Quarterly Report

Calendar Year 2023 – Fourth Quarter, October 1 – December 31, 2023

Prepared by:

Carlsbad Environmental Monitoring & Research Center
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Field Programs - Radiation Safety Group

WIPP Underground Effluent Monitoring (Station A and Station B)

From October 1st to December 31st, a total of 118 filters from the primary skid at Station A, of which 94 were sample filters, 12 were trip blanks and 12 were filter blanks, were collected. In addition, 119 filters were collected from the backup skid at Station A (95 sample filters, 12 trip blank filters and 12 filter blanks). Ninety-six filters were collected from the primary skid at Station B, (72 sample filters, 12 trip blanks and 12 filter blanks). Ninety-six filters were collected from Station B backup (72 sample filters, 12 trip blanks and 12 filter blanks), during the same time period.

All 118 filters from the primary skid at Station A have been processed (gravimetrics, sample flow volume, and mass concentration have been calculated in the Field Programs (FP) data package) and transferred to the Radiochemistry group (RC). All 119 of the Station A backup filters have been processed and transferred to the Environmental Chemistry group (EC). All 192 filters from each skid (primary and backup) at Station B have been processed and transferred to RC and EC, respectively.

Ambient Air Sampling

From October 1st to December 31st, 12 ambient air samples were collected from the six perimeter and regional continuous sampling stations (On-Site, Near Field, Cactus Flats, WIPP East, Carlsbad, and Loving) using a high-volume sampler (HiVol). All filter samples have been processed (gravimetrics, total air flow values, and notes of any irregularities) by FP and transferred to RC.

Subtask - Non-Radiological analyses

Four Whatman-41 filters and 4 trip blank filters were collected from October 1st to December 31st, from the 2 sampling sites (Near Field, Cactus Flats) using a high-volume sampler. All filter samples have been processed (total air flow values and notes of any irregularities) by FP and transferred to EC.

Soil sampling

Nine soil samples were collected in the 4th quarter and processing has begun.

Surface Water Monitoring

From October 1st to December 31st, a total of 9 samples, 8 surface water samples and 1 trip blank sample, were collected.

Drinking Water Monitoring

From October 1st to December 31st, 9 samples, 7 drinking water samples and 2 blanks, were collected.

Sediment Monitoring

Four sediment samples were collected from October 1st to December 31st.

Nuclear Materials Management and Safeguards

From October 1st to December 31st the Radiation Safety group (RS) has collected and bulked radioactive waste from NMSU, LANL and the WIPP Labs groups working in the CEMRC facility. Radiation Safety (RS) has performed monthly surveys of all laboratories where radioactive materials are present, including smears and dose rate measurements. All fume hoods are face-velocity checked quarterly. The date of the last inspection was December 21, 2023. Several survey instruments have been sent to Ludlum Corporation for calibration.

Radiochemistry Group

WIPP Underground Effluent Monitoring (Station A and Station B)

Gross alpha and beta activities on individual filters collected from station A, taken immediately before, and Station B, taken after the high-efficiency particulate air (HEPA) filtration, were counted using a low-background gas proportional counter (Protean Instruments) for 1200 minutes (20 hours). The analysis of all filters from Station A and Station B has been completed through January 2024. The complete results for gross alpha and gross beta counts on FAS filters from Station A and Station B through January 2024 were submitted to CBFO on February 12, 2024.

Between October 1st and December 31st, 2023, the total number of radiochemical samples processed includes the following:

- Alpha radiation emitting isotopes (^{241}Am, ^{238}Pu, $^{239+240}$Pu, ^{234}U, ^{235}U, and ^{238}U)
    - Vegetation – 6 samples
    - Sediment – 4 samples
    - Drinking water – 8 samples
    - Surface water – 6 samples
    - Soil – 19 samples
- Beta radiation emitting isotope (^{90}Sr)
    - Vegetation – 6 samples
    - Sediment – 4 samples
    - Drinking water – 8 samples
    - Surface water – 6 samples
    - Soil – 15 samples
- Gamma radiation emitting isotopes (^{60}Co, ^{137}Cs, and ^{40}K)
    - Vegetation – 6 samples
    - Sediment – 4 samples
    - Drinking water – 8 samples
    - Surface water – 12 samples
    - Soil – 11 samples

Characteristic results are included in the following tables.

The Mirion service contract was signed in October 2023 and Mirion senior personnel visited CEMRC on November 14-16, 2023, to address the main issues with the alpha and gamma radiation detectors. As a result, all four gamma radiation detectors and many of the 72 alpha radiation detectors were rendered operational. However, issues related to both the alpha and gamma systems and computers and software controlling the alpha and gamma radiation detectors persist and will have to be addressed. We have received a quote for updating the software controlling the gamma radiation detectors.

FAS Station A Filter Analysis – ^{90}Sr

								raw results				final results							
2022	WEEK	SID	flow (m^3)	mass (mg)	mass (g)	aliquot for gamma	aliquot for LSC	Activity, DPM/unit	Unc, 2 sigma	MDA, DPM/unit		Bq/m^3	Unc, 2 sigma	MDC, Bq/m3	status	Bq/g	Unc, 2 sigma	MDC, Bq/g	status
January	1st	47852	572.01	24.55999756	0.02456	0.5	1/7	3.90E+01	9.34E-02	5.28E+01		1.04E-02	9.74E-04	1.41E-02	Not Detected	2.43E+02	2.27E+01	3.29E+02	Not Detected
	2nd	48323	560.79	69.13001251	0.06913001	0.5	1/7	4.80E+01	8.26E-02	5.82E+01		1.31E-02	1.08E-03	1.59E-02	Not Detected	1.06E+02	8.78E+00	1.29E+02	Not Detected
	3rd	48324	568.72	98.16001129	0.09816001	0.5	1/7	5.40E+01	8.13E-02	5.82E+01		1.45E-02	1.18E-03	1.57E-02	Not Detected	8.42E+01	6.84E+00	9.07E+01	Not Detected
	4th	48325	806.72	109.9199982	0.10992	0.5	1/7	5.20E+01	8.08E-02	5.82E+01		9.86E-03	7.97E-04	1.10E-02	Not Detected	7.24E+01	5.85E+00	8.10E+01	Not Detected
February	1st	48326	569.86	152.9400101	0.15294001	0.5	1/7	4.10E+01	9.39E-02	5.28E+01		1.10E-02	1.03E-03	1.42E-02	Not Detected	4.10E+01	3.85E+00	5.28E+01	Not Detected
	2nd	48327	572.12	142.8799973	0.14288	0.5	1/7	5.20E+01	8.47E-02	5.97E+01		1.39E-02	1.18E-03	1.60E-02	Not Detected	5.57E+01	4.72E+00	6.39E+01	Not Detected
	3rd	48328	567.31	184.609993	0.18460999	0.5	1/7	5.40E+01	8.08E-02	5.97E+01		1.46E-02	1.18E-03	1.61E-02	Not Detected	4.48E+01	3.62E+00	4.95E+01	Not Detected
	4th	48329	570.82	192.3700027	0.19237	0.5	1/7	5.70E+01	8.11E-02	5.97E+01		1.53E-02	1.24E-03	1.60E-02	Not Detected	4.53E+01	3.68E+00	4.75E+01	Not Detected
March	1st	48330	571.61	65.92999268	0.06592999	0.5	1/7	4.40E+01	9.01E-02	5.28E+01		1.18E-02	1.06E-03	1.41E-02	Not Detected	1.02E+02	9.20E+00	1.22E+02	Not Detected
	2nd	48331	569.40	264.9500046	0.26495	0.5	1/7	4.20E+01	9.15E-02	5.28E+01		1.13E-02	1.03E-03	1.42E-02	Not Detected	2.43E+01	2.22E+00	3.05E+01	Not Detected
	3rd	48332	571.61	544.9500122	0.54495001	0.5	1/7	4.70E+01	8.81E-02	5.28E+01		1.26E-02	1.11E-03	1.41E-02	Not Detected	1.32E+01	1.16E+00	1.48E+01	Not Detected
	4th	48933	809.80	763.4400482	0.76344005	0.5	1/7	4.90E+01	8.60E-02	5.82E+01		9.26E-03	7.96E-04	1.10E-02	Not Detected	9.82E+00	8.45E-01	1.17E+01	Not Detected
April	1st	48934	571.33	101.1700058	0.10117001	0.5	1/7	4.60E+01	8.65E-02	5.82E+01		1.23E-02	1.07E-03	1.56E-02	Not Detected	6.96E+01	6.02E+00	8.80E+01	Not Detected
	2nd	48935	543.29	291.5800095	0.29158001	0.5	1/7	4.50E+01	8.91E-02	5.82E+01		1.27E-02	1.13E-03	1.64E-02	Not Detected	2.36E+01	2.10E+00	3.05E+01	Not Detected
	3rd	48936	595.01	245.1100006	0.24511	0.5	1/7	4.20E+01	9.14E-02	5.28E+01		1.08E-02	9.87E-04	1.36E-02	Not Detected	2.62E+01	2.40E+00	3.29E+01	Not Detected
	4th	48937	735.82	178.3800049	0.17838	0.5	1/7	5.60E+01	8.12E-02	5.97E+01		1.16E-02	9.46E-04	1.24E-02	Not Detected	4.80E+01	3.90E+00	5.12E+01	Not Detected
May	1st	48938	571.77	136.25	0.13625	0.5	1/7	5.00E+01	8.78E-02	5.97E+01		1.34E-02	1.17E-03	1.60E-02	Not Detected	5.62E+01	4.93E+00	6.70E+01	Not Detected
	2nd	48939	561.20	196.4000015	0.1964	0.5	1/7	5.20E+01	8.41E-02	5.97E+01		1.42E-02	1.19E-03	1.63E-02	Not Detected	4.05E+01	3.41E+00	4.65E+01	Not Detected
	3rd	48940	567.20	239.9599915	0.23995999	0.5	1/7	4.60E+01	8.74E-02	5.82E+01		1.24E-02	1.08E-03	1.57E-02	Not Detected	2.93E+01	2.56E+00	3.71E+01	Not Detected
	4th	48941	706.09	158.8200073	0.15882001	0.5	1/7	5.00E+01	8.46E-02	5.82E+01		1.08E-02	9.17E-04	1.26E-02	Not Detected	4.82E+01	4.08E+00	5.60E+01	Not Detected
June	1st	48942	561.39	120.2000046	0.1202	0.5	1/7	4.30E+01	8.90E-02	5.82E+01		1.17E-02	1.04E-03	1.59E-02	Not Detected	5.47E+01	4.87E+00	7.41E+01	Not Detected
	2nd	49453	528.64	182.0400085	0.18204001	0.5	1/7	4.60E+01	8.66E-02	5.82E+01		1.33E-02	1.15E-03	1.68E-02	Not Detected	3.87E+01	3.35E+00	4.89E+01	Not Detected
	3rd	49454	581.60	208.1299896	0.20812999	0.5	1/7	4.90E+01	8.59E-02	5.82E+01		1.29E-02	1.11E-03	1.53E-02	Not Detected	3.60E+01	3.09E+00	4.28E+01	Not Detected
	4th	49455	733.17	195.2299881	0.19522999	0.5	1/7	4.40E+01	9.05E-02	5.50E+01		9.18E-03	8.31E-04	1.15E-02	Not Detected	3.45E+01	3.12E+00	4.31E+01	Not Detected
July	1st	49456	570.25	116.4300003	0.11643	0.5	1/7	5.20E+01	8.40E-02	5.82E+01		1.40E-02	1.17E-03	1.56E-02	Not Detected	6.83E+01	5.74E+00	7.65E+01	Not Detected
	2nd	49457	565.46	155.9000015	0.1559	0.5	1/7	4.40E+01	9.16E-02	5.50E+01		1.19E-02	1.09E-03	1.49E-02	Not Detected	4.32E+01	3.96E+00	5.40E+01	Not Detected
	3rd	49458	571.55	243.9799881	0.24397999	0.5	1/7	4.90E+01	8.90E-02	5.77E+01		1.31E-02	1.17E-03	1.54E-02	Not Detected	3.07E+01	2.74E+00	3.62E+01	Not Detected
	4th	49459	814.33	200.5500031	0.20055	0.5	1/7	4.30E+01	9.04E-02	5.50E+01		8.08E-03	7.30E-04	1.03E-02	Not Detected	3.28E+01	2.97E+00	4.20E+01	Not Detected
August	1st	49460	570.87	230.3499908	0.23034999	0.5	1/7	4.50E+01	9.10E-02	5.50E+01		1.21E-02	1.10E-03	1.47E-02	Not Detected	2.99E+01	2.72E+00	3.65E+01	Not Detected
	2nd	49461	570.59	243.1200104	0.24312001	0.5	1/7	4.10E+01	9.37E-02	5.50E+01		1.10E-02	1.03E-03	1.47E-02	Not Detected	2.58E+01	2.42E+00	3.46E+01	Not Detected
	3rd	49462	567.39	121.7600174	0.12176002	0.5	1/7	4.40E+01	8.89E-02	5.50E+01		1.19E-02	1.05E-03	1.48E-02	Not Detected	5.53E+01	4.92E+00	6.91E+01	Not Detected
	4th	50163	804.42	127.0400009	0.12704	0.5	1/7	4.70E+01	8.69E-02	5.77E+01		8.94E-03	7.77E-04	1.10E-02	Not Detected	5.66E+01	4.92E+00	6.94E+01	Not Detected
Septembe	1st	50164	570.42	50.18999481	0.05018999	0.5	1/7	5.10E+01	8.59E-02	5.97E+01		1.37E-02	1.18E-03	1.60E-02	Not Detected	1.55E+02	1.34E+01	1.82E+02	Not Detected
	2nd	50165	566.18	59.64000702	0.05964001	0.5	1/7	5.20E+01	8.61E-02	5.97E+01		1.41E-02	1.21E-03	1.61E-02	Not Detected	1.33E+02	1.15E+01	1.53E+02	Not Detected
	3rd	50166	562.96	105.7699966	0.10577	0.5	1/7	5.20E+01	8.39E-02	5.97E+01		1.41E-02	1.19E-03	1.62E-02	Not Detected	7.52E+01	6.31E+00	8.64E+01	Not Detected
	4th	50167	735.92	224.0500031	0.22405	0.5	1/7	4.50E+01	9.04E-02	5.77E+01		9.36E-03	8.46E-04	1.20E-02	Not Detected	3.07E+01	2.78E+00	3.94E+01	Not Detected
October	1st	50168	566.54	164.3499985	0.16435	0.5	1/7	4.70E+01	8.75E-02	5.77E+01		1.27E-02	1.11E-03	1.56E-02	Not Detected	4.38E+01	3.83E+00	5.37E+01	Not Detected
	2nd	50169	570.57	182.8800125	0.18288001	0.5	1/7	5.70E+01	8.24E-02	5.97E+01		1.53E-02	1.26E-03	1.60E-02	Not Detected	4.77E+01	3.93E+00	4.99E+01	Not Detected
	3rd	50170	568.38	130.6100006	0.13061	0.5	1/7	4.80E+01	8.54E-02	5.77E+01		1.29E-02	1.10E-03	1.55E-02	Not Detected	5.62E+01	4.80E+00	6.75E+01	Not Detected
	4th	50171	815.12	123.8599854	0.12385999	0.5	1/7	5.00E+01	8.56E-02	5.77E+01		9.39E-03	8.03E-04	1.08E-02	Not Detected	6.18E+01	5.29E+00	7.12E+01	Not Detected
Novembe	1st	50172	570.59	130.5899963	0.13059	0.5	1/7	4.80E+01	8.52E-02	5.77E+01		1.29E-02	1.10E-03	1.55E-02	Not Detected	5.62E+01	4.79E+00	6.76E+01	Not Detected
	2nd	50363	563.91	97.15000153	0.09715	0.5	1/7	5.50E+01	8.25E-02	4.25E+01		1.49E-02	1.23E-03	1.15E-02	Detected	8.66E+01	7.15E+00	6.70E+01	Detected
	3rd	50364	569.80	132.9900055	0.13299001	0.5	1/7	5.30E+01	8.30E-02	4.25E+01		1.42E-02	1.18E-03	1.14E-02	Detected	6.10E+01	5.06E+00	4.89E+01	Detected
	4th	50365	735.47	125.5500031	0.12555	0.5	1/7	5.20E+01	8.33E-02	5.77E+01		1.08E-02	9.01E-04	1.20E-02	Not Detected	6.34E+01	5.28E+00	7.03E+01	Not Detected
December	1st	50366	570.25	101.4900208	0.10149002	0.5	1/7	4.80E+01	8.63E-02	5.77E+01		1.29E-02	1.11E-03	1.55E-02	Not Detected	7.24E+01	6.25E+00	8.69E+01	Not Detected
	2nd	50367	566.87	118.8399887	0.11883999	0.5	1/7	5.00E+01	8.38E-02	5.77E+01		1.35E-02	1.13E-03	1.56E-02	Not Detected	6.44E+01	5.40E+00	7.42E+01	Not Detected
	3rd	50368	568.59	145.5599976	0.14556	0.5	1/7	4.80E+01	8.49E-02	5.77E+01		1.29E-02	1.10E-03	1.55E-02	Not Detected	5.05E+01	4.28E+00	6.06E+01	Not Detected
	4th	50369	811.08	247.7899704	0.24778997	0.5	1/7	4.60E+01	8.81E-02	5.77E+01		8.68E-03	7.65E-04	1.09E-02	Not Detected	2.84E+01	2.50E+00	3.56E+01	Not Detected
MAXIMUM												1.53E-02				2.43E+02			
MINIMUM												8.08E-03				9.82E+00			
MEAN												1.22E-02				5.79E+01			
STD. DEVIATION												1.84E-03				3.89E+01			
COEF. OF VARIATION												15.1%				67.3%			

FAS Station B Filter Analysis – ^{90}Sr

							raw results			final results							
2022	SID	flow (m^3)	mass (mg)	mass (g)	aliquot for gamma	aliquot for LSC	DPM/unit	Unc, 2 sigma	MDA, DPM/unit	Bq/m^3	Unc, 2 sigma	MDC, Bq/m3	status	Bq/g	Unc, 2 sigma	MDC, Bq/g	status
January	BM122	2356.507	6.650009155	0.00665001	0.5	1/7	5.90E+01	8.06E-02	6.58E+01	3.83E-03	3.09E-04	4.28E-03	Not Detected	1.36E+03	1.09E+02	1.51E+03	Not Detected
February	BM222	2186.247	10.75001526	0.01075002	0.5	1/7	5.60E+01	7.92E-02	6.07E+01	3.92E-03	3.10E-04	4.25E-03	Not Detected	7.97E+02	6.31E+01	8.64E+02	Not Detected
March	BM322	2230.37	9.490036011	0.01	0.5	1/7	5.20E+01	8.35E-02	6.07E+01	3.57E-03	2.98E-04	4.16E-03	Not Detected	8.38E+02	7.00E+01	9.78E+02	Not Detected
April	BM422	2003.81	14.68997955	0.01468998	0.5	1/7	5.50E+01	8.30E-02	6.07E+01	4.20E-03	3.49E-04	4.63E-03	Not Detected	5.73E+02	4.76E+01	6.32E+02	Not Detected
May	BM522	2514.986	38.22000885	0.03822001	0.5	1/7	6.00E+01	8.04E-02	6.58E+01	3.65E-03	2.94E-04	4.01E-03	Not Detected	2.40E+02	1.93E+01	2.64E+02	Not Detected
June	BM622	2445.149	43.47999573	0.04348	0.5	1/7	5.60E+01	8.25E-02	6.58E+01	3.50E-03	2.89E-04	4.12E-03	Not Detected	1.97E+02	1.63E+01	2.32E+02	Not Detected
July	BM722	2529.486	42.18998718	0.04218999	0.5	1/7	5.70E+01	8.10E-02	6.58E+01	3.45E-03	2.79E-04	3.98E-03	Not Detected	2.07E+02	1.67E+01	2.39E+02	Not Detected
August	BM822	2524.955	38.52000427	0.03852	0.5	1/7	5.60E+01	8.25E-02	6.58E+01	3.39E-03	2.80E-04	3.99E-03	Not Detected	2.22E+02	1.84E+01	2.62E+02	Not Detected
September	BM922	2449.453	34.29999542	0.0343	0.5	1/7	5.60E+01	8.08E-02	6.07E+01	3.50E-03	2.83E-04	3.79E-03	Not Detected	2.50E+02	2.02E+01	2.71E+02	Not Detected
October	BM1022	2518.837	3.720001221	0.00372	0.5	1/7	5.70E+01	8.09E-02	6.58E+01	3.46E-03	2.80E-04	4.00E-03	Not Detected	2.34E+03	1.90E+02	2.71E+03	Not Detected
November	BM1122	2446.338	13.02998352	0.01302998	0.5	1/7	5.50E+01	8.19E-02	6.07E+01	3.44E-03	2.82E-04	3.80E-03	Not Detected	6.46E+02	5.29E+01	7.13E+02	Not Detected
December	BM1222	2525.351	10.5900116	0.01059001	0.5	1/7	5.70E+01	8.18E-02	6.07E+01	3.45E-03	2.83E-04	3.68E-03	Not Detected	8.24E+02	6.74E+01	8.77E+02	Not Detected
MAXIMUM										4.20E-03				2.34E+03			
MINIMUM										3.39E-03				1.97E+02			
MEAN										3.61E-03				7.08E+02			
STD. DEVIATION										2.36E-04				6.01E+02			
COEF. OF VARIATION										6.5%				84.9%			

Drinking Water Analysis (2022 samples) – ^{90}Sr

SID	Location	collection date	aliquot (mL)	aliquot (L)	DPM	Unc. 2 sig (Bq)	MDA, DPM/unit	Act. (Bq/L)	Unc. 2 sig (Bq/L)	MDC, Bq/L	status
49803	Sheep Draw	7/6/2022	20	0.02	4.70E+01	8.73E-02	6.17E+01	2.16E+01	1.89E+00	2.84E+01	Not detected
49804	Sheep Draw-Dup	7/6/2022	20	0.02	5.00E+01	8.61E-02	5.77E+01	2.30E+01	1.98E+00	2.65E+01	Not detected
49805	Malaga	7/7/2022	20	0.02	5.40E+01	8.23E-02	5.77E+01	2.49E+01	2.05E+00	2.65E+01	Not detected
49806	Loving	7/7/2022	20	0.02	5.00E+01	8.61E-02	5.77E+01	2.30E+01	1.98E+00	2.65E+01	Not detected
49807	Otis	7/7/2022	20	0.02	5.10E+01	8.46E-02	5.77E+01	2.35E+01	1.99E+00	2.65E+01	Not detected
49808	Trip Blank	7/7/2022	20	0.02	5.70E+01	8.14E-02	5.77E+01	2.62E+01	2.14E+00	2.65E+01	Not detected
49809	Hobbs	6/14/2022	20	0.02	5.30E+01	8.44E-02	6.17E+01	2.44E+01	2.06E+00	2.84E+01	Not detected
49810	PRV-4	6/14/2022	20	0.02	4.70E+01	8.83E-02	5.77E+01	2.16E+01	1.91E+00	2.65E+01	Not detected
					MAXIMUM			2.62E+01			
					MINIMUM			2.16E+01			
					MEAN			2.38E+01			
					STD. DEVIATION			1.39E+00			
					COEF. OF VARIATION			5.8%			

Surface Water Analysis (2022 samples) – ^{90}Sr

SID	Location	collection date	aliquot (L)	DPM	Unc. 2 sig	MDA, DPM/unit	Act. (Bq/L)	Unc. 2 sig (Bq/L)	MDC, Bq/L	status
49623	Trip Blank	6/14/2022 7:12	0.02	5.60E+01	7.94E-02	6.17E+01	2.13E+01	1.69E+00	2.34E+01	Not Detected
49624	Lake Carlsbad (Shallow)	6/14/2022 8:43	0.02	5.70E+01	7.93E-02	6.17E+01	2.17E+01	1.72E+00	2.34E+01	Not Detected
49625	Lake Carlsbad (Deep)	6/14/2022 8:55	0.02	4.90E+01	8.37E-02	6.17E+01	1.86E+01	1.56E+00	2.34E+01	Not Detected
49627	Brantley Lake (Shallow)	6/15/2022 8:10	0.02	5.30E+01	8.25E-02	6.17E+01	2.01E+01	1.66E+00	2.34E+01	Not Detected
49628	Brantley Lake (Deep)	6/15/2022 8:24	0.02	5.20E+01	7.76E-02	6.17E+01	1.98E+01	1.53E+00	2.34E+01	Not Detected
49630	Lost Tank	6/16/2022 8:20	0.02	5.90E+01	7.76E-02	6.17E+01	2.24E+01	1.74E+00	2.34E+01	Not Detected
49631	Hill Tank (bottom)	6/16/2022 9:07	0.02	5.30E+01	8.17E-02	6.17E+01	2.01E+01	1.65E+00	2.34E+01	Not Detected
49632	Red Tank	6/16/2022 9:35	0.02	4.90E+01	8.53E-02	6.17E+01	1.86E+01	1.59E+00	2.34E+01	Not Detected
49633	Red Bluff (Shallow)	6/16/2022 14:45	0.02	5.80E+01	7.83E-02	6.17E+01	2.21E+01	1.73E+00	2.34E+01	Not Detected
49634	Red Bluff (Deep)	6/16/2022 14:45	0.02	4.70E+01	8.73E-02	6.17E+01	1.79E+01	1.56E+00	2.34E+01	Not Detected
49636	Red Bluff (Shallow, Dup)	6/16/2022 14:45	0.02	5.40E+01	8.24E-02	6.17E+01	2.05E+01	1.69E+00	2.34E+01	Not Detected
49637	Red Bluff (Deep,Dup)	6/16/2022 14:45	0.02	5.10E+01	8.28E-02	6.17E+01	1.94E+01	1.61E+00	2.34E+01	Not Detected
				MAXIMUM			2.24E+01			
				MINIMUM			1.79E+01			
				MEAN			2.02E+01			
				STD. DEVIATION			1.39E+00			
				COEF. OF VARIATION			6.9%			

Drinking Water Analysis (2022 samples) – Actinides

	SID	Location	collection date	aliquot (mL)	aliquot (L)	Act. Bq	Unc. 2 sig	MDA	Act. (Bq/L)	Unc. 2 sig (Bq/L)	MDA (Bq/L)	STATUS
Am241	49803	Sheep Draw	7/6/2022	1000	1	-2.22E-04	1.58E-04	5.53E-04	-2.22E-04	1.58E-04	5.53E-04	Not Detected
Am241	49804	Sheep Draw-Dup	7/6/2022	1000	1	2.27E-04	1.76E-04	3.28E-04	2.27E-04	1.76E-04	3.28E-04	Not Detected
Am241	49805	Malaga	7/7/2022	1000	1	-7.21E-05	1.98E-04	5.65E-01	-7.21E-05	1.98E-04	5.65E-01	Not Detected
Am241	49806	Loving	7/7/2022	1000	1	9.28E-05	8.36E-05	1.62E-04	9.28E-05	8.36E-05	1.62E-04	Not Detected
Am241	49807	Otis	7/7/2022	1000	1	1.55E-04	5.36E-04	1.32E-03	1.55E-04	5.36E-04	1.32E-03	Not Detected
Am241	49808	Trip Blank	7/7/2022	1000	1	9.45E-05	7.63E-05	1.33E-04	9.45E-05	7.63E-05	1.33E-04	Not Detected
Am241	49809	Hobbs	6/14/2022	1000	1	-1.23E-04	1.84E-04	5.43E-04	-1.23E-04	1.84E-04	5.43E-04	Not Detected
Am241	49810	PRV-4	6/14/2022	1000	1	7.34E-05	8.24E-05	1.73E-04	7.34E-05	8.24E-05	1.73E-04	Not Detected

Note: PRV-4 = Double Eagle

Pu238							**Pu238**					
	SID	**Location**	**collection date**	**aliquot (mL)**	**aliquot (L)**	**Act. Bq**	**Unc. 2 sig**	**MDA**	**Act. (Bq/L)**	**Unc. 2 sig (Bq/L)**	**MDA (Bq/L)**	
Pu238	49803	Sheep Draw	7/6/2022	1000	1	6.29E-05	6.32E-05	1.25E-04	6.29E-05	6.32E-05	1.25E-04	Not Detected
Pu238	49804	Sheep Draw-Dup	7/6/2022	1000	1	1.69E-04	1.27E-04	2.23E-04	1.69E-04	1.27E-04	2.23E-04	Not Detected
Pu238	49805	Malaga	7/7/2022	1000	1	1.49E-04	1.10E-04	2.01E-04	1.49E-04	1.10E-04	2.01E-04	Not Detected
Pu238	49806	Loving	7/7/2022	1000	1	1.02E-04	1.15E-04	2.49E-04	1.02E-04	1.15E-04	2.49E-04	Not Detected
Pu238	49807	Otis	7/7/2022	1000	1	8.57E-05	1.25E-04	2.84E-04	8.57E-05	1.25E-04	2.84E-04	Not Detected
Pu238	49808	Trip Blank	7/7/2022	1000	1	8.62E-05	9.23E-05	1.93E-04	8.62E-05	9.23E-05	1.93E-04	Not Detected
Pu238	49809	Hobbs	6/14/2022	1000	1	7.99E-05	7.31E-05	1.46E-04	7.99E-05	7.31E-05	1.46E-04	Not Detected
Pu238	49810	PRV-4	6/14/2022	1000	1	5.44E-05	8.90E-05	2.03E-04	5.44E-05	8.90E-05	2.03E-04	Not Detected

Pu239							**Pu239**					
	SID	**Location**	**collection date**	**aliquot (mL)**	**aliquot (L)**	**Act. Bq**	**Unc. 2 sig**	**MDA**	**Act. (Bq/L)**	**Unc. 2 sig (Bq/L)**	**MDA (Bq/L)**	
Pu239	49803	Sheep Draw	7/6/2022	1000	1	1.34E-04	7.33E-05	9.44E-05	1.34E-04	7.33E-05	9.44E-05	Detected
Pu239	49804	Sheep Draw-Dup	7/6/2022	1000	1	1.12E-04	8.96E-05	1.30E-04	1.12E-04	8.96E-05	1.30E-04	Not Detected
Pu239	49805	Malaga	7/7/2022	1000	1	9.60E-05	9.35E-05	1.86E-04	9.60E-05	9.35E-05	1.86E-04	Not Detected
Pu239	49806	Loving	7/7/2022	1000	1	5.08E-05	7.89E-05	1.77E-04	5.08E-05	7.89E-05	1.77E-04	Not Detected
Pu239	49807	Otis	7/7/2022	1000	1	-9.08E-12	9.32E-05	2.43E-04	-9.08E-12	9.32E-05	2.43E-04	Not Detected
Pu239	49808	Trip Blank	7/7/2022	1000	1	7.67E-05	7.71E-05	1.52E-04	7.67E-05	7.71E-05	1.52E-04	Not Detected
Pu239	49809	Hobbs	6/14/2022	1000	1	5.81E-05	6.84E-05	1.46E-04	5.81E-05	6.84E-05	1.46E-04	Not Detected
Pu239	49810	PRV-4	6/14/2022	1000	1	1.27E-04	1.00E-04	1.93E-04	1.27E-04	1.00E-04	1.93E-04	Not Detected

U234												
	SID	**Location**	**collection date**	**aliquot (mL)**	**aliquot (L)**	**Act. Bq**	**Unc. 2 sig**	**MDA**	**Act. (Bq/L)**	**Unc. 2 sig (Bq/L)**	**MDA (Bq/L)**	
U234	49803	Sheep Draw	7/6/2022	1000	1	1.03E-02	4.47E-03	1.27E-04	1.03E-02	4.47E-03	1.27E-04	Detected
U234	49804	Sheep Draw-Dup	7/6/2022	1000	1	1.22E-01	1.29E-02	1.47E-04	1.22E-01	1.29E-02	1.47E-04	Detected
U234	49805	Malaga	7/7/2022	1000	1	2.23E-02	2.53E-03	2.73E-04	2.23E-02	2.53E-03	2.73E-04	Detected
U234	49806	Loving	7/7/2022	1000	1	5.62E-02	6.00E-03	2.21E-04	5.62E-02	6.00E-03	2.21E-04	Detected
U234	49807	Otis	7/7/2022	1000	1	9.67E-02	1.03E-02	1.62E-04	9.67E-02	1.03E-02	1.62E-04	Detected
U234	49808	Trip Blank	7/7/2022	1000	1	2.95E-04	1.54E-04	2.51E-04	2.95E-04	1.54E-04	2.51E-04	Detected
U234	49809	Hobbs	6/14/2022	1000	1	4.18E-02	4.62E-03	2.74E-04	4.18E-02	4.62E-03	2.74E-04	Detected
U234	49810	PRV-4	6/14/2022	1000	1	3.64E-02	3.87E-03	1.56E-04	3.64E-02	3.87E-03	1.56E-04	Detected
								min	2.95E-04	2.95E-01		
								max	1.22E-01	1.22E+02		

U235												
	SID	**Location**	**collection date**	**aliquot (mL)**	**aliquot (L)**	**Act. Bq**	**Unc. 2 sig**	**MDA**	**Act. (Bq/L)**	**Unc. 2 sig (Bq/L)**	**MDA (Bq/L)**	
U235	49803	Sheep Draw	7/6/2022	1000	1	2.62E-04	1.46E-04	2.28E-04	2.62E-04	1.46E-04	2.28E-04	Detected
U235	49804	Sheep Draw-Dup	7/6/2022	1000	1	2.36E-03	3.94E-04	1.53E-04	2.36E-03	3.94E-04	1.53E-04	Detected
U235	49805	Malaga	7/7/2022	1000	1	5.06E-04	1.94E-04	2.63E-04	5.06E-04	1.94E-04	2.63E-04	Detected
U235	49806	Loving	7/7/2022	1000	1	9.07E-04	2.30E-04	2.01E-04	9.07E-04	2.30E-04	2.01E-04	Detected
U235	49807	Otis	7/7/2022	1000	1	2.92E-03	4.78E-04	1.38E-04	2.92E-03	4.78E-04	1.38E-04	Detected
U235	49808	Trip Blank	7/7/2022	1000	1	2.91E-05	9.20E-05	2.31E-04	2.91E-05	9.20E-05	2.31E-04	Not Detected
U235	49809	Hobbs	6/14/2022	1000	1	1.05E-03	2.72E-04	2.63E-04	1.05E-03	2.72E-04	2.63E-04	Detected
U235	49810	PRV-4	6/14/2022	1000	1	6.97E-04	1.69E-04	7.62E-05	6.97E-04	1.69E-04	7.62E-05	Detected
								min	2.91E-05	2.91E-02		
								max	2.92E-03	2.92E+00		

U238												
	SID	**Location**	**collection date**	**aliquot (mL)**	**aliquot (L)**	**Act. Bq**	**Unc. 2 sig**	**MDA**	**Act. (Bq/L)**	**Unc. 2 sig (Bq/L)**	**MDA (Bq/L)**	
U238	49803	Sheep Draw	7/6/2022	1000	1	4.73E-03	6.78E-04	2.98E-04	4.73E-03	6.78E-04	2.98E-04	Detected
U238	49804	Sheep Draw-Dup	7/6/2022	1000	1	4.67E-02	5.02E-03	2.19E-04	4.67E-02	5.02E-03	2.19E-04	Detected
U238	49805	Malaga	7/7/2022	1000	1	8.48E-03	1.07E-03	2.89E-04	8.48E-03	1.07E-03	2.89E-04	Detected
U238	49806	Loving	7/7/2022	1000	1	1.72E-02	1.95E-03	2.03E-04	1.72E-02	1.95E-03	2.03E-04	Detected
U238	49807	Otis	7/7/2022	1000	1	3.69E-02	4.04E-03	2.36E-04	3.69E-02	4.04E-03	2.36E-04	Detected
U238	49808	Trip Blank	7/7/2022	1000	1	8.21E-05	1.35E-04	3.10E-04	8.21E-05	1.35E-04	3.10E-04	Not Detected
U238	49809	Hobbs	6/14/2022	1000	1	1.78E-02	2.07E-03	2.89E-04	1.78E-02	2.07E-03	2.89E-04	Detected
U238	49810	PRV-4	6/14/2022	1000	1	1.30E-02	1.46E-03	1.97E-04	1.30E-02	1.46E-03	1.97E-04	Detected
								min	8.21E-05	8.21E-02		
								max	4.67E-02	4.67E+01		

FAS Station A Filter Analysis – ^{137}Cs

2022	WEEK	SID	flow(M3)	wt(mg)	wt(g)	aliquot	Act/unit	Unc	MDC	Bq/m3	Unc	MDC	Status	Bq/g	Unc	MDC	Status
January	1st	47852	572.0074	24.56	0.02456	0.5	-3.92E-03	2.23E-02	7.51E-02	-1.37E-05	7.81E-05	2.62E-04	Not Detected	-3.19E-01	1.82E+00	6.11E+00	Not Detected
	2nd	48323	560.7926	69.13001	0.06913	0.5	3.63E-02	1.07E-02	3.45E-02	1.29E-04	3.81E-05	1.23E-04	Detected	1.05E+00	3.09E-01	9.99E-01	Detected
	3rd	48324	568.7222	98.16001	0.09816	0.5	3.07E-03	4.08E-02	1.37E-01	1.08E-05	1.43E-04	4.80E-04	Not Detected	6.25E-02	8.30E-01	2.78E+00	Not Detected
	4th	48325	806.7235	109.92	0.10992	0.5	1.34E-02	9.28E-03	3.06E-02	3.32E-05	2.30E-05	7.59E-05	Not Detected	2.44E-01	1.69E-01	5.57E-01	Not Detected
February	1st	48326	569.855	152.94	0.15294	0.5	5.23E-03	1.70E-02	7.01E-02	1.83E-05	5.97E-05	2.46E-04	Not Detected	6.84E-02	2.22E-01	9.16E-01	Not Detected
	2nd	48327	572.1206	142.88	0.14288	0.5	8.70E-03	2.16E-02	7.20E-02	3.04E-05	7.54E-05	2.52E-04	Not Detected	1.22E-01	3.02E-01	1.01E+00	Not Detected
	3rd	48328	567.3062	184.61	0.18461	0.5	2.36E-02	9.22E-03	3.00E-02	8.33E-05	3.25E-05	1.06E-04	Not Detected	2.56E-01	9.99E-02	3.25E-01	Not Detected
	4th	48329	570.8179	192.37	0.19237	0.5	6.92E-03	6.23E-03	2.07E-02	2.42E-05	2.18E-05	7.25E-05	Not Detected	7.19E-02	6.48E-02	2.15E-01	Not Detected
March	1st	48330	571.6109	65.92999	0.06593	0.5	-3.10E-03	2.51E-02	8.40E-02	-1.08E-05	8.77E-05	2.94E-04	Not Detected	-9.40E-02	7.60E-01	2.55E+00	Not Detected
	2nd	48331	569.4019	264.95	0.26495	0.5	1.46E-02	8.20E-03	2.69E-02	5.13E-05	2.88E-05	9.45E-05	Not Detected	1.10E-01	6.19E-02	2.03E-01	Not Detected
	3rd	48332	571.6109	544.95	0.54495	0.5	1.44E-02	1.94E-02	6.44E-02	5.04E-05	6.78E-05	2.25E-04	Not Detected	5.29E-02	7.11E-02	2.36E-01	Not Detected
	4th	48933	809.7972	763.44	0.76344	0.5	-8.71E-04	6.37E-03	2.16E-02	-2.15E-06	1.57E-05	5.33E-05	Not Detected	-2.28E-03	1.67E-02	5.65E-02	Not Detected
April	1st	48934	571.3277	101.17	0.10117	0.5	-1.03E-02	2.08E-02	7.02E-02	-3.59E-05	7.27E-05	2.46E-04	Not Detected	-2.03E-01	4.11E-01	1.39E+00	Not Detected
	2nd	48935	543.2857	291.58	0.29158	0.5	2.22E-03	2.25E-02	7.52E-02	8.16E-06	8.27E-05	2.77E-04	Not Detected	1.52E-02	1.54E-01	5.16E-01	Not Detected
	3rd	48936	595.0101	245.11	0.24511	0.5	1.47E-02	7.59E-03	2.49E-02	4.95E-05	2.55E-05	8.36E-05	Not Detected	1.20E-01	6.20E-02	2.03E-01	Not Detected
	4th	48937	735.8216	178.38	0.17838	0.5	7.00E-03	2.00E+03	6.67E-02	1.90E-05	5.42E+00	1.81E-04	Not Detected	7.85E-02	2.24E+04	7.48E-01	Not Detected
May	1st	48938	571.7671	136.25	0.13625	0.5	-2.07E-02	2.04E-02	6.92E-02	-7.25E-05	7.12E-05	2.42E-04	Not Detected	-3.04E-01	2.99E-01	1.02E+00	Not Detected
	2nd	48939	561.1988	196.4	0.1964	0.5	4.37E-02	1.03E-02	3.29E-02	1.56E-04	3.67E-05	1.17E-04	Detected	4.45E-01	1.05E-01	3.35E-01	Detected
	3rd	48940	567.1969	239.96	0.23996	0.5	3.24E-03	2.37E-02	7.94E-02	1.14E-05	8.37E-05	2.80E-04	Not Detected	2.70E-02	1.98E-01	6.62E-01	Not Detected
	4th	48941	706.0923	158.82	0.15882	0.5	1.36E-02	8.40E-03	2.76E-02	3.84E-05	2.38E-05	7.83E-05	Not Detected	1.71E-01	1.06E-01	3.48E-01	Not Detected
June	1st	48942	561.3884	120.2	0.1202	0.5	5.53E-03	7.36E-03	2.45E-02	1.97E-05	2.62E-05	8.73E-05	Not Detected	9.20E-02	1.22E-01	4.08E-01	Not Detected
	2nd	49453	528.6353	182.04	0.18204	0.5	9.13E-03	7.83E-03	2.59E-02	3.46E-05	2.96E-05	9.81E-05	Not Detected	1.00E-01	8.61E-02	2.85E-01	Not Detected
	3rd	49454	581.5995	208.13	0.20813	0.5	6.32E-03	2.12E-02	7.08E-02	2.17E-05	7.28E-05	2.43E-04	Not Detected	6.07E-02	2.03E-01	6.80E-01	Not Detected
	4th	49455	733.1698	195.23	0.19523	0.5	-1.65E-02	2.38E-02	8.03E-02	-4.49E-05	6.50E-05	2.19E-04	Not Detected	-1.69E-01	2.44E-01	8.23E-01	Not Detected
July	1st	49456	570.2515	116.43	0.11643	0.5	2.57E-02	1.02E-02	3.33E-02	9.01E-05	3.59E-05	1.17E-04	Not Detected	4.41E-01	1.76E-01	5.72E-01	Not Detected
	2nd	49457	565.4601	155.9	0.1559	0.5	-1.63E-02	2.00E-02	6.80E-02	-5.77E-05	7.08E-05	2.40E-04	Not Detected	-2.09E-01	2.57E-01	8.72E-01	Not Detected
	3rd	49458	571.5542	243.98	0.24398	0.5	6.89E-03	8.46E-03	2.81E-02	2.41E-05	2.96E-05	9.85E-05	Not Detected	5.65E-02	6.94E-02	2.31E-01	Not Detected
	4th	49459	814.3283	200.55	0.20055	0.5	2.67E-02	8.86E-03	2.86E-02	6.57E-05	2.18E-05	7.03E-05	Not Detected	2.67E-01	8.83E-02	2.85E-01	Not Detected
August	1st	49460	570.8746	230.35	0.23035	0.5	2.88E-02	9.05E-03	2.92E-02	1.01E-04	3.17E-05	1.02E-04	Not Detected	2.50E-01	7.86E-02	2.53E-01	Not Detected
	2nd	49461	570.5914	243.12	0.24312	0.5	1.37E-02	2.16E-02	7.19E-02	4.80E-05	7.57E-05	2.52E-04	Not Detected	1.13E-01	1.78E-01	5.92E-01	Not Detected
	3rd	49462	567.3935	121.76	0.12176	0.5	7.55E-04	2.20E-02	7.38E-02	2.66E-06	7.76E-05	2.60E-04	Not Detected	1.24E-02	3.62E-01	1.21E+00	Not Detected
	4th	50163	804.4227	127.04	0.12704	0.5	1.51E-03	2.17E-02	7.26E-02	3.76E-06	5.39E-05	1.81E-04	Not Detected	2.38E-02	3.41E-01	1.14E+00	Not Detected
September	1st	50164	570.4214	50.18999	0.05019	0.5	-2.49E-02	2.12E-02	7.22E-02	-8.75E-05	7.44E-05	2.53E-04	Not Detected	-9.94E-01	8.46E-01	2.88E+00	Not Detected
	2nd	50165	566.1769	59.64001	0.05964	0.5	2.95E-02	9.24E-03	2.98E-02	1.04E-04	3.26E-05	1.05E-04	Not Detected	9.88E-01	3.10E-01	1.00E+00	Not Detected
	3rd	50166	562.9558	105.77	0.10577	0.5	2.15E-03	2.04E-02	6.83E-02	7.65E-06	7.24E-05	2.43E-04	Not Detected	4.07E-02	3.85E-01	1.29E+00	Not Detected
	4th	50167	735.9235	224.05	0.22405	0.5	8.52E-03	2.29E-02	7.63E-02	2.32E-05	6.22E-05	2.07E-04	Not Detected	7.61E-02	2.04E-01	6.81E-01	Not Detected
October	1st	50168	566.5389	164.35	0.16435	0.5	8.62E-04	2.29E-02	7.67E-02	3.04E-06	8.09E-05	2.71E-04	Not Detected	1.05E-02	2.79E-01	9.34E-01	Not Detected
	2nd	50169	570.5664	182.88	0.18288	0.5	1.74E-03	6.30E-03	2.12E-02	6.12E-06	2.21E-05	7.44E-05	Not Detected	1.91E-02	6.89E-02	2.32E-01	Not Detected
	3rd	50170	568.3824	130.61	0.13061	0.5	9.02E-04	2.59E-03	8.97E-03	3.17E-06	9.11E-06	3.16E-05	Not Detected	1.38E-02	3.96E-02	1.37E-01	Not Detected
	4th	50171	815.1171	123.86	0.12386	0.5	1.52E-02	8.36E-03	2.74E-02	3.72E-05	2.05E-05	6.73E-05	Not Detected	2.45E-01	1.35E-01	4.43E-01	Not Detected
November	1st	50172	570.5914	130.59	0.13059	0.5	1.11E-03	2.08E-02	6.99E-02	3.89E-06	7.31E-05	2.45E-04	Not Detected	1.70E-02	3.19E-01	1.07E+00	Not Detected
	2nd	50363	563.9078	97.15	0.09715	0.5	1.01E-02	8.18E-03	2.71E-02	3.57E-05	2.90E-05	9.60E-05	Not Detected	2.07E-01	1.68E-01	5.57E-01	Not Detected
	3rd	50364	569.7984	132.99	0.13299	0.5	-1.67E-03	2.30E-02	7.71E-02	-5.86E-06	8.08E-05	2.71E-04	Not Detected	-2.51E-02	3.46E-01	1.16E+00	Not Detected
	4th	50365	735.4704	125.55	0.12555	0.5	0.00E+00	2.12E-04	5.74E-04	0.00E+00	5.77E-07	1.56E-06	Not Detected	0.00E+00	3.38E-03	9.15E-03	Not Detected
December	1st	50366	570.2515	101.49	0.10149	0.5	4.41E-03	2.30E-02	7.70E-02	1.54E-05	8.08E-05	2.70E-04	Not Detected	8.68E-02	4.54E-01	1.52E+00	Not Detected
	2nd	50367	566.8661	118.84	0.11884	0.5	2.80E-03	2.30E-02	7.71E-02	9.90E-06	8.13E-05	2.72E-04	Not Detected	4.72E-02	3.88E-01	1.30E+00	Not Detected
	3rd	50368	568.5869	145.56	0.14556	0.5	-9.70E-04	8.46E-03	2.84E-02	-3.41E-06	2.97E-05	1.00E-04	Not Detected	-1.33E-02	1.16E-01	3.91E-01	Not Detected
	4th	50369	811.0848	247.79	0.24779	0.5	5.02E-03	8.05E-03	2.68E-02	1.24E-05	1.98E-05	6.62E-05	Not Detected	4.06E-02	6.50E-02	2.17E-01	Not Detected

Environmental Chemistry Group

From October 1st to December 31st, 2023, the Environmental Chemistry group (EC) worked on processing Fixed Air Sampler (FAS) filters, ambient air (HiVol) filters, surface water samples, and drinking water samples collected in 2023.

The following Tables and Figures represent characteristic results.

Sample Type: FAS, Station A
Year: 2023
Analysis Performed: Metals in weekly composites

Week	Aluminum ng/m³	Cadmium ng/m³	Lead ng/m³	Magnesium ng/m³	Silicon ng/m³	Thorium ng/m³	Uranium ng/m³
01/01/23	1.347E+02	4.004E-01	9.461E-01	6.954E+02	5.331E+02	<MDL	1.610E-02
01/08/23	2.229E+02	4.963E-01	2.744E+00	9.495E+02	9.079E+02	<MDL	3.238E-02
01/15/23	2.339E+02	4.926E-01	4.736E+00	9.654E+02	9.024E+02	<MDL	2.702E-02
01/22/23	2.556E+02	6.202E-01	3.796E+00	1.177E+03	9.348E+02	<MDL	2.779E-02
02/01/23	2.742E+02	5.433E-01	4.956E+00	1.212E+03	1.039E+03	<MDL	2.404E-02
02/08/23	6.047E+02	1.921E+00	4.896E+00	2.807E+03	2.301E+03	<MDL	<MDL
02/15/23	8.367E+02	6.982E-01	2.922E+00	4.370E+03	2.511E+03	9.697E-02	7.775E-02
02/22/23	6.330E+02	5.306E-01	2.816E+00	2.379E+03	1.919E+03	8.888E-02	7.272E-02
03/01/23	1.488E+03	6.511E-01	1.084E+01	6.572E+03	4.065E+03	1.889E-01	1.407E-01
03/08/23	3.197E+02	5.911E-01	1.405E+00	7.903E+02	1.150E+03	<MDL	2.750E-02
03/15/23	4.240E+02	4.666E-01	3.466E+00	2.064E+03	1.407E+03	5.566E-02	4.748E-02
03/22/23	6.809E+02	5.387E-01	3.322E+00	3.376E+03	2.153E+03	9.664E-02	7.480E-02
04/01/23							
04/08/23							
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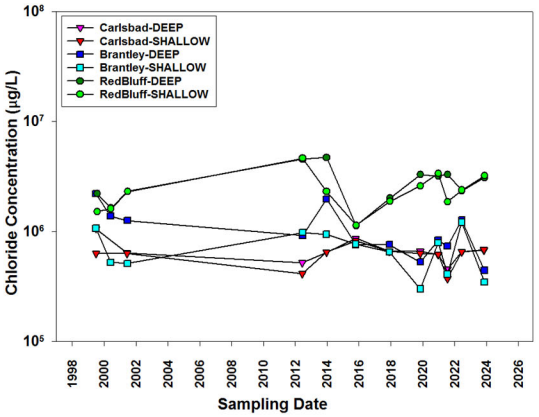
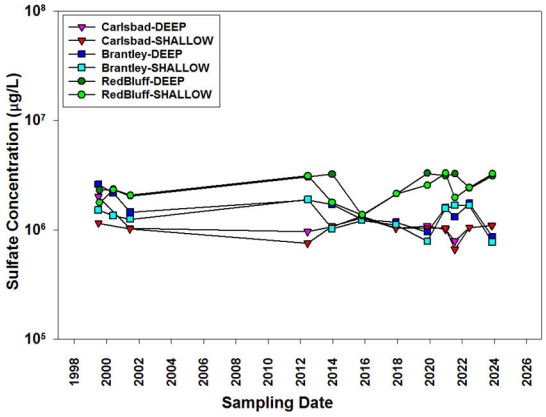
12/08/23							
12/15/23							
12/22/23							

NOTE: Filters were not received for the following time frames: N/A.

Sample Type: Surface Water
Year: 2023
Analysis Performed: Anions

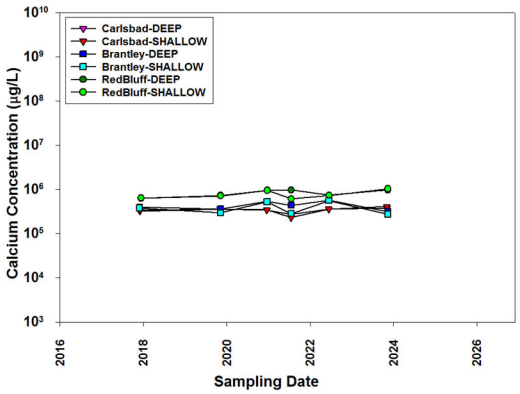
Sample Location	Chloride µg/L	Nitrate µg/L	Phosphate µg/L	Sulfate µg/L
Hill Tank	2.64E+04	1.84E+03	<MDC	4.08E+04
Noya Tank	1.63E+04	1.77E+04	<MDC	1.81E+04
Red Tank	5.33E+03	2.75E+03	<MDC	9.19E+03
Lake Carlsbad (Shallow)	6.84E+05	4.20E+03	<MDC	1.10E+06
Lake Carlsbad (Deep)	6.75E+05	4.03E+03	<MDC	1.09E+06
Brantley Lake (Shallow)	3.48E+05	<MDC	<MDC	7.71E+05
Brantley (Deep)	4.44E+05	<MDC	<MDC	8.65E+05
Red Bluff (Shallow)	3.21E+06	<MDC	<MDC	3.24E+06
Red Bluff (Deep)	3.08E+06	<MDC	<MDC	3.11E+06

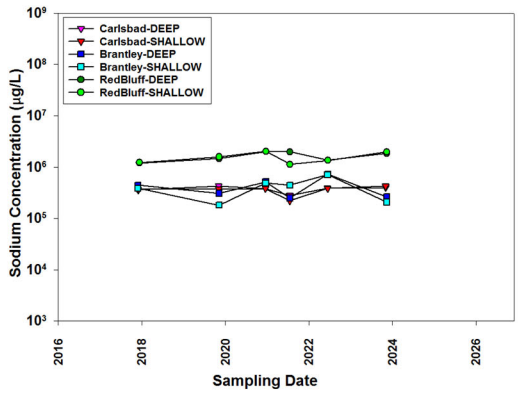




Sample Type: Surface Water
Year: 2023
Analysis Performed: Cations

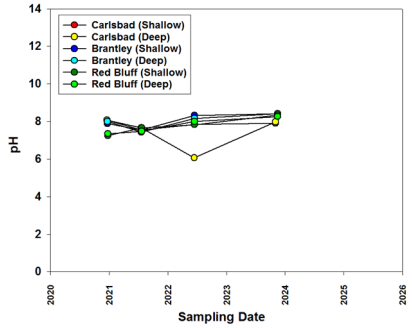
Sample Location	Calcium µg/L	Magnesium µg/L	Potassium µg/L	Sodium µg/L
Hill Tank	9.17E+04	1.61E+04	7.37E+04	9.61E+03
Noya Tank	1.00E+05	1.03E+04	3.31E+04	4.84E+03
Red Tank	2.84E+04	1.20E+04	2.33E+04	3.15E+03
Lake Carlsbad (Shallow)	4.05E+05	1.07E+05	2.76E+03	4.27E+05
Lake Carlsbad (Deep)	3.82E+05	1.51E+05	3.86E+03	4.02E+05
Brantley Lake (Shallow)	2.73E+05	5.32E+04	3.80E+03	2.07E+05
Brantley Lake (Deep)	3.16E+05	6.41E+04	3.78E+03	2.62E+05
Red Bluff (Shallow)	1.03E+06	3.73E+05	2.97E+04	1.97E+06
Red Bluff (Deep)	9.63E+05	3.59E+05	3.08E+04	1.84E+06





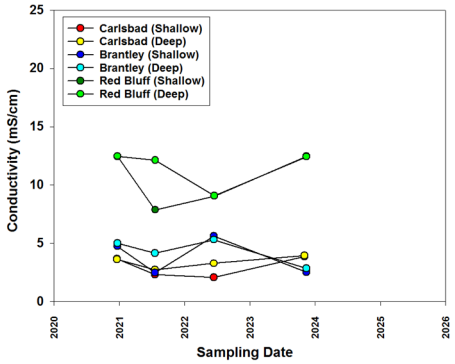
Sample Type: Surface Water
Year: 2023
Analysis Performed: pH

Sample Location	pH @ 23°C
Hill Tank	7.78
Noya Tank	7.87
Red Tank	8.01
Lake Carlsbad (Shallow)	7.905
Lake Carlsbad (Deep)	7.988
Brantley Lake (Shallow)	8.402
Brantley Lake (Deep)	8.406
Red Bluff (Shallow)	8.347
Red Bluff (Deep)	8.262



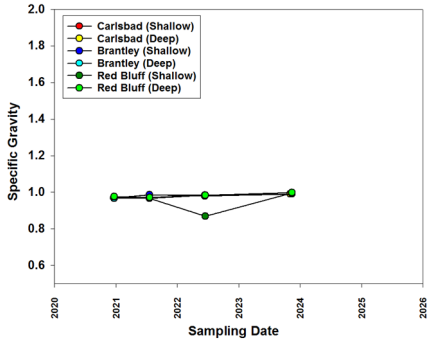
Sample Type: Surface Water
Year: 2023
Analysis Performed: Conductivity

Sample Location	Conductivity mS/cm	Temperature °C
Hill Tank	0.758	22.5
Noya Tank	0.483	22.7
Red Tank	0.280	22.7
Lake Carlsbad (Shallow)	3.87	19.6
Lake Carlsbad (Deep)	3.94	19.6
Brantley Lake (Shallow)	2.52	19.6
Brantley Lake (Deep)	2.86	19.6
Red Bluff (Shallow)	12.47	19.7
Red Bluff (Deep)	12.44	19.7



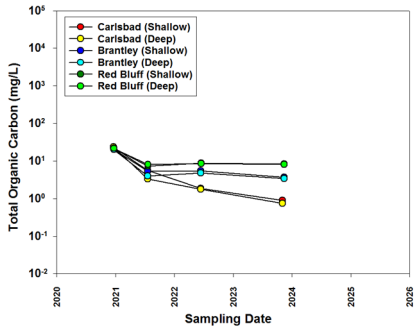
Sample Type: Surface Water
Year: 2023
Analysis Performed: Specific gravity

Sample Location	SG T/4°C
Hill Tank	1.000
Noya Tank	1.001
Red Tank	1.000
Lake Carlsbad (Shallow)	0.992
Lake Carlsbad (Deep)	0.990
Brantley Lake (Shallow)	0.990
Brantley (Deep)	0.991
Red Bluff (Shallow)	0.997
Red Bluff (Deep)	0.998



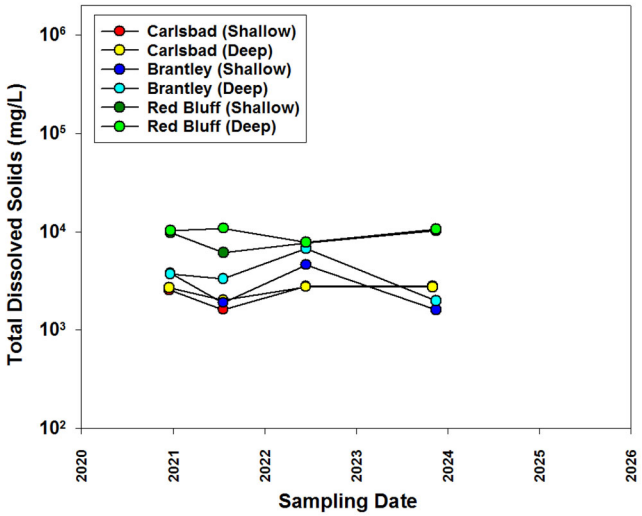
Sample Type: Surface Water
Year: 2023
Analysis Performed: TOC/TN/TIC

Sample Location	TOC mg/L
Hill Tank	32.70
Noya Tank	20.20
Red Tank	9.13
Lake Carlsbad (Shallow)	0.883
Lake Carlsbad (Deep)	0.745
Brantley Lake (Shallow)	3.67
Brantley (Deep)	3.42
Red Bluff (Shallow)	8.26
Red Bluff (Deep)	7.99



Sample Type: Surface Water
Year: 2023
Analysis Performed: TDS/TSS

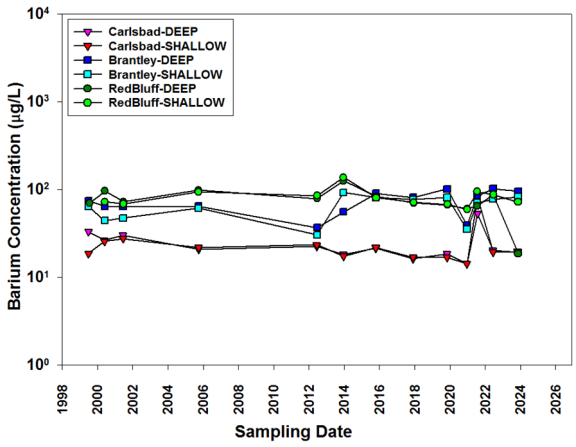
Sample Location	TDS mg/L	TSS mg/L
Hill Tank	520	320
Noya Tank	420	960
Red Tank	380	120
Lake Carlsbad (Shallow)	2800	60
Lake Carlsbad (Deep)	2720	20
Brantley Lake (Shallow)	1600	N.D.
Brantley (Deep)	1980	N.D.
Red Bluff (Shallow)	10260	140
Red Bluff (Deep)	10240	60

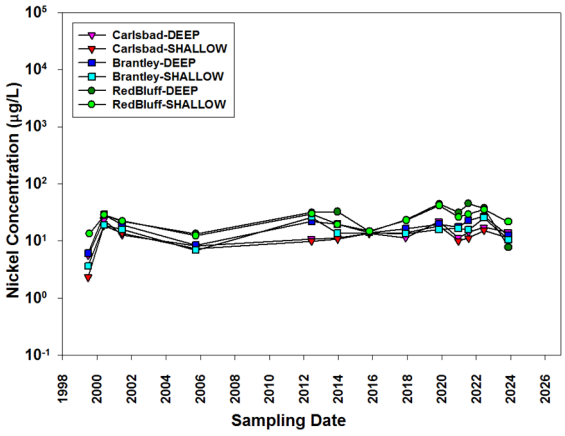


Sample Type: Surface Water
Year: 2023
Analysis Performed: Metals

Metal	Hill Tank Conc µg/L	Noya Tank Conc µg/L	Red Tank Conc µg/L
Ag	2.88E-01	<MDC	<MDC
Al	1.84E+03	4.81E+03	2.03E+03
As	9.66E+00	6.89E+00	3.52E+00
Ba	5.07E+02	7.32E+02	2.22E+02
Be	2.64E-01	7.01E-01	2.26E-01
Ca	8.23E+04	9.73E+04	2.66E+04
Cd	9.80E-02	2.77E-01	4.57E-02
Ce	8.44E+00	2.44E+01	6.15E+00
Co	3.67E+00	6.88E+00	1.57E+00
Cr	3.03E+00	2.87E+00	<MDC
Cu	9.97E+00	1.51E+01	6.58E+00
Dy	7.96E-01	2.28E+00	8.36E-01
Er	3.63E-01	1.02E+00	3.14E-01
Eu	3.81E-01	9.57E-01	3.90E-01
Fe	1.23E+03	2.79E+03	5.71E+02
Gd	1.18E+00	3.61E+00	1.41E+00
Hg	<MDC	<MDC	<MDC
K	6.11E+04	3.26E+04	7.62E+03
La	3.76E+00	1.06E+01	2.37E+00
Li	1.04E+01	1.16E+01	7.95E+00
Mg	1.74E+04	1.28E+04	1.01E+04
Mn	3.48E+02	8.93E+02	1.68E+02
Mo	2.77E+00	1.78E+00	7.35E-01
Na	8.59E+03	4.30E+03	2.71E+03
Nd	4.81E+00	1.40E+01	4.92E+00
Ni	1.14E+01	1.49E+01	4.15E+00
P	6.18E+02	1.07E+03	3.34E+02
Pb	6.12E+00	1.70E+01	3.15E+00
Pr	1.13E+00	3.22E+00	9.75E-01
Sb	7.72E-01	7.07E-01	1.56E-01
Sc	2.81E+00	5.28E+00	2.35E+00
Se	<MDC	<MDC	<MDC
Si	8.37E+03	1.21E+04	5.26E+03
Sr	4.67E+02	3.64E+02	1.69E+02
Th	2.56E-01	2.68E-01	<MDC
Tl	<MDC	2.74E-02	<MDC
U	1.58E+00	6.02E-01	5.14E-01
V	2.18E+01	2.95E+01	2.60E+01
Zn	<MDC	<MDC	<MDC

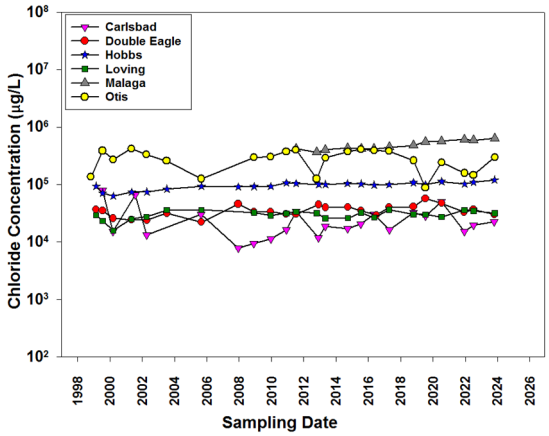
	Brantley Lake		Lake Carlsbad		Red Bluff	
Metal	Shallow Conc µg/L	Deep Conc µg/L	Shallow Conc µg/L	Deep Conc µg/L	Shallow Conc µg/L	Deep Conc µg/L
Ag	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Al	8.06E+01	1.96E+02	5.95E+01	4.74E+01	<MDC	<MDC
As	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Ba	8.23E+01	9.53E+01	1.96E+01	1.93E+01	7.18E+01	7.44E+01
Be	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Ca	2.19E+05	2.34E+05	2.81E+05	2.89E+05	7.62E+05	7.73E+05
Cd	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Ce	1.63E-01	3.35E-01	<MDC	<MDC	<MDC	<MDC
Co	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Cr	1.47E+01	1.36E+01	<MDC	1.35E+01	<MDC	5.65E+01
Cu	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Dy	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Er	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Eu	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Fe	2.62E+03	2.83E+03	1.10E+03	2.58E+03	3.54E+03	8.43E+03
Gd	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Hg	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
K	4.28E+03	4.61E+03	4.36E+03	4.48E+03	3.27E+04	3.21E+04
La	<MDC	1.25E-01	<MDC	<MDC	<MDC	<MDC
Li	2.48E+01	2.95E+01	4.53E+01	4.09E+01	1.36E+02	1.47E+02
Mg	5.41E+04	6.88E+04	1.11E+05	1.07E+05	3.61E+05	3.83E+05
Mn	2.00E+01	4.28E+01	1.01E+01	9.27E+00	3.39E+01	3.61E+01
Mo	2.73E+00	2.47E+00	2.99E+00	2.38E+00	7.48E+00	6.34E+00
Na	1.90E+05	2.53E+05	3.66E+05	3.67E+05	1.75E+06	1.75E+06
Nd	<MDC	1.85E-01	<MDC	<MDC	<MDC	<MDC
Ni	1.05E+01	1.24E+01	1.13E+01	1.44E+01	2.16E+01	3.12E+01
P	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Pb	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Pr	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Sb	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Sc	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Se	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Si	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Sr	3.49E+03	3.99E+03	4.96E+03	4.34E+03	1.36E+04	1.32E+04
Th	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Tl	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
U	3.62E+00	3.96E+00	3.63E+00	3.41E+00	8.90E+00	9.08E+00
V	8.94E+00	8.41E+00	4.71E+00	8.08E+00	<MDC	2.03E+01
Zn	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC





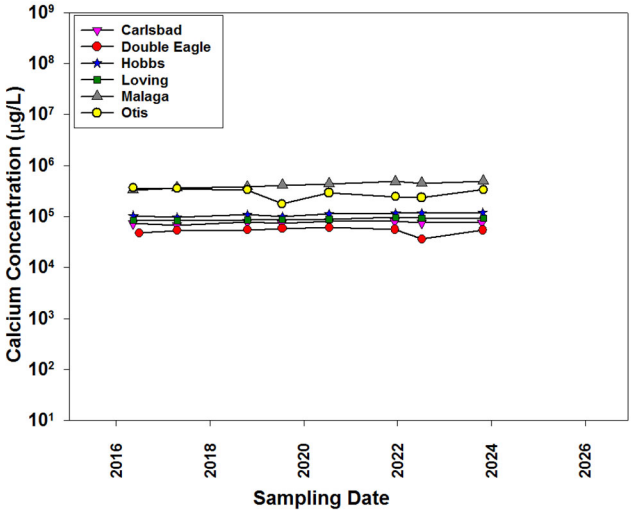
Sample Type: Drinking Water
Year: 2023
Analysis Performed: Anions

Sample Location	Chloride µg/L	Nitrate µg/L	Phosphate µg/L	Sulfate µg/L
Carlsbad (Sheep draw)	2.261E+04	4.597E+03	<MDC	8.566E+04
Hobbs	1.205E+05	2.157E+04	<MDC	<MDC
Double Eagle PRV4	3.002E+04	1.300E+04	<MDC	4.225E+04
Loving	3.185E+04	2.009E+04	<MDC	1.141E+05
Otis	2.980E+05	1.581E+04	<MDC	6.929E+05
Malaga	6.352E+05	1.694E+04	<MDC	9.723E+05



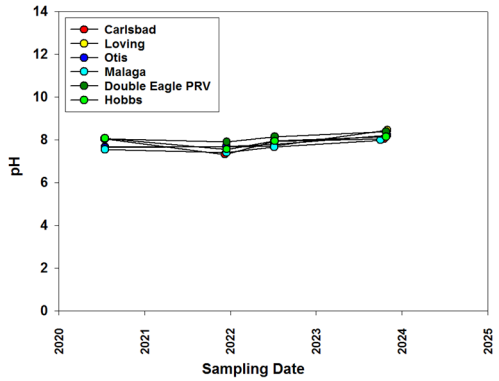
Sample Type: Drinking Water
Year: 2023
Analysis Performed: Cations

Sample Location	Calcium µg/L	Magnesium µg/L	Potassium µg/L	Sodium µg/L
Carlsbad (Sheep draw)	7.700E+04	3.366E+04	1.705E+03	1.700E+04
Hobbs	1.187E+05	2.532E+04	2.220E+03	5.673E+04
Double Eagle PRV4	5.437E+04	1.007E+04	2.392E+03	3.412E+04
Loving	9.263E+04	3.757E+04	2.385E+03	2.237E+04
Otis	3.372E+05	7.994E+04	3.440E+03	7.982E+04
Malaga	4.944E+05	1.324E+05	2.100E+03	2.017E+05



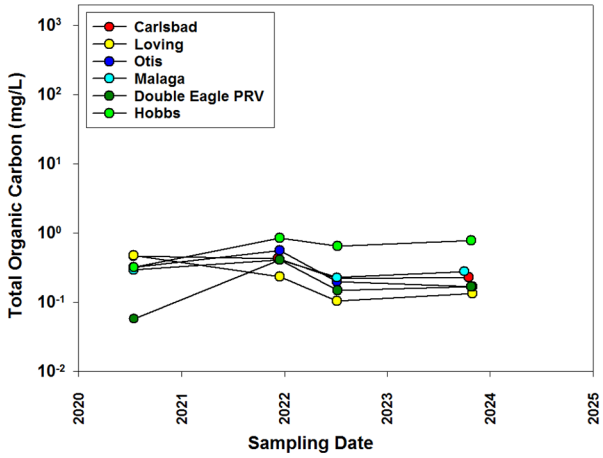
Sample Type: Drinking Water
Year: 2023
Analysis Performed: pH

Sample Location	pH @ 17.9°C
Carlsbad (Sheep draw)	8.054
Hobbs	8.134
Double Eagle PRV4	8.385
Loving	8.441
Otis	8.203
Malaga	7.987



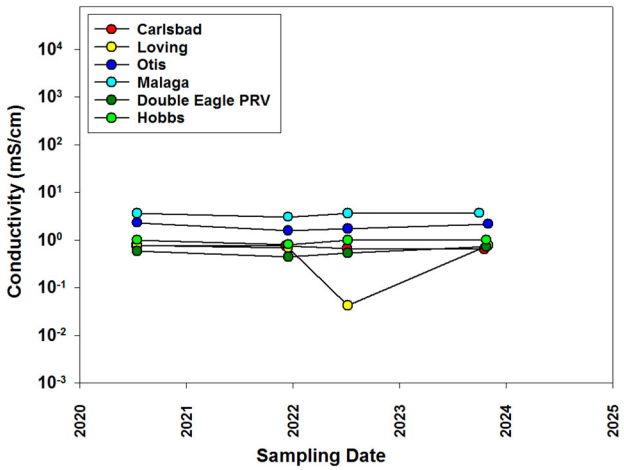
Sample Type: Drinking Water
Year: 2023
Analysis Performed: Total Organic Carbon

Sample Location	TOC mg/L
Sheep Draw	0.232
Hobbs	0.776
Double Eagle PRV-4	0.168
Loving	0.135
Otis	0.170
Malaga	0.280



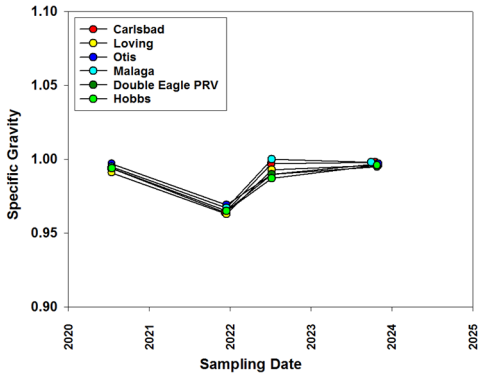
Sample Type: Drinking Water
Year: 2023
Analysis Performed: Conductivity

Sample Location	Conductivity mS/cm	Temperature °C
Sheep Draw (Carlsbad)	0.638	19.8
Loving	0.772	19.6
Otis	2.19	19.5
Malaga	3.70	19.6
Hobbs	1.01	19.4
PRV4 (Double Eagle)	0.726	19.4



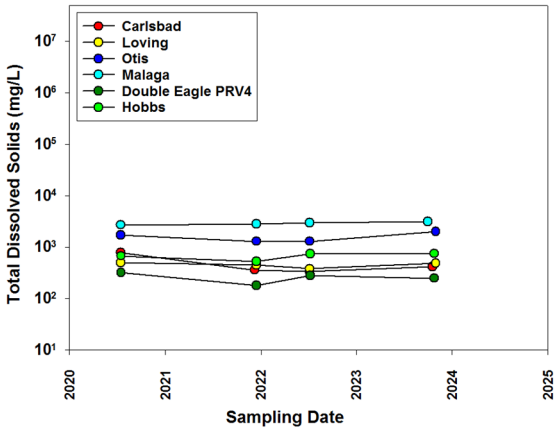
Sample Type: Drinking Water
Year: 2023
Analysis Performed: Specific gravity

Sample Location	Specific Gravity
Sheep Draw (Carlsbad)	0.998
Loving	0.996
Otis	0.997
Malaga	0.998
Hobbs	0.996
PRV4 (Double Eagle)	0.995



Sample Type: Drinking Water
Year: 2023
Analysis Performed: TDS/TSS

Sample Location	TDS mg/L	TSS mg/L
Sheep Draw (Carlsbad)	420.0	N.D.
Loving	490.0	N.D.
Otis	2010.0	10.0
Malaga	3140.0	40.0
Hobbs	750.0	N.D.
PRV4 (Double Eagle)	250.0	N.D.
N.D. = non-detect.		



Sample Type: Drinking Water
Year: 2023
Analysis Performed: Metals

Metal	Carlsbad (Sheeps Draw) Conc µg/L	Loving Conc µg/L	Otis Conc µg/L	Double Eagle (PRV4) Conc µg/L	Hobbs Conc µg/L	Malaga Conc µg/L
Ag	5.34E-02	7.76E-02	2.05E-01	<MDC	1.66E-01	4.52E-01
Al	1.93E+00	1.99E+00	1.04E+01	4.67E+00	1.30E+00	2.57E+00
As	7.68E-01	1.73E+00	2.00E+00	7.37E+00	7.46E+00	2.02E+00
B	N/A	N/A	N/A	N/A	N/A	N/A
Ba	6.96E+01	3.36E+01	1.27E+01	9.23E+01	5.54E+01	1.29E+01
Be	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Ca	6.43E+04	8.24E+04	2.94E+05	4.89E+04	1.03E+05	4.17E+05
Cd	1.95E-02	1.89E-02	<MDC	<MDC	<MDC	<MDC
Ce	<MDC	<MDC	<MDC	6.20E-03	<MDC	<MDC
Co	1.61E-01	1.65E-01	6.53E-01	<MDC	<MDC	8.54E-01
Cr	1.73E+00	2.25E+00	<MDC	<MDC	<MDC	<MDC
Cu	1.03E+01	1.46E+01	1.99E+01	<MDC	<MDC	<MDC
Dy	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Er	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Eu	1.64E-02	8.14E-03	<MDC	1.87E-02	<MDC	<MDC
Fe	N/A	N/A	N/A	N/A	N/A	N/A
Ga	N/A	N/A	N/A	N/A	N/A	N/A
Gd	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Hg	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
K	1.10E+03	1.86E+03	2.94E+03	2.81E+03	2.71E+03	4.04E+03
La	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Li	6.44E+00	1.97E+01	5.38E+01	2.09E+01	3.53E+01	6.52E+01
Mg	3.35E+04	3.76E+04	8.34E+04	1.04E+04	2.62E+04	1.38E+05
Mn	7.50E-01	8.03E-02	4.85E-01	5.74E-01	1.22E+00	1.31E+00
Mo	1.22E+00	1.70E+00	4.83E+00	1.59E+00	2.45E+00	3.81E+00
Na	1.62E+04	2.17E+04	8.05E+04	3.17E+04	5.27E+04	2.07E+05
Nd	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Ni	3.76E+00	4.00E+00	1.75E+01	2.07E+00	4.49E+00	2.08E+01
P	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Pb	5.30E+00	1.48E+00	3.02E-01	1.33E-01	2.48E-01	2.75E-02
Pr	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Sb	4.48E-02	4.80E-02	5.40E-02	2.94E-02	6.86E-02	5.10E-02
Sc	2.38E+00	4.02E+00	4.71E+00	6.18E+00	9.52E+00	4.63E+00
Se	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Si	5.85E+03	9.62E+03	1.09E+04	1.55E+04	2.49E+04	1.08E+04
Sr	3.17E+02	7.20E+02	3.56E+03	5.00E+02	1.11E+03	4.55E+03
Th	<MDC	<MDC	<MDC	<MDC	<MDC	<MDC
Tl	7.45E-02	<MDC	<MDC	<MDC	<MDC	<MDC
U	7.86E-01	1.83E+00	4.86E+00	1.90E+00	3.53E+00	5.56E+00
V	3.63E+00	1.18E+01	7.40E+00	2.85E+01	2.96E+01	7.74E+00
Zn	3.75E+01	1.99E+01	<MDC	<MDC	<MDC	<MDC

Sample Type: FAS, Station A
Year: 2023
Analysis Performed: Anions in weekly composites

Week	Chloride ng/m^3	Nitrate ng/m^3	Phosphate ng/m^3	Sulfate ng/m^3
01/01/23	1.35E+05	<MDL	<MDL	1.10E+04
01/08/23	3.18E+05	2.55E+01	<MDL	3.67E+04
01/15/23	2.98E+05	<MDL	<MDL	1.64E+04
01/22/23	2.25E+05	<MDL	<MDL	1.59E+04
02/01/23	1.43E+05	<MDL	<MDL	1.04E+04
02/08/23	2.69E+05	<MDL	<MDL	3.07E+04
02/15/23	4.19E+05	<MDL	<MDL	4.92E+04
02/22/23	1.83E+05	1.92E+02	6.20E+02	2.50E+04
03/01/23	4.94E+05	1.42E+02	<MDL	6.32E+04
03/08/23	3.41E+04	<MDL	<MDL	8.21E+03
03/15/23	2.11E+05	8.52E+01	<MDL	4.83E+04
03/22/23	3.67E+05	2.71E+02	<MDL	8.03E+04
04/01/23	3.32E+05	2.39E+02	<MDL	5.34E+04
04/08/23	1.98E+05	1.61E+02	<MDL	5.73E+04
04/15/23	3.58E+05	3.06E+02	<MDL	5.82E+04
04/22/23	2.03E+06	2.42E+03	<MDL	9.94E+04
05/01/23	6.34E+05	1.08E+02	<MDL	5.45E+04
05/08/23	1.78E+05	4.32E+01	<MDL	1.40E+04
05/15/23	4.55E+05	<MDL	<MDL	2.13E+04
05/22/23	1.09E+05	<MDL	<MDL	9.73E+03
06/01/23	7.36E+04	3.60E+01	<MDL	1.07E+04
06/08/23	1.15E+06	9.43E+01	<MDL	2.33E+04
06/15/23	3.77E+05	5.10E+01	<MDL	3.41E+04
06/22/23	4.22E+05	3.47E+01	<MDL	2.69E+04
07/01/23	2.45E+05	6.28E+01	<MDL	1.26E+04
07/08/23	3.68E+05	3.74E+01	<MDL	2.24E+04
07/15/23	1.13E+06	1.81E+02	<MDL	2.47E+04
07/22/23	1.10E+06	2.35E+02	<MDL	5.28E+04
08/01/23	3.91E+05	3.89E+02	<MDL	3.62E+04
08/08/23	3.77E+05	<MDL	<MDL	2.43E+04
08/15/23	3.18E+05	<MDL	<MDL	2.39E+04
08/22/23	4.31E+05	<MDL	<MDL	3.82E+04
09/01/23	3.81E+05	<MDL	<MDL	3.63E+04
09/08/23	2.13E+05	<MDL	4.88E+03	2.11E+04
09/15/23	4.14E+05	3.63E+02	1.12E+03	4.56E+04
09/22/23	2.77E+05	3.19E+02	<MDL	2.66E+04
10/01/23				
10/08/23				
10/15/23				
10/22/23				
11/01/23				
11/08/23				
11/15/23				
11/22/23				
12/01/23				
12/08/23				
12/15/23				
12/22/23				

NOTE: Filters were not received for the following time frames: N/A

Sample Type: Near Field (107), ambient air
Year: 2023
Analysis Performed: Anions

Start Date	Chloride µg/m³	Nitrate µg/m³	Phosphate µg/m³	Sulfate µg/m³
01/06/23	2.92E-01	1.47E+00	1.95E-03	1.15E+00
01/27/23	6.44E-01	3.79E+00	4.13E-03	2.60E+00
03/01/23	3.52E-01	2.17E+00	3.63E-03	1.76E+00
03/29/23	3.59E-01	1.13E+00	2.32E-03	1.01E+00
04/14/23	3.53E-01	1.80E+00	1.11E-02	1.82E+00
04/28/23	4.60E-01	3.23E+00	6.03E-03	2.74E+00
05/19/23	1.59E-01	1.65E+00	5.24E-03	2.04E+00
06/21/23	1.24E-01	1.15E+00	2.43E-03	2.00E+00
08/02/23	1.86E-01	2.01E+00	2.82E-03	1.71E+00
08/30/23	1.54E-01	2.41E+00	<MDL	2.15E+00

Sample Type: Cactus Flats (108), ambient air
Year: 2023
Analysis Performed: Anions

Start Date	Chloride µg/m³	Nitrate µg/m³	Phosphate µg/m³	Sulfate µg/m³
01/06/23	3.50E-01	1.55E+00	<MDL	1.08E+00
01/27/23	4.04E-01	3.56E+00	<MDL	2.57E+00
03/01/23	2.51E-01	2.23E+00	3.32E-03	1.86E+00
03/29/23	1.59E-01	1.11E+00	2.43E-03	1.09E+00
04/14/23	3.50E-01	2.01E+00	1.01E-02	2.23E+00
04/28/23	3.79E-01	2.70E+00	6.03E-03	2.54E+00
05/19/23	1.14E-01	1.70E+00	4.15E-03	2.05E+00
06/21/23	6.98E-02	1.07E+00	<MDL	2.24E+00
08/02/23	1.16E-01	2.34E+00	3.72E-03	2.55E+00
08/30/23	9.56E-02	2.52E+00	8.14E-03	2.56E+00

Sample Type: FAS, Station A
Year: 2023
Analysis Performed: Cations in weekly composites

Week	Sodium ng/m^3	Ammonium ng/m^3	Magnesium ng/m^3	Potassium ng/m^3	Calcium ng/m^3
01/01/23	8.87E+05	<MDL	5.38E+02	7.34E+02	5.10E+03
01/08/23	2.05E+06	<MDL	7.80E+02	1.45E+03	1.79E+04
01/15/23	1.91E+06	<MDL	7.16E+02	1.36E+03	7.25E+03
01/22/23	1.46E+06	<MDL	8.33E+02	1.57E+03	5.98E+03
02/01/23	9.52E+05	<MDL	1.03E+03	2.27E+03	4.22E+03
02/08/23	1.86E+06	<MDL	2.35E+03	5.02E+03	1.03E+04
02/15/23	2.72E+06	<MDL	5.91E+03	7.33E+03	1.76E+04
02/22/23	1.20E+06	<MDL	2.58E+03	3.08E+03	9.34E+03
03/01/23	5.85E+05	<MDL	1.32E+03	1.32E+03	3.96E+03
03/08/23	1.34E+04	<MDL	2.27E+02	8.14E+02	2.23E+03
03/15/23	1.64E+06	<MDL	2.75E+03	3.50E+03	2.28E+04
03/22/23	3.40E+06	<MDL	5.89E+03	8.88E+03	4.54E+04
04/01/23	<MDL	2.19E+06	<MDL	4.70E+03	5.04E+03
04/08/23	<MDL	1.25E+06	<MDL	2.32E+03	2.82E+03
04/15/23	<MDL	2.39E+06	<MDL	2.96E+03	4.03E+03
04/22/23	<MDL	1.37E+07	<MDL	5.27E+03	8.74E+03
05/01/23	<MDL	4.24E+06	<MDL	3.03E+03	5.42E+03
05/08/23	<MDL	1.15E+06	<MDL	1.48E+03	2.08E+03
05/15/23	<MDL	2.97E+06	<MDL	1.77E+03	<MDL
05/22/23	<MDL	7.04E+04	<MDL	1.04E+03	1.68E+03
06/01/23	<MDL	4.90E+05	<MDL	1.74E+03	1.17E+03
06/08/23	<MDL	3.07E+06	<MDL	2.43E+03	3.47E+03
06/15/23	<MDL	2.54E+06	<MDL	2.60E+03	3.44E+03
06/22/23	<MDL	2.93E+06	<MDL	2.39E+03	3.50E+03
07/01/23	1.66E+06	<MDL	1.17E+03	1.82E+03	3.71E+03
07/08/23	2.45E+06	<MDL	2.06E+03	3.30E+03	6.98E+03
07/15/23	3.02E+06	<MDL	2.34E+03	3.69E+03	7.63E+03
07/22/23	2.93E+06	<MDL	2.30E+03	4.12E+03	1.88E+04
08/01/23	2.57E+06	<MDL	2.18E+03	3.73E+03	1.19E+04
08/08/23	2.48E+06	<MDL	2.06E+03	2.88E+03	7.94E+03
08/15/23	2.04E+06	<MDL	1.85E+03	3.52E+03	8.35E+03
08/22/23	2.81E+06	<MDL	2.22E+03	4.32E+03	1.28E+04
09/01/23					
09/08/23					
09/15/23					
09/22/23					
10/01/23					
10/08/23					
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12/01/23					
12/08/23					
12/15/23					
12/22/23					

NOTE: Filters were not received for the following time frames: N/A

Internal Dosimetry Group

Number of *in vivo* radiobioassay measurements performed during the reporting period: 6 for WIPP, 28 for the contract radiological personnel and those working in the laboratories located at CEMRC, none for the public participants.

Outreach activities:
The Internal Dosimetry group continues to interact with the public to encourage citizens to participate in the Lie Down and Be Counted (LDBC) project's lung and whole body in-vivo radiobioassay measurements at CEMRC. CEMRC also promotes awareness of environmental monitoring and research to the public.

The following activities took place during the reporting period of October 1st to December 31st, 2023:

10/21/2023: 11:00 AM – 12:00 PM, Artesia Public Library Meeting Room, 205 W Quay St, Artesia, NM 88210.
Arranged an informal presentation at the library on 10/21/2023 11:00 AM to 12:PM about environmental monitoring at CEMRC.

10/14/2023 9:15 AM – 12:15 PM, Cascades, Carlsbad, NM 88220
Participated in the solar eclipse event sponsored by the Inspired by Science Organization.
Set up a table with LDBC exhibits. About 425 public adults, teens, and children attended the event visiting all the exhibits. Distributed about 150 LDBC flyers, explained about the DOE free program Lie Down and Be Counted (LDBC) project's lung and whole body in-vivo radiobioassay measurements. Obtained 14 signatures of public volunteers interested in LDBC participation.