CONTAMINANTS OF EMERGING CONCERN SENTRY PROGRAM

Sept 27, 2023

2022 RESULTS SUMMARY

CITY OF TUCSON | TUCSON WATER

2022 RESULTS SUMMARY

TABLE OF CONTENTS

FIGURES

TABLES

1.0 EXECUTIVE SUMMARY

Tucson Water is committed to providing high-quality safe drinking water and closely follows the scientific study of contaminants of emerging concern (CEC). Recent scientific research indicates that exposure to CECs may pose risks to human health. To respond to these potential health concerns, Tucson Water established a voluntary monitoring program, the "Sentry Program", in 2008 under the direction of the City Manager.

The Sentry Program has detected trace levels of CECs in the drinking water system and nonpotable water sources. Tucson Water tracks sampling results to proactively identify and address potential contamination issues. The Sentry Program is a proactive, voluntary monitoring component of Tucson Water's routine water quality management program. Results of the 2022 Sentry Program are summarized in this report and are largely consistent with historical CEC data.

Tucson Water's Sentry Program keeps water supplies safe and protects public health. The Sentry Program has multiple objectives:

- Continue biannual sampling for potable, nonpotable, and reclaimed water systems.
- Maintain baseline data to monitor current water quality conditions and trends.
- Collect data to support the assessment of regulatory issues.
- Develop source water protection measures.
- Preserve a high-quality water supply.
- Provide a robust and evolving list of analytes.
- Collaborate with other local water utilities and stakeholders.
- Update Tucson Water's website with prior years Sentry Program reports https://www.tucsonaz.gov/water/CEC.

2.0 BACKGROUND

CECs are newly identified or re-emerging, manufactured or naturally-occurring compounds that 1) may lack public health impact data, or 2) may not have an applicable regulatory maximum contaminant level (MCL) or established health advisory (HA) for drinking water. The lack of regulatory drinking water standards is driven by a cumbersome regulatory rule making process. There are critical research gaps in toxicity information associated with individual CECs, mixtures of CECs, and cumulative exposure of CECs over time. In short, CECs are broadly described as chemicals or substances that are not yet regulated by the U.S. Environmental Protection Agency (EPA), but which potentially pose a threat to human health or the environment.

Typically, CECs are categorized by their type and source. For this report, these common categories are used: Perfluorinated compounds (PFCs), per- and polyfluoroalkyl substances (PFAS), fire retardants, food additives, industrial chemicals, personal care products, pesticides, and pharmaceuticals. CECs include endocrine disrupting compounds such as Bisphenol A (BPA), PFAS, and Triclosan (**Table 1**).

PFAS are synthetic chemicals used in a wide range of products, from firefighting foam to nonstick cookware, to waterproof clothing, to food packaging, to shampoo and more. PFAS are a contaminant of concern because they could potentially pose a risk to public health and because they do not degrade. In other words, if they reach the environment, they will be there forever and could affect groundwater and drinking water.

State-of-the-art advances in analytical technologies and instrumentation have made it possible to identify trace concentrations of CECs measured in parts per trillion (ppt). For reference, one ppt is the approximate equivalent of one drop of water in 20 Olympic-sized swimming pools. The fact that a substance is detectable doesn't always mean it is harmful. The health significance of these trace contaminants is often under review and the subject of further study and research.

A list of all 158 CECs analyzed under the 2022 Sentry Program is provided (**Table 1**).

3.0 SAMPLING SITES

As part of the 2022 Sentry Program, water samples were collected from a total of 15 sample locations as follows (**Figure 1**).

Samples were collected at three Entry Points to the Distribution System (EPDS) at native groundwater wells located in close proximity to the Santa Cruz River, downstream of Pima County's Agua Nueva Wastewater Reclamation and Tres Rios Wastewater Reclamation facilities. These three sampling sites represent drinking water wells impacted by treated wastewater.

1. EPDS 166 (Y-001B) represents an out of service potable well – inactive
2. EPDS 160 (Y-004A) represents an emergency use only potable well – standby
3. EPDS 232 (W-001C) represents an active potable well

Samples were collected at three Combined Entry Points to the Distribution System (CEPDS) comprised of combined flow of groundwater wells. These four sampling sites represent the blended drinking water supply entering the distribution system at different locations.

4. CEPDS 124 (167R) represents the Southern Avra Valley Storage and Recovery Project (SAVSARP) wellfield
5. CEPDS 125 (310) represents the Santa Cruz wellfield
6. CEPDS 159 (EP1) represents the Central Avra Valley Storage and Recovery Project (CAVSARP) and SAVSARP wellfields

Samples were collected at four EPDS and one reservoir. These five sampling sites represent the drinking water supply entering the distribution system at different locations.

7. EPDS 013 (A-055A) represents an out of service potable well - inactive
8. EPDS 054 (C-046B) represents an active potable well
9. EPDS 147 (B-110A) represents an active potable well
10. EPDS 245 (F-006A) represents an active potable well
11. Escalante Reservoir (EP21) represents an active potable reservoir

One sample was collected at the Tucson Airport Remediation Project/Advanced Oxidation Process (TARP/AOP) Water Treatment Plant. Tucson Water's TARP/AOP Water Treatment Plant uses state-of-the-art technology to effectively remove trichloroethylene (TCE), 1,4-dioxane, and PFAS from water. The AOP water treatment facility operates in conjunction with the adjacent TARP facility to produce up to 7 million gallons of purified water a day. This sampling site represents groundwater before treatment prior to discharging to the Santa Cruz River outfall and/or entering the recycled water system.

12. TA-030A (influent) represents untreated groundwater collected at the influent booster station

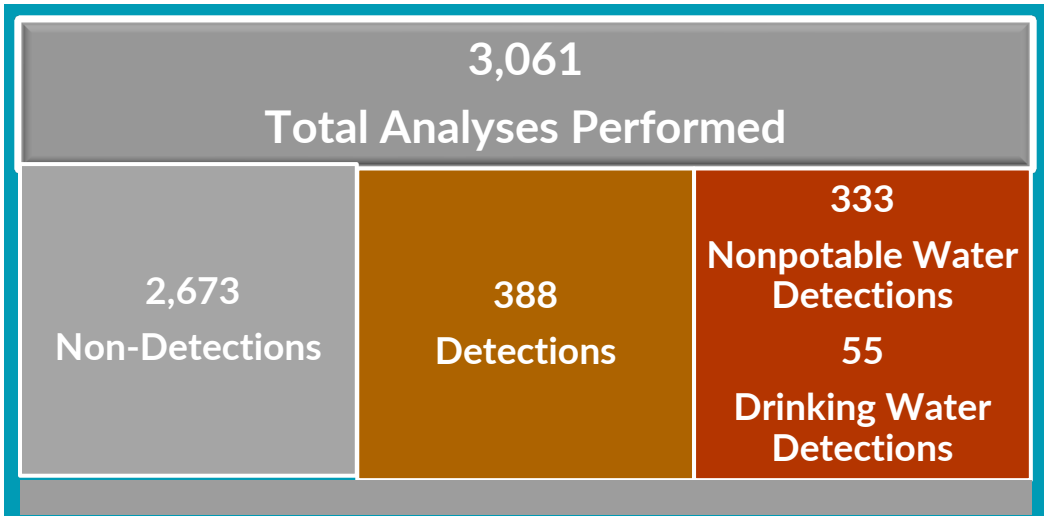
In June of 2021, Tucson Water ceased discharging the TARP/AOP treated effluent into the potable distribution system. Beginning in November 2021, the treated effluent was discharged to the Santa Cruz River in accordance with Tucson Water's AZPDES discharge permit. Tucson Water constructed a TARP/AOP Recycled System Source Water Infrastructure which was completed in the Spring 2023. As of July 1, 2023, Tucson Water is able to discharge treated water from the TARP/AOP Plant into the Recycled Water System and/or the Santa Cruz River.

Tucson Water uses some of its recycled water to produce reclaimed water, which is specially treated for applications such as irrigation, dust control, firefighting, and industrial uses. Reclaimed water is not treated for use in drinking or bathing. These three sampling sites represent reclaimed water before and after treatment prior to entering the Sweetwater wetlands and/or the reclaimed water distribution system.

13. 510 (influent) represents untreated reclaimed water
14. 522 (effluent) represents treated reclaimed water
15. EW-007A (influent) represents untreated groundwater from an extraction well

4.0 DETECTED CEC ANALYTES

The CEC common categories, concentrations detected, and number of detections for the 2022 Sentry Program were generally consistent with historical data (**Table 1**). Trace levels of CECs were detected in all 15 sample locations and showed no discernable trends. (**Table 2**).



Drinking Water Served (Potable)

Potable water is water of a quality suitable for drinking, cooking, and personal bathing. All 2022 trace detections for potable water were considerably below any applicable health-based MCLs or HAs with one exception. Silverbell West System PWS AZ0410162 EPDS 232 W-001C detected PFOS at levels exceeding EPA's HA of 0.02 ppt. However, Silverbell West customers treat their drinking water using a pitcher/filter with a PFOS removal rate of 99.8% which currently reduces the PFOS level to below the HA.

Potable detections are as follows (**Table 2**):

- CEPDS 124 (167R) had 4 detections
- CEPDS 125 (310) had 3 detections
- CEPDS 159 (EP1) had 6 detection
- EPDS 054 (C-046B) had 0 detections
- EPDS 147 (B-110A) had 5 detections
- EPDS 232 (W-001C) had 17 detections
- EPDS 245 (F-006A) had 9 detections
- Escalante Reservoir (EP21) had 8 detections

Water Not Served (Nonpotable)

Nonpotable water is not suitable for drinking or bathing but may still be used for other purposes such as irrigation, dust control, firefighting, and industrial uses. All 2022 trace detections for nonpotable water were considerably below any applicable health-based MCLs or HAs with the following exceptions:

- 1,4-Dioxane - HA of 0.35 part per billion (ppb) for 1,4-dioxane was exceeded at the following six sample locations: 510, 522, EW-007A, TA-030A, Y-001B, and Y-004A.
- PFOA - HA of 0.004 ppt for PFOA was exceeded at the following seven sample locations: 510, 522, A-055A, EW-007A, TA-030A, Y-001B, and Y-004A.
- PFOS - HA of 0.02 ppt for PFOS was exceeded at the following seven sample locations: 510, 522, A-055A, EW-007A, TA-030A, Y-001B, and Y-004A.

Nonpotable detections are as follows (**Table 2**):

- EPDS 013 (A-055A) had 21 detections (emergency use only/standby)
- EPDS 160 (Y-004A) had 41 detections (emergency use only/standby)
- EPDS 166 (Y-001B) had 41 detections (inactive)
- Influent to TARP/AOP Plant TA-030A had 32 detections (untreated)

- 510 (influent) had 86 detections (untreated reclaimed water)
- 522 (effluent) had 74 detections (treated reclaimed water)
- EW-007A (influent) had 38 detections (untreated extraction well)

5.0 REGULATORY OUTLOOK

Tucson Water gives serious consideration to CEC detections. However, it is important to put their presence into context. The EPA has not determined whether standards are necessary for many CECs. EPA uses the Unregulated Contaminant Monitoring Rule (UCMR) to collect data for contaminants that are suspected to be present in drinking water and do not have health-based standards set under the Safe Drinking Water Act. The UCMR Program provides a basis for future EPA regulatory actions to protect public health. Depending on the outcome of EPA reviews, some of the CECs may or may not be considered for regulation in the future.

PFAS Regulatory Update

On March 14, 2023, the EPA announced the proposed National Primary Drinking Water Regulation (NPDWR) for six PFAS including PFOA, PFOS, PFNA, GenX, PFHxS, and PFBS. The proposed PFAS NPDWR does not require any actions until it is finalized, which the EPA anticipates occurring at the end of 2023. Once finalized, the EPA will have established legally enforceable levels, called MCLs, for the six PFAS compounds listed below. PFOA and PFOS will have MCLs as individual contaminants and PFHxS, PFNA, PFBS, and GenX will have an MCL based on a mixture of the four. EPA is also proposing health based, non-enforceable Maximum Contaminant Level Goals (MCLGs) for these six PFAS.

PFAS Compound	*Proposed MCLG (non-enforceable level)*	*Proposed MCL (enforceable level)*
PFOA	Zero	4.0 ppt
PFOS	Zero	4.0 ppt
PFNA		
PFHxS	1.0 (unitless) Hazard Index*	1.0 (unitless) Hazard Index*
PFBS		
GenX		

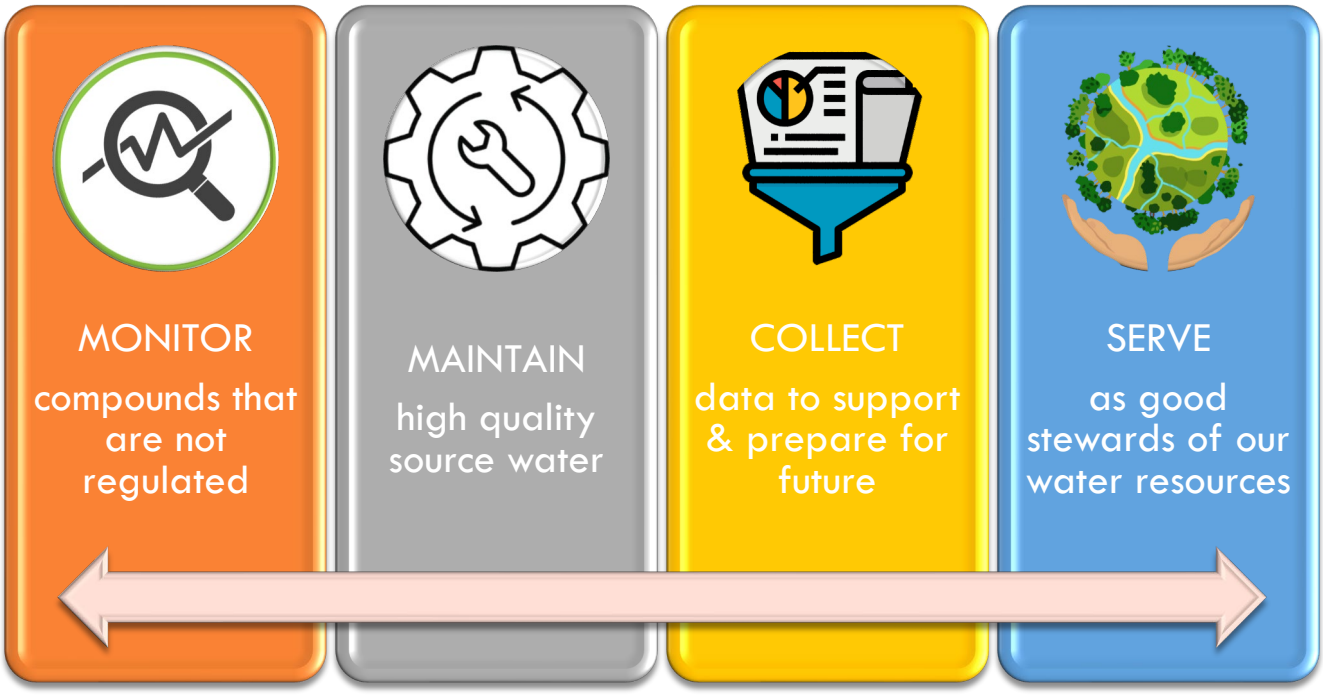
*The Hazard Index is a long-established tool that EPA regularly uses to understand health risk from chemical mixtures. EPA is proposing a Hazard Index MCL to limit any mixture containing one or more of PFHxS, PFNA, PFBS, and GenX. The Hazard Index will be calculated by taking the measured concentration of each and dividing PFHxS by 9 ppt, PFNA by 10 ppt, PFBS by 2000 ppt, and GenX by 10 ppt. The total of these four ratios cannot exceed 1.0.

The proposed rule would also require Tucson Water to:

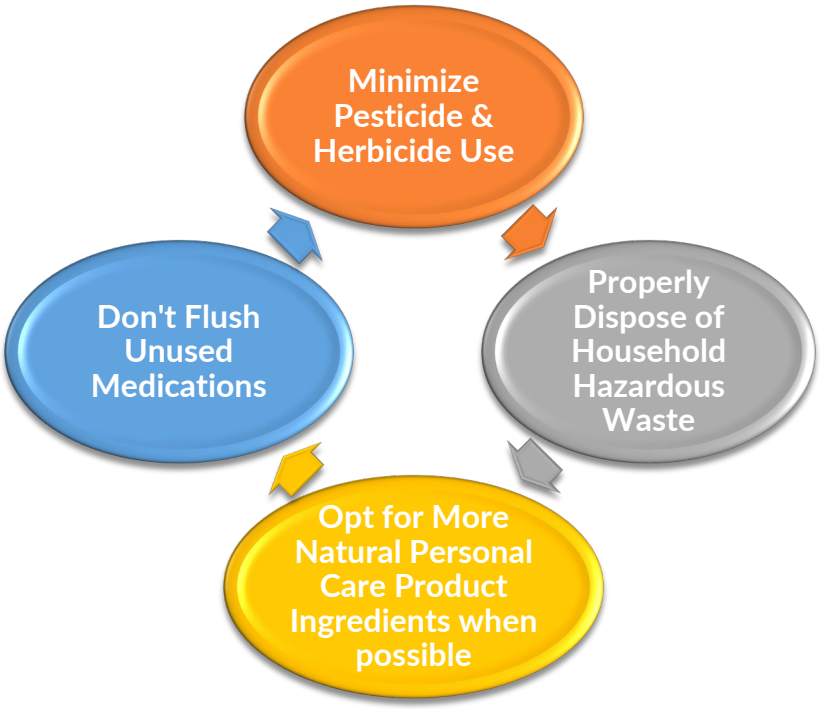
- Monitor for these PFAS
- Notify the public of the levels of these PFAS
- Reduce the levels of these PFAS in drinking water if they exceed the proposed standards.

6.0 CONTINUED ACTION PLAN

Tucson Water will continue to enhance the Sentry Program. The monitoring frequency of CECs will be maintained twice per year at selected potable and non-potable sampling locations. Tucson Water is actively engaged with local utilities and other key partners in investigation programs that focus on monitoring and treatment of CECs including any potential health impacts that may be associated with the presence of these contaminants in both source water and drinking water.



Steps You Can Take to Make a Difference



Visit: https://www.tucsonaz.gov/es/household-hazardous-waste or call 520-791-3171

Contact Us: https://www.tucsonaz.gov/water or

QualityandPressure@tucsonaz.gov or call 520-791-5945

CITY OF TUCSON | TUCSON WATER

Figure 1. CEC Sentry Program Sampling Plan - 2022

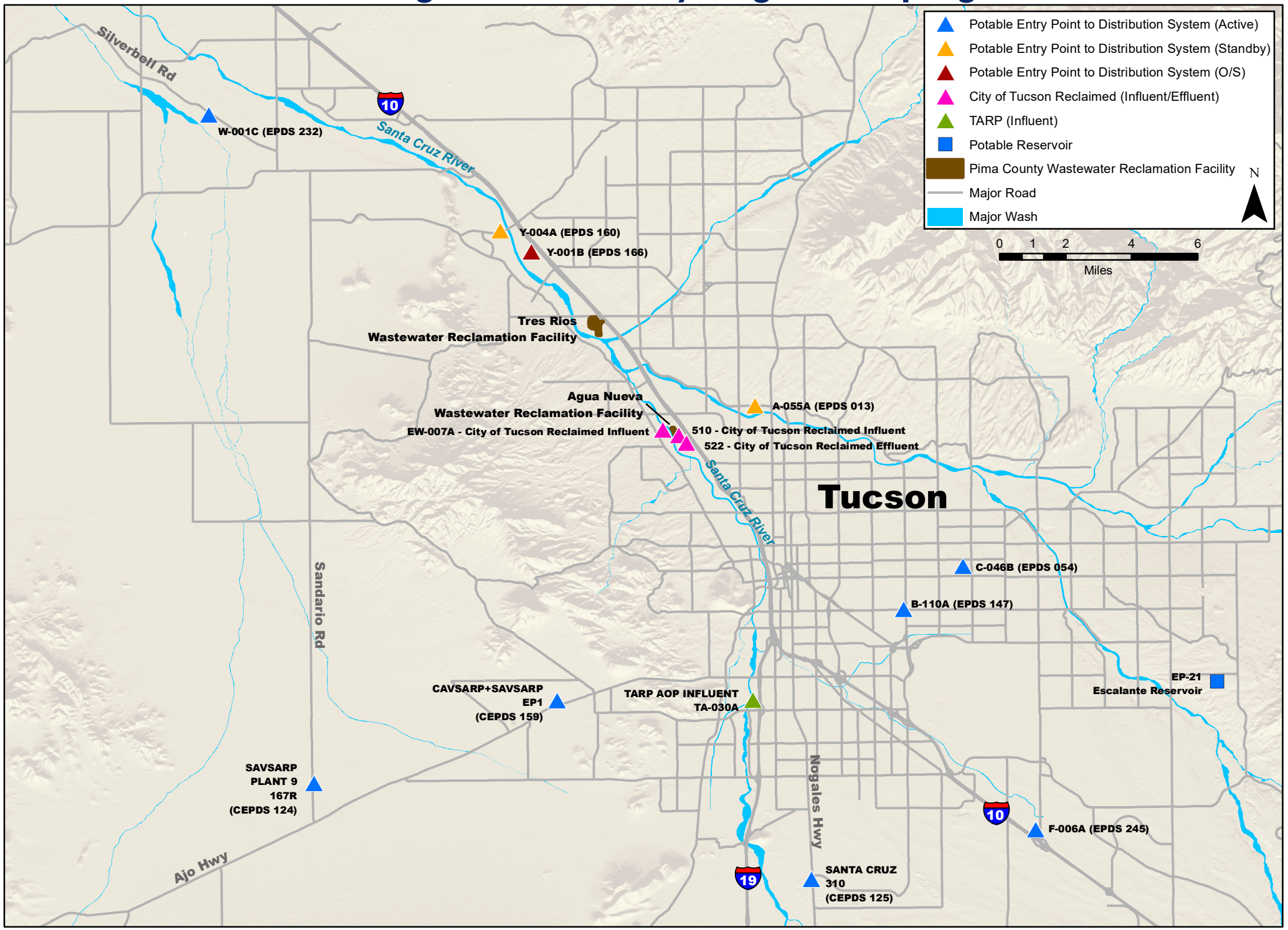


TABLE 1. 2022 SENTRY PROGRAM
CEC ANALYTE LIST AND NUMBER OF DETECTIONS

General Category	Analyte Name	Detected 2022	No. of 2022 Detects
Food Additive	ACESULFAME-K	Y	10
	SUCRALOSE	Y	15
Industrial Chemical	1,4-DIOXANE	Y	13
	1H-BENZOTRIAZOLE	Y	7
	4-TERT-OCTYLPHENOL	Y	2
	BIS PHENOL A (BPA)	N	0
	CHROMIUM, HEXAVALENT[1]	Y	26
	NONYLPHENOL	Y	1
	QUINOLINE	N	0
	TCEP	Y	4
	TCPP	Y	4
	TDCPP	Y	2
Personal Care Product	BUTYLPARABEN	N	0
	ETHYLPARABEN	Y	1
	ISOBUTYLPARABEN	N	0
	METHYLPARABEN	N	0
	OXYBENZONE	Y	2
	PROPYLPARABEN	Y	1
	TRICLOCARBAN	N	0
	TRICLOSAN	Y	1
Pesticide	2,4,6-TRICHLOROPHENOL	N	0
	2,4-D	N	0
	4-N-OCTYLPHENOL	N	0
	4-NONYLPHENOL- (SEMI-QUANT)	Y	1
	ATRAZINE	Y	3
	BROMACIL	Y	1
	CHLORIDAZON	N	0
	CHLOROTOLURON	N	0
	CLOFIBRIC ACID	N	0
	DACT	Y	3
	DEA	Y	4
	DEET	Y	7
	DIA	Y	4
	DIURON	Y	4
	ISOPROTURON	Y	4
	LINURON	Y	2
	METAZACHLOR	N	0
	METOLACHLOR	N	0
	PENTACHLOROPHENOL	N	0
	PHENYLPHENOL, TOTAL	N	0
	PROPAZINE	Y	1
	SIMAZINE	Y	5
	SULFOMETURON METHYL	N	0
Pesticide	THIABENDAZOLE	Y	2
	11-CHLOROEICOSAFLUORO-3-OXAUNDECANE-1-SU	N	0
	1H,1H, 2H, 2H-PERFLUORODECANE SULFONIC A	N	0
	1H,1H, 2H, 2H-PERFLUOROHEXANE SULFONIC A	N	0
	1H,1H, 2H, 2H-PERFLUOROOCTANE SULFONIC A	Y	1
	4,8-DIOXA-3H-PERFLUORONONANOIC ACID	N	0
	9-CHLOROHEXADECAFLUORO-3-OXANONANE-1-SUL	N	0
	HEXAFLUOROPROPYLENE OXIDE DIMER ACID	N	0
	N-ETHYL PERFLUOROOCTANESULFONAMIDOACETIC	N	0

TABLE 1. 2022 SENTRY PROGRAM
CEC ANALYTE LIST AND NUMBER OF DETECTIONS

General Category	Analyte Name	Detected 2022	No. of 2022 Detects
PFC/PFAS/Fire Retardant[2]	N-METHYL PERFLUOROOCTANESULFONAMIDOACETI	N	0
	NONAFLUORO-3,6-DIOXAHEPTANOIC ACID	N	0
	PERFLUORO BUTANOIC ACID - PFBA	Y	6
	PERFLUORO OCTANESULFONIC ACID - PFOS	Y	14
	PERFLUORO OCTANOIC ACID - PFOA	Y	13
	PERFLUORO(2-ETHOXYETHANE)SULFONIC ACID	N	0
	PERFLUORO-1-BUTANESULFONIC ACID - PFBS	Y	11
	PERFLUORO-1-HEXANESULFONIC ACID - PFHxS	Y	12
	PERFLUORO-3-METHOXYPROPANOIC ACID	Y	1
	PERFLUORO-4-METHOXYBUTANOIC ACID	N	0
	PERFLUORODODECANOIC ACID	N	0
	PERFLUOROHEPTANESULFONIC ACID	N	0
	PERFLUOROHEPTANOIC ACID - PFHpA	Y	11
	PERFLUORO-N-DECANOIC ACID	N	0
	PERFLUORO-N-HEXANOIC ACID	Y	13
	PERFLUORO-N-NONANOIC ACID - PFNA	Y	5
	PERFLUOROPENTANESULFONIC ACID	Y	4
	PERFLUOROPENTANOIC ACID	Y	7
	PERFLUOROTETRADECANOIC ACID	N	0
	PERFLUOROTRIDECANOIC ACID	N	0
	PERFLUOROUNDECANOIC ACID	N	0
	TETRABROMOBISPHENOL A (TBBPA)*	N	0
Pharmaceutical	ACETAMINOPHEN	Y	4
	ALBUTEROL	N	0
	AMOXICILLIN (SEMI-QUANT.)	Y	7
	ANDROSTENEDIONE	Y	1
	ATENOLOL	Y	4
	AZITHROMYCIN	Y	2
Pharmaceutical	BENDROFLUMETHIAZIDE	N	0
	BEZAFIBRATE	Y	3
	BUTALBITAL	Y	2
	CAFFEINE	Y	5
	CARBADOX	Y	1
	CARBAMAZEPINE	Y	10
	CARISOPRODOL	Y	1
	CHLORAMPHENICOL	N	0
	CHLORTETRACYCLINE	N	0
	CIMETIDINE	N	0
	CODEINE	Y	2
	DEXAMETHASONE	N	0
	DIAZEPAM	Y	2
	DICLOFENAC	Y	4
	DIETHYLSTILBESTROL (DES)	N	0
	DILANTIN	Y	7
	DILTIAZEM	Y	3
	EPITESTOSTERONE	N	0
	ERYTHROMYCIN	N	0
	ESTRADIOL	N	0
	ESTRIOL	N	0
	ESTRONE	Y	3
	ETHINYL ESTRADIOL-17 ALPHA	Y	2
	FLUMEQUINE	N	0
	FLUOXETINE	Y	4

TABLE 1. 2022 SENTRY PROGRAM
CEC ANALYTE LIST AND NUMBER OF DETECTIONS

General Category	Analyte Name	Detected 2022	No. of 2022 Detects
	GEMFIBROZIL	Y	3
	HYDROCODONE	N	0
	IBUPROFEN	N	0
	IOHEXOL	Y	3
	IOPROMIDE	N	0
	KETOPROFEN	N	0
	KETOROLAC	N	0
	LEVOTHYROXINE	N	0
	LIDOCAINE	Y	1
	LINCOMYCIN	Y	1
	LOPRESSOR	Y	2
	MECLOFENAMIC ACID	Y	1
	MEPROBAMATE	Y	6
	METFORMIN	N	0
	METHADONE	N	0
	MONENSIN	N	0
	MORPHINE	N	0
	NAPROXEN	Y	2
Pharmaceutical	NARASIN	N	0
	NICOTINE	Y	2
	NIFEDIPINE	Y	1
	NORETHISTERONE	Y	3
	OLEANDOMYCIN	N	0
	OXOLINIC ACID	N	0
	PENICILLIN G	N	0
	PENICILLIN V	N	0
	PENTOXIFYLLINE	N	0
	PHENAZONE	Y	5
	PREDNISONE	N	0
	PRIMIDONE	Y	11
	PROGESTERONE	Y	2
	PROPANOLOL	N	0
	ROXITHROMYCIN	N	0
	SALICYLIC ACID	Y	4
	SALINOMYCIN	N	0
	SULFACHLOROPYRIDAZINE	N	0
	SULFADIAZINE	Y	3
	SULFADIMETHOXINE	Y	1
	SULFAMERAZINE	N	0
	SULFAMETHAZINE	Y	1
	SULFAMETHIZOLE	N	0
	SULFAMETHOXAZOLE	Y	12
	SULFASALAZINE	Y	2
	SULFATHIAZOLE	N	0
	TESTOSTERONE	Y	1
	THEOBROMINE	Y	2
	THEOPHYLLINE	Y	5
	TRANS-TESTOSTERONE	Y	3
	TRIMETHOPRIM	Y	3
	TYLOSIN	N	0
	VENLAFAXINE	N	0
	VIRGINIAMYCIN M1	N	0
	WARFARIN	N	0
	ESTRADIOL (17A-ESTRADIOL)	N	0
	ESTRADIOL (17B-ESTRADIOL)	Y	1

TABLE 1. 2022 SENTRY PROGRAM
CEC ANALYTE LIST AND NUMBER OF DETECTIONS

General Category	Analyte Name	Detected 2022	No. of 2022 Detects
Pharmaceutical (Metabolite of Caffeine)	COTININE	Y	4
Pharmaceutical (Metabolite of Caffeine)	PARAXANTHINE (1,7-DIMETHYLXANTHINE)	Y	6
Pharmaceutical (Metabolite of Nifedipene)	DEHYDRONIFEDIPINE	Y	1

Footnotes/Acronyms/Abbreviations:

[1] Chromium naturally occurs in the environment primarily in two valence states, trivalent chromium (Cr III) and hexavalent chromium (Cr VI).

[2] PFC = Perfluorinated Chemicals/ PFAS = Perfluorinated Alkylated Substances

TABLE 2. 2022 SENTRY PROGRAM - ANALYTICAL RESULTS FOR DETECTIONS

General Category	Sample Point ID	Sample Date	Analyte Name	Water Quality Standard	2022 Result	Units
Industrial Chemical	310	6/15/2022	1H-BENZOTRIAZOLE		15	ppt
Industrial Chemical	310	6/15/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.49	ppb
Industrial Chemical	310	12/8/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.55	ppb
Food Additive	167R	6/15/2022	SUCRALOSE		130	ppt
Industrial Chemical	167R	6/15/2022	1H-BENZOTRIAZOLE		39	ppt
Industrial Chemical	167R	6/15/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	1	ppb
Pharmaceutical	167R	6/15/2022	AMOXICILLIN (SEMI-QUANT.)		21	ppt
Industrial Chemical	B-110A	6/13/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	7.2	ppb
Personal Care Product	B-110A	6/13/2022	PROPYLPARABEN		8	ppt
Pharmaceutical	B-110A	6/13/2022	AMOXICILLIN (SEMI-QUANT.)		24	ppt
Industrial Chemical	B-110A	12/22/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	7.1	ppb
Pharmaceutical	B-110A	12/22/2022	TRANS-TESTOSTERONE		1.4	ppt
Food Additive	C-046B	6/13/2022	ACESULFAME-K		120	ppt
Industrial Chemical	C-046B	6/13/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.31	ppb
Industrial Chemical	C-046B	12/22/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.12	ppb
Food Additive	EP1	6/15/2022	ACESULFAME-K		36	ppt
Food Additive	EP1	6/15/2022	SUCRALOSE		130	ppt
Industrial Chemical	EP1	6/15/2022	1H-BENZOTRIAZOLE		22	ppt
Industrial Chemical	EP1	6/15/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.45	ppb
Pesticide	EP1	6/15/2022	DEET		24	ppt
Pharmaceutical	EP1	6/15/2022	CAFFEINE		14	ppt
Food Additive	EP21	6/30/2022	SUCRALOSE		290	ppt

TABLE 2. 2022 SENTRY PROGRAM - ANALYTICAL RESULTS FOR DETECTIONS

General Category	Sample Point ID	Sample Date	Analyte Name	Water Quality Standard	2022 Result	Units
Industrial Chemical	EP21	6/30/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.45	ppb
Personal Care Product	EP21	6/30/2022	OXYBENZONE		120	ppt
Pesticide	EP21	6/30/2022	ISOPROTURON		26	ppt
Food Additive	EP21	12/16/2022	ACESULFAME-K		12	ppt
Food Additive	EP21	12/16/2022	SUCRALOSE		65	ppt
Industrial Chemical	EP21	12/16/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.47	ppb
Industrial Chemical	EP21	12/16/2022	NONYLPHENOL		520	ppt
Industrial Chemical	F-006A	6/30/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.15	ppb
Personal Care Product	F-006A	6/30/2022	OXYBENZONE		890	ppt
Pesticide	F-006A	6/30/2022	DACT		50	ppt
Pesticide	F-006A	6/30/2022	DEA		22	ppt
Pharmaceutical	F-006A	6/30/2022	AMOXICILLIN (SEMI-QUANT.)		260	ppt
Pharmaceutical	F-006A	6/30/2022	CARBADOX		15,000	ppt
Pharmaceutical	F-006A	6/30/2022	CODEINE		31	ppt
Industrial Chemical	F-006A	12/16/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.073	ppb
Pharmaceutical	F-006A	12/16/2022	ACETAMINOPHEN		10	ppt
Industrial Chemical	[3]W-001C	6/3/2022	1H-BENZOTRIAZOLE		59	ppt
Industrial Chemical	[3]W-001C	6/3/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.23	ppb
Pesticide	[3]W-001C	6/3/2022	DACT		49	ppt
Pesticide	[3]W-001C	6/3/2022	DIA		11	ppt
Pesticide	[3]W-001C	6/3/2022	SIMAZINE	MCL 4,000	7.5	ppt
Pharmaceutical	[3]W-001C	6/3/2022	CAFFEINE		27	ppt

TABLE 2. 2022 SENTRY PROGRAM - ANALYTICAL RESULTS FOR DETECTIONS

General Category	Sample Point ID	Sample Date	Analyte Name	Water Quality Standard	2022 Result	Units
Pharmaceutical	[3]W-001C	6/3/2022	SULFAMETHOXAZOLE		6.2	ppt
Pharmaceutical	[3]W-001C	6/3/2022	THEOBROMINE		51	ppt
PFC/PFAS/Fire Retardant	[3]W-001C	6/3/2022	PERFLUORO OCTANOIC ACID - PFOA	[2]HA 0.004	0.0027	ppt
PFC/PFAS/Fire Retardant	[3]W-001C	6/3/2022	PERFLUORO OCTANESULFONIC ACID - PFOS	[2]HA 0.02	**2.24**	ppt
Industrial Chemical	[3]W-001C	12/2/2022	1,4-DIOXANE	HA 0.35	0.112	ppb
PFC/PFAS/Fire Retardant	[3]W-001C	12/2/2022	PERFLUORO OCTANESULFONIC ACID - PFOS	[2]HA 0.02	**2.58**	ppt
PFC/PFAS/Fire Retardant	[3]W-001C	12/2/2022	PERFLUORO-1-HEXANESULFONIC ACID - PFHxS		2.54	ppt
Food Additive	[3]W-001C	12/16/2022	ACESULFAME-K		15	ppt
Industrial Chemical	[3]W-001C	12/16/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.1	ppb
Pharmaceutical	[3]W-001C	12/16/2022	PRIMIDONE		5.7	ppt
Pharmaceutical	[3]W-001C	12/16/2022	SULFAMETHOXAZOLE		6.1	ppt
Pharmaceutical	510	6/2/2022	TRIMETHOPRIM		10	ppt
Food Additive	510	6/2/2022	SUCRALOSE		80,000	ppt
Industrial Chemical	510	6/2/2022	1,4-DIOXANE	HA 0.35	**0.435**	ppb
Industrial Chemical	510	6/2/2022	4-TERT-OCTYLPHENOL		28	ppt
Industrial Chemical	510	6/2/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.25	ppb
Industrial Chemical	510	6/2/2022	TCEP		160	ppt
Industrial Chemical	510	6/2/2022	TCPP		2,900	ppt
Industrial Chemical	510	6/2/2022	TDCPP		1,500	ppt
Pesticide	510	6/2/2022	4-NONYLPHENOL- (SEMI-QUANT)		1,300	ppt
Pesticide	510	6/2/2022	DEET		31	ppt
Pesticide	510	6/2/2022	DIURON		72	ppt

TABLE 2. 2022 SENTRY PROGRAM - ANALYTICAL RESULTS FOR DETECTIONS

General Category	Sample Point ID	Sample Date	Analyte Name	Water Quality Standard	2022 Result	Units
Pesticide	510	6/2/2022	ISOPROTURON		69	ppt
Pesticide	510	6/2/2022	LINURON		28	ppt
Pesticide	510	6/2/2022	SIMAZINE	MCL 4,000	14	ppt
Pesticide	510	6/2/2022	THIABENDAZOLE		45	ppt
PFC/PFAS/Fire Retardant	510	6/2/2022	PERFLUORO OCTANESULFONIC ACID - PFOS	[2]HA 0.02	**2.88**	ppt
PFC/PFAS/Fire Retardant	510	6/2/2022	PERFLUORO OCTANOIC ACID - PFOA	[2]HA 0.004	**9.01**	ppt
PFC/PFAS/Fire Retardant	510	6/2/2022	PERFLUORO-N-HEXANOIC ACID		13.1	ppt
Pharmaceutical	510	6/2/2022	ACETAMINOPHEN		16	ppt
Pharmaceutical	510	6/2/2022	ATENOLOL		210	ppt
Pharmaceutical	510	6/2/2022	BEZAFIBRATE		13	ppt
Pharmaceutical	510	6/2/2022	BUTALBITAL		23	ppt
Pharmaceutical	510	6/2/2022	CARBAMAZEPINE		140	ppt
Pharmaceutical	510	6/2/2022	DIAZEPAM		8.7	ppt
Pharmaceutical	510	6/2/2022	DICLOFENAC		640	ppt
Pharmaceutical	510	6/2/2022	DILANTIN		42	ppt
Pharmaceutical	510	6/2/2022	DILTIAZEM		99	ppt
Pharmaceutical	510	6/2/2022	ESTRONE		11	ppt
Pharmaceutical	510	6/2/2022	ETHINYL ESTRADIOL-17 ALPHA		130	ppt
Pharmaceutical	510	6/2/2022	FLUOXETINE		86	ppt
Pharmaceutical	510	6/2/2022	GEMFIBROZIL		11	ppt
Pharmaceutical	510	6/2/2022	IOHEXOL		3,600	ppt
Pharmaceutical	510	6/2/2022	LIDOCAINE		1,500	ppt

TABLE 2. 2022 SENTRY PROGRAM - ANALYTICAL RESULTS FOR DETECTIONS

General Category	Sample Point ID	Sample Date	Analyte Name	Water Quality Standard	2022 Result	Units
Pharmaceutical	510	6/2/2022	LOPRESSOR		640	ppt
Pharmaceutical	510	6/2/2022	MECLOFENAMIC ACID		34	ppt
Pharmaceutical	510	6/2/2022	MEPROBAMATE		74	ppt
Pharmaceutical	510	6/2/2022	NAPROXEN		21	ppt
Pharmaceutical	510	6/2/2022	NORETHISTERONE		100	ppt
Pharmaceutical	510	6/2/2022	PRIMIDONE		180	ppt
Pharmaceutical	510	6/2/2022	SULFADIAZINE		44	ppt
Pharmaceutical	510	6/2/2022	SULFAMETHOXAZOLE		400	ppt
Pharmaceutical	510	6/2/2022	TESTOSTERONE		10	ppt
Pharmaceutical	510	6/2/2022	THEOPHYLLINE		17	ppt
Pharmaceutical (Metabolite of Caffeine)	510	6/2/2022	COTININE		30	ppt
Pharmaceutical (Metabolite of Caffeine)	510	6/2/2022	PARAXANTHINE (1,7-DIMETHYLXANTHINE)		9.5	ppt
Pharmaceutical (Metabolite of Nifedipene)	510	6/2/2022	DEHYDRONIFEDIPINE		5.8	ppt
PFC/PFAS/Fire Retardant	510	12/1/2022	PERFLUORO OCTANOIC ACID - PFOA	[2]HA 0.004	**6.21**	ppt
PFC/PFAS/Fire Retardant	510	12/1/2022	PERFLUORO-3-METHOXYPROPANOIC ACID		2.84	ppt
PFC/PFAS/Fire Retardant	510	12/1/2022	PERFLUORO-N-HEXANOIC ACID		9.96	ppt
PFC/PFAS/Fire Retardant	510	12/1/2022	PERFLUOROPENTANOIC ACID		17.8	ppt
Pharmaceutical	510	1/5/2023	TRANS-TESTOSTERONE		1.1	ppt
Pharmaceutical	510	1/5/2023	TRIMETHOPRIM		210	ppt
Food Additive	510	1/5/2023	ACESULFAME-K		650	ppt
Food Additive	510	1/5/2023	SUCRALOSE		78,000	ppt
Industrial Chemical	510	1/5/2023	1,4-DIOXANE	HA 0.35	**0.582**	ppb

TABLE 2. 2022 SENTRY PROGRAM - ANALYTICAL RESULTS FOR DETECTIONS

General Category	Sample Point ID	Sample Date	Analyte Name	Water Quality Standard	2022 Result	Units
Industrial Chemical	510	1/5/2023	TCEP		150	ppt
Industrial Chemical	510	1/5/2023	TCPP		1,100	ppt
Pesticide	510	1/5/2023	DEET		110	ppt
Pharmaceutical	510	1/5/2023	ACETAMINOPHEN		44	ppt
Pharmaceutical	510	1/5/2023	ATENOLOL		460	ppt
Pharmaceutical	510	1/5/2023	AZITHROMYCIN		220	ppt
Pharmaceutical	510	1/5/2023	BEZAFIBRATE		19	ppt
Pharmaceutical	510	1/5/2023	CARBAMAZEPINE		240	ppt
Pharmaceutical	510	1/5/2023	DICLOFENAC		760	ppt
Pharmaceutical	510	1/5/2023	DILANTIN		75	ppt
Pharmaceutical	510	1/5/2023	DILTIAZEM		76	ppt
Pharmaceutical	510	1/5/2023	ESTRONE		43	ppt
Pharmaceutical	510	1/5/2023	FLUOXETINE		71	ppt
Pharmaceutical	510	1/5/2023	GEMFIBROZIL		420	ppt
Pharmaceutical	510	1/5/2023	LINCOMYCIN		0.12	ppt
Pharmaceutical	510	1/5/2023	MEPROBAMATE		44	ppt
Pharmaceutical	510	1/5/2023	NAPROXEN		380	ppt
Pharmaceutical	510	1/5/2023	NICOTINE		72	ppt
Pharmaceutical	510	1/5/2023	PHENAZONE		7.8	ppt
Pharmaceutical	510	1/5/2023	PRIMIDONE		450	ppt
Pharmaceutical	510	1/5/2023	PROGESTERONE		0.45	ppt
Pharmaceutical	510	1/5/2023	SALICYLIC ACID		200	ppt

TABLE 2. 2022 SENTRY PROGRAM - ANALYTICAL RESULTS FOR DETECTIONS

General Category	Sample Point ID	Sample Date	Analyte Name	Water Quality Standard	2022 Result	Units
Pharmaceutical	510	1/5/2023	SULFADIAZINE		6.5	ppt
Pharmaceutical	510	1/5/2023	SULFADIMETHOXINE		0.47	ppt
Pharmaceutical	510	1/5/2023	SULFAMETHAZINE		4	ppt
Pharmaceutical	510	1/5/2023	SULFAMETHOXAZOLE		730	ppt
Pharmaceutical	510	1/5/2023	SULFASALAZINE		80	ppt
Pharmaceutical	510	1/5/2023	THEOPHYLLINE		54	ppt
Pharmaceutical	510	1/5/2023	ESTRADIOL (17B-ESTRADIOL)		8.7	ppt
Pharmaceutical (Metabolite of Caffeine)	510	1/5/2023	COTININE		23	ppt
Pharmaceutical (Metabolite of Caffeine)	510	1/5/2023	PARAXANTHINE (1,7-DIMETHYLXANTHINE)		100	ppt
Food Additive	522	6/2/2022	SUCRALOSE		32,000	ppt
Industrial Chemical	522	6/2/2022	1,4-DIOXANE	HA 0.35	**0.574**	ppb
Industrial Chemical	522	6/2/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.26	ppb
Industrial Chemical	522	6/2/2022	TCEP		71	ppt
Industrial Chemical	522	6/2/2022	TCPP		1,100	ppt
Industrial Chemical	522	6/2/2022	TDCPP		480	ppt
Pesticide	522	6/2/2022	DEET		14	ppt
Pesticide	522	6/2/2022	DIURON		30	ppt
Pesticide	522	6/2/2022	ISOPROTURON		39	ppt
Pesticide	522	6/2/2022	LINURON		7.4	ppt
Pesticide	522	6/2/2022	PROPAZINE		5.6	ppt
Pesticide	522	6/2/2022	THIABENDAZOLE		12	ppt
PFC/PFAS/Fire Retardant	522	6/2/2022	PERFLUORO OCTANESULFONIC ACID - PFOS	[2]HA 0.02	**32.2**	ppt

TABLE 2. 2022 SENTRY PROGRAM - ANALYTICAL RESULTS FOR DETECTIONS

General Category	Sample Point ID	Sample Date	Analyte Name	Water Quality Standard	2022 Result	Units
PFC/PFAS/Fire Retardant	522	6/2/2022	PERFLUORO OCTANOIC ACID - PFOA	[2]HA 0.004	**15.3**	ppt
PFC/PFAS/Fire Retardant	522	6/2/2022	PERFLUORO-1-BUTANESULFONIC ACID - PFBS	[4]HA 2,000	8.97	ppt
PFC/PFAS/Fire Retardant	522	6/2/2022	PERFLUORO-1-HEXANESULFONIC ACID - PFHxS		14.3	ppt
PFC/PFAS/Fire Retardant	522	6/2/2022	PERFLUOROHEPTANOIC ACID - PFHpA		6.34	ppt
PFC/PFAS/Fire Retardant	522	6/2/2022	PERFLUORO-N-HEXANOIC ACID		18.4	ppt
PFC/PFAS/Fire Retardant	522	6/2/2022	PERFLUORO-N-NONANOIC ACID - PFNA		2.2	ppt
Pharmaceutical	522	6/2/2022	ACETAMINOPHEN		24	ppt
Pharmaceutical	522	6/2/2022	ATENOLOL		65	ppt
Pharmaceutical	522	6/2/2022	BUTALBITAL		12	ppt
Pharmaceutical	522	6/2/2022	CARBAMAZEPINE		62	ppt
Pharmaceutical	522	6/2/2022	DICLOFENAC		32	ppt
Pharmaceutical	522	6/2/2022	DILANTIN		23	ppt
Pharmaceutical	522	6/2/2022	ETHINYL ESTRADIOL-17 ALPHA		28	ppt
Pharmaceutical	522	6/2/2022	FLUOXETINE		19	ppt
Pharmaceutical	522	6/2/2022	IOHEXOL		520	ppt
Pharmaceutical	522	6/2/2022	LOPRESSOR		160	ppt
Pharmaceutical	522	6/2/2022	MEPROBAMATE		30	ppt
Pharmaceutical	522	6/2/2022	NORETHISTERONE		19	ppt
Pharmaceutical	522	6/2/2022	PRIMIDONE		120	ppt
Pharmaceutical	522	6/2/2022	SALICYLIC ACID		260	ppt
Pharmaceutical	522	6/2/2022	SULFAMETHOXAZOLE		7.4	ppt
Pharmaceutical (Metabolite of Caffeine)	522	6/2/2022	COTININE		10	ppt

TABLE 2. 2022 SENTRY PROGRAM - ANALYTICAL RESULTS FOR DETECTIONS

General Category	Sample Point ID	Sample Date	Analyte Name	Water Quality Standard	2022 Result	Units
PFC/PFAS/Fire Retardant	522	12/1/2022	PERFLUORO BUTANOIC ACID - PFBA		9.5	ppt
PFC/PFAS/Fire Retardant	522	12/1/2022	PERFLUORO OCTANESULFONIC ACID - PFOS	[2]HA 0.02	**16.7**	ppt
PFC/PFAS/Fire Retardant	522	12/1/2022	PERFLUORO OCTANOIC ACID - PFOA	[2]HA 0.004	**10.8**	ppt
PFC/PFAS/Fire Retardant	522	12/1/2022	PERFLUORO-1-HEXANESULFONIC ACID - PFHxS		7.1	ppt
PFC/PFAS/Fire Retardant	522	12/1/2022	PERFLUOROHEPTANOIC ACID - PFHpA		3.98	ppt
PFC/PFAS/Fire Retardant	522	12/1/2022	PERFLUORO-N-HEXANOIC ACID		13	ppt
PFC/PFAS/Fire Retardant	522	12/1/2022	PERFLUOROPENTANOIC ACID		23.8	ppt
PFC/PFAS/Fire Retardant	522	12/1/2022	PERFLUORO-1-BUTANESULFONIC ACID - PFBS	[4]HA 2,000	5.27	ppt
Food Additive	522	1/5/2023	ACESULFAME-K		280	ppt
Food Additive	522	1/5/2023	SUCRALOSE		26,000	ppt
Industrial Chemical	522	1/5/2023	1,4-DIOXANE	HA 0.35	**0.799**	ppb
Industrial Chemical	522	1/5/2023	CHROMIUM, HEXAVALENT	[1]MCL 100	0.094	ppb
Industrial Chemical	522	1/5/2023	TCEP		57	ppt
Industrial Chemical	522	1/5/2023	TCPP		440	ppt
Pesticide	522	1/5/2023	DEET		17	ppt
Pharmaceutical	522	1/5/2023	ATENOLOL		99	ppt
Pharmaceutical	522	1/5/2023	AZITHROMYCIN		110	ppt
Pharmaceutical	522	1/5/2023	BEZAFIBRATE		3.9	ppt
Pharmaceutical	522	1/5/2023	CARBAMAZEPINE		130	ppt
Pharmaceutical	522	1/5/2023	DICLOFENAC		12	ppt
Pharmaceutical	522	1/5/2023	DILANTIN		37	ppt
Pharmaceutical	522	1/5/2023	DILTIAZEM		1	ppt

TABLE 2. 2022 SENTRY PROGRAM - ANALYTICAL RESULTS FOR DETECTIONS

General Category	Sample Point ID	Sample Date	Analyte Name	Water Quality Standard	2022 Result	Units
Pharmaceutical	522	1/5/2023	ESTRONE		0.66	ppt
Pharmaceutical	522	1/5/2023	FLUOXETINE		29	ppt
Pharmaceutical	522	1/5/2023	GEMFIBROZIL		44	ppt
Pharmaceutical	522	1/5/2023	MEPROBAMATE		23	ppt
Pharmaceutical	522	1/5/2023	NICOTINE		17	ppt
Pharmaceutical	522	1/5/2023	PHENAZONE		1.9	ppt
Pharmaceutical	522	1/5/2023	PRIMIDONE		210	ppt
Pharmaceutical	522	1/5/2023	PROGESTERONE		0.15	ppt
Pharmaceutical	522	1/5/2023	SALICYLIC ACID		130	ppt
Pharmaceutical	522	1/5/2023	SULFADIAZINE		1.3	ppt
Pharmaceutical	522	1/5/2023	SULFAMETHOXAZOLE		370	ppt
Pharmaceutical	522	1/5/2023	SULFASALAZINE		20	ppt
Pharmaceutical	522	1/5/2023	THEOPHYLLINE		35	ppt
Pharmaceutical (Metabolite of Caffeine)	522	1/5/2023	COTININE		6.5	ppt
Pharmaceutical (Metabolite of Caffeine)	522	1/5/2023	PARAXANTHINE (1,7-DIMETHYLXANTHINE)		39	ppt
Pharmaceutical	522	1/5/2023	TRANS-TESTOSTERONE		0.38	ppt
Pharmaceutical	522	1/5/2023	TRIMETHOPRIM		15	ppt
Food Additive	A-055A	6/30/2022	SUCRALOSE		170	ppt
Industrial Chemical	A-055A	6/30/2022	4-TERT-OCTYLPHENOL		32	ppt
Industrial Chemical	A-055A	6/30/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.079	ppb
Pesticide	A-055A	6/30/2022	ATRAZINE	MCL 3,000	16	ppt
Pesticide	A-055A	6/30/2022	DACT		35	ppt

TABLE 2. 2022 SENTRY PROGRAM - ANALYTICAL RESULTS FOR DETECTIONS

General Category	Sample Point ID	Sample Date	Analyte Name	Water Quality Standard	2022 Result	Units
Pesticide	A-055A	6/30/2022	DEA		9.3	ppt
Pesticide	A-055A	6/30/2022	DIA		65	ppt
Pesticide	A-055A	6/30/2022	ISOPROTURON		26	ppt
Pesticide	A-055A	6/30/2022	SIMAZINE	MCL 4,000	7.3	ppt
Pharmaceutical	A-055A	6/30/2022	AMOXICILLIN (SEMI-QUANT.)		55	ppt
Pharmaceutical	A-055A	6/30/2022	CODEINE		11	ppt
Pharmaceutical	A-055A	6/30/2022	IOHEXOL		25	ppt
Industrial Chemical	A-055A	12/22/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.04	ppb
PFC/PFAS/Fire Retardant	A-055A	12/22/2022	PERFLUORO BUTANOIC ACID - PFBA		3.43	ppt
PFC/PFAS/Fire Retardant	A-055A	12/22/2022	PERFLUORO OCTANESULFONIC ACID - PFOS	[2]HA 0.02	**4.74**	ppt
PFC/PFAS/Fire Retardant	A-055A	12/22/2022	PERFLUORO OCTANOIC ACID - PFOA	[2]HA 0.004	**7.24**	ppt
PFC/PFAS/Fire Retardant	A-055A	12/22/2022	PERFLUORO-1-BUTANESULFONIC ACID - PFBS	[4]HA 2,000	7.68	ppt
PFC/PFAS/Fire Retardant	A-055A	12/22/2022	PERFLUORO-1-HEXANESULFONIC ACID - PFHxS		6.73	ppt
PFC/PFAS/Fire Retardant	A-055A	12/22/2022	PERFLUOROHEPTANOIC ACID - PFHpA		2.65	ppt
PFC/PFAS/Fire Retardant	A-055A	12/22/2022	PERFLUORO-N-HEXANOIC ACID		2.8	ppt
PFC/PFAS/Fire Retardant	A-055A	12/22/2022	PERFLUOROPENTANOIC ACID		3.25	ppt
Industrial Chemical	EW-007A	6/1/2022	1,4-DIOXANE	HA 0.35	**0.629**	ppb
PFC/PFAS/Fire Retardant	EW-007A	6/1/2022	PERFLUORO OCTANESULFONIC ACID - PFOS	[2]HA 0.02	**57.4**	ppt
PFC/PFAS/Fire Retardant	EW-007A	6/1/2022	PERFLUORO OCTANOIC ACID - PFOA	[2]HA 0.004	**23.1**	ppt
PFC/PFAS/Fire Retardant	EW-007A	6/1/2022	PERFLUORO-1-BUTANESULFONIC ACID - PFBS	[4]HA 2,000	16.3	ppt
PFC/PFAS/Fire Retardant	EW-007A	6/1/2022	PERFLUORO-1-HEXANESULFONIC ACID - PFHxS		50	ppt
PFC/PFAS/Fire Retardant	EW-007A	6/1/2022	PERFLUOROHEPTANOIC ACID - PFHpA		9.4	ppt
PFC/PFAS/Fire Retardant	EW-007A	6/1/2022	PERFLUORO-N-HEXANOIC ACID		26.4	ppt

TABLE 2. 2022 SENTRY PROGRAM - ANALYTICAL RESULTS FOR DETECTIONS

General Category	Sample Point ID	Sample Date	Analyte Name	Water Quality Standard	2022 Result	Units
PFC/PFAS/Fire Retardant	EW-007A	6/1/2022	PERFLUORO-N-NONANOIC ACID - PFNA		2.03	ppt
Food Additive	EW-007A	6/1/2022	ACESULFAME-K		23	ppt
Food Additive	EW-007A	6/1/2022	SUCRALOSE		1,200	ppt
Industrial Chemical	EW-007A	6/1/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.29	ppb
Pesticide	EW-007A	6/1/2022	ATRAZINE	MCL 3,000	5	ppt
Pesticide	EW-007A	6/1/2022	DIURON		8.7	ppt
Pharmaceutical	EW-007A	6/1/2022	AMOXICILLIN (SEMI-QUANT.)		34	ppt
Pharmaceutical	EW-007A	6/1/2022	CARBAMAZEPINE		97	ppt
Pharmaceutical	EW-007A	6/1/2022	PRIMIDONE		73	ppt
Pharmaceutical	EW-007A	6/1/2022	SULFAMETHOXAZOLE		21	ppt
Pharmaceutical	EW-007A	6/1/2022	THEOBROMINE		57	ppt
Food Additive	EW-007A	12/20/2022	ACESULFAME-K		81	ppt
Food Additive	EW-007A	12/20/2022	SUCRALOSE		2,500	ppt
Industrial Chemical	EW-007A	12/20/2022	1,4-DIOXANE	HA 0.35	**0.756**	ppb
Industrial Chemical	EW-007A	12/20/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.14	ppb
PFC/PFAS/Fire Retardant	EW-007A	12/20/2022	PERFLUORO BUTANOIC ACID - PFBA		10.4	ppt
PFC/PFAS/Fire Retardant	EW-007A	12/20/2022	PERFLUORO OCTANESULFONIC ACID - PFOS	[2]HA 0.02	**13.6**	ppt
PFC/PFAS/Fire Retardant	EW-007A	12/20/2022	PERFLUORO OCTANOIC ACID - PFOA	[2]HA 0.004	**12.6**	ppt
PFC/PFAS/Fire Retardant	EW-007A	12/20/2022	PERFLUORO-1-BUTANESULFONIC ACID - PFBS	[4]HA 2,000	13.5	ppt
PFC/PFAS/Fire Retardant	EW-007A	12/20/2022	PERFLUORO-1-HEXANESULFONIC ACID - PFHxS		20.1	ppt
PFC/PFAS/Fire Retardant	EW-007A	12/20/2022	PERFLUOROHEPTANOIC ACID - PFHpA		5.38	ppt
PFC/PFAS/Fire Retardant	EW-007A	12/20/2022	PERFLUORO-N-HEXANOIC ACID		23.5	ppt

TABLE 2. 2022 SENTRY PROGRAM - ANALYTICAL RESULTS FOR DETECTIONS

General Category	Sample Point ID	Sample Date	Analyte Name	Water Quality Standard	2022 Result	Units
PFC/PFAS/Fire Retardant	EW-007A	12/20/2022	PERFLUOROPENTANESULFONIC ACID		2.48	ppt
PFC/PFAS/Fire Retardant	EW-007A	12/20/2022	PERFLUOROPENTANOIC ACID		42.4	ppt
Pharmaceutical	EW-007A	12/20/2022	CARBAMAZEPINE		110	ppt
Pharmaceutical	EW-007A	12/20/2022	DIAZEPAM		1.9	ppt
Pharmaceutical	EW-007A	12/20/2022	DILANTIN		7.9	ppt
Pharmaceutical	EW-007A	12/20/2022	PHENAZONE		1.1	ppt
Pharmaceutical	EW-007A	12/20/2022	PRIMIDONE		220	ppt
Pharmaceutical	EW-007A	12/20/2022	SULFAMETHOXAZOLE		32	ppt
Pharmaceutical (Metabolite of Caffeine)	EW-007A	12/20/2022	PARAXANTHINE (1,7-DIMETHYLXANTHINE)		6.8	ppt
Industrial Chemical	TA-030A	6/1/2022	1,4-DIOXANE	HA 0.35	**2.35**	ppb
PFC/PFAS/Fire Retardant	TA-030A	6/1/2022	PERFLUORO OCTANESULFONIC ACID - PFOS	[2]HA 0.02	**26.2**	ppt
PFC/PFAS/Fire Retardant	TA-030A	6/1/2022	PERFLUORO OCTANOIC ACID - PFOA	[2]HA 0.004	**8.56**	ppt
PFC/PFAS/Fire Retardant	TA-030A	6/1/2022	PERFLUORO-1-BUTANESULFONIC ACID - PFBS	[4]HA 2,000	27.9	ppt
PFC/PFAS/Fire Retardant	TA-030A	6/1/2022	PERFLUORO-1-HEXANESULFONIC ACID - PFHxS		145	ppt
PFC/PFAS/Fire Retardant	TA-030A	6/1/2022	PERFLUOROHEPTANOIC ACID - PFHpA		7.03	ppt
PFC/PFAS/Fire Retardant	TA-030A	6/1/2022	PERFLUORO-N-HEXANOIC ACID		26.3	ppt
Industrial Chemical	TA-030A	6/23/2022	1H-BENZOTRIAZOLE		12	ppt
Personal Care Product	TA-030A	6/23/2022	TRICLOSAN		53	ppt
Industrial Chemical	TA-030A	6/23/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	4.3	ppb
Personal Care Product	TA-030A	6/23/2022	ETHYLPARABEN		22	ppt
Pesticide	TA-030A	6/23/2022	BROMACIL		20	ppt
Pesticide	TA-030A	6/23/2022	DEA		13	ppt

TABLE 2. 2022 SENTRY PROGRAM - ANALYTICAL RESULTS FOR DETECTIONS

General Category	Sample Point ID	Sample Date	Analyte Name	Water Quality Standard	2022 Result	Units
Pesticide	TA-030A	6/23/2022	DEET		19	ppt
Pharmaceutical	TA-030A	6/23/2022	ANDROSTENEDIONE		15	ppt
Pharmaceutical	TA-030A	6/23/2022	CAFFEINE		56	ppt
Pharmaceutical	TA-030A	6/23/2022	NIFEDIPINE		24	ppt
Pharmaceutical	TA-030A	6/23/2022	NORETHISTERONE		12	ppt
Pharmaceutical	TA-030A	6/23/2022	SALICYLIC ACID		230	ppt
Pharmaceutical	TA-030A	6/23/2022	THEOPHYLLINE		14	ppt
Pharmaceutical (Metabolite of Caffeine)	TA-030A	6/23/2022	PARAXANTHINE (1,7-DIMETHYLXANTHINE)		7.8	ppt
Industrial Chemical	TA-030A	12/6/2022	1,4-DIOXANE	HA 0.35	**1.67**	ppb
PFC/PFAS/Fire Retardant	TA-030A	12/6/2022	PERFLUORO BUTANOIC ACID - PFBA		6.39	ppt
PFC/PFAS/Fire Retardant	TA-030A	12/6/2022	PERFLUORO OCTANESULFONIC ACID - PFOS	[2]HA 0.02	**27.2**	ppt
PFC/PFAS/Fire Retardant	TA-030A	12/6/2022	PERFLUORO OCTANOIC ACID - PFOA	[2]HA 0.004	**8.35**	ppt
PFC/PFAS/Fire Retardant	TA-030A	12/6/2022	PERFLUORO-1-BUTANESULFONIC ACID - PFBS	[4]HA 2,000	17.8	ppt
PFC/PFAS/Fire Retardant	TA-030A	12/6/2022	PERFLUORO-1-HEXANESULFONIC ACID - PFHxS		107	ppt
PFC/PFAS/Fire Retardant	TA-030A	12/6/2022	PERFLUOROHEPTANOIC ACID - PFHpA		5.81	ppt
PFC/PFAS/Fire Retardant	TA-030A	12/6/2022	PERFLUORO-N-HEXANOIC ACID		21.6	ppt
PFC/PFAS/Fire Retardant	TA-030A	12/6/2022	PERFLUOROPENTANESULFONIC ACID		17.3	ppt
PFC/PFAS/Fire Retardant	TA-030A	12/6/2022	PERFLUOROPENTANOIC ACID		12.7	ppt
PFC/PFAS/Fire Retardant	TA-030A	12/20/2022	1H,1H, 2H, 2H-PERFLUOROOCTANE SULFONIC A		3.08	ppt
Food Additive	Y-001B	6/23/2022	SUCRALOSE		1,700	ppt
Industrial Chemical	Y-001B	6/23/2022	1,4-DIOXANE	HA 0.35	**0.69**	ppb
Industrial Chemical	Y-001B	6/23/2022	1H-BENZOTRIAZOLE		590	ppt

TABLE 2. 2022 SENTRY PROGRAM - ANALYTICAL RESULTS FOR DETECTIONS

General Category	Sample Point ID	Sample Date	Analyte Name	Water Quality Standard	2022 Result	Units
Industrial Chemical	Y-001B	6/23/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.16	ppb
Pesticide	Y-001B	6/23/2022	ATRAZINE	MCL 3,000	6.1	ppt
Pesticide	Y-001B	6/23/2022	DEA		5.1	ppt
Pesticide	Y-001B	6/23/2022	DEET		11	ppt
Pesticide	Y-001B	6/23/2022	DIA		6.3	ppt
Pesticide	Y-001B	6/23/2022	SIMAZINE	MCL 4,000	5.2	ppt
PFC/PFAS/Fire Retardant	Y-001B	6/23/2022	PERFLUORO OCTANESULFONIC ACID - PFOS	[2]HA 0.02	**103**	ppt
PFC/PFAS/Fire Retardant	Y-001B	6/23/2022	PERFLUORO OCTANOIC ACID - PFOA	[2]HA 0.004	**18.8**	ppt
PFC/PFAS/Fire Retardant	Y-001B	6/23/2022	PERFLUORO-1-BUTANESULFONIC ACID - PFBS	[4]HA 2,000	7.52	ppt
PFC/PFAS/Fire Retardant	Y-001B	6/23/2022	PERFLUORO-1-HEXANESULFONIC ACID - PFHxS		65.2	ppt
PFC/PFAS/Fire Retardant	Y-001B	6/23/2022	PERFLUOROHEPTANOIC ACID - PFHpA		5.61	ppt
PFC/PFAS/Fire Retardant	Y-001B	6/23/2022	PERFLUORO-N-HEXANOIC ACID		10.7	ppt
PFC/PFAS/Fire Retardant	Y-001B	6/23/2022	PERFLUORO-N-NONANOIC ACID - PFNA		2.07	ppt
Pharmaceutical	Y-001B	6/23/2022	AMOXICILLIN (SEMI-QUANT.)		20	ppt
Pharmaceutical	Y-001B	6/23/2022	CAFFEINE		54	ppt
Pharmaceutical	Y-001B	6/23/2022	CARBAMAZEPINE		49	ppt
Pharmaceutical	Y-001B	6/23/2022	PRIMIDONE		22	ppt
Pharmaceutical	Y-001B	6/23/2022	SULFAMETHOXAZOLE		7.2	ppt
Pharmaceutical	Y-001B	6/23/2022	THEOPHYLLINE		22	ppt
Pharmaceutical (Metabolite of Caffeine)	Y-001B	6/23/2022	PARAXANTHINE (1,7-DIMETHYLXANTHINE)		10	ppt
Food Additive	Y-001B	12/15/2022	ACESULFAME-K		28	ppt
Food Additive	Y-001B	12/15/2022	SUCRALOSE		35	ppt

TABLE 2. 2022 SENTRY PROGRAM - ANALYTICAL RESULTS FOR DETECTIONS

General Category	Sample Point ID	Sample Date	Analyte Name	Water Quality Standard	2022 Result	Units
Industrial Chemical	Y-001B	12/15/2022	1,4-DIOXANE	HA 0.35	**0.704**	ppb
Industrial Chemical	Y-001B	12/15/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.18	ppb
PFC/PFAS/Fire Retardant	Y-001B	12/15/2022	PERFLUORO BUTANOIC ACID - PFBA		9.4	ppt
PFC/PFAS/Fire Retardant	Y-001B	12/15/2022	PERFLUORO OCTANESULFONIC ACID - PFOS	[2]HA 0.02	**84.4**	ppt
PFC/PFAS/Fire Retardant	Y-001B	12/15/2022	PERFLUORO OCTANOIC ACID - PFOA	[2]HA 0.004	**15.4**	ppt
PFC/PFAS/Fire Retardant	Y-001B	12/15/2022	PERFLUORO-1-BUTANESULFONIC ACID - PFBS	[4]HA 2,000	6.38	ppt
PFC/PFAS/Fire Retardant	Y-001B	12/15/2022	PERFLUORO-1-HEXANESULFONIC ACID - PFHxS		52.5	ppt
PFC/PFAS/Fire Retardant	Y-001B	12/15/2022	PERFLUOROHEPTANOIC ACID - PFHpA		5.13	ppt
PFC/PFAS/Fire Retardant	Y-001B	12/15/2022	PERFLUORO-N-HEXANOIC ACID		8.76	ppt
PFC/PFAS/Fire Retardant	Y-001B	12/15/2022	PERFLUOROPENTANESULFONIC ACID		4.06	ppt
PFC/PFAS/Fire Retardant	Y-001B	12/15/2022	PERFLUOROPENTANOIC ACID		6.68	ppt
Pharmaceutical	Y-001B	12/15/2022	CARBAMAZEPINE		62	ppt
Pharmaceutical	Y-001B	12/15/2022	DILANTIN		6.1	ppt
Pharmaceutical	Y-001B	12/15/2022	PHENAZONE		1.6	ppt
Pharmaceutical	Y-001B	12/15/2022	PRIMIDONE		42	ppt
Pharmaceutical	Y-001B	12/15/2022	SULFAMETHOXAZOLE		6.6	ppt
Food Additive	Y-004A	6/23/2022	SUCRALOSE		1,800	ppt
Industrial Chemical	Y-004A	6/23/2022	1,4-DIOXANE	HA 0.35	**0.767**	ppb
Industrial Chemical	Y-004A	6/23/2022	1H-BENZOTRIAZOLE		300	ppt
Industrial Chemical	Y-004A	6/23/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.14	ppb
Pesticide	Y-004A	6/23/2022	DIA		7.4	ppt
Pesticide	Y-004A	6/23/2022	DIURON		7.2	ppt

TABLE 2. 2022 SENTRY PROGRAM - ANALYTICAL RESULTS FOR DETECTIONS

General Category	Sample Point ID	Sample Date	Analyte Name	Water Quality Standard	2022 Result	Units
Pesticide	Y-004A	6/23/2022	SIMAZINE	MCL 4,000	29	ppt
PFC/PFAS/Fire Retardant	Y-004A	6/23/2022	PERFLUORO OCTANESULFONIC ACID - PFOS	[2]HA 0.02	**65.2**	ppt
PFC/PFAS/Fire Retardant	Y-004A	6/23/2022	PERFLUORO OCTANOIC ACID - PFOA	[2]HA 0.004	**20.1**	ppt
PFC/PFAS/Fire Retardant	Y-004A	6/23/2022	PERFLUORO-1-BUTANESULFONIC ACID - PFBS	[4]HA 2,000	11.8	ppt
PFC/PFAS/Fire Retardant	Y-004A	6/23/2022	PERFLUORO-1-HEXANESULFONIC ACID - PFHxS		38.3	ppt
PFC/PFAS/Fire Retardant	Y-004A	6/23/2022	PERFLUOROHEPTANOIC ACID - PFHpA		5.3	ppt
PFC/PFAS/Fire Retardant	Y-004A	6/23/2022	PERFLUORO-N-HEXANOIC ACID		13.4	ppt
PFC/PFAS/Fire Retardant	Y-004A	6/23/2022	PERFLUORO-N-NONANOIC ACID - PFNA		2.54	ppt
Pharmaceutical	Y-004A	6/23/2022	AMOXICILLIN (SEMI-QUANT.)		210	ppt
Pharmaceutical	Y-004A	6/23/2022	CAFFEINE		22	ppt
Pharmaceutical	Y-004A	6/23/2022	CARBAMAZEPINE		97	ppt
Pharmaceutical	Y-004A	6/23/2022	CARISOPRODOL		9.5	ppt
Pharmaceutical	Y-004A	6/23/2022	MEPROBAMATE		9.8	ppt
Pharmaceutical	Y-004A	6/23/2022	PRIMIDONE		46	ppt
Pharmaceutical	Y-004A	6/23/2022	SULFAMETHOXAZOLE		31	ppt
Food Additive	Y-004A	12/15/2022	ACESULFAME-K		32	ppt
Food Additive	Y-004A	12/15/2022	SUCRALOSE		850	ppt
Industrial Chemical	Y-004A	12/15/2022	1,4-DIOXANE	HA 0.35	**0.924**	ppb
Industrial Chemical	Y-004A	12/15/2022	CHROMIUM, HEXAVALENT	[1]MCL 100	0.18	ppb
PFC/PFAS/Fire Retardant	Y-004A	12/15/2022	PERFLUORO BUTANOIC ACID - PFBA		13.7	ppt
PFC/PFAS/Fire Retardant	Y-004A	12/15/2022	PERFLUORO OCTANESULFONIC ACID - PFOS	[2]HA 0.02	**59.8**	ppt
PFC/PFAS/Fire Retardant	Y-004A	12/15/2022	PERFLUORO OCTANOIC ACID - PFOA	[2]HA 0.004	**19.9**	ppt

TABLE 2. 2022 SENTRY PROGRAM - ANALYTICAL RESULTS FOR DETECTIONS

General Category	Sample Point ID	Sample Date	Analyte Name	Water Quality Standard	2022 Result	Units
PFC/PFAS/Fire Retardant	Y-004A	12/15/2022	PERFLUORO-1-BUTANESULFONIC ACID - PFBS	[4]HA 2,000	10.9	ppt
PFC/PFAS/Fire Retardant	Y-004A	12/15/2022	PERFLUORO-1-HEXANESULFONIC ACID - PFHxS		33.2	ppt
PFC/PFAS/Fire Retardant	Y-004A	12/15/2022	PERFLUOROHEPTANOIC ACID - PFHpA		3.7	ppt
PFC/PFAS/Fire Retardant	Y-004A	12/15/2022	PERFLUORO-N-HEXANOIC ACID		11.6	ppt
PFC/PFAS/Fire Retardant	Y-004A	12/15/2022	PERFLUORO-N-NONANOIC ACID - PFNA		2.34	ppt
PFC/PFAS/Fire Retardant	Y-004A	12/15/2022	PERFLUOROPENTANESULFONIC ACID		3.44	ppt
PFC/PFAS/Fire Retardant	Y-004A	12/15/2022	PERFLUOROPENTANOIC ACID		11.6	ppt
Pharmaceutical	Y-004A	12/15/2022	CARBAMAZEPINE		130	ppt
Pharmaceutical	Y-004A	12/15/2022	DILANTIN		20	ppt
Pharmaceutical	Y-004A	12/15/2022	MEPROBAMATE		14	ppt

TABLE 2. 2022 SENTRY PROGRAM - ANALYTICAL RESULTS FOR DETECTIONS

General Category	Sample Point ID	Sample Date	Analyte Name	Water Quality Standard	2022 Result	Units
Pharmaceutical	Y-004A	12/15/2022	PHENAZONE		1.9	ppt
Pharmaceutical	Y-004A	12/15/2022	PRIMIDONE		92	ppt
Pharmaceutical	Y-004A	12/15/2022	SULFAMETHOXAZOLE		35	ppt

Footnotes/ Acronyms/Abbreviations:

Water Served: Drinking water served to Tucson Water customers; Active potable well

Bold Font indicates the sample result exceeds the non-enforceable HA

[1]Total Chromium MCL =100 ppb; There is **no** published MCL for Hexavalent Chromium. Chromium naturally occurs in the environment primarily in two valence states: Trivalent Chromium (Cr III) and Hexavalent Chromium (Cr VI).

[2] On 6/15/2022, EPA reduced the non-enforceable HA for PFOA = 0.004 ppt (Interim) and for PFOS = 0.02 ppt (Interim). On April 14, 2023, EPA **proposed** Maximum Contaminant Levels (MCLs) for six PFAS in drinking water. EPA's Proposed Maximum Contaminant Level for PFOA and PFOS as individual compounds = 4.0 ppt.

[3]W-001C Potable Source for Silverbell West System PWS AZ0410162; Customers treat their drinking water using a pitcher/filter with a PFOS removal rate of 99.8%.

[4]On 6/15/2022, EPA established an HA for PFBS = 2,000 ppt (Final)

CEC = Contaminant of Emerging Concern

HA = Health Advisory; An estimate of acceptable drinking water level for a chemical substance based on health effects information; An HA is not legally enforceable but serves as technical guidance.

MCL = Maximum Contaminant Level; The highest level of a contaminant that is allowed in drinking water; An MCL is an enforceable standard.

ppb = parts per billion

ppt = parts per trillion