler Systems

Plans and permits for fire sprinkler (suppression) systems are processed through the GRCA Facility Management and Engineering Division, Utility Branch, and the GRCA Fire Department. Commercial properties are required to have a testable backflow assembly, if the GRCA Fire Department deems a sprinkler system necessary. The GRCA Fire Department will do a rough and final fire sprinkler (suppression) systems inspection on new construction and/or remodeling construction. This inspection is to verify that the construction complies with state of Arizona fire codes and NPS specifications.

GRCA - Cross Connection Coordinator performs the rough and final inspection of the related backflow prevention device. Before the system can be placed into service a backflow prevention tester has to complete a backflow prevention assembly test form (**Passing**) with two pictures. Backflow prevention devices are required to be installed between the potable water main and the fire sprinkler (suppression) systems, commercial and housing units.

Chapter 8 - Boiler Systems

All commercial, Park operations, and housing utilizing boiler systems for heating require a Reduce Pressure Principle Backflow Prevention Assembly, (RP) for water supply line to the unit. The device size will be determined by the supply line to the boiler.

Chapter 9 - Removal Requirements

It shall be unlawful for any person to alter, modify, bypass, or remove a backflow preventer without the written approval of GRCA Facility Management and Engineering Division, Water Utility Branch - Cross Connection Coordinator. The property owner must contact the GRCA Facility Management and Engineering Division, Water Utility Branch prior, to removing the backflow assembly. A site survey will be completed to assess the actual or potential for cross-connections if the backflow were to be removed. If none are found, the GRCA Facility Management and Engineering Division, Water Utility Branch - Cross Connection Coordinator, will issue a written report documenting the findings.

If the property owner has already removed the backflow, a site survey must be completed to assess the water usage and the status of the removal. The device and piping shall be removed as close as possible to the main service connection. Under no circumstances shall the GRCA Facility Management and Engineering Division, Water Utility Branch, give approval if only the device has been removed and the water lines are open to the air. Grand Canyon National Park

has the right to require the backflow device be reinstalled to protect the Park's potable water distribution system.

Once the removal is completed to the satisfaction of the Park, it can be removed from the database. If there has been a change in owner/tenant or a water use change, the Park can require a backflow device to be reinstalled.

Chapter 10 - Discontinuance of Water Services

As stated in Chapter 3, a reminder E-mail will be sent on **September 26th**. The Park will then generate and send by email, a **"Final Notice - Water Service Termination"**. This email notification will be sent to the business/property owner as part of the escalating enforcement. If the deadline has passed without communication, a **"Notice of Violation" (NOV)** will be issued to the legal authority for the business/owner of the property. The GRCA - Chief of Facility Management & Engineering, will be notified of the violation and the possibility of water disconnect.

Once the **"Notice of Violation" (NOV)** deadline has passed, a call will be placed to the NPS legal authority that the water service to the address will be discontinued. The Park's Commercial Services Supervisor and the FMD Chief of Facilities will be notified of the discontinuance. The Cross Connection Coordinator will place a door hanger at the address notifying the occupant of the discontinuance to happen in **24 hours**. If Commercial Services Division and/or GRCA Facility Management and Engineering Division, Water Utility Branch is not contacted within the time period, the water will be shut off until the violation is resolved.

Chapter 11 – Sources of Information about Cross-Connection Control

American Society of Sanitary Engineering
ASSE International Office
901 Canterbury, Suite A
Westlake, OH 44145
(440) 835-3040

American Backflow Prevention Association (ABPA)
100 N. 20th Street, Suite 200
Philadelphia, PA 19103
(979) 846-7606

American Water Works Association
6666 West Quincy Ave.
Denver, CO 80235-3098
(800) 366-0107

University of Southern California, Foundation for Cross-Connection Control and Hydraulic Research
KAP – 200 University Park MC-2531
Los Angeles, CA 90089-2531
(866) 545-6340

Chapter 12 – Definitions and Cross-Connection Control Industry Terminology

Absolute Pressure:
Is the total combination of gage pressure and atmospheric pressure.

Accessible:
Assemblies must be installed having access for testing, maintenance, and repair.

Administrative Authority:
The official office, board, department, or agency authorized by law to administer and enforce regulation and or code requirements. This includes a duly authorized representative of the Administrative Authority. The state administrative authority sets the minimum standards for a Cross-Connection Control Program.

Air Gap (AG)
The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture, or other device and the flood level rim of the vessel. An approved air gap shall be at least double the diameter of the supply pipe, measured vertically, above the overflow rim of the vessel; by physical separation and in no case less than one inch. The relief valve on a RP assembly must be piped to a drain through an air gap. Examples: (Kitchen faucet, bathroom faucet, drains going into a floor sink)

Approved:
Accepted by the GRCA Chief of Facility Management & Engineering as meeting an applicable specification stated or cited in this ordinance, or as suitable for the proposed use. (Meeting certain standards like USC, ABPA, or ASSE)

As-built Drawings:
Blueprint drawings that are modified to reflect the actual piping, configuration and location.

Aspirator:
The means by which liquids are sucked into a piping system. It's the velocity of liquid in the pipe that creates a vacuum or low pressure on the sides of the pipe which allows backsiphonage to occur. (Small tee inlet, water main break)

Assembly:
An assemblance of one or more approved body components, including approved,

shutoff valves, test cocks and check valves. A Y configured reduced pressure assembly has less head loss than an inline assembly.

Atmospheric Pressure:
Is the pressure exerted by the earth's atmosphere at sea level (14.7 psi)
Atmospheric vacuum breaker (AVB): the AVB consists of a float check, a check seat, and an air inlet port. A shutoff valve immediately upstream may or may not be an integral part of the device. The AVB is designed to allow air to enter the downstream water line to prevent backsiphonage. This unit may never be subjected to a backpressure condition, have a downstream shutoff valve, or be installed where it will be in continuous operation for more than 12 hours in a 24-hour period. (AVB's must be installed a minimum of 6 inches above all downstream piping. AVB's are used on lab sinks, janitor sinks, hose bibs, they are not approved, for service protection. AVB's can only be assumed as working by taking it apart and inspecting)

Authority having Jurisdiction:
The agency, organization, office or individual responsible for
approving materials, equipment, work installation, or procedure. (Local authorities: NPS, United States Public Health Service (USPHS)(Recommendation), Coconino County Health Dept., or the Arizona Department of Environmental Quality (ADEQ) (Regulatory Agency Requirement)

Auxiliary Water Supply (Reclaim Water):
Any water supply on or available to the premises, other than the National Park Service approved potable water system, will be considered an auxiliary water supply. These auxiliary waters may include water from another purveyor's public potable water supply or any natural source(s) such as a well, spring, river, lake, stream, etc., or **"Reclaim Water"** or "recycled" or "used water" or "industrial fluids". These waters may be contaminated or polluted, or they may be objectionable and constitute an unacceptable water source over which the National Park Service has no sanitary control. Water users that maintain an auxiliary water supply must provide backflow protection.

Backflow:
The reversal of the normal flow of a liquid, gas, or other substance in a potable
water distribution piping system because of a cross connection. This can be caused by either backpressure or backsiphonage. The #1 cause of a backflow, cross connection is the common garden hose.

Backflow Preventer:
An assembly, device, or method that prohibits the backflow of water into the potable water supply systems. The primary reason for installing a BPA is to prevent backflow. A bypass around a BPA installation is not allowed under any circumstance without the same backflow protection. **(Assembly low rates differ with the size and type)**

Back Pressure:
The flow of water or other liquids, mixtures, or substances under pressure into the pipes of a potable water supply from any source(s) other than the intended source. This backpressure, that would be higher on the water user's side than on the supply side may be caused by a pump,

elevated tank, boiler, air or steam pressure, pressure sprayers, high-rise buildings. (Back pressure is one form of backflow)

Backsiphonage:
The flow of water or other liquids, mixtures, or substances into the distribution pipes of a potable water supply from any source(s) other than its intended source caused by the reduction of pressure in the potable water supply system. This backflow caused by negative, sub atmospheric or reduced pressure in the supply piping. It is when the demand exceeds supply. May be caused by a hose submerged in a liquid, fire pumper truck, broken water main or fire hydrant, venturi effect or the same thing as sucking liquid through a straw. (Backsiphonage is one form of backflow)

Ball Valve:
A quick opening valve with a spherical gate providing a tight shut off. Ball valves on backflow assemblies shall be fully ported and resilient seated.

Barometric Loop:
A looped piping arrangement (35 ft. in height (at sea level) in which the water flows over the loop at the top. This method of backflow prevention is only capable of protecting against back-siphonage since backpressure could drive water backward over the loop.

Bypass:
A piping arrangement that is designed to go around an installed backflow prevention assembly. (Any bypass line must have the same backflow protection as the main line)

Certified Backflow-Prevention Assembly Tester:
A person who has demonstrated competence to test, repair, and maintain backflow-prevention assemblies as evidenced by certification which is recognized by the approving authority. (As a tester are responsible to register yourself, your test gauge and submit field test results to the administrative authority)

Check Valve:
Is a Non-Testable device that is designed to control the direction of flow.

Chief of Facility Management & Engineering:
The GRCA Chief of Facility Management & Engineering oversees the park maintenance and is invested with the authority and responsibility (and/or Authorize Designees) for the implementation of an effective cross-connection control program and for the provisions of this policy.

Customer or Consumer:
The owner, operator, or customer receiving service from a Public Water System. (PWS)

Containment Protection:
A water purveyor's policy to protect the public water system by installing a backflow assembly at the water meter. (Also known as service protection, secondary protection or point of service protection)

Contamination Hazard:
An impairment of a potable water supply by the introduction or admission of any foreign substance that degrades the quality and creates a health hazard. (Also known as a high hazard or health hazard) This can be sewage, industrial fluids, waste liquids, chemical compounds, biological such as pesticides, herbicides, and giardia. An actual or potential hazard to the public health through poisoning or through the spread of disease. Proper backflow protection for a contaminant is a RP assembly.

Critical Level:
A reference line representing the level of the check valve seat within a backflow assembly. It is used to establish the height of the unit above the highest outlet or flood level rim. If it is not marked on the backflow preventer, the bottom of the assembly is the critical level. The critical level is established by the testing lab.

Cross Connection:
A physical connection or arrangement of piping, fixtures between two otherwise separate piping systems. Or a potential connection between any part of a potable water system and any other environment containing pollutants or contaminants in a manner that, under any circumstances, would allow such substances to enter the potable water system. Other substances may be gases, liquids, or solids, such as chemicals, water products, steam, water from other sources (potable or non-potable), Bypass arrangements, jumper connections, dummy section of pipe, spools, swing connections, or changeover assemblies / devices, sliding multiport tube and other temporary or permanent connecting arrangements through which backflow may occur are cross connections. (Two types of cross-connections are Direct and Indirect. An internal CCC Program may be administered by the local health department)

Cross Connection – Controlled:
A connection between a potable a potable water system and a nonportable assembly properly installed and maintained. So that it will continuously afford the protection commensurate with the degree of hazard.

Cross Connection Control by Containment:
The installation of an approved backflow prevention assembly at the water service connection to any building where it is physically and economically infeasible to find and permanently eliminate or control all actual or potential cross connections to the water system within the facilities assigned to the Facility Manager **(NPS, Concessionaires, or Partners)** included in their land assignment; or, it shall mean the installation of an approved backflow prevention assembly on the service line leading to and supplying a portion of a building's water system where there are actual or potential cross connections which cannot be effectively eliminated or controlled at the point of the cross connection.

Cross Connection Control Specialist:
A person who has demonstrated competence to inspect premises for cross-connections and determine the method of backflow protection for any on site hazards by completing a course of study and passing a written exam. (The Cross-Connection Control Specialist must be able to supervise a Cross-Connection Control Program, have good customer relation skills, be able to inform and educate customers by scheduling appointments for inspection. (No cold calls)

Cross Connection Control Survey:
An inspection to determine the degree of hazard and recommend the proper backflow protection. (If access is denied then the installation of a RP assembly is required at the service connection)

Degree of Hazard:
The term is derived from an evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable water system. The assessment of the on-site hazard, it could be a (low hazard, non-health hazard, pollution hazard) or (high hazard, health hazard, contamination hazard) (Hydraulics are always considered when assessing the degree of hazard) (The administrative authority will determine the degree of hazard and require the proper backflow protection)

- **Hazard – Health.** Any condition, device, or practice in the water supply and its operation which could create, or in the judgment of the GRCA Chief of Facility Management & Engineering, Public Health Service, or the appropriate area regulatory officials, may create a danger to the health and well-being of the water consumer.

- **Hazard – Plumbing.** A plumbing type cross-connection in a consumer's potable water system that has not been property protected by an approved air gap or approved backflow prevention assembly.

- **Hazard – Pollution.** An actual or potential threat to the physical properties of the water system or the potability of the water supply which would constitute a nuisance, be aesthetically objectionable, or could cause damage to the system or its appurtenances but would not be dangerous to health.

- **Hazard – System.** An actual or potential threat of severe damage to the physical properties of the potable water system, or of a pollution or contamination which would have a protracted effect on the quality of the potable water in the system.

Deputy Chief of Facilities for Water Utilities Branch:
The GRCA Deputy Chief of Facilities for Water Utilities Branch oversees the park water and wastewater operations / maintenance and is invested with the authority and responsibility (and/or Authorize Designees) for the implementation of an effective cross-connection control program and for the provisions of this policy. The Deputy Chief of Facilities for Water Utilities Branch serves as the supervisor for the Cross-Connection Control Specialist.

Device:
Is a backflow preventer that is Non-Testable; it must be disassembled and inspected to insure it's working properly. (AVB, Dual Check, Hose Bibb Vacuum Breaker)

Differential Pressure Gage:
A pressure gage that measures two pressures (a low pressure and a high pressure) and indicates the difference in the two pressures. (Gages should be calibrated annually. They can be mechanical or digital)

Direct Cross-Connection:
A cross-connection that is subject to both backpressure and backsiphonage. It is a rigid permanent connection to a contaminant or pollution source.

Double Check Valve Assembly (DCVA or DC):
An assembly composed of two independently acting, internally loaded check valves, including tightly closing resilient-seated, fully ported shutoff valves located at each end of the assembly and fitted with 4 properly located resilient-seated, fully ported test cocks. This assembly shall only be used to protect against a non-health hazard (that is, a pollutant). (The checks must be drip tight in the direction of flow, max head loss 10 psi, if it is found connected to a high hazard then notify the admin authority)
The entire assembly shall meet the design and performance specifications as determined by the, Foundation for Cross Connection Control at USC for backflow prevention assemblies. To be approved, these assemblies must be readily accessible for in-line testing and maintenance.

Double Check-Detector Backflow Prevention Assembly (DCDA):
A backflow assembly specially designed assembly composed of a line-size approved double check valve assembly with a bypass containing a specific water meter and an approved double check valve assembly. The meter shall register accurately for only very low rates of flow up to 3 gpm (gallons per minute) and shall show a registration for all rates of flow. This assembly shall only be used to protect against a non-health hazard (that is, a pollutant).

Dual Check:
A Non-Testable backflow device with two check valves and no test cocks.

Effective Opening:
The minimum cross-sectional area at the point of water supply discharge, measured or expressed in terms of the diameter of a circle, or if the opening is not circular, the diameter of a circle of equivalent cross-sectional area. **(Don't confuse with an air gap, which is determined by the size of the effective opening)**

Expansion Tank:
A tank used for safely controlling the expansion of water. (An expansion tank or other method of controlling thermal expansion must be addressed when installing a backflow assembly on the water service) When a BPA is installed a closed system is created.

Fire Department Connection: (FDC or Siamese Connection)
A connection through which a fire department can introduce supplemental water with or without the addition of other chemical fire retarding agents by the means of a pump into a sprinkler system, standpipe, or other fire suppression system.

Fire Protection Systems (Water Based):
Sprinkler system is a system of underground and overhead piping hydraulically designed and constructed to which sprinkler heads are attached for extinguishing fire.

1. **Wet Pipe System:** A sprinkler system containing water and connected to a water supply.

2. **Antifreeze System:** A wet pipe sprinkler system containing antifreeze.

3. **Dry Pipe System:** A sprinkler system containing air or nitrogen under pressure and connected to a water supply. A sprinkler head opening allows the air or nitrogen to be released from the system and water to enter the system. Dry pipe systems are to be always maintained dry. Exception: During non-freezing conditions, the system can be left wet if the only other option is to remove the system from service while waiting for parts or during repair activities.

4. **Deluge System:** A sprinkler system having open sprinkler heads connected to a water supply. The sprinkler system piping is dry until the fire detection system opens the water supply valve to the system.

5. **Pre-Action System:** A sprinkler system containing air that may or may not be under pressure and connected to a water supply but having a supplemental detection system in the area of the sprinklers that would open a supply valve allowing water to flow into the system and to be discharged by any open sprinkler.

6. **Combined Dry Pipe-Pre-Action System:** A sprinkler system containing air under pressure with a supplemental detection system installed in the area of the sprinklers. The detection system actuates tripping devices that open water inlet and air exhaust valves, which generally precedes the opening of the sprinklers. The detection system additionally serves as a fire alarm system.

7. **Standpipe System:** A piping system having valves, hose connections, and allied equipment installed within a premises, building or structure where the hose connections are located in a manner to discharge water through an attached hose and nozzle to extinguish a fire. These systems maybe wet or dry and may or may not be directly connected to a drinking water supply system. They may also be combined with a sprinkler system.

   There are three classes of standpipe systems.

   - Class I service provides 2 ½ in. hose stations from a standpipe or combined riser.
   - Class II service provides 1 ½ in. hose stations from a standpipe, combined riser, or sprinkler system. Exception: A minimum 1 in. hose may be used

for Class II Light Hazard Occupancies if investigated, listed, and authorized by the authority having jurisdiction.

- Class III service provides 1 ½ in. and 2 ½ in. hose connections or 1 ½ in. or 2 ½ in. hose stations from a standpipe or combination riser.

8. **Foam-Water Sprinkler and Spray Systems:** a special fire protection system pipe-connected to a source of foam concentrate and to a water supply. The system may discharge the foam agent before, after or with the water over the area to be protected.

Fire system classes: The 6 AWWA classes of fire systems

1. **Class 1 A fire system fed directly from a public water supply with line pressure only.**
2. **Class 2 A fire system fed directly from a public water supply with line pressure assisted with a booster pump.**
3. **Class 3 A fire system fed directly from a public water supply with line pressure, system has potable water storage tank, and has a booster pump.**
4. **Class 4 A fire system fed directly from a public water supply with line pressure, system has an auxiliary water supply. (i.e.: well, reclaimed water supply system)**
5. **Class 5 A fire system fed directly from a public water supply with line pressure, system has unapproved storage or well supply.**
6. **Class 6 A fire system fed directly from a public water supply with line pressure, system has chemical injection.**

Fire System General Information:

When testing a backflow assembly on a fire system, tamper switches may be an integral part of the shut off valves on the backflow assembly and may activate and sound an alarm when closed or opened. Notification of the premise owner, Alarm company and fire department are required before shutting off and testing the assembly. Fire codes may require a forward flow test on the backflow assembly to verify the assembly will allow the designed rate of flow.
According to AWWA standard practice all fire hydrants must be installed on 6" or larger water mains and the supply pressure can't drop below 20 psi, if this happens negative pressure can develop and create a backsiphonage condition. Example when a fire pumper truck is taking more water than the system can supply.

Flood Level Rim:

Is the level from which liquid in plumbing fixtures, appliances, or vats could overflow to the floor, when all drain and overflow openings built into the equipment are obstructed. (Air gaps are measured from the flood rim)

Gauge Pressure:

Pressure that is registered on a gauge, does not consider atmospheric pressure.

Health Hazard:

A cross connection or potential cross connection involving a contaminate that could if exposed or introduced into the potable water supply, cause death, illness, or spread disease, or have a high probability of causing such effects. (High hazard, contamination hazard, 3 types of health

hazards—chemical, biological, physical (airs and gasses) (Education on and identifying health hazards is an essential part of a CCC program) (boiler feed with or without chemicals)

Indirect Cross-Connection:
A potential or existing cross-connection that is created but is not constructed to be permanent and is subject to backsiphonage only. (Most common is a hose attached to potable water outlet and submerged in a non-potable liquid)

Industrial Fluids System:
Any system containing a fluid or solution, which may be chemically, biologically, or otherwise contaminated or polluted in a form or concentration such as would constitute a health, system, pollution, or plumbing hazard if introduced into an approved water supply. This may include, but not be limited to: pollution or contaminated waters, all type of processed waters and "used water" or **"Reclaim Water"** originating from the public potable water system which may be deteriorated in sanitary quality; chemicals in fluid form; plating acids and alkalizes; circulating cooling waters connected to an open cooling tower and/or cooling towers that are chemically or biologically treated or stabilized with toxic substances; contaminated natural waters such as from wells, springs, streams, rivers, irrigation canals, or systems, etc; oils, gases, gaseous fluids used in industrial or other purposes or for firefighting purposes, recirculating hot water systems, hot water heating systems, solar systems with antifreeze solutions, and charged fire systems.

Inspection:
A visual examination of backflow protection equipment, materials, workmanship, or portion thereof to verify installation and operational performance.

Inspector:
An individual working for or under the authority having jurisdiction empowered to ensure code compliance.

Inter Connection:
Any connection between the water meter and the service protection backflow assembly. (None allowed)

Internal Isolation:
Fixture isolation and/or isolation of an area or zone. Isolation at the fixture means installing an approved backflow preventer at the source of the potential contamination within a specific area. (Internal protection, primary protection, point of use protection) (An internal CCC Program should be administered by a local health department)

Irrigation Water:
Water utilized for plant life.

Listed-Classified-Approved:
Materials, equipment, fixtures, and other products included in a list published by an agency or organization that has successfully evaluated the item and determined compliance with the

agencies established material and or performance standards. (Agencies such as ASSE, FM, UL, ANSI, USC)

Maintenance:
Work performed or repairs made to keep equipment operable and in compliance.

Negative Pressure:
Is pressure that is below zero psi gauge or below 14.7 psi atmospheric.

Non-Health Hazard:
A cross connection or potential cross connection involving any substance that generally would not be a health hazard but would constitute a nuisance, or be aesthetically objectionable, if introduced into the potable water supply. (Also called Low hazard, pollution hazard, taste, odor, color change in water)

Physical Location Code System:

- BA/TR - Bright Angel Trail
- CVIP – Canyon Visitor Interpretive Pavilion
- DV - Desert View
- FMD - Facility Management Division
- GCUSD - Grand Canyon Unified School District
- HG - Havasupai Garden
- HR - Hermits Rest
- HQ - Head Quarters
- NR - North Rim
- PR - Phantom Ranch
- RSP – Roaring Springs Pumphouse
- SRM - Science and Resource Management
- SR - South Rim
- WTP - Water Treatment Plant
- WWTP - Wastewater Treatment Plant
- 1.5-M/RH - 1.5 Mile Resthouse
- 3-M/RH - 3 Mile Resthouse

Plumbing System:
All potable water and distribution pipes, fixtures, traps, drainage pipe, gas pipe, water treating or using equipment, vent pipe, including joints, connections, devices, receptacles, and appurtenances within the property lines of a premises.

Pollution Hazard:
The presence of any foreign substance (organic, inorganic, or biological) in water that tends to degrade its quality so as to constitute a non-health hazard, low hazard or impair the usefulness of the water. (Taste, color, odor, low hazard, non-health hazard)

Potable Water:
Water that is safe for human consumption as described by the public health authority having jurisdiction and meets EPA standards.

Non-Potable Water:
Water which is not safe for human consumption, or which is of questionable quality.

Premises Isolation:
Preventing backflow into a public water system from a user's premises by installing a suitable backflow preventer at all of the user's potable water connections. (Also called Service Protection, Secondary Protection, Containment Protection)

Pressure Vacuum Breaker Assembly (PVB):
An assembly consisting of an independently operating internally loaded check valve, an independently operating loaded air inlet valve located on the discharge side of the check valve, with properly located resilient-seated test cocks and tightly closing resilient-seated shutoff valves attached at each end of the assembly designed to operate under pressure for prolonged periods of time to prevent backsiphonage. (The pressure vacuum breaker may not be subjected to backpressure. 1psi min on air inlet and check, max head loss 10psi, protects against backsiphonage only, must be 12" above all downstream piping & outlets, will protect against low and high hazards)

Readily Accessible:
The assembly is capable of being reached for testing and maintenance without the removal of a panel, door, or any other structure. (Need to have room to work on and test UPC recommends 12" clearance on all sides)

Rated Flow:
All backflow assemblies have a normal rate of flow, it is usually a balance between the head loss and flow rate. (The higher the flow rate the higher the head loss)

Reclaimed Water:
Water that, as a result of treatment of wastewater, is suitable for a direct beneficial use or a controlled use that would not otherwise occur.

Reduced Pressure Principle Assembly
An assembly of two independently acting approved check valves together with a hydraulically operating, mechanically independent differential pressure relief valve located between the check valves and at the same time below the first check valve. The unit shall include properly located resilient seated test cocks and resilient seated shut-off valves at each end of the assembly. The entire assembly shall meet the design and performance specification as determined by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California (USC). University Park, Los Angeles, CA 90089., for backflow prevention assemblies. The assembly shall operate to maintain the pressure in the zone between the two check valves at an acceptable level less than the pressure on the potable water supply side of the

assembly. At cessation of a normal flow the pressure between the two check valves shall be less than the pressure on the public supply side of the assembly.
In case of leakage of either of the check valves, the differential relief valve shall operate to maintain the reduced pressure in the zone between the check valves by discharging to the atmosphere. When the inlet pressure is (2) two pounds per square inch (PSI) or less, the relief valve shall be open to the atmosphere.

To be approved, these assemblies must be readily accessible (No items are to be stored around and/or on the assembly) for in-line testing and maintenance and be installed in a location where no part of the assembly will be submerged.

Reduced Pressure Principle Backflow Prevention Assembly (RPBA, RP, RPA, RPZ):
These units consist of two tightly closing resilient-seated shutoff valves, four properly located resilient-seated test cocks, two independently acting internally loaded approved check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the two check valves and below the first check valve. (Relief valve is closed by system pressure, #1 spring loading is 5psi, #2 spring loading is 1psi, relief spring loading is 2psi, spring loadings are different and are not interchangeable, install 12" above any flood rim, a Y configured assembly has less head loss than an inline one)

Reduced Pressure Principle Detector Backflow Prevention Assembly (RPDA): A backflow assembly specially designed assembly composed of a line-size approved reduced pressure principle backflow prevention assembly with a bypass containing a specific water meter and an approved reduced pressure principle backflow prevention assembly. The meter shall register accurately for only very low rates of flow up to 3 gpm and shall show a registration for all rates of flow. This assembly shall be used to protect against a non-health hazard (that is, a pollutant) or a health hazard (that is, a contaminant). **The RPDA is primarily used on fire sprinkler systems.**

Relief Valve:
An automatic valve that opens and closes at a preset value.
Service Connection: the piping connection between the water purveyors' main and a user's system. **(Must be a minimum of ¾ inch)**

Service Protection:
Refers to the backflow protection installed on the water supply line to a premise as close to the service connection to the public water system as possible. (Containment protection, secondary protection, point of service protection)

Spill Resistant Pressure Vacuum Breaker (SVB):
A backflow assembly containing an independently operating internally loaded check valve and independently operating loaded air inlet valve located on the discharge side of the check valve. The assembly is to be equipped with a properly located resilient seated test cock, a properly located bleed/vent valve, and tightly closing resilient seated shutoff valves attached at each end of the assembly. (This assembly is designed to protect against both a non-health hazard (that is, a pollutant) or a health hazard (that is, a contaminant) under a backsiphonage condition only.

Minimum air inlet loading 1psi, check valve 1psi, max head loss 10psi, protection of low and high hazards, backsiphonage only, must be installed 12" above all downstream piping and outlets)

Submerged Inlet:
An inlet pipe opening which is below the flood rim level of the receptacle.
Test cock: a valve that is used to provide access to a backflow assembly for testing.

Testing:
A procedure to determine the operational and functioning status of a backflow preventer. (Tester responsibility, submit test results to the administrative authority)

Test Equipment:
An electronic or mechanical instrument recognized by the authority having jurisdiction to test the operational performance of a backflow preventer. must be calibrated annually and calibration submitted to the administrative authority (NPS-GRCA-FMD-CCC Office).

Thermal Expansion:
Is an increase in volume of a liquid due to an increase in temperature. When water is heated in a closed vessel the pressure increases, this can cause your water heater to discharge after a BPA is installed. (Closing the system)

Union:
A three-part coupling device used to join pipe. A dielectric union is for dissimilar metals.

Vacuum:
Any space in a water supply system from which water has been displaced by water vapor, air, or other gases when the pressure is less than the prevailing atmospheric pressure.
(A vacuum relief valve should never be used as a BPA) A perfect vacuum at sea level can lift water 33.9 feet.

Venturi:
The narrowing of a section of pipe used to create a vacuum for the injecting of chemicals.
(Venturi effect caused by high velocity through a narrow section of pipe)

Water Hammer:
The hammering noises and severe shocks that may occur in a pressurized water system when flow is stopped abruptly by the rapid closure of a valve or faucet.

Water Meter:
The point of connection from the public water system to the private water system. (This would be the starting point for assessing the degree of hazard)

Water Purveyor:
The owner or operator of a public water system. (The water purveyor is the enforcement authority for requiring the installation of backflow protection)

Water Service Types:

- **Combined:** A combined water service is a water service that is used for more than one purpose. The domestic potable water service enters a building to feed the domestic needs and also is used for a fire sprinkler system. **NOTE:** Depending on the type of fire service, a separate backflow assembly may be needed in addition to the service protection backflow assembly.
- **Commercial:** A commercial water service is similar to an industrial water service, as it may supply several high hazard waters uses on site.
- **Critical:** Customers may require an uninterrupted continuous supply of water. When that is the case, assemblies may be installed parallel with each other the size of the cross-sectional areas of the backflow assemblies need to equal that of the water meter. **Example:** One two-inch meter with two 2" backflow assemblies.
- **Dual:** Similar to a combined service where the water use may be used for domestic and fire protection.
- **Industrial:** An industrial water service usually feeds a manufacturing facility with several high hazard water uses on site.
- **Multiple:** Multiple water services are just that, there is more than one water service on a site. The services may be tied together in a loop or serve individual buildings on site. Multiple water services may also be a combination of different services such as a domestic water service, fire water service, separate irrigation meter, reclaimed water supply or any other auxiliary water supply on site.
- **Restricted:** A water service where access is denied. This type of service will require the installation of a RP assembly at the meter.

Appendix: A,

Ariz. Admin. Code § 18-4-215

Ariz. Admin. Code § 18-4-215
Current through Register Vol. 29, No. 5, February 3, 2023

Section R18-4-215 - Backflow Prevention

A. A public water system shall protect its system from contamination caused by backflow through unprotected cross-connections by requiring the installation and periodic testing of backflow-prevention assemblies. Required backflow-prevention assemblies shall be installed as close as practicable to the service connection.

B. A public water system shall ensure that a backflow-prevention assembly is installed whenever any of the following occur:

1. A substance harmful to human health is handled in a manner that could permit its entry into the public water system. These substances include chemicals, chemical or biological process waters, water from public water supplies that has deteriorated in sanitary quality, and water that has entered a fire sprinkler system. A Class 1 or Class 2 fire sprinkler system is exempt from the requirements of this Section;

2. A source of water supply exists on the user's premises that is not accepted as an additional source by the public water system or is not approved by the Department;

3. An unprotected cross-connection exists, or a cross-connection problem has previously occurred within a user's premises; or

4. There is a significant possibility that a cross-connection problem will occur and entry to the premises is restricted to the extent that cross-connection inspections cannot be made with sufficient frequency or on sufficiently short notice to ensure that unprotected cross-connections do not exist.

C. Unless a cross-connection problem is specifically identified, or as otherwise provided in this Section, the requirements of this Section shall not apply to single-family residences used solely for residential purposes.

D. A backflow-prevention assembly required by this Section shall comply with the following:

1. If equipped with test cocks, it shall have been issued a certificate of approval by:

a. The University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USC-FCCCHR), or

b. A third-party certifying entity that is unrelated to the product's manufacturer or vendor and is approved by the Department.

2. If not equipped with test cocks, it shall be approved by a third-party certifying entity that is unrelated to the product's manufacturer or vendor and is approved by the Department.

E. The minimum level of backflow protection that is provided to protect a public water system shall be the level recommended in Section 7.2 of the Manual of Cross-Connection Control, Ninth Edition, USC-FCCCHR, KAP-200 University Park MC-2531, Los Angeles, CA, 90089-2531, December 1993, (and no future editions or amendments), incorporated by reference and on file with the Department. The types of backflow prevention that may be required, listed in decreasing order according to the level of protection they provide, include: an air-gap separation (AG), a reduced pressure principle backflow prevention (RP) assembly, a pressure vacuum breaker

(PVB) assembly, and a double check valve (DC) assembly. Nothing contained in this Section shall prevent a public water system from requiring the use of a higher level of protection than the level required by this subsection.

1. A public water system may make installation of a required backflow-prevention assembly a condition of service. A user's failure to comply with this requirement shall be sufficient cause for the public water system to terminate water service.

2. Specific installation requirements for backflow prevention include the following:

a. Any backflow prevention required by this Section shall be installed in accordance with the manufacturer's specifications.

b. For an AG installation, all piping between the user's connection and the receiving tank shall be entirely visible unless otherwise approved in writing by the public water system.

c. An RP assembly shall not be installed in a meter box, pit, or vault unless adequate drainage is provided.

d. A PVB assembly may be installed for use on a landscape water irrigation system if the irrigation system conforms to all of the criteria listed below. An RP assembly is required whenever any of the criteria are not met.

i. The water use beyond the assembly is for irrigation purposes only;

ii. The PVB is installed in accordance with the manufacturer's specifications;

iii. The irrigation system is designed and constructed to be incapable of inducing backpressure; and

iv. The injection of chemical pesticides and fertilizers, chemigation, is not used or provided in the irrigation system.

F. Each backflow-prevention assembly required by this Section shall be tested at least annually, or more frequently if directed by the public water system or the Department. Each assembly shall also be tested after installation, relocation, or repair. An assembly shall not be placed in service unless it has been tested and is functioning as designed. The following provisions shall apply to the testing of backflow-prevention assemblies:

1. Testing shall be in accordance with procedures described in Section 9 of the Manual of Cross-Connection Control. The public water system shall notify the water user when testing of backflow-prevention assemblies is needed. The notice shall specify the date by which the testing must be completed, and the results forwarded to the public water system.

2. Testing shall be performed by a person who is currently certified as a "general" tester by the California-Nevada Section of the American Water Works Association (CA-NV Section, AWWA), the Arizona State Environmental Technical Training (ASETT) Center, or other certifying authority approved by the Department.

3. When a backflow-prevention assembly is tested and found to be defective, it shall be repaired or replaced in accordance with the provisions of this Section.

G. A public water system shall maintain records of backflow-prevention assembly installations and tests performed on backflow-prevention assemblies in its service area. Records shall be retained by the public water system for at least three years and shall be made available for review by the Department upon request. These records shall include an inventory of backflow-prevention assemblies required by this Section and, for each assembly, all of the following information:

1. Assembly identification number and description,
2. Location,
3. Date of tests,
4. Description of repairs and recommendations for repairs made by the tester, and
5. The tester's name and certificate number.

H. A public water system shall submit a written cross-connection incident report to the Department and the local health authority within five business days after a cross-connection problem occurs that results in contamination of the public water system. The report shall address all of the following:

1. Date and time of discovery of the unprotected cross-connection,
2. Nature of the cross-connection problem,
3. Affected area,
4. Cause of the cross-connection problem,
5. Public health impact,
6. Date and text of any public health advisory issued,
7. Each corrective action taken, and
8. Date of completion of each corrective action.

I. An individual with direct responsibility for implementing a backflow prevention program for a water system serving more than 50,000 persons, or an individual with direct responsibility for implementing a backflow prevention program for a for a water system serving 50,000 or fewer persons if the Department has determined that such a need exists, shall be licensed as a "cross-connection control program specialist" by the CA-NV Section, AWWA, the ASETT Center, or another certifying authority approved by the Department.

Historical Note;
Ariz. Admin. Code § R18-4-215

Adopted effective August 8, 1991 (Supp. 91-3). Section repealed; new Section adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Section R18-4-215 repealed; new Section renumbered from R18-4-115 and amended by final rulemaking at 14 A.A.R. 2978, effective August 30, 2008 (Supp. 08-3).

Appendix: B,

List of NPS – GRCA – Backflow Repair / Tester Specialists &
2024 Backflow Gauge Testing Equipment Calibration Reports:

NPS – GRCA, List of Backflow Repair / Testers:

1. Chad Larrieu, ABPA Certificate #03-211175, expires 11/13/2024
2. ~~Sherryl Johnson, ABPA Certificate #03-1198, expires 05/16/2023~~
3. ~~Colton Lindbom, ASSE – IAPMO BPI Certificate #48054, expires 04/03/2024~~

NPS – GRCA, 2024 Backflow Gauges Testing Equipment Calibration Reports:

Appendix: C,

United States Environmental Protection Agency (USEPA) Cross-Connection Control Manual

Appendix: D,

United States Environmental Protection Agency (USEPA) Cross-Connection Control; A Best Practices Guide

Appendix: E,

American Water Works Association (AWWA) M-14 Backflow / Cross-Connection Control; A Best Practices Guide

Appendix: F,

United States Public Health Services, NPS - Office of Public Health, Common Cross-Connections and Recommended Backflow Prevention Devices Field Guide / Manual, November 2021

GRAND CANYON NATIONAL PARK
PROJECT FLIGHT REQUEST FORM

Flight Request # _____
(assigned by aviation staff)

To be completed by the person requesting the flight.

Name:_____ Division/Office:_____

Work Telephone:_____ Email:_____

FLIGHT INFORMATION Email requests to email provided

Platform : ☐Airplane (Galen Howell) ☐Helicopter (GRCA_Helibase) ☐UAS (GRCA_Helibase)

Detailed Flight Description:

FLIGHT JUSTIFICATION- Why can't this mission be done without aviation support?
Explanation:

HAS COMPLIANCE BEEN COMPLETED FOR THIS FLIGHT? ☐YES ☐NO
DOES THIS FLIGHT MEET MINIMUM REQUIREMENTS ANALYSIS (MRA)? ☐YES (attach to form) ☐NO

Helicopter flights will only be scheduled between the hours of 9:00 AM and 4:30 PM unless otherwise approved by aviation management staff.

Day, date, and time flight is requested: _____

Passenger Manifest: (include yourself if you are going)

Name	Weight	Aircrewmember Expiration Date

Cargo: (ie: plumbing tools 75 pounds)

Description	Weight

Are sling (i.e., external) loads required?
☐NO ☐YES
if yes, how many?_____ approximate weights:1\ 2\ 3\ 4\ 5\

FISCAL INFORMATION- Flights will not start without a valid GRCA charge code. (IAA) agreements must also provide IAA number below. Charge codes must be legible.

Account number(s) to be charged:

_____

Interagency Agreement#_____

Fiscal Information Point of Contact Name:_____

Work Telephone:_____ Email:_____

TRIP REQUESTOR MUST INITIAL AND SIGN BELOW

____ Approval of this Flight Request Form indicates authorization to charge any premium pay (i.e., overtime, hazard pay, etc.) incurred during the accomplishment of this mission to the account number provided in the Fiscal Information section.

_____ _____

Trip Requestor's Signature Date

- Flights will not occur unless the park's aviation management personnel have this fully completed, signed, and approved Flight Request Form in their possession prior to flight time.
- All passengers must be at the departure location (South Rim Helibase, Grand Canyon Airport, or other appropriate location) at least 15 minutes prior to flight departure.
- If the flight is postponed or cancelled because of weather, aircraft maintenance, etc., this authorization is good for five (5) working days from the day, date, and time listed in the Flight Data section. A new Flight Request Form is not needed.

THIS SECTION TO BE COMPLETED BY DIVISION CHIEF OR DESIGNATED REPRESENTATIVE

The above requested flight is the most appropriate tool for the job. I certify that all passengers are current and in compliance with required basic aviation safety training. I have reviewed the fiscal information and certify that it is a valid GRCA account.

_____ _____ _____

Division Chief's Signature Name Printed Date

Forward approved flight requests to the Superintendent's Office for final review and disposition.

HELIBASE USE ONLY: RECEIVED BY:_____ **DATE:**_____

CONFIRMED/SCHEDULED BY:_____