

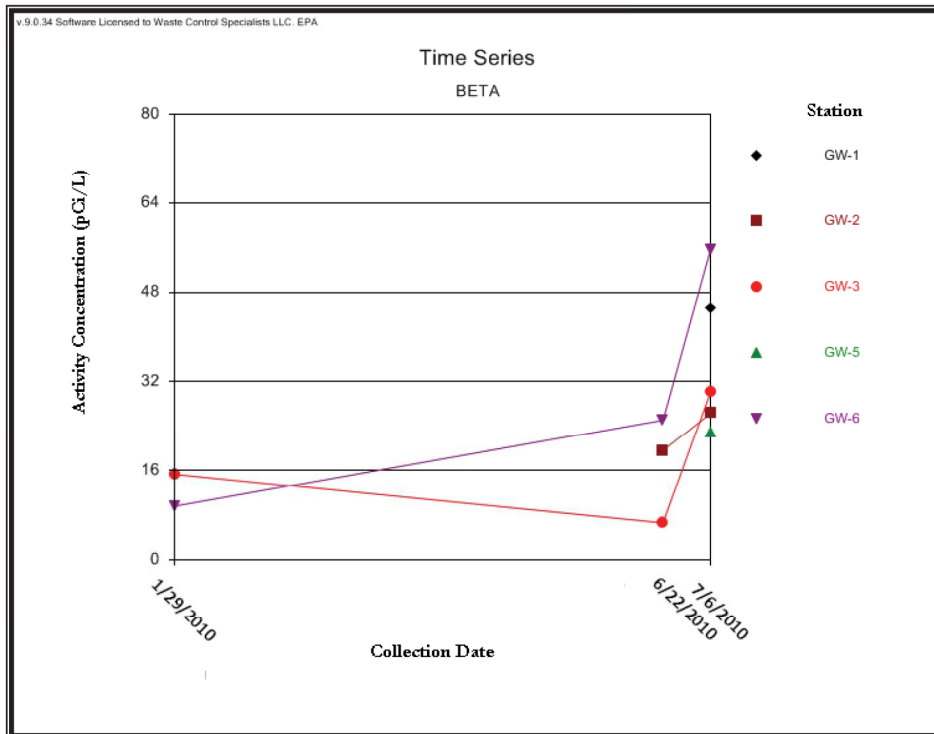


Figure 4-179 : Beta Surface Water Results.

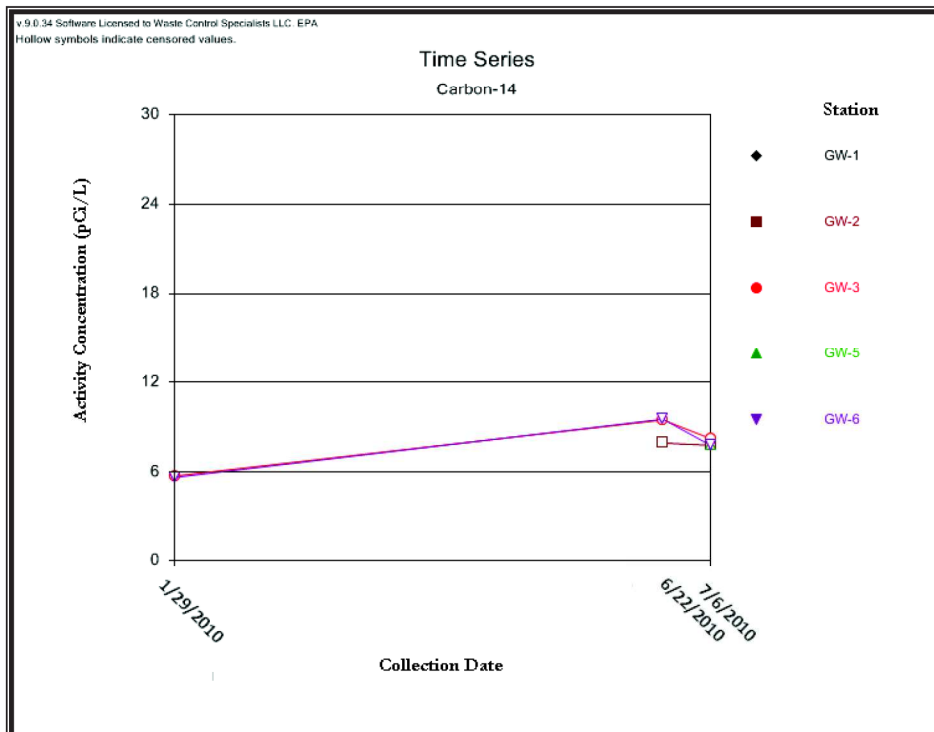


Figure 4-180 : Carbon-14 Surface Water Results.

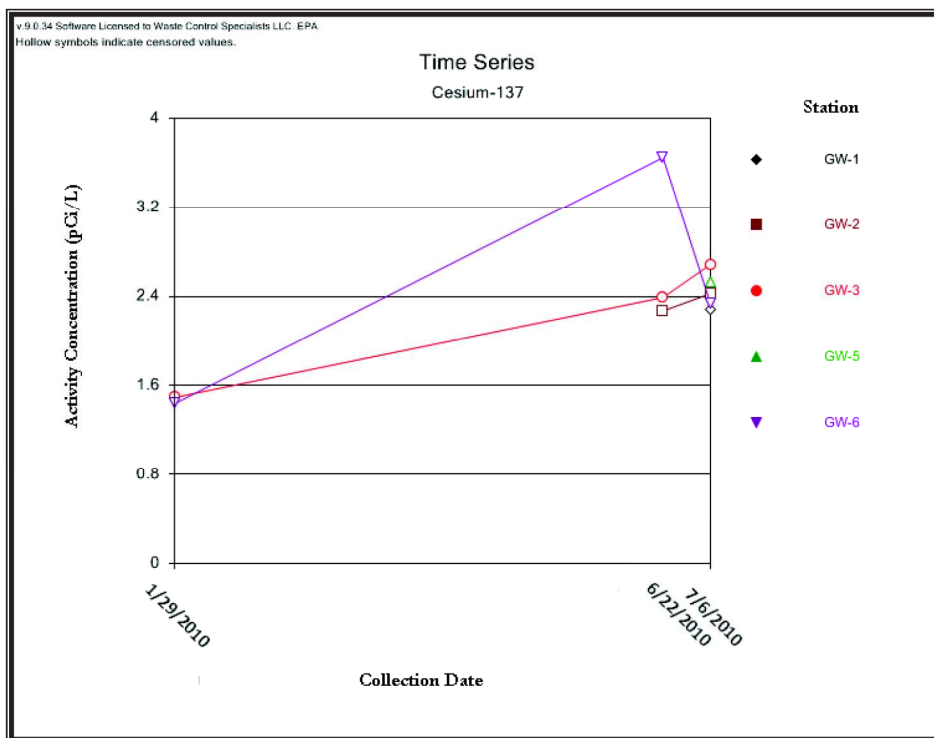


Figure 4-181 : Cesium-137 Surface Water Results.

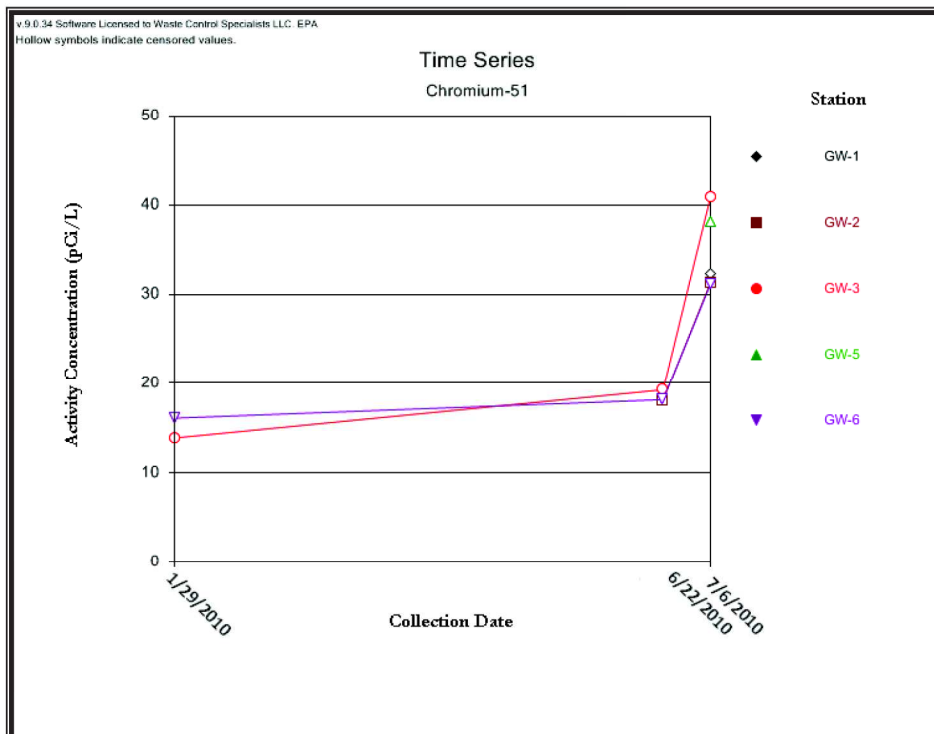


Figure 4-182 : Chromium-51 Surface Water Results.

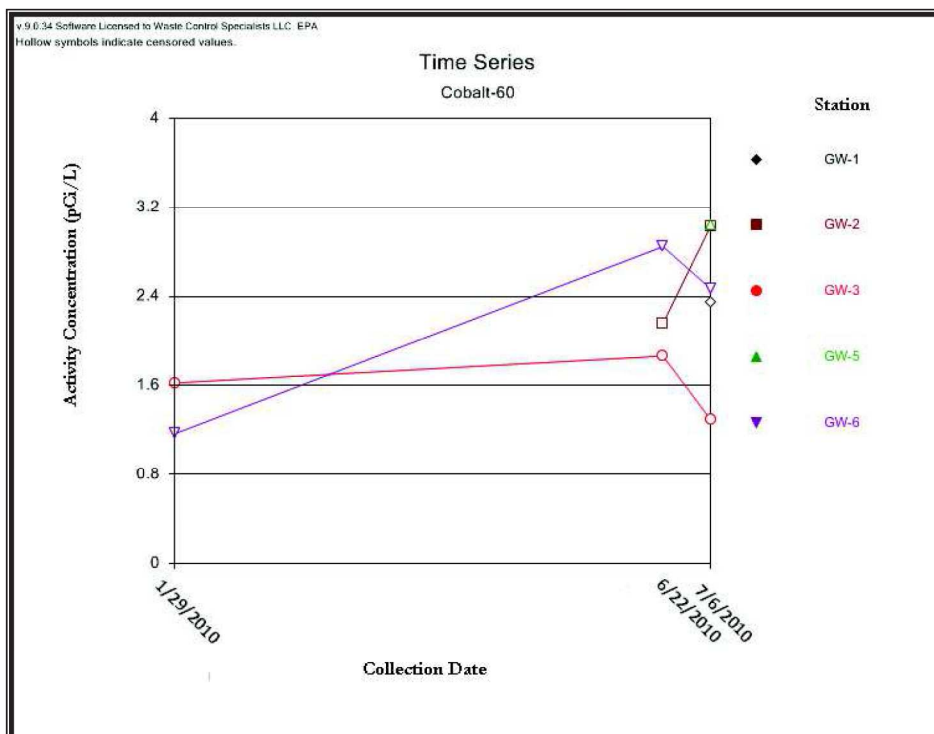


Figure 4-183 : Cobalt-60 Surface Water Results.

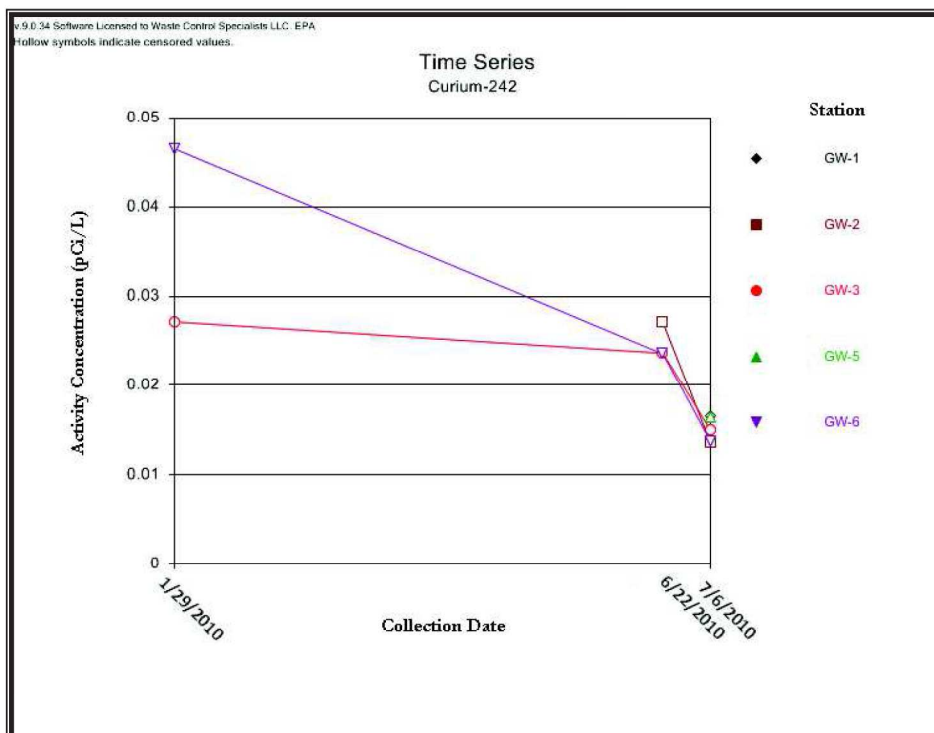


Figure 4-184 : Curium-242 Surface Water Results.

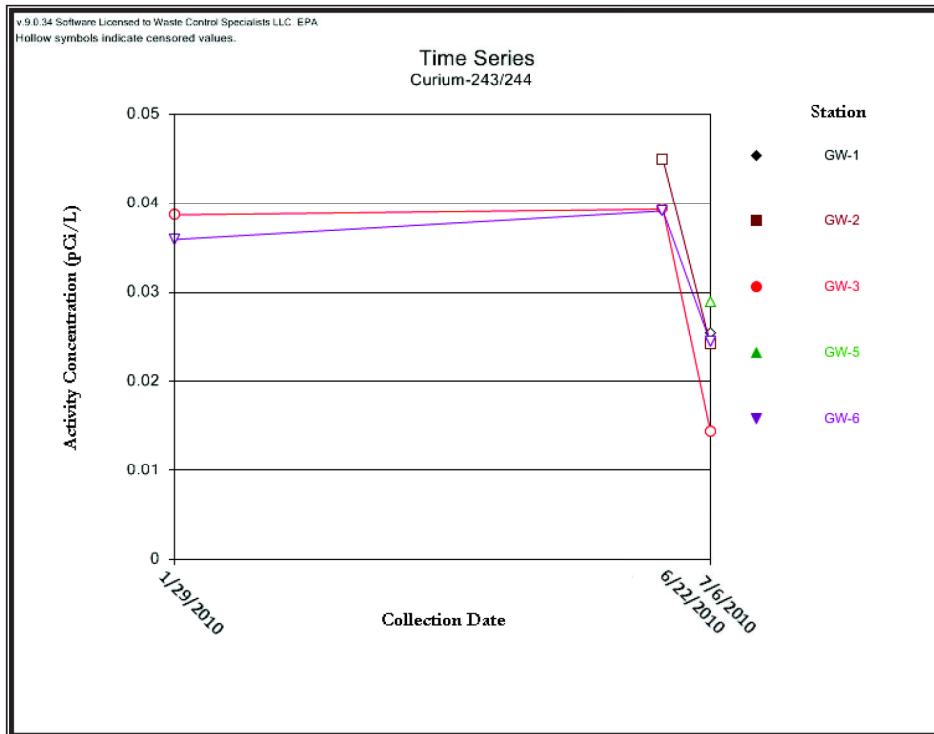


Figure 4-185 : Curium-243/244 Surface Water Results.

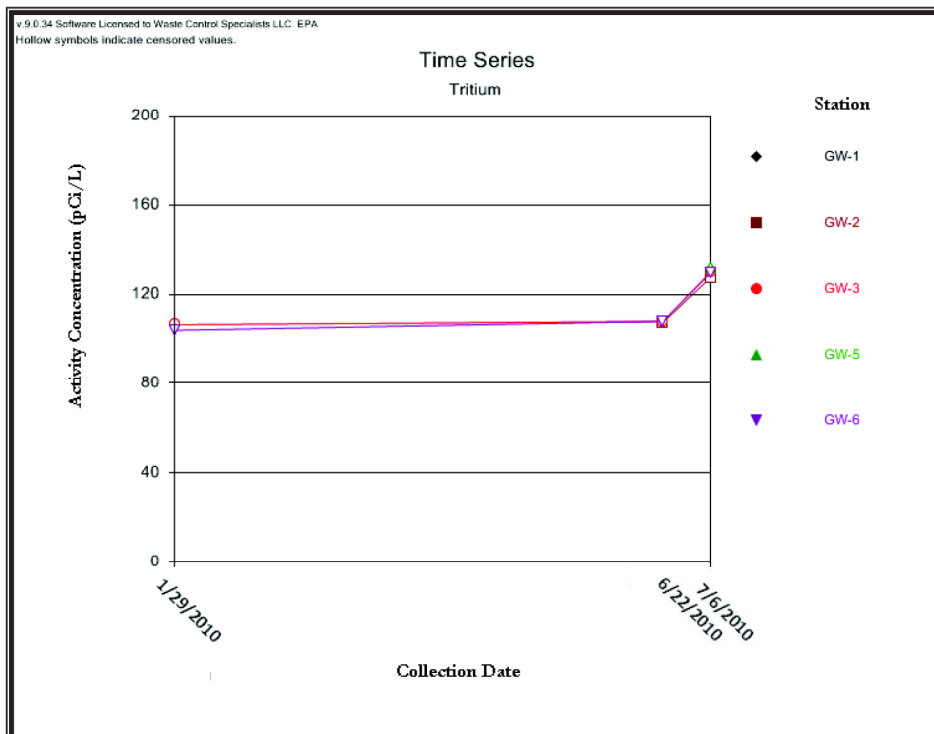


Figure 4-186 : Tritium Surface Water Results.

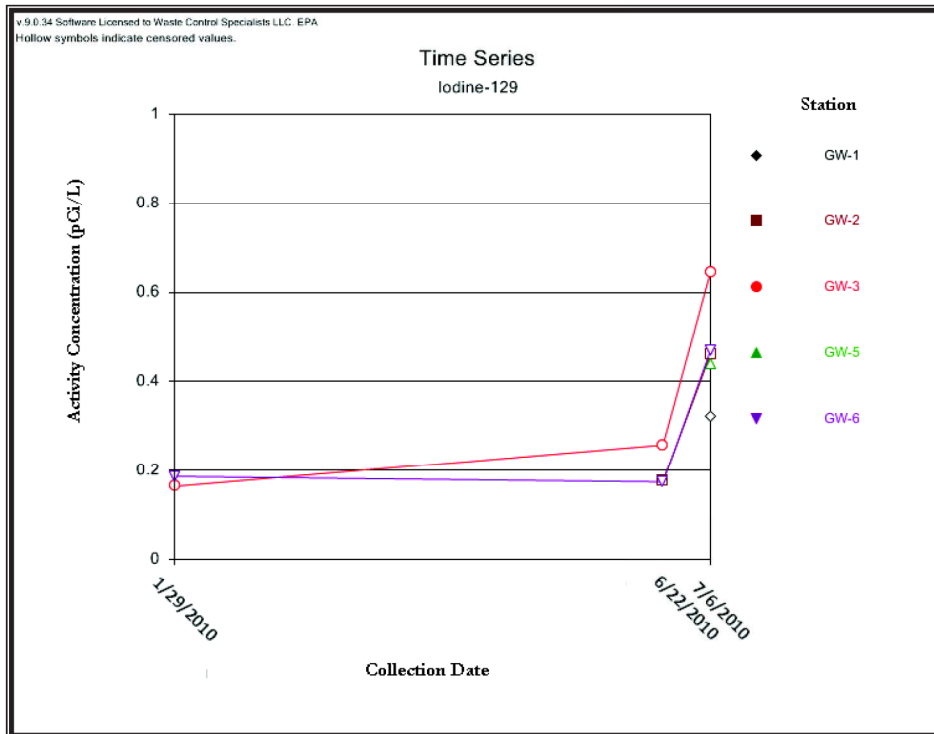


Figure 4-187 : Iodine-129 Surface Water Results.

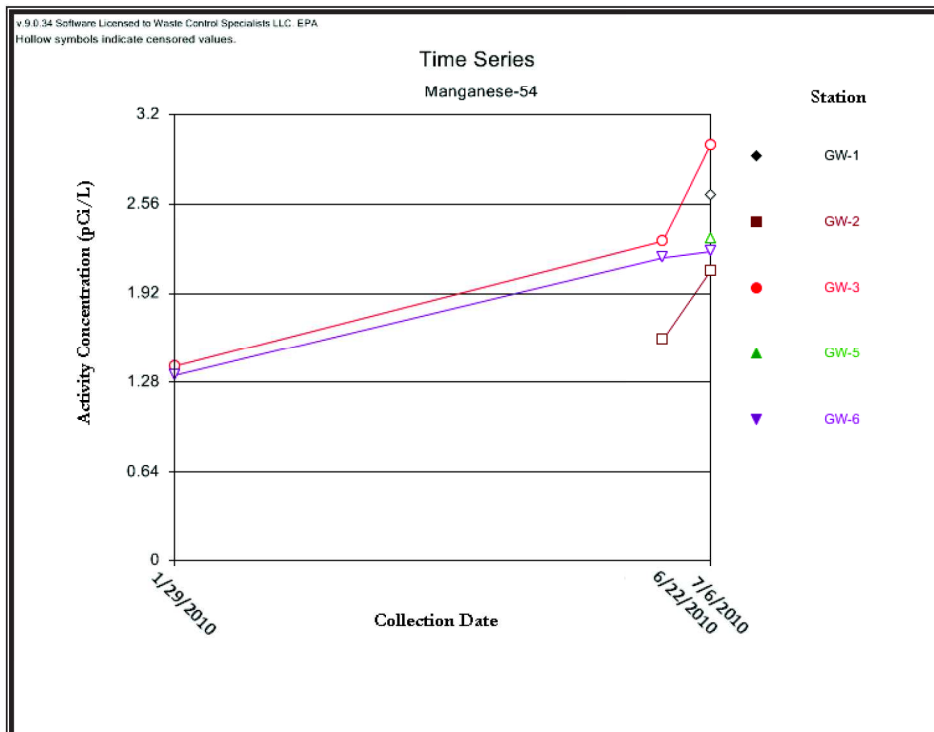


Figure 4-188 : Manganese-54 Surface Water Results.

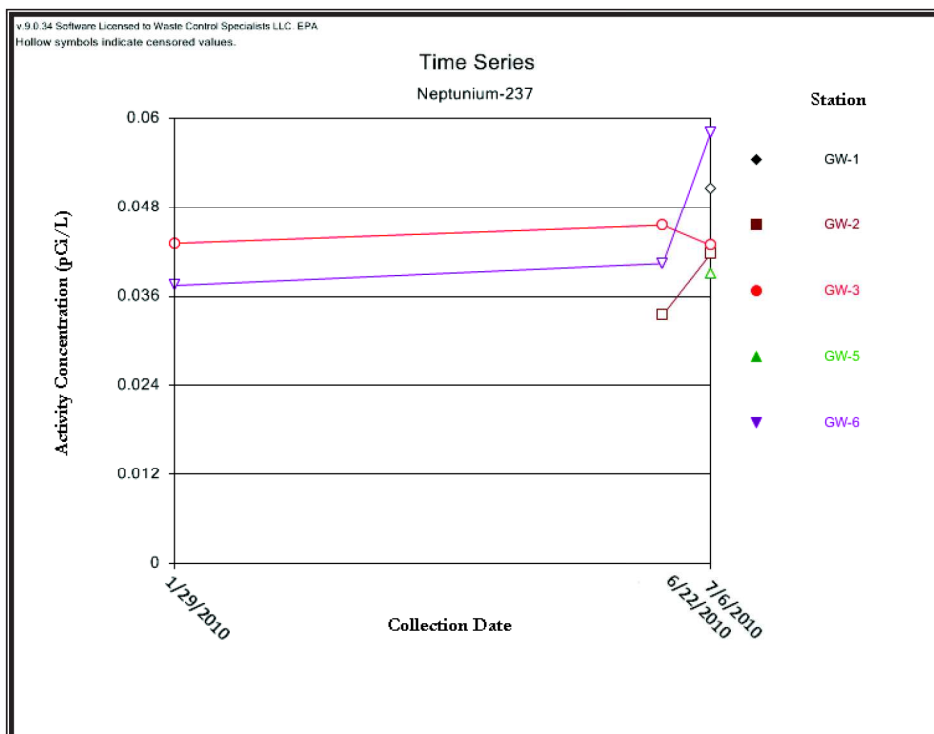


Figure 4-189 : Neptunium-237 Surface Water Results.

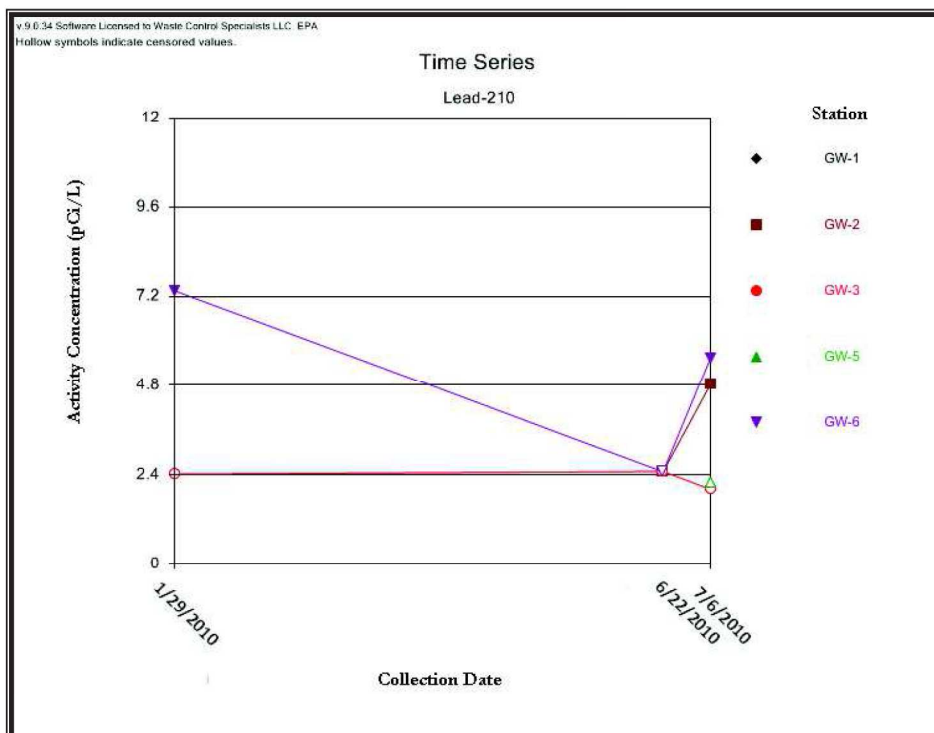


Figure 4-190 : Lead-210 Surface Water Results.

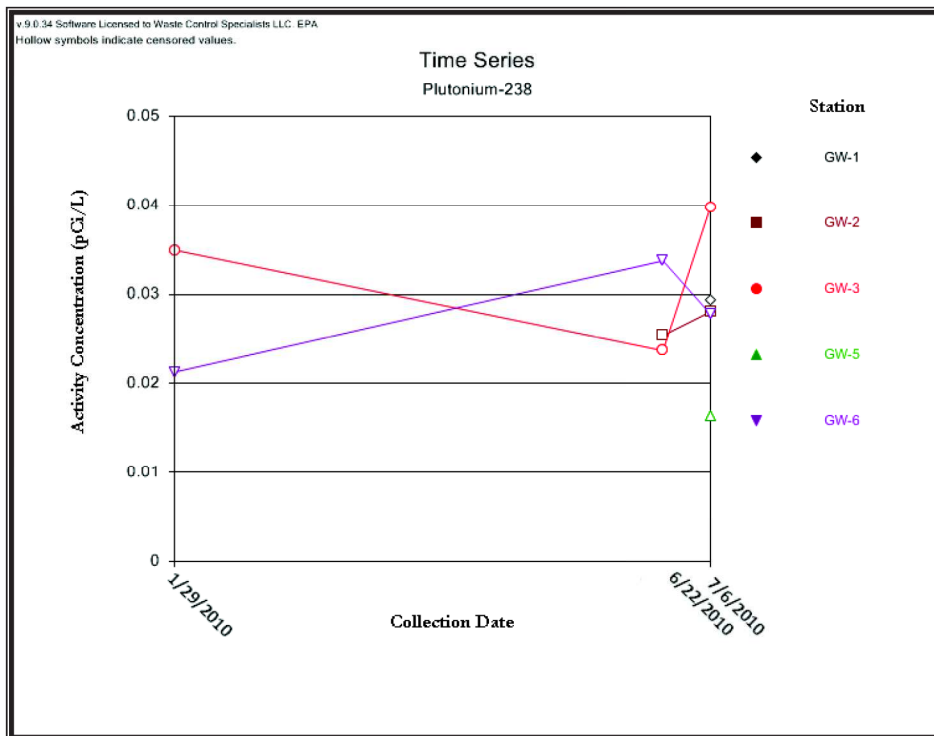


Figure 4-191 : Plutonium-238 Surface Water Results.

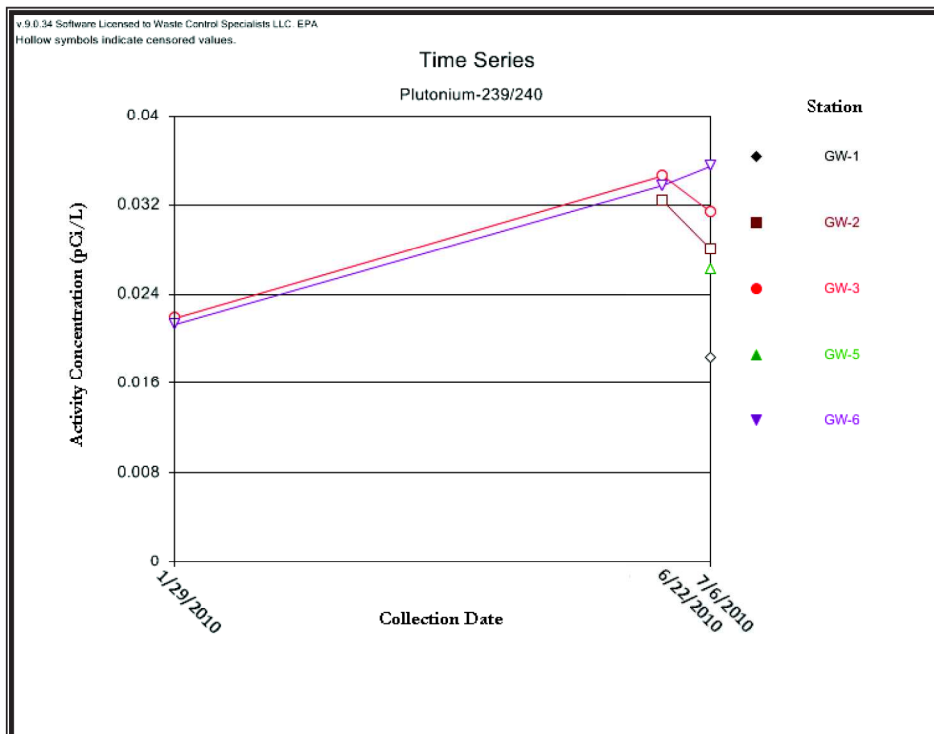


Figure 4-192 : Plutonium-239/240 Surface Water Results.

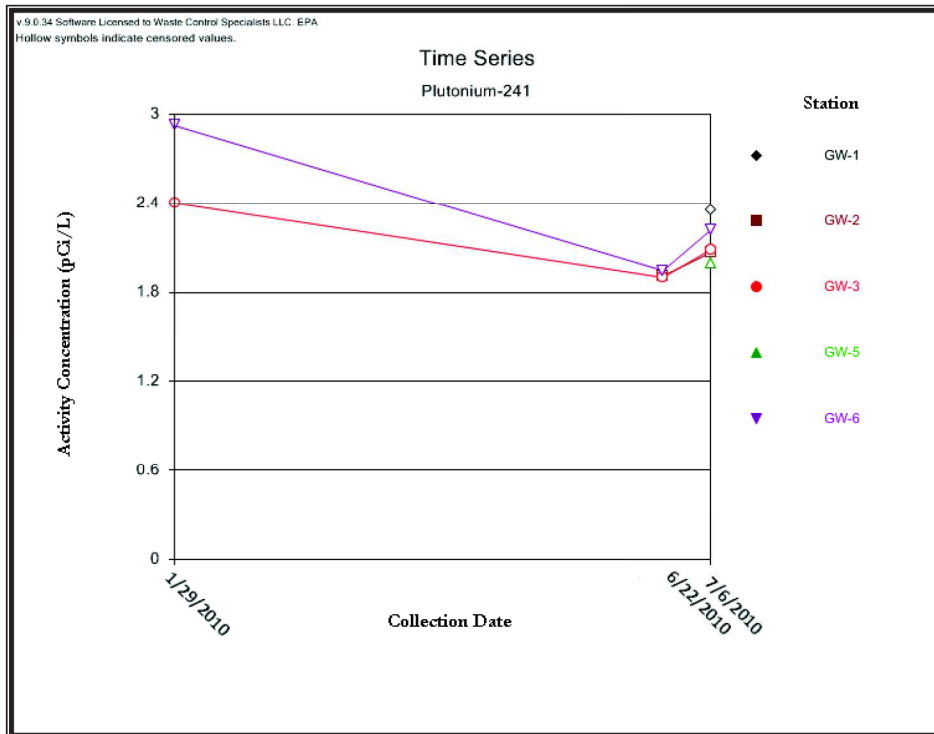


Figure 4-193 : Plutonium-241 Surface Water Results.

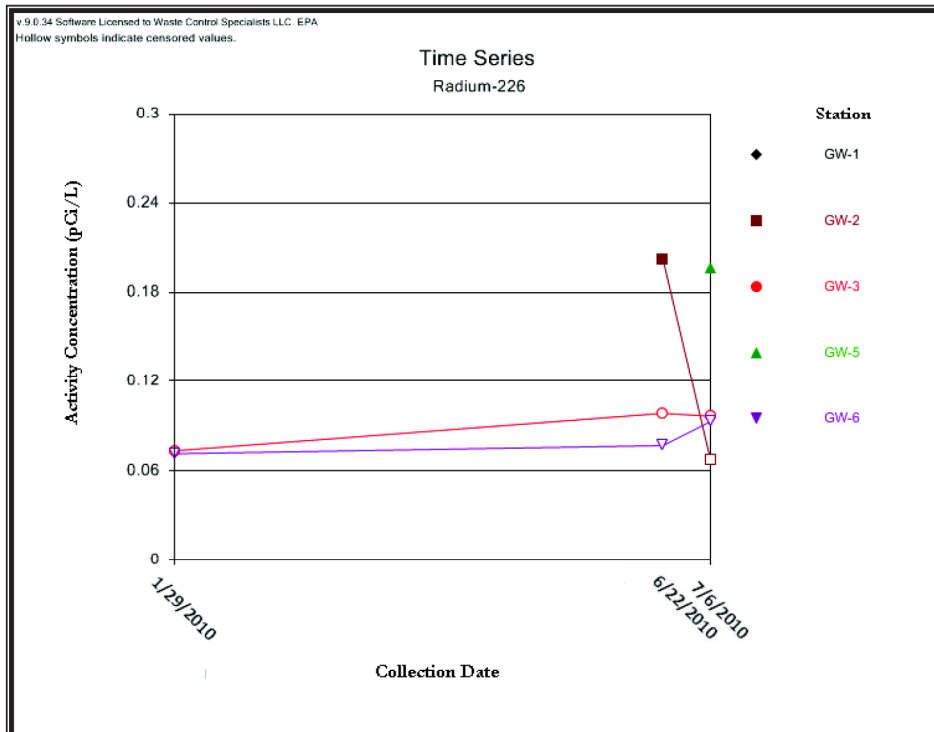


Figure 4-194 : Plutonium-241 Surface Water Results.

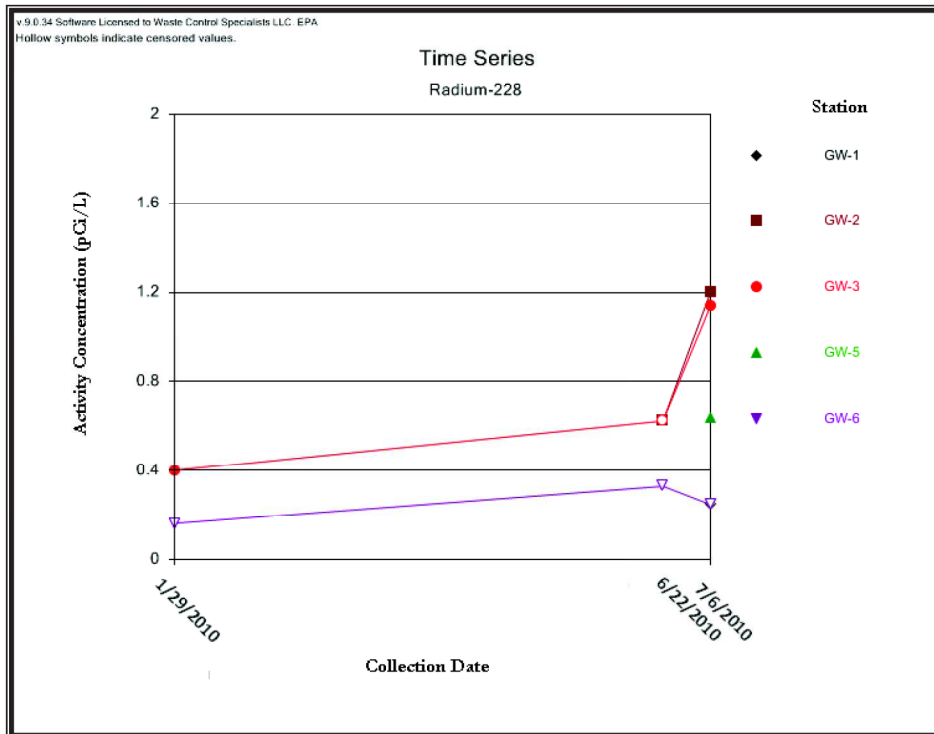


Figure 4-195 : Radium-228 Surface Water Results.

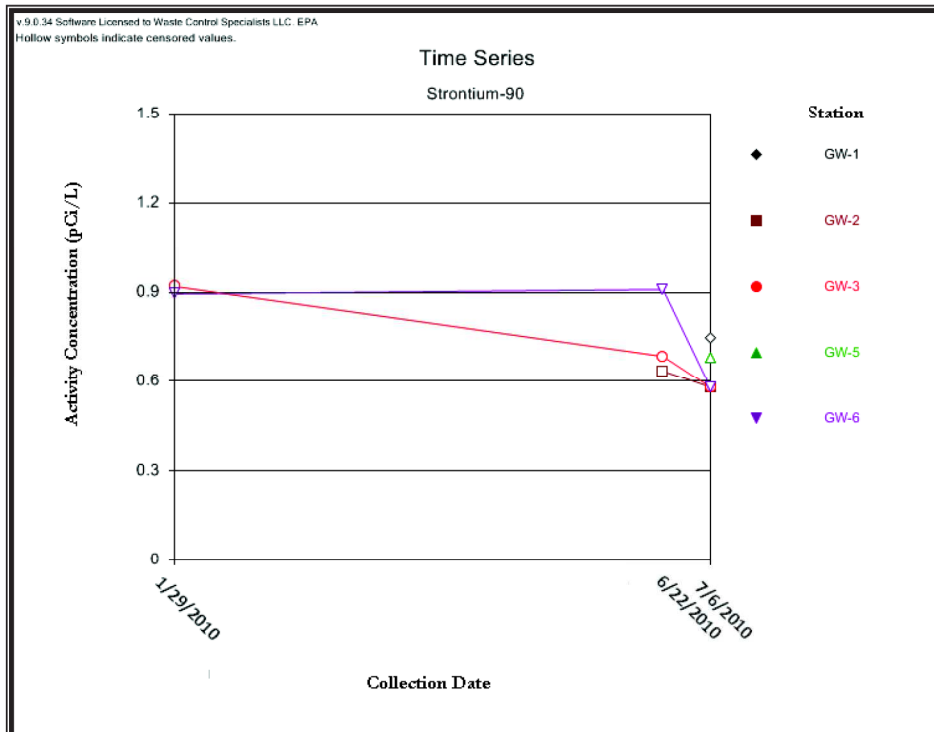


Figure 4-196 : Strontium-90 Surface Water Results.

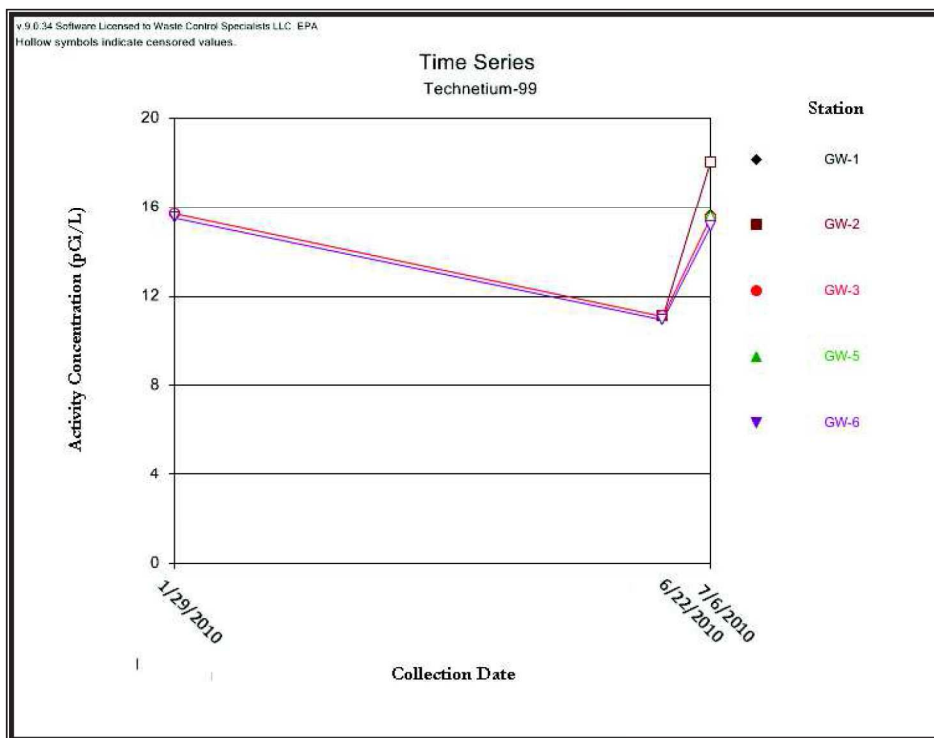


Figure 4-197 : Technetium-99 Surface Water Results.

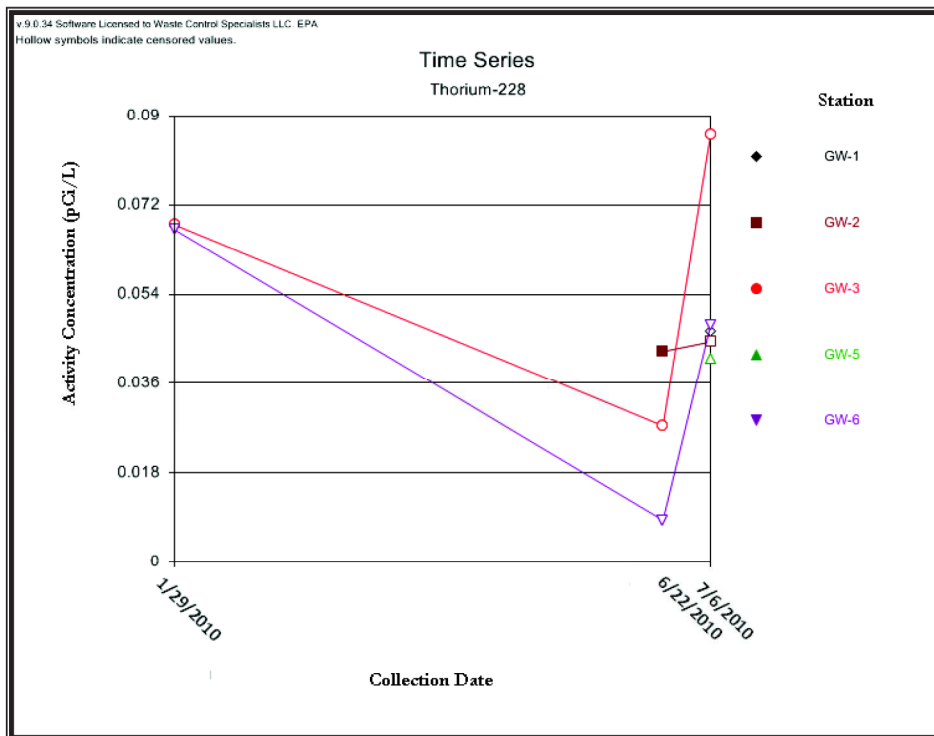


Figure 4-198 : Thorium-228 Surface Water Results.

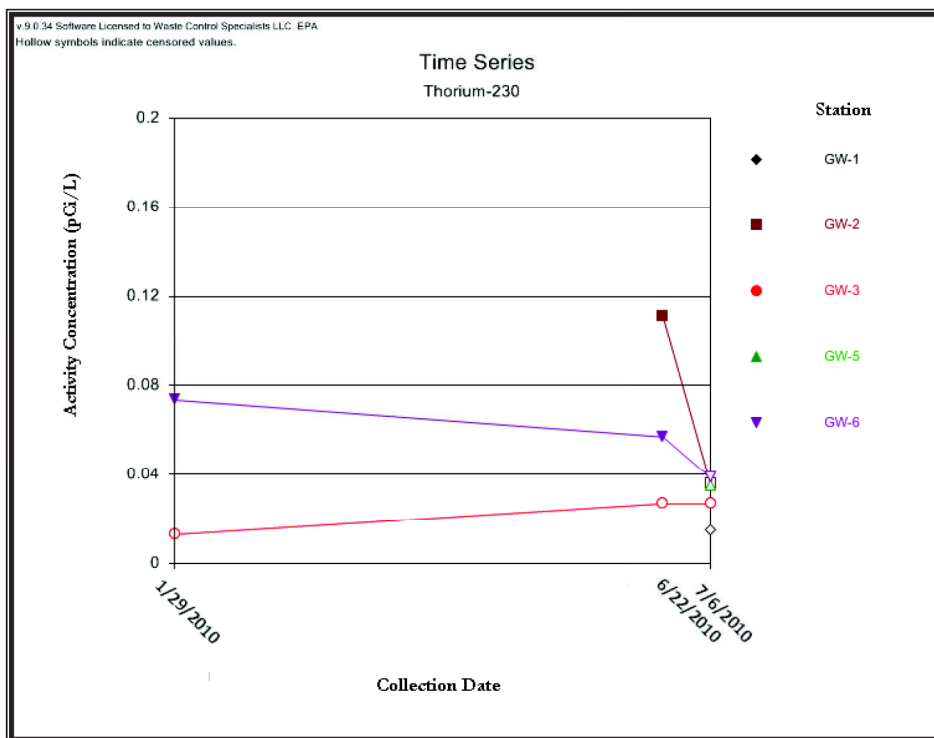


Figure 4-199 : Thorium-230 Surface Water Results.

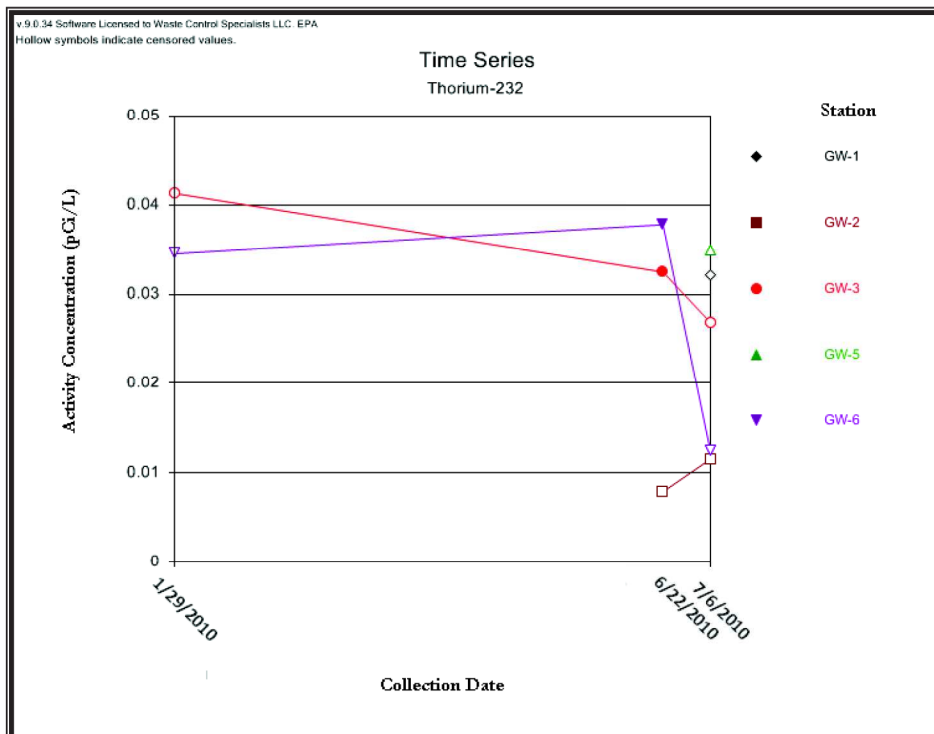


Figure 4-200 : Thorium-232 Surface Water Results.

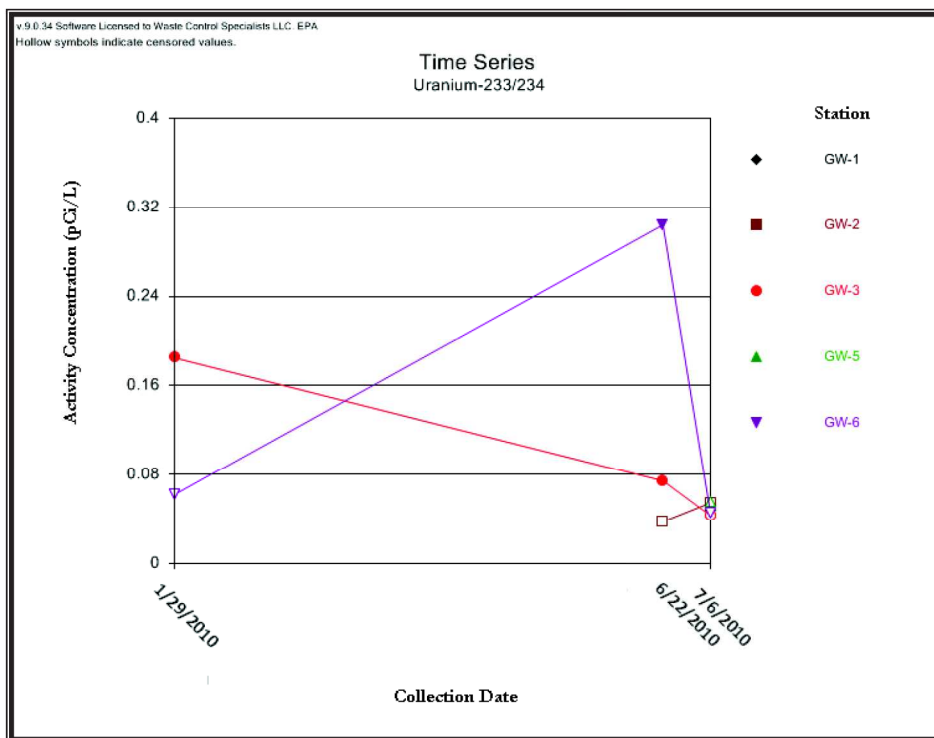


Figure 4-201 : Uranium-233/234 Surface Water Results.

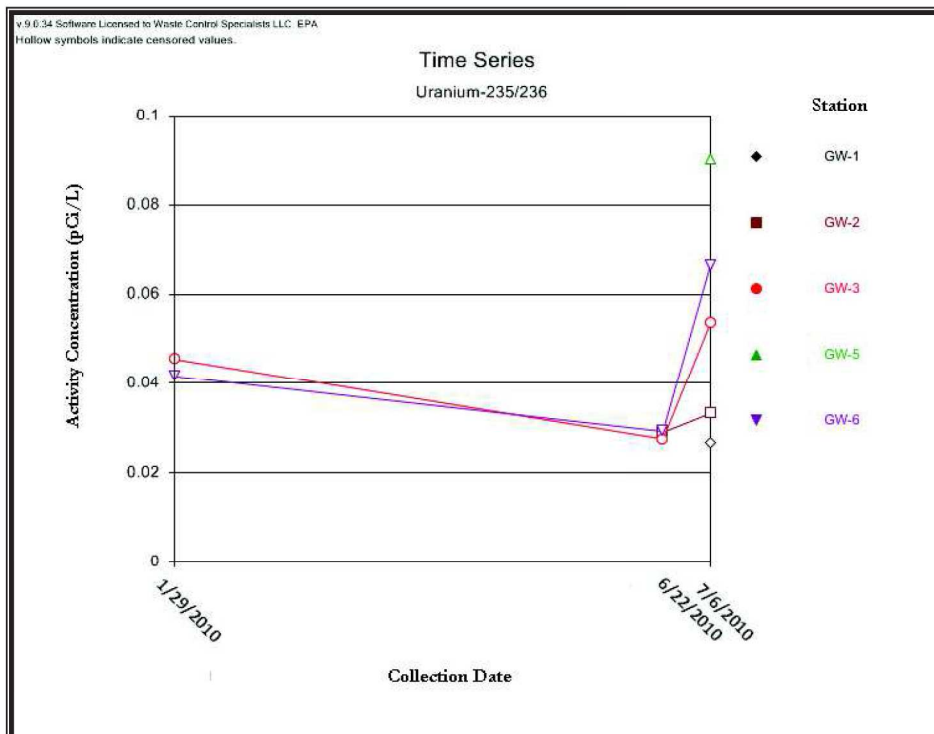


Figure 4-202 : Uranium-235/236 Surface Water Results.

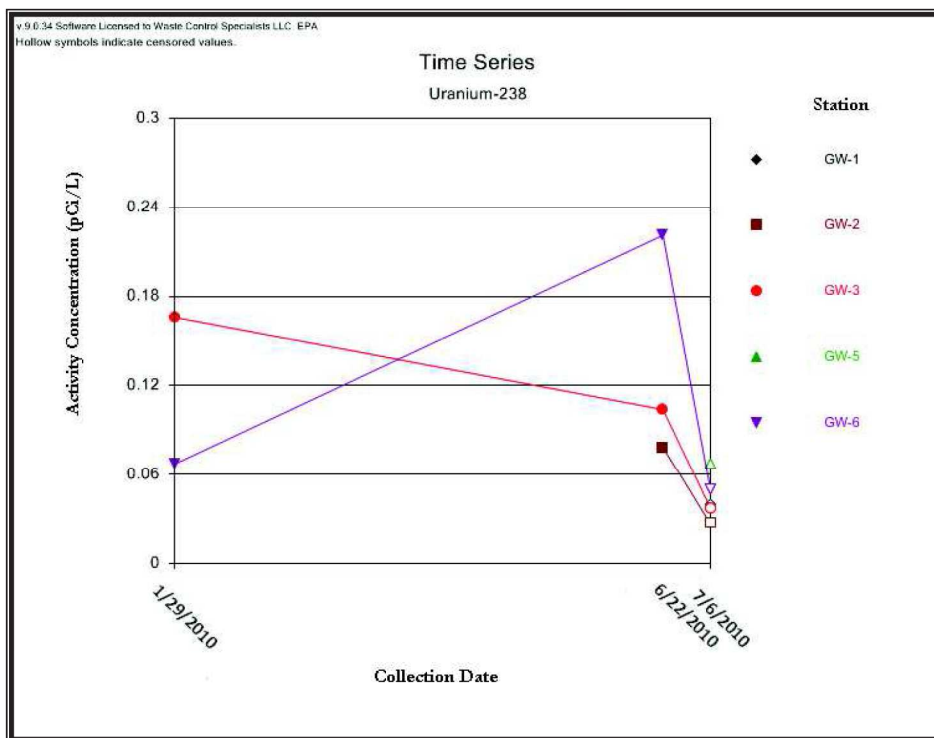


Figure 4-203 : Uranium-238 Surface Water Results.

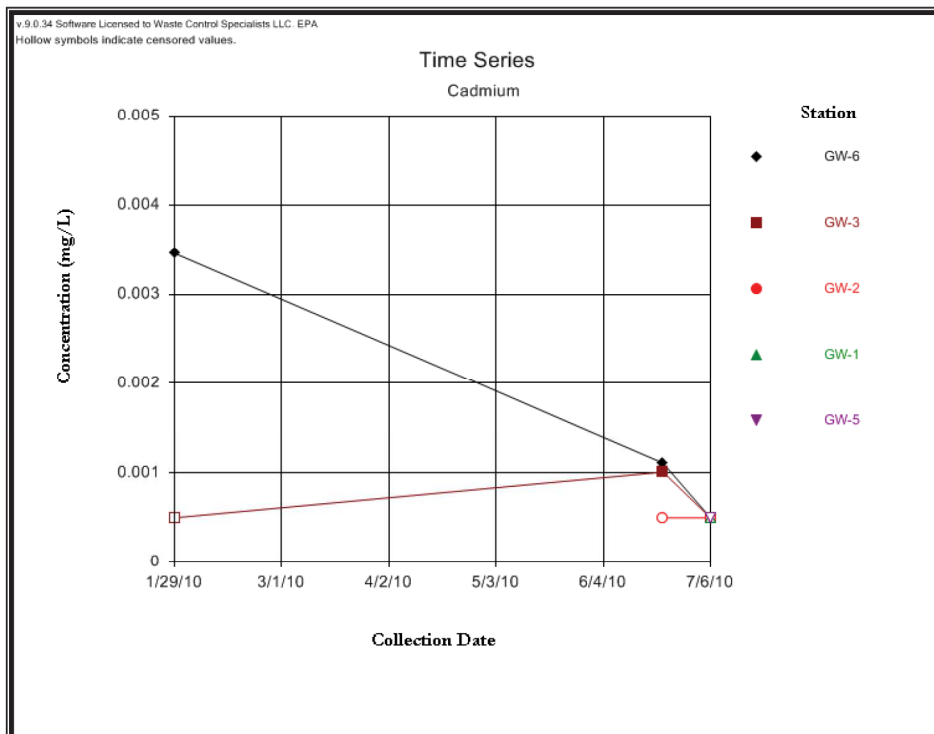


Figure 4-204 Cadmium Surface Water Results.

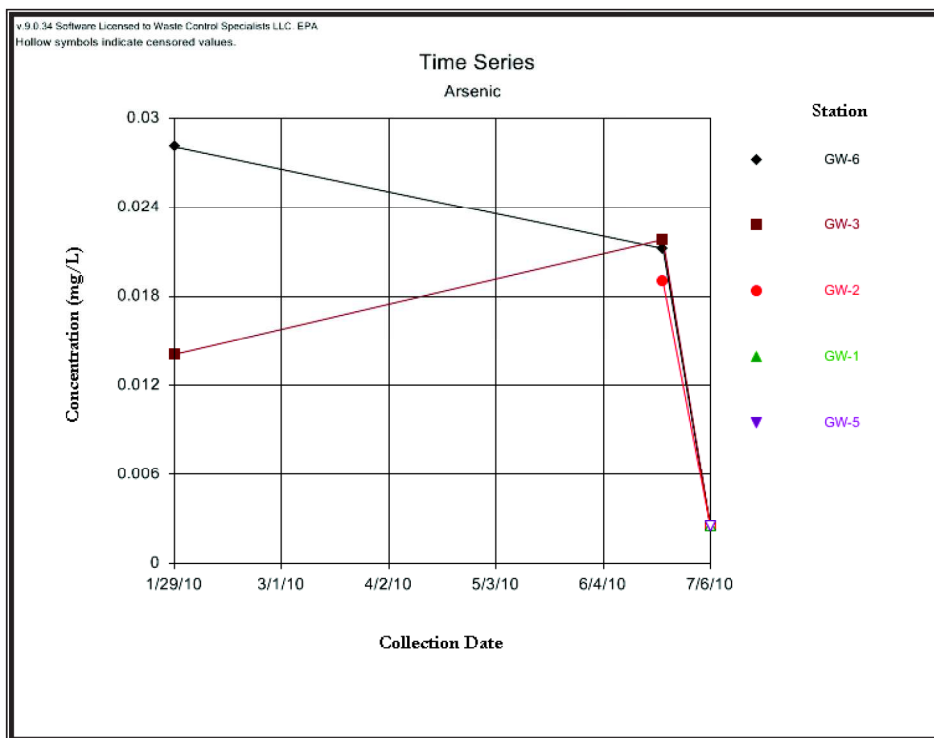


Figure 4-205 : Arsenic Surface Water Results.

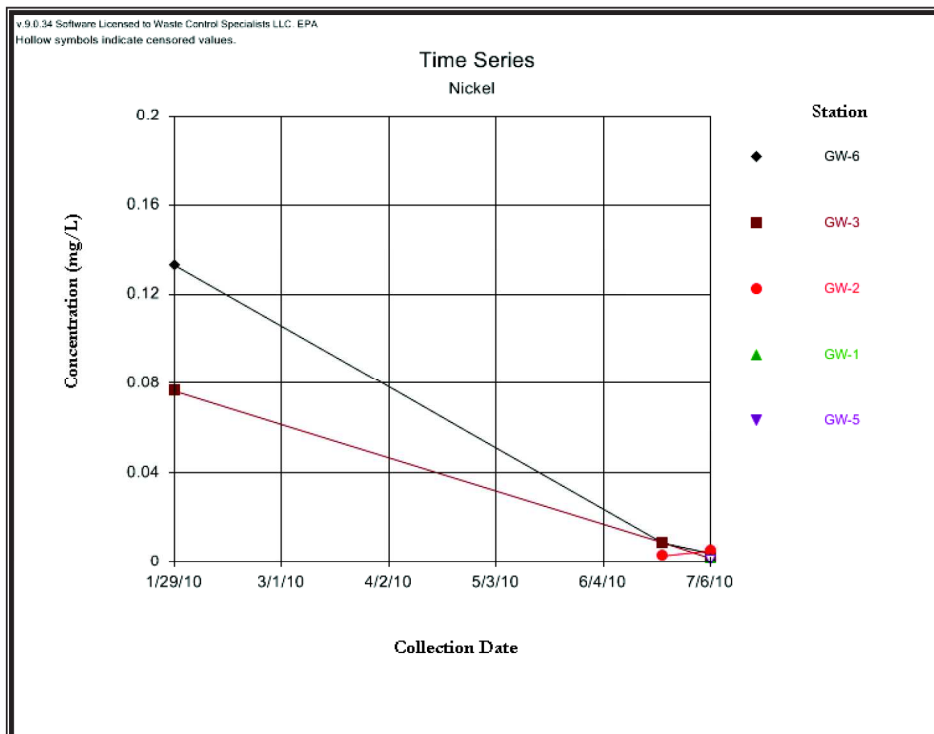


Figure 4-206 : Nickel Surface Water Results.

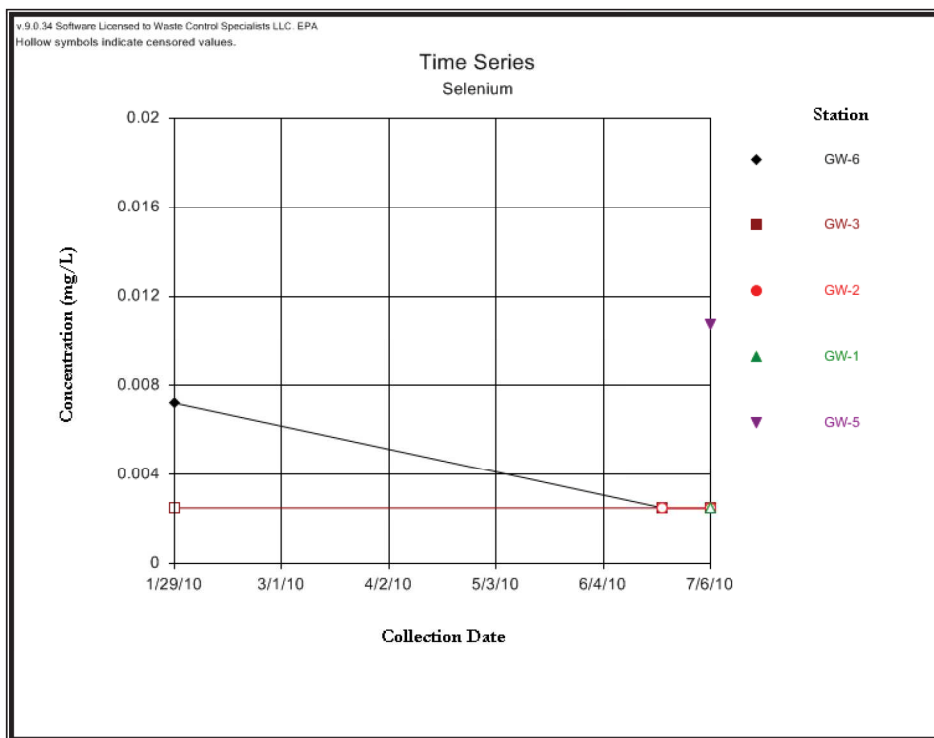


Figure 4-207 : Selenium Surface Water Results.

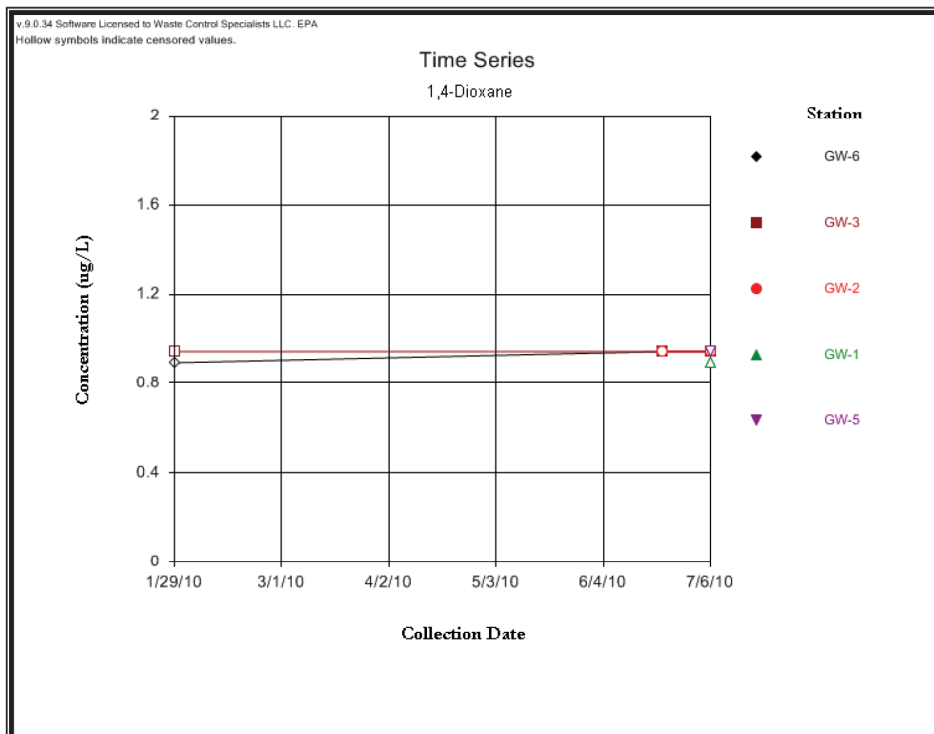


Figure 4-208 : 1,4-Dioxane Surface Water Results.

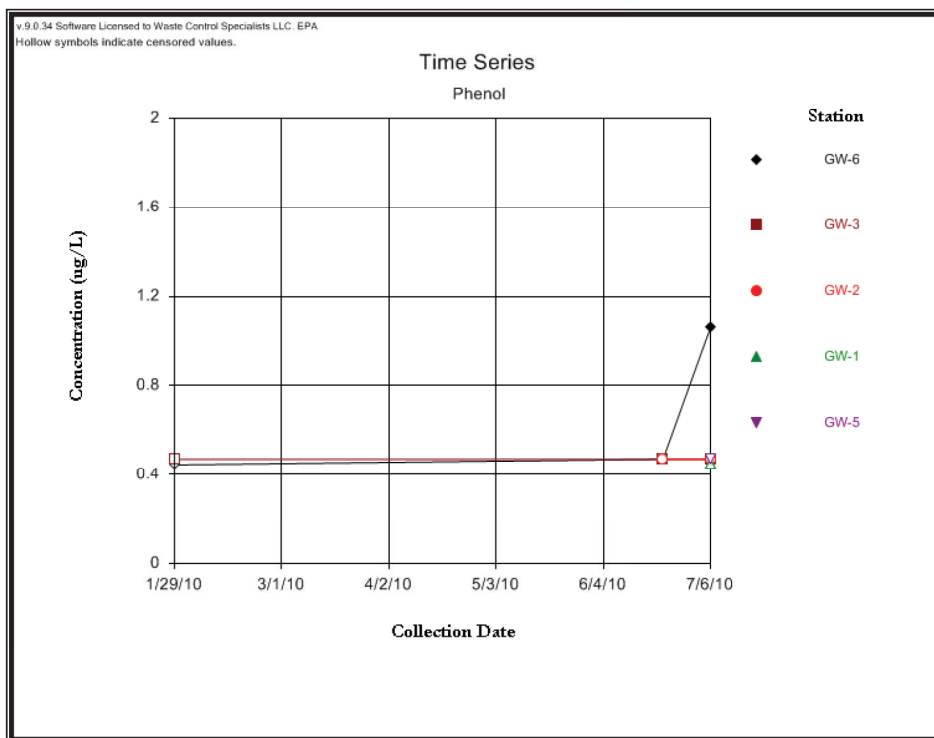


Figure 4-209 : Phenol Surface Water Results.

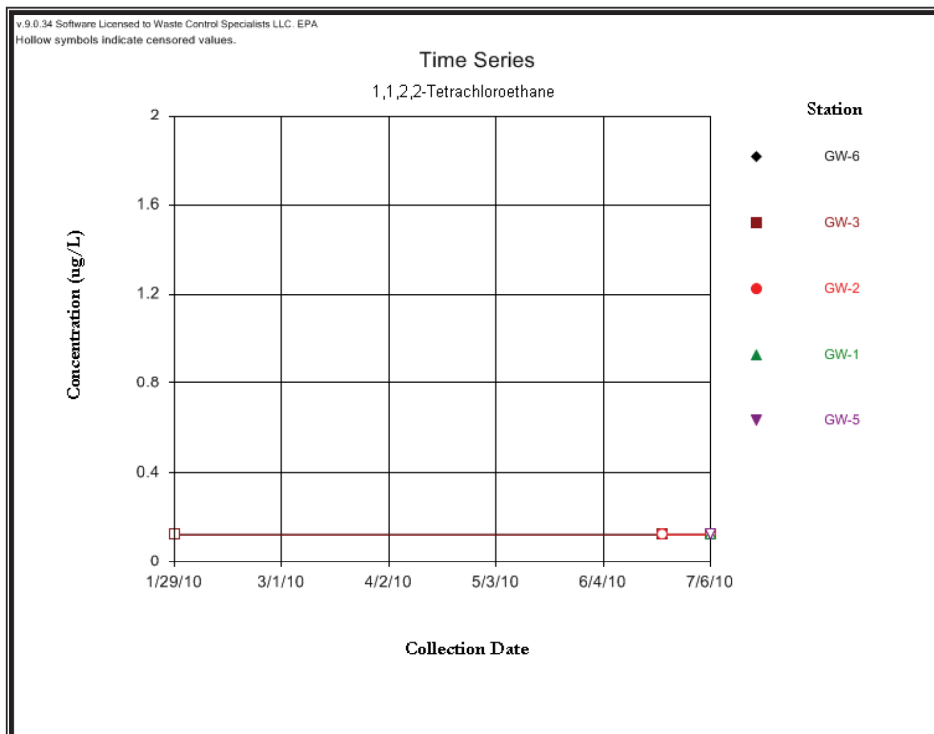


Figure 4-210 : 1,1,2,2-Tetrachloroethane Surface Water Results.

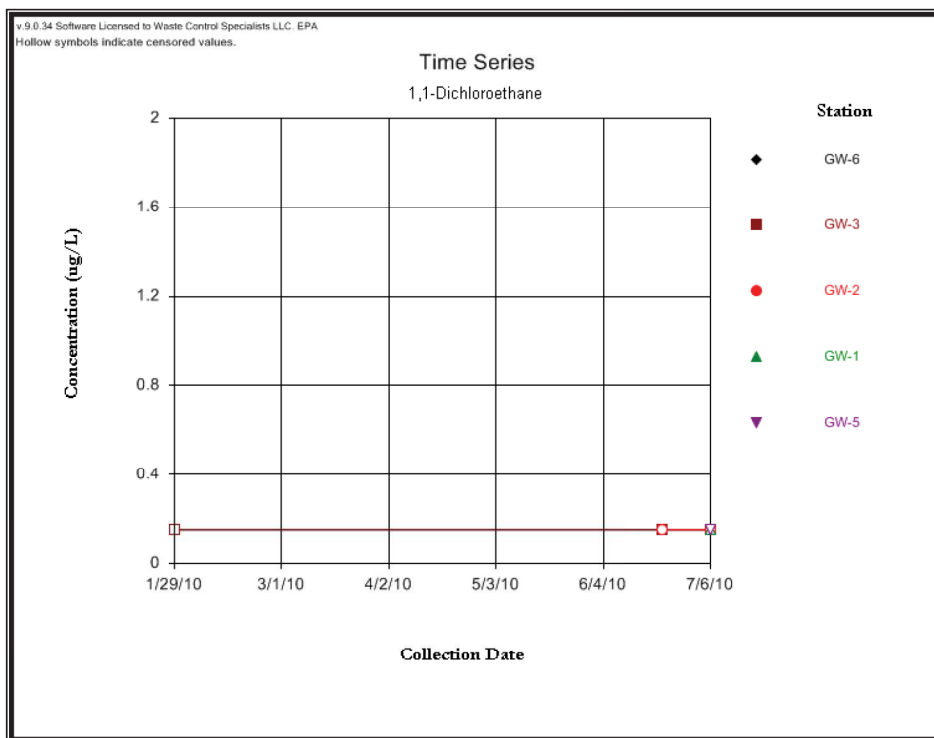


Figure 4-211 : 1,1-Dichloroethane Surface Water Results.

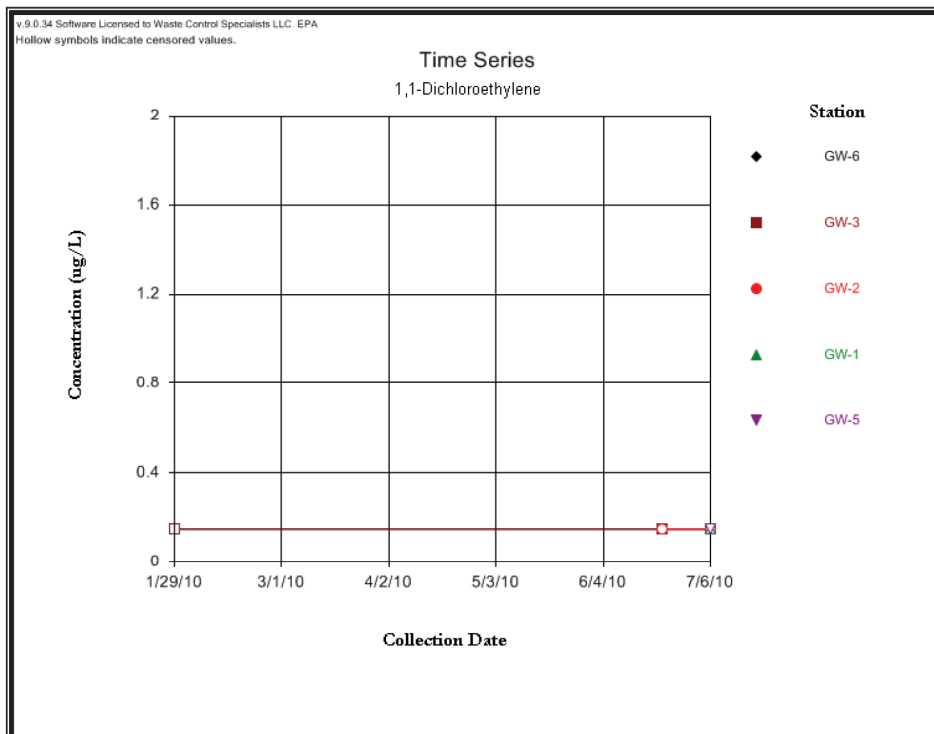


Figure 4-212 : 1,1-Dichloroethylene Surface Water Results.

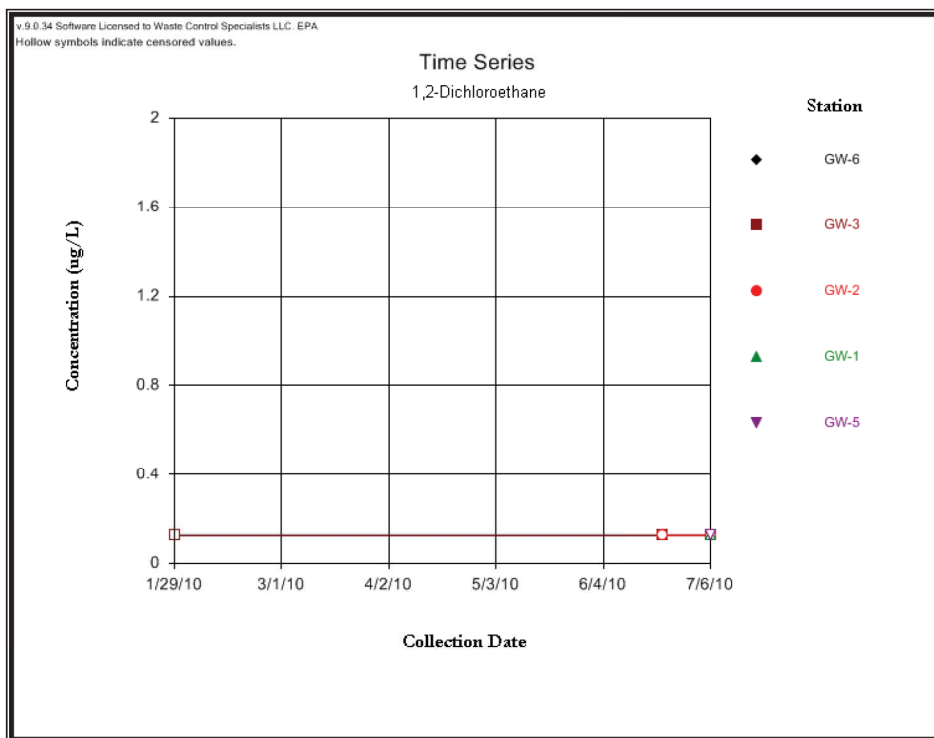


Figure 4-213 : 1,2-Dichloroethane Surface Water Results.

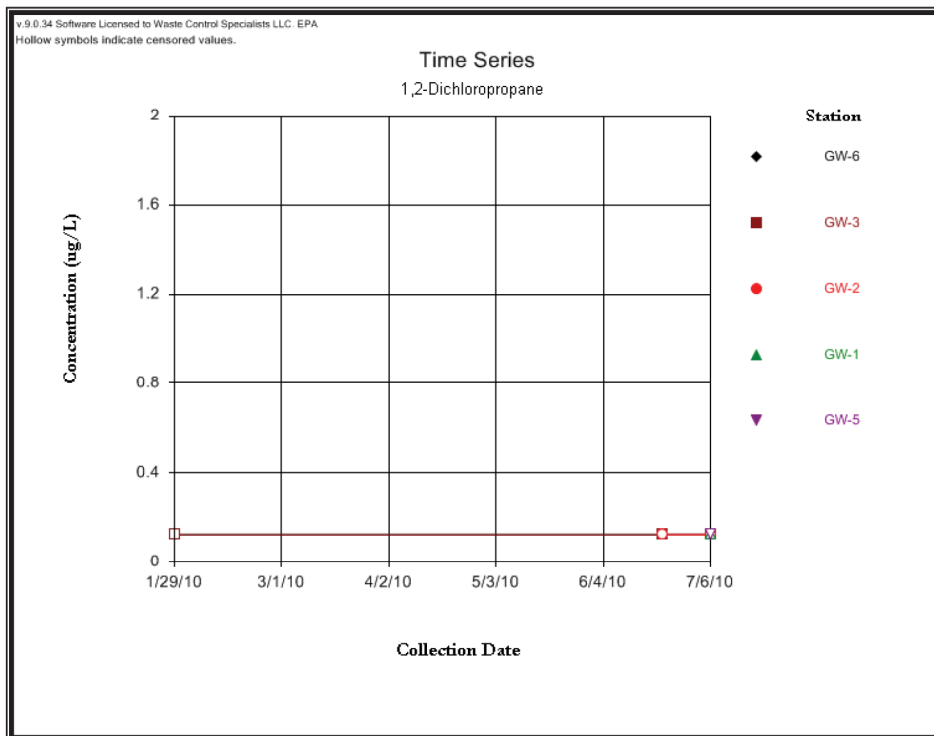


Figure 4-214 : Dichloropropane Surface Water Results.

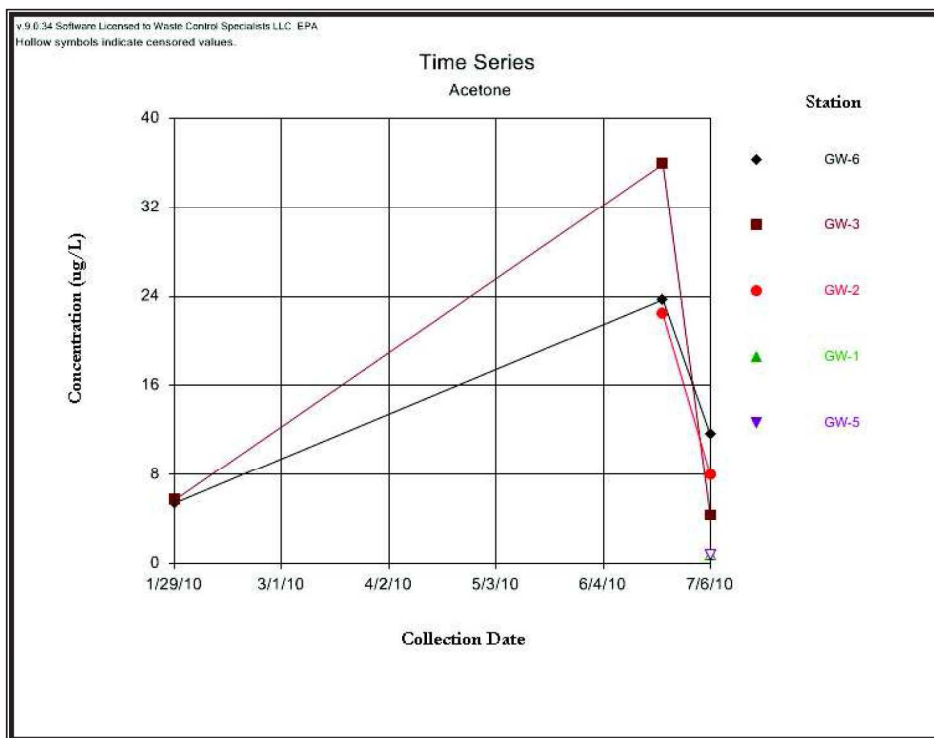


Figure 4-215 : Acetone Surface Water Results.

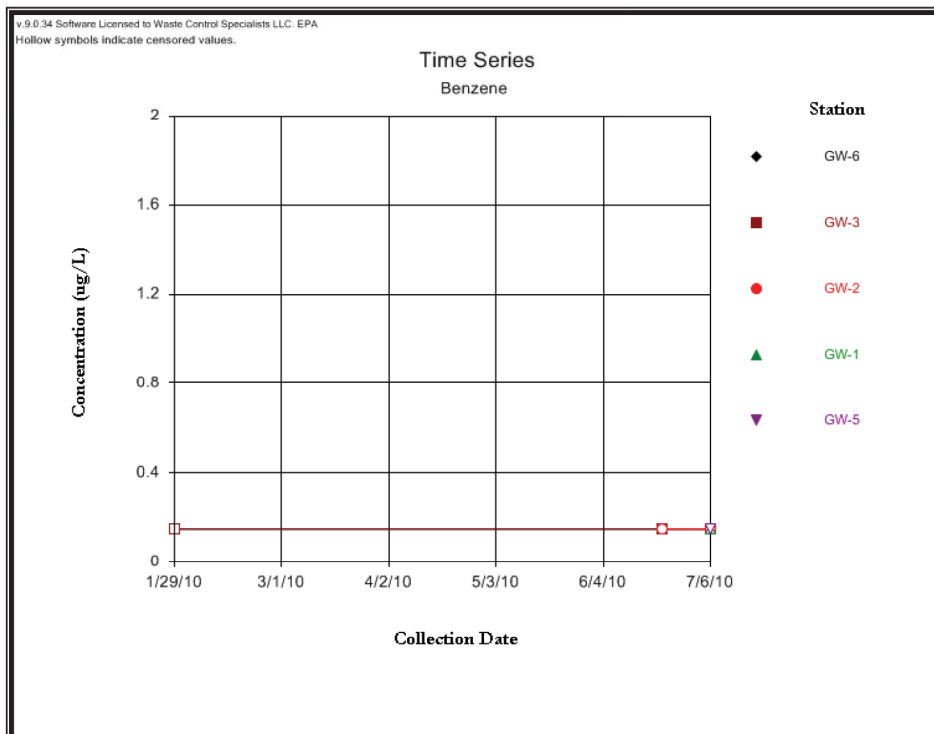


Figure 4-216 : Benzene Surface Water Results.

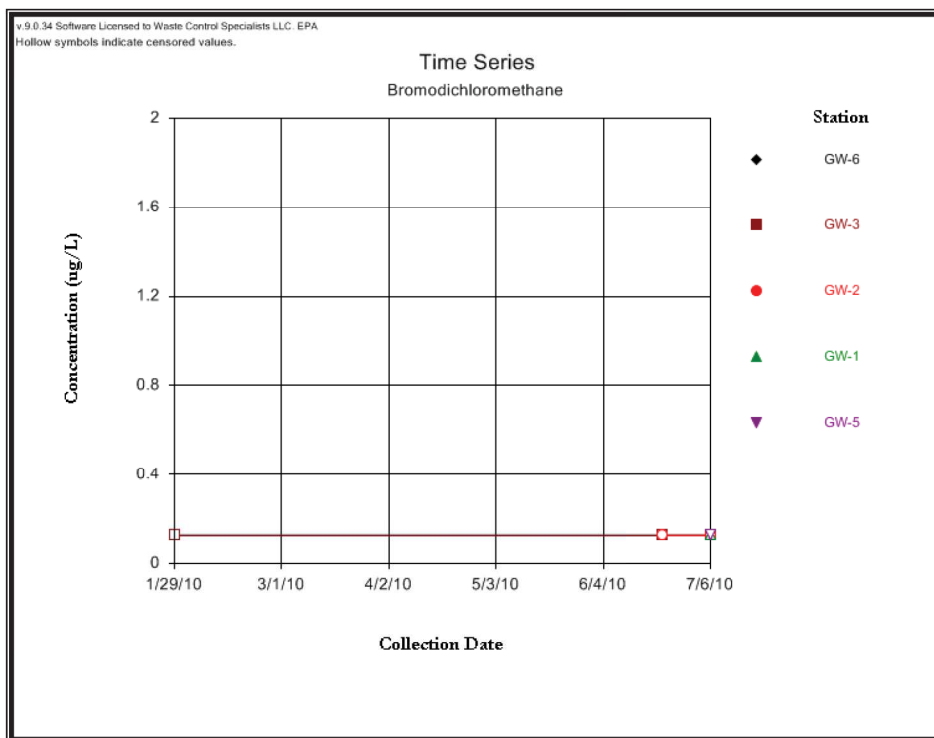


Figure 4-217 : Bromodichloromethane Surface Water Results.

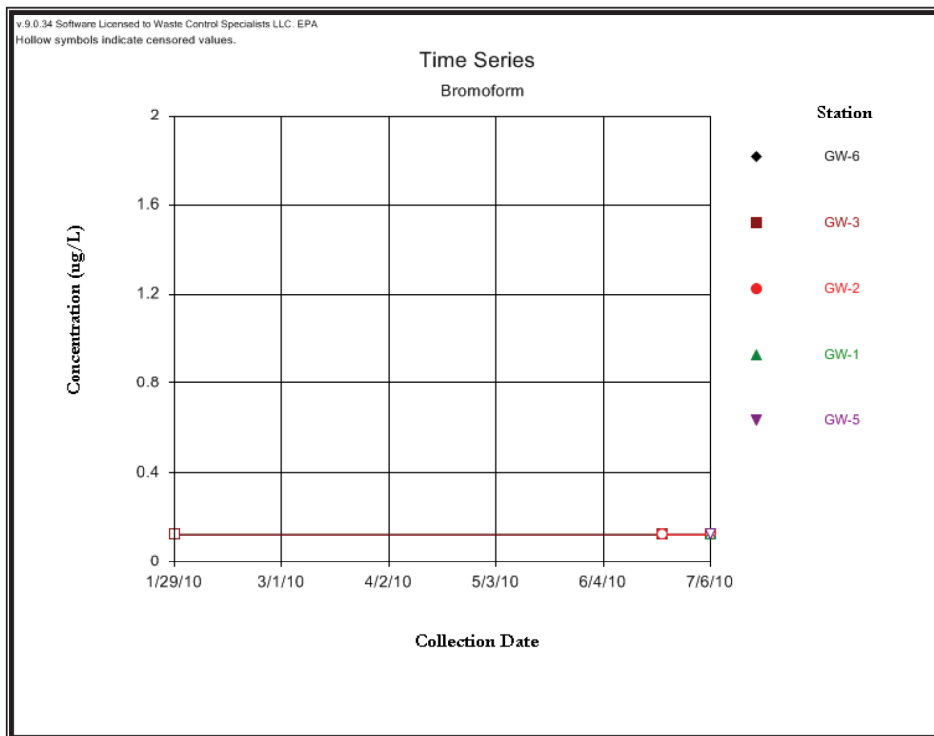


Figure 4-218 : Bromoform Surface Water Results.

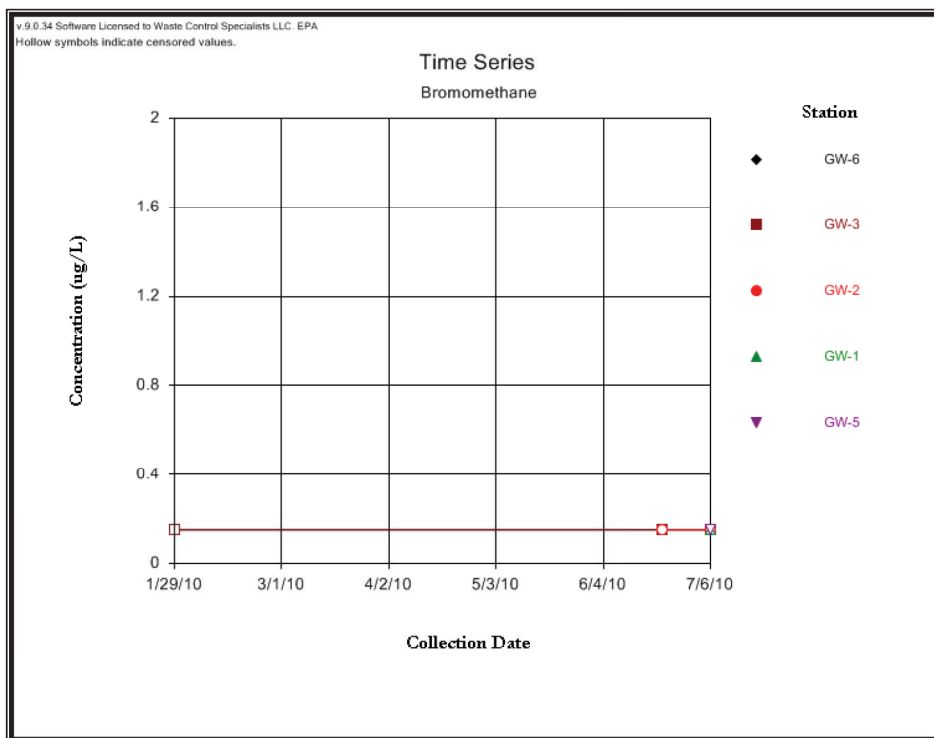


Figure 4-219 : Bromomethane Surface Water Results.

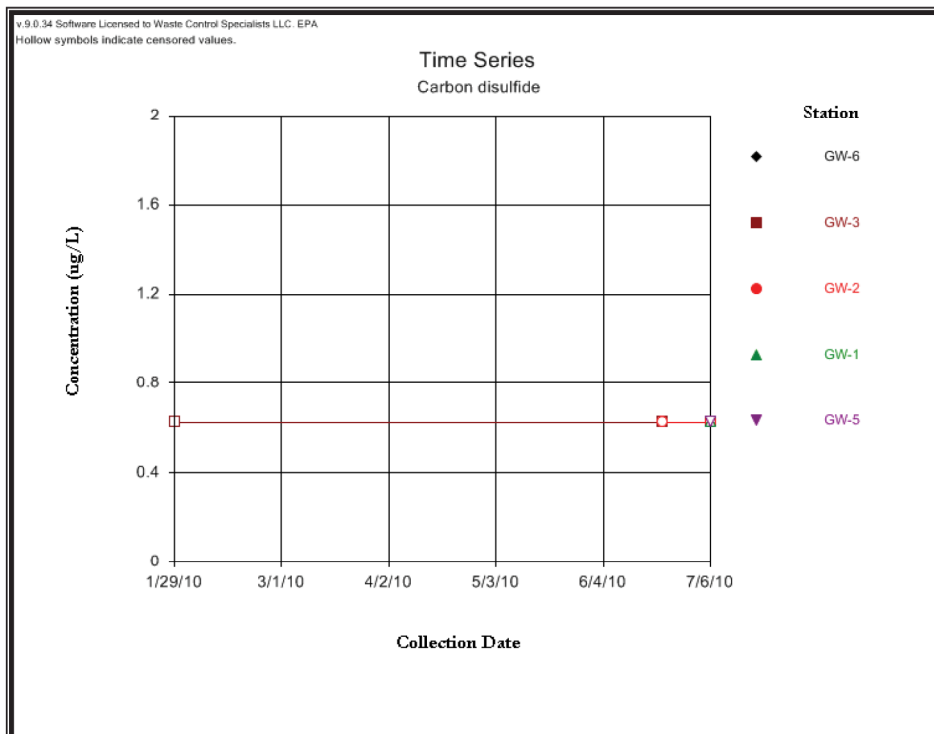


Figure 4-220 : Carbon disulfide Surface Water Results.

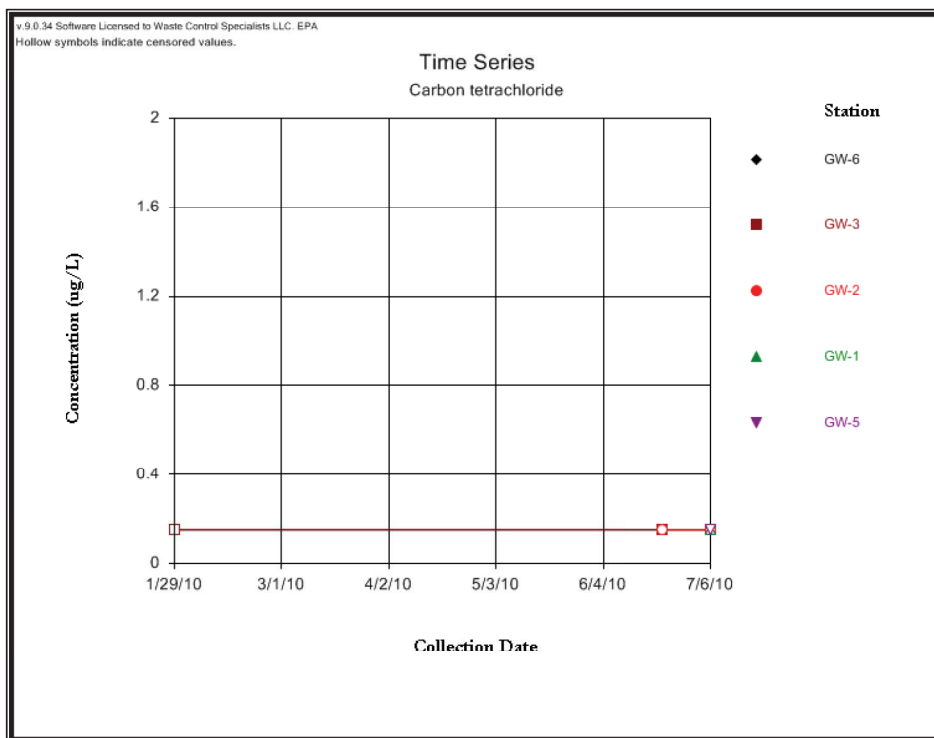


Figure 4-221 : Carbon Tetrachloride Surface Water Results.

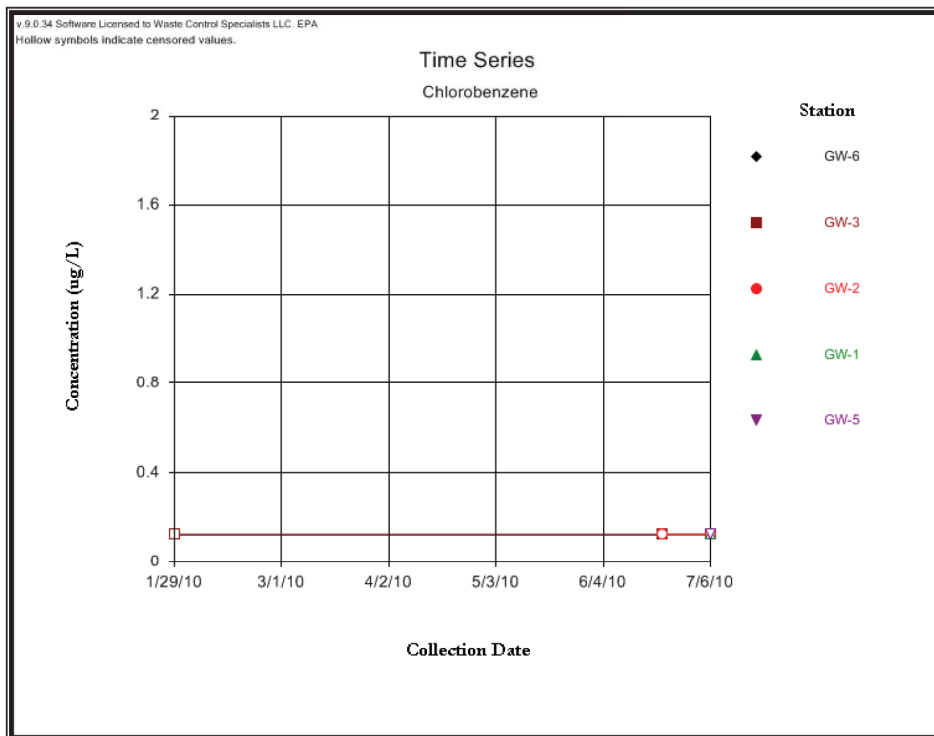


Figure 4-222 : Chlorobenzene Surface Water Results.

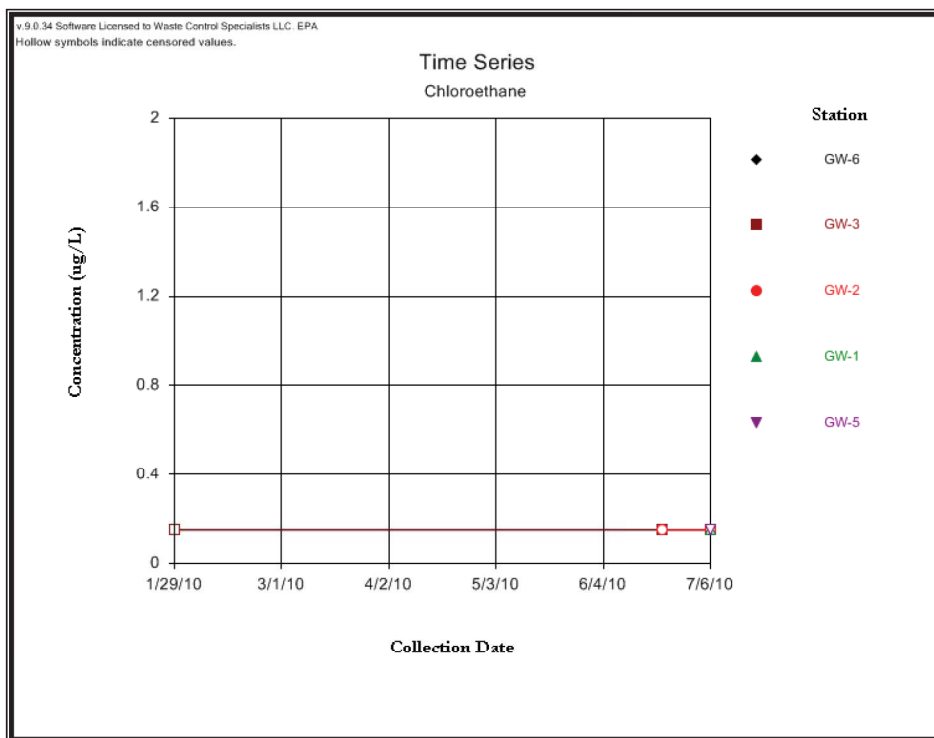


Figure 4-223 : Chloroethane Surface Water Results.

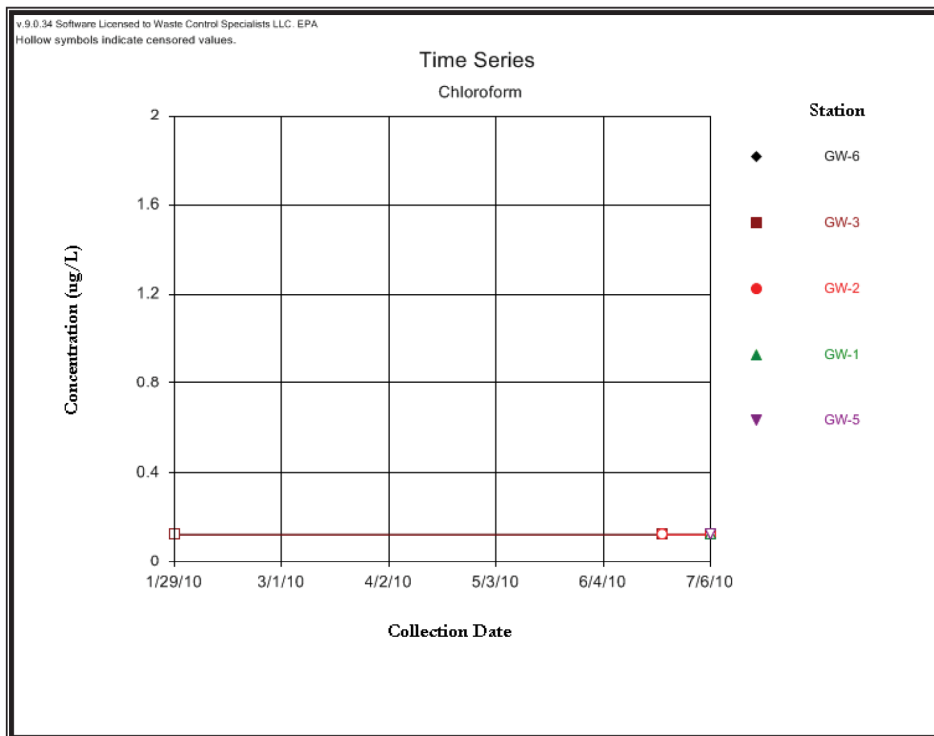


Figure 4-224 : Chloroform Surface Water Results.

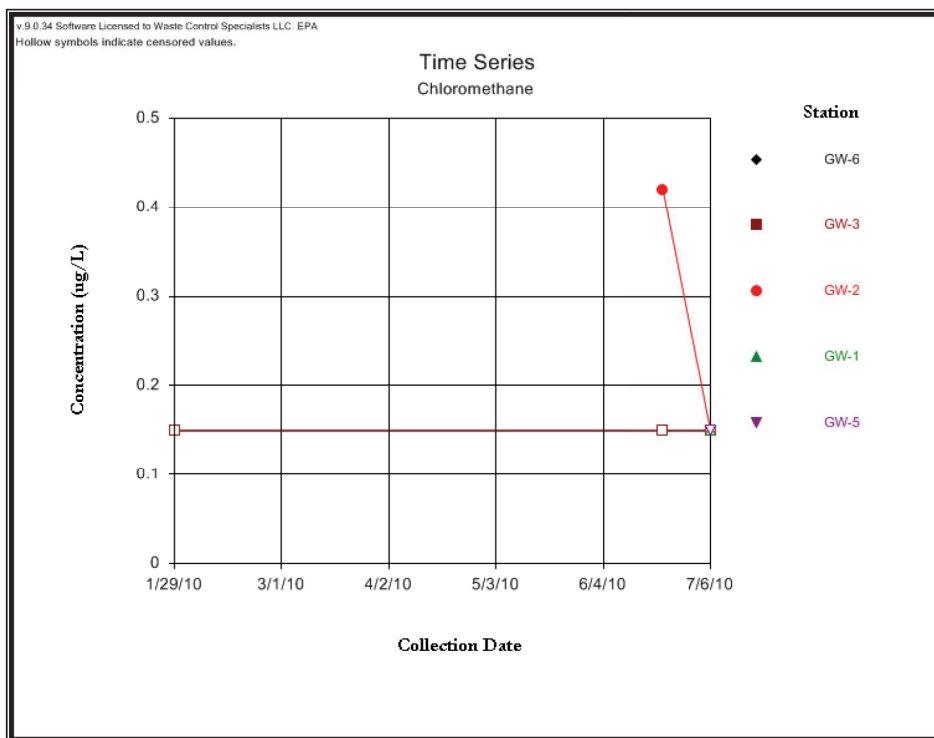


Figure 4-225 : Chloromethane Surface Water Results.

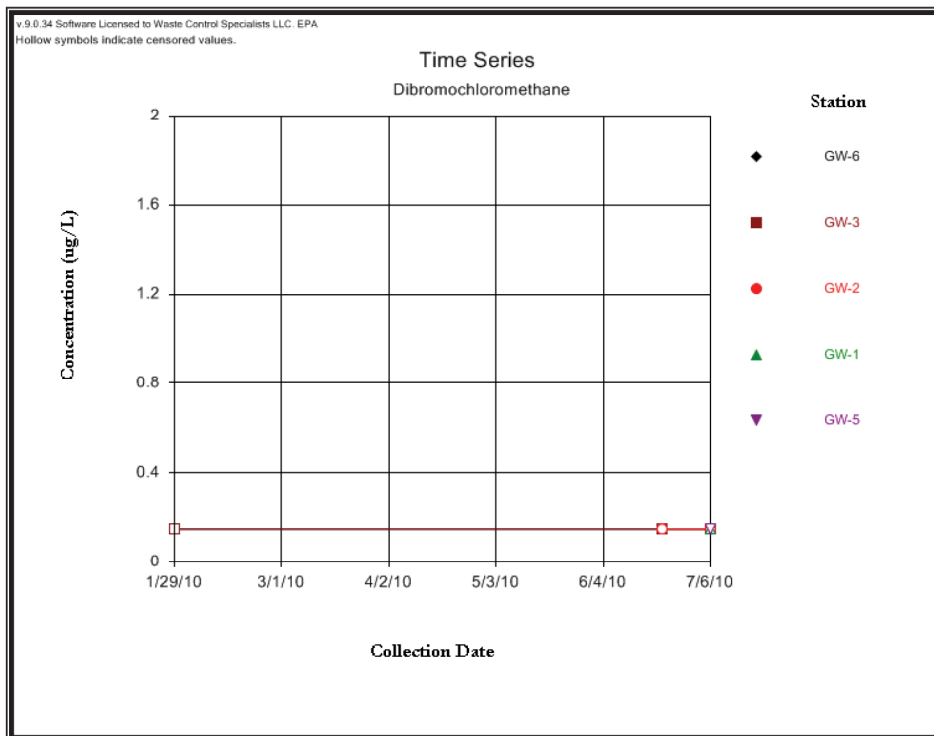


Figure 4-226 : Dibromochloromethane Surface Water Results.

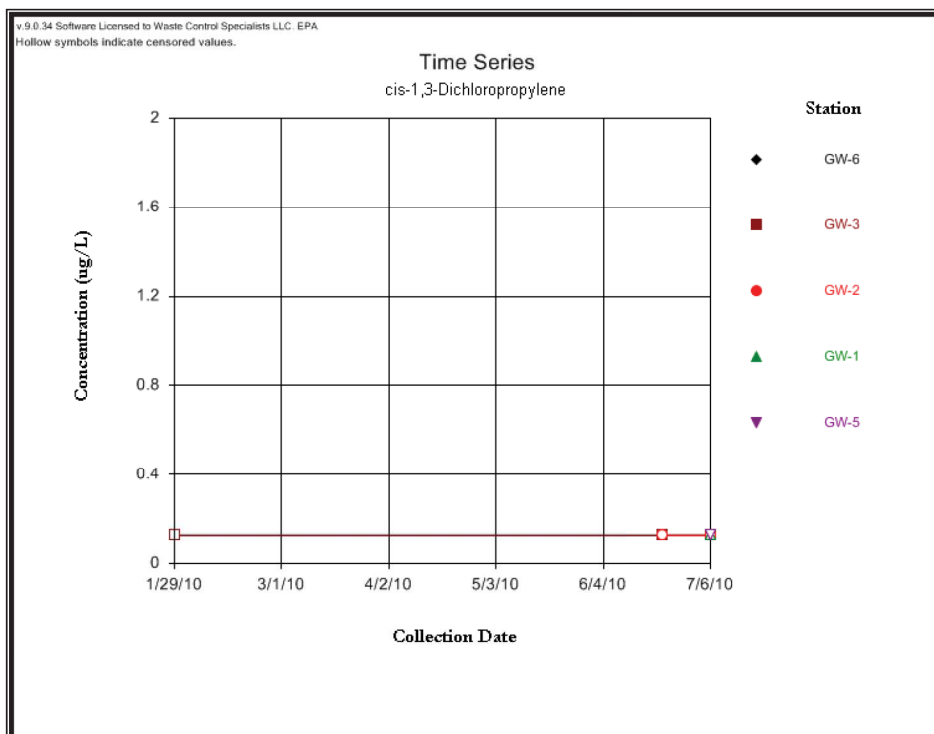


Figure 4-227 : cis-1,3-Dichloropropylene Surface Water Results.

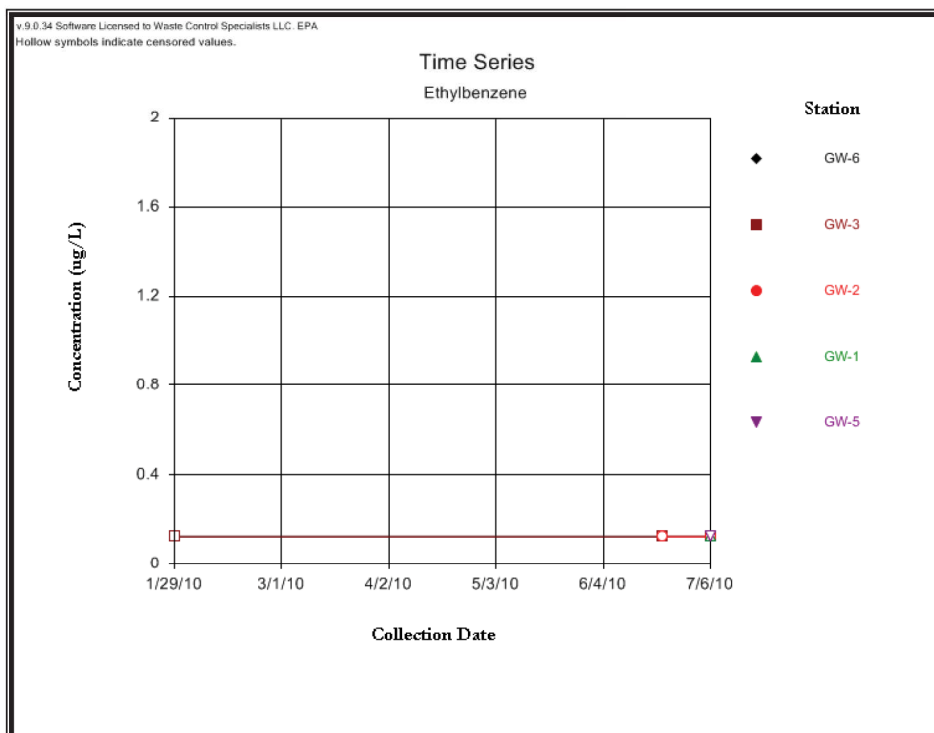


Figure 4-228 : Ethylbenzene Surface Water Results.

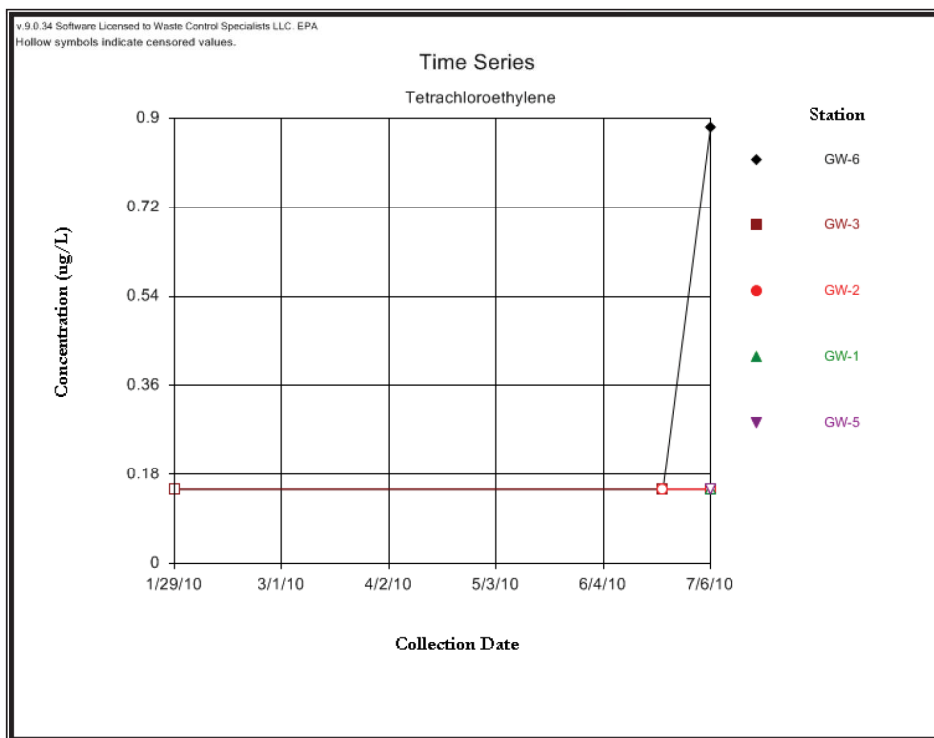


Figure 4-229 : Tetrachloroethylene Surface Water Results.

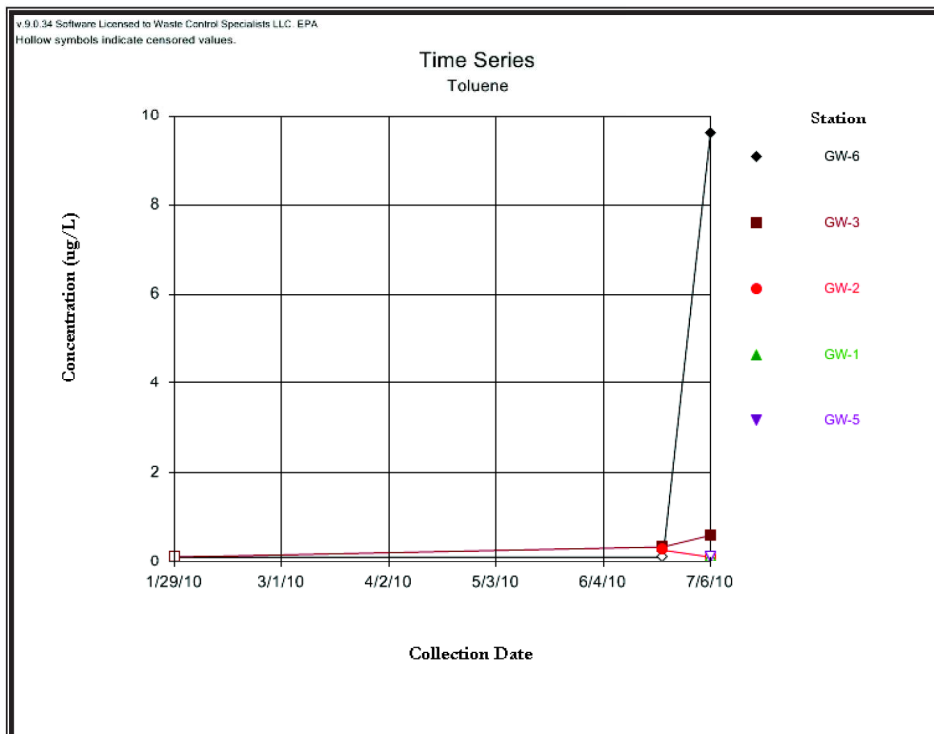


Figure 4-230 : Toluene Surface Water Results.

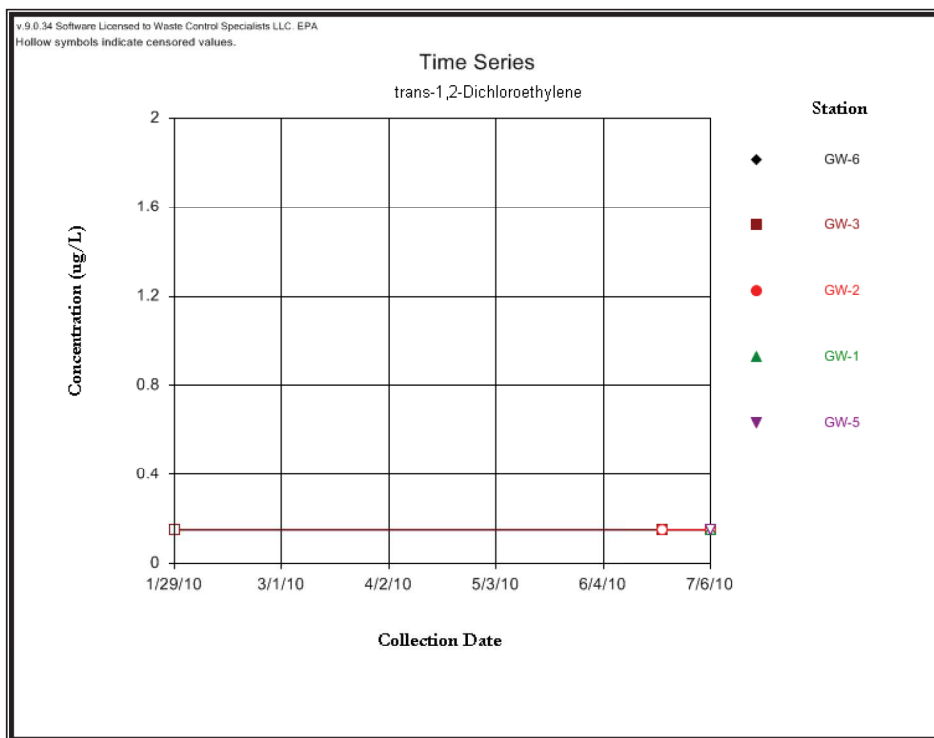


Figure 4-231 : trans-1,2-Dichloroethylene Surface Water Results.

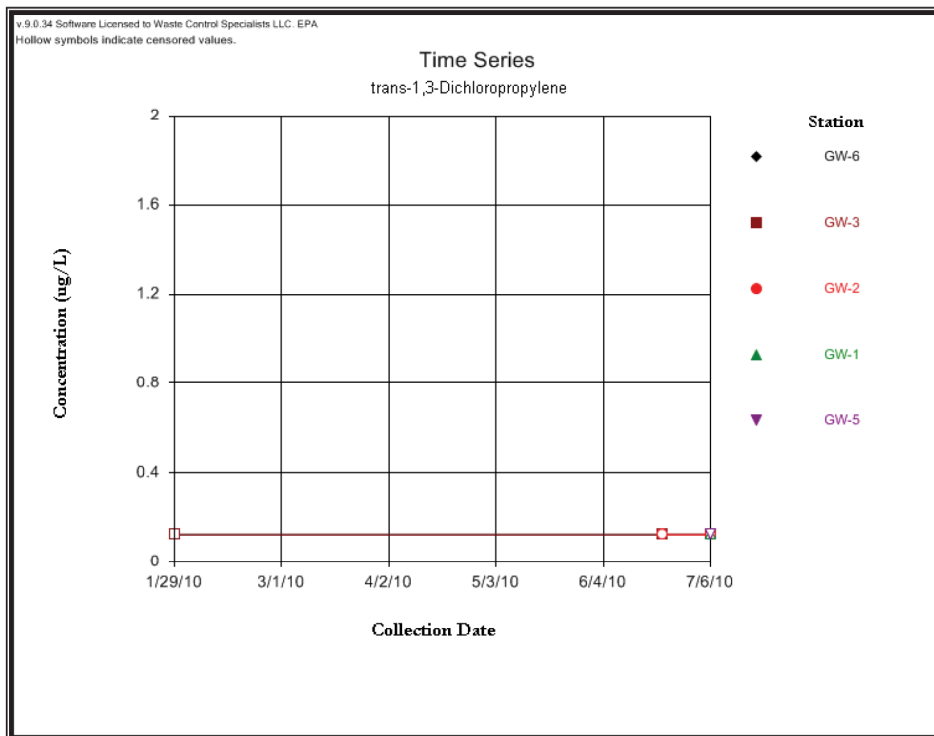


Figure 4-232 : trans-1,3-Dichloropropylene Surface Water Results.

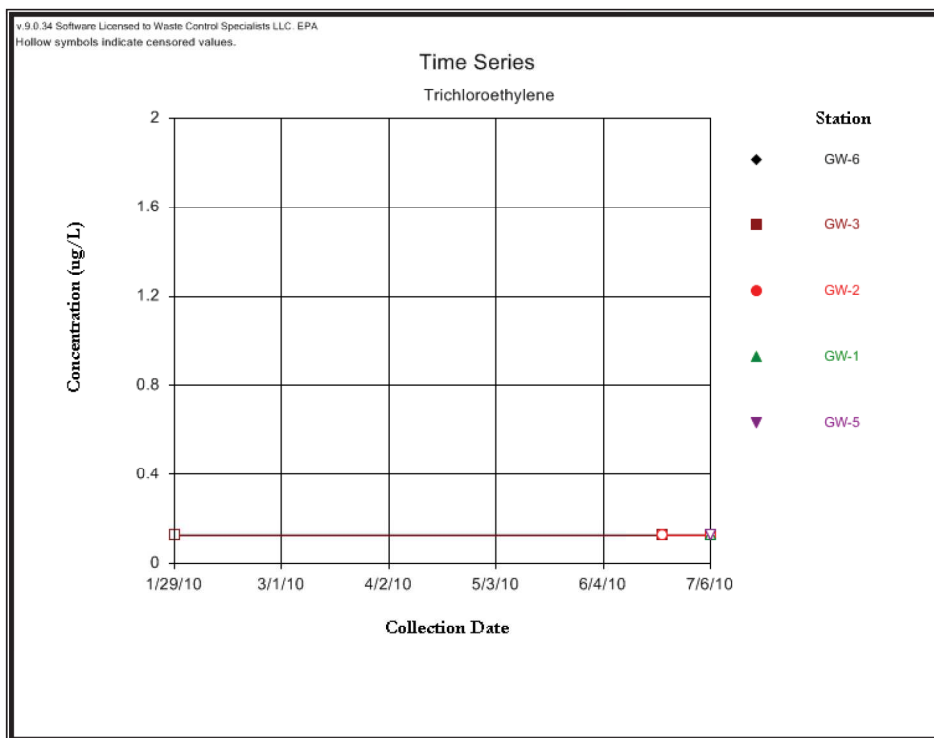


Figure 4-233 : Trichloroethylene Surface Water Results.

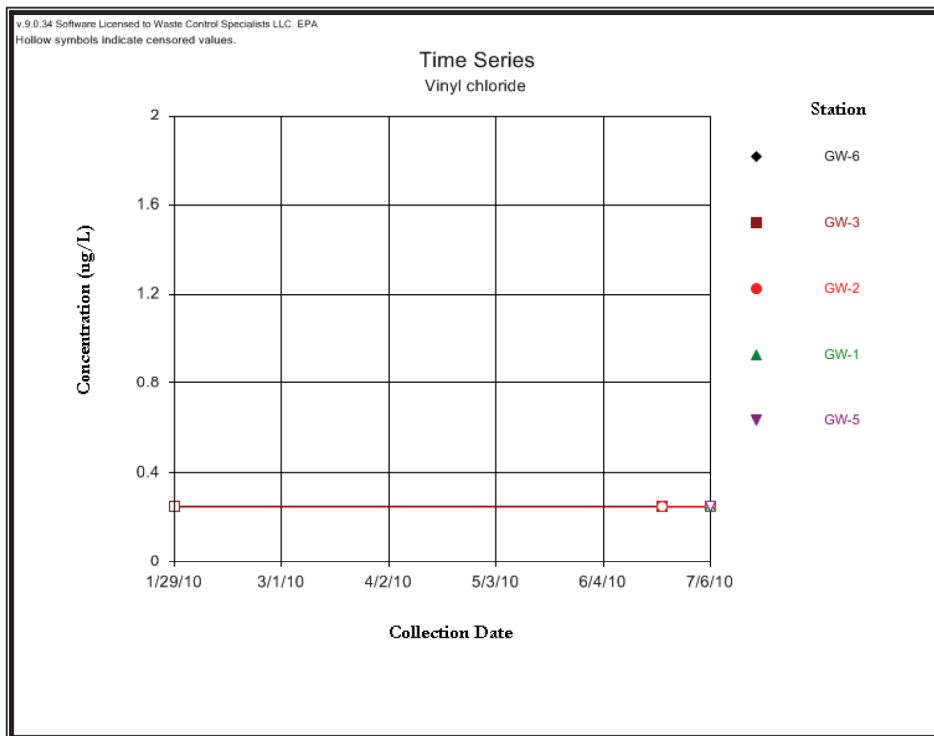


Figure 4-234 : Vinyl Chloride Surface Water Results.

5.0 Sediment

As part of the pre-operational monitoring program, sediment is sampled quarterly at 6 locations specified in Attachments A and B of RML No. R04100. Figure 5-1 displays the sediment sampling locations. Sediment is analyzed for radiological parameters only. The sediment sampling stations are GW-1, GW-2, GW-3, GW-4, GW-5, and GW-6.



Figure 5-1: Sediment Sample Locations

Sediment Environmental Data

Summary statistics for the environmental monitoring data obtained during the pre-operational period for sediment are presented in the Table 1. As noted previously, sediment samples are analyzed for radiological parameters only. Figures 5-2 through 5-29 graphically depict the pre-operational sediment results. All pre-operational sediment samples results are given in Appendix C.

Table 5-1: Summary Statistics for Sediment Samples (pCi/g).

	Observations	Number of Stations	Below L _c *	Maximum	Minimum	Mean	Standard Deviation
Alpha	36	6	0	2.86E+01	3.12E+00	1.59E+01	5.57E+00
Am-241	36	6	20	3.61E-02	-8.10E-03	7.41E-03	8.63E-03
Beta	36	6	0	3.95E+01	8.38E+00	2.59E+01	6.94E+00
C-14	36	6	29	2.98E-01	-2.82E-01	6.67E-03	1.65E-01
Cs-137	36	6	0	1.50E+00	4.77E-02	4.95E-01	4.30E-01
Cr-51	36	6	36	6.38E-01	-8.15E-01	-4.03E-02	1.96E-01
Co-60	36	6	35	1.20E-02	-2.01E-02	-5.81E-04	7.08E-03
Cu-242	36	6	22	1.36E-02	-9.62E-04	4.36E-03	4.58E-03
Cu-243/244	36	6	20	2.40E-02	-7.50E-03	5.87E-03	6.51E-03
I-129	36	6	35	8.97E-02	-1.10E-01	1.38E-02	4.84E-02
Pb-210	30	6	0	5.89E+00	6.02E-01	2.95E+00	1.54E+00
Mn-54	36	6	30	2.72E-02	-1.81E-02	4.04E-03	9.87E-03
Np-237	36	6	36	2.65E-02	-2.72E-02	-6.32E-04	8.63E-03
Pu-238	36	6	31	1.88E-02	-9.31E-03	3.81E-03	7.02E-03
Pu239/240	36	6	17	8.20E-02	-8.88E-03	1.78E-02	1.82E-02
Pu-241	36	6	32	7.12E-01	-3.72E-01	-5.96E-03	2.34E-01
Pu-242	36	6	32	2.03E-02	-8.45E-03	2.97E-03	6.12E-03
Ra-226	36	6	0	1.44E+00	5.00E-01	1.01E+00	2.31E-01
Ra-228	36	6	0	1.76E+00	4.86E-01	1.21E+00	3.00E-01
Sr-90	36	6	23	1.80E-01	-3.34E-02	6.48E-02	5.55E-02
Tc-99	36	6	31	3.78E-01	-2.41E-01	4.12E-02	1.33E-01
Th-228	36	6	0	2.35E+00	3.63E-01	1.25E+00	4.59E-01
Th-230	36	6	0	1.87E+00	2.71E-01	1.13E+00	4.28E-01
Th-232	36	6	0	2.01E+00	3.69E-01	1.09E+00	3.59E-01
H-3	36	6	35	3.30E-01	-1.31E+00	-2.41E-01	3.70E-01
U-233/234	36	6	0	1.14E+00	2.77E-01	6.84E-01	1.74E-01
U-235/236	36	6	9	1.17E-01	0.00E+00	4.21E-02	2.80E-02
U-238	36	6	0	1.11E+00	2.85E-01	6.96E-01	1.84E-01

*Estimated as one-half of the MDC.

Only 30 observations were reported for Lead-210, while 36 observations were reported for the other radionuclides. The analytical laboratory did not analyze the fourth quarter 2009 sediment samples were not analyzed for Lead-210 by Gas Flow Proportional Counting (GFPC), which is the preferential analytical method for this radionuclide in soils and sediment. The 30 observations are comprised of five sequential quarterly measurements spanning a 15-month period, which exceeds the required duration of 12 consecutive months. Appendix C contains sediment results for Lead-210 determined by gamma spectroscopy, including fourth quarter 2009 samples.

Naturally occurring radionuclides detected in the sediment data include: Carbon-14, Lead-210, Radium-226, Radium-228, Thorium-228, Thorium-230, Thorium-232, Uranium-234, Uranium-235 and Uranium-238. The concentrations of these radionuclides are consistent with natural background.

Cesium-137 was measured in the sediment samples at levels consentient with fallout from nuclear weapons testing in soils and sediments.

The reported detections of the following radionuclides are believed to represent false positives: Americium-241, Cobalt-60, Curium-242, Curium-243/244, Iodine-129, Manganese-54, Plutonium-238, Plutonium-239/240, Plutonium-241, Plutonium-242, Strontium-90 and Technetium-99. Since the critical level is established at the $\alpha = 0.05$ significance level, a 5% false positive rate is expected. The sediment results for Americium-241, Curium-242, Curium-243/244, Manganese-54, Plutonium-238, Plutonium-239/240, Plutonium-241, Plutonium-242, Strontium-90 and Technetium-99 have a higher than expected false positive rate. As noted in Section 2, the critical levels were estimated values calculated as one-half of the MDC. Because the false positives are very close to the critical level, WCS suspects that if these data were compared against their true critical levels that the false positive rate would approach 5%. In addition, if the background counts were extremely low, the estimated critical values would be artificially low. WCS is requesting documentation of background counts for these data from the analytical laboratory.

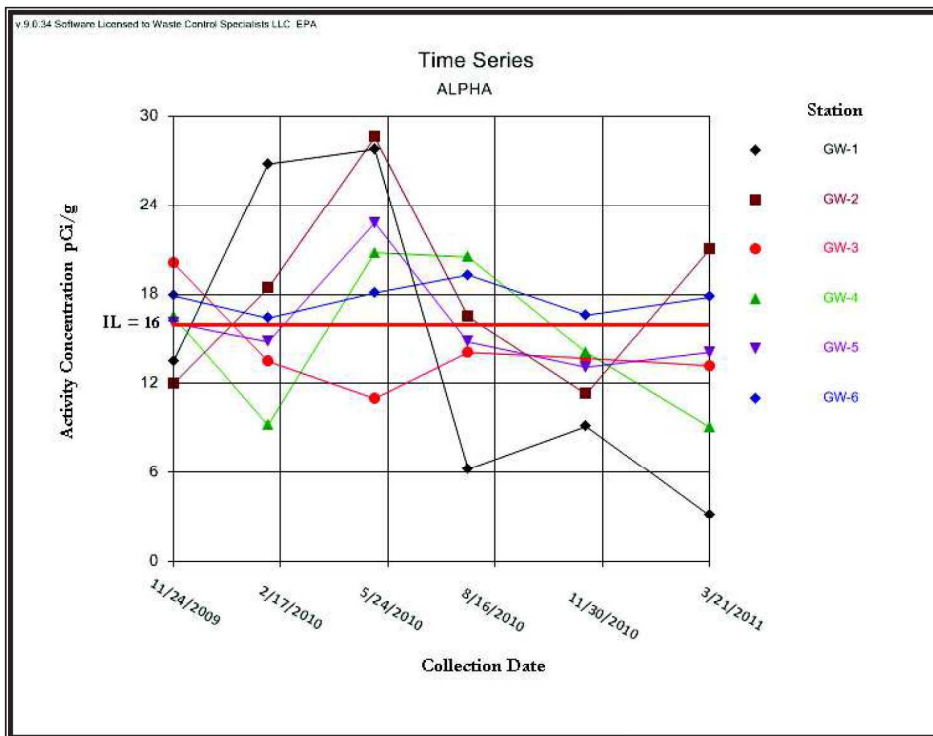


Figure 5-2: Alpha Sediment Results.

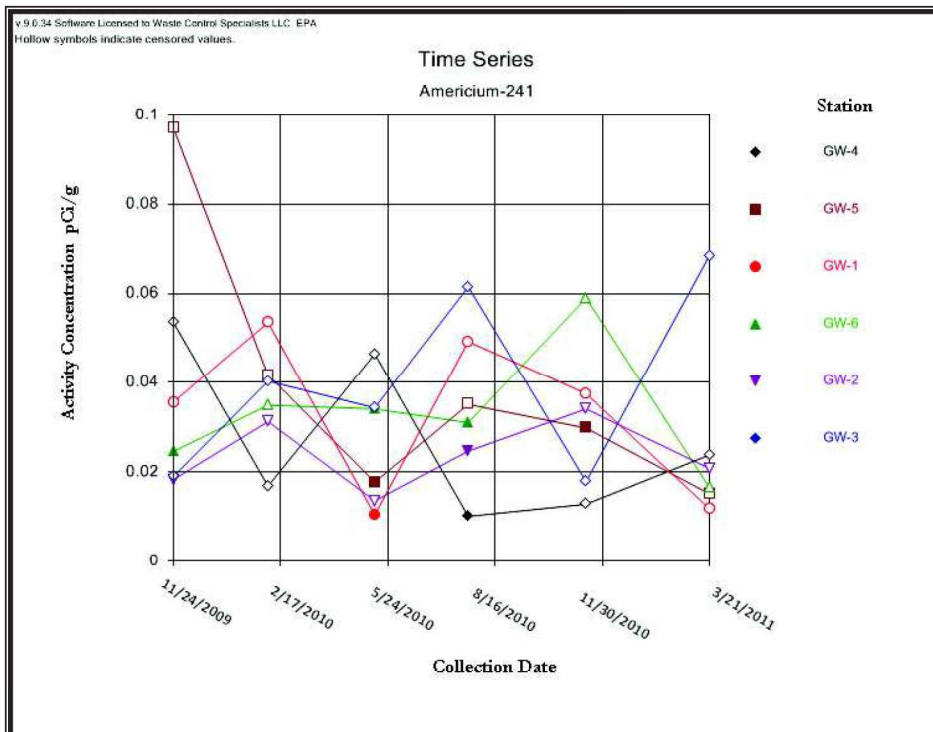


Figure 5-3: Americium-241 Sediment Results.

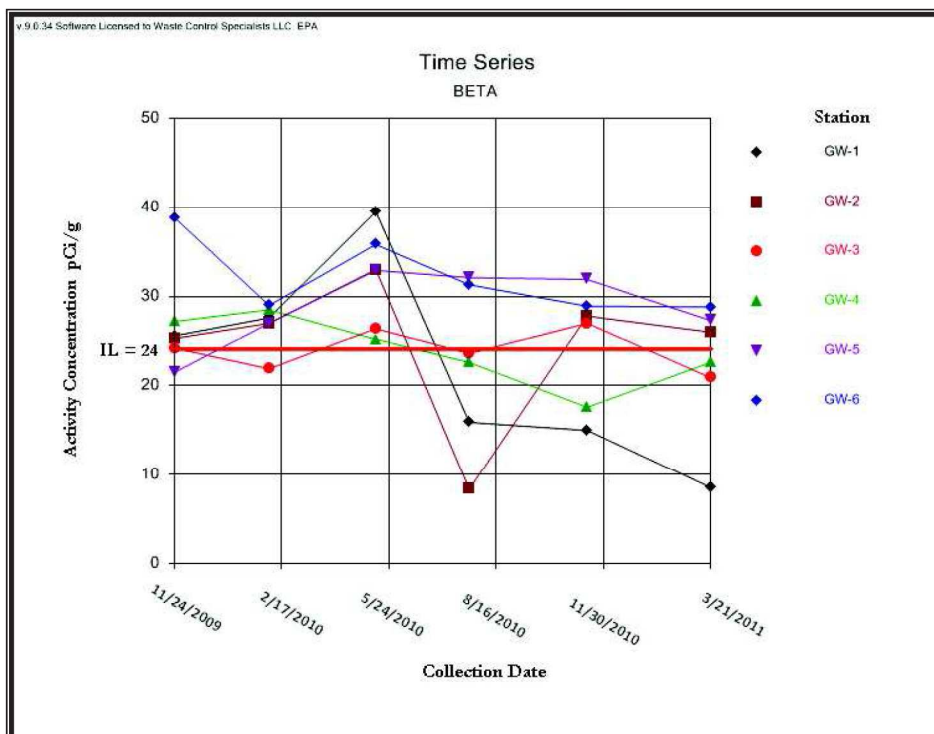


Figure 5-4: Beta Sediment Results.

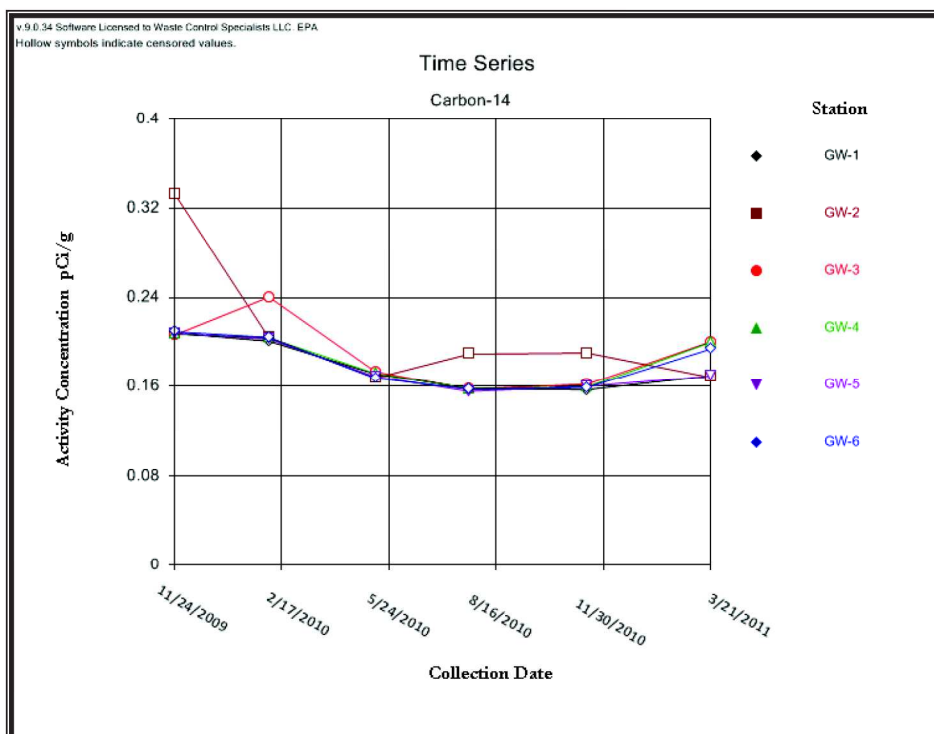


Figure 5-5: Carbon-14 Sediment Results.

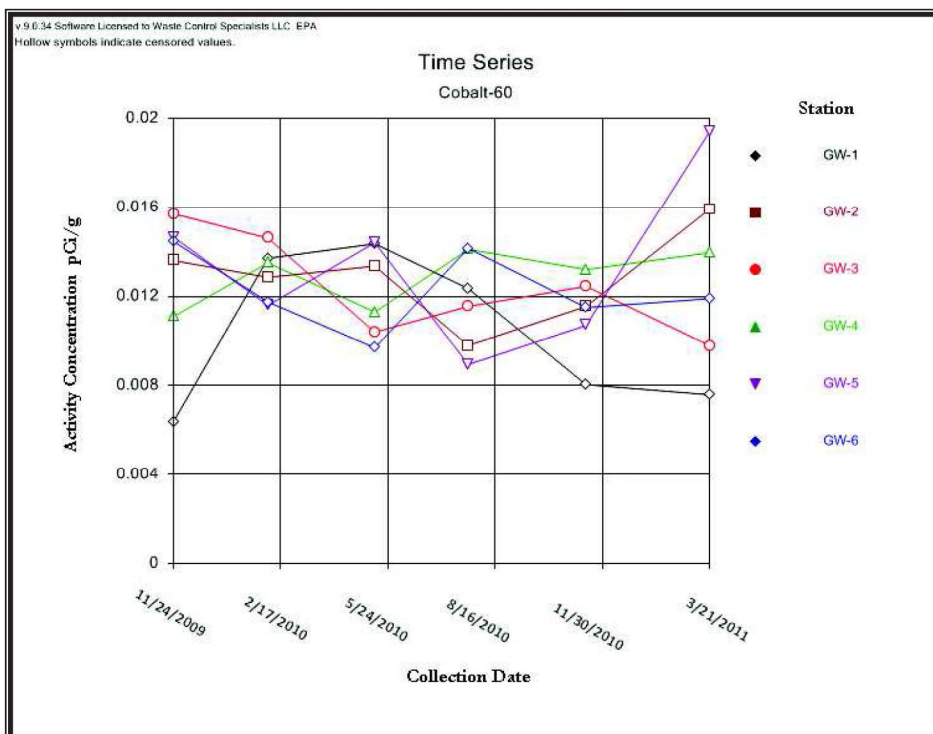


Figure 5-6: Cobalt-60 Sediment Results.

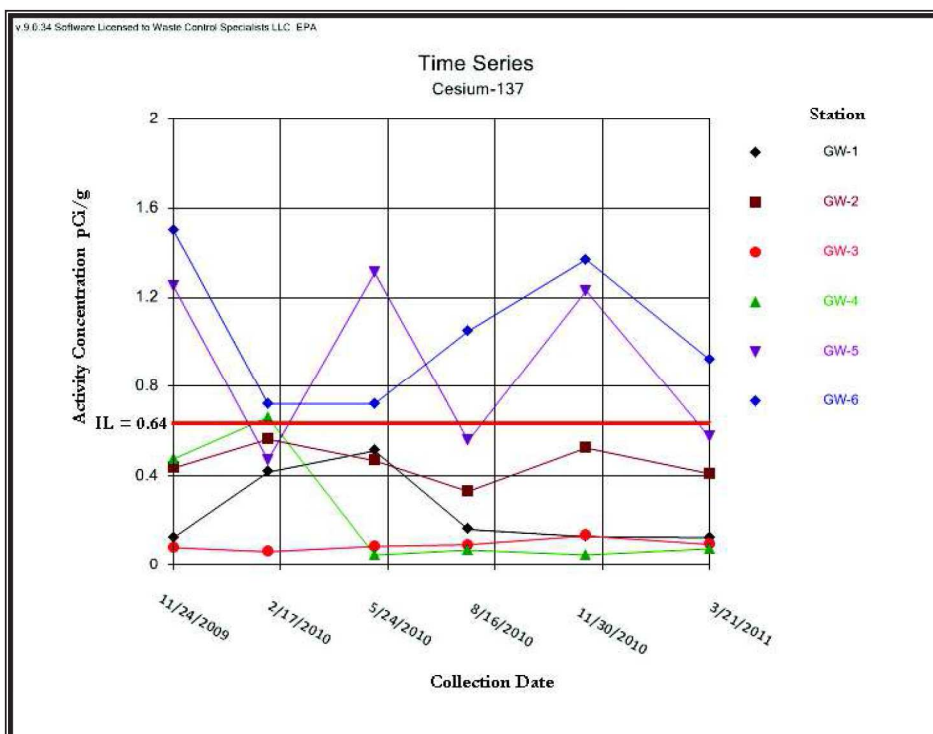


Figure 5-7: Cesium-137 Sediment Results.

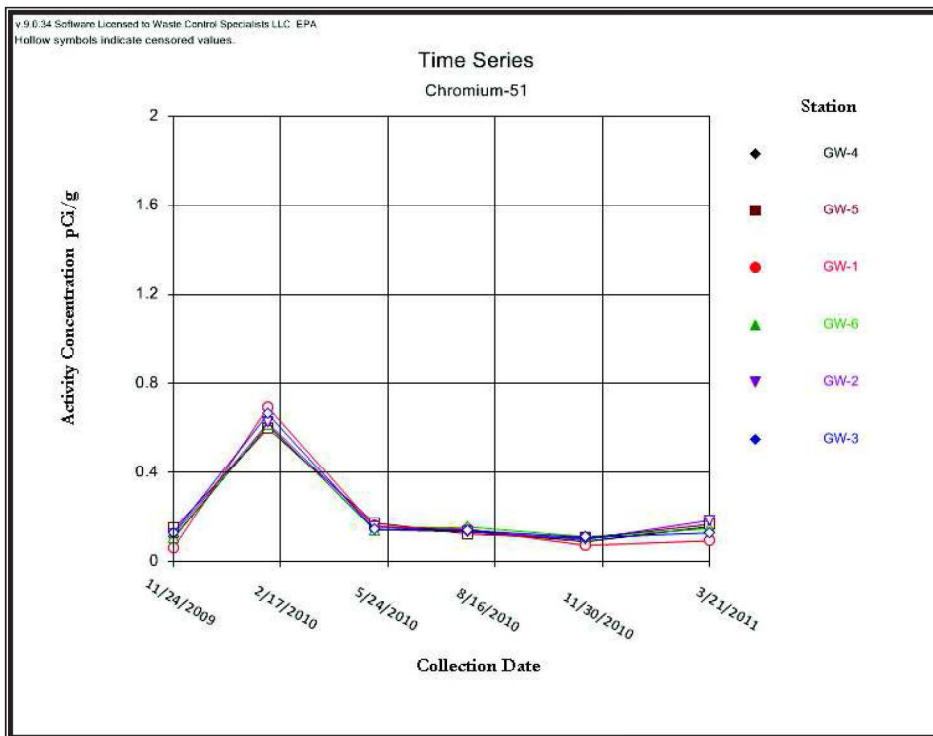


Figure 5-8: Chromium-51 Sediment Results.

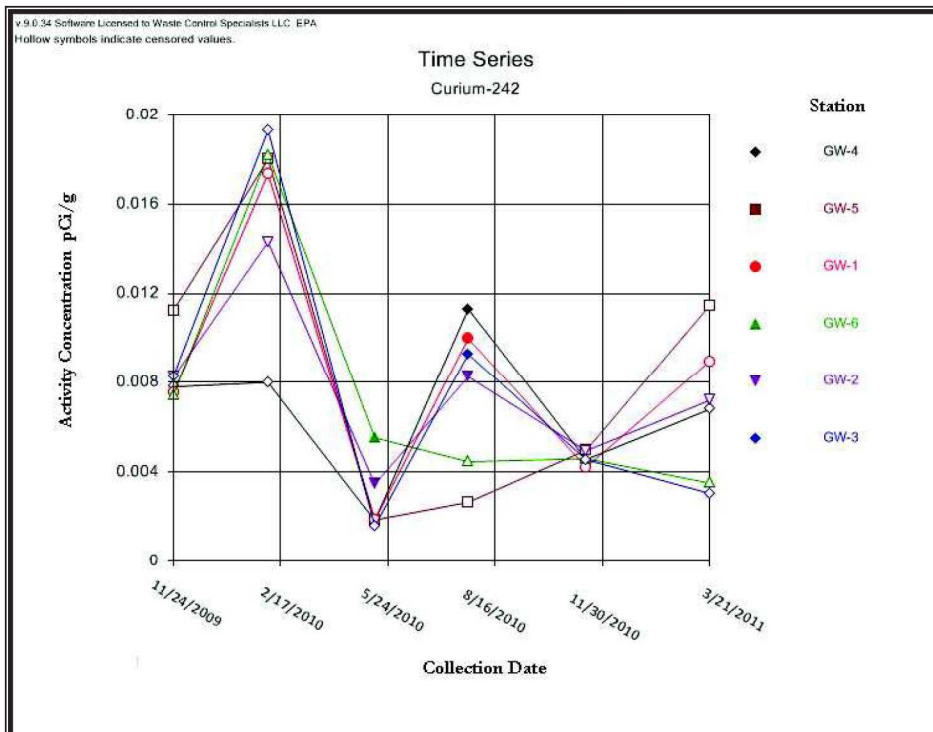


Figure 5-9: Curium-242 Sediment Results.

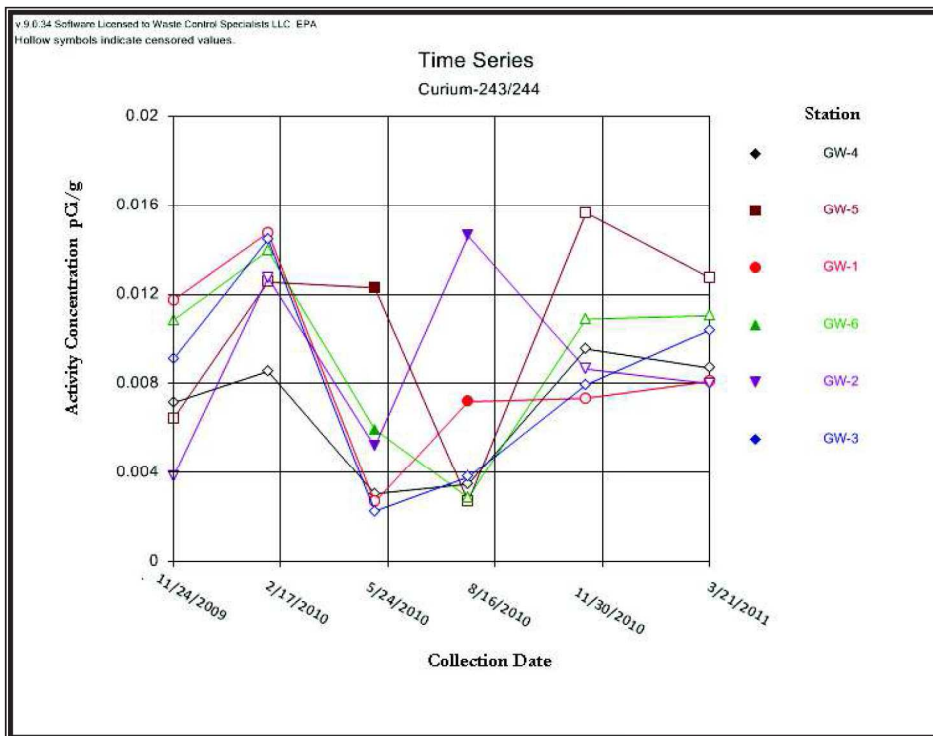


Figure 5-10: Curium-243/244 Sediment Results.

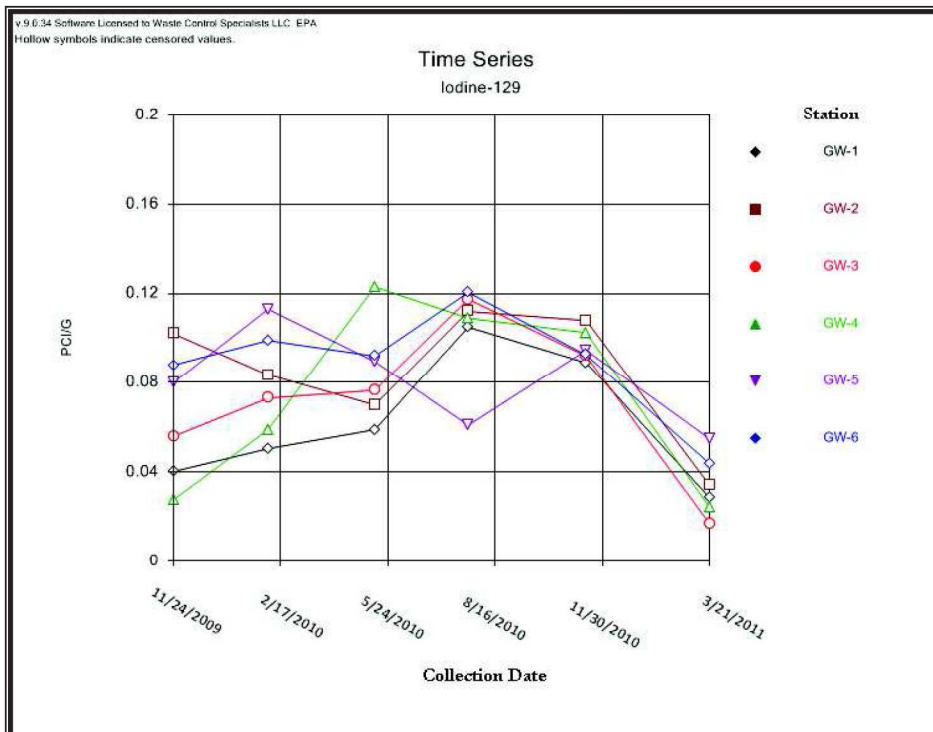


Figure 5-11: Iodine-129 Sediment Results.

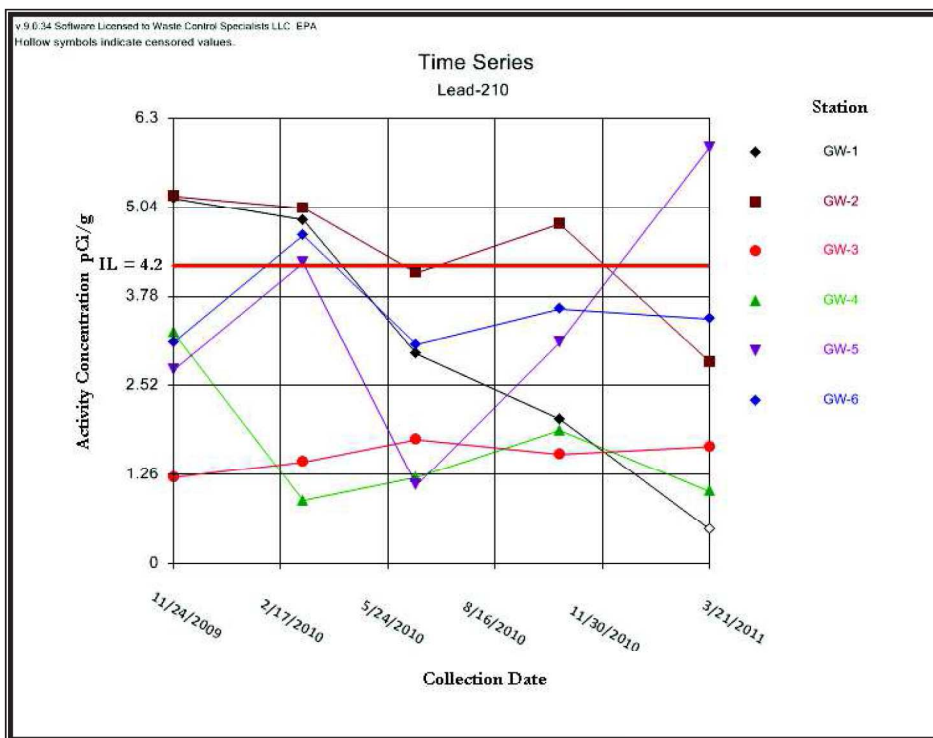


Figure 5-12: Lead-210 Sediment Results.

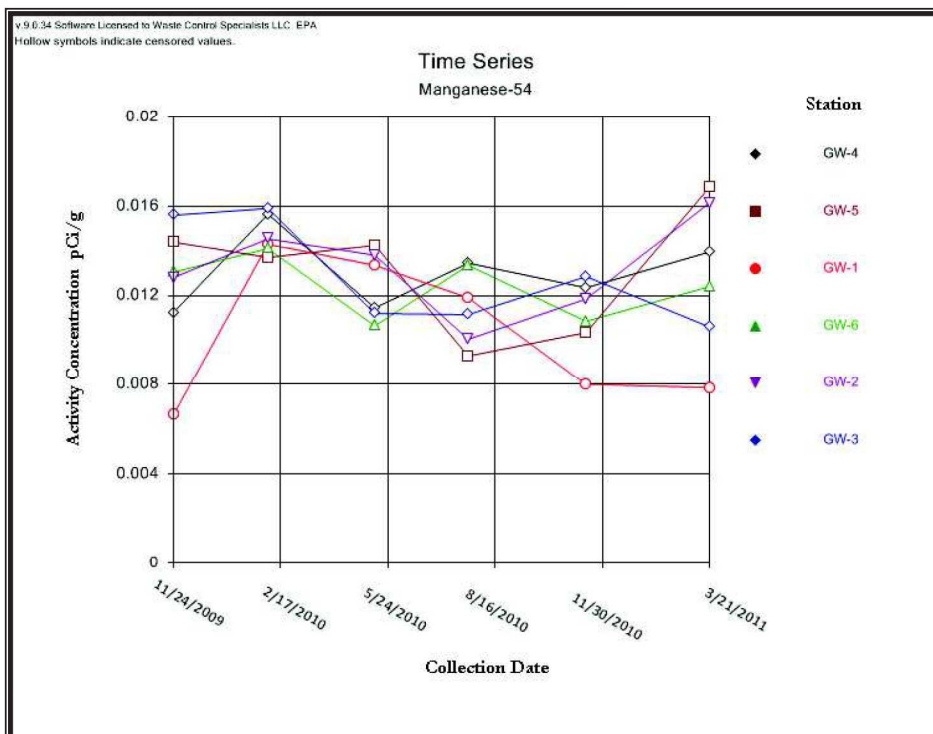


Figure 5-13: Manganese-54 Sediment Results.

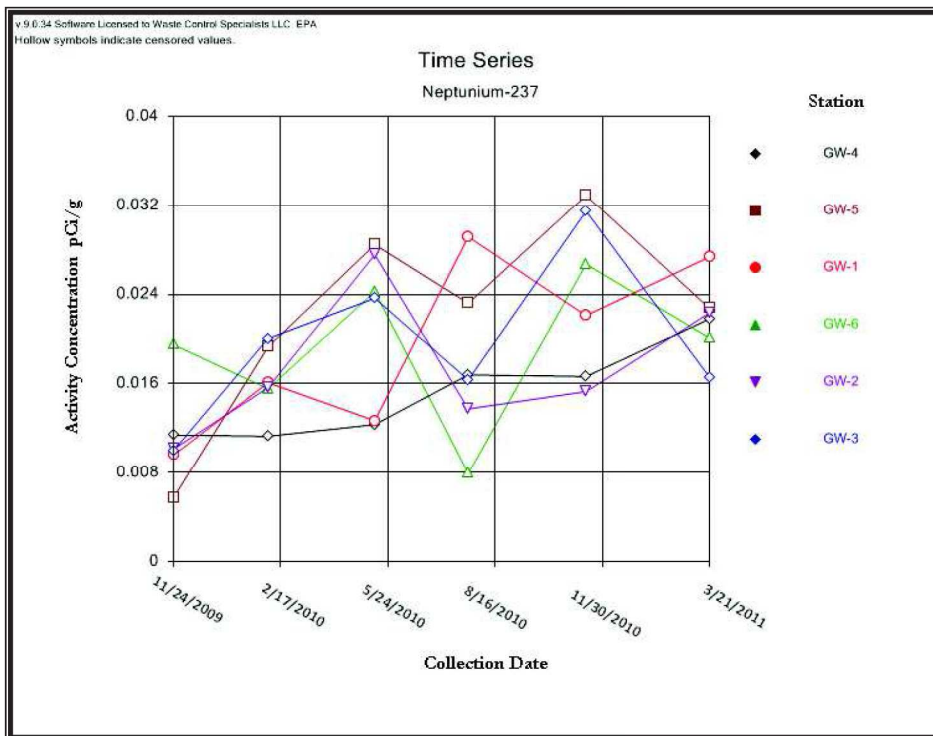


Figure 5-14: Neptunium-237 Sediment Results.

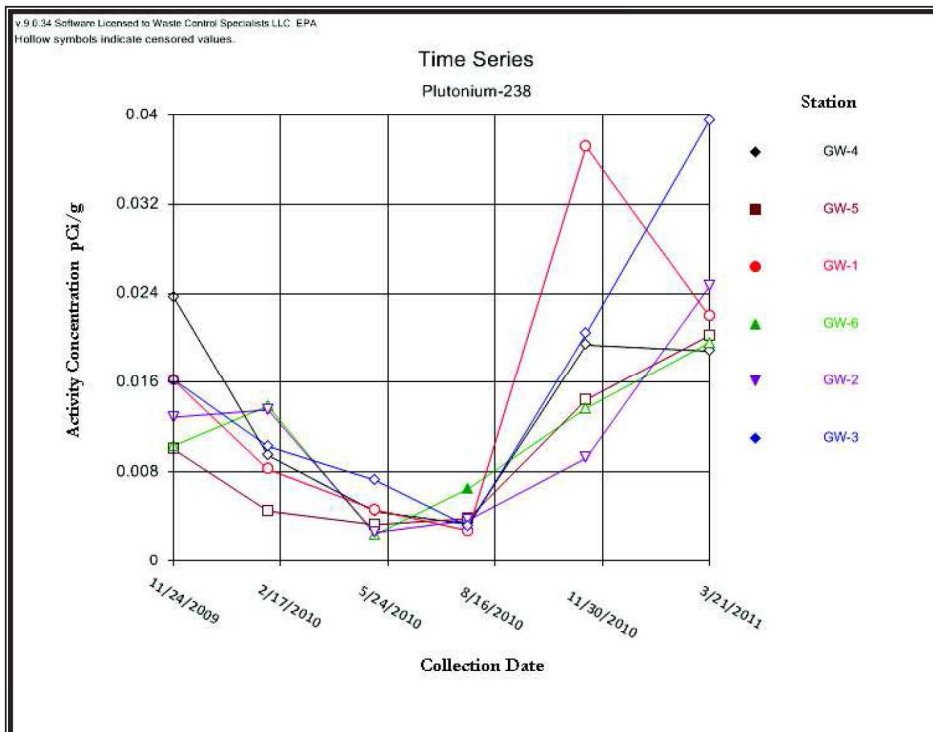


Figure 5-15: Plutonium-238 Sediment Results.

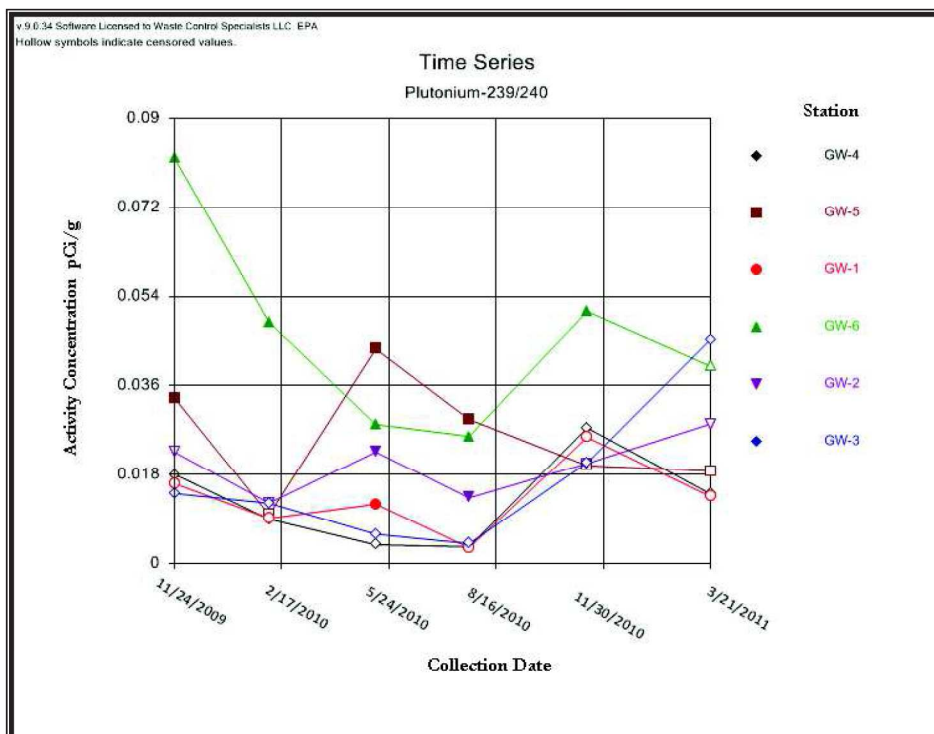


Figure 5-16: Plutonium -239/240 Sediment Results.

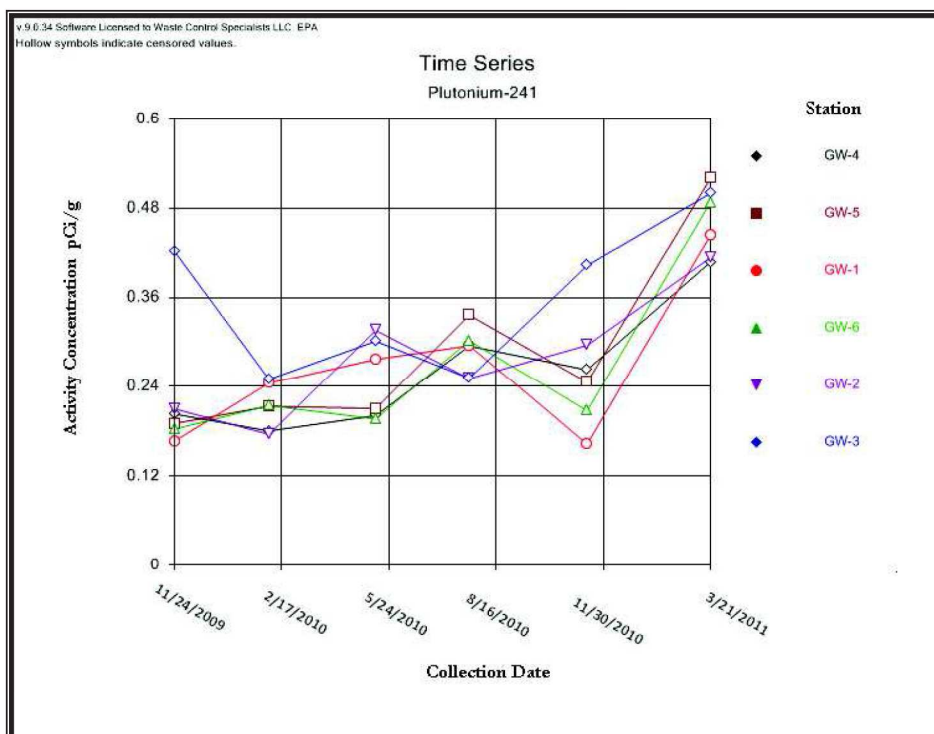


Figure 5-17: Plutonium -241 Sediment Results.

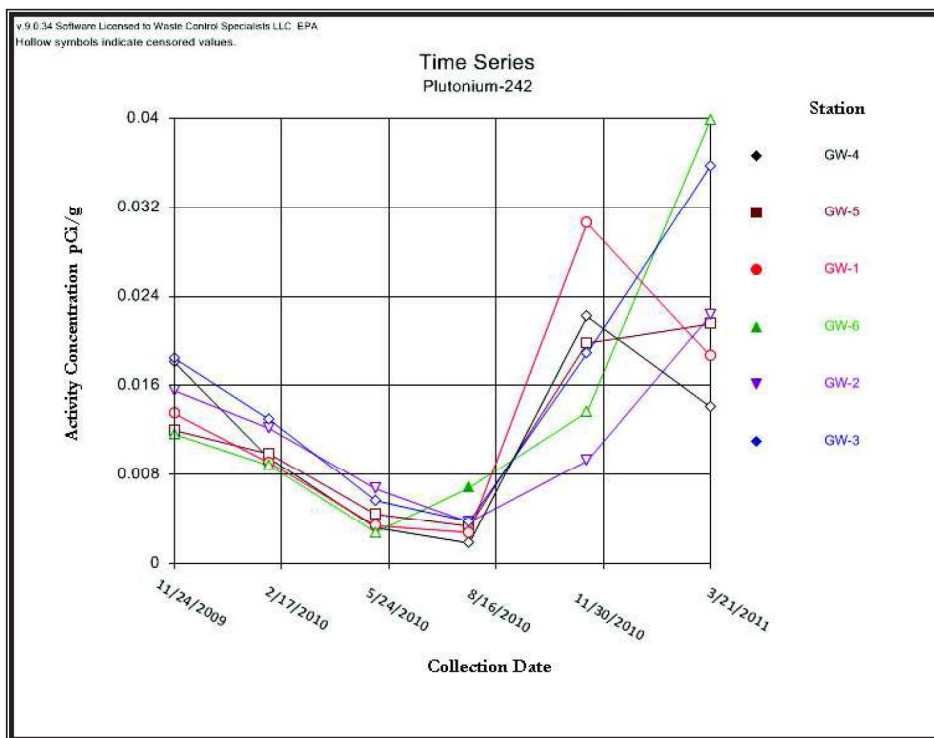


Figure 5-18: Plutonium -242 Sediment Results.

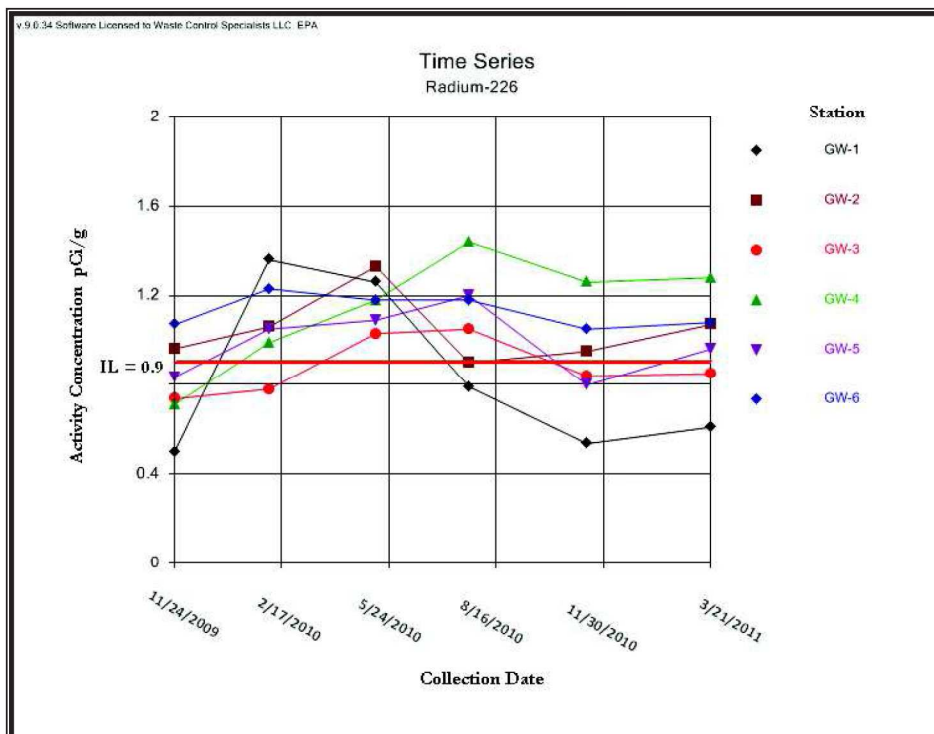


Figure 5-19: Radium-226 Sediment Results.

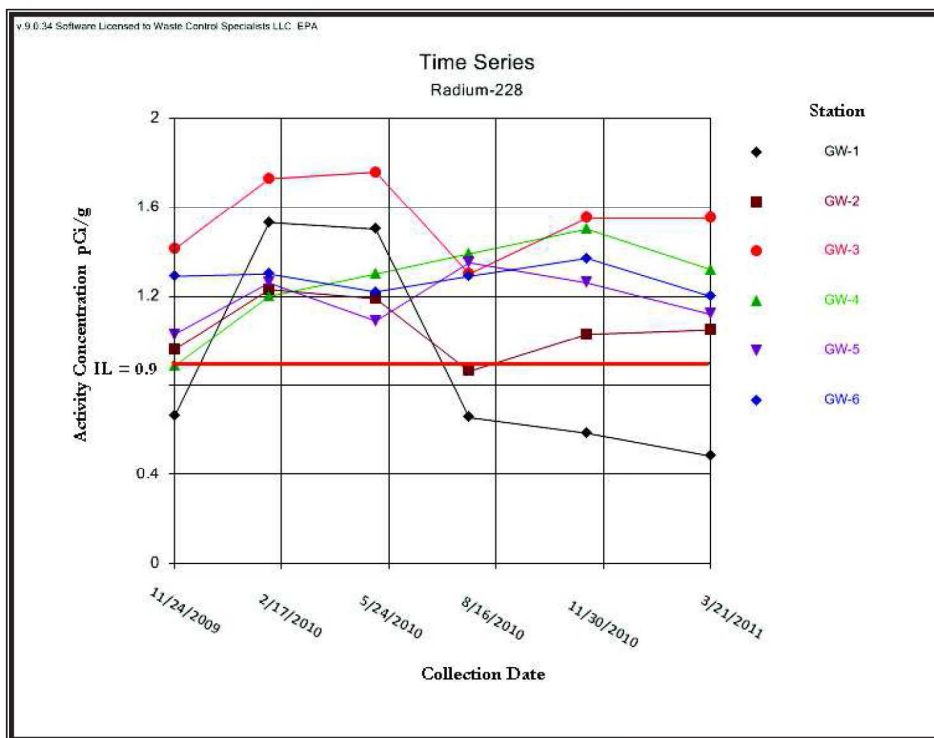


Figure 5-20: Radium-228 Sediment Results.

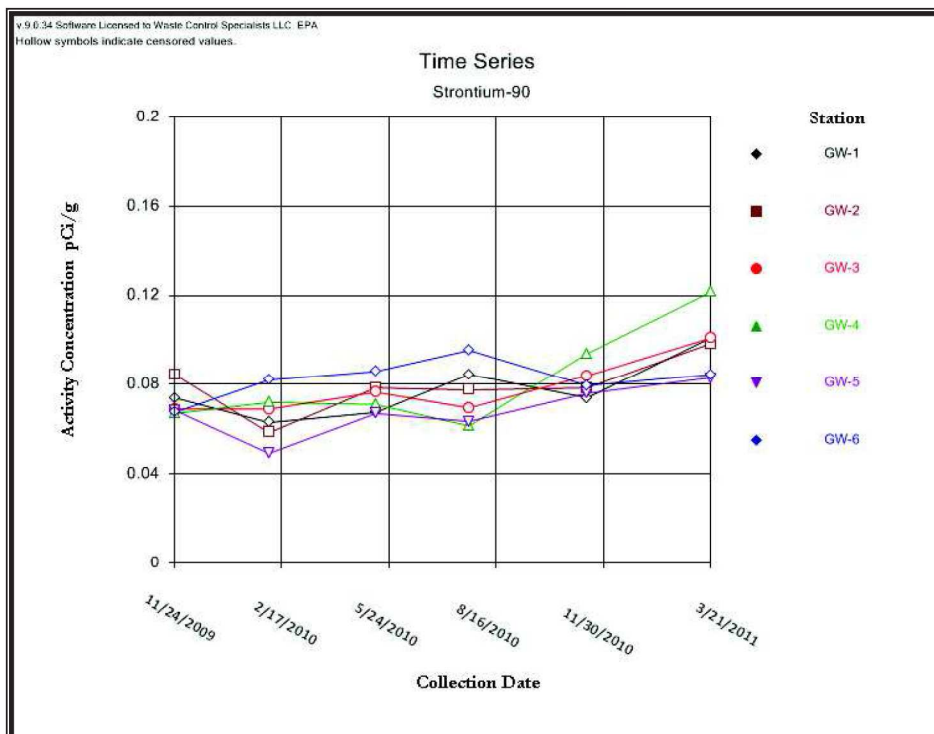


Figure 5-21: Strontium-90 Sediment Results.

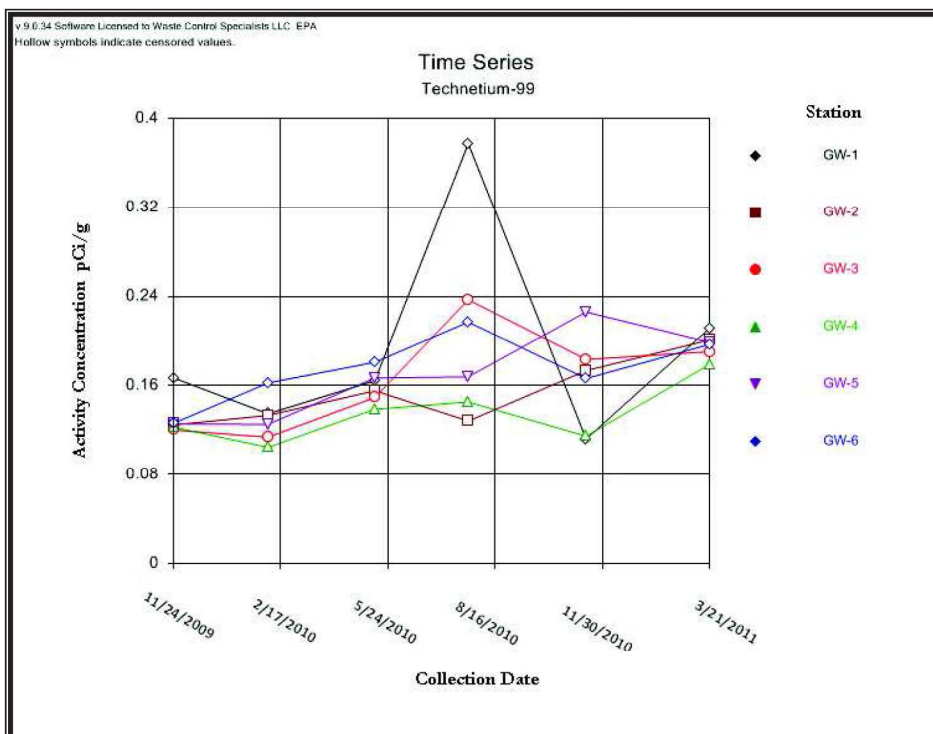


Figure 5-22: Technetium-99 Sediment Results.

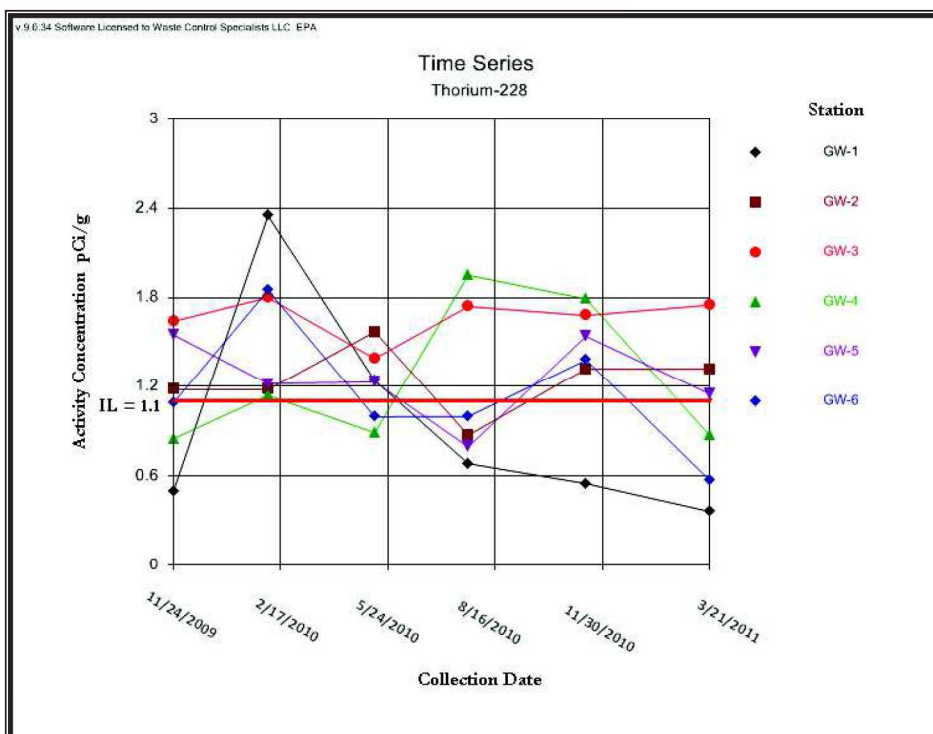


Figure 5-23: Thorium-228 Sediment Results.

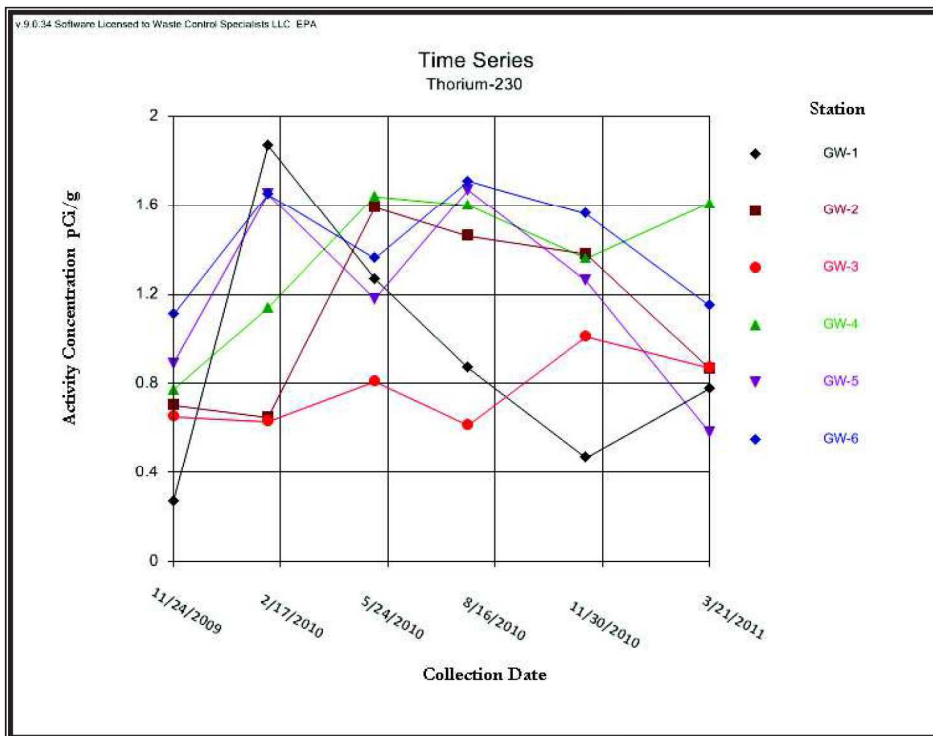


Figure 5-24: Thorium-230 Sediment Results.

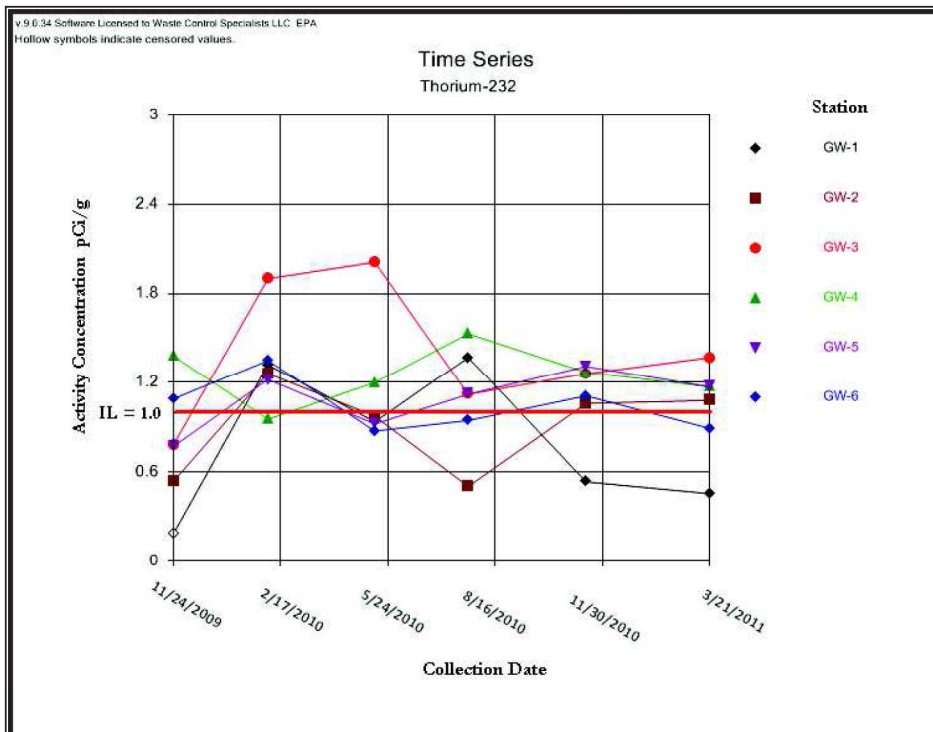


Figure 5-25: Thorium-232 Sediment Results.

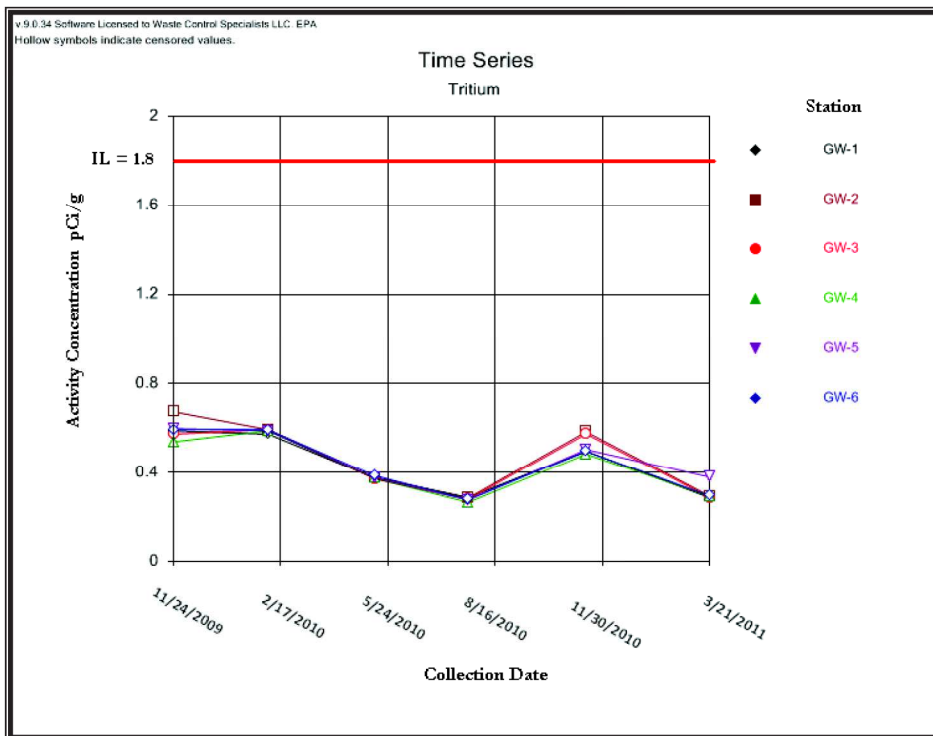


Figure 5-26: Tritium Sediment Results.

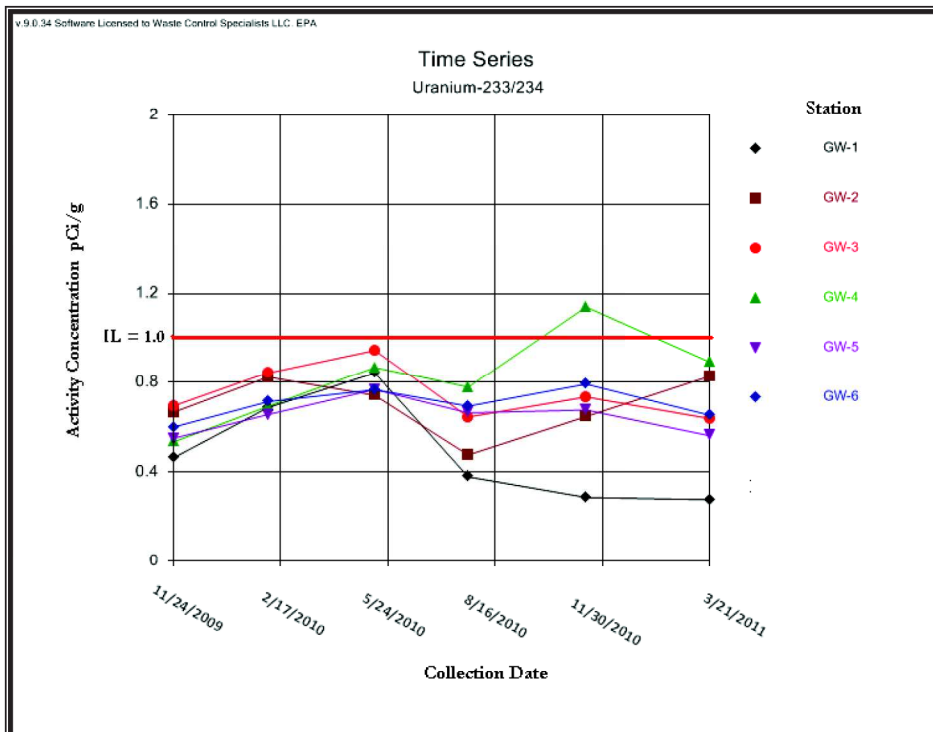


Figure 5-27: Uranium-233/234 Sediment Results.

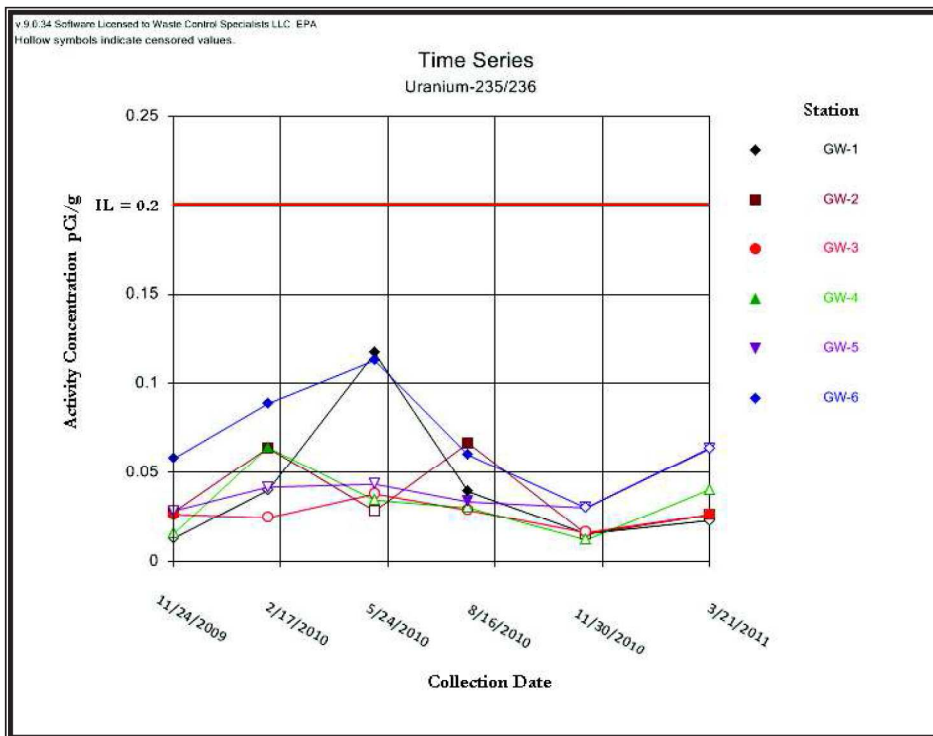


Figure 5-28: Uranium-235/236 Sediment Results.

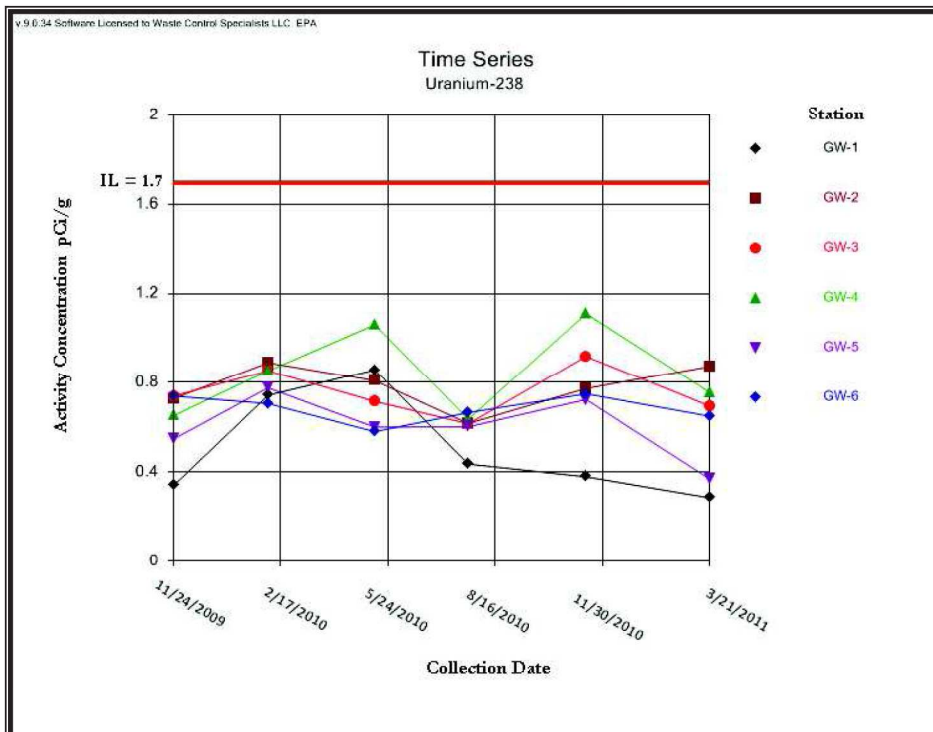


Figure 5-29: Uranium-238 Sediment Results.

6.0 Soil

In accordance with the pre-operational monitoring program, the following sampling campaigns were performed:

- 1) Radiological LLRW Grid,
- 2) 50 Meter Non-Radiological LLRW Grid,
- 3) 17 Offsite Locations,
- 4) Routine Soil Monitoring.

Radiological LLRW Soil Grid

As part of the pre-operational monitoring program, WCS performed a one-time surface soil sampling event. Soil samples were collected from a grid established over the future LLRW disposal facility, as specified in the EV-1.1.0, Radiological Environmental Monitoring Program and Addendum No.1, Revision 2 to the REMP. Figure 6-1 displays the radiological LLRW soil grid locations. Ultimately, WCS collected samples from 33 locations as shown (versus the 30 locations indicated in the WCS program documents).

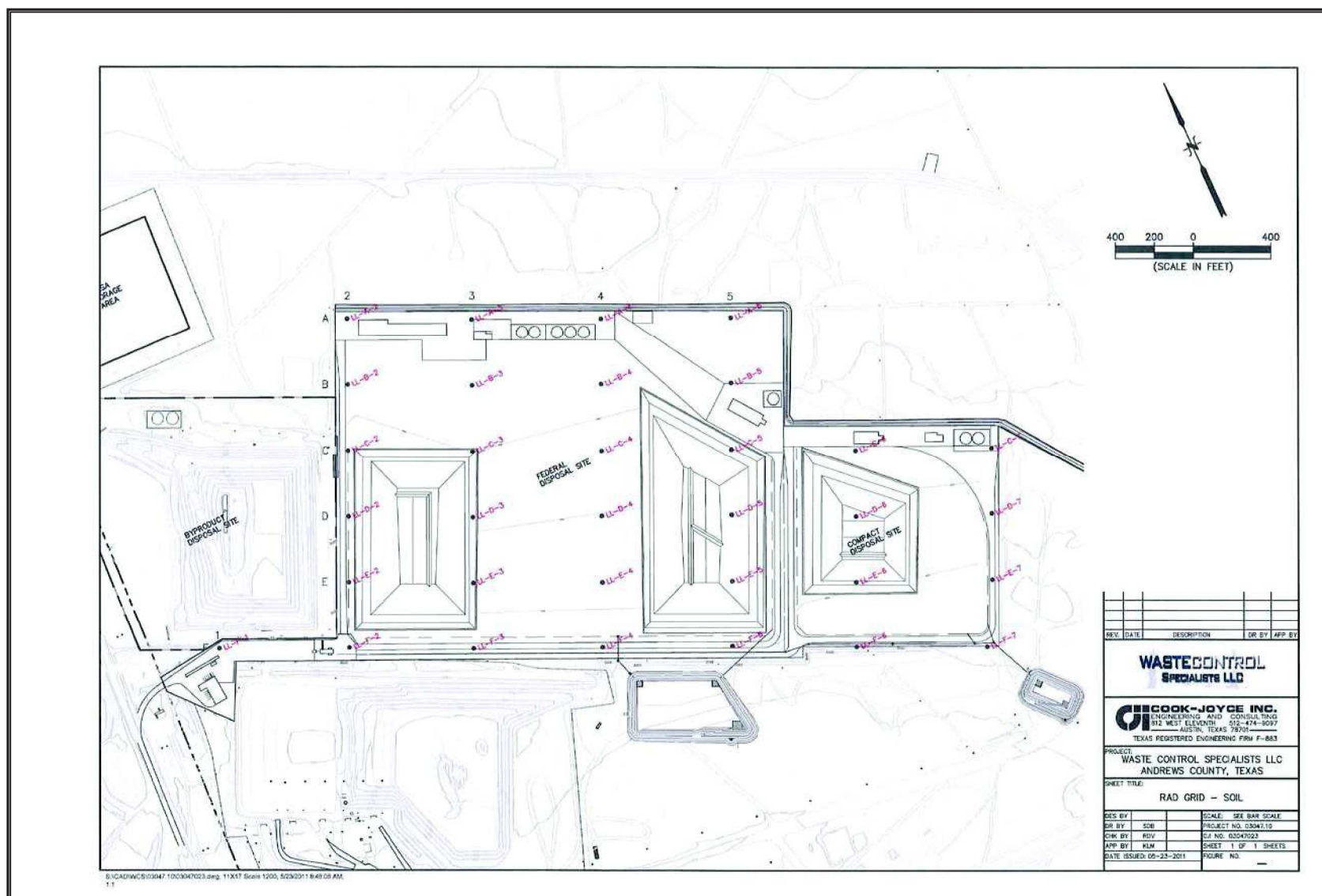


Figure 6-1: Radiological Soil Grid Locations

Summary statistics for the pre-operational radiological soil grid results are presented in the Table 6-1. All sample results for the radiological soil grid are given in Appendix D.

Table 6-1: LLRW Grid Soil Location Results for Low Level Pre-Operational Monitoring (pCi/g)

	Number of Observations	Number of Stations	Below L_c^*	Maximum	Minimum	Mean	Standard Deviation
Alpha	33	33	0	2.27E+01	5.57E+00	1.03E+01	3.11E+00
Am-241	33	33	26	1.31E-02	-5.95E-03	3.25E-03	4.79E-03
Beta	33	33	0	3.76E+01	9.43E+00	1.77E+01	5.71E+00
C-14	33	33	27	3.07E-01	-1.79E-01	1.32E-02	1.29E-01
Cs-137	33	33	4	7.55E-01	-4.03E-03	2.71E-01	1.76E-01
Cr-51	33	33	32	5.65E-01	-5.32E-01	-2.53E-02	3.03E-01
Co-60	33	33	31	1.13E-02	-1.05E-02	-4.18E-04	5.63E-03
Cm-242	33	33	32	7.00E-03	-4.72E-03	8.81E-04	2.41E-03
Cm 243/244	33	33	29	2.31E 02	5.76E 03	2.86E 03	5.17E 03
I-129	33	33	32	1.42E-01	-1.36E-01	-8.92E-03	5.92E-02
Mn-54	33	33	28	2.58E-02	-1.99E-02	1.13E-03	8.31E-03
Np-237	33	33	33	9.36E-03	-1.06E-02	-2.01E-03	4.86E-03
Pb-210	33	33	0	4.01E+00	3.03E-01	1.41E+00	8.08E-01
Pu-238	33	33	29	1.62E-02	-8.24E-03	2.46E-03	4.90E-03
Pu239/240	33	33	16	2.70E-02	-1.54E-03	1.04E-02	7.09E-03
Pu-241	33	33	29	2.86E-01	-4.35E-01	1.95E-02	1.85E-01
Pu-242	33	33	30	1.71E-02	-4.56E-03	1.03E-03	5.03E-03
Ra-226	33	33	0	1.01E+00	4.83E-01	6.39E-01	9.69E-02
Ra-228	33	33	0	1.15E+00	3.81E-01	6.96E-01	1.45E-01
Sr-90	33	33	21	1.35E-01	-6.07E-02	3.34E-02	5.35E-02
Tc-99	33	33	29	4.40E-01	-1.46E-01	1.76E-02	1.19E-01
Th-228	33	33	0	1.28E+00	1.96E-01	7.40E-01	2.72E-01
Th-230	33	33	0	1.82E+00	4.24E-01	8.25E-01	3.06E-01
Th-232	33	33	0	1.50E+00	3.22E-01	7.77E-01	2.56E-01
H-3	33	33	32	7.59E-01	-7.46E-01	1.11E-01	3.91E-01
U-233/234	33	33	0	9.22E-01	2.28E-01	5.06E-01	1.15E-01
U-235/236	33	33	5	6.42E-02	8.80E-03	3.13E-02	1.49E-02
U-238	33	33	0	8.31E-01	3.73E-01	5.09E-01	9.32E-02

*Critical Level estimated as one-half of MDC.

Naturally occurring radionuclides detected in these data include: Tritium, Carbon-14, Lead-210, Radium-226, Radium-228, Thorium-228, Thorium-230, and Thorium-232, Uranium-234, and Uranium-235 and Uranium-238. The concentrations of these radionuclides are consistent with natural background.

Strontium-90, Cesium-137, Plutonium-239/240 and Americium-241 were measured in soil at levels consistent with fallout from nuclear weapons. Plutonium-238 was also detected in soil consistent with levels from fallout involving accidents from failed satellite re-entries in the earth's atmosphere.

Since the critical level is established at the $\alpha = 0.05$ significance level, a 5% false positive rate is expected. The LLRW soil grid location results for Curium-243/244, Manganese-54, Plutonium-241, Plutonium-242, and Technetium-99 have a higher than expected false positive rate. WCS suspects that these are not true false positives because they are being compared against critical values that were estimated by WCS as one-half of the MDC. Because the false positives are very close to the critical level, WCS suspects that if these data were compared against their true critical levels that the false positive rate would approach 5%. In addition, if the background counts were extremely low, the estimated critical values would be artificially low. WCS is requesting documentation of background counts for these data from the analytical laboratory.

50m Non-Radiological Soil Grid

WCS performed a one time surface soil sampling event, pursuant to Attachment A of RML R04100. Soil samples were collected from a 50 meter grid established over the future LLRW disposal facility. Ultimately, WCS collected samples for non-radiological constituents (metals, volatile organic compounds [VOCs], and semi-volatile organic compounds [SVOCs]) analytes from 209 locations. These locations are presented in Figure 6-2.

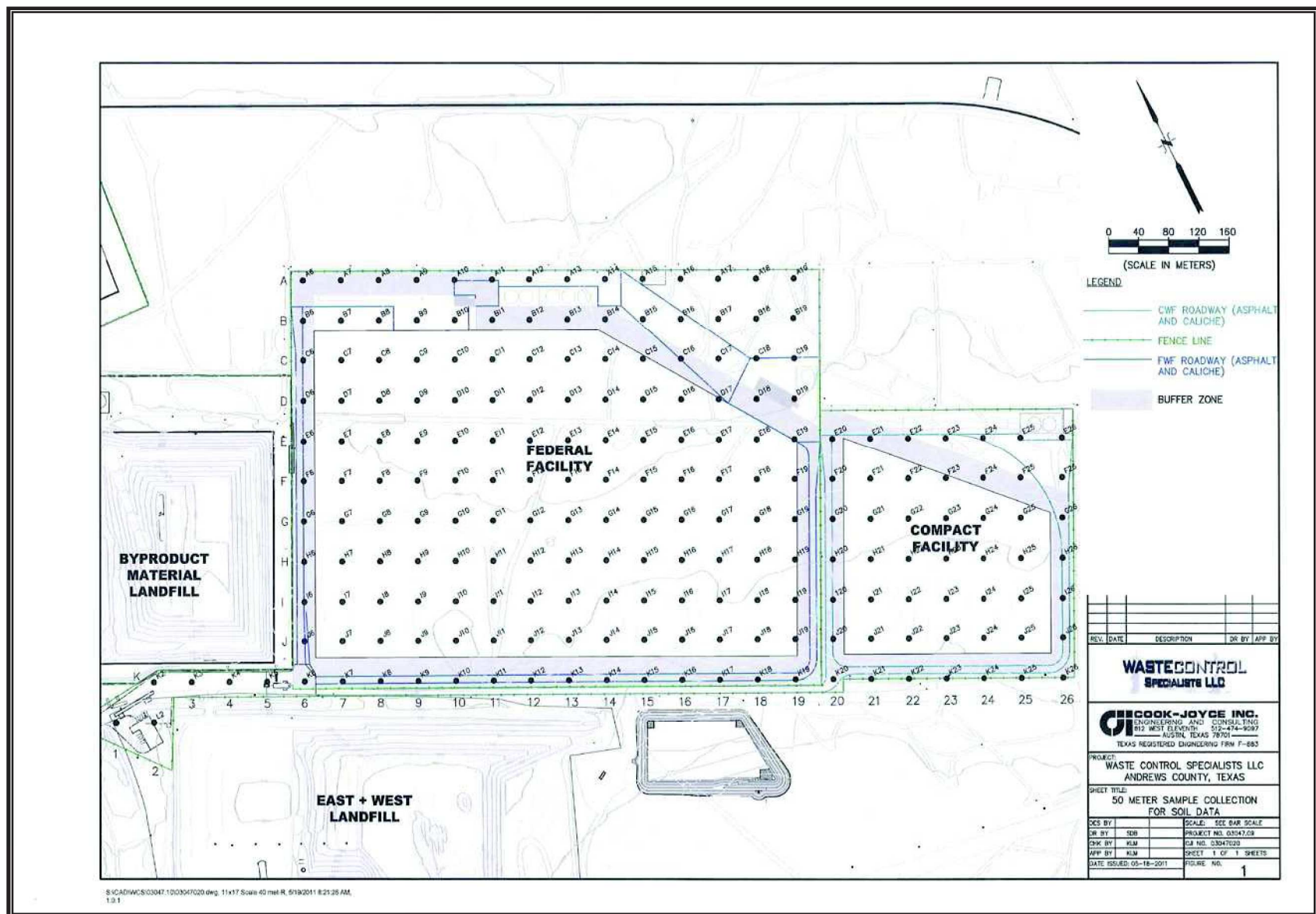


Figure 6-2: 50m Soil Grid Non-Radiological Locations.

Summary statistics for the pre-operational soil non-radiological results are presented in the Table 6-2. Figure 6-3 through Figure 6-7 graphically depict the pre-operational soil results. All sample results for the 50-meter non-radiological grid sampling are given in Appendix D.

Table 6-2: Soil Monitoring Results for 50-Meter Grid Over Future Facilities

Analyte	Units	Observations	No. of Stations	< PQL	Max. Value	Min. Value	Mean Value*	Standard Dev.*
Arsenic	µg/Kg	209	209	106 (99 J flags)	9800	<472	3513.2	1476.9
Cadmium	µg/Kg	209	209	207 (158 J flags)	961	<94.5	206.2	106.6
Nickel	µg/Kg	209	209	0	19400	3400	7353.4	1864.2
Selenium	µg/Kg	209	209	188 (90 J flags)	16200	<484	1895.8	3118.0
1,4-Dioxane	µg/Kg	209	209	209	<2.0	<2.0	N/A	N/A
Phenol	µg/Kg	209	209	209	<1.0	<1.0	N/A	N/A
1,1,1-Trichloroethane	µg/Kg	209	209	209	<0.325	<0.325	N/A	N/A
1,1,2,2-Tetrachloroethane	µg/Kg	209	209	209	<0.25	<0.25	N/A	N/A
1,1,2-Trichloroethane	µg/Kg	209	209	209	<0.25	<0.25	N/A	N/A
1,1-Dichloroethane	µg/Kg	209	209	209	<0.3	<0.3	N/A	N/A
1,1-Dichloroethylene	µg/Kg	209	209	209	<0.3	<0.3	N/A	N/A
1,2-Dichloroethane	µg/Kg	209	209	209	<0.25	<0.25	N/A	N/A
1,2-Dichloropropane	µg/Kg	209	209	209	<0.25	<0.25	N/A	N/A
Acetone	µg/Kg	209	209	209 (1 J flag)	4.32 J	<1.62	N/A	N/A
Benzene	µg/Kg	209	209	209	<0.3	<0.3	N/A	N/A
Bromodichloromethane	µg/Kg	209	209	209	<0.25	<0.25	N/A	N/A
Bromoform	µg/Kg	209	209	209	<0.25	<0.25	N/A	N/A
Bromomethane	µg/Kg	209	209	209	<0.3	<0.3	N/A	N/A
Carbon disulfide	µg/Kg	209	209	209	<1.25	<1.25	N/A	N/A
Carbon tetrachloride	µg/Kg	209	209	209	<0.3	<0.3	N/A	N/A
Chlorobenzene	µg/Kg	209	209	209	<0.25	<0.25	N/A	N/A
Chloroethane	µg/Kg	209	209	209	<0.3	<0.3	N/A	N/A
Chloroform	µg/Kg	209	209	209	<0.25	<0.25	N/A	N/A
Chloromethane	µg/Kg	209	209	209	<0.3	<0.3	N/A	N/A
cis-1,3-Dichloropropylene	µg/Kg	209	209	209	<0.25	<0.25	N/A	N/A
Dibromochloromethane	µg/Kg	209	209	209	<0.3	<0.3	N/A	N/A
Ethylbenzene	µg/Kg	209	209	209	<0.25	<0.25	N/A	N/A
Tetrachloroethylene	µg/Kg	209	209	209	<0.3	<0.3	N/A	N/A
Toluene	µg/Kg	209	209	209	<0.25	<0.25	N/A	N/A
trans-1,2-Dichloroethylene	µg/Kg	209	209	209	<0.3	<0.3	N/A	N/A
trans-1,3-Dichloropropylene	µg/Kg	209	209	209	<0.25	<0.25	N/A	N/A
Trichloroethylene	µg/Kg	209	209	209	<0.25	<0.25	N/A	N/A
Vinyl chloride	µg/Kg	209	209	209	<0.5	<0.5	N/A	N/A

NOTES: * Mean and Standard Deviation values are calculated by replacing non-detect values (values reported as less than the MDL) with one half of the MDL. Estimated values reported by the laboratory were used in calculating the Mean and Standard Deviation values.

As summarized in the table above and in Appendix D, no semi-volatile organic compounds (SVOCs) or volatile organic compounds (VOCs) were reported at concentrations above their practical quantification levels (PQLs). One estimated concentration of acetone was reported in one sample. Acetone is a common laboratory contaminant and WCS has concluded that the acetone is a laboratory artifact. This conclusion is supported by the laboratory's QA/QC data – acetone was reported at a similar concentration in the laboratory blank.

As expected for a heterogeneous surface soil, metal concentrations were variable across the sample grid. Concentrations of nickel were ubiquitous across the grid, ranging from 3400 $\mu\text{g}/\text{Kg}$ to 19400 $\mu\text{g}/\text{Kg}$. Approximately half of the samples contained quantifiable concentrations of arsenic and selenium, with selenium concentrations being more variable in concentration. Approximately one quarter of the samples contained quantifiable concentrations of cadmium. All of these concentrations are considered to be natural.

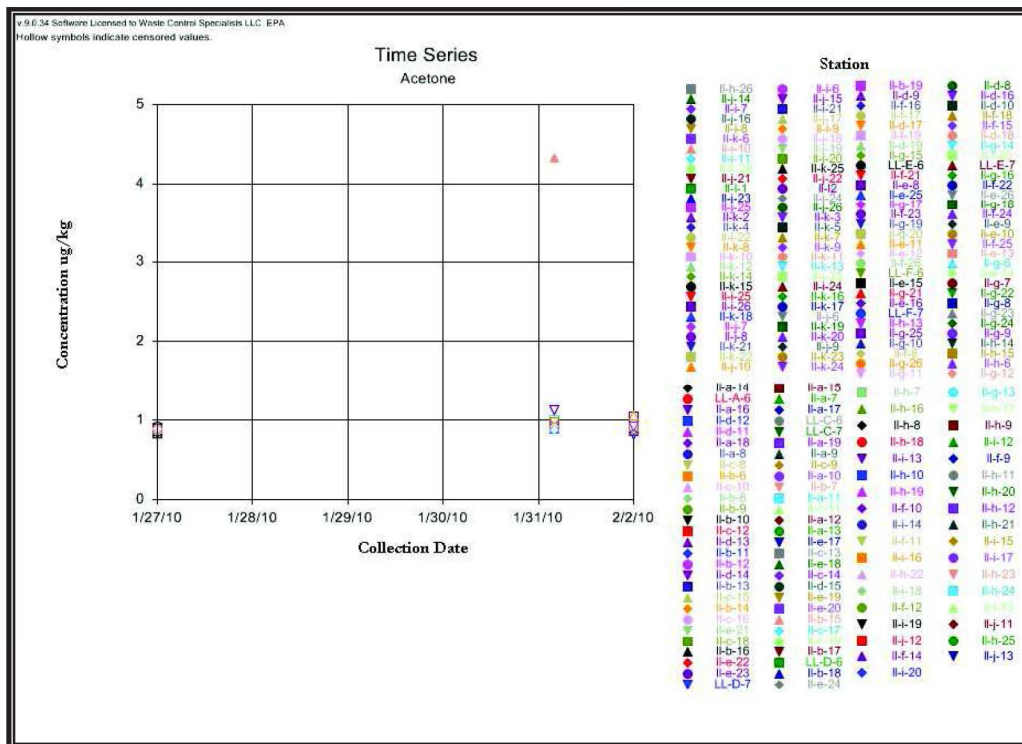
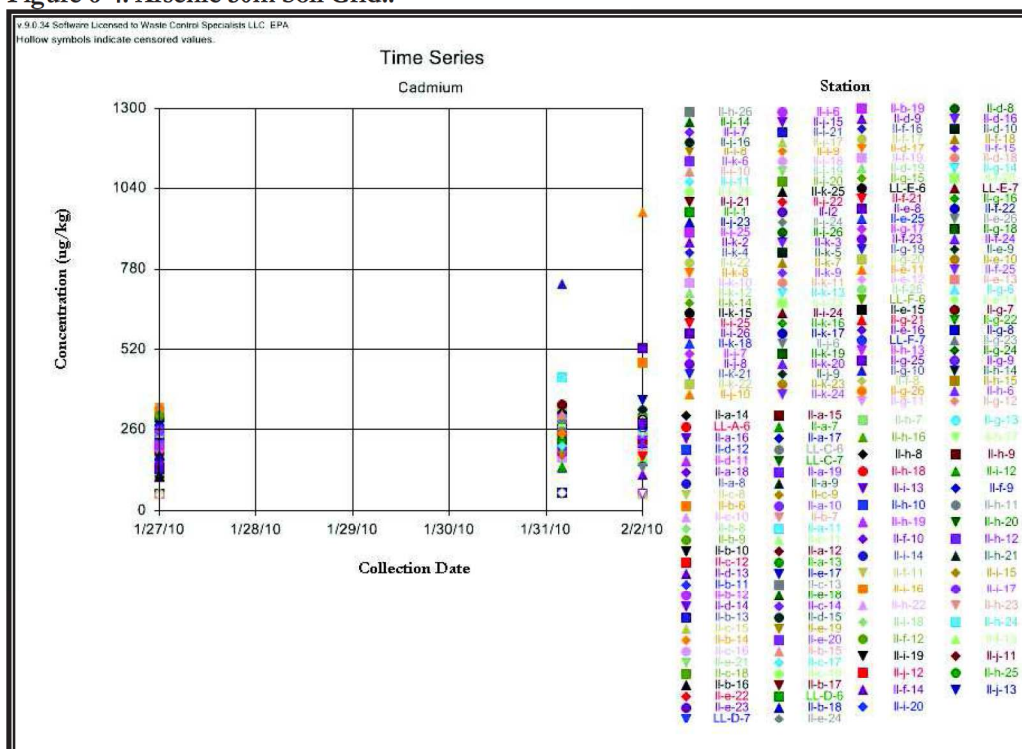
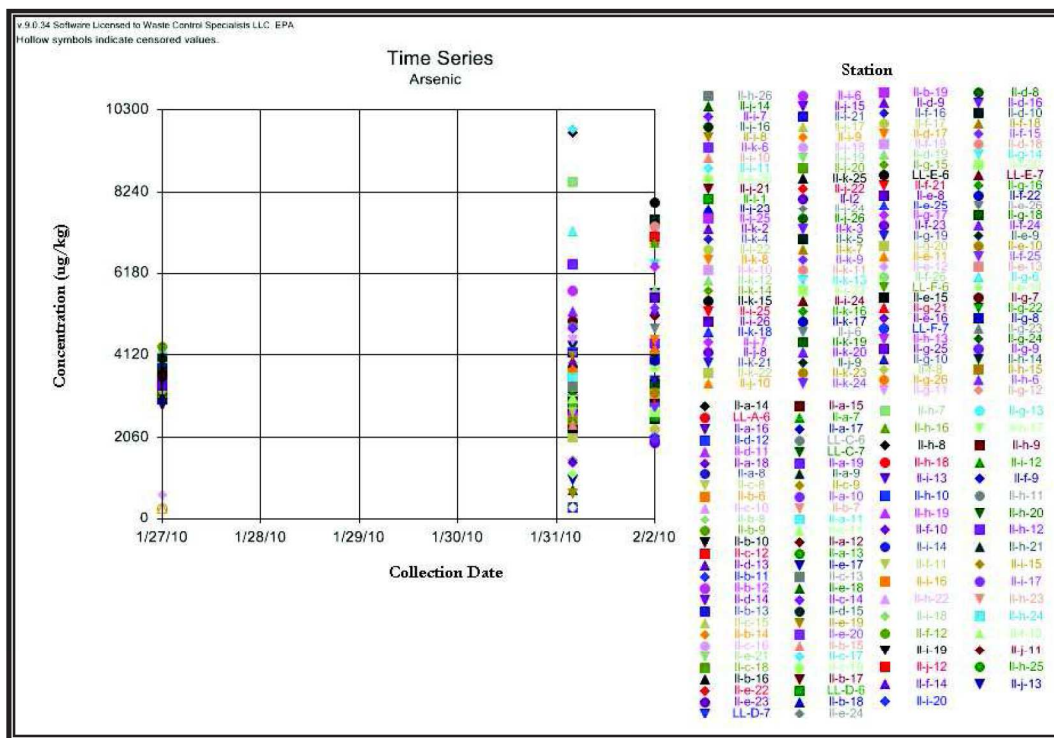


Figure 6-3: Acetone 50m Soil Grid.



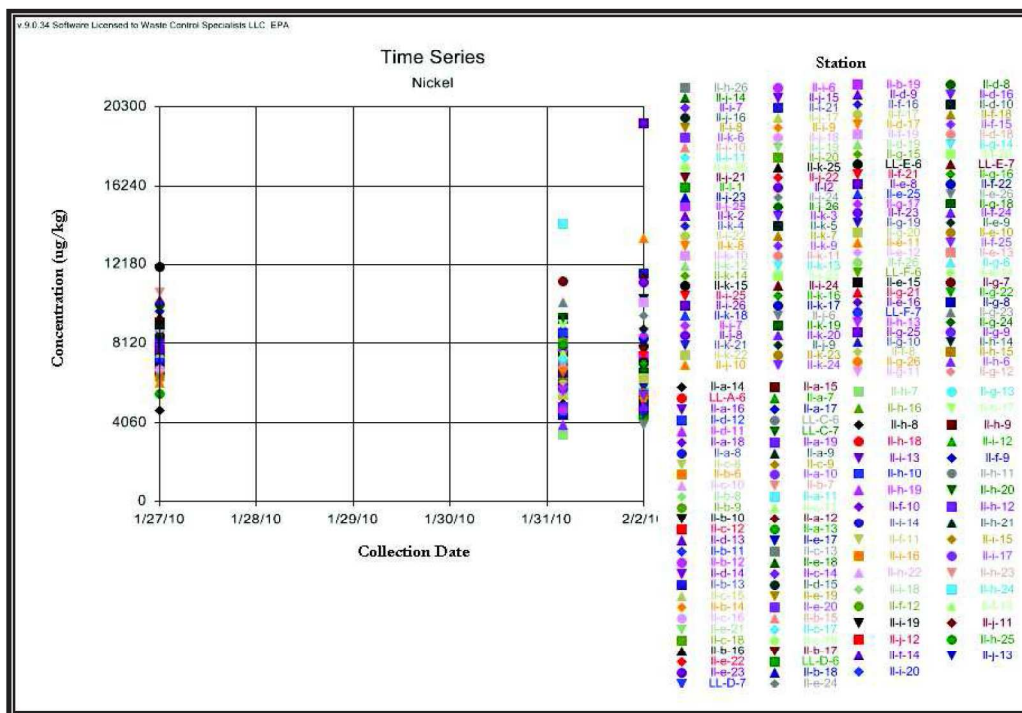


Figure 6-6: Nickel 50m Soil Grid..

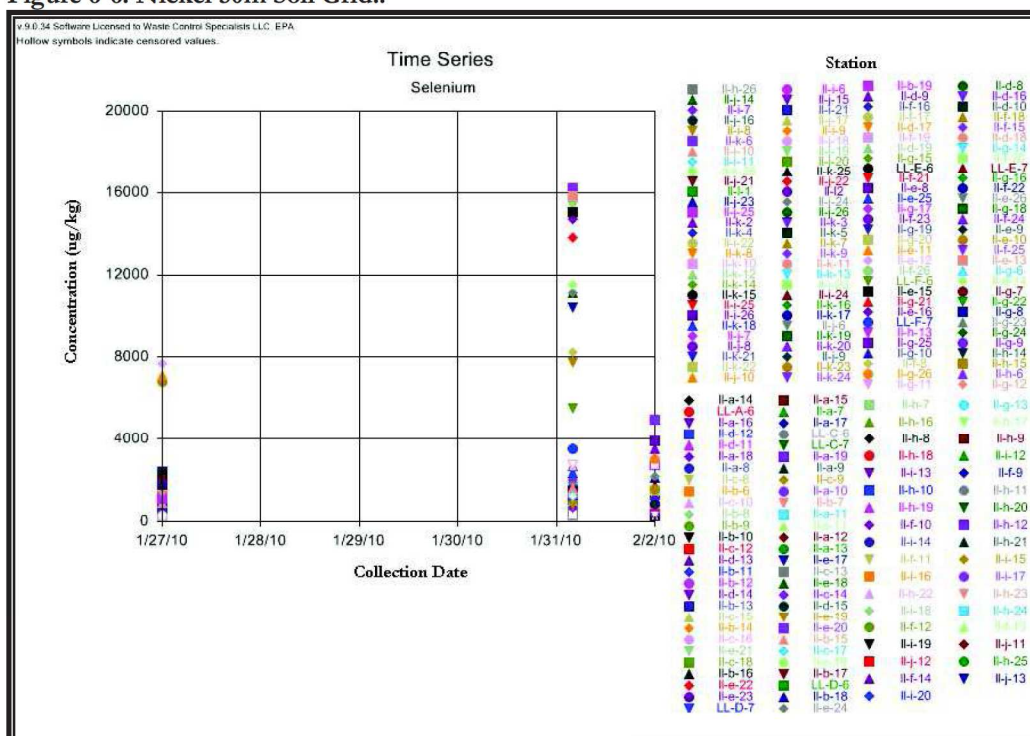


Figure 6-7: Selenium 50m Soil Grid..

17 Offsite Soil Locations

In accordance with the pre-operational monitoring program, soil was sampled quarterly at 17 off-site locations at varying distances and directions from the LLRW facility.

Summary statistics for the pre-operational soil radiological results are presented in Table 6-3 and Table 6-4. Figure 6-8 through Figure 6-35 graphically depict the pre-operational soil results. All soil sample results for the 17 offsite locations are given in Appendix D.

Table 6-3: 17 Offsite Soil Location (0-6 in.) Results for Low Level Pre-Operational Monitoring (pCi/g).

	Number of Observations	Number of Stations	Below L _c *	Maximum	Minimum	Mean	Standard Deviation
Alpha	68	17	3	1.59E+01	5.64E-01	6.44E+00	3.67E+00
Am-241	68	17	58	6.18E-03	-9.47E-03	5.71E-04	2.22E-03
Beta	68	17	0	2.63E+01	1.96E+00	1.03E+01	5.88E+00
C-14	68	17	63	3.14E-01	-3.49E-01	-4.67E-03	1.37E-01
Cs-137	68	17	9	3.84E-01	-8.77E-03	9.35E-02	7.32E-02
Cr-51	68	17	66	1.47E+00	-1.94E+00	-6.49E-02	4.95E-01
Co-60	68	17	65	9.90E-03	-1.30E-02	-6.43E-04	4.49E-03
Cu-242	68	17	64	5.74E-03	-1.17E-03	2.95E-04	1.04E-03
Cu-243/244	68	17	62	7.89E-03	-3.59E-03	5.81E-04	1.71E-03
I-129	68	17	65	1.14E-01	-1.38E-01	-2.18E-03	4.61E-02
Mn-54	68	17	62	1.30E-02	-1.21E-02	-2.23E-06	4.97E-03
Np-237	68	17	68	5.72E-03	-1.19E-02	-1.86E-03	3.53E-03
Pb-210	68	17	30	1.84E+00	-2.22E-01	5.45E-01	4.44E-01
Pu-238	68	17	50	2.25E-02	-2.80E-03	2.83E-03	4.60E-03
Pu-239/240	68	17	37	1.88E-02	-1.50E-03	4.62E-03	4.38E-03
Pu-241	68	17	64	8.46E-01	-6.88E-01	-1.41E-02	2.54E-01
Pu-242	68	17	60	1.06E-02	-2.98E-03	1.65E-03	2.54E-03
Ra-226	68	17	1	8.40E-01	0.00E+00	4.34E-01	2.26E-01
Ra-228	68	17	0	8.99E-01	1.20E-01	4.41E-01	2.33E-01
Sr-90	68	17	51	1.74E-01	-1.51E-01	2.44E-02	6.53E-02
Tc-99	68	17	63	2.40E-01	-2.56E-01	-2.71E-03	1.07E-01
Th-228	68	17	15	2.04E+00	3.53E-02	5.27E-01	3.59E-01
Th-230	68	17	4	1.65E+00	-8.59E-02	6.10E-01	3.68E-01
Th-232	68	17	7	1.18E+00	2.93E-02	4.32E-01	2.81E-01
H-3	68	17	64	4.55E-01	-5.05E-01	8.99E-02	1.85E-01
U-233/234	68	17	0	1.09E+00	1.27E-01	3.63E-01	1.96E-01
U-235/236	68	17	21	1.00E-01	-1.44E-02	2.67E-02	1.99E-02
U-238	68	17	0	8.96E-01	1.06E-01	3.81E-01	2.08E-01

*Critical Level estimated as one-half of MDC.

Table 6-4: 17 Offsite Soil Location (6-12 in.) Results for Low Level Pre-Operational Monitoring (pCi/g)

	Number of Observations	Number of Stations	Below L _c *	Maximum	Minimum	Mean	Standard Deviation
Alpha	68	17	3	1.44E+01	-3.07E-01	5.70E+00	3.53E+00
Am-241	68	17	56	1.04E-02	-1.10E-02	8.66E-04	3.30E-03
Beta	68	17	0	2.65E+01	1.67E+00	9.19E+00	4.77E+00
C-14	68	17	66	1.93E-01	-2.85E-01	-1.11E-02	1.05E-01
Cs-137	68	17	7	3.48E-01	-2.58E-02	4.87E-02	5.43E-02
Cr-51	68	17	66	2.15E+00	-2.02E+00	-1.35E-02	6.15E-01
Co-60	68	17	64	1.03E-02	-1.28E-02	-4.13E-04	4.81E-03
Cu-242	68	17	62	1.09E-02	-3.73E-03	8.07E-04	2.10E-03
Cu-243/244	68	17	57	1.09E-02	-4.69E-03	9.24E-04	2.41E-03
I-129	68	17	64	1.84E-01	-2.14E-01	-4.52E-03	6.95E-02
Mn-54	68	17	63	1.55E-02	-1.05E-02	1.00E-03	5.12E-03
Np-237	68	17	67	1.96E-02	-2.49E-02	-1.03E-03	6.38E-03
Pb-210	68	17	11	1.68E+00	-3.93E-01	6.72E-01	3.45E-01
Pu-238	68	17	56	2.04E-02	-4.75E-03	2.06E-03	3.85E-03
Pu239/240	68	17	45	1.70E-02	-8.11E-03	2.91E-03	4.02E-03
Pu-241	68	17	66	3.42E-01	-5.04E-01	3.68E-03	1.70E-01
Pu-242	68	17	62	1.12E-02	-5.26E-03	4.74E-04	2.89E-03
Ra-226	68	17	0	8.77E-01	1.14E-01	4.36E-01	2.23E-01
Ra-228	68	17	0	9.60E-01	1.07E-01	4.42E-01	2.39E-01
Sr-90	68	17	52	2.75E-01	-2.99E-01	1.33E-02	8.72E-02
Tc-99	68	17	63	2.26E-01	-2.17E-01	-1.08E-02	1.22E-01
Th-228	68	17	16	1.18E+00	4.37E-02	4.28E-01	2.76E-01
Th-230	68	17	3	2.44E+00	6.75E-02	6.11E-01	3.91E-01
Th-232	68	17	4	1.17E+00	8.86E-02	4.58E-01	2.76E-01
H-3	68	17	61	5.54E-01	-4.01E-01	1.04E-01	1.85E-01
U-233/234	68	17	0	7.33E-01	5.52E-02	3.55E-01	1.74E-01
U-235/236	68	17	26	7.60E-02	-9.17E-03	2.65E-02	1.88E-02
U-238	68	17	0	7.43E-01	7.85E-02	3.52E-01	1.71E-01

*Critical Level estimated as one-half of MDC.

Naturally occurring radionuclides detected in these data include: Tritium, Carbon-14, Lead-210, Radium-226, Radium-228, Thorium-228, Thorium-230, Thorium-232, Uranium-234, Uranium-235 and Uranium-238. The concentrations of these radionuclides are consistent with natural background.

Strontium-90, Cesium-137, Plutonium 239/240 and Americium-241 were measured in soil at levels consistent with fallout from nuclear weapons testing in soils and sediments. Plutonium-238 was also detected in soil consistent with levels from fallout involving accident from failed satellites re-entries in the earth's atmosphere.

Since the critical level is established at the $\alpha = 0.05$ significance level, a 5% false positive rate is expected. The 17 offsite soil location results for Americium-241, Chromium-51, Curium-242, Curium-243/244, Manganese-54, Plutonium-238, Plutonium-239/240, Plutonium-242, Strontium-90, and Technetium-99 have a higher than expected false positive rate. WCS suspects that these are not true false positives because they are being compared against critical values that were estimated by WCS as one-half of the MDC. Because the false positives are very close to the critical level, WCS suspects that if these data were compared against their true critical levels that the false positive rate would approach 5%. In addition, if the background counts were extremely low, the estimated critical values would be artificially low. WCS is requesting documentation of background counts for these data from the analytical laboratory.

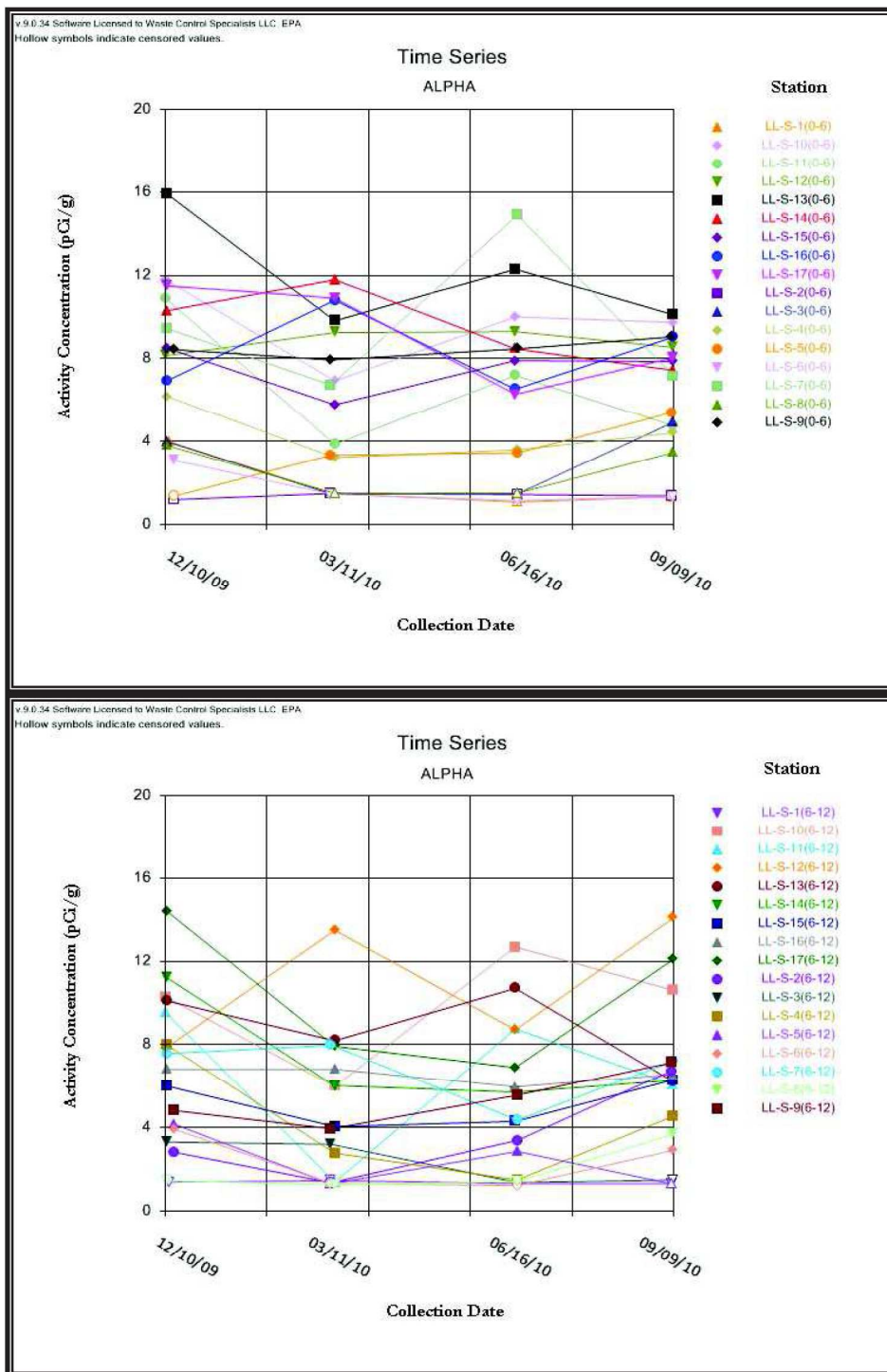


Figure 6-8: Alpha Results for the 17 Offsite Soil Locations.

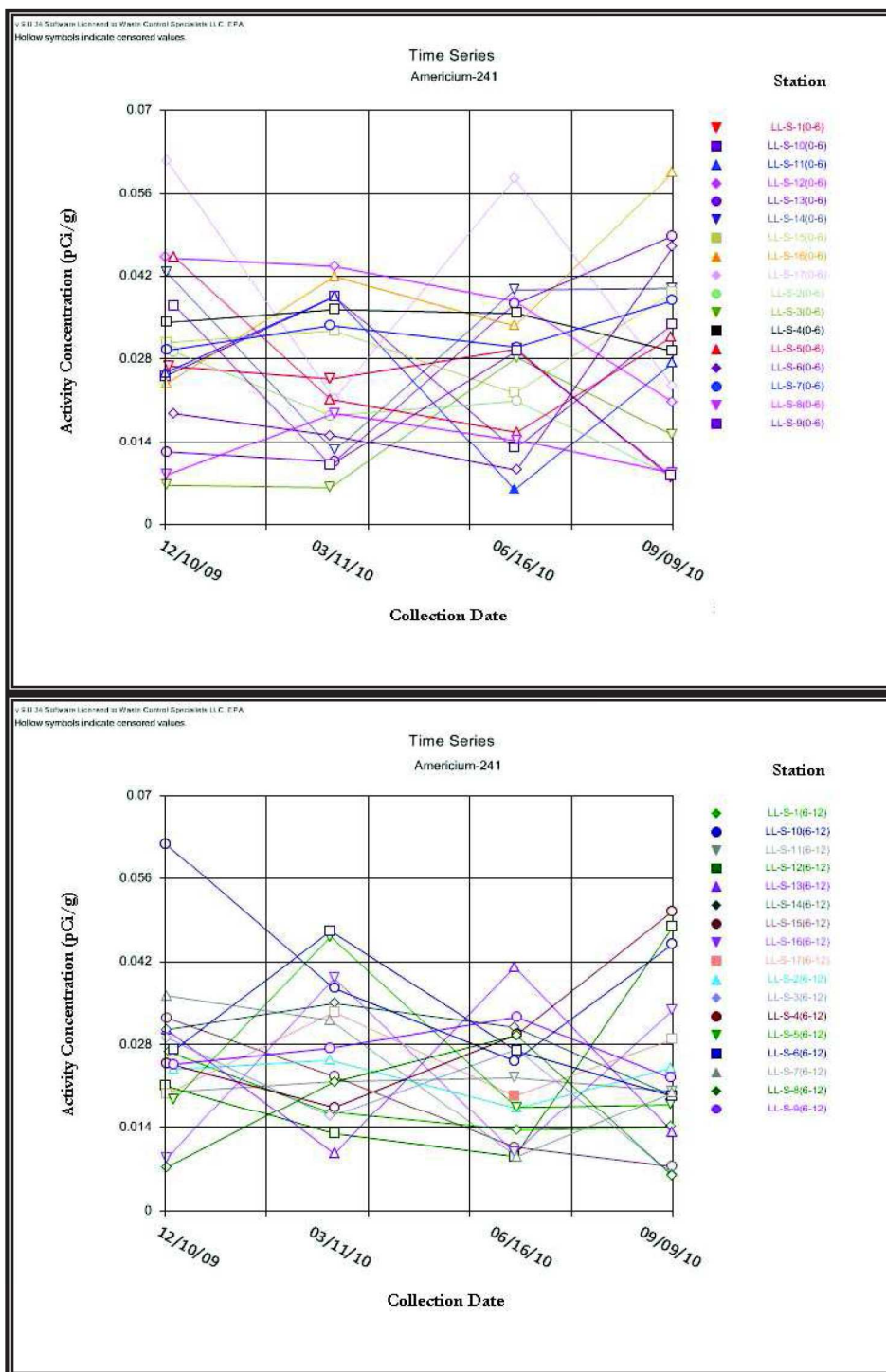


Figure 6-9: Americium-241 Results for the 17 Offsite Soil Locations.

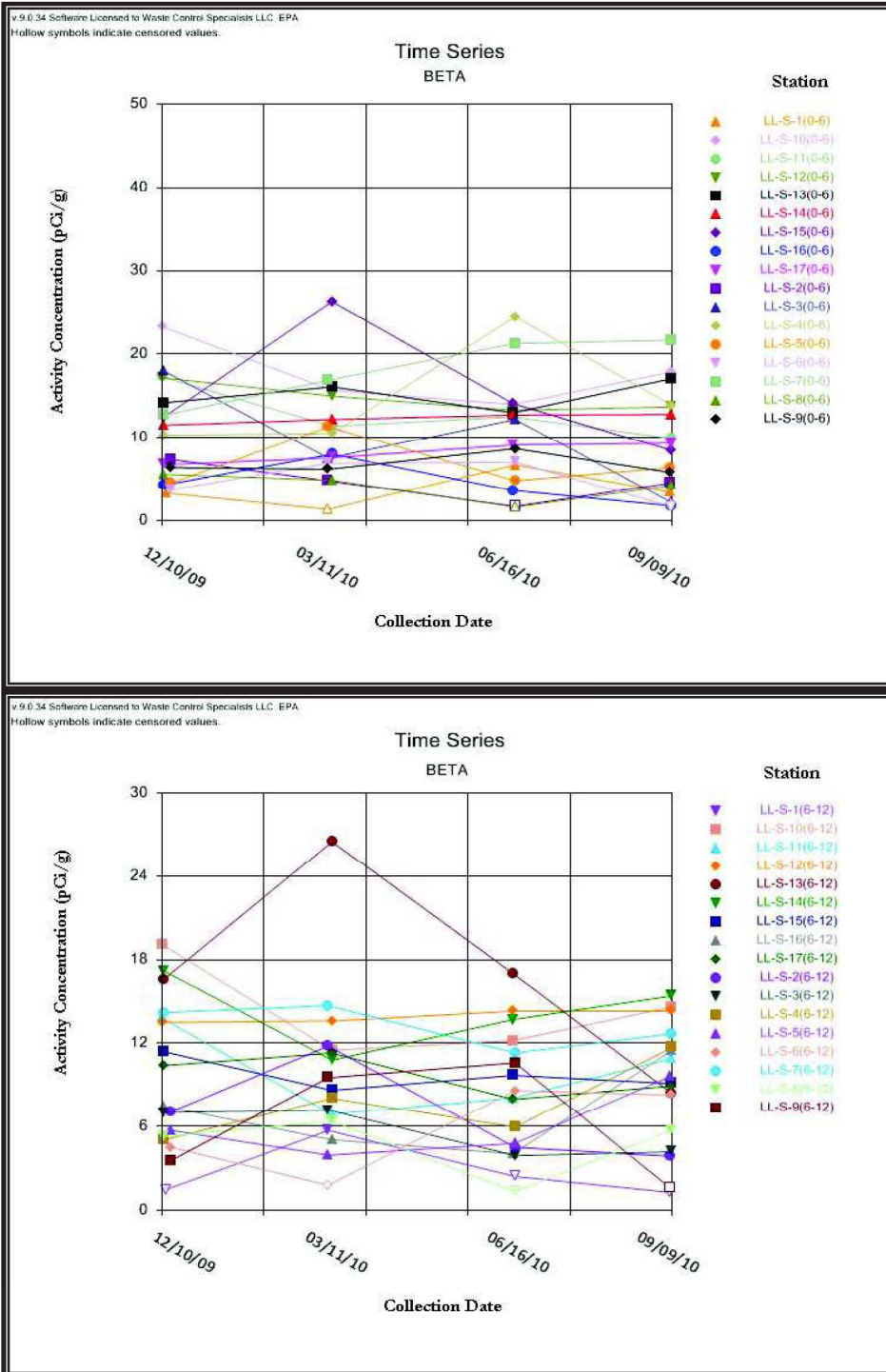


Figure 6-10: Beta Results for the 17 Offsite Soil Locations.

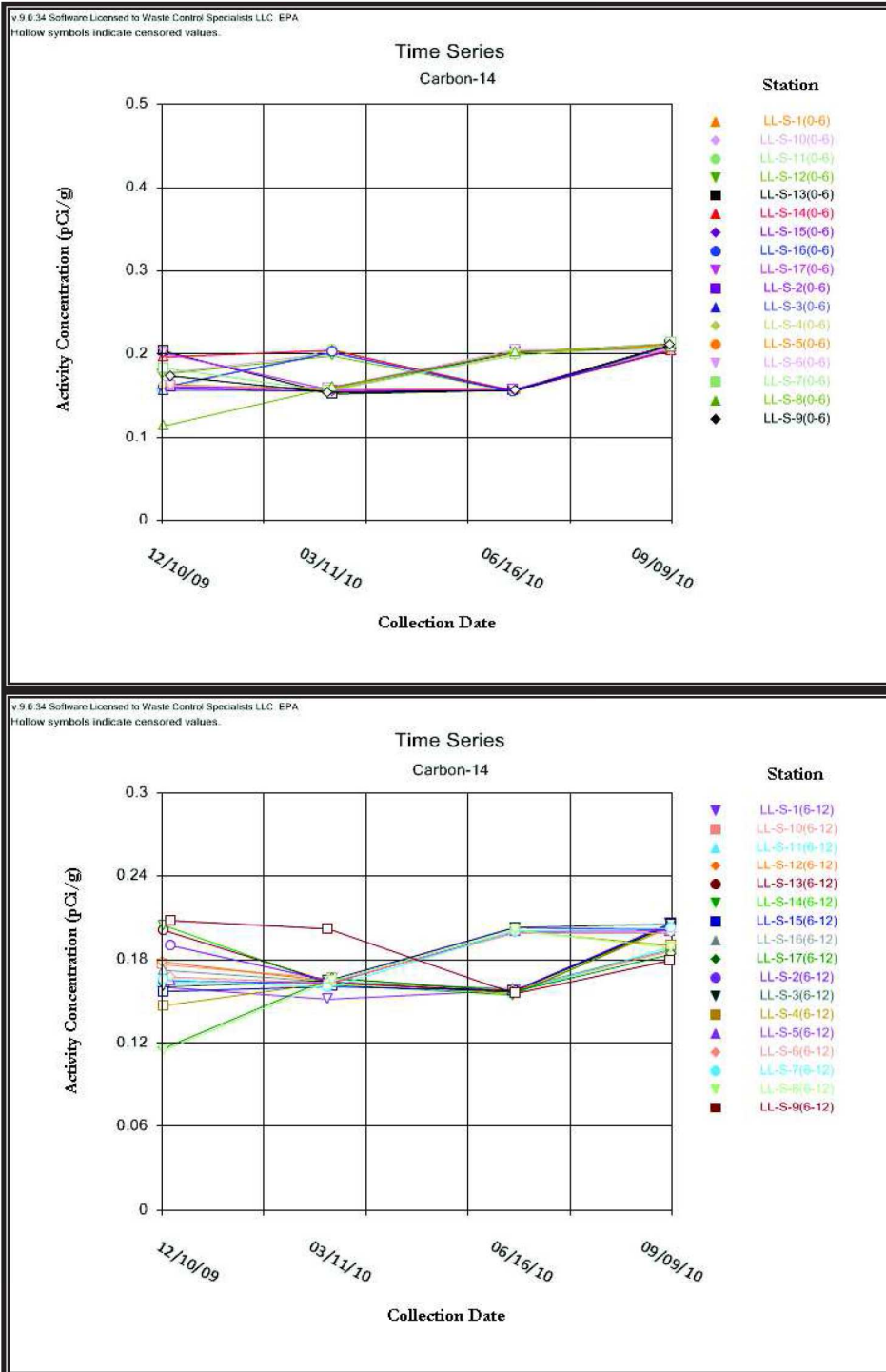


Figure 6-11: Carbon-14 Results for the 17 Offsite Soil Locations.

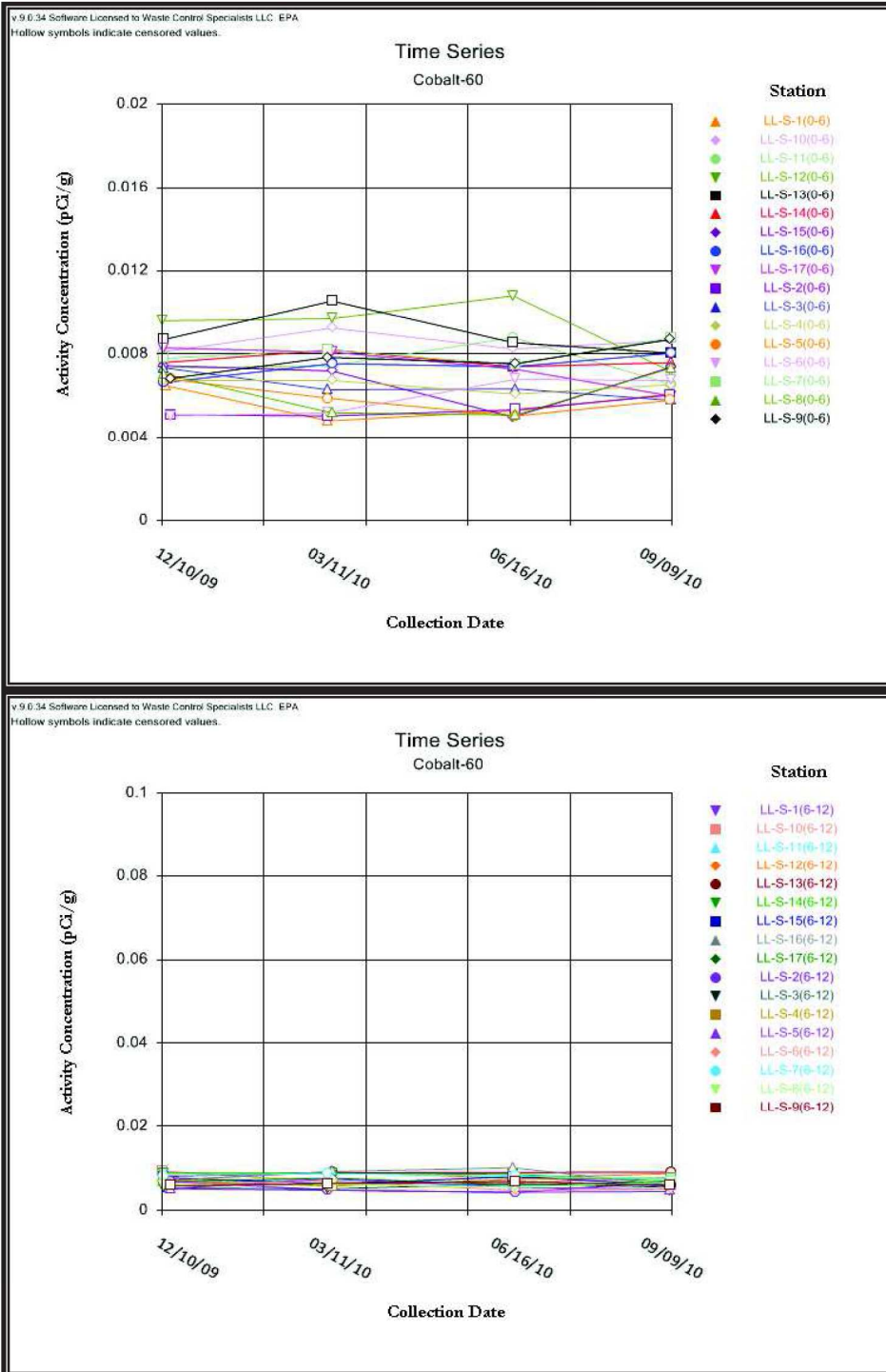


Figure 6-12: Cobalt-60 Results for the 17 Offsite Soil Locations.

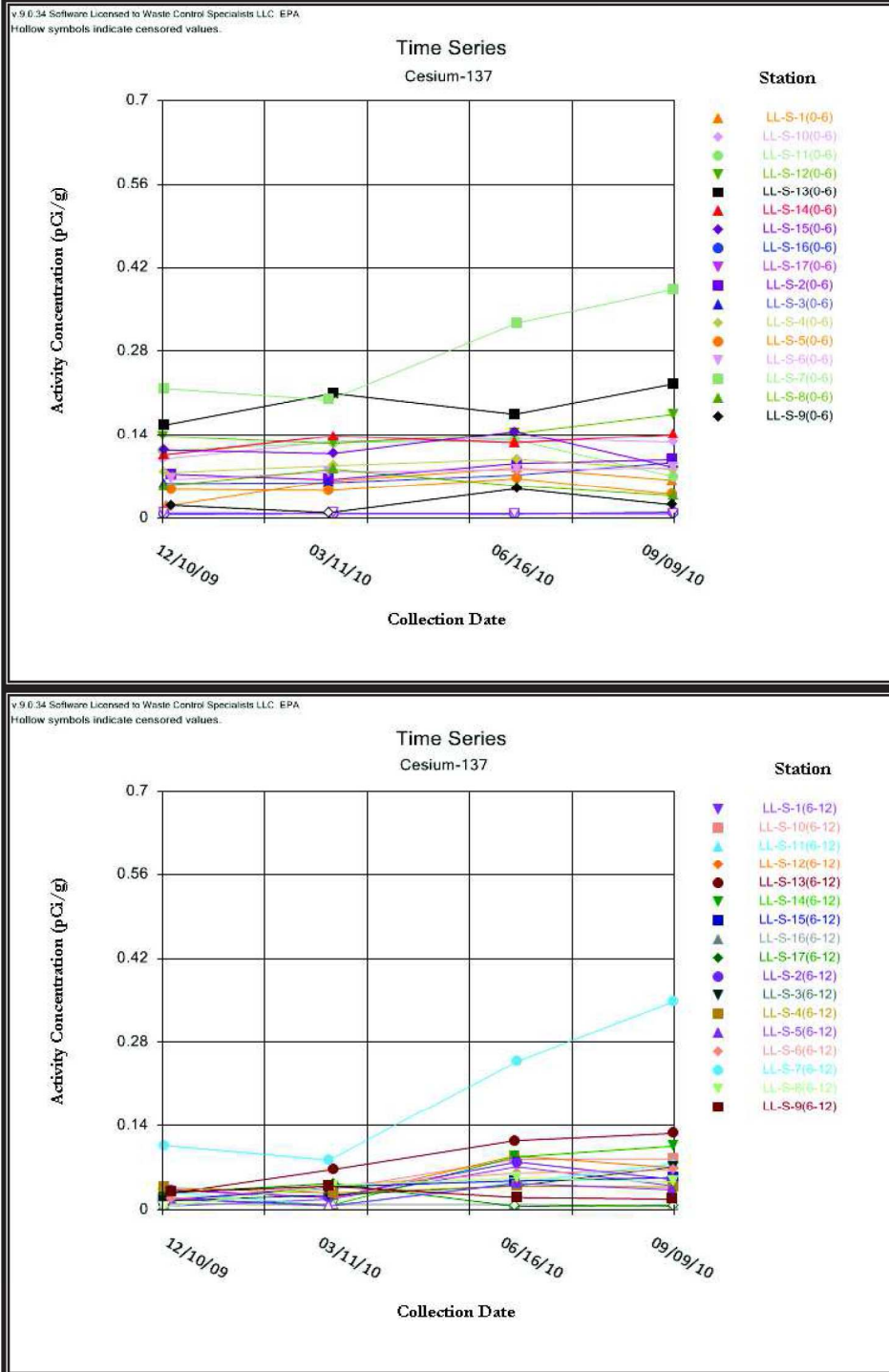


Figure 6-13: Cesium-137 Results for the 17 Offsite Soil Locations.

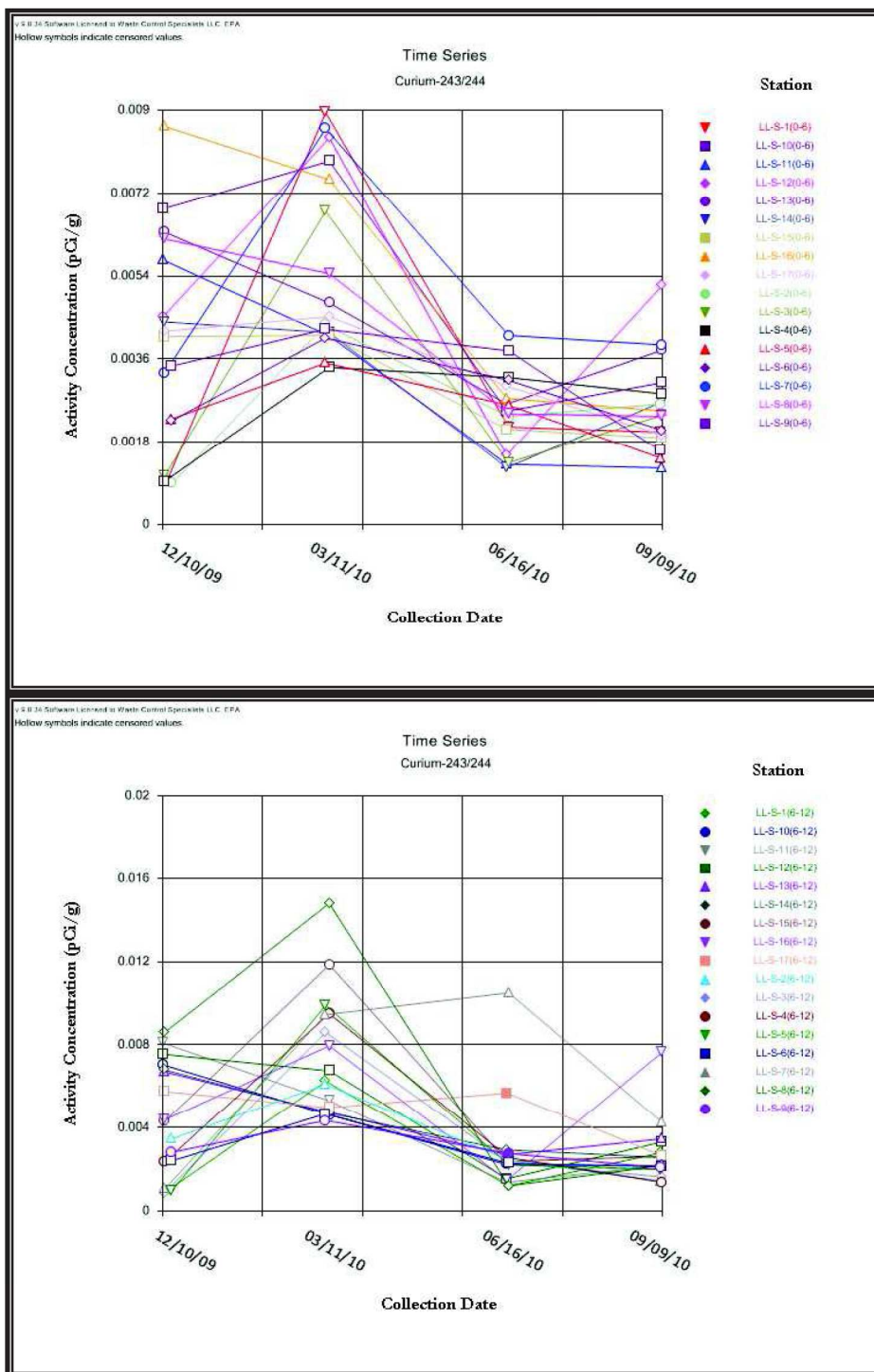


Figure 6-14: Curium-243/244 Results for the 17 Offsite Soil Locations.

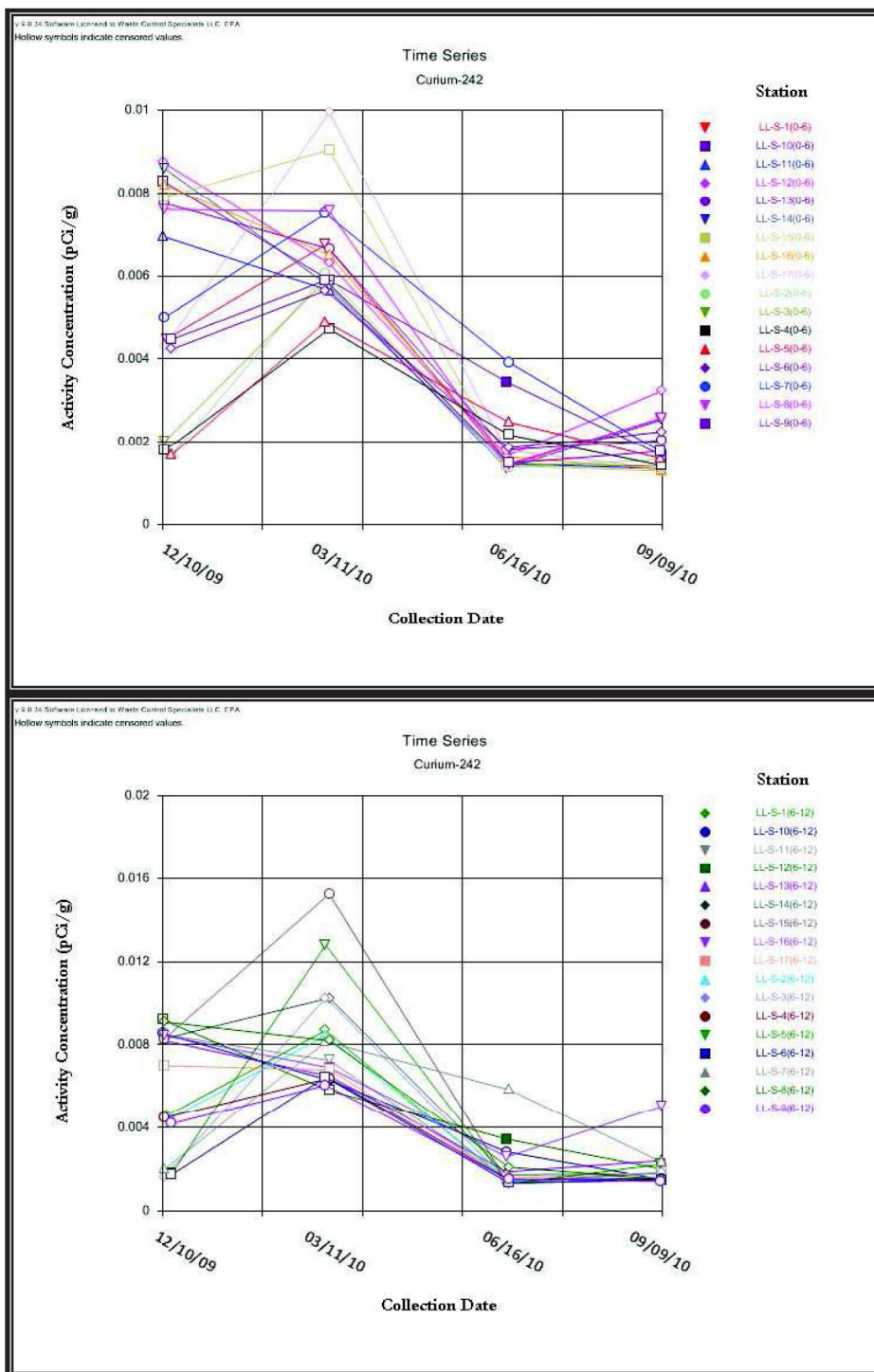


Figure 6-15: Curium-242 Results for the 17 Offsite Soil Locations.

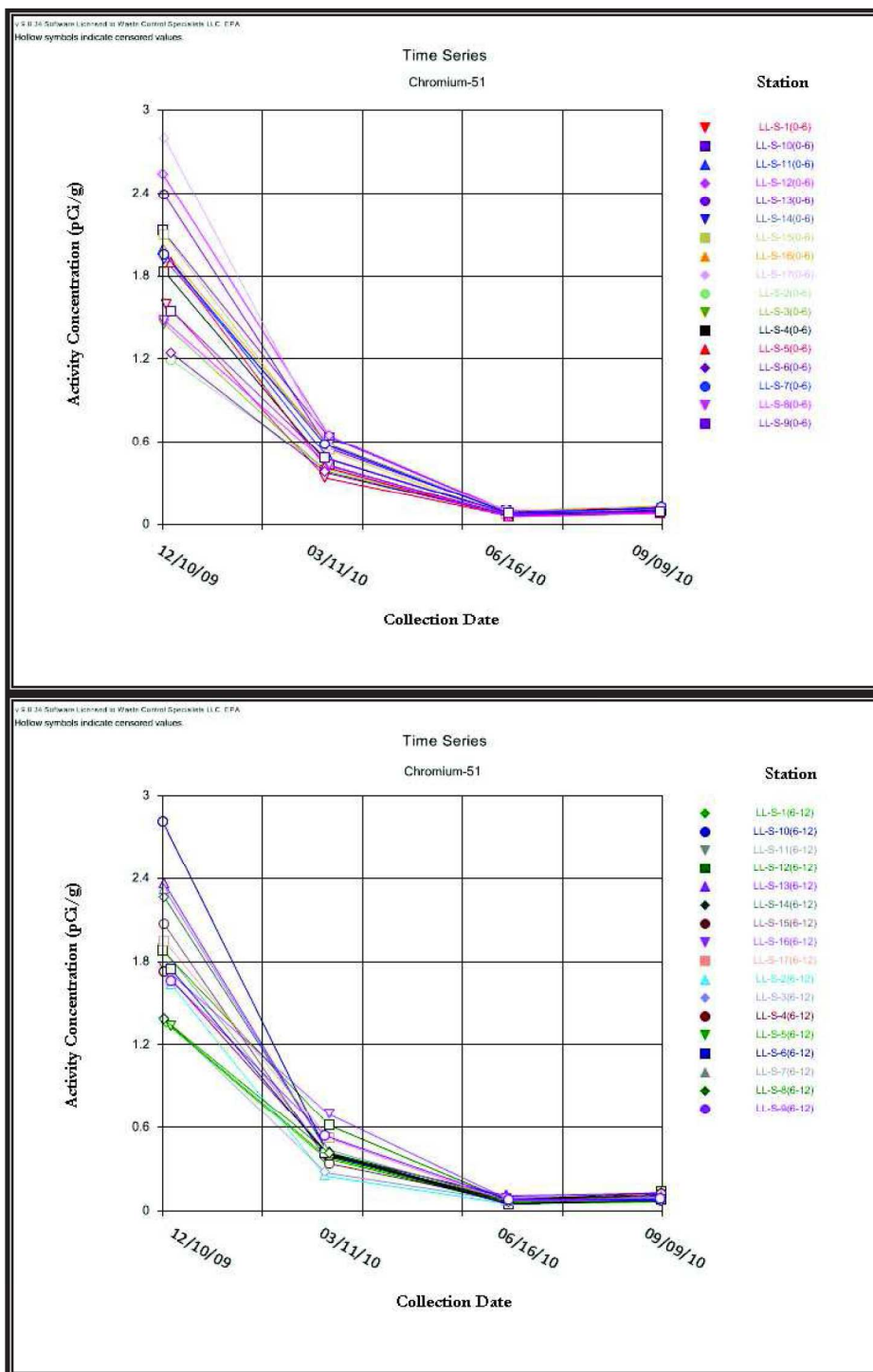


Figure 6-16: Chromium-51 Results for the 17 Offsite Soil Locations.

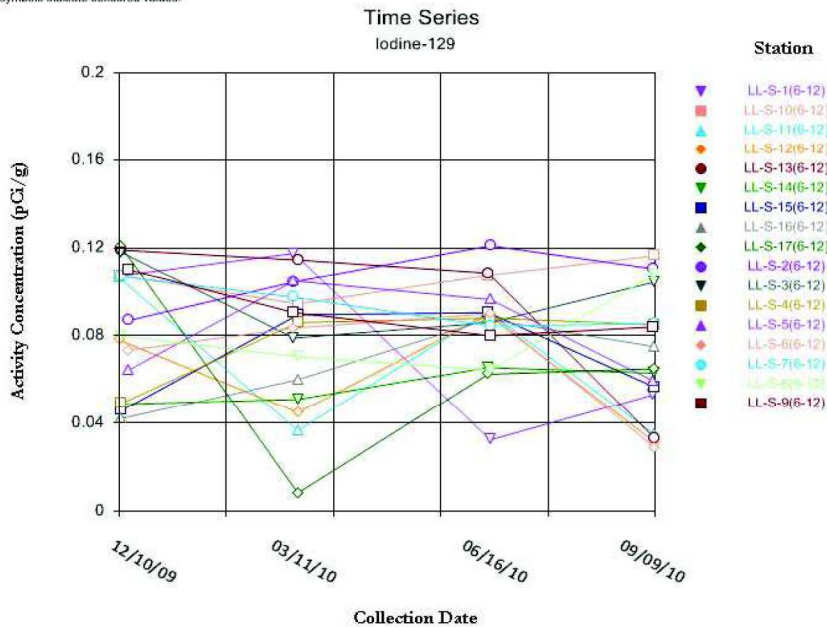
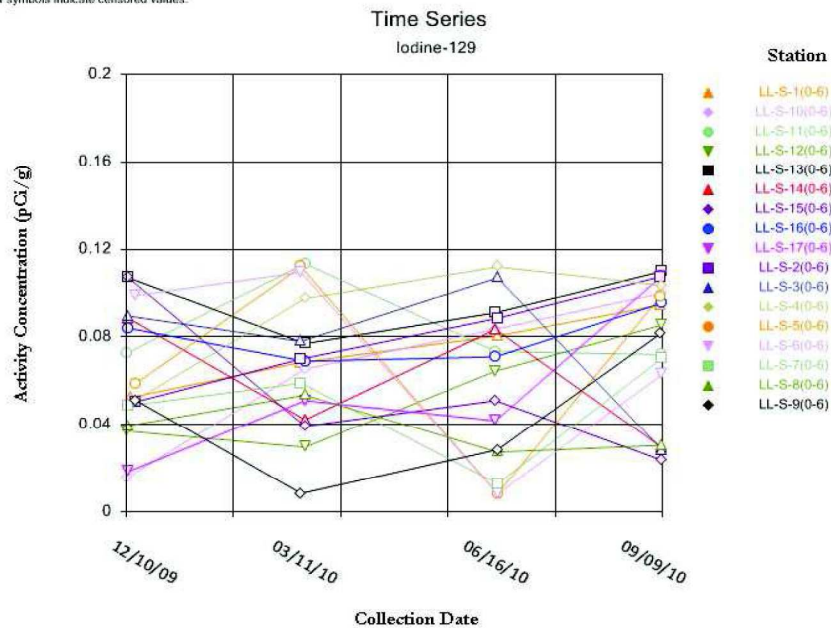


Figure 6-17: Iodine-129 Results for the 17 Offsite Soil Locations.

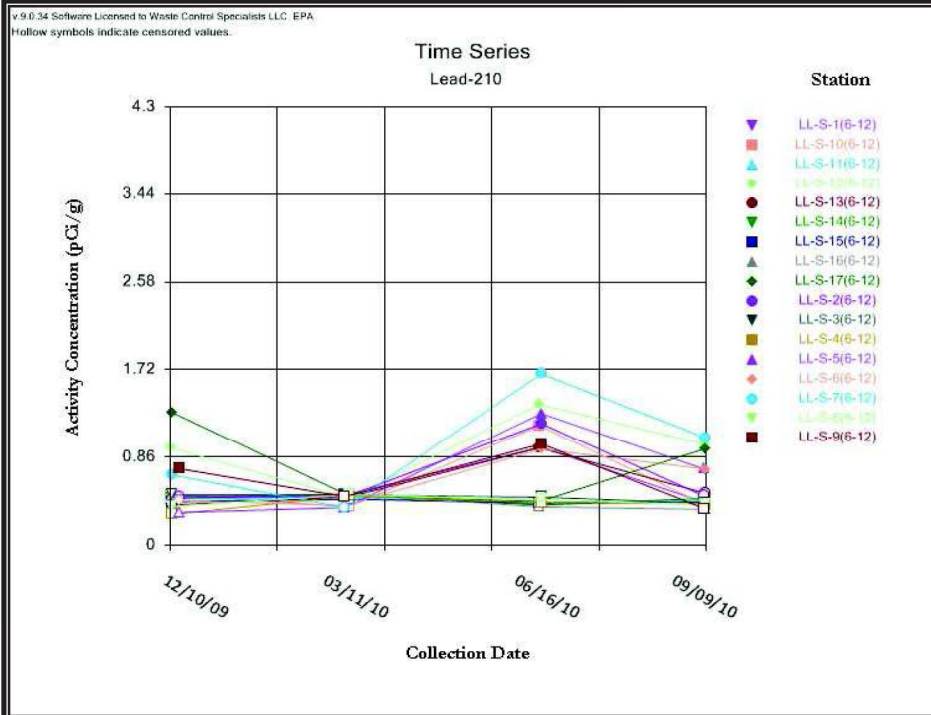
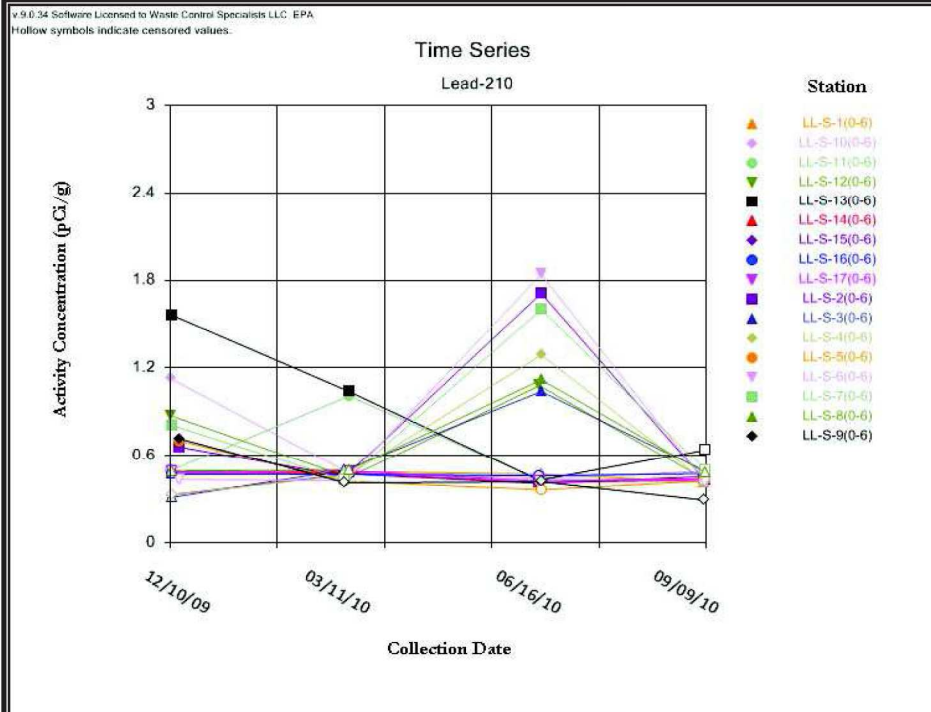


Figure 6-18: Lead-210 Results for the 17 Offsite Soil Locations.

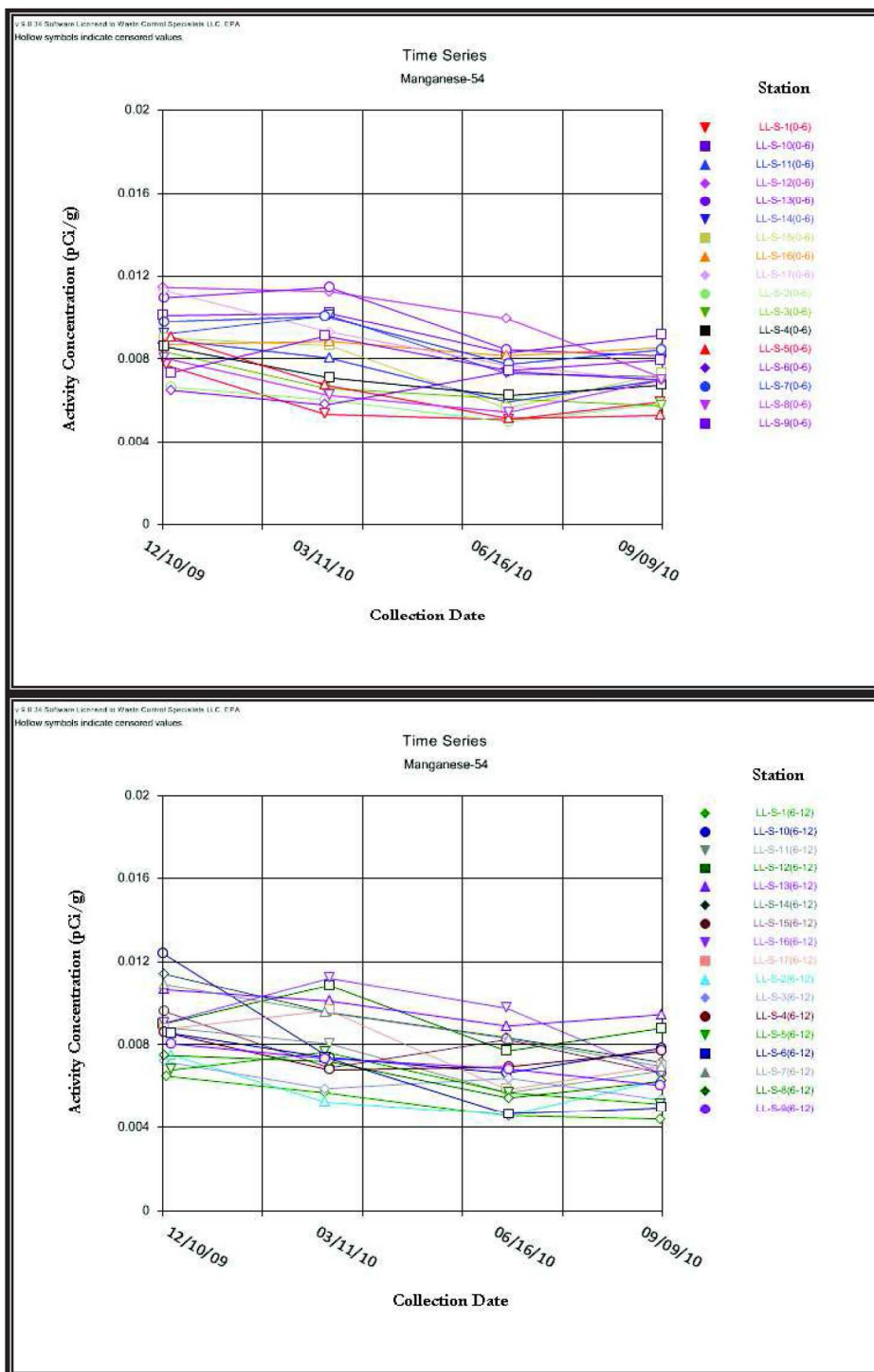


Figure 6-19: Manganese-54 Results for the 17 Offsite Soil Locations.

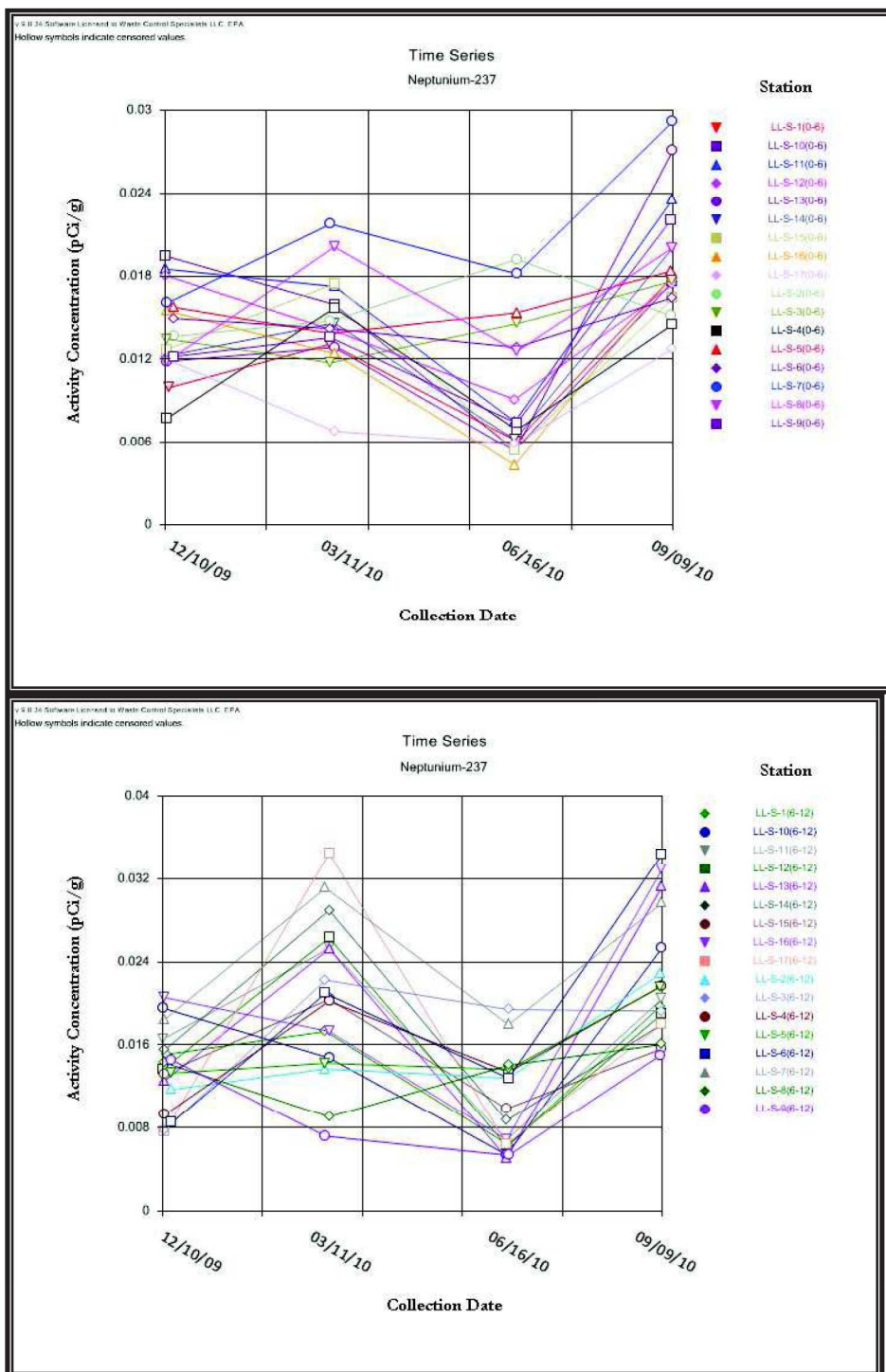


Figure 6-20: Neptunium-237 Results for the 17 Offsite Soil Locations.

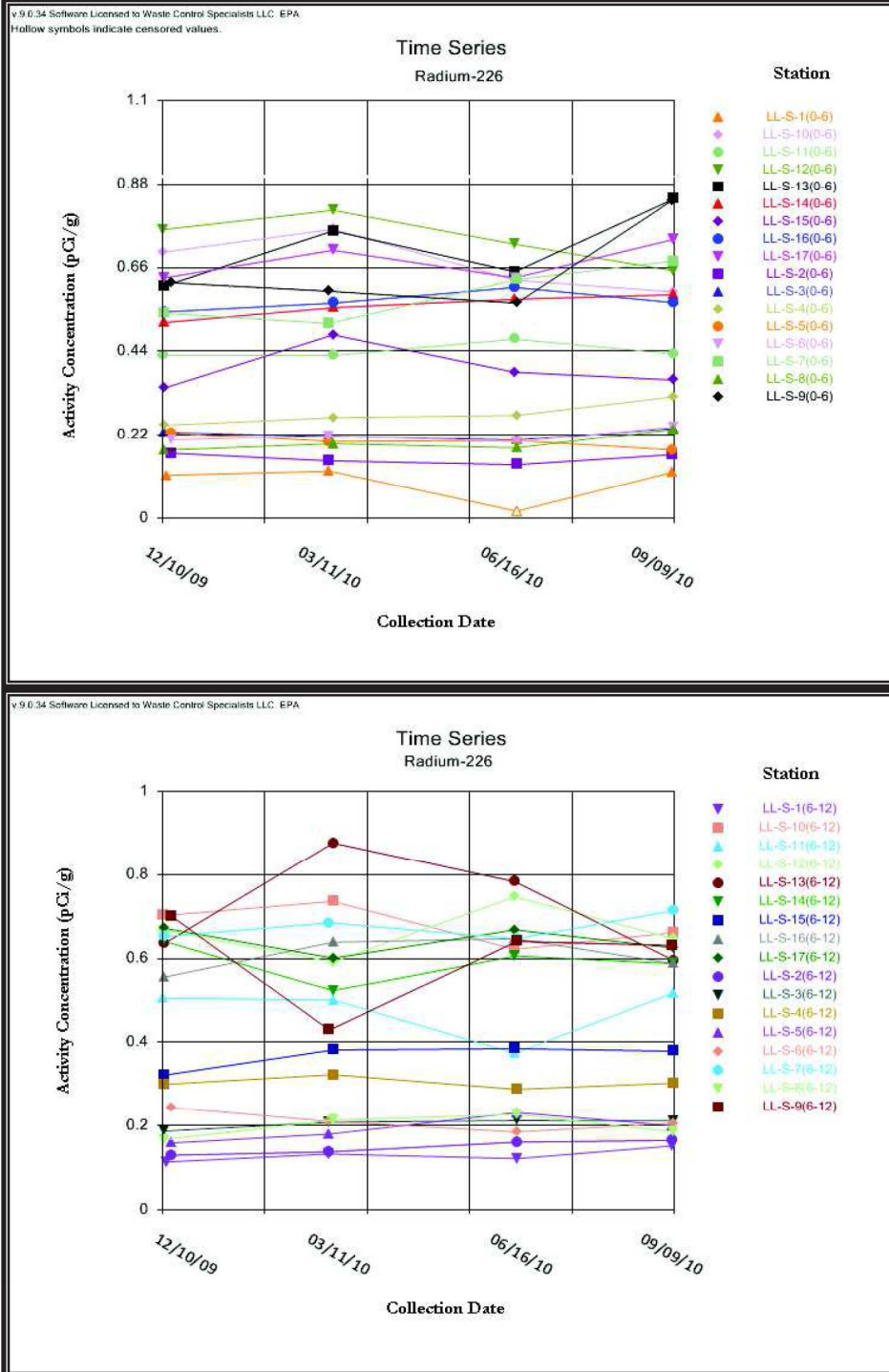


Figure 6-21: Radium-226 Results for the 17 Offsite Soil Locations.

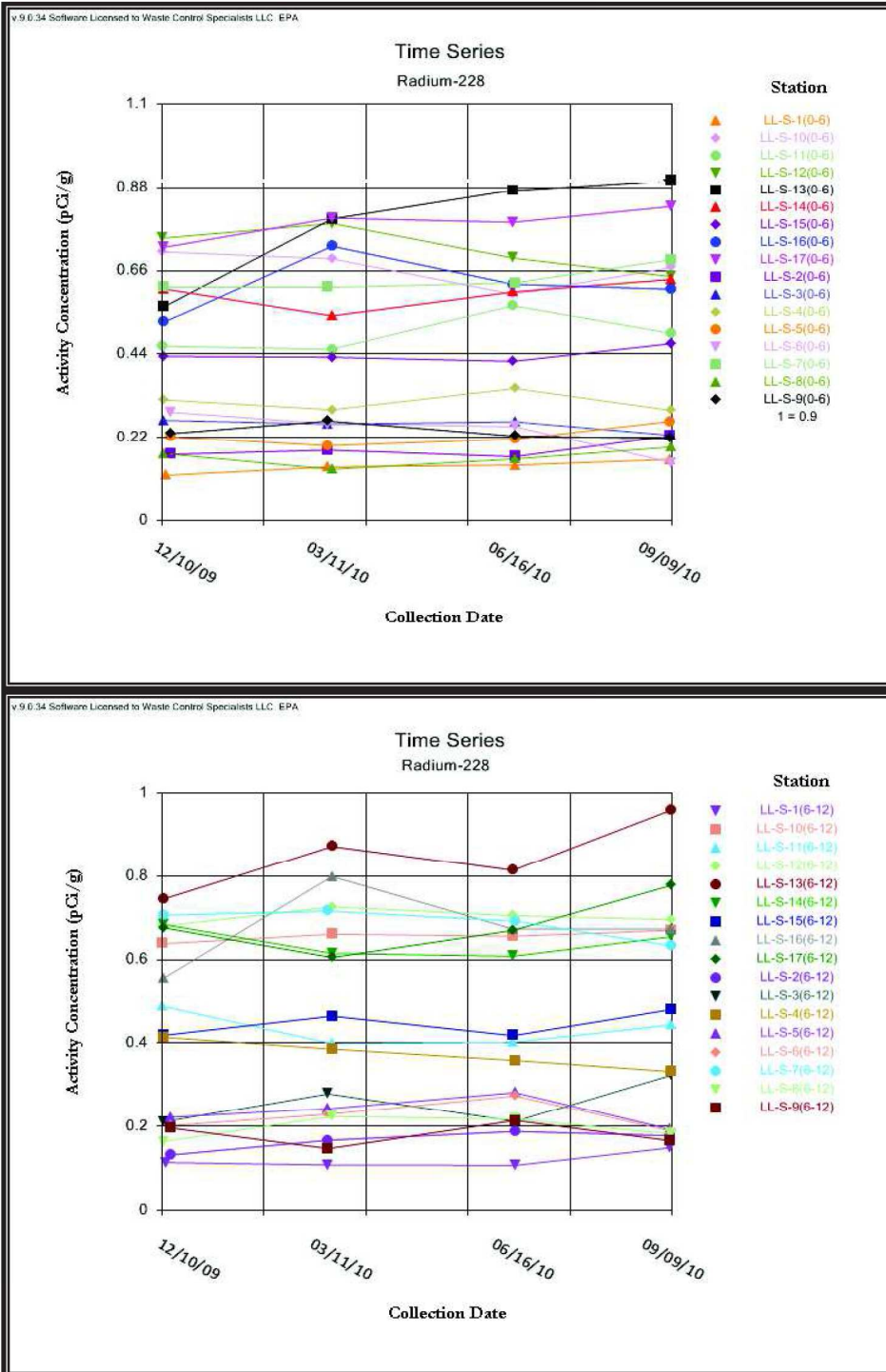


Figure 6-22: Radium-228 Results for the 17 Offsite Soil Locations.

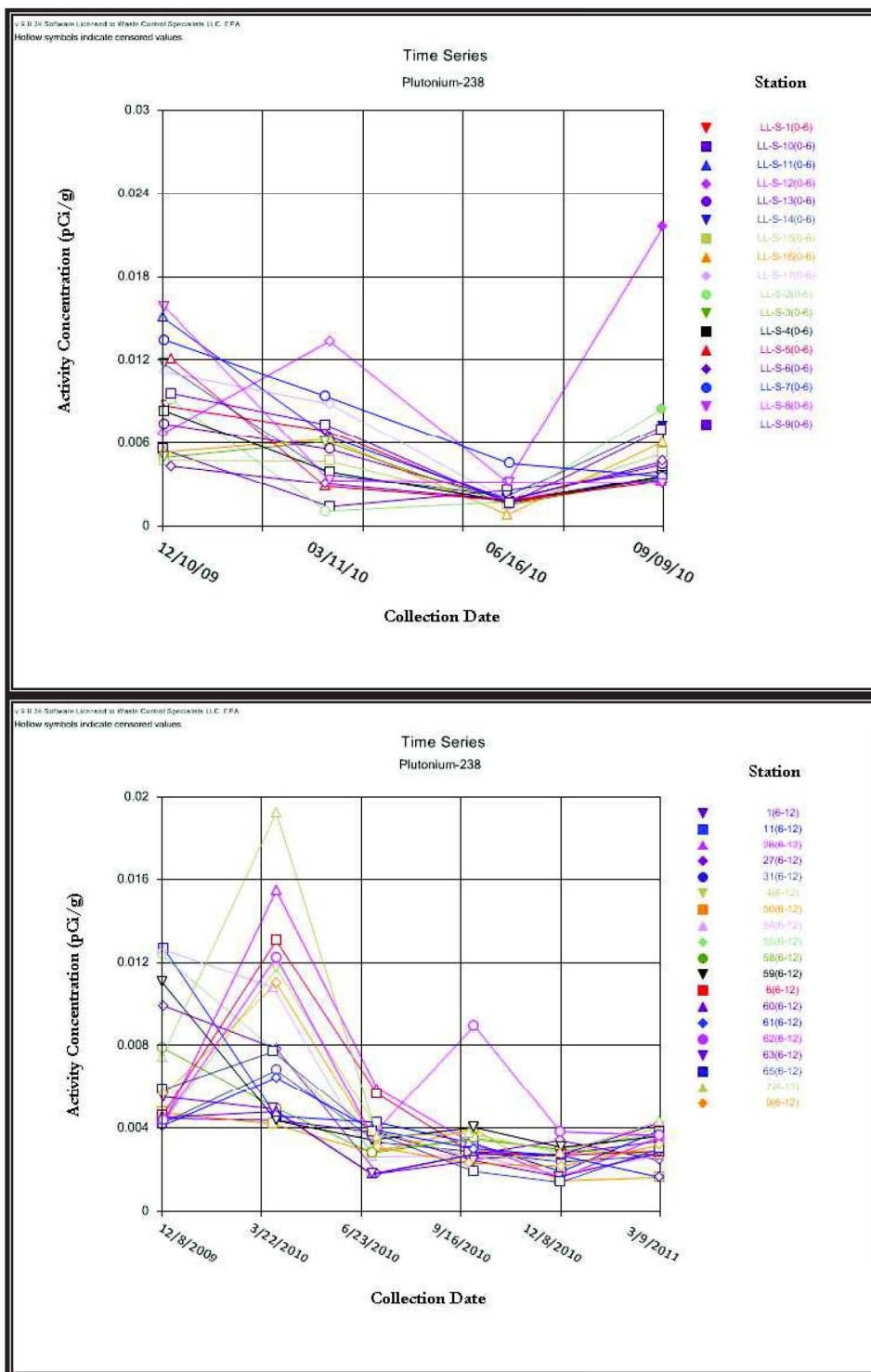


Figure 6-23: Plutonium-238 Results for the 17 Offsite Soil Locations.

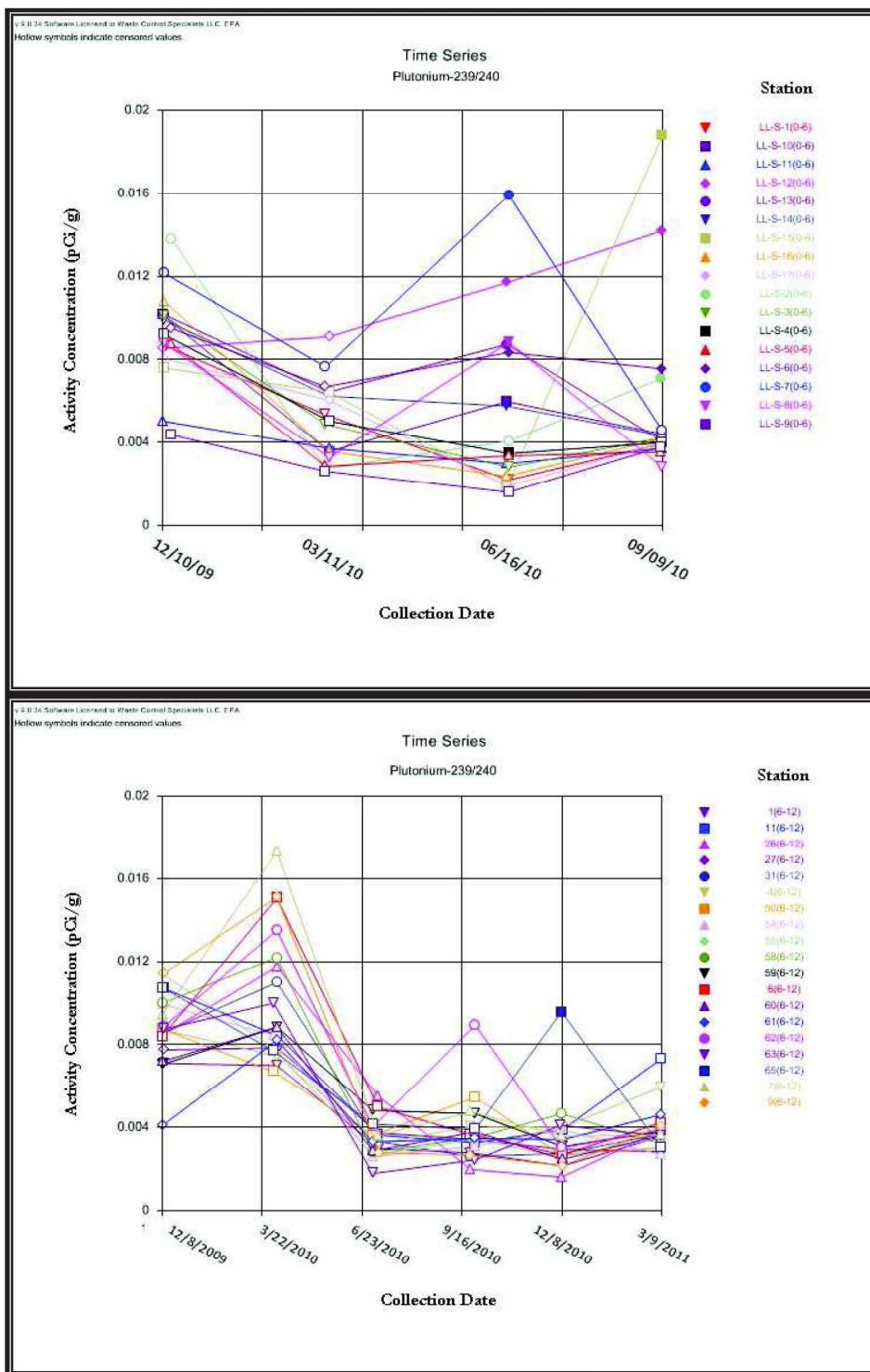


Figure 6-24: Plutonium-239/240 Results for the 17 Offsite Soil Locations.

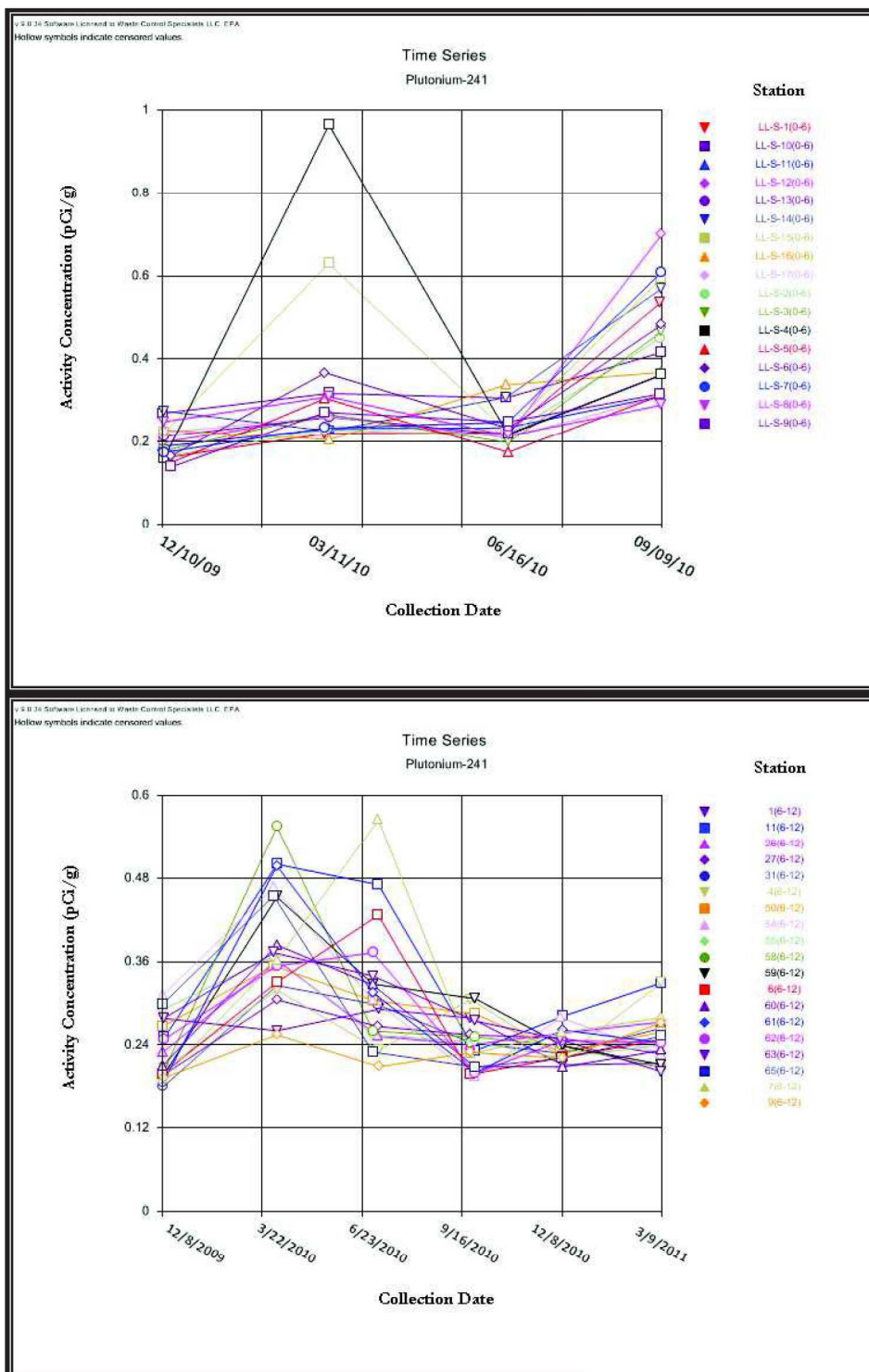


Figure 6-25: Plutonium-241 Results for the 17 Offsite Soil Locations.

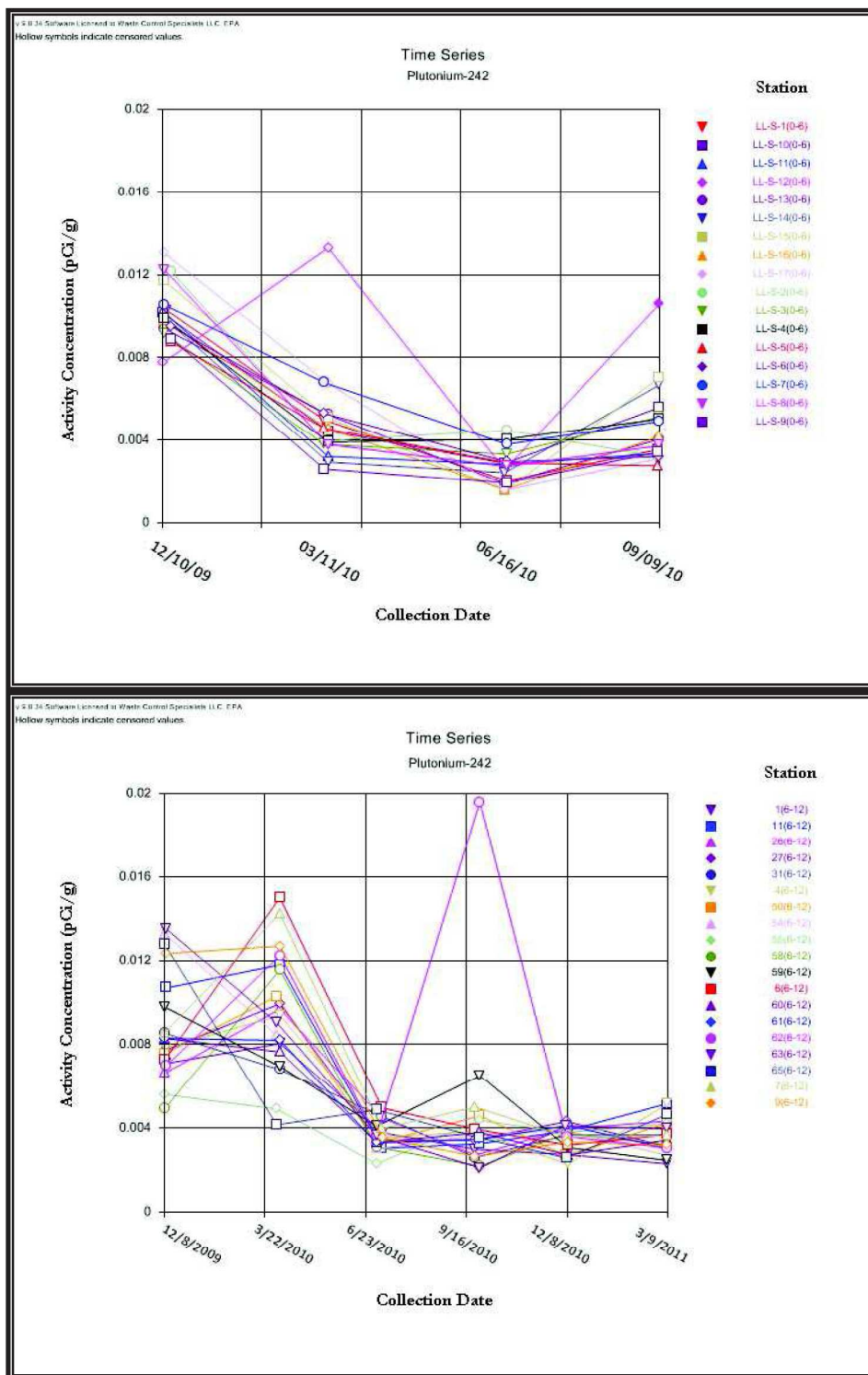


Figure 6-26: Plutonium-242 Results for the 17 Offsite Soil Locations.

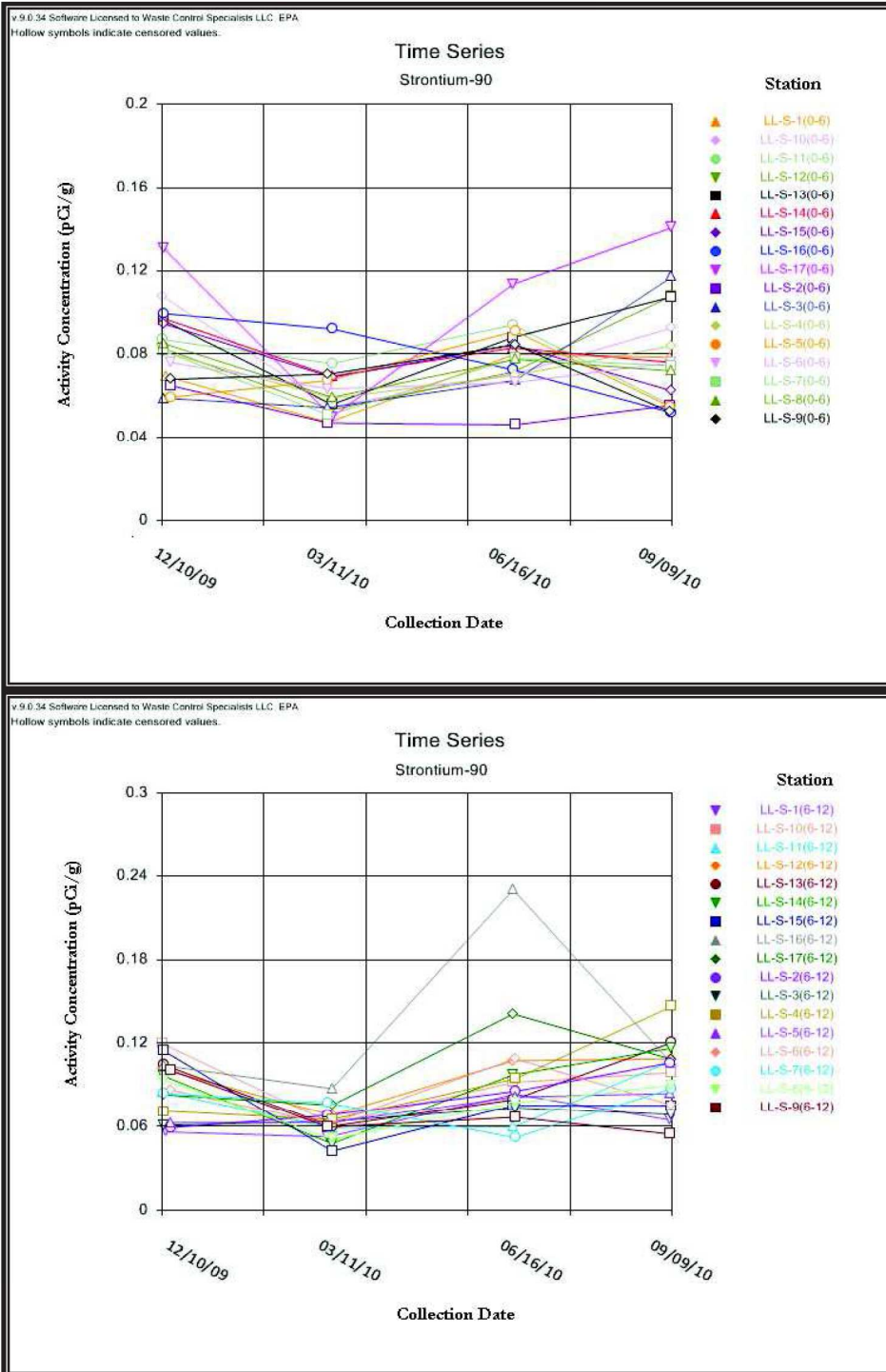


Figure 6-27: Strontium-90 Results for the 17 Offsite Soil Locations.

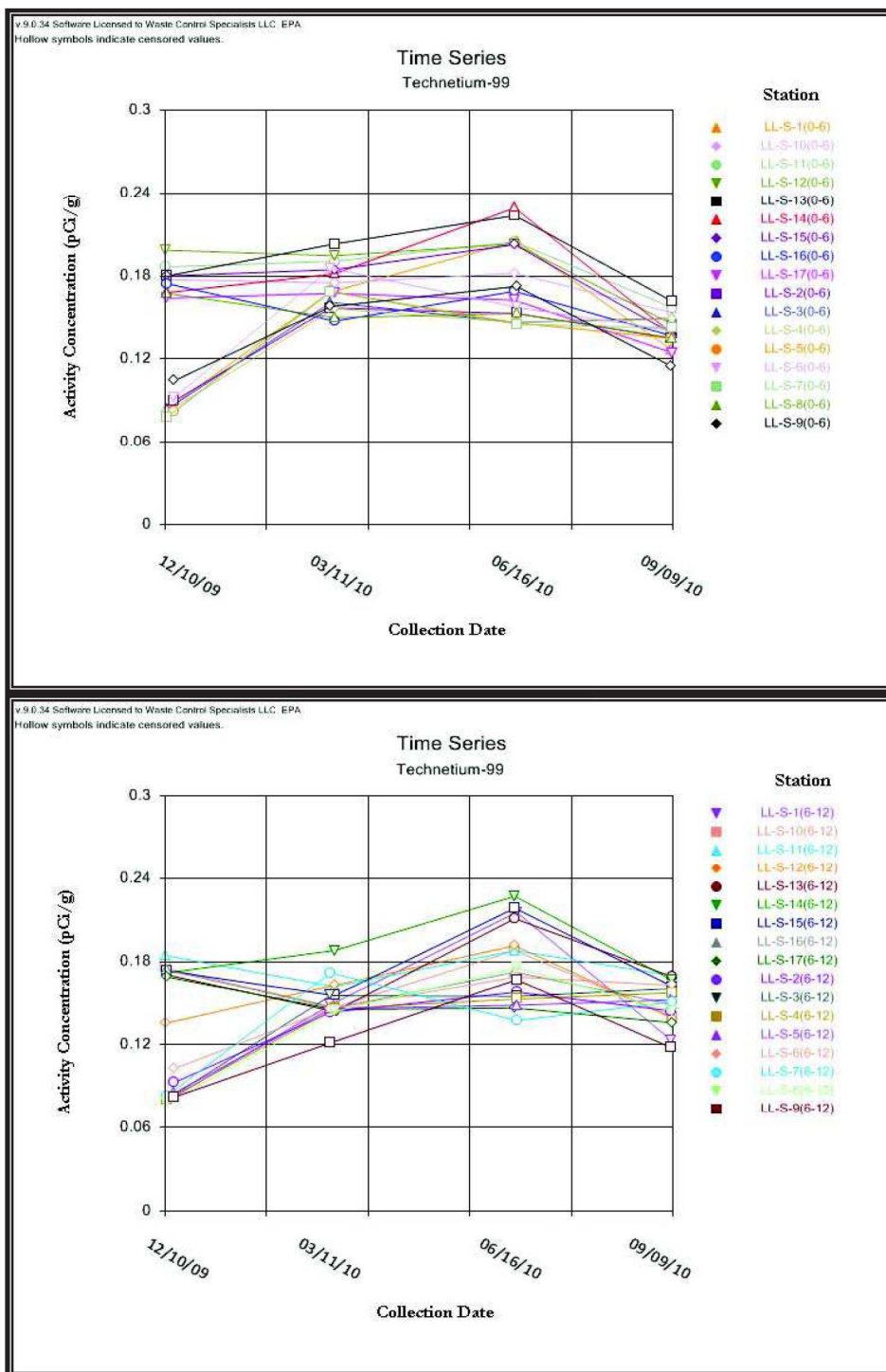


Figure 6-28: Technetium-99 Results for the 17 Offsite Soil Locations.

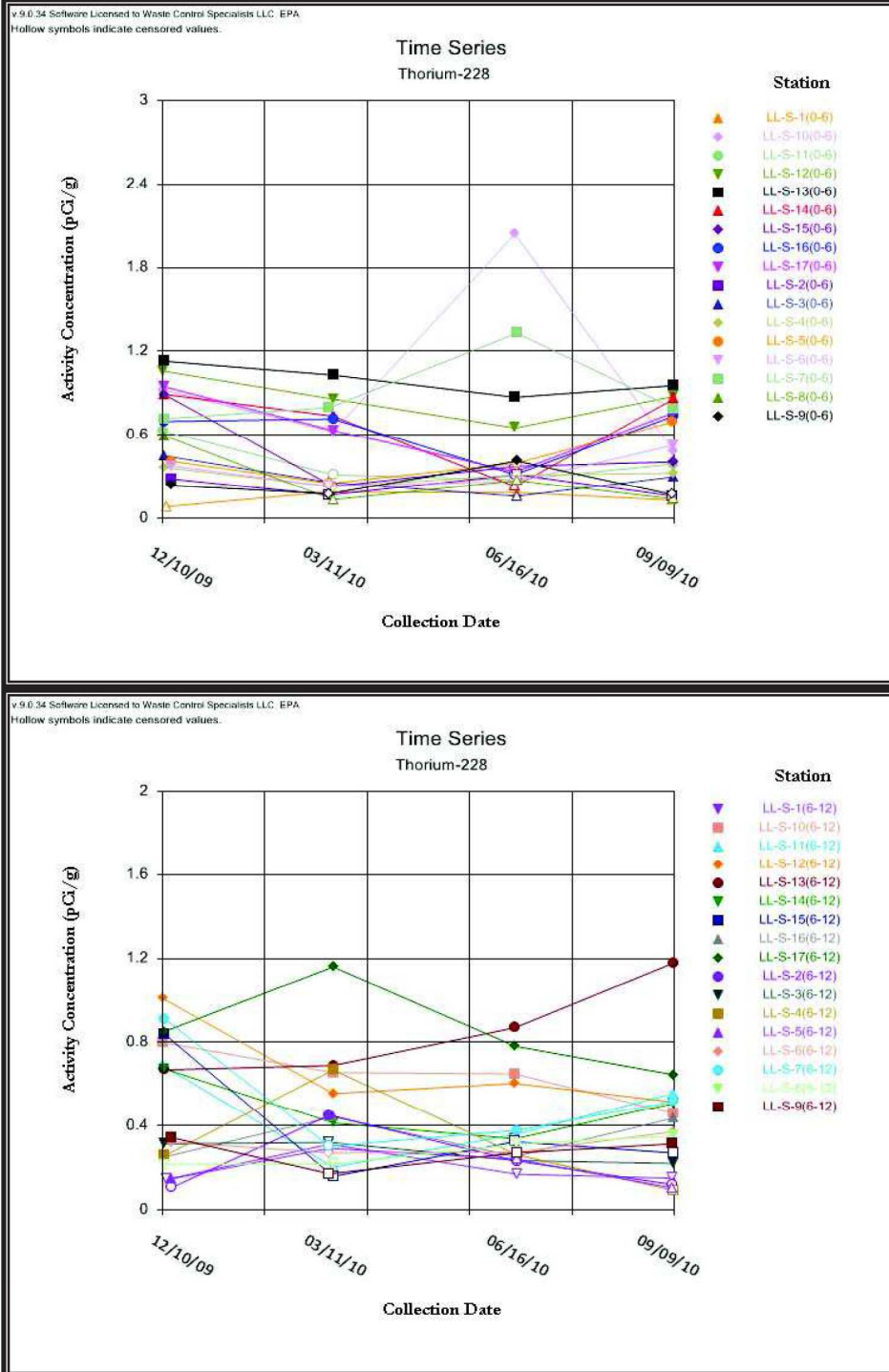


Figure 6-29: Thorium-228 Results for the 17 Offsite Soil Locations.

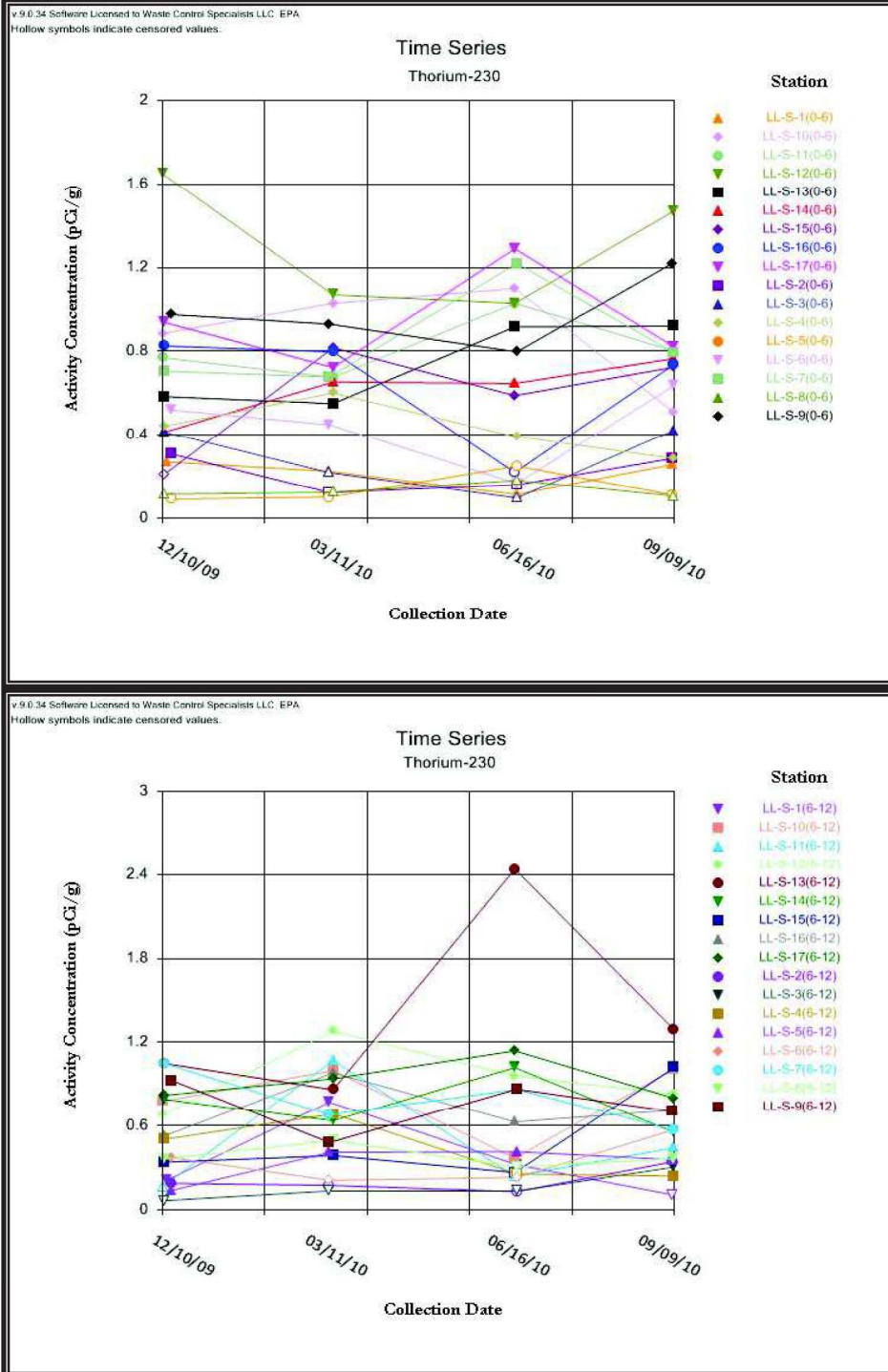


Figure 6-30: Thorium-230 Results for the 17 Offsite Soil Locations.

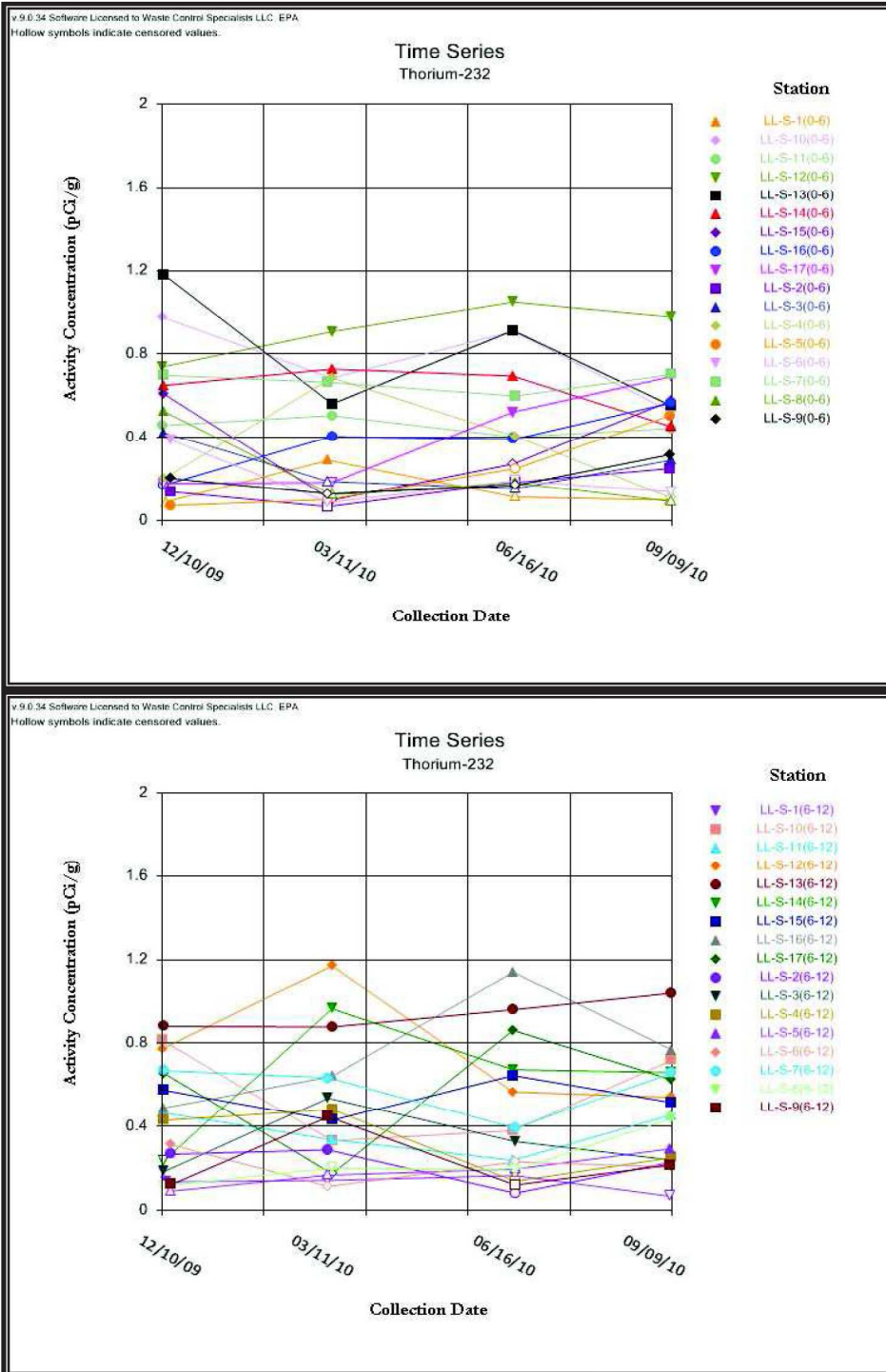


Figure 6-31: Thorium-232 Results for the 17 Offsite Soil Locations.

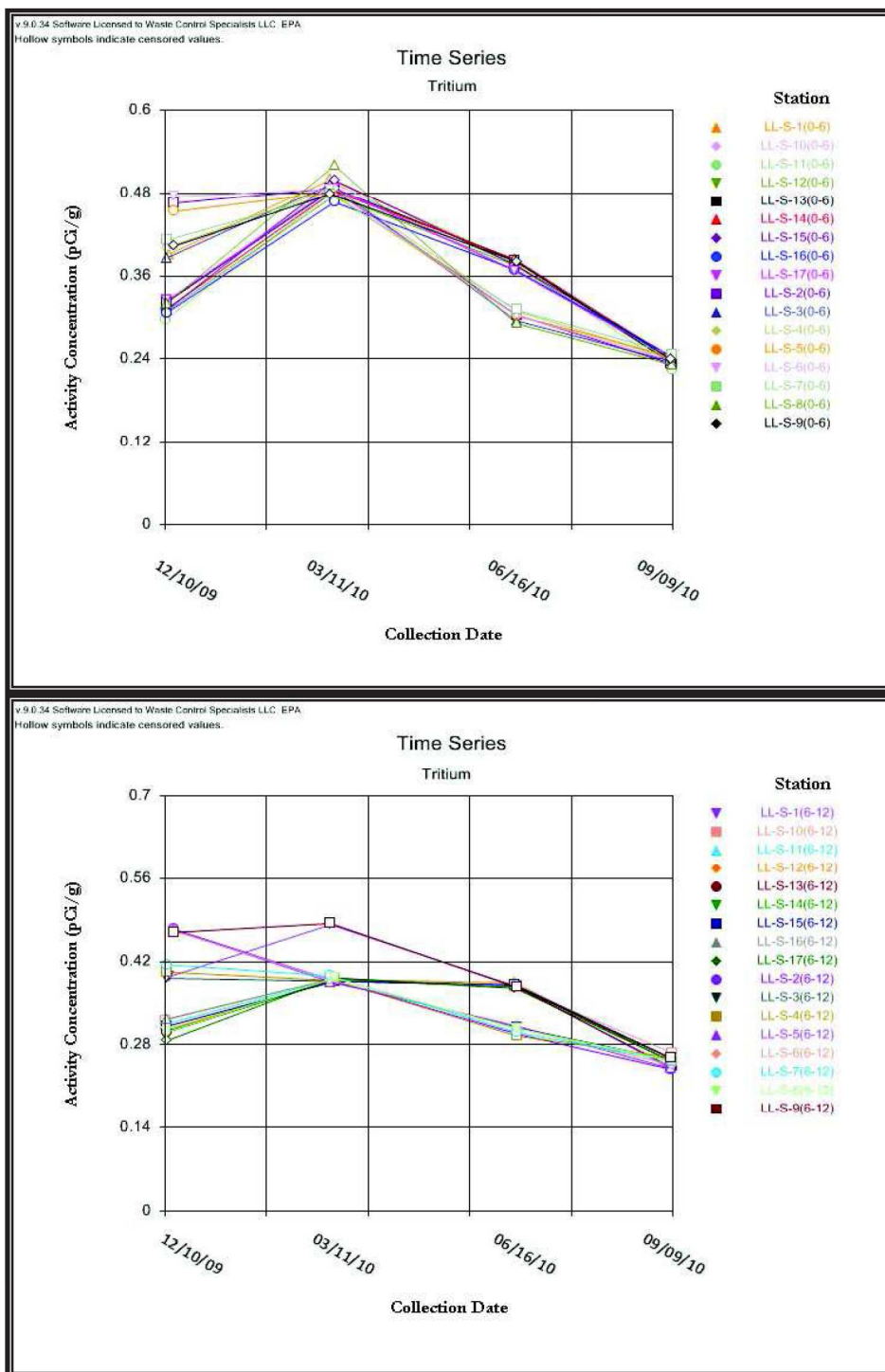


Figure 6-32: Tritium Results for the 17 Offsite Soil Locations.

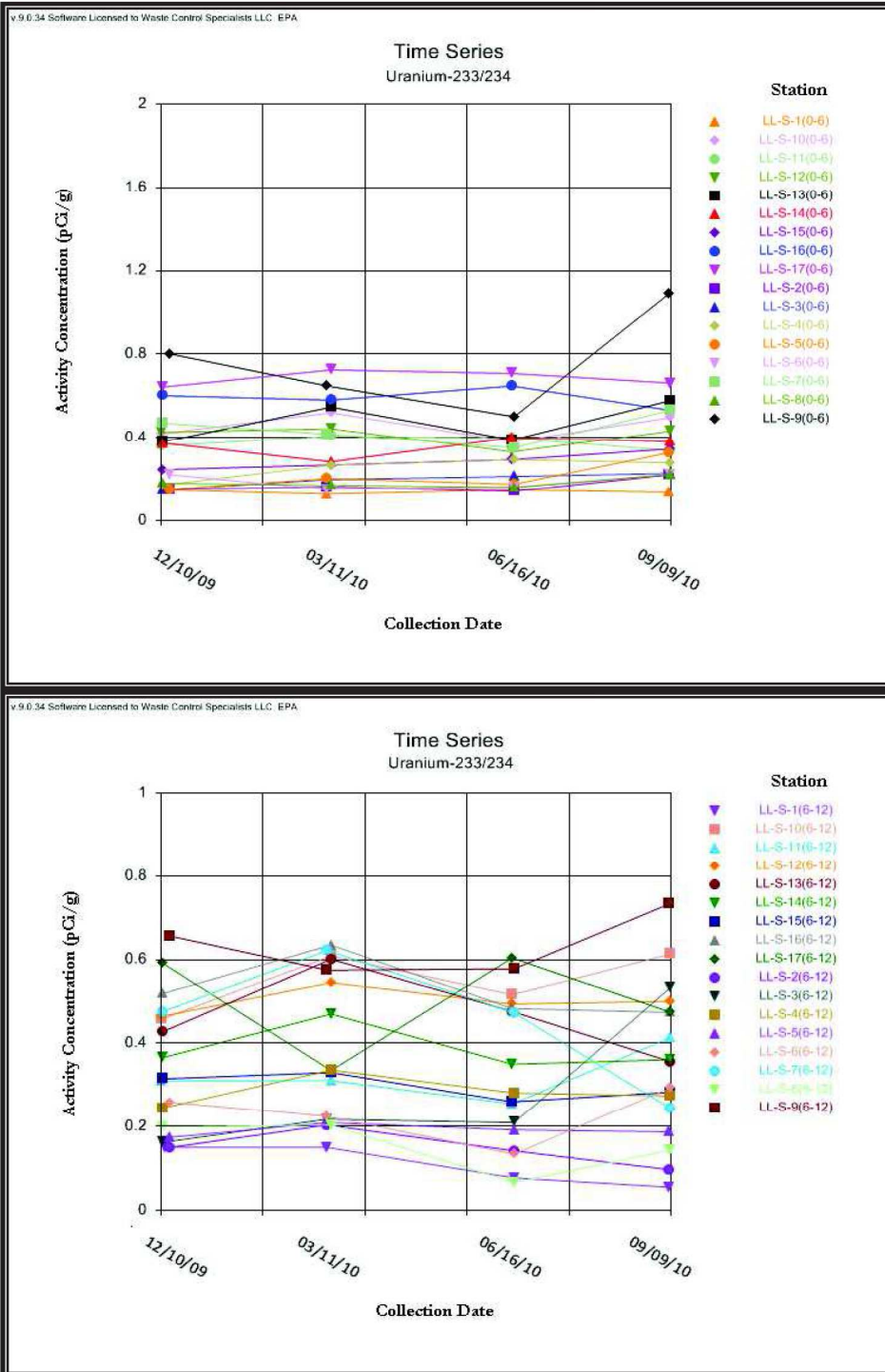


Figure 6-33: Uranium-233/234 Results for the 17 Offsite Soil Locations.

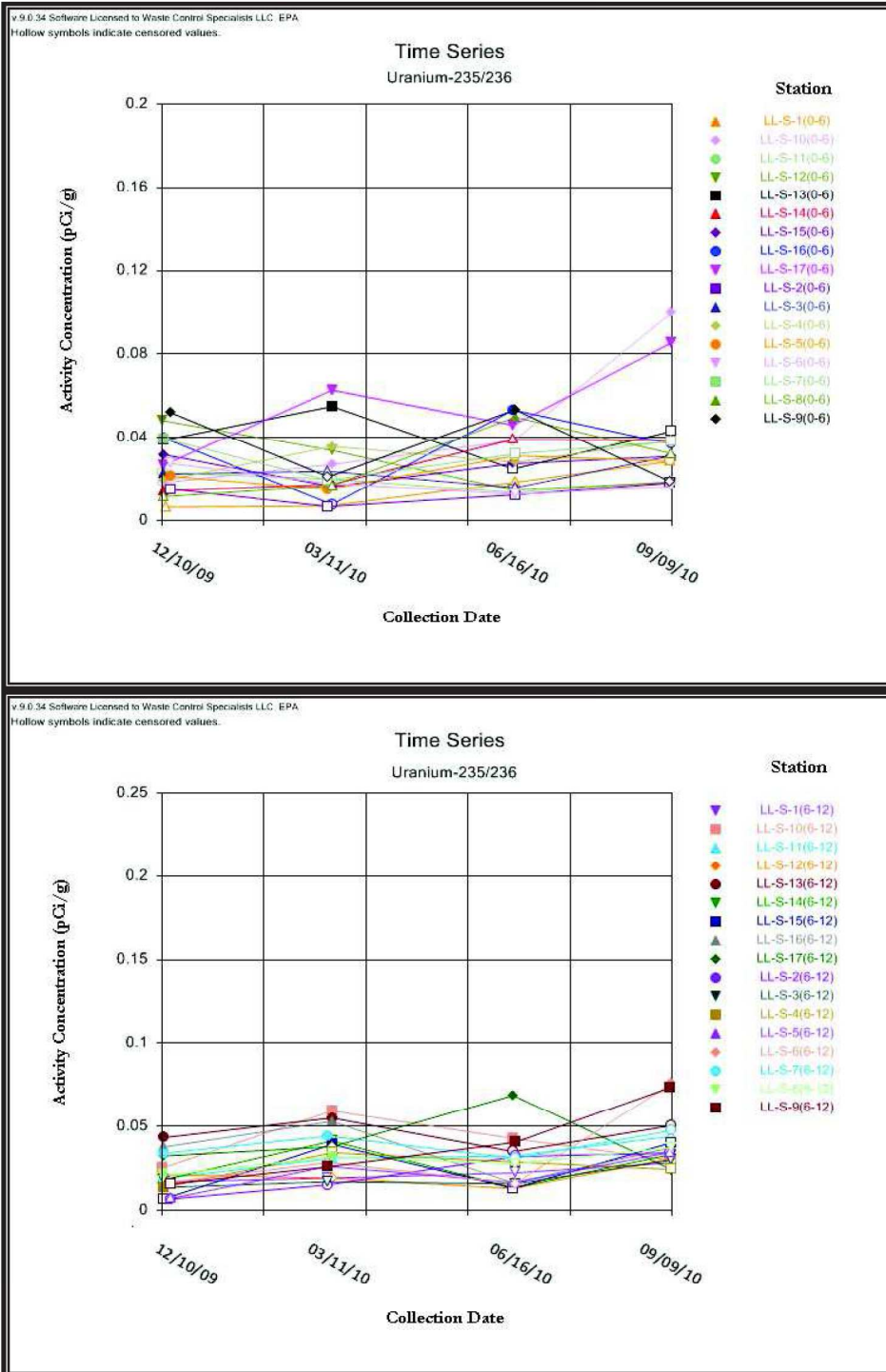


Figure 6-34: Uranium-235/236 Results for the 17 Offsite Soil Locations.

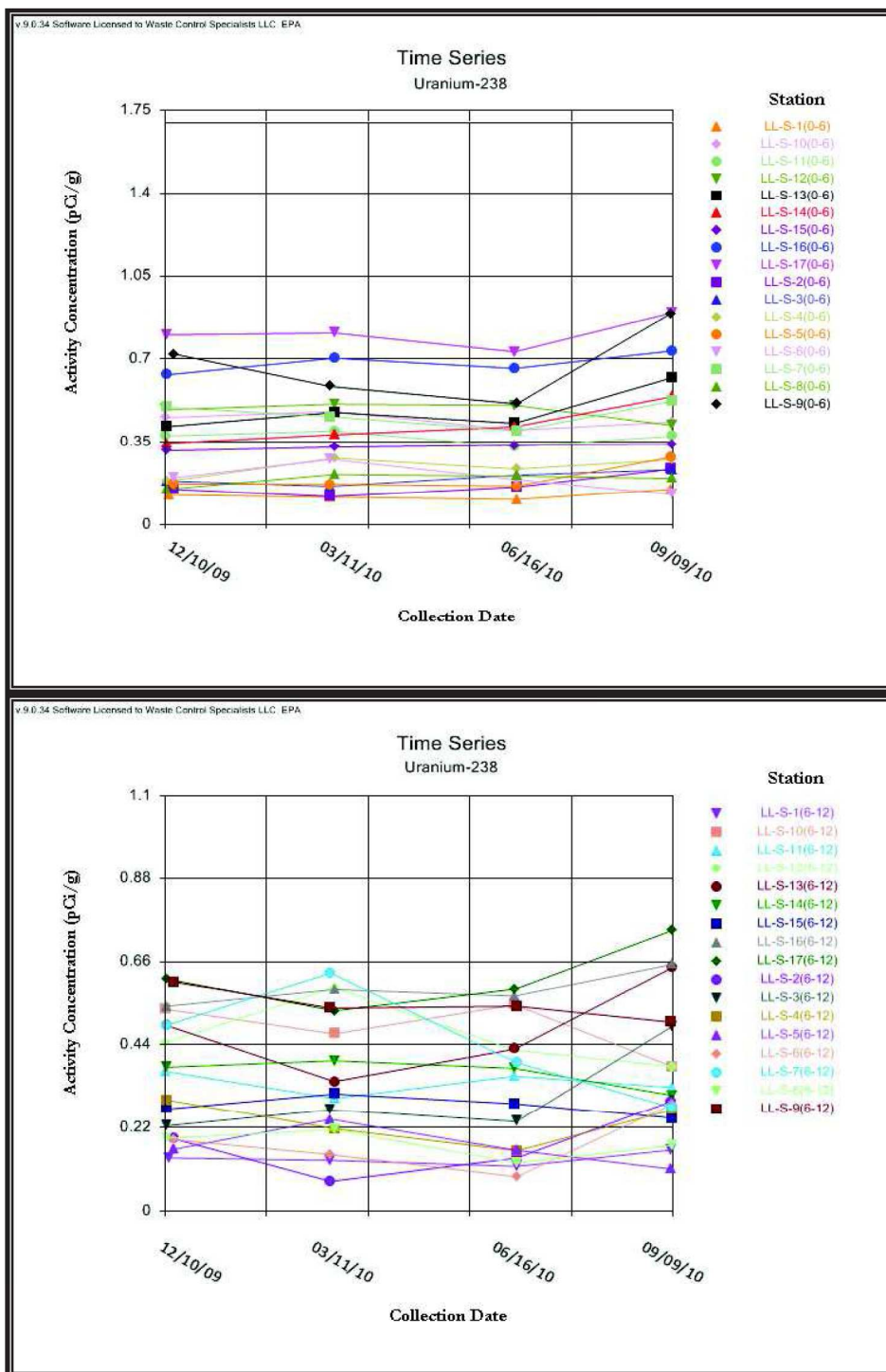


Figure 6-35: Uranium-238 Results for the 17 Offsite Soil Locations.

Routine Soil

As part of the pre-operational monitoring program, soil is sampled quarterly at 19 locations. In addition, additional soil samples are collected semiannually from 3 locations listed in the Low-Level Radiological Waste Non-Radionuclide Environmental Monitoring Program (N-REMP) for analysis of non-radiological monitoring parameters. Figure 6-32 displays the soil locations.



Figure 6-36: Routine Soil Sampling Locations

Soil samples are collected from three different profiles:

- Core samples are collected from 0-6 inches below ground surface (bgs).
- Core samples are collected from 6-12 inches bgs.
- Composite samples are collected from 0-2 inches bgs in a 1 meter square area.

Because these groups represent data sets from slightly different strata, each are described separately below.

Results: Soil Samples From 0-6 Inches bgs

Summary statistics for radiological and non-radiological analytes in the 0-6 inch bgs stratum are presented in Table 6-5 and Table 6-6. The sample locations for all three strata are provided in Figure 6-32. Figure 6-33 through Figure 6-60 graphically depict the routine pre-operational soil monitoring results. All pre-operational soil sample results are given in Appendix D.

Table 6-5: Radiological Summary Statistics for Routine Soil (0-6 inches).

	Units	Number of Observations	Number of Stations	<L _c */	Maximum	Minimum	Mean	Standard Deviation
Alpha	pCi/g	114	19	1	1.38E+01	-2.41E-01	7.33E+00	2.51E+00
Am-241	pCi/g	114	19	90	8.80E-03	-8.11E-03	1.44E-03	2.86E-03
Beta	pCi/g	115	19	1	4.44E+01	1.08E-01	1.31E+01	5.25E+00
C-14	pCi/g	114	19	108	4.33E-01	-3.24E-01	-2.48E-02	1.29E-01
Cs-137	pCi/g	114	19	8	2.64E-01	-5.35E-03	1.05E-01	6.55E-02
Cr-51	pCi/g	114	19	111	1.78E+00	-1.44E+00	2.45E-02	4.49E-01
Co-60	pCi/g	114	19	107	1.14E-02	-1.02E-02	7.13E-04	4.74E-03
Cu-242	pCi/g	114	19	90	1.44E-02	-1.52E-03	1.72E-03	2.99E-03
Cu-243/244	pCi/g	114	19	85	1.43E-02	-6.18E-03	1.88E-03	3.28E-03
I-129	pCi/g	114	19	107	1.42E-01	-9.09E-02	1.39E-02	4.93E-02
Mn-54	pCi/g	114	19	100	1.39E-02	-1.59E-02	1.00E-03	5.56E-03
Np-237	pCi/g	114	19	112	1.74E-02	-1.36E-02	-1.43E-03	5.22E-03
Pb-210	pCi/g	114	19	19	2.42E+00	-2.24E-01	8.07E-01	4.52E-01
Pu-238	pCi/g	114	19	94	2.93E-02	-3.36E-03	2.29E-03	4.17E-03
Pu-239/240	pCi/g	114	19	62	2.14E-02	-5.23E-03	4.64E-03	4.29E-03
Pu-241	pCi/g	114	19	103	7.53E-01	-5.43E-01	-2.42E-02	2.15E-01
Pu-242	pCi/g	114	19	108	1.80E-02	-3.88E-03	9.63E-04	2.89E-03
Ra-226	pCi/g	114	19	0	8.04E-01	3.03E-01	5.97E-01	1.14E-01
Ra-228	pCi/g	114	19	0	9.76E-01	2.48E-01	6.00E-01	1.47E-01
Sr-90	pCi/g	114	19	88	2.93E-01	-9.74E-02	4.40E-02	7.57E-02
Tc-99	pCi/g	114	19	100	3.16E-01	-2.80E-01	-2.93E-03	1.28E-01
Th-228	pCi/g	115	19	3	1.74E+00	1.32E-01	6.27E-01	2.59E-01
Th-230	pCi/g	114	19	0	1.35E+00	2.52E-01	7.36E-01	2.71E-01
Th-232	pCi/g	114	19	3	1.18E+00	3.56E-02	5.59E-01	2.10E-01
H-3	pCi/g	114	19	110	5.32E-01	-3.35E-01	1.43E-02	1.83E-01
U-233/234	pCi/g	114	19	0	7.83E-01	2.26E-01	4.44E-01	1.16E-01
U-235/236	pCi/g	114	19	57	7.19E-02	-2.04E-02	2.42E-02	1.82E-02
U-238	pCi/g	114	19	0	7.44E-01	2.06E-01	4.56E-01	1.06E-01

* Values of Critical level were estimated as one-half the MDC.

Naturally occurring radionuclides detected in these data include: Tritium, Carbon-14, Lead-210, Radium-226, Radium-228, Thorium-228, Thorium-230, and Thorium-232, Uranium-234, and Uranium-235 and Uranium-238. The concentrations of these radionuclides are consistent with natural background.

Strontium-90, Cesium-137, Plutonium-239/240 and Americium-241 was measured in soil at levels consistent with fallout from nuclear weapons. Plutonium-238 was also detected in soil consistent with levels from fallout involving accident from failed satellites re-entries in the earth's atmosphere.

Since the critical level is established at the $\alpha = 0.05$ significance level, a 5% false positive rate is expected. The routine soil (0-6") results for Americium-241, Curium-242, Curium-243/244, Manganese-54, Plutonium-238, Plutonium-239/240, Plutonium-241, Strontium-90, and Technetium-99 have a higher than expected false positive rate. WCS suspects that these are not true false positives because they are being compared against critical values that were estimated by WCS as one-half of the MDC. Because the false positives are very close to the critical level, WCS suspects that if these data were compared against their true critical levels that the false positive rate would approach 5%. In addition, if the background counts were extremely low, the estimated critical values would be artificially low. WCS is requesting documentation of background counts for these data from the analytical laboratory.

Table 6-6: Non-Radiological Summary Statistics for Routine Soil (0-6 inches).

Analyte	Units	Observations	No. of Stations	< PQL	Max. Value	Min. Value	Mean Value*	Standard Dev.*
Antimony	µg/Kg	28	19	21	6180	<324	1396.4	1489.7
Arsenic	µg/Kg	69	19	31	19300	<485	3474.1	2475.0
Barium	µg/Kg	28	19	0	298000	51800	110167	55637
Beryllium	µg/Kg	28	19	21 (21 "J" flags)	620	222	440	95.6
Cadmium	µg/Kg	69	19	58 (5 "J" flags)	1840	<95.8	307	263.9
Chromium	µg/Kg	28	19	28	12000	3600	7788.2	1829.3
Cobalt	µg/Kg	28	19	28	4850	689	2666.8	780.9
Lead	µg/Kg	28	19	27 (1 "J" flag)	54500	2200	9030.7	9273.5
Mercury	µg/Kg	9	3	9 (5 "J" flags)	10.7	<3.54	4.2	2.87
Nickel	µg/Kg	69	19	0	9650	2810	6221.5	1331.7
Selenium	µg/Kg	69	19	67 (16 "J" flags)	7590	<456	936	1390.2
Zinc	µg/Kg	28	19	0	74200	11500	24796.4	11121.6
1,4-Dioxane	µg/Kg	69	19	69	<2.0	<2.0	N/A	N/A
Phenol	µg/Kg	69	19	69	<1.0	<1.0	N/A	N/A
Benzo(b)fluoranthene	µg/Kg	9	3	9 (1 "J"-flag)	11.2 J	<10.0	N/A	N/A
Chrysene	µg/Kg	9	3	9 (1 "J"-flag)	11.0 J	<10.0	N/A	N/A
Fluoranthene	µg/Kg	9	3	9 (1 "J"-flag)	18.9 J	<10.0	N/A	N/A
Indeno(1,2,3-cd)pyrene	µg/Kg	9	3	9 (1 "J"-flag)	110	<10.0	N/A	N/A
Pyrene	µg/Kg	9	3	9 (1 "J"-flag)	10.9 J	<10.0	N/A	N/A
1,1,1-Trichloroethane	µg/Kg	69	19	69	<0.325	<0.325	N/A	N/A
1,1,2,2-Tetrachloroethane	µg/Kg	69	19	69	<0.25	<0.25	N/A	N/A
1,1,2-Trichloroethane	µg/Kg	69	19	69	<0.25	<0.25	N/A	N/A
1,1-Dichloroethane	µg/Kg	69	19	69	<0.3	<0.3	N/A	N/A
1,1-Dichloroethylene	µg/Kg	69	19	69	<0.3	<0.3	N/A	N/A
1,2-Dichloroethane	µg/Kg	69	19	69	<0.25	<0.25	N/A	N/A
1,2-Dichloropropane	µg/Kg	69	19	69	<0.25	<0.25	N/A	N/A
Acetone	µg/Kg	69	19	69 (3 "J"-flags)	4.23 J	<1.58	N/A	N/A
Benzene	µg/Kg	69	19	69	<0.3	<0.3	N/A	N/A
Bromodichloromethane	µg/Kg	69	19	69	<0.25	<0.25	N/A	N/A
Bromoform	µg/Kg	69	19	69	<0.25	<0.25	N/A	N/A
Bromomethane	µg/Kg	69	19	69	<0.3	<0.3	N/A	N/A
Carbon disulfide	µg/Kg	69	19	69	<1.25	<1.25	N/A	N/A
Carbon tetrachloride	µg/Kg	69	19	69	<0.3	<0.3	N/A	N/A
Chlorobenzene	µg/Kg	69	19	69	<0.25	<0.25	N/A	N/A
Chloroethane	µg/Kg	69	19	69	<0.3	<0.3	N/A	N/A
Chloroform	µg/Kg	69	19	69	<0.25	<0.25	N/A	N/A
Chloromethane	µg/Kg	69	19	69	<0.3	<0.3	N/A	N/A
cis-1,3-Dichloropropylene	µg/Kg	69	19	69	<0.25	<0.25	N/A	N/A
Dibromochloromethane	µg/Kg	69	19	69	<0.3	<0.3	N/A	N/A
Ethylbenzene	µg/Kg	69	19	69	<0.25	<0.25	N/A	N/A
Methylene chloride	µg/Kg	9	3	9 (1 "J"-flag)	2.93 J	<1.91	N/A	N/A
Tetrachloroethylene	µg/Kg	69	19	69	<0.3	<0.3	N/A	N/A
Toluene	µg/Kg	69	19	69 (1 "J"-flag)	0.399 J	<0.286	N/A	N/A
trans-1,2-Dichloroethylene	µg/Kg	69	19	69	<0.3	<0.3	N/A	N/A
trans-1,3-Dichloropropylene	µg/Kg	69	19	69	<0.25	<0.25	N/A	N/A
Trichloroethylene	µg/Kg	69	19	69	<0.25	<0.25	N/A	N/A
Vinyl chloride	µg/Kg	69	19	69	<0.5	<0.5	N/A	N/A

Notes: Non-detect values were replaced with one half of the MDL when calculating summary statistics.

As summarized in Appendix D and in the table above, a number of naturally occurring metals were reported in soil from the 0-6 inch bgs stratum at the site. Collectively, the concentrations of these non-radiological metals are representative of background conditions at WCS.

The organic constituents listed in the table above are considered to be false positives. All of the concentrations reported for these analytes were estimated (they were too low to be quantified).

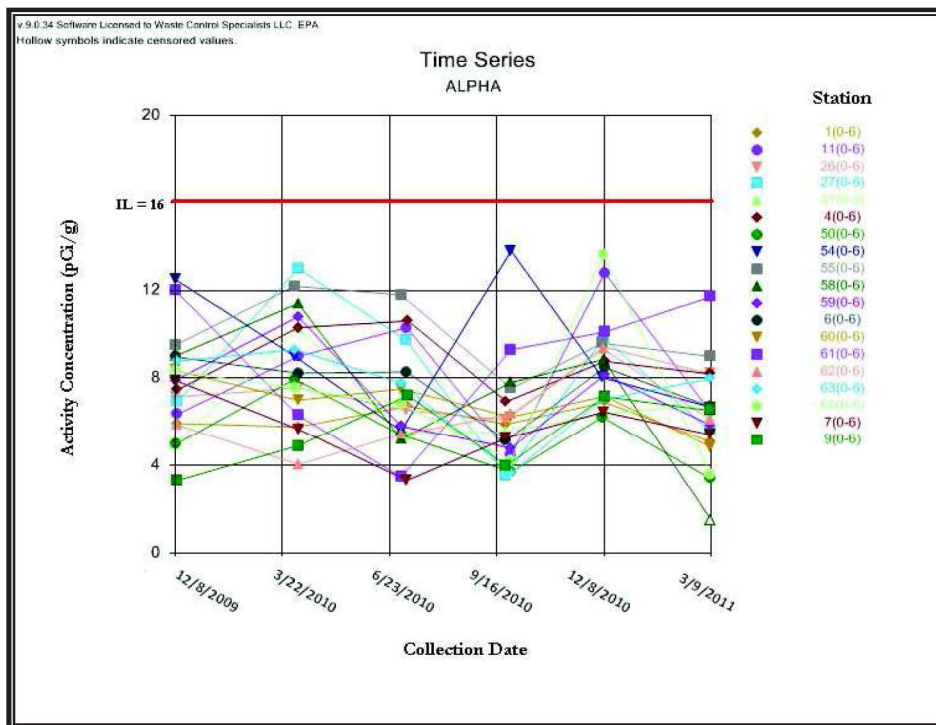


Figure 6-37: Alpha Soil Sample Results (0-6").

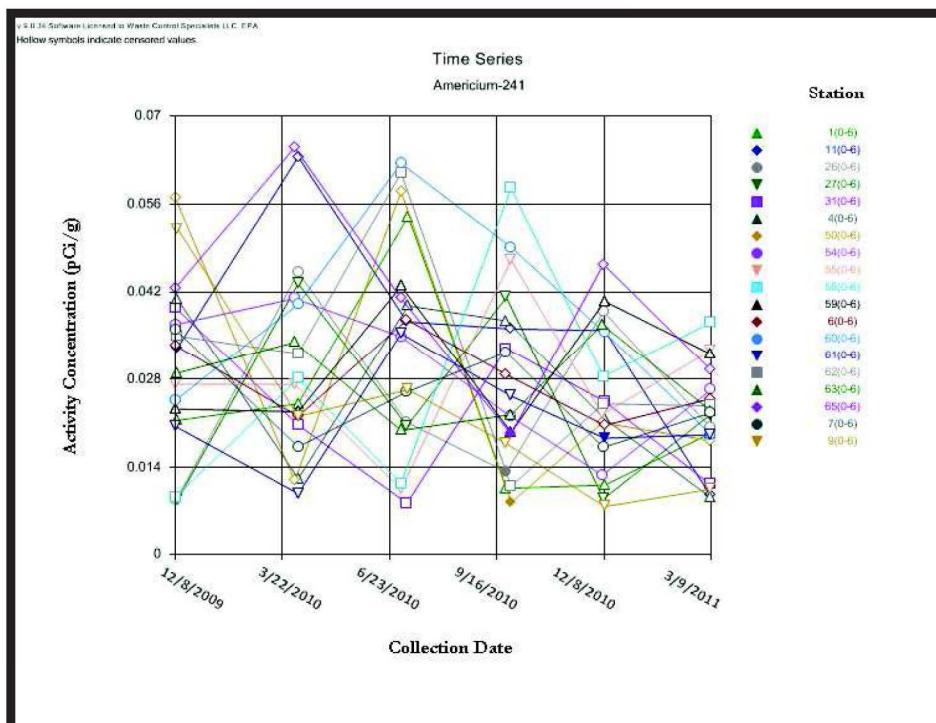


Figure 6-38: Americium-241 Soil Sample Results (0-6").

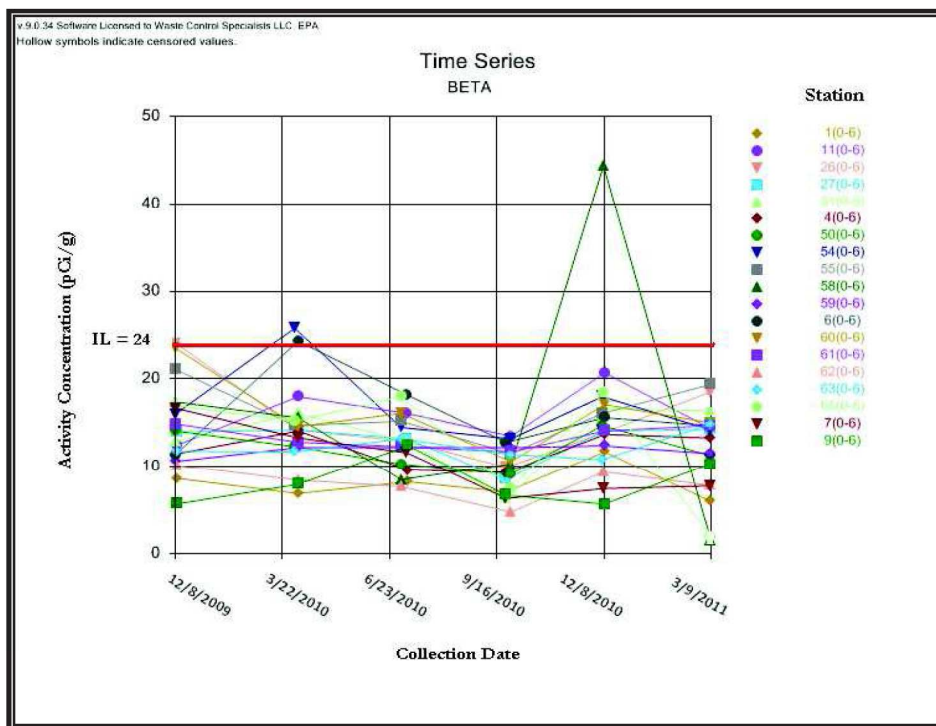


Figure 6-39: Beta Soil Sample Results (0-6").

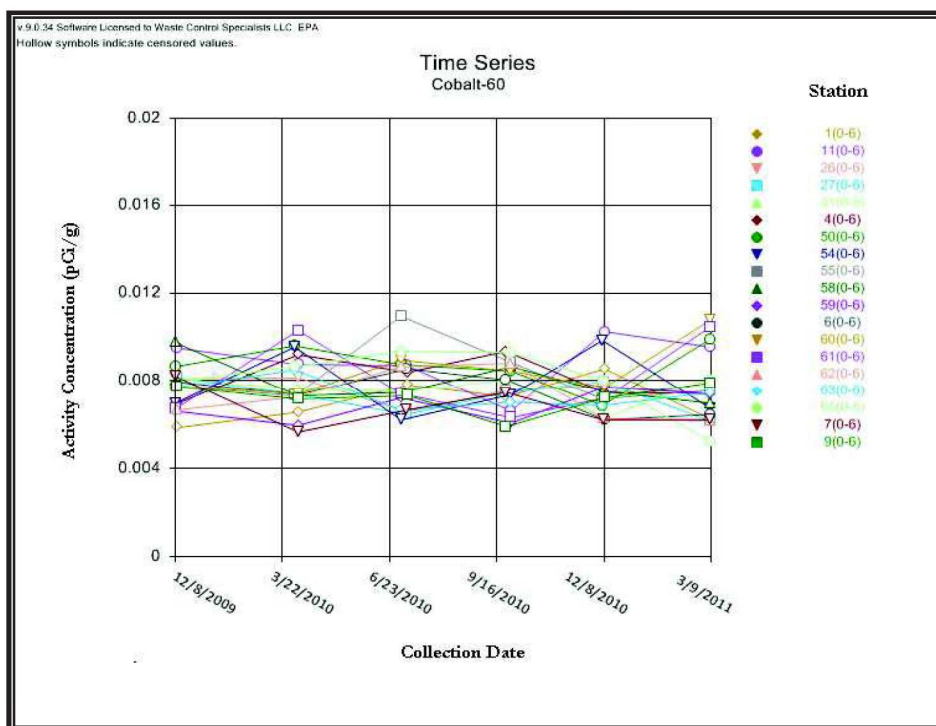


Figure 6-40: Cobalt-60 Soil Sample Results (0-6").

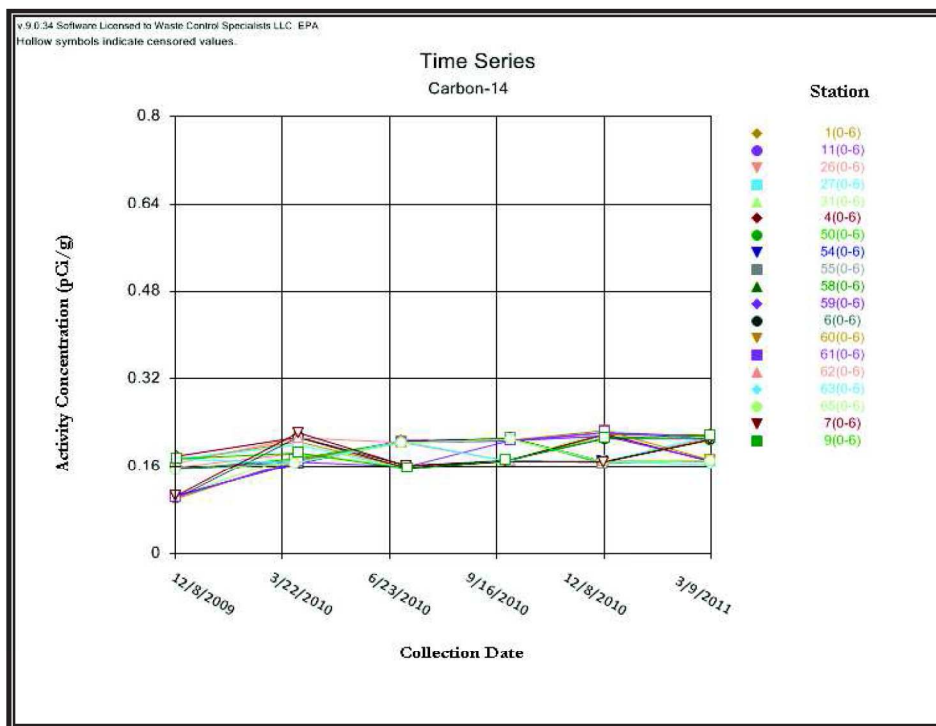


Figure 6-41: Carbon-14 Soil Sample Results (0-6").

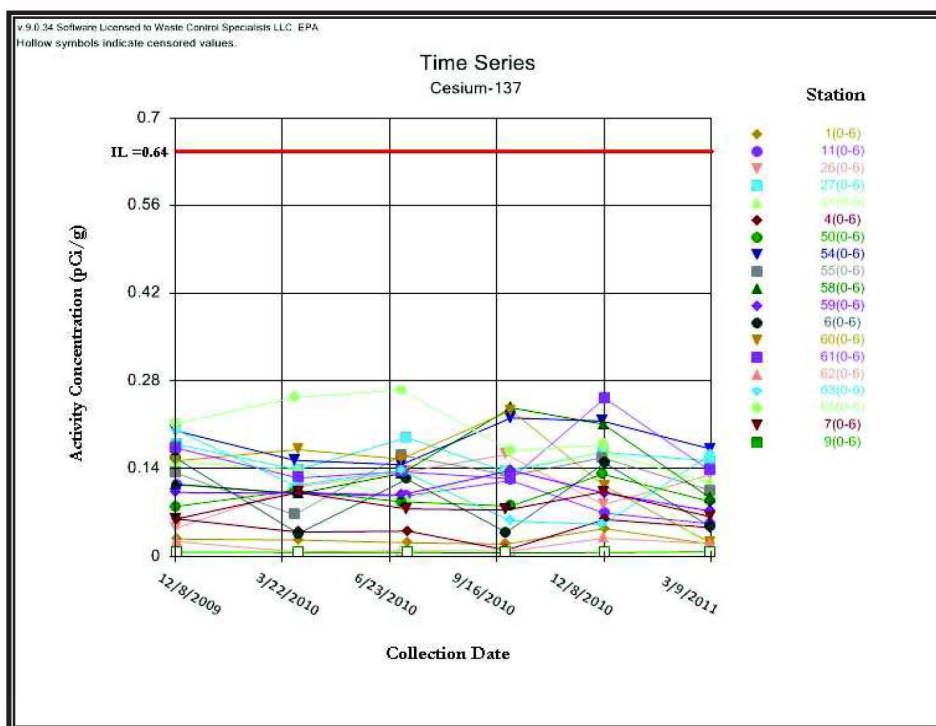


Figure 6-42: Cesium-137 Soil Sample Results (0-6").

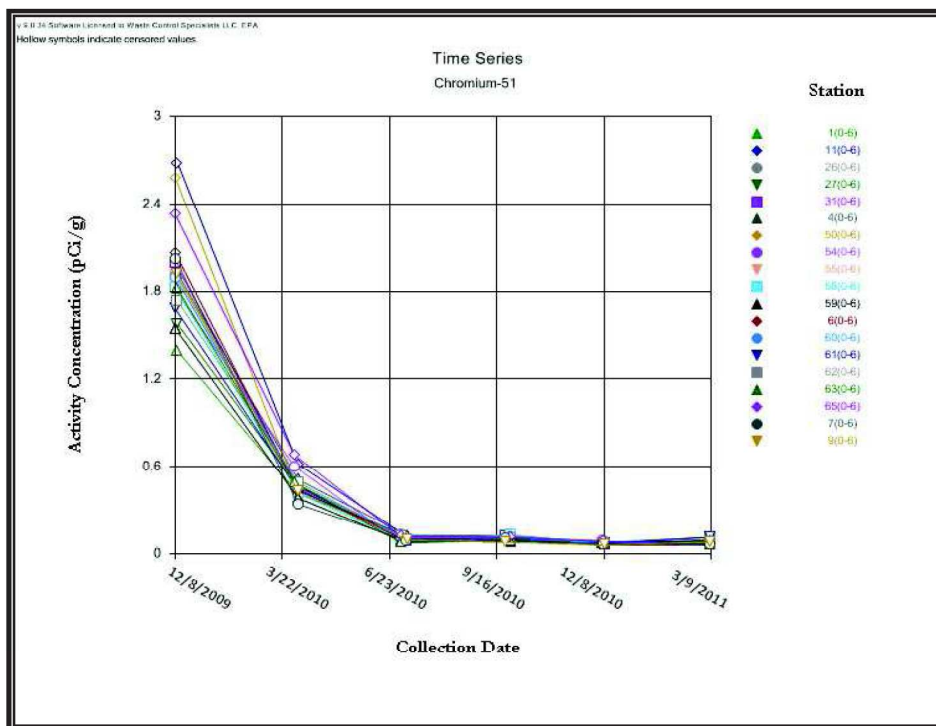


Figure 6-43: Chromium-51 Soil Sample Results (0-6").

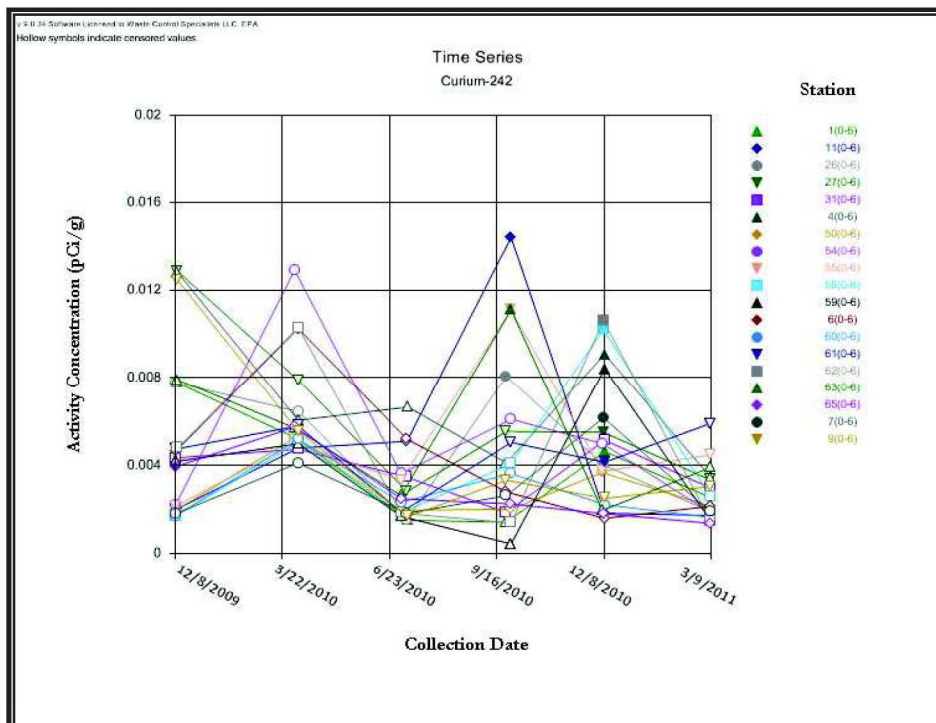


Figure 6-44: Curium-242 Soil Sample Results (0-6").

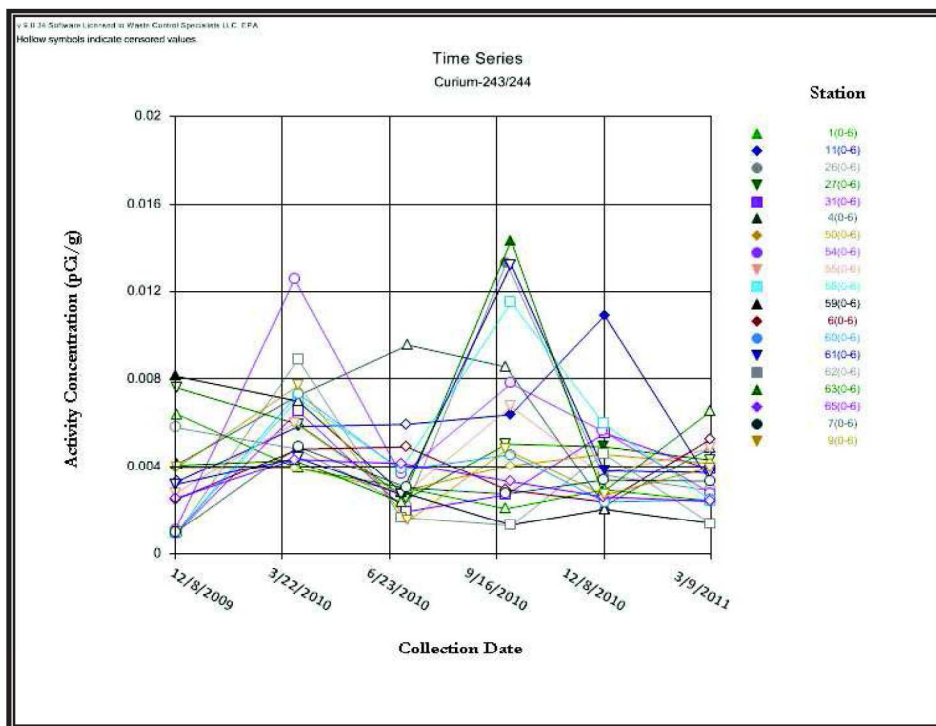


Figure 6-45: Curium-243/244 Soil Sample Results (0-6").

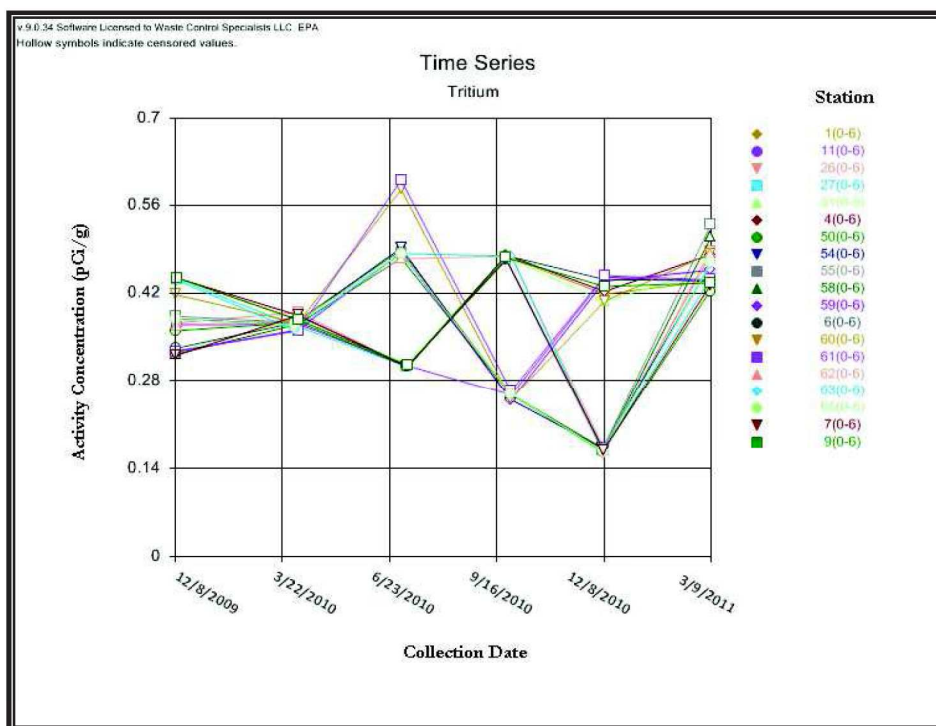


Figure 6-46: Tritium Soil Sample Results (0-6").

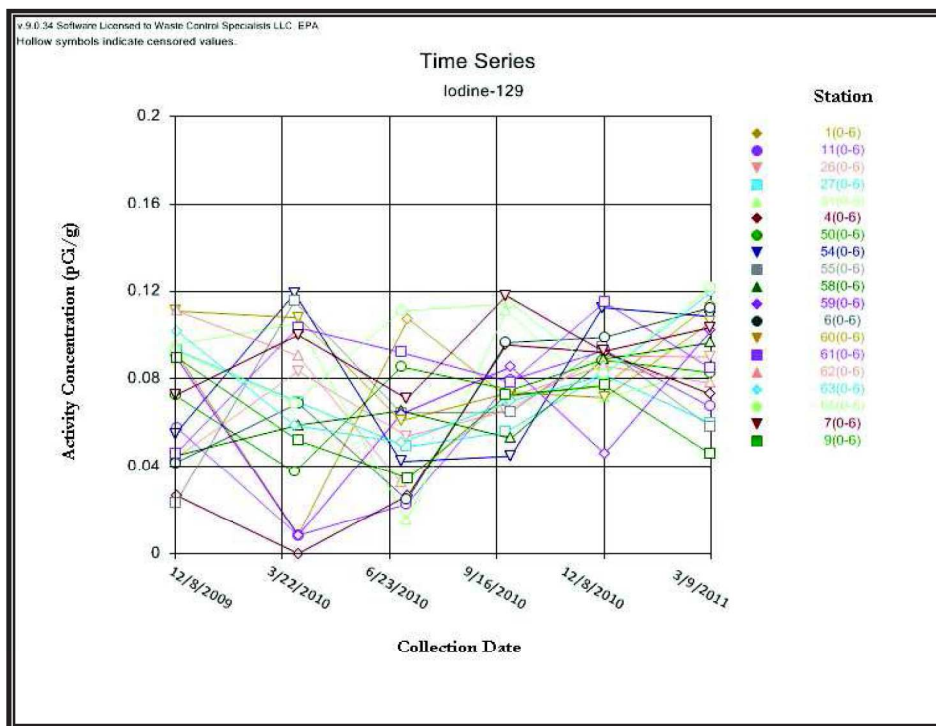


Figure 6-47: Iodine-129 Soil Sample Results (0-6").

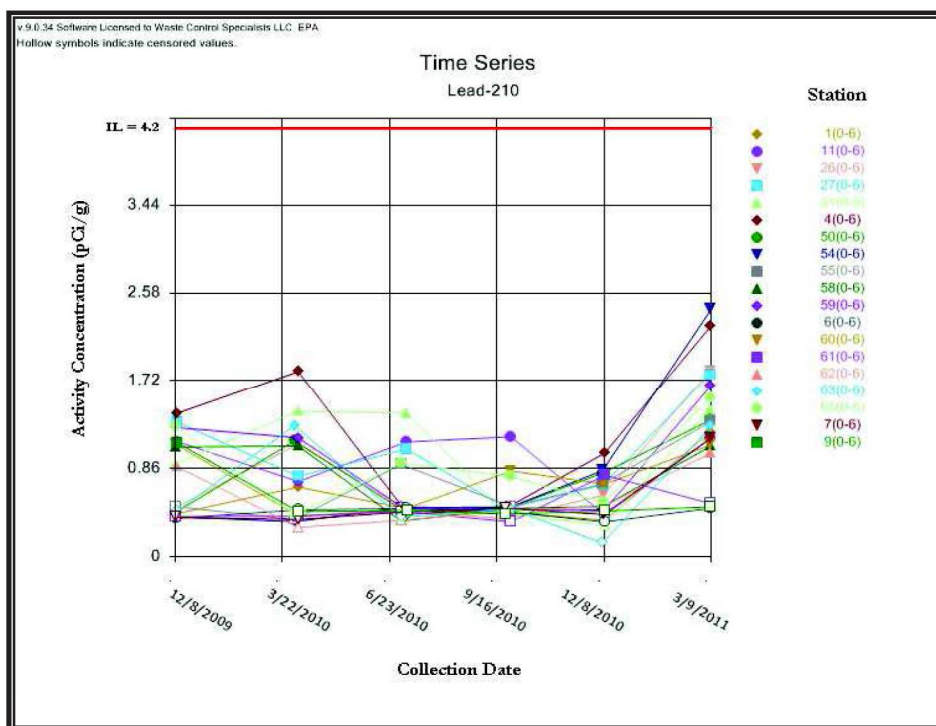


Figure 6-48: Lead-210 Soil Sample Results (0-6").

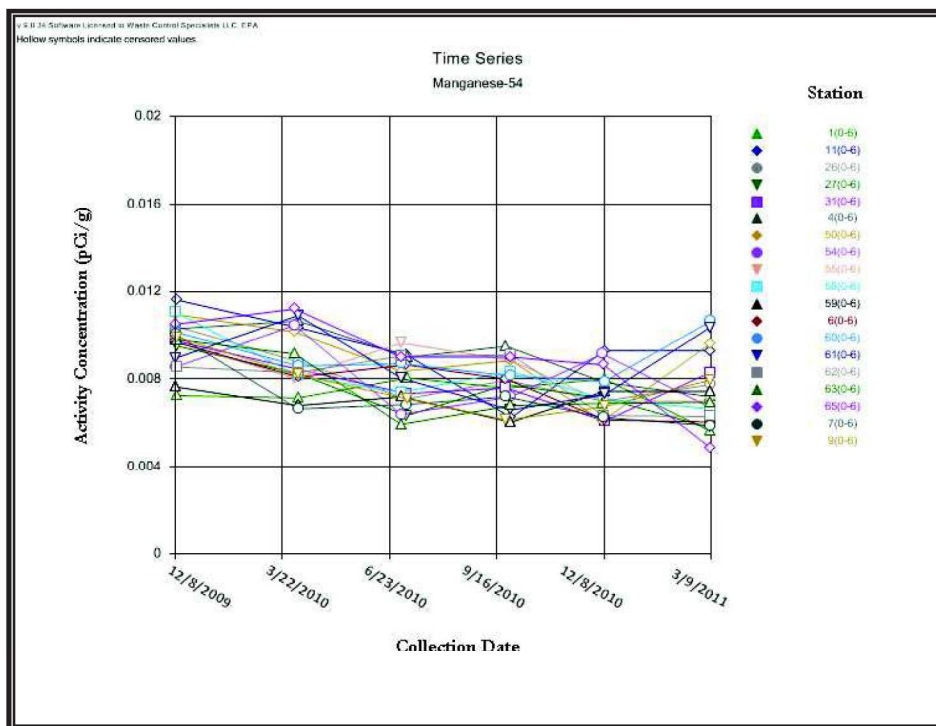


Figure 6-49: Manganese Soil Sample Results (0-6").

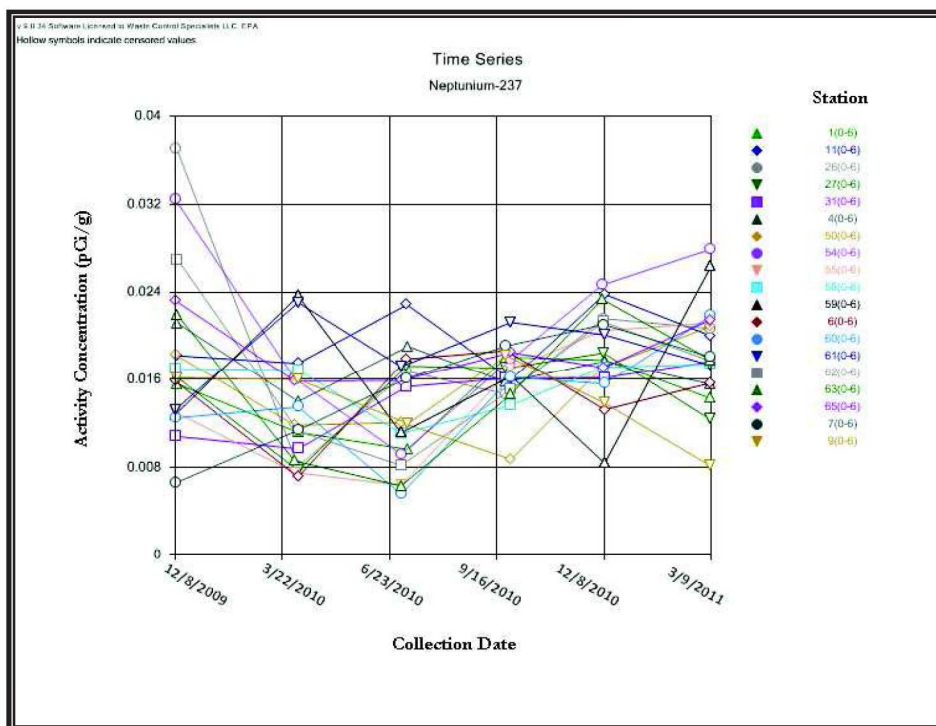


Figure 6-50 : Neptunium-237 Soil Sample Results (0-6").

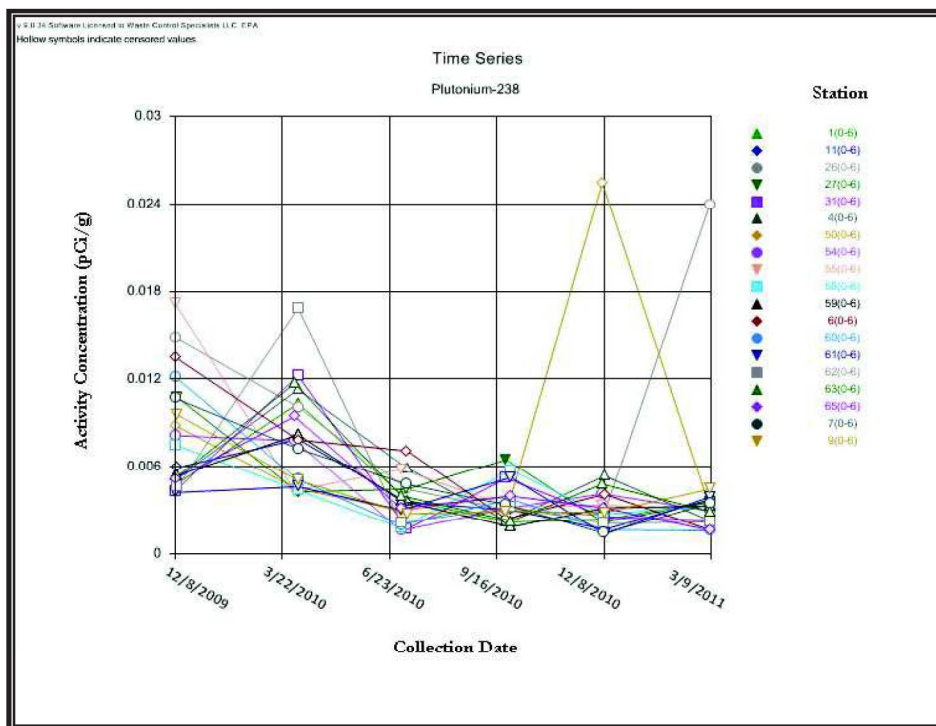


Figure 6-51: Plutonium-238 Soil Sample Results (0-6").

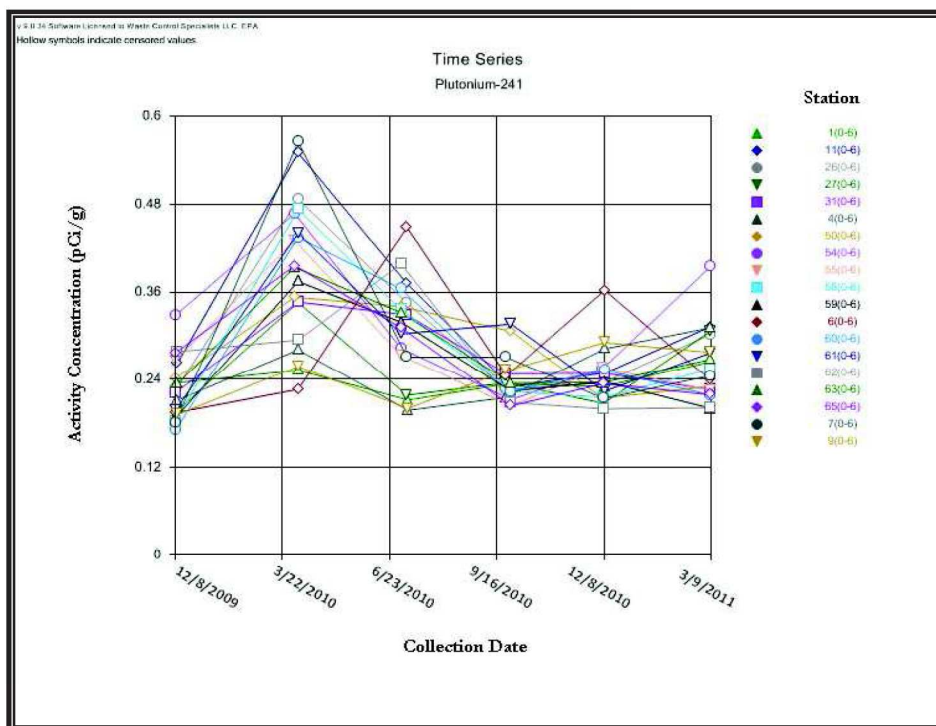


Figure 6-52: Plutonium-241 Soil Sample Results (0-6").

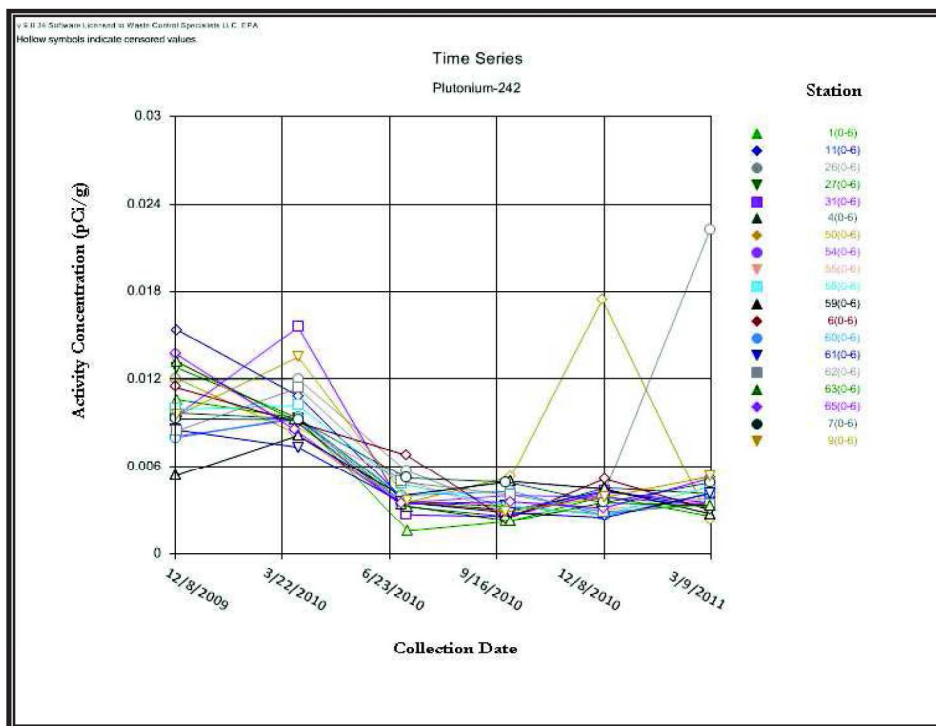


Figure 6-53: Plutonium-242 Soil Sample Results (0-6").

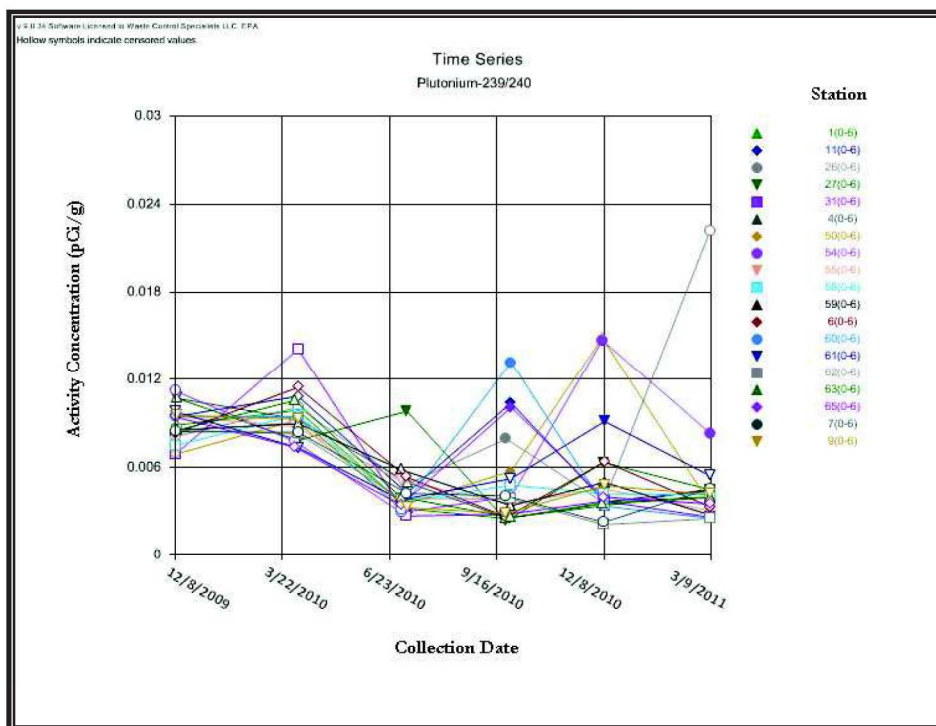


Figure 6-54: Plutonium-239/240 Soil Sample Results (0-6").

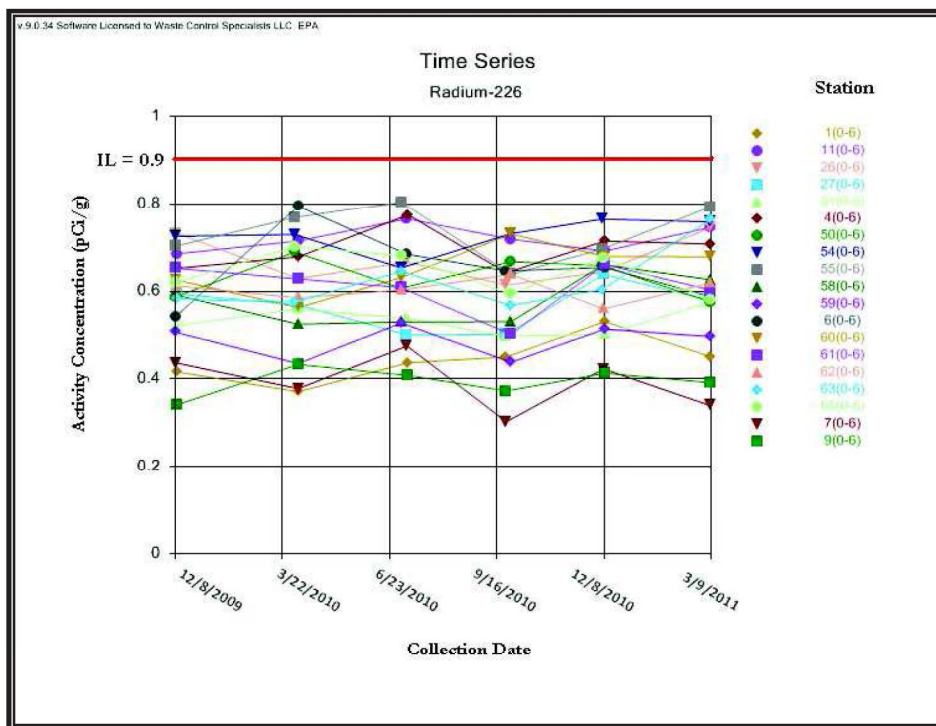


Figure 6-55: Radium-226 Soil Sample Results (0-6").

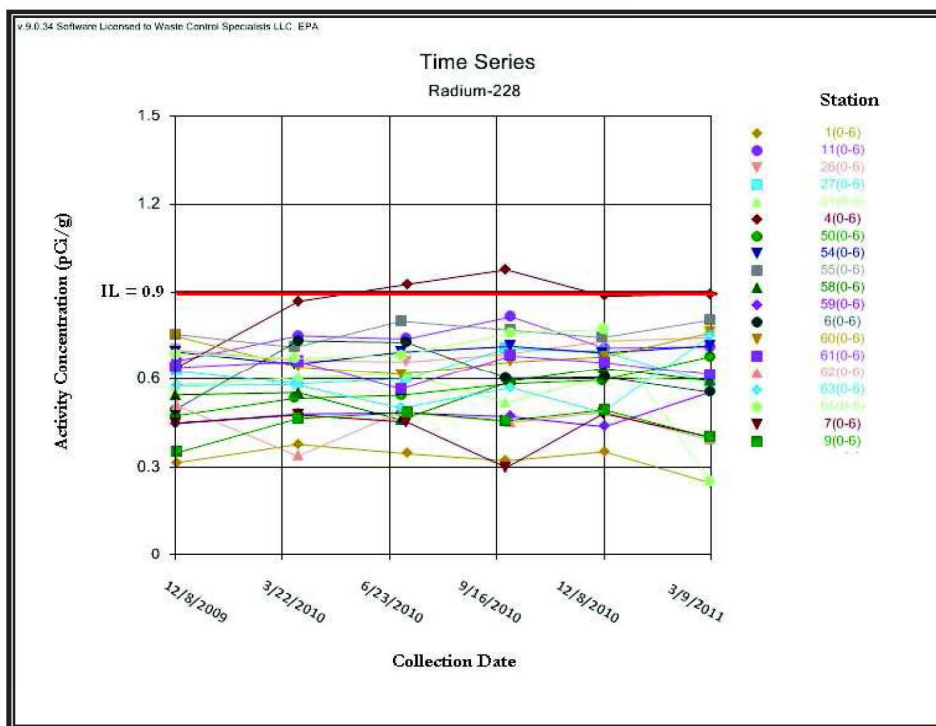


Figure 6-56: Radium-228 Soil Sample Results (0-6").

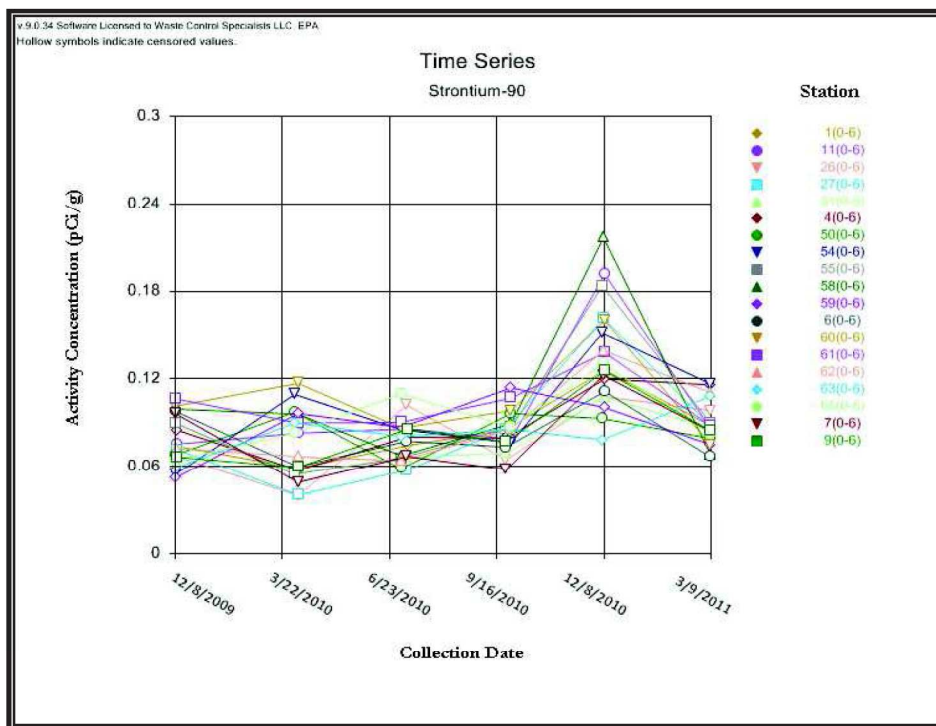


Figure 6-57: Strontium-90 Soil Sample Results (0-6").

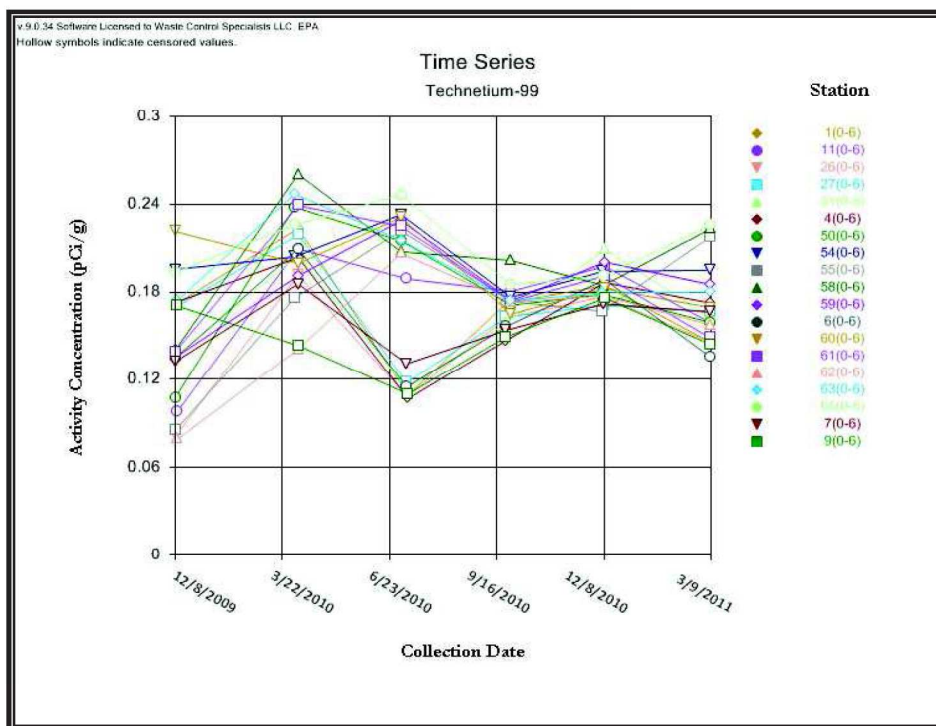


Figure 6-58: Technetium-99 Soil Sample Results (0-6").

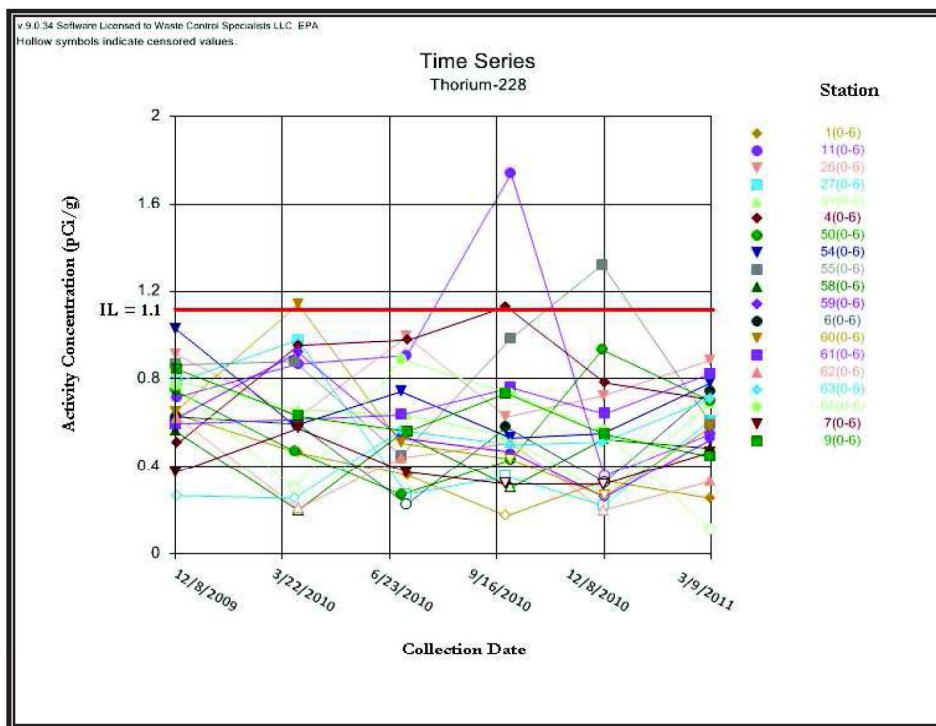


Figure 6-59: Thorium-228 Soil Sample Results (0-6").

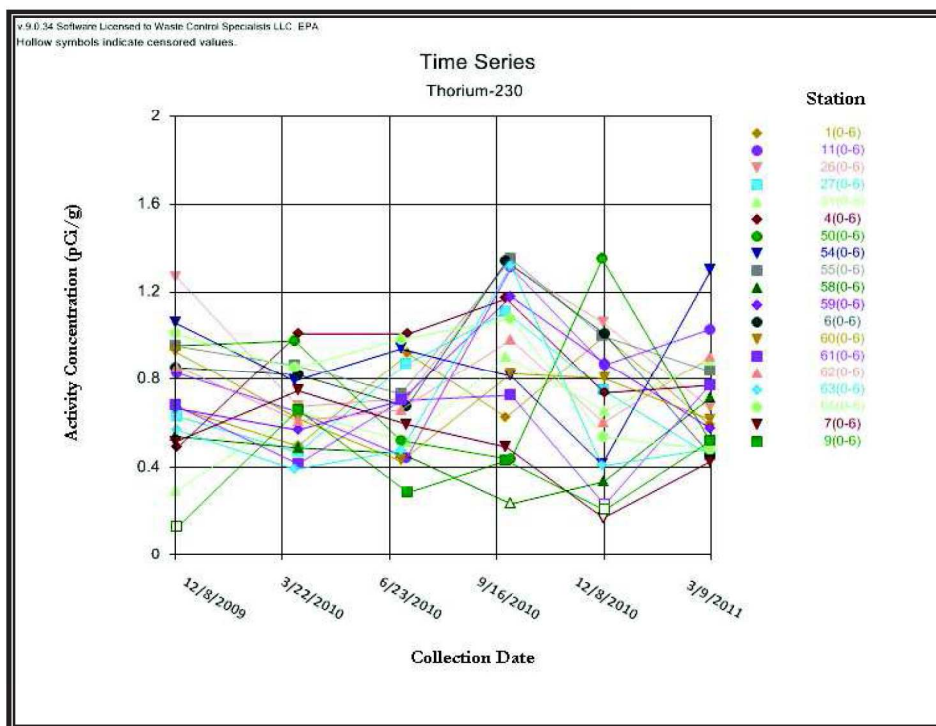


Figure 6-60: Thorium-230 Soil Sample Results (0-6").

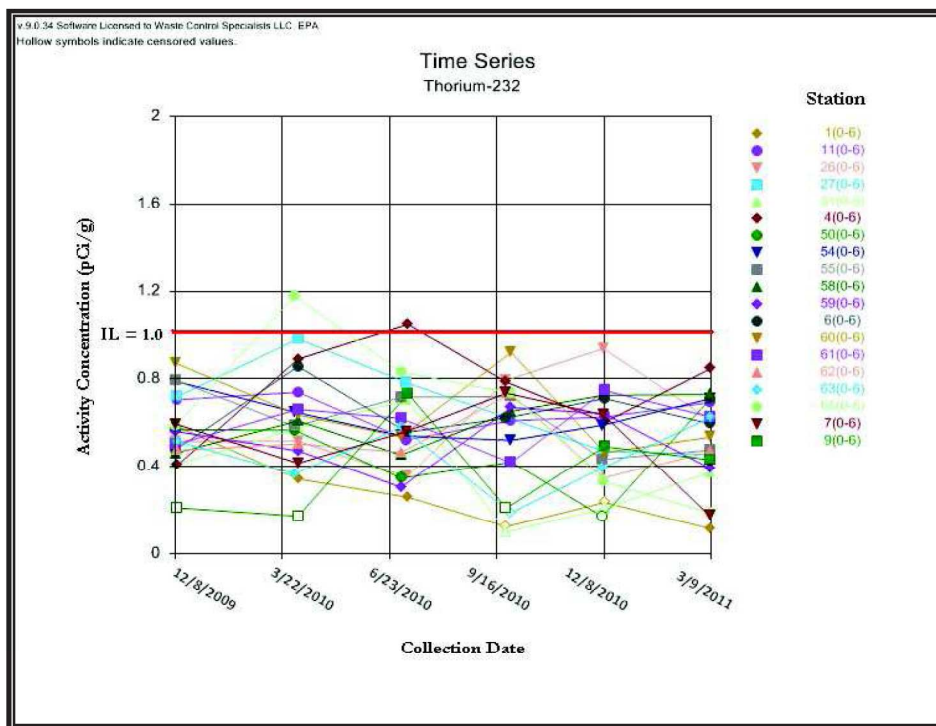


Figure 6-61: Throium-232 Soil Sample Results (0-6").

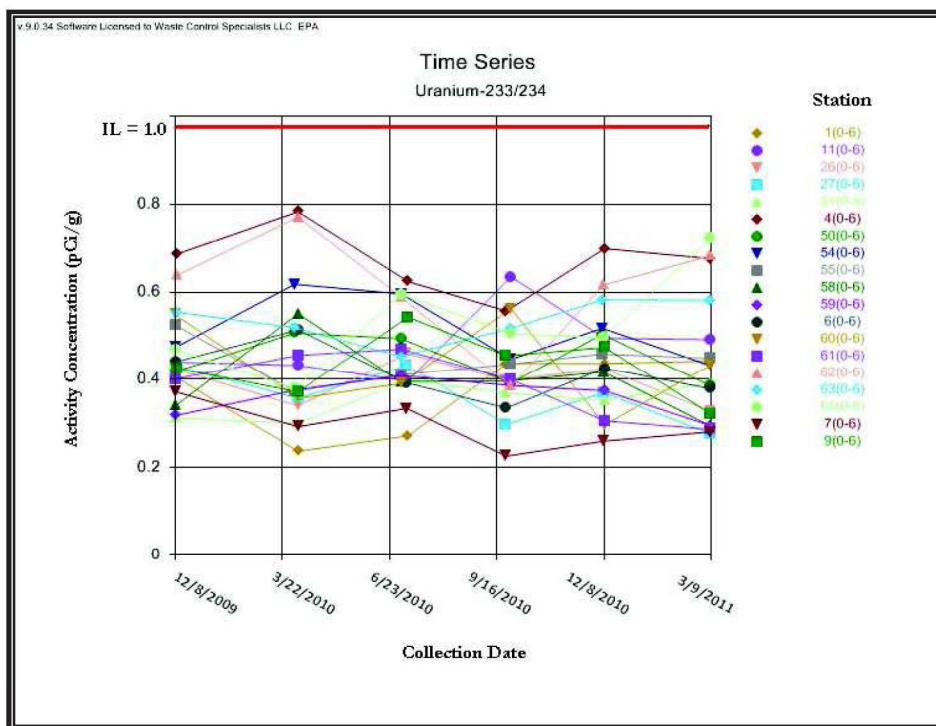


Figure 6-62: Uranium-233/234 Soil Sample Results (0-6").

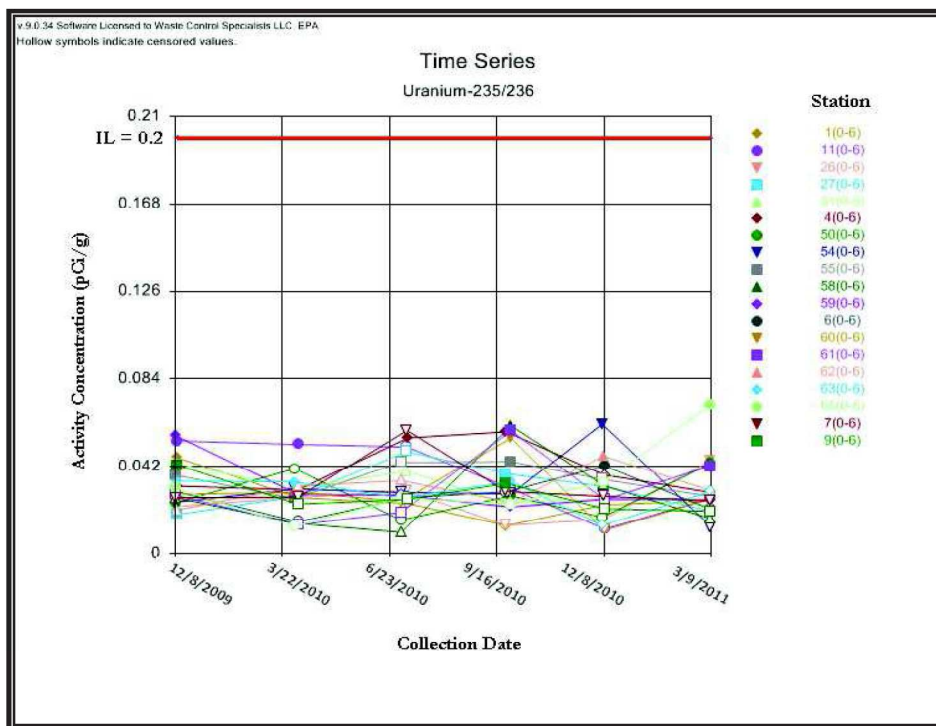


Figure 6-63: Uranium-235/236 Soil Sample Results (0-6").

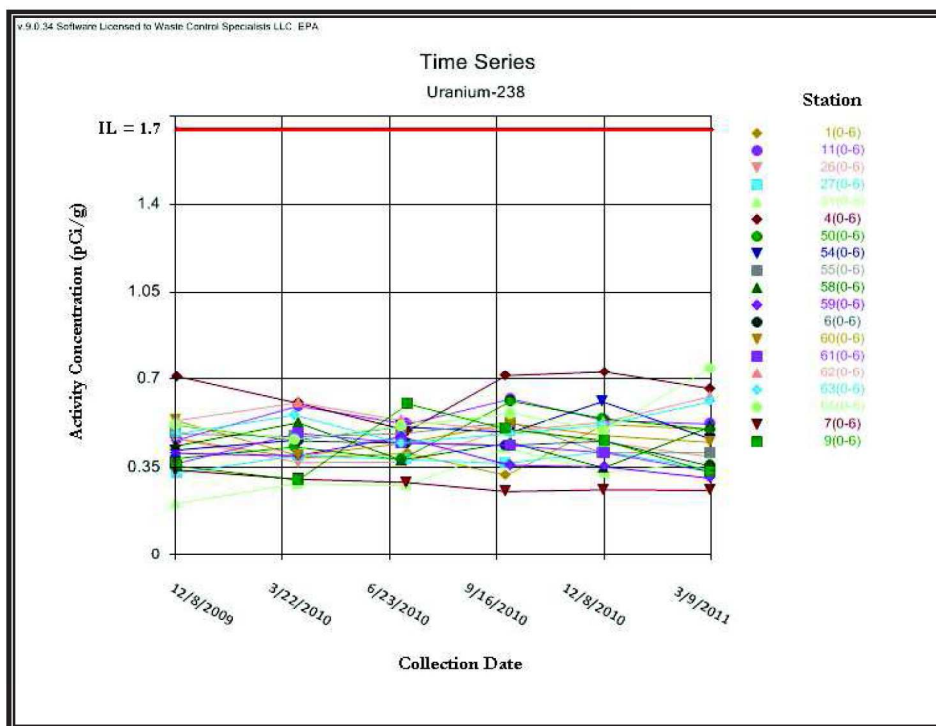


Figure 6-64: Uranium-238 Soil Sample Results (0-6").

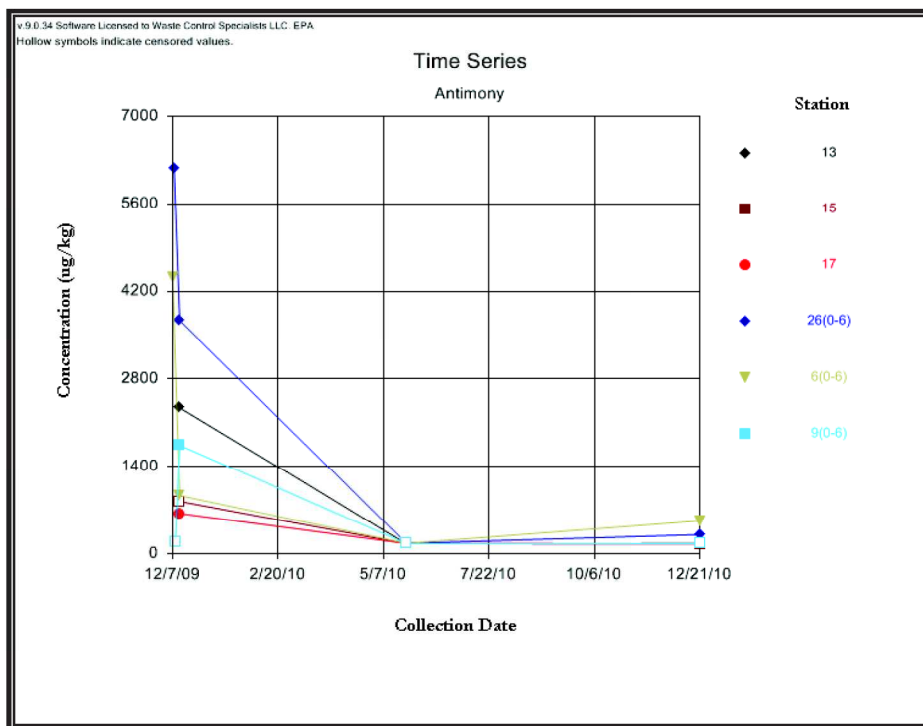


Figure 6-65: Antimony Soil Sample Results (0-2" and 0-6").

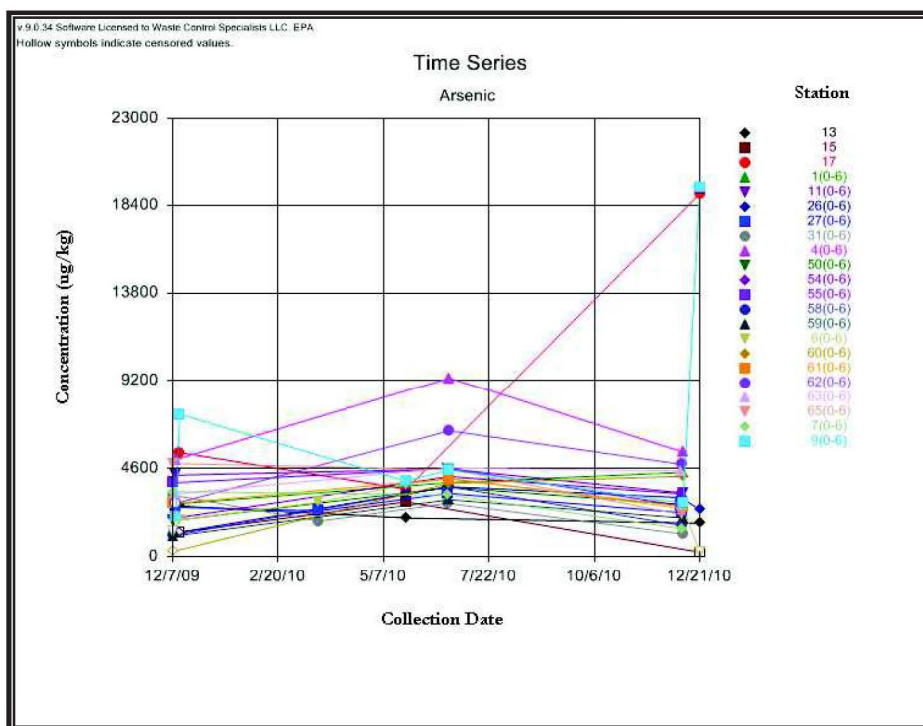


Figure 6-66: Arsenic Soil Sample Results (0-2" and 0-6").

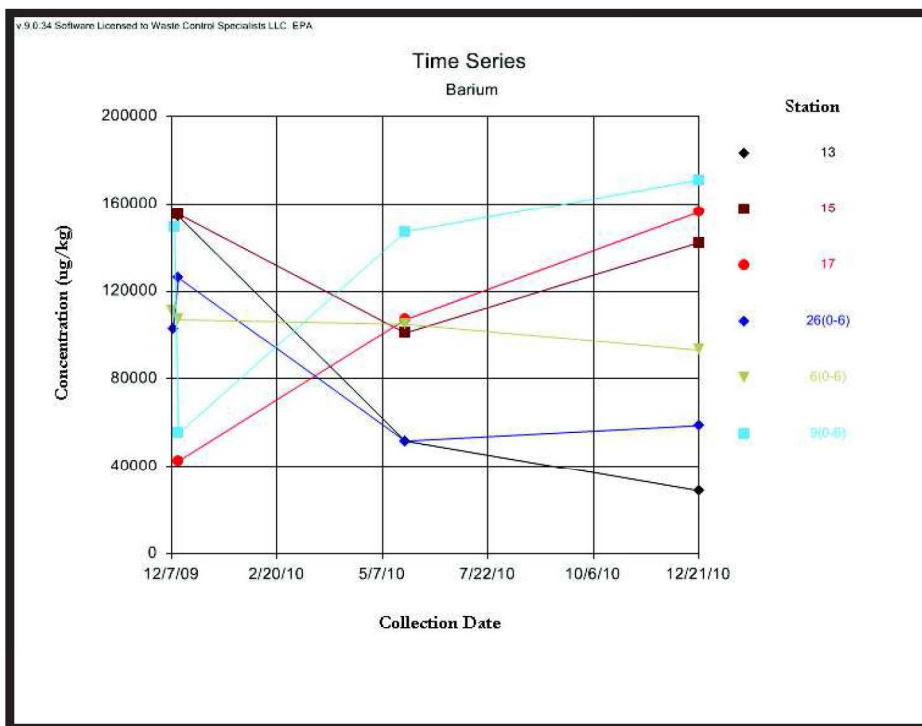


Figure 6-67: Barium Soil Sample Results (0-2" and 0-6").

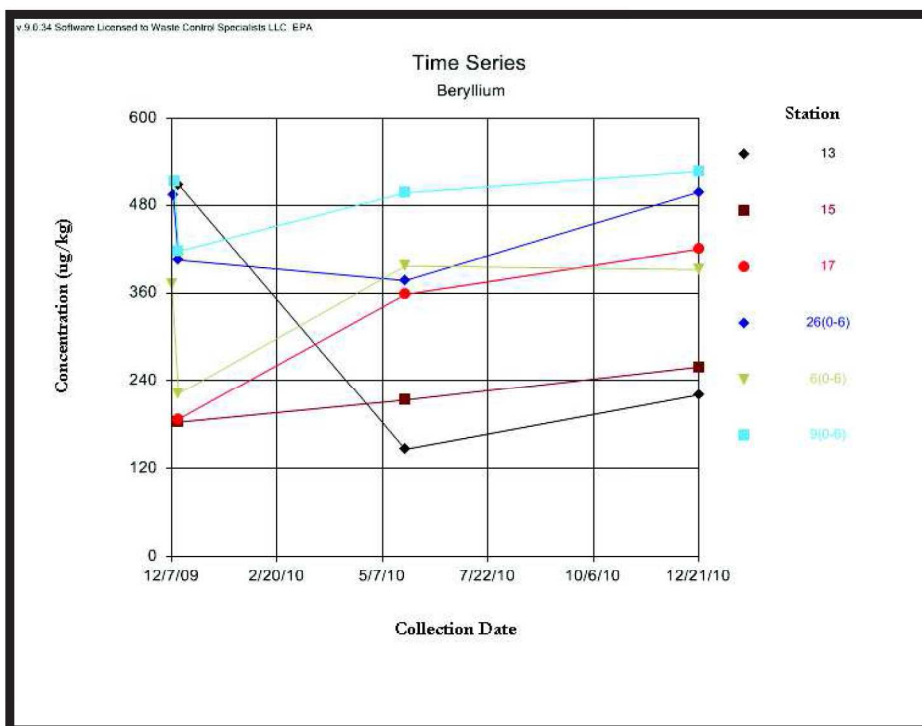


Figure 6-68: Beryllium Soil Sample Results (0-2" and 0-6").

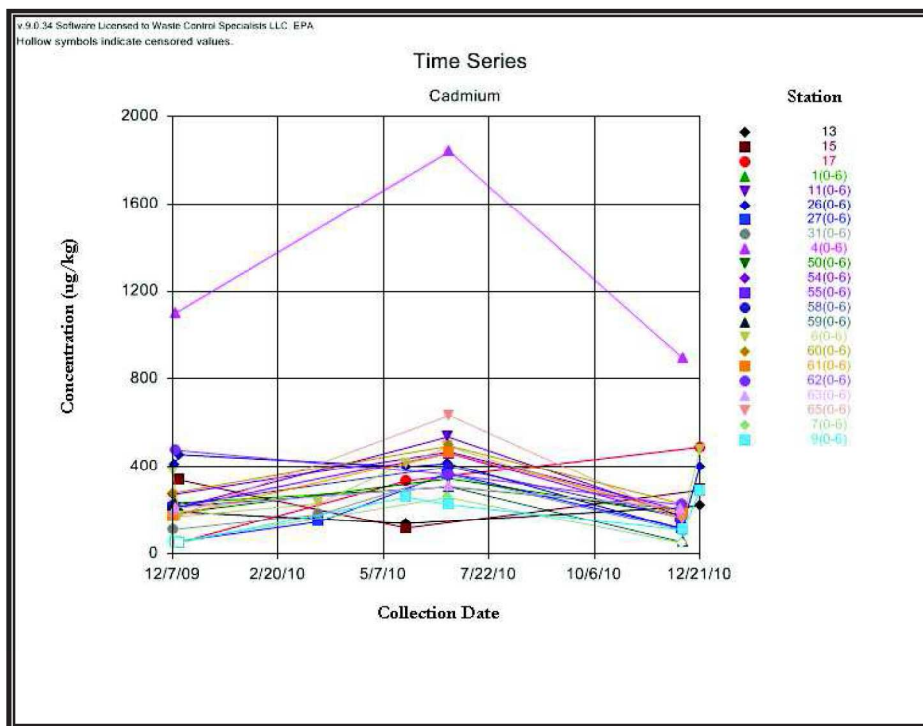


Figure 6-69: Cadmium Soil Sample Results (0-2" and 0-6").

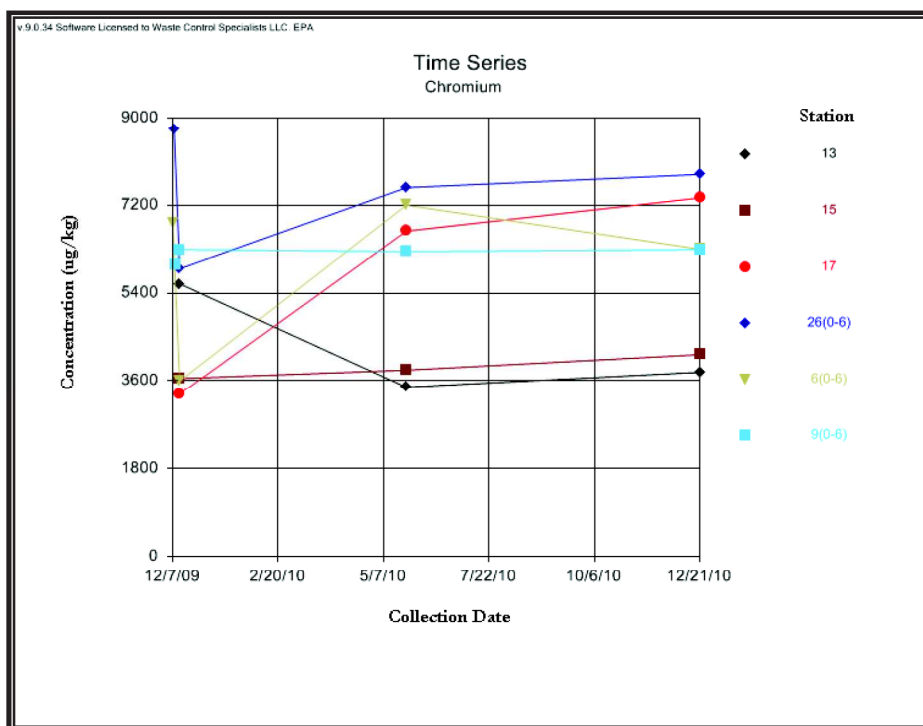


Figure 6-70: Chromium Soil Sample Results (0-2" and 0-6").

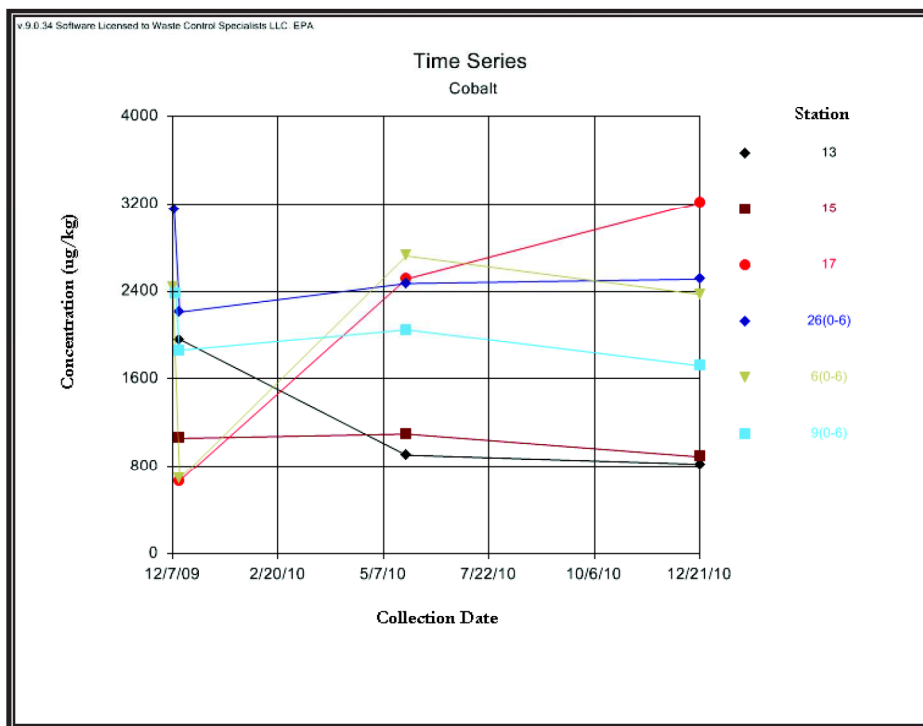


Figure 6-71: Cobalt Soil Sample Results (0-2" and 0-6").

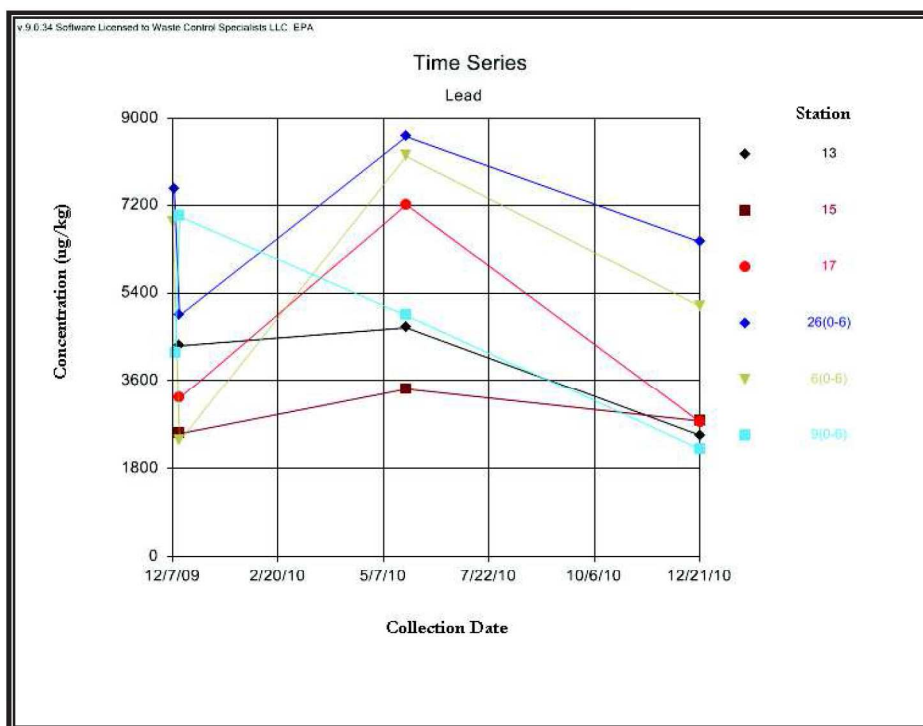


Figure 6-72: Lead Soil Sample Results (0-2" and 0-6").

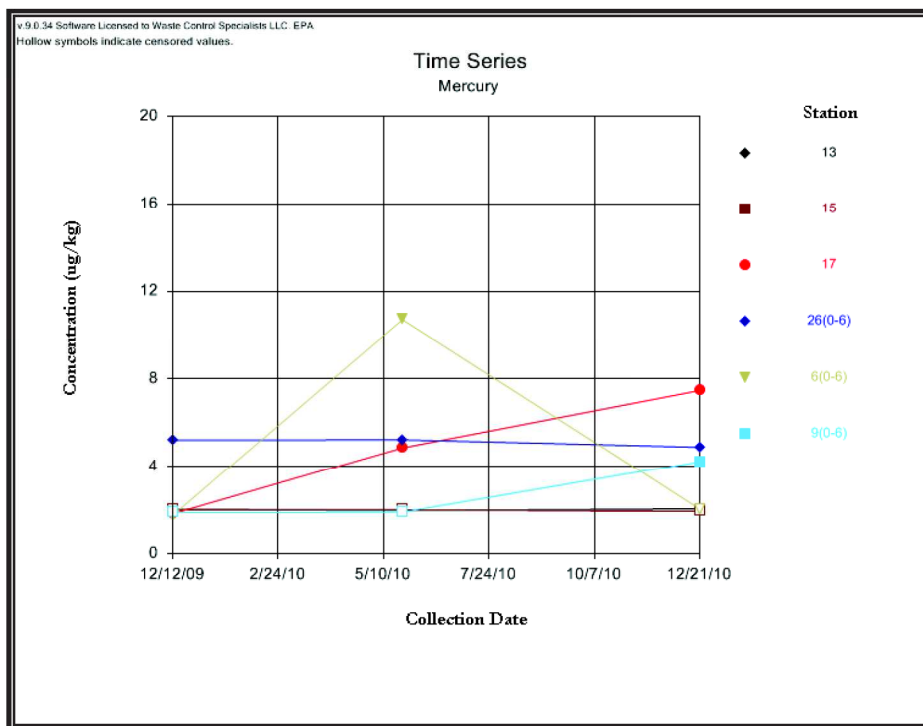


Figure 6-73: Mercury Soil Sample Results (0-2" and 0-6").

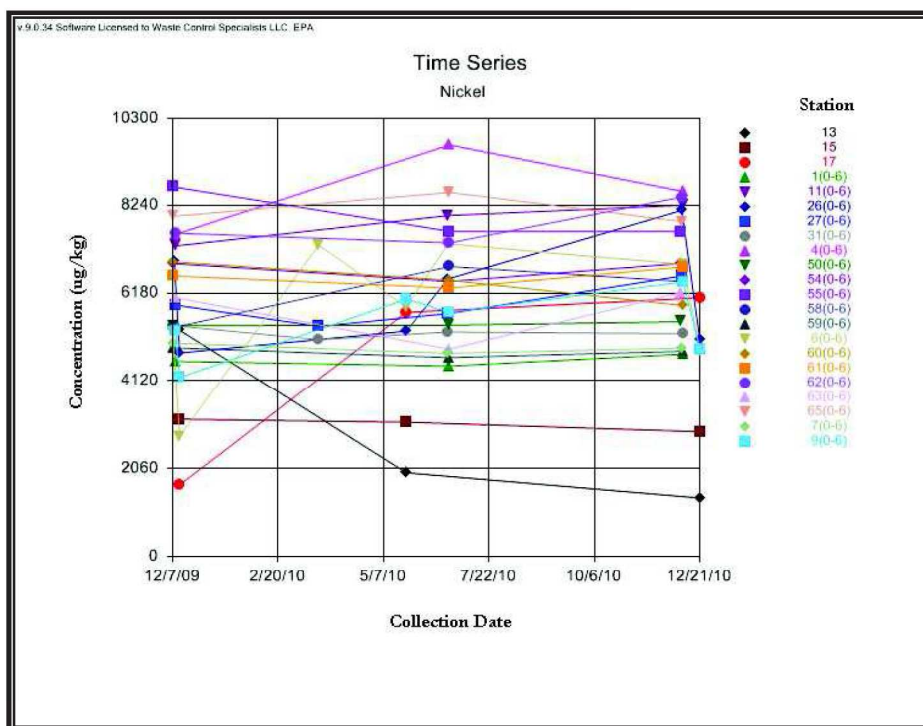


Figure 6-74: Nickel Soil Sample Results (0-2" and 0-6").

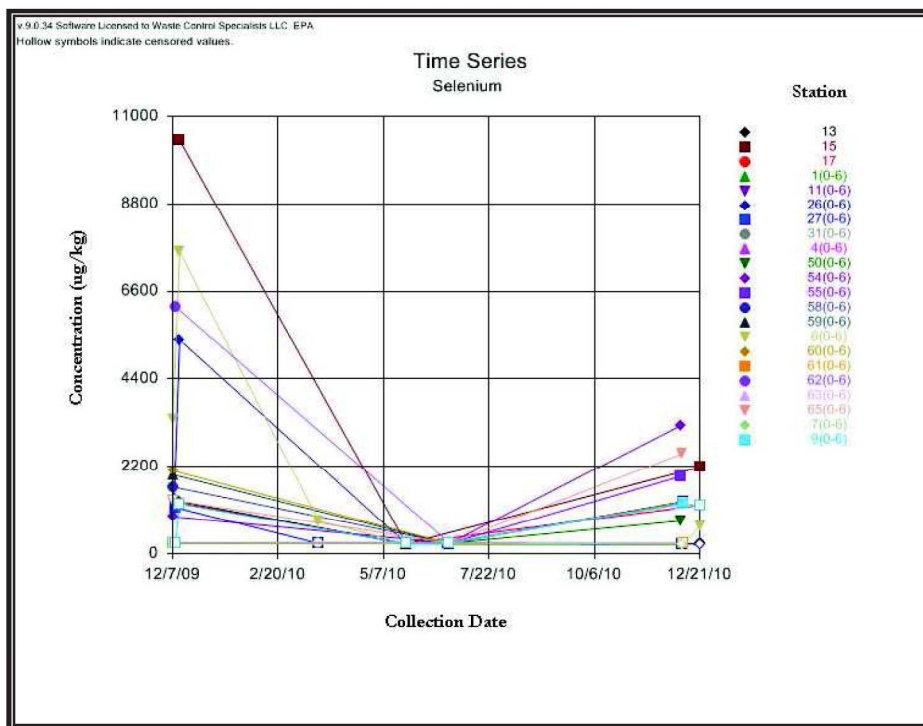


Figure 6-75: Selenium Soil Sample Results (0-2" and 0-6").

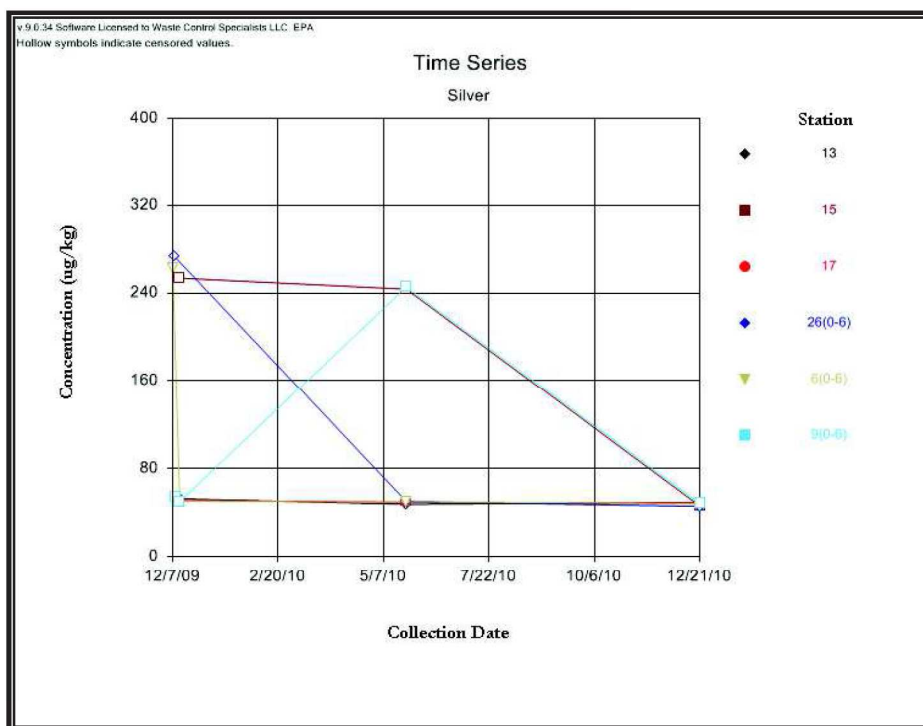


Figure 6-76: Silver Soil Sample Results (0-2" and 0-6").

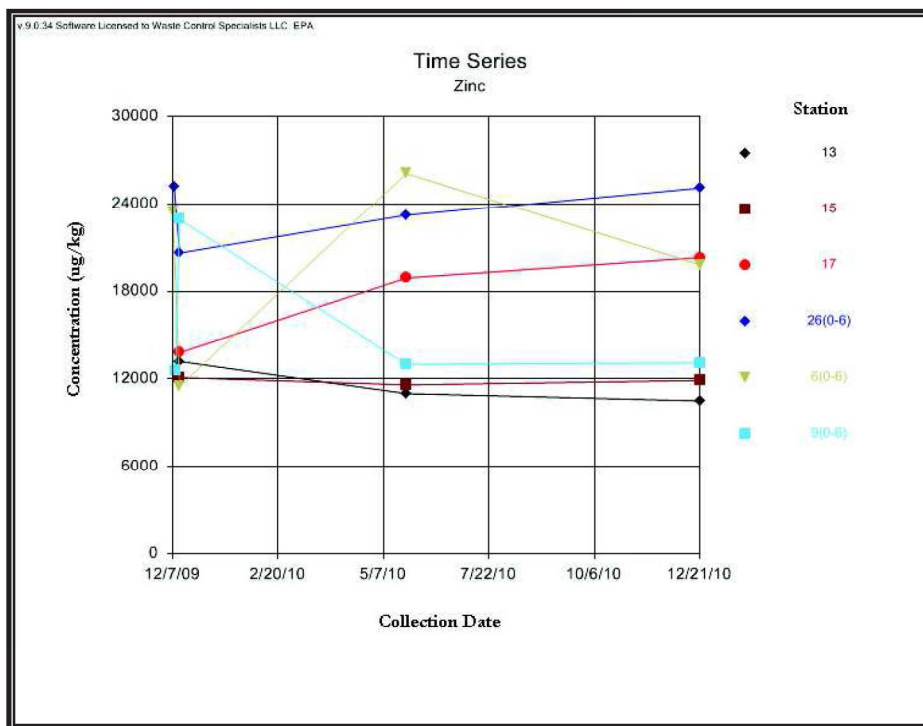


Figure 6-77: Zinc Soil Sample Results (0-2" and 0-6").

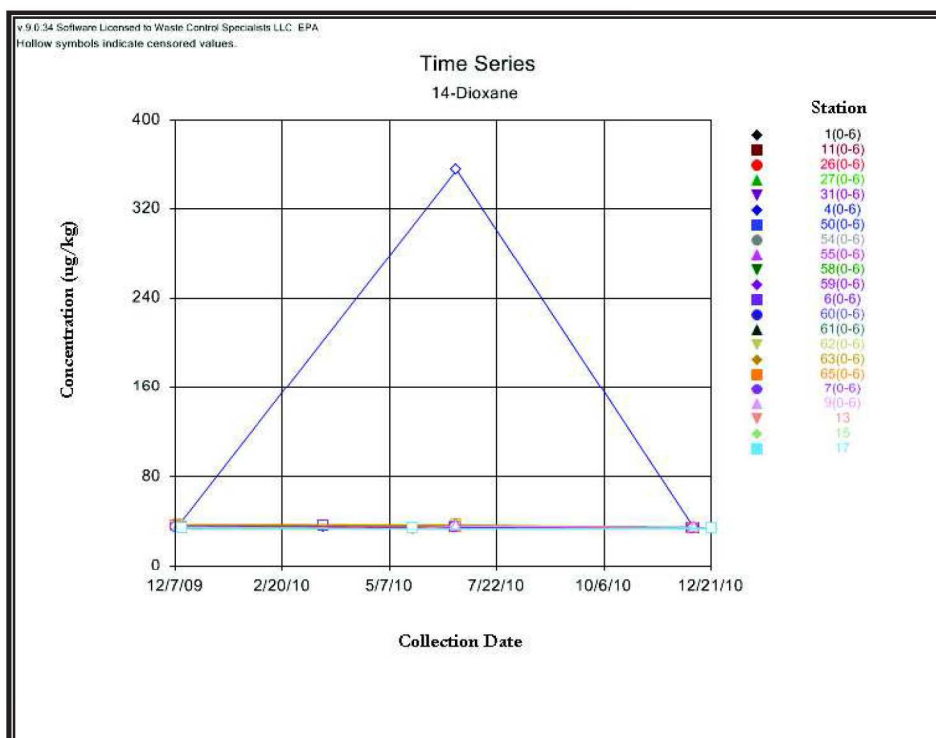


Figure 6-78: 1,4-Dioxane Soil Sample Results (0-2" and 0-6").

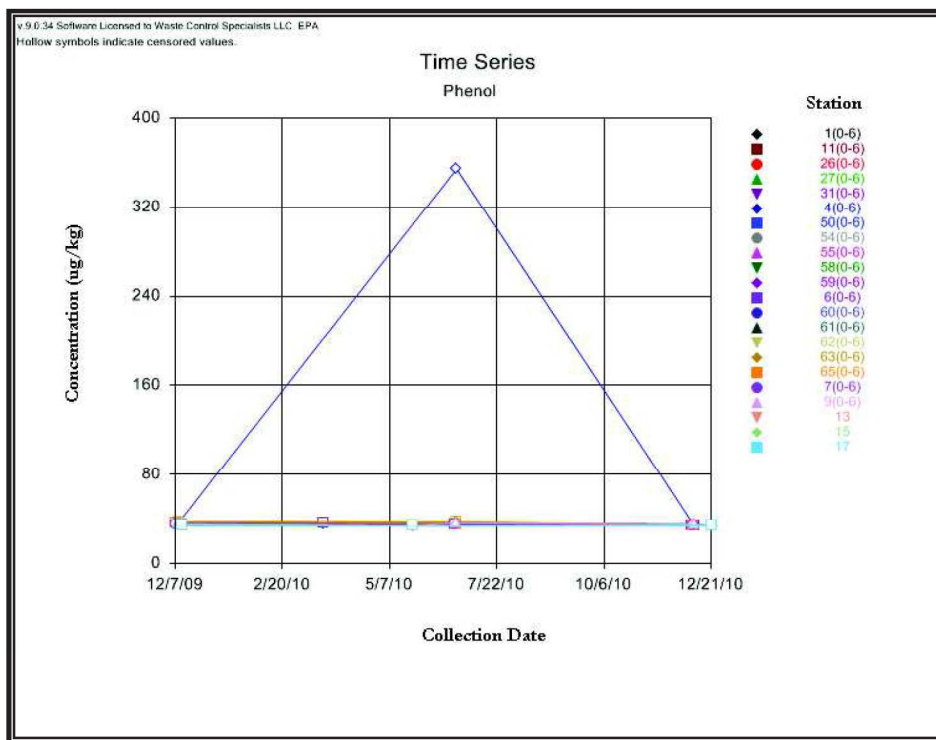


Figure 6-79: Phenol Soil Sample Results (0-2" and 0-6").

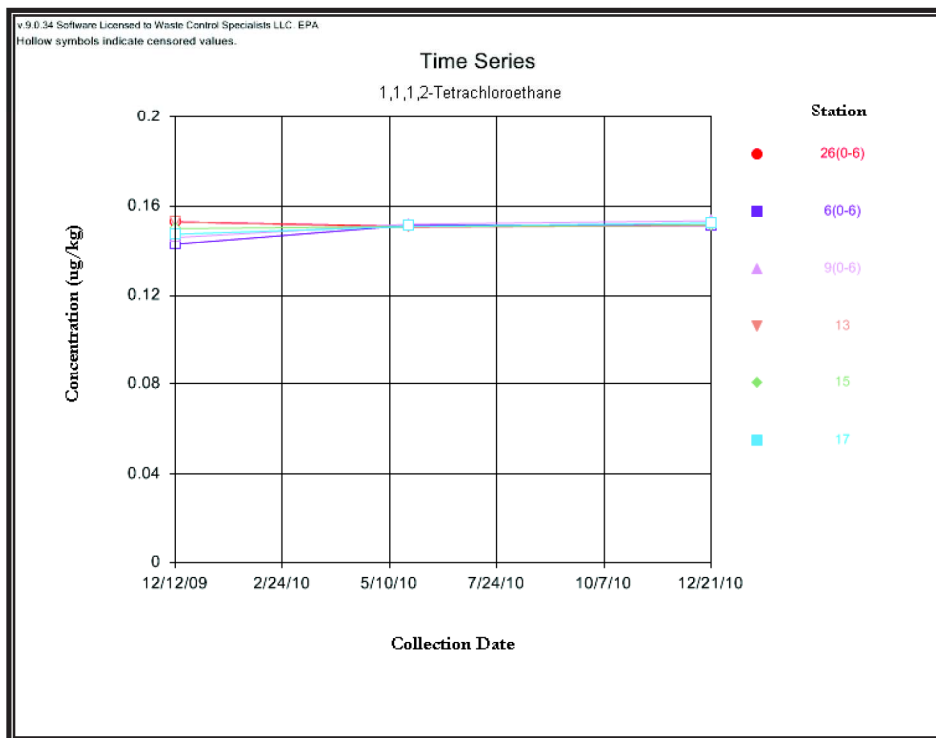


Figure 6-80: 1,1,1,2-Tetrachloroethane Soil Sample Results (0-2" and 0-6").

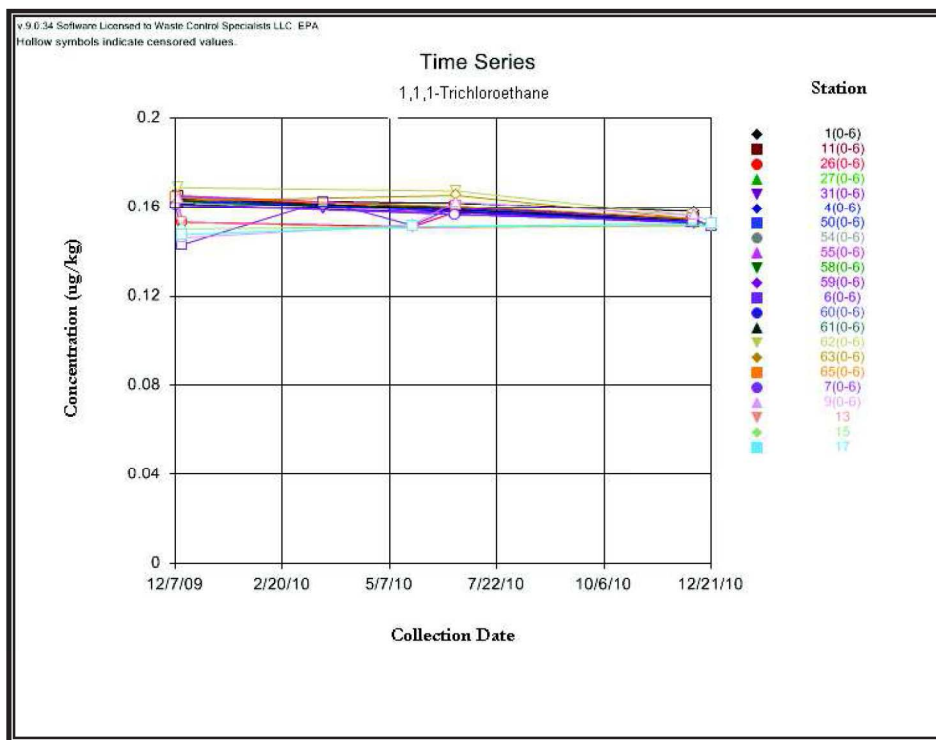


Figure 6-81: Trichloroethane Soil Sample Results (0-2" and 0-6").

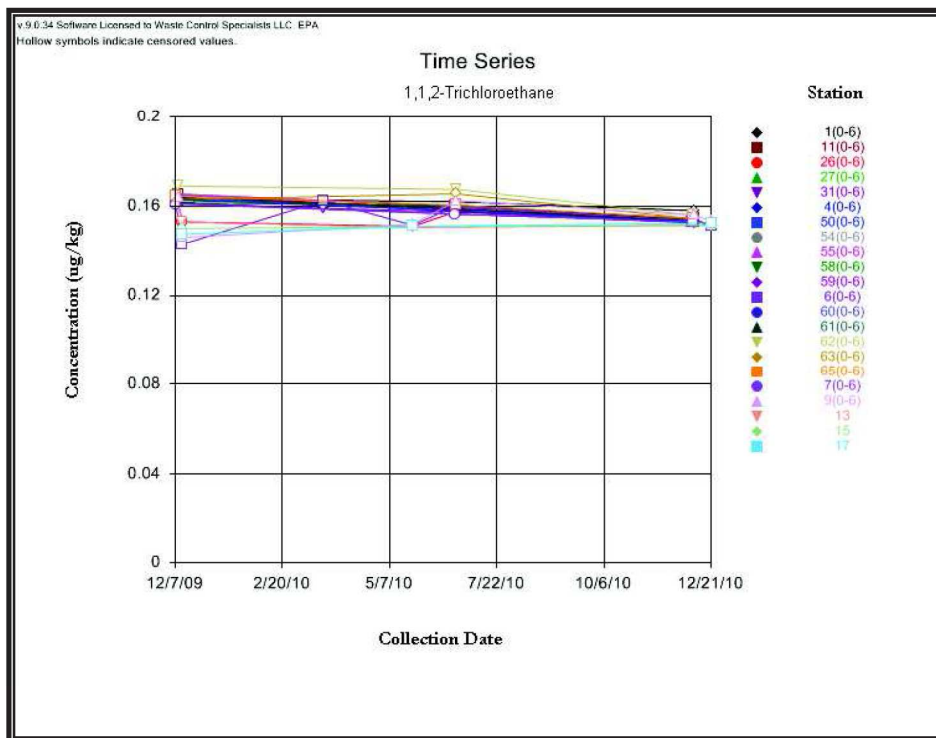


Figure 6-82: 1,1,2-Trichloroethane Soil Sample Results (0-2" and 0-6").

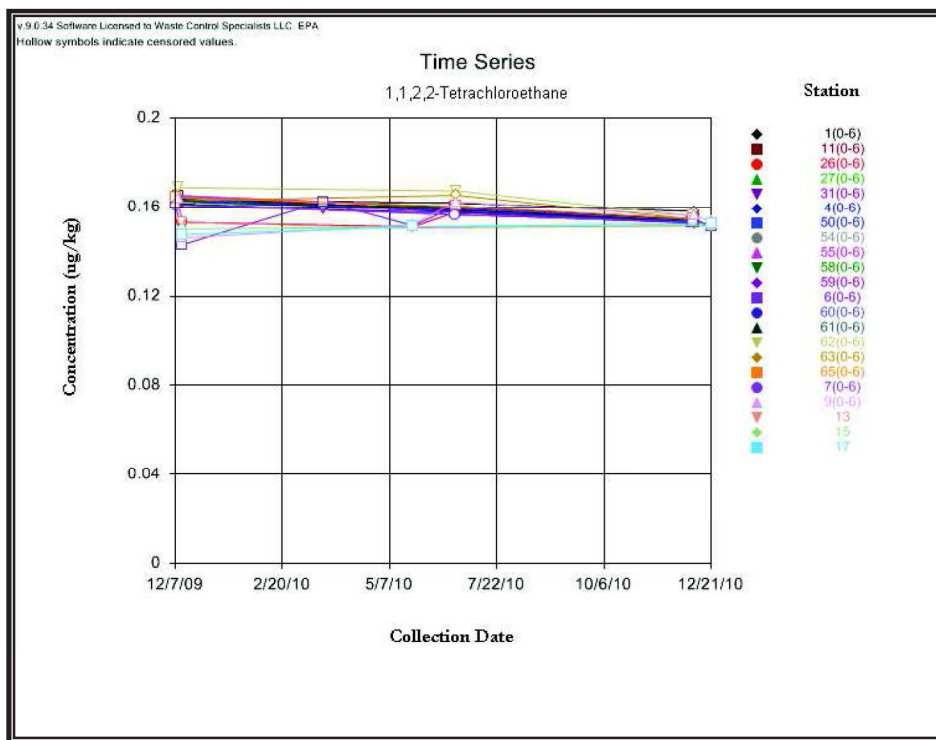


Figure 6-83: 1,1,2,2-Tetrachloroethane Soil Sample Results (0-2" and 0-6").

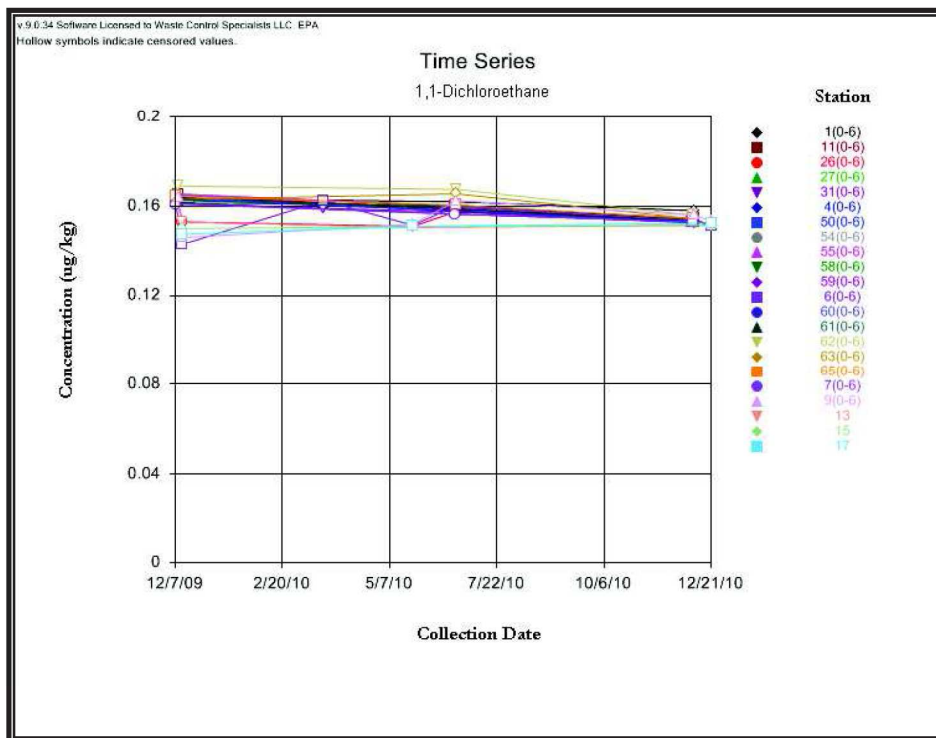


Figure 6-84: 1,1-Dichloroethane Soil Sample Results (0-2" and 0-6").

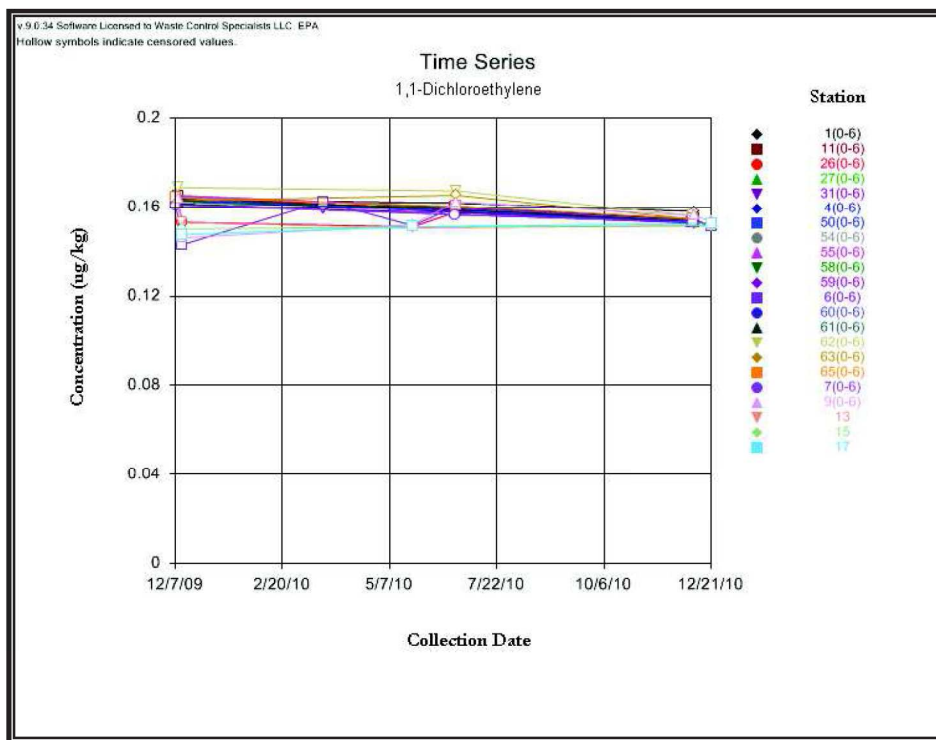


Figure 6-85: 1,1-Dichloroethylene Soil Sample Results (0-2" and 0-6").

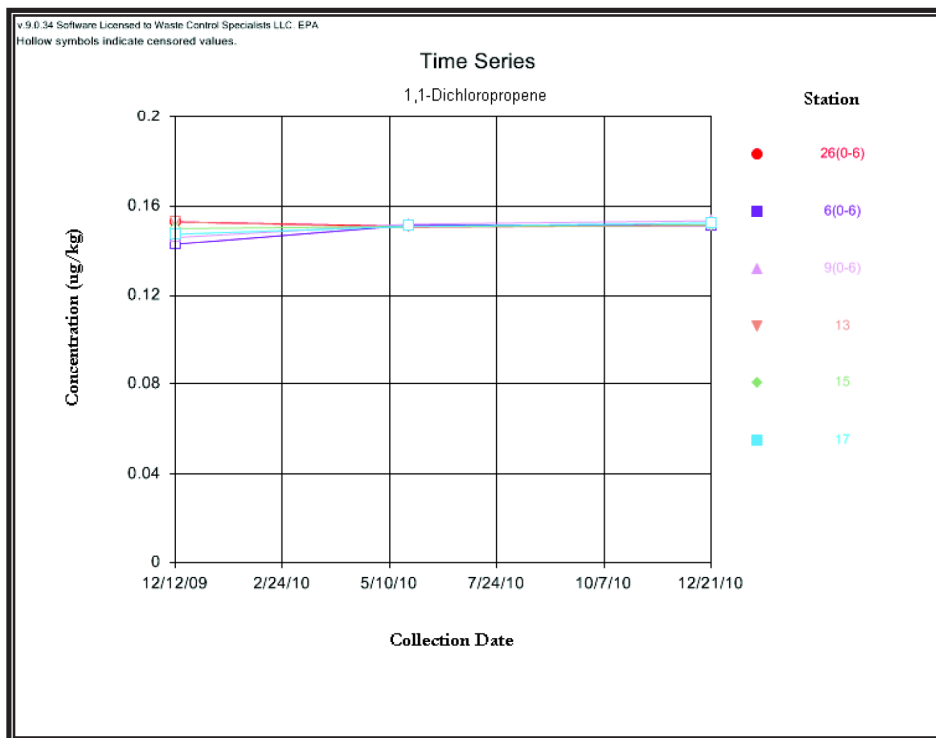


Figure 6-86: Dichloropropene Soil Sample Results (0-2" and 0-6").

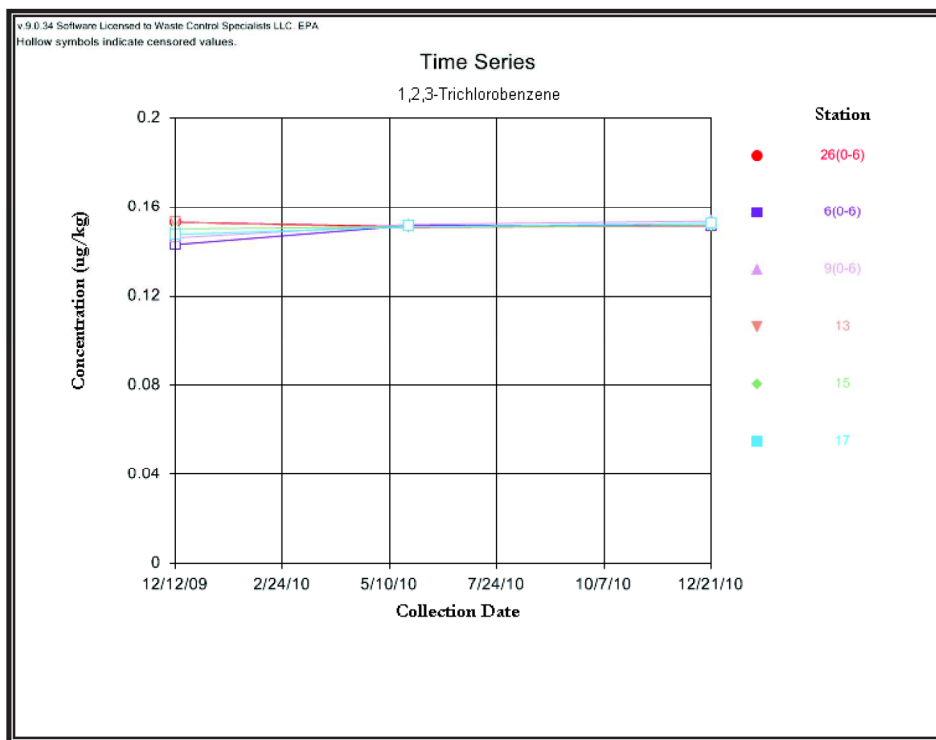


Figure 6-87: 1,2,3-Trichlorobenzene Soil Sample Results (0-2" and 0-6").

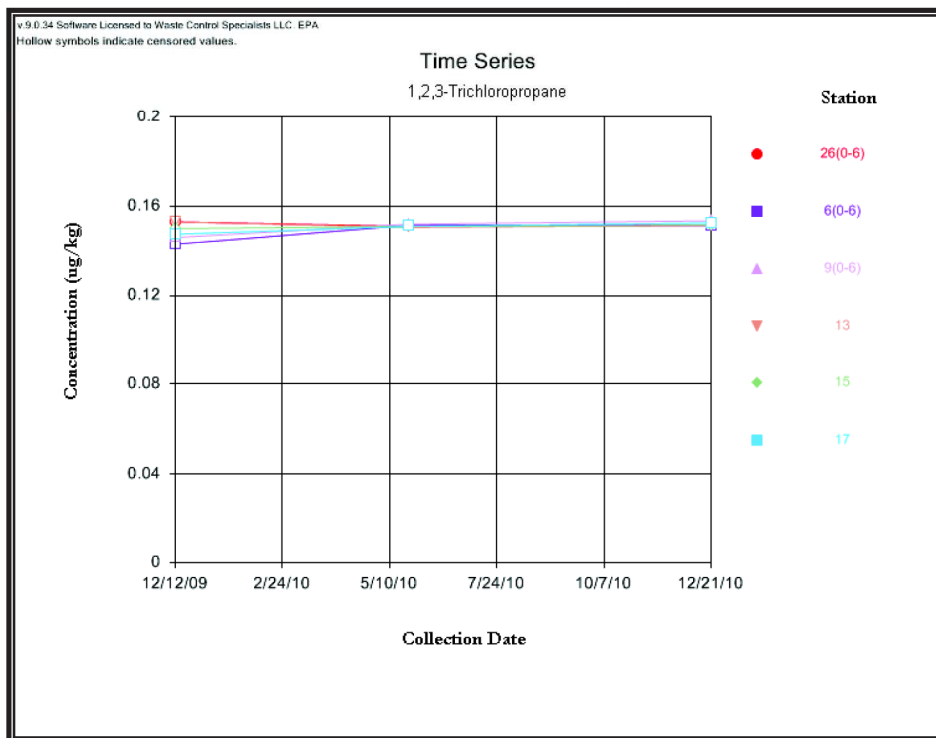


Figure 6-88: 1,2,3-Trichloropropane Soil Sample Results (0-2" and 0-6").

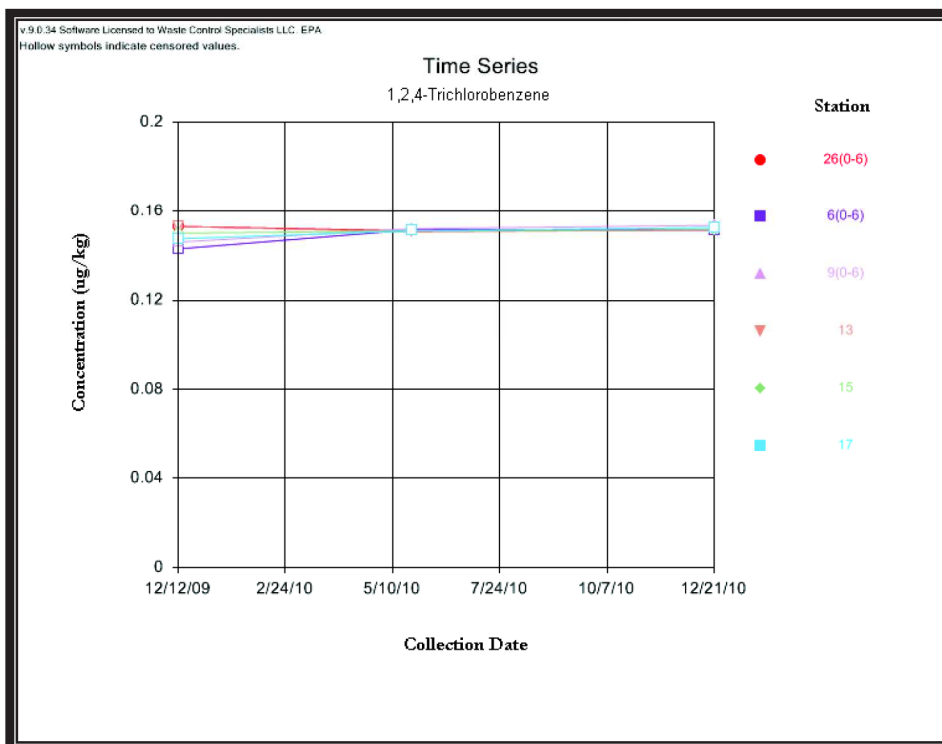


Figure 6-89: 1,2,4-Trichlorobenzene Soil Sample Results (0-2" and 0-6").

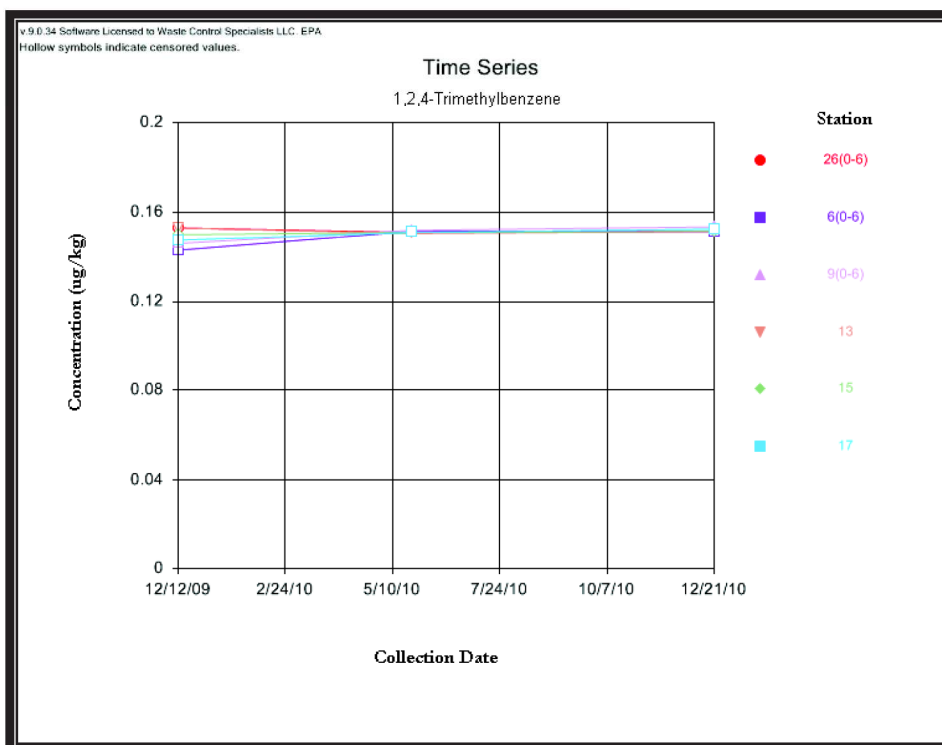


Figure 6-90: 1,2,4-Trimethylbenzene Soil Sample Results (0-2" and 0-6").

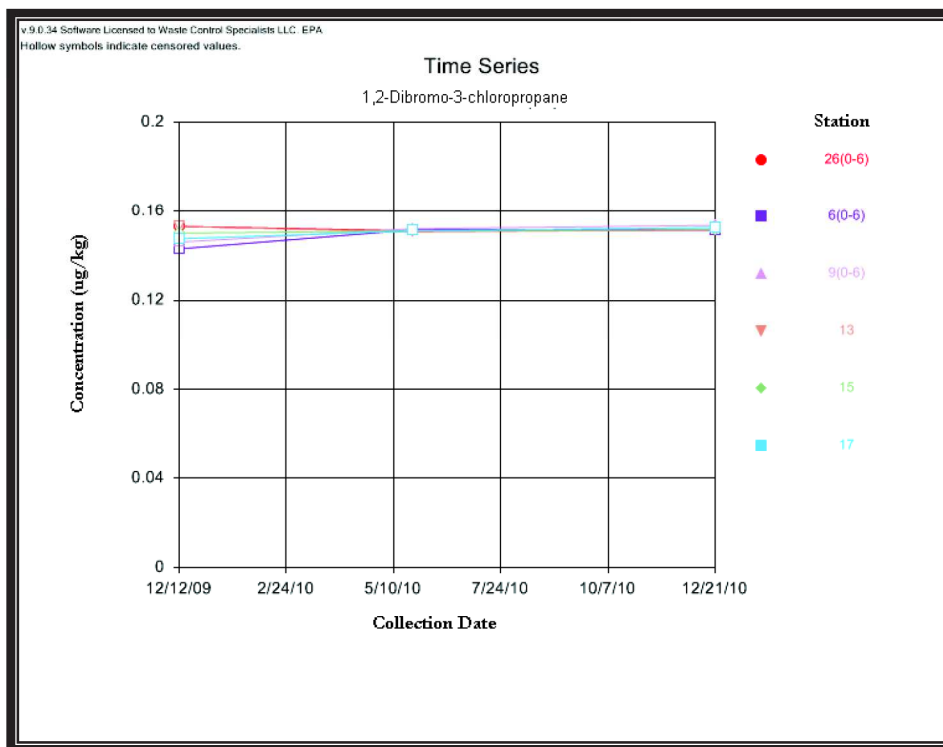


Figure 6-91: 1,2-Dibromo-3-chloropropane Soil Sample Results (0-2" and 0-6").

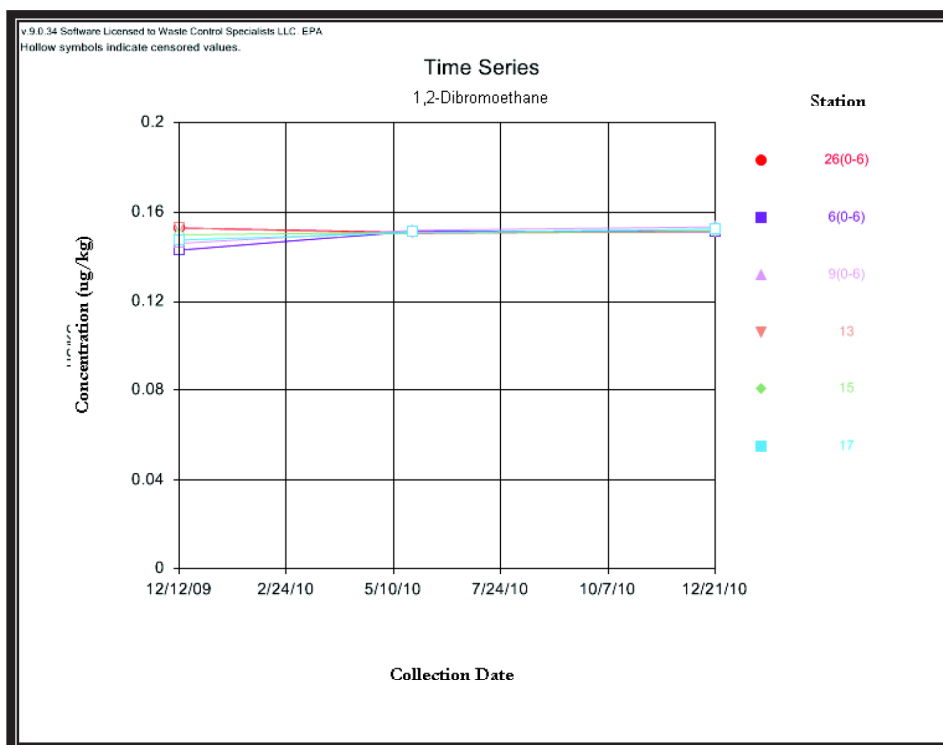


Figure 6-92: 1,2-Dibromomethane Soil Sample Results (0-2" and 0-6").

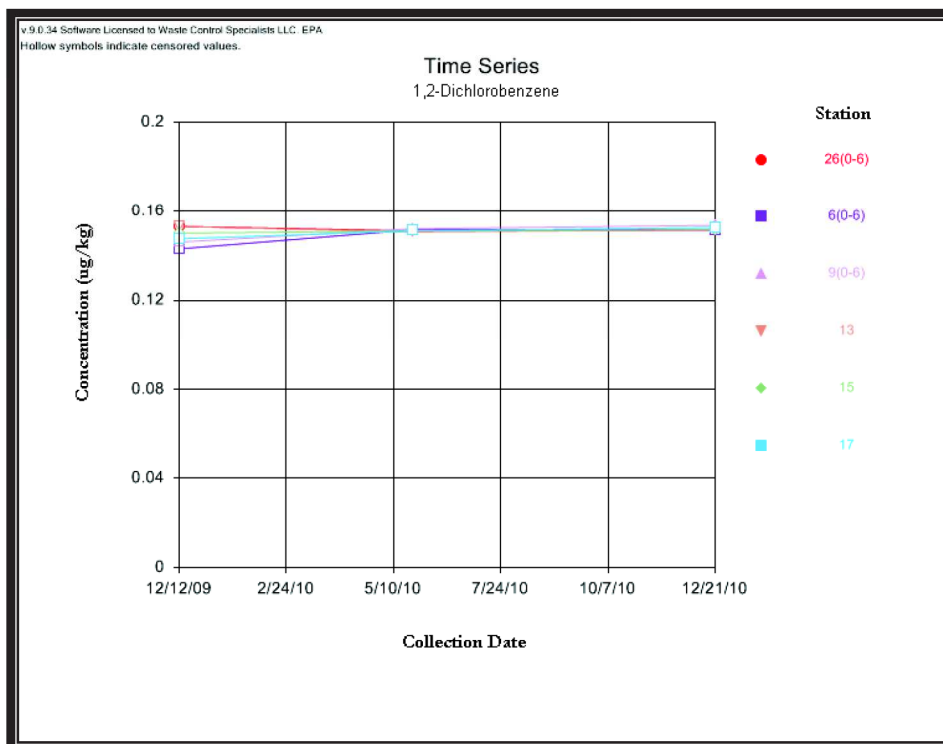


Figure 6-93: 1,2-Dichlorobenzene Soil Sample Results (0-2" and 0-6").

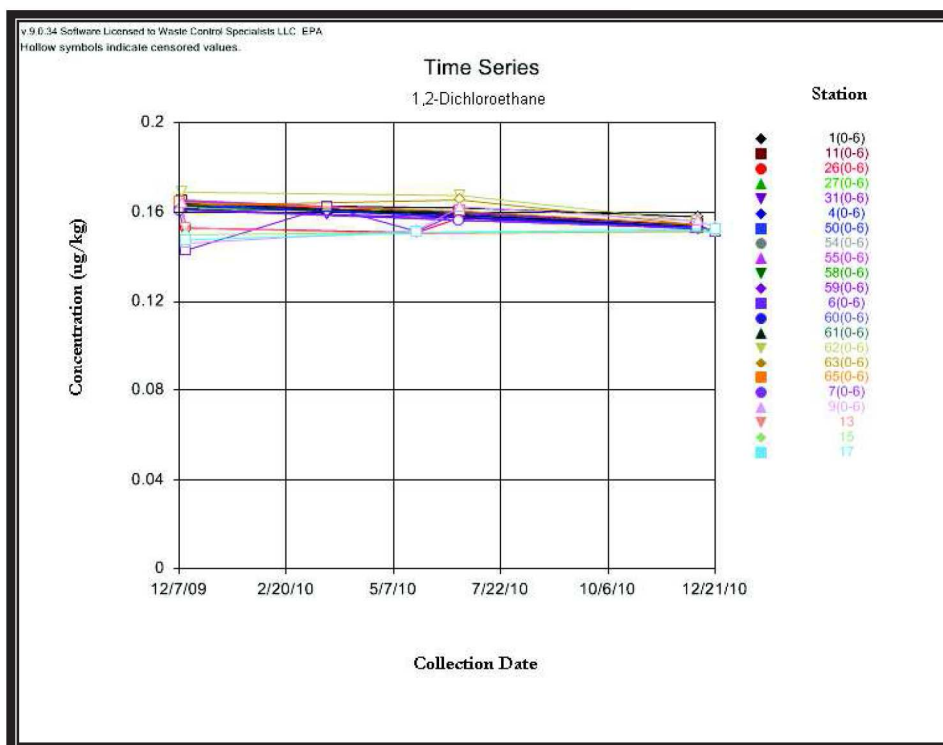


Figure 6-94: 1,2-Dichloroethane Soil Sample Results (0-2" and 0-6").

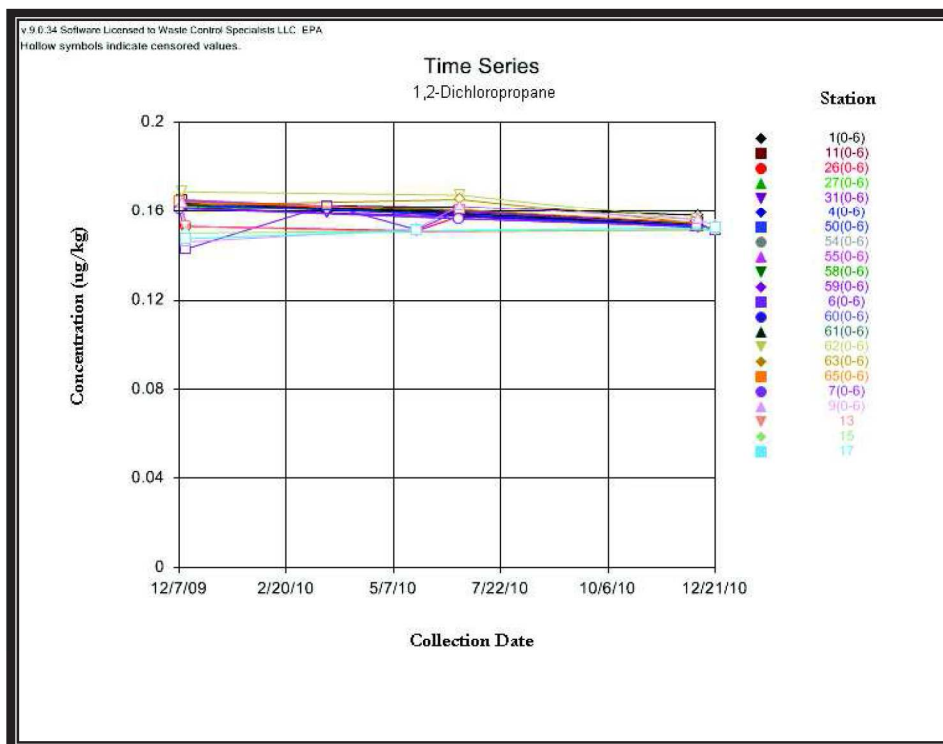


Figure 6-95: 1,2-Dichloropropane Soil Sample Results (0-2" and 0-6").

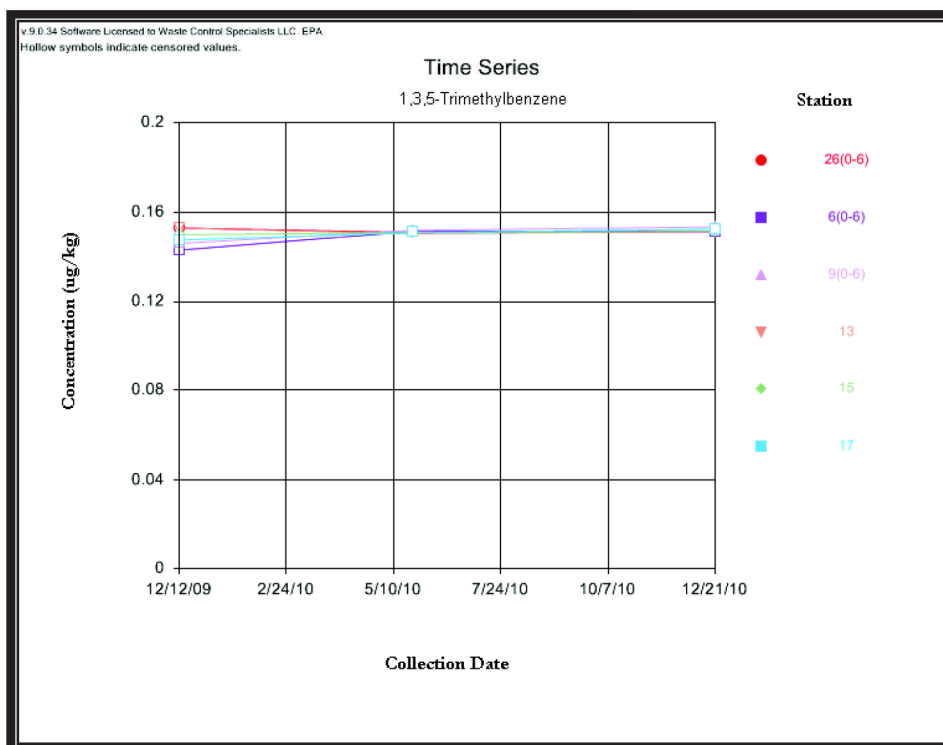


Figure 6-96: 1,3,5-Trimethylbenzene Soil Sample Results (0-2" and 0-6").

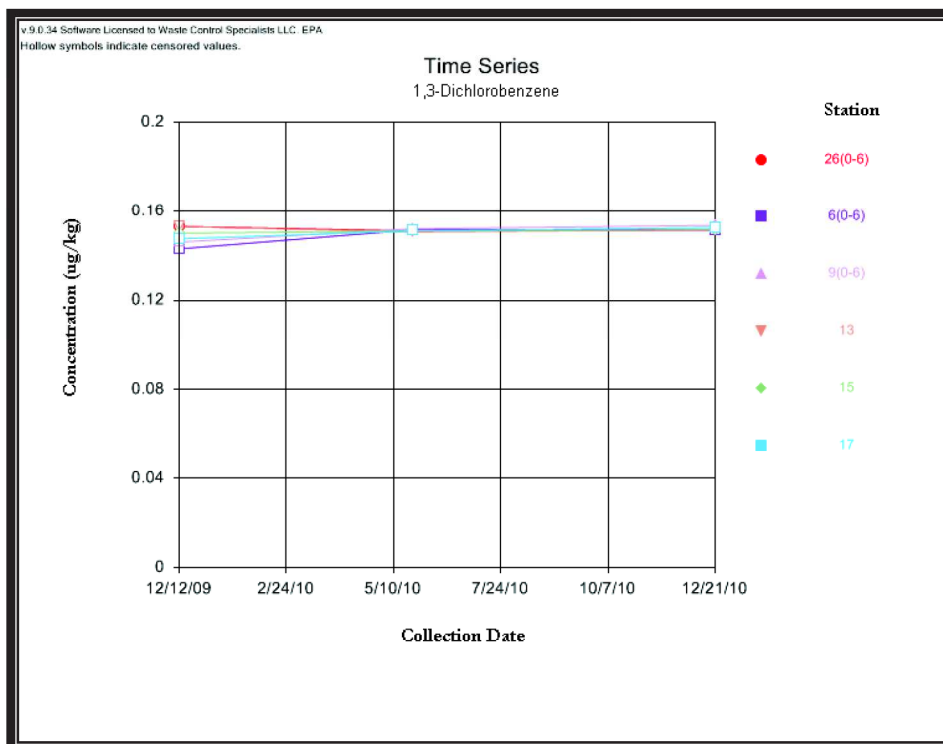


Figure 6-97: 1,3-Dichlorobenzene Soil Sample Results (0-2" and 0-6").

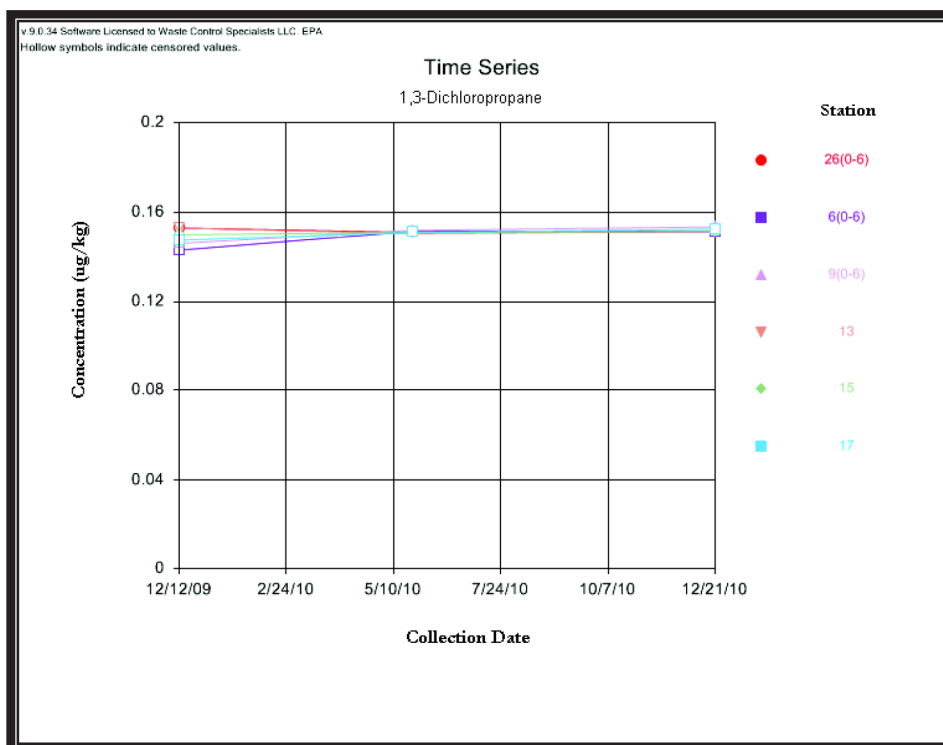


Figure 6-98: 1,3-Dichloropropane Soil Sample Results (0-2" and 0-6").

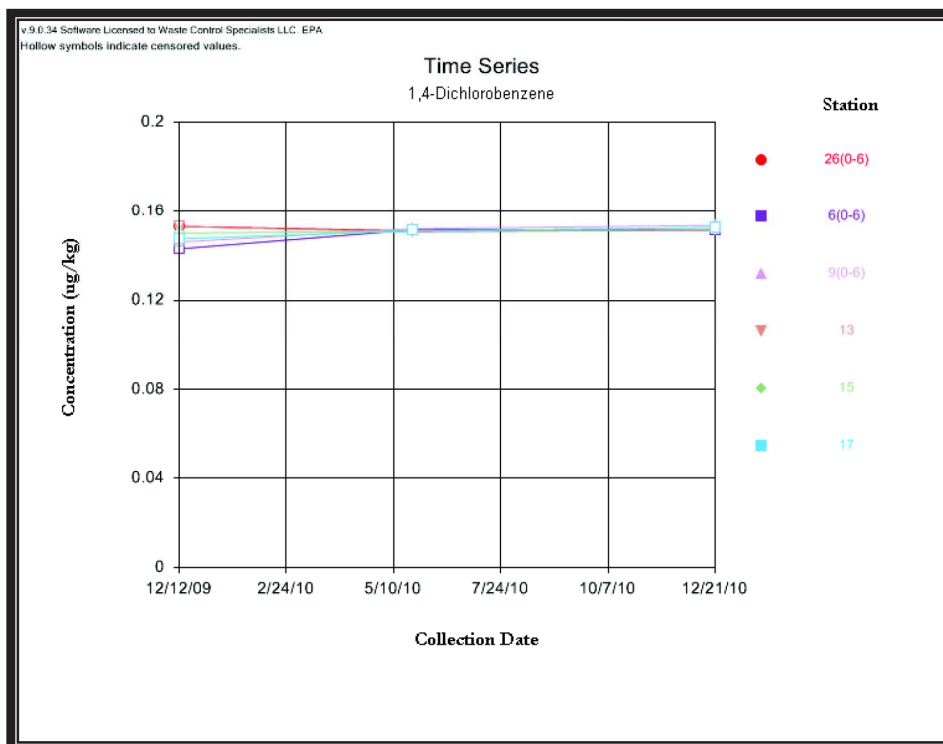


Figure 6-99: 1,4-Dichlorobenzene Soil Sample Results (0-2" and 0-6").

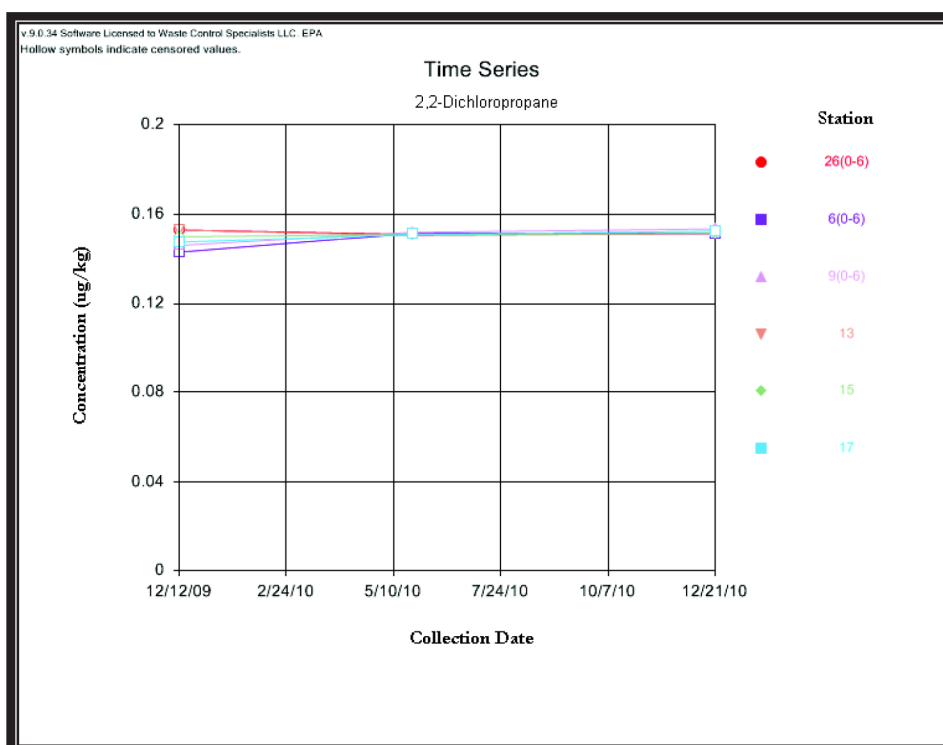


Figure 6-100: 2,2-Dichloropropane Soil Sample Results (0-2" and 0-6").

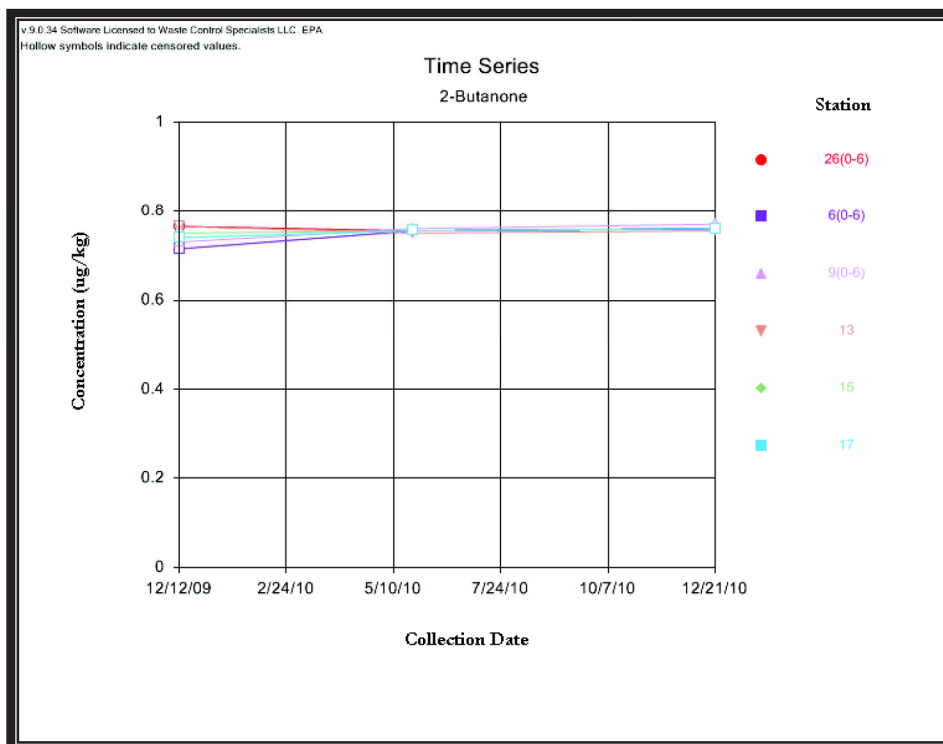


Figure6- 101: 2-Butanone Soil Sample Results (0-2" and 0-6").

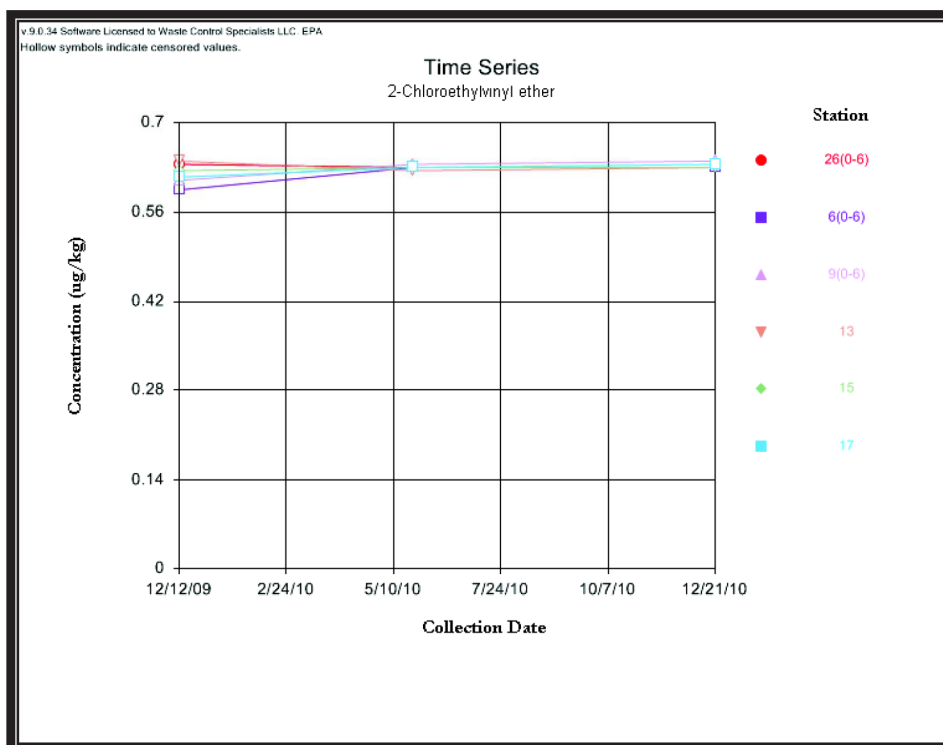


Figure 6-102: 2-Chloroethylvinyl Ether Soil Sample Results (0-2" and 0-6").