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First Semester 2015
Compliance Monitoring Report
Lawrence Livermore National Laboratory
Site 300

Technical Editors

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M. Buscheck*

Contributing Authors

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September 30, 2015

*Weiss Associates, Emeryville, California

Environmental Restoration Department

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1. Introduction

This Compliance Monitoring Report (CMR) summarizes the Lawrence Livermore National Laboratory (LLNL) Site 300 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Action compliance monitoring activities performed during January through June 2015. The report is submitted in compliance with the Compliance Monitoring Plan (CMP)/Contingency Plan (CP) for Environmental Restoration at Lawrence Livermore National Laboratory Site 300 (Dibley et al., 2009a) and CMP/CP Addendum (MacQueen et al., 2013).

During the reporting period of January through June 2015, approximately 3.7 million gallons of ground water and 37 million cubic feet of soil vapor were treated at Site 300, removing approximately 1.8 kilograms (kg) of volatile organic compounds (VOCs), 18 grams (g) of perchlorate, 450 kg of nitrate, 26 g of Research Department Explosive (RDX), 3.9 g of a mixture of tetrabutyl orthosilicate (TBOS) and tetrakis (2-ethylbutyl) silane (TKEBS) and 1.9 g of total uranium (Table Summ-1).

Since remediation began in 1991, approximately 430 million gallons of ground water and 957 million cubic feet of soil vapor have been treated, removing approximately 610 kg of VOCs, 1.5 kg of perchlorate, 15,000 kg of nitrate, 2.1 kg of RDX, 9.5 kg of TBOS/TKEBs, and 0.023 kg of total uranium (Table Summ-2).

2. Extraction and Treatment System Monitoring and Ground and Surface Water Monitoring Programs

Section 2 presents the monitoring results for the Site 300 remediation systems, ground water monitoring network, and surface water sampling and analyses. These results are presented and discussed by operable unit (OU) as follows:

2.1. General Services Area OU 1
2.2. Building 834 OU 2
2.3. Pit 6 Landfill OU 3
2.4. High Explosives Process Area (HEPA) OU 4
2.5. Building 850/Pit 7 Complex OU 5
2.6. Building 854 OU 6
2.7. Building 832 Canyon OU 7
2.8. Site-Wide OU 8 (Building 833, Building 801/Pit 8, Building 845/Pit 9, and Building 851)

The locations of the Site 300 OUs 1 through 8 are shown on Figure 2-1. The Pit 2, 8, and 9 Landfills (OU 8) are discussed in Section 3.

In accordance with the revised 2009 CMP/CP requirements, post-only concentration maps and isoconcentration contour maps depicting primary and secondary contaminants of concern (COC) data will be presented in the annual CMR report along with hydraulic capture zones for

all hydrostratigraphic units (HSUs) where ground water elevation and concentration data are contoured.

Treatment facility operations and maintenance issues that occurred during first semester 2015 and influent and effluent analytical data collected during first semester 2015 are included in this report. Treatment facility pH data collected during first semester 2015 are presented in Appendix A. Ground and surface water monitoring analytical data and ground water elevation measurements for the entire calendar year 2015 will be presented in the annual report. Details pertaining to one new well installed during first semester 2015 are presented in Table 2-1. Analytical data from the analysis of soil samples will be presented in the annual report. An acronym list is located in the Table Section of this report.

During first semester 2015, shallow water-bearing zones throughout Site 300 continued to be dewatered by pumping extraction wells and prevailing drought conditions.

In this report, concentrations for most organic compounds are reported in micrograms per liter (µg/L). The primary exception is nitrate, which is reported in milligrams per liter (mg/L).

2.1. General Services Area (GSA) OU 1

The GSA OU consists of the Eastern and Central GSA areas.

The source of contamination in the Eastern GSA was abandoned debris burial trenches that received craft shop debris. Leaching of solvents in the debris resulted in the release of volatile organic compounds (VOCs) to ground water.

A ground water extraction and treatment system (GWTS) was operated in the Eastern GSA from 1991 to 2007 to remove VOCs from ground water. VOC-contaminated ground water was extracted from three wells (W-26R-03, W-25N01 and W-25N-24), located downgradient of the debris burial trenches, at a combined flow rate of 45 gallons per minute (gpm).

Remediation efforts in the Eastern GSA successfully reduced concentrations of trichloroethene (TCE) and other VOCs in ground water to below their respective Maximum Contaminant Level (MCL) cleanup standards set in the GSA Record of Decision (ROD) (United States [U.S.] Department of Energy [DOE], 1997). The Eastern GSA ground water extraction and treatment system was shut off on February 15, 2007 with the U.S. Environmental Protection Agency (EPA), Regional Water Quality Control Board (RWQCB) and California Department of Toxic Substances Control (DTSC) approval. As required by the GSA ROD, ground water monitoring was conducted for five years after treatment facility shutdown to determine if VOC concentrations rose or "rebounded" above MCL cleanup standards. The results of the monitoring, indicating that VOC concentrations had remained below cleanup standards during the five-year post shutdown-monitoring period, were presented at the February 24, 2012 Remedial Project Manager's (RPM) Meeting. The regulatory agencies agreed that cleanup of the Eastern GSA was complete, monitoring and reporting could cease, and that close out documentation should be submitted. Therefore, the Eastern GSA is no longer discussed in the CMRs (Dibley et al., 2012).

At the Central GSA, chlorinated solvents, mainly TCE, were historically used as degreasing agents in craft shops, such as Building 875. Rinse water from these degreasing operations was disposed of in dry wells. Typically, the dry wells were gravel-filled holes about three to four feet

(ft) deep and two ft in diameter. The Central GSA dry wells were used until 1982. In 1983 and 1984, these dry wells were decommissioned and excavated.

The Central GSA GWTS has been operating since 1992 removing VOCs from ground water. The current ground water extraction wellfield consists of eight wells (W-7I, W-7O, W-7P, W-7R, W-872-02, W-873-07, W-875-07 and W-875-08). The entire extraction wellfield contributed to the volumes extracted during first semester 2015. There was a substantial increase in volumes of water extracted from W-7O and W-7P, which will be discussed in more detail below. The combined flow rates increased to an average rate of 9.4 gpm, with a high of 11.1 gpm in April. The Central GSA GWTS also treated water from the Building 830-Distal South (830-DISS) facility. The current ground water extraction wellfield from 830-DISS connected to the Central GSA GWTS consists of W-830-2216, W-830-51, W-830-52 and W-830-53. The current GWTS configuration includes particulate filtration, air stripping to remove VOCs from extracted water, and granular activated carbon (GAC) to treat vapor effluent from the air stripper. Treated ground water is discharged to the surrounding natural vegetation using misting towers.

The Central GSA soil vapor extraction and treatment system (SVTS) began operation in 1994, in the GSA adjacent to the Building 875 dry well contaminant source area, removing VOCs from soil vapor. Soil vapor is currently extracted from seven wells (W-7I, W-875-07, W-875-08, W-875-09, W-875-10, W-875-11 and W-875-15) at a combined total flow rate of approximately 33 to 37 standard cubic feet per minute (scfm). This flow rate has been fairly consistent over the operational history of this system. Simultaneous ground water extraction in the vicinity lowers the elevation of the water table and maximizes the volume of unsaturated soil influenced by vapor extraction. The current SVTS configuration includes a water knockout chamber, a rotary vane blower, and four 140-lb vapor-phase GAC columns arranged in series. Treated vapors are discharged to the atmosphere under a regulatory permit from the San Joaquin Valley Unified Air Pollution Control District.

A map of the Central GSA, showing the locations of monitor and extraction wells and treatment facilities is presented on Figure 2.1-1.

2.1.1. GSA Ground Water and Soil Vapor Extraction and Treatment System Operations and Monitoring

This section is organized into five subsections: facility performance assessment; operations and maintenance issues; compliance summary; and sampling plan evaluation and modifications.

2.1.1.1. GSA Facility Performance Assessment

The monthly ground water and soil vapor discharge volumes and rates and operational hours for first semester 2015 are summarized in Table 2.1-1. The total volume of ground water and vapor extracted and treated and masses removed during the reporting period are presented in Table Summ-1. The cumulative volume of ground water and soil vapor treated and discharged and masses removed are summarized in Table Summ-2. Analytical results for influent and effluent samples collected during first semester 2015 are presented in Table 2.1-2. The pH measurement results are presented in Appendix A.

2.1.1.2. GSA Operations and Maintenance Issues

The following maintenance and operational issues interrupted continuous operations of the Central GSA GWTS and SVTS during first semester 2015:

- The GWTS was offline for freeze protection from the start of the first semester until March 16, 2015. During the shutdown period, several wells underwent maintenance including replacement of flow meters and pump tubing.
- On March 16, the pump in well W-7P was removed, pump tubing was replaced, and the pump reinstalled at a deeper depth in the well, resulting in a lower intake from 20 to 32.2 ft below measuring point.
- The GWTS was restarted on March 16 and compliance samples collected on March 17. On March 19, the sample results indicated the presence of TCE in the effluent sample at a concentration of 0.57 µg/L; slightly above the 0.5 µg/L effluent limit. A second effluent verification sample was collected on March 19, and the treatment system was then shut down pending receipt of the second sample results. No VOCs were detected in this sample. The GWTS was then restarted on March 23 and an additional sample collected on March 24. No VOCs were detected in this March 24 sample. An influent flow rate of 14 gpm, which was more than twice the flow rates measured in 2014, coupled with reduced air flow in the stripper, reduced the efficiency of the stripper to remove all the VOCs. Maintenance was performed on the stripper.
- The GWTS was offline from April 27 until May 11 due to electrical connection problems at the misting towers. The system was restarted with a different misting head configuration and compliance samples were collected on May 12.
- The GWTS was shut down on May 13 due to another detection of TCE (1.3 µg/L) in the effluent samples collected on May 12. Additional assessments were performed on the air stripper, and air flow rates were increased. The GWTS was restarted on May 20 for resampling and again shut down pending analytical results.
- Additional system inspections discovered partial clogging of the air inlet lines, which was believed to be the cause of the performance problems. The lines were cleared and the GWTS was restarted on May 26, and another effluent sample was collected. The GWTS was again shut down pending analytical results. No VOCs were detected in the May 20 or May 26 samples, so the GWTS was restarted on June 1, 2015.
- Electrical problem at the misting towers caused the GWTS to shut down on June 2 and again on June 4, and the system remained down for the remainder of the reporting period.

2.1.1.3. GSA Compliance Summary

Although TCE was detected in the effluent sample collected on May 12 at a concentration of 1.2 µg/L, this did not exceed the daily discharge limit of 5.0 µg/L of total VOCs. The monthly median VOC effluent discharge limit of <0.5 µg/L was also met with the collection of additional effluent samples with VOC concentrations below 0.5 µg/L. Therefore, the Central GSA GWTS operated in compliance with the RWQCB Substantive Requirements for Wastewater Discharge

during first semester 2015. The Central GSA SVTS system operated in compliance with San Joaquin Valley Air Pollution Control District permit limitations.

2.1.1.4. GSA Facility Sampling Plan Evaluation and Modifications

The Central GSA treatment facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The treatment facility sampling and analysis plan is presented in Table 2.1-3. No modifications were made to the plan during this reporting period.

2.1.1.5. GSA Treatment Facility and Extraction Wellfield Modifications

No modifications were made to the Central GSA GWTS, SVTS, or the extraction wellfield during this reporting period.

2.1.2. GSA Surface Water and Ground Water Monitoring

The sampling and analysis plan for ground water monitoring at the Central GSA is presented in Table 2.1-4. This table delineates and explains deviations from the sampling plan. The sampling and analysis plans for the three Eastern GSA offsite water-supply wells and the three Eastern GSA wells retained for CMP monitoring downgradient of the Central GSA, have been incorporated into Table 2.1-4.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; a total of 10 required analyses were not performed in 10 different wells because the wells were dry or there was insufficient water to collect the samples, and one required analysis was not performed for a well due to an inoperable pump that has since been replaced.

2.1.3. GSA Remediation Progress Analysis

This section is organized into four subsections: mass removal; analysis of contaminant distribution and concentration trends; remediation optimization evaluation; and performance issues.

2.1.3.1. GSA Mass Removal

The monthly ground water and soil vapor mass removal estimates for first semester 2015 are summarized in Table 2.1-5. The total mass removed during the reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

2.1.3.2. GSA Contaminant Concentrations and Distribution

At the Central GSA, VOCs are the only COCs in ground water and soil vapor. TCE is the most prevalent VOC, comprising approximately 90% of the total VOCs. Other VOC COCs include tetrachloroethene (PCE), cis-1,2-dichloroethene (cis-1,2-DCE), 1,1-dichloroethene (1,1-DCE), 1,1,1-trichloroethane (TCA), benzene, bromodichloromethane, and chloroform. The HSUs in the Central GSA are the: Qt-$Tnsc_1$ HSU (western part of the Central GSA), Qal-$Tnbs_1$ HSU (eastern part of the Central GSA), and underlying Upper and Lower $Tnbs_1$ HSUs.

Dry Well Pad Area

A VOC plume is present in Qt-$Tnsc_1$ and Qal-$Tnbs_1$ HSU ground water in the Central GSA dry well pad area. The highest VOC and TCE concentrations have been detected in wells screened in the Qt-$Tnsc_1$ HSU within the Building 875 dry pad area. Prior to remediation, the

historic maximum total VOC (mostly TCE) concentration detected in Central GSA ground water was 272,000 µg/L in a bailed ground water sample collected during drilling of the Building 875 dry well pad area extraction well W-875-07 in March 1992. Total VOC concentrations in the Building 875 dry well area have decreased to a first semester 2015 maximum of 450 µg/L (W-875-07, April). While most of the VOCs detected in the Building 875 dry well area consist of TCE, other VOCs in this area detected during the reporting period included PCE, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, and 1,1-DCA. Of these VOCs, only TCE, PCE, and cis-1,2-DCE were present at concentrations that significantly exceeded their MCL cleanup standards while 1,1-DCE and 1,1-DCA were present at concentrations slightly above their MCL cleanup standards. During the reporting period, trichlorofluoromethane (Freon 11), bromodichloromethane, and chloroform were not detected in this area.

TCE concentrations have decreased from a historic maximum of 240,000 µg/L (W-875-07, 1993) to a first semester 2015 maximum of 370 µg/L (same well, April). PCE concentrations have decreased from a historic maximum of 25,000 µg/L (W-875-07, 1993) to a first semester 2015 maximum of 23 µg/L (W-7I, March). Cis-1,2-DCE concentrations have decreased from a historic maximum of 16,000 µg/L (W-7I, 1993) to a first semester 2015 maximum of 55 µg/L (W-875-08, April). Concentrations of 1,1-DCE have decreased from a historic maximum of 860 µg/L (W-7I, 1993) to a first semester 2015 maximum of 6.4 µg/L (W-875-08, April), the only detection of 1,1-DCE above the MCL cleanup standard in this area. Concentrations of 1,2-dichloroethane (1,2-DCA) have decreased from a historic maximum of 38 µg/L (W-875-08, 1993 and W-7I, 1993) to below the reporting limit in this area (as well as the entire OU). 1,1-dichloroethane (1,1-DCA) concentrations have decreased from a historic maximum of 38 µg/L (W-7I, 1993) to a first semester 2015 maximum of 0.72 µg/L (W-7I, April), well below its MCL cleanup standard. Overall, a decreasing trend of VOC concentrations in ground water continued in first semester 2015, in the dry well pad area.

During first semester 2015, TCE soil vapor concentrations in the Building 875 dry well pad area (wells W-7I, W-875-07, W-875-08, W-875-09, W-875-10, W-875-11, W-875-12 and W-875-15 ranged from 0.0075 to 0.33 parts per million on a volume per volume basis ($ppm_{v/v}$). These vapor concentrations have decreased significantly from the historic maximum TCE vapor concentration of 530 $ppm_{v/v}$ detected in extraction well W-875-07, in 1994.

Outside the Dry Well Pad Area

Outside the Building 875 dry well pad area, wells monitor the (1) Qt-$Tnsc_1$ and the Qal-$Tnbs_1$ HSUs, (2) Upper $Tnbs_1$ HSU and (3) Lower $Tnbs_1$ HSU.

Qt-$Tnsc_1$ and Qal-$Tnbs_1$ HSUs

For monitor wells screened in the Qt-$Tnsc_1$ and the Qal-$Tnbs_1$ HSUs, the historic maximum total VOC concentration was detected in well W-7O (screened in the Qt-$Tnsc_1$ HSU) at 920 µg/L (1994) declining to 96 µg/L (April) representing the first semester 2015 maximum total VOC concentration detected in wells outside the Building 875 dry well area. Most of VOCs detected for both maxima in well W-7O consisted of TCE (870 µg/L in 1994 and 87 µg/L in March 2015) and these represent the historic and first semester 2015 maximum TCE concentrations detected in area wells. During first semester 2015, VOCs detected consisted primarily of TCE, with minor concentrations of PCE, 1,1-DCE, cis-1,2-DCE, trans-1,2-dichloroethene (trans-1,2-DCE) and Freon 11. Of these VOCs, only TCE and PCE (at 6.7 µg/L) were present above their MCL cleanup standards of 5 µg/L.

Upper $Tnbs_1$ HSU

One monitor well is screened in the Upper $Tnbs_1$ HSU, W-873-01. This well has never had VOCs detected above the reporting limit since installation in 1988.

Lower $Tnbs_1$ HSU

Five monitor wells are screened in the deeper Lower $Tnbs_1$ HSU. The historic maximum total VOC concentration was detected in well W-7G at 47 µg/L (primarily TCE, 1989) declining to less than the reporting limit in all five wells, during first semester 2015. No VOCs above the reporting limit have been detected in Lower $Tnbs_1$ Central GSA wells since 2001.

South of the Site 300 Boundary

South of the Site 300 boundary, 17 wells monitor the (1) Qt-$Tnsc_1$ HSU, (2) Upper $Tnbs_1$ HSU, and (3) Lower $Tnbs_1$ HSU.

South of the Site 300 boundary, seven monitor wells and two guard wells are screened in the Qt-$Tnsc_1$ HSU. During first semester 2015, total VOCs (mostly TCE) were detected in only two Qt-$Tnsc_1$ HSU offsite monitor wells, W-35A-01 (64 µg/L, June) and W-35A-10 (15 µg/L, June). The historic maximum total VOC concentration observed in Qt/$Tnsc_1$ HSU ground water south of the Site 300 boundary was detected in well W-35A-01 at 545 µg/L (comprised of 510 µg/L TCE and 30 µg/L PCE, 1991) declining to 64 µg/L (mostly TCE, June 2015), primarily consisting of TCE (58 µg/L) and PCE (3.9 µg/L). Of these VOCs, only TCE was detected above its MCL cleanup standard (5 µg/L).

During the reporting period, well W-35A-10 yielded a maximum total VOC concentration of 15 µg/L (June), comprised of TCE (9.8 µg/L) and Freon 11 (5.3 µg/L). The historic maximum total VOC concentration in this well was 86 µg/L (1994). During the reporting period, no VOCs were detected above their reporting limits in the remaining Qt/$Tnsc_1$ HSU Central GSA wells located south of the Site 300 boundary including guard wells W-35A-08 and W-35A-14, neither of which has had detectable VOCs since their construction in 1994.

Upper $Tnbs_1$ HSU

During first semester 2015, no VOCs were detected in the three monitor wells (W-35A-05, -12 and -13) screened in the Upper $Tnbs_1$ HSU, south of the Site 300 boundary. VOCs were last detected in this HSU south of the Site 300 boundary in 1996 (2.4 µg/L TCE, W-35A-13).

Lower $Tnbs_1$ HSU

No VOCs above the reporting limit were detected in the five Lower $Tnbs_1$ Central GSA wells located south of the Site 300 boundary during first semester 2015. VOCs have not been detected in this HSU south of the Site 300 boundary since 2001 (CDF1, 1.96 µg/L, the historic maximum, and CON1, 1.3 µg/L).

2.1.3.3. GSA Remediation Optimization Evaluation

Ground water extraction and ongoing drought conditions are expected to continue to lower the water table within the GSA OU. During first semester 2015, the combined extraction flow rates increased to an average rate of 9.4 gpm, with a high of 11.1 gpm in April 2015. By contrast, the average combined flow rate was 2.3 gpm during first semester 2014. The higher extraction volumes over the first six months of 2015, especially from wells W-7O and W-7P, were attributable to (1) higher water levels following a long 3-1/2 month winter (freeze protection) facility shutdown period along with some recharge from rain events that occurred in

December 2014, and (2) well head maintenance during the shutdown period including replacement of flow meters and pump tubing and significant lowering of the pump intake allowing for sustained pumping rates in well W-7P.

At the Central GSA, ground water extraction continues to capture the highest concentrations in ground water. Remediation efforts have reduced VOC concentrations in Central GSA ground water from a historic maximum of 272,000 µg/L in 1992 (W-875-07) to a first semester 2015 maximum of 450 µg/L (W-875-07, April). At the eastern edge of the VOC plume, VOC concentrations continue to decrease and remain low in monitor wells W-26R-06 and W-26R-11.

Ground water remediation continues to reduce VOC concentrations in two offsite monitor wells, W-35A-01 and W-35A-10, located within 50 and 100 feet of the southern site boundary, respectively. Well W-35A-01 appears to be within the hydraulic capture zone of the Central GSA extraction well W-875-08 based on recent capture zone analysis. Although well W-35A-10 is likely not within the hydraulic capture zone of the Central GSA extraction wellfield, VOC and TCE concentrations continue to exhibit a long-term declining trend. TCE concentrations in this well, with a historic maximum of 86 µg/L (1994) remained low at 9.8 µg/L in June 2015; just above its 5 µg/L MCL cleanup standard. No other VOCs were detected above their MCL cleanup standards in W-35A-10.

Historically and during first semester 2015, substantially more VOC mass was removed by soil vapor extraction than by ground water extraction. Of the 201 grams (g) of VOCs removed during first semester 2015 at the Central GSA treatment facility, 140 g (70%) were removed in the vapor phase. For ground water and soil vapor combined, an approximate 5% increase in VOC mass removed occurred in first semester 2015 (201 g) compared with first semester 2014 (190 g). The volume of VOC mass removed by ground water extraction during first semester 2015 (61 g) was three times higher than during first semester 2014 (20 g), a result of the increased volume of ground water extracted during first semester 2015. A comparison from first semester 2014 to first semester 2015 indicates the volume of treated soil vapor increased by approximately 12% from 8.30 million cubic feet (cf) (first semester 2014) to 9.27 million cf (first semester 2015) and the volume of treated ground water increased by 264% from 243,000 gallons (gal) (first semester 2014) to 642,000 gal (first semester 2015). The increase in treated ground water volume is primarily due the increase in available water from extraction wells W-7P (which had its pump intake lowered from 20 to 32.7 ft below the measuring point of the well), W-7O (which dried out in June 2014) and W-7R (pumped approximately 30% more water during first semester 2015 compared to first semester 2014) and the overall increasing ground water table following a long 3-1/2 month winter (freeze protection) facility shutdown period along with limited recharge that occurred in December 2014. Table Summ-1 lists the mass removed by each individual treatment facility.

The third GSA Five-Year Review (Valett et al., 2011) included a recommendation to track VOC concentrations in monitor well W-889-01 (located in the northern plume area) and if concentrations increase, the well should be considered for conversion to an extraction well. In 2012, a new extraction well (W-CGSA-2708) was installed in the northern plume area, in lieu of converting well W-889-01 to an extraction well. Due to the dense infrastructure in the area that precluded constructing a pipeline from the new extraction well to the Central GSA treatment facility, DOE is currently constructing a new treatment facility (CGSA-North) to address VOCs in the northern plume. During 2013, a new injection well (W-CGSA-2907) was installed in the vadose zone portion of the Qt-$Tnsc_1$ HSU, upgradient of planned extraction well W-CGSA-2708.

The well was developed and tested during first semester 2014; test results indicate this well has sufficient capacity to accept ground water extracted from W-CGSA-2708. During first semester 2015, total VOC concentrations in monitor well W-889-01 were 8.9 µg/L (June) continuing a declining trend since 1998 (75 µg/L) and 2011 (28 µg/L).

2.1.3.4. GSA OU Remedy Performance Issues

Over the long term, ground water extraction activities and prevailing drought conditions continued to lower the ground water table and dewater the Central GSA dry well pad area, resulting in a decreased volume of ground water that can be extracted for treatment. Otherwise, there were no new issues that affect the performance of the cleanup remedy for the GSA OU during this reporting period. The remedy continues to be effective and protective of human health and the environment, and to make progress toward cleanup.

2.2. Building 834 OU 2

The Building 834 Complex has been used to test the stability of weapons and weapon components under various environmental conditions since the 1950s. Past spills and piping leaks in the OU have resulted in soil and ground water contamination with VOCs and TBOS/TKEBs. Nitrate concentrations in Building 834 ground water that exceed the MCL cleanup standard (45 mg/L) are likely caused by a combination of natural sources and septic system leachate. Also, a former underground diesel storage tank released diesel to the subsurface.

The Building 834 OU is informally divided into three areas: the core, leachfield (septic system), and distal areas (Figure 2.2-1). The core area generally refers to the vicinity of the buildings and test cells in the center of the Building 834 Complex where the majority of contaminant releases occurred. The leachfield area is located immediately southwest of the core area. The distal (T2) area refers to the area downgradient (south) of the core and leachfield areas. A map of Building 834 OU showing the locations of monitor and extraction wells and treatment facilities is presented on Figure 2.2-1.

The Building 834 GWTS and SVTS began operation in 1995 and 1998, respectively. These systems are located in the Building 834 core area. The ground water extraction wellfield removes VOCs, nitrate, and TBOS/TKEBs from ground water within the Tpsg HSU and the SVTS removes VOCs from soil vapor. Due to the very low ground water yield from individual extraction wells (<0.1 gpm), the GWTS and SVTS have been operated simultaneously in batch mode. Although the GWTS can be operated alone, the SVTS is not operational without ground water extraction due to the upconing of the ground water in the wells that covers the well screens and prevents soil vapor flow until the water table is sufficiently lowered.

The current extraction wellfield consists of 12 active dual extraction wells for both ground water and soil vapor. Nine extraction wells (W-834-B2, -B3, -D4, -D6, -D7, -D12, -D13, -J1, and -2001) are located within the core area and three (W-834-S1, -S12A, and -S13) within the leachfield area. The GWTS extracts ground water at an approximate combined flow rate of between 0.12 and 0.31 gpm and the SVTS extracts soil vapor at a combined flow rate of approximately 116 to 155 scfm. The current GWTS configuration includes floating hydrocarbon adsorption devices to remove the floating silicon oil, TBOS/TKEBs, and floating diesel (if any), followed by aqueous-phase GAC to remove VOCs, dissolved-phase TBOS/TKEBs, and diesel from ground water. Nitrate-bearing treated effluent is then discharged via a misting tower onto

the landscape for uptake and utilization of the nitrate by indigenous grasses. The current SVTS configuration includes vapor-phase GAC for VOC removal. Treated vapors are discharged to the atmosphere under an air permit issued by the San Joaquin Valley Unified Air Pollution Control District.

Since 2005, a long-term enhanced *in situ* bioremediation treatability test has been conducted at the distal T2 Area. This testing has included biostimulation to transform ground water from oxidizing to reducing conditions and bioaugmentation with KB-1™, a natural non-pathogenic microbial consortium capable of complete dechlorination of TCE to ethene. This long-term test is described in Sections 2.2.3.3 and 2.2.3.4.

Figure 2.2-1 shows the location of wells and treatment facilities in the Building 834 OU.

2.2.1. Building 834 OU Ground Water and Soil Vapor Extraction and Treatment System Operations and Monitoring

This section is organized into four subsections: facility performance assessment; operations and maintenance issues; compliance summary; and sampling plan evaluation and modification.

2.2.1.1. Building 834 OU Facility Performance Assessment

The monthly ground water and soil vapor discharge volumes and rates and operational hours for first semester 2015 are summarized in Table 2.2-1. The total volumes of ground water and vapor extracted and treated and masses removed during the reporting period are presented in Table Summ-1. The cumulative volume of ground water and soil vapor treated and discharged and masses removed are summarized in Table Summ-2. Analytical results for influent and effluent samples collected during first semester 2015 are presented in Tables 2.2-2 through 2.2-4. The pH measurement results are presented in Appendix A.

2.2.1.2. Building 834 OU Operations and Maintenance Issues

The following maintenance and operational issues interrupted continuous operations of the Building 834 GWTS and SVTS during first semester 2015:

- Both the GWTS and SVTS were offline from the start of the reporting period until March 11 for freeze protection.
- Both the GWTS and SVTS were was offline from May 14 until May 18 due to a power outage.
- Both the GWTS and SVTS were taken offline on May 28 to repair the effluent pipeline leading to the misting towers. Both systems were restarted on June 1.
- Both the GWTS and SVTS were again offline from June 5 to June 8 due to a power outage related to a grass fire.

2.2.1.3. Building 834 OU Compliance Summary

The Building 834 GWTS operated in compliance with the RWQCB Substantive Requirements for Wastewater Discharge during first semester 2015. The Building 834 SVTS system also operated in compliance with San Joaquin Valley Air Pollution Control District permit limitations during first semester 2015.

2.2.1.4. Building 834 OU Facility Sampling Plan Evaluation and Modifications

The Building 834 treatment facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The sampling and analysis plan is presented in Table 2.2-5. No modifications were made to the plan during this reporting period.

2.2.1.5. Building 834 OU Treatment Facility and Extraction Wellfield Modifications

No modifications to the treatment facility or to the extraction wellfield were made during this reporting period.

2.2.2. Building 834 OU Ground Water Monitoring

The sampling and analysis plan for ground water monitoring is presented in Table 2.2-6. This table also delineates and explains deviations from the sampling plan.

During this reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions. A total of 69 required analyses in 25 different wells were not performed because the wells were dry or there was insufficient water to collect the samples and a total of three required analyses in one well (W-834-T3) were not performed due to an inoperable pump. The inoperable pump has recently been replaced.

2.2.3. Building 834 OU Remediation Progress Analysis

This section is organized into four subsections: mass removal, analysis of contaminant distribution and concentration trends, remediation optimization evaluation, and performance issues.

2.2.3.1. Building 834 OU Mass Removal

The monthly ground water and soil vapor mass removal estimates for first semester 2015 are summarized in Table 2.2-7. The total mass removed during the reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

2.2.3.2. Building 834 OU Contaminant Concentrations and Distribution

At the Building 834 OU, VOCs (primarily TCE but also PCE, cis-1,2-DCE, 1,1,1-trichloroethane [1,1,1-TCA], and chloroform) are the primary COCs detected in ground water; TBOS/TKEBs and nitrate are the secondary COCs. These COCs have been identified in two shallow HSUs: (1) the Tpsg perched water-bearing gravel zone, and (2) the underlying Tps-$Tnsc_2$ perching horizon.

2.2.3.2.1. VOCs Concentrations and Distribution

Although the overall extent of VOCs in the Building 834 OU ground water and soil vapor have not changed significantly, the maximum concentrations have decreased by more than one order-of-magnitude since remediation began in the mid 1990s. VOCs detected in Building 834 area ground water consist primarily of TCE and cis-1,2-DCE. Other VOCs including PCE, 1,1-DCE, 1,1,2-trichloroethane (1,1,2-TCA), trans-1,2-DCE, 1,1,2-trichloro-1,2,2-trifluoroethane (Freon 113), vinyl chloride, and chloroform as well as ethane and ethene have also been detected, albeit in much lower concentrations during recent years. The compounds cis-1,2-DCE, vinyl chloride, ethane, and ethane are the TCE microbial dechlorination breakdown products under anaerobic conditions.

Core Area

The Building 834 core area continues to exhibit the highest VOC concentrations in ground water and soil vapor. VOC concentrations and distribution in ground water and soil vapor in the Tpsg and Tps-$Tnsc_2$ HSUs in the Building 834 core area are discussed below.

Tpsg HSU

Twenty-six wells (18 monitor and eight dual phase extraction) are screened in the Tpsg HSU, where active remediation has reduced total VOC ground water concentrations from a historic maximum of 1,100,000 µg/L (all TCE, W-834-D5, 1988) to a first semester 2015 maximum of 16,500 µg/L (February, extraction well W-834-C5), located approximately 100 ft south of W-834-D5. Over the past two years, the highest concentrations of total VOCs in core area Tpsg HSU wells, have been observed in well W-834-C5 at 54,000 µg/L (2014) and 60,000 µg/L (2013) illustrating an overall declining trend in total VOCs in the area.

TCE concentrations have decreased from a historic maximum of 1,100,000 µg/L in W-834-D5 (1988) to a first semester 2015 maximum of 11,000 µg/L (February) in well W-834-C5. Since 2013, maximum TCE concentrations in the Tpsg HSU have been observed in this well, along a declining trend, at 34,000 µg/L (2014) and 37,000 µg/L (2013).

In the core area, cis-1,2-DCE and vinyl chloride are microbial dechlorination products of TCE in wells that contain TBOS/TKEBS as co-contaminants. Cis-1,2-DCE concentrations have decreased from a historic maximum of 540,000 µg/L (W-834-D4, 1990) to a first semester 2015 maximum of 5,500 µg/L (February) in well W-834-C5, decreasing from a 2014 maximum of 20,000 µg/L in the same well. During the reporting period, only four core area Tpsg HSU wells had vinyl chloride concentrations above the reporting limit and only one detection in extraction well W-834-D4 (18 µg/L, February) exceeded the MCL cleanup standard (2 µg/L). Very low concentrations of ethene most recently detected in monitor well W-834-J2 (0.74 µg/L, 2012), monitor well W-834-D3 (0.66 µg/L, 2012) and extraction well W-834-B3 (0.27 µg/L, 2012) indicate at least partial degradation under biotic or abiotic processes to a benign end product.

PCE concentrations have decreased from a historic maximum of 10,000 µg/L (W-834-D3, 1993) to a first semester 2015 maximum of 36 µg/L (W-834-C5, February), down from 120 µg/L detected in the same well, in 2014. Although 1,1,1-TCA was detected at a historic maximum of 33,000 µg/L in extraction well W-834-J1 (1991), this compound was not detected above the reporting limit in this or any other well, in the Building 834 OU during first semester 2015, nor in 2014 and 2013. During first semester 2015, the compound 1,1-DCE was not detected in any area wells above its 6 µg/L MCL cleanup level and in only four area wells above the reporting limit. In 2014, this compound was detected in two wells above its 6 µg/L MCL cleanup level, illustrating a recent declining trend for this compound. During first semester 2015, the compounds 1,1,2-TCA, trans-1,2-DCE and Freon 113 did not exceed MCL cleanup standards and were detected at low concentrations or below reporting limits.

During first semester 2015, TCE soil vapor concentrations from the core area soil vapor extraction (SVE) wells ranged from 0.06 to 3.3 $ppm_{v/v}$. The highest detection (3.3 $ppm_{v/v}$) is representative of ongoing vapor extraction operations rather than rebound conditions, as it was detected in extraction well W-834-B3 in June, approximately three months after the resumption of treatment facility operations following the freeze protection shutdown period. TCE vapor concentrations have decreased by three orders-of-magnitude from a pre-remediation maximum core area concentration of 3,200 $ppm_{v/v}$ (extraction well W-834-D4, 1989). Well W-834-D4 is

located approximately 10 feet from well W-834-D5, where the historic maximum ground water VOC concentration in the Tpsg HSU was detected.

The Tpsg HSU in the core area has exhibited declining VOC trends since treatment began in 1995.

Tps-Tnsc$_2$ HSU

In the core area, underlying the Tpsg HSU, the Tps-Tnsc$_2$ HSU continues to yield the highest VOC ground water concentrations in the Building 834 OU and at Site 300. Five wells (four monitor and one dual extraction) are screened in the Tps-Tnsc$_2$ HSU. Total VOC concentrations in this HSU, comprised mostly of TCE, have decreased from a historic maximum of 250,000 µg/L (2002) to a first semester 2015 maximum of 66,000 µg/L (February) and PCE concentrations have decreased from a historic maximum of 7,900 µg/L (2001) to a first semester 2015 maximum of 300 µg/L (February). Both TCE and PCE maxima were in monitor well W-834-A1. First semester 2015 TCE and PCE maxima have also declined from 2014 maxima for both compounds (180,000 µg/L and 940 µg/L, respectively). Chloroform concentrations have decreased from a historic maximum of 42 µg/L (W-834-A1 and monitor well W-834-U1, 2000) to below reporting limits in all core area Tps-Tnsc$_2$ HSU wells for first semester 2015. The historic maximum for cis-1,2-DCE was 11,000 µg/L (W-834-U1, 2009), declining to a first semester 2015 maximum of 3,600 µg/L in the same well.

In a July 2014 sample from well W-834-A1, cis-1,2-DCE was reported at 33,000 µg/L by the analytical laboratory. This measurement was anomalously high, by an order-of-magnitude, compared with historic results and suspect. Previously, the maximum cis-1,2-DCE detection in this well was 9,700 µg/L (February 2008) and typical detections of cis-1,2-DCE have been in the range of 1,500 to 9,000 µg/L since 2010. Furthermore, when the well was previously and subsequently sampled in February 2014 and February 2015, cis-1,2-DCE was detected at 2,200 µg/L and 2,400 µg/L, respectively. Both of these detections are consistent with historic results while the July 2014 result (33,000 µg/L) is not. This well will continue to be monitored for cis-1,2-DCE.

During first semester 2015, vinyl chloride (6.6 µg/L, February) and 1,1-DCE (34 µg/L, February) were detected above their MCL cleanup standards in one well (W-834-U1) while 1,1,2-TCA, trans-1,2-DCE and Freon 113 were detected slightly above the reporting limit in the same well. These compounds were not detected above reporting limits in any other Tps-Tnsc$_2$ HSU wells in the core area.

During the reporting period, TCE soil vapor concentrations from the sole core area Tps-Tnsc$_2$ HSU SVE well W-834-2001 ranged from 0.22 to 0.25 $ppm_{v/v}$. The highest detection (0.25 $ppm_{v/v}$) is likely representative of ongoing vapor extraction operations, not rebound conditions, as it was collected in March, approximately two weeks after the resumption of treatment facility operations following the freeze protection shutdown period. The historic maximum TCE vapor concentration from this well was 30 $ppm_{v/v}$ (April 2011), and representative of rebound conditions following a prolonged period of treatment facility shutdown. Higher vapor concentrations may be observed after an extended rebound period.

Leachfield Area

VOC concentrations and distribution in ground water and soil vapor in the Tpsg and Tps-Tnsc$_2$ HSUs in the Building 834 leachfield area are discussed below.

Tpsg HSU

In the leachfield area, six wells (three monitor and three dual phase extraction) are screened in the Tpsg HSU. Total VOCs in this HSU have decreased from a pre-remediation maximum of 179,200 µg/L (mostly TCE, W-834-S1, 1988) to a first semester 2015 maximum of 5,400 µg/L (almost entirely TCE, February) in monitor well W-834-2113. The first semester 2015 maximum of 5,400 µg/L is also a decline from the 2014 maximum of 9,300 µg/L (almost entirely TCE) detected in W-834-S1. The historic maximum PCE detection was 6,300 µg/L (W-834-S1, 1986) declining to a first semester 2015 maximum of 54 µg/L (June) observed in the same well. Concentrations of cis-1,2-DCE have decreased from a historic maximum of 3,900 µg/L (W-834-S13, 2003) to a first semester 2015 maximum of 89 µg/L (W-834-S1, June). The historic maximum chloroform detection was 950 µg/L (W-834-S1, 1989). During first semester 2015, chloroform was not detected in any leachfield area Tpsg HSU wells. Vinyl chloride, 1,1-DCE, 1,1,2-TCA, trans-1,2-DCE and Freon 113 were also not detected in any leachfield area Tpsg HSU wells, during the reporting period.

During first semester 2015, TCE soil vapor concentrations in the leachfield area Tpsg HSU ranged from 0.39 to 4.1 $ppm_{v/v}$, significantly lower than the 710 $ppm_{v/v}$ maximum pre-remediation concentration measured in 2004 in well W-834-S13. The highest detection (4.1 $ppm_{v/v}$) is representative of ongoing dual extraction operations, not rebound conditions, as it was collected from extraction well W-834-S12A, two weeks after the resumption of treatment facility operations following the freeze protection shut down period.

The Tpsg HSU in the leachfield area has exhibited declining VOC trends since treatment began in 1995.

Tps-Tnsc$_2$ HSU

In the leachfield area, the underlying Tps-Tnsc$_2$ HSU (monitored by two wells, W-834-S8 and -S9) exhibits VOCs concentrations significantly lower than in the overlying Tpsg HSU or in the core area. Total VOC concentrations in Tps-Tnsc$_2$ HSU ground water have decreased from a historic maximum of 16,000 µg/L (entirely TCE, W-834-S8, 1992) to a first semester 2015 maximum of 2,000 µg/L (entirely TCE, W-834-S9, February). Well W-834-S8 was dry and has not been sampled since 2013.

PCE concentrations have declined from a historic maximum of 170 µg/L (W-834-S8, 1993) to a first semester 2015 maximum of 4.2 µg/L (W-834-S9, February). Cis-1,2-DCE concentrations have decreased from a historic maximum of 130 µg/L (W-834-S8, 1991) to a first semester 2015 maximum of 3.5 µg/L (W-834-S9, February). 1,1,1-TCA concentrations have declined from a historic maximum of 260 µg/L (W-834-S8, 1991) to below the reporting limit since 2013. Chloroform concentrations have decreased from a historic maximum of 6.1 µg/L (W-834-S8, 1993) to below the reporting limit since first semester 2013.

The Tps-Tnsc$_2$ HSU in the leachfield area has exhibited declining VOC trends since monitoring began in 1989.

Distal Area

VOC concentrations and distribution in ground water in the Tpsg, Tps-Tnsc$_2$, and Tnbs$_1$ HSUs in the Building 834 distal area are discussed below.

Tpsg HSU

The distal area includes 20 monitor wells completed in the Tpsg HSU. Since 2005, this HSU (in the T2 area) has been the target of a long-term enhanced *in situ* bioremediation treatability study, discussed in Section 2.2.3.4 of this report.

Total VOC concentrations in this area have decreased from a historic maximum of 86,000 µg/L (entirely TCE, well W-834-T2A, 1988) to a first semester 2015 maximum of 4,300 µg/L (entirely TCE, February) in well W-834-2117. This concentration has also declined from the 2014 maximum of 7,600 µg/L (entirely TCE) detected in this well.

PCE concentrations have decreased from a historic maximum of 160 µg/L (W-834-S6, 1987) to a first semester 2015 maximum of 20 µg/L (W-834-2117, February). Except for this well and wells W-834-T2D (13 µg/L, February) and W-834-1824 (0.59 µg/L, February), PCE concentrations were below the reporting limit in all distal area Tpsg HSU wells during the reporting period. Cis-1,2-DCE has decreased from a historic maximum of 6,200 µg/L in W-834-T2 (2008) to a first semester 2015 maximum of 230 µg/L (February) in the same well. 1,1,2-TCA concentrations have decreased from a historic maximum of 200 µg/L (W-834-T2D, 1991) to below the reporting limit in all wells during first semester 2015. Chloroform has decreased from a historic maximum concentration of 270 µg/L (W-834-M1, 1999) to 1.5 µg/L (February 2015) in the same well. This concentration (1.5 µg/L) is far below its MCL cleanup standard of 80 µg/L and was the only chloroform detection above the reporting limit in all distal area Tpsg HSU wells. During first semester 2015, the only vinyl chloride detections above the reporting limit, were observed in wells W-834-T2 (180 µg/L, February) and W-834-1824 (7.8 µg/L, February). These vinyl chloride detections are within the range of concentrations observed in these wells in recent years. In distal area Tpsg HSU wells, in first semester 2015, 1,1-DCE was detected at a very low concentration in one well (W-834-1824) and trans-1,2-DCE, 1,1,2-TCA and Freon 113 were not detected in any wells.

During first semester 2015, the Tpsg HSU in the distal area has continued to exhibit declining VOC trends since monitoring began in 1989.

Tps-Tnsc$_2$ HSU

The underlying Tps-Tnsc$_2$ HSU is monitored by well W-834-2119, which contained a first semester 2015 maximum total VOC concentration of 15,000 µg/L (all TCE, February). After an initial increase between 2005 (when monitoring began) and 2007, VOC concentrations in this well have since been relatively stable in a range between 11,000 µg/L and 16,700 µg/L.

Tnbs$_1$ HSU

In the distal area, the deeper Tnbs$_1$ HSU is monitored by well W-834-T1. VOCs were not detected in first semester 2015 and have not been detected since 1986 and 1987 when very low concentrations (less than 4 µg/L) were detected immediately following well installation and were likely due to some cross contamination from shallow soil, during drilling.

2.2.3.2.2. TBOS/TKEBS Concentrations and Distribution

TBOS/TKEBS concentrations in ground water have decreased from a historic maximum of 7,300,000 µg/L (core area Tpsg HSU monitor well W-834-D3, 1995) to a first semester 2015 maximum of 73 µg/L (core area Tpsg HSU extraction well W-834-B2, February). Over the past

five years, maximum TBOS/TKEBS concentrations in well W-834-D3 ranged from 96,000 µg/L to 13,000 µg/L. Well W-834-D3 contained 25 µg/L of TBOS/TKEBS in February.

In the core area, eight Tpsg HSU wells yielded detectable TBOS/TKEBS during first semester 2015, ranging from 15 to 73 µg/L. This compound is a light, non-aqueous phase liquid (LNAPL) that is found primarily in the core area, with the highest concentrations in the Tpsg HSU. TBOS/TKEBS concentrations differ significantly from one sampling event to the next. Although several attempts have been made to identify and measure TBOS/TKEBS as floating product, it was last observed in some core area wells in the mid-1990s. Wells that contain TBOS/TKEBS as co-contaminants with TCE, generally exhibit the highest concentrations of degradation products, such as cis-1,2 DCE and vinyl chloride.

Because TBOS/TKEBS concentrations in Tpsg HSU wells in the leachfield and distal areas have historically been low or below reporting limits, sampling for TBOS/TKEBS in the leachfield and distal areas are performed biennially, with approximately half the wells sampled during even numbered years and half sampled during odd numbered years. In the leachfield and distal area Tpsg HSU wells sampled during first semester 2015, TBOS/TKEBS concentrations were below reporting limits, except for leachfield area Tpsg HSU extraction well W-834-S13 (29 µg/L, March). Historically, these wells have been below reporting limits for TBOS/TKEBS.

The concentration and extent of TBOS/TKEBS in ground water are greater in the Tpsg HSU than the underlying Tps-Tnsc$_2$ HSU. The historic maximum TBOS/TKEBS detection in the Tps-Tnsc$_2$ HSU is 110 µg/L (W-834-U1, 2009). During the reporting period, TBOS/TKEBS were detected in one well screened in the Tps-Tnsc$_2$ HSU, core area extraction well W-834-2001 (17 µg/L, February). During the reporting period, TBOS/TKEBS remained below the reporting limit in guard well W-834-T1.

2.2.3.2.3. Nitrate Concentrations and Distribution

During first semester 2015, nitrate concentrations in Tpsg HSU ground water exceeded the 45 mg/L MCL cleanup standard in the Building 834 core, leachfield, and distal areas. During the reporting period, nitrate in Tpsg HSU ground water ranged from a maximum concentration of 330 mg/L (February) in core area monitor well W-834-C4 to below the 0.5 mg/L reporting limit.

In the core area, first semester 2015 nitrate concentrations in the Tpsg HSU varied spatially and temporally. This may be due to denitrification associated with the ongoing intrinsic *in situ* biodegradation of TCE. Nitrate concentrations in Tpsg HSU ground water exceeded the 45 mg/L MCL cleanup standard in: (1) 11 core area wells at concentrations ranging from 61 to 330 mg/L, (2) four leachfield area wells at concentrations ranging from 130 to 210 mg/L, and (3) six distal area wells at concentrations ranging from 62 to 310 mg/L. All of these detections were within the historical range of nitrate concentrations observed in these wells since 2006. All other Tpsg HSU wells were below the nitrate MCL cleanup standard (45 mg/L) or the reporting limit.

In the Tps-Tnsc$_2$ HSU, first semester 2015 nitrate concentrations in ground water exceeded the 45 mg/L MCL cleanup standard in (1) no core area wells, (2) one leachfield area well (W-834-S9, 89 mg/L, February), (3) one distal area well (W-834-2119, 84 mg/L, February), and (4) one well south of the distal area (W-834-T5, 100 mg/L, February). All of these detections were within the historical range of nitrate concentrations observed in these wells since 2006. All

other Tps-Tnsc$_2$ HSU wells were below the nitrate MCL cleanup level (45 mg/L) or the reporting limit.

Nitrate concentrations in ground water have decreased from a historic maximum of 749 mg/L (monitor well W-834-K1A, 2000 mg/L) to a 2015 maximum of 330 mg/L (W-834-C4, February). However, the continued presence of elevated nitrate indicates that an ongoing source of nitrate to ground water exists, likely due to a combination of both natural and anthropogenic sources. During first semester 2015, nitrate was not detected in guard well W-834-T1. Guard well W-834-T3 was not sampled for nitrate due to an inoperable pump that has been replaced.

2.2.3.2.4. Other Contaminant Concentrations and Distribution

The extent of diesel in ground water in the Building 834 area is limited to the vicinity of a former underground storage tank located beneath the paved portion of the core area. Diesel concentrations have decreased from a historic maximum of 3,900,000 µg/L (W-834-2001, 2004) to a first semester 2015 maximum of 4,900 µg/L (W-834-2001, February). Diesel concentrations measured in ground water tend to vary from one sampling event to the next, likely due to varying amounts of free-phase product in the subsurface and fluctuating ground water levels. No floating product was observed in ground water during first semester 2015.

Perchlorate concentrations have decreased from a historic maximum of 11 µg/L (W-834-2118, 2005) to a first semester 2015 maximum of 5.9 µg/L (W-834-2118, February), below the MCL cleanup standard of 6 µg/L. Perchlorate concentrations in well W-834-A2 were below the reporting limit during first semester 2015. In February, an attempt to sample monitor well W-834-S7, which has historically contained perchlorate at concentrations ranging from 8.8 to 11 µg/L, was unsuccessful because the well was dry. Semi-annual monitoring for perchlorate will continue for wells W-834-2118, W-834-S7 and W-834-A2.

2.2.3.3. Building 834 OU Remediation Optimization Evaluation

Ground water extraction and drought conditions continue to lower the water table within the Building 834 OU. During first semester 2015, of 50 monitor wells planned for sampling, 25 wells (50%) were dry or had insufficient water to sample.

During the reporting period, no modifications were made to the core or leachfield area extraction wellfields. From first semester 2014 to first semester 2015, the estimated volume of treated ground water increased slightly by approximately 11% from 47,000 gal (first semester 2014) to 52,000 gal (first semester 2015) while the volume of treated soil vapor decreased by 36% from 25,820,000 cf (first semester 2014) to 16,586,000 cf (first semester 2015). The 11% increase in treated water volume from first semester 2014 to first semester 2015 is likely inaccurate due to significant maintenance issues that are currently being addressed. For all 13 extraction wells, scheduled maintenance activities include replacing well pumps, installing new double check valves, upgrading seals and tubing, rebuilding and replacing air regulators, and performing leak checks on air supply lines. The decrease in treated soil vapor volumes is relatively accurate. During first semester 2014, the system was restarted in February 2014 and operated for five months. During first semester 2015 it was not restarted until March 2015 and operated for only 4 months. Also, the treatment facility blower was not running at full capacity during first semester 2015. Repairs are underway and the system should be running at full capacity later in 2015.

As in the past, during first semester 2015, substantially more VOC mass was removed by soil vapor extraction than by ground water extraction. Of the 1,320 g of VOCs removed during first semester 2015, 1,200 g (91%) were removed in the vapor phase; during first semester 2014, 93% of VOCs were removed in the vapor phase. For ground water and soil vapor combined, an approximate 66% decline in VOC mass removed occurred in first semester 2015 (1,320 g) compared with first semester 2014 (3,850 g). This decline was due to the decrease in soil vapor volumes, the phase in which most of the VOC mass is removed.

During first semester 2015, the total nitrate mass removed was 25 kg, a 67% increase from the first semester 2014 when 15 kg of nitrate was removed. This is likely due to the higher concentrations of nitrate detected in 11 core area Tpsg HSU wells. The total TBOS/TKEBS mass removed during the reporting period was 3.9 g, higher than the 0.16 g removed in first semester 2014. Since 2007, first semester TBOS/TKEBS mass removal rates have fluctuated in a range between 0.019 g and 4.2 g. Table Summ-1 lists the mass removed by each individual treatment facility.

Core Area

Dual extraction operations in the core area and regional drought conditions continue to dewater the Tpsg HSU. TCE biodegradation continues within the core area where significant amounts of TBOS/TKEBS are present and, when hydrolyzed, serves as an electron donor for biodegradation. Historically, the primary biodegradation byproduct has been cis-1,2-DCE, although vinyl chloride and trace detections of ethene have also been historically detected in some wells, especially in well W-834-D3. Cis-1,2-DCE and vinyl chloride are degradation products of intrinsic anaerobic biodegradation of TCE, in the core area. Low concentrations of ethene (0.74 µg/L in W-834-J2 and 0.66 µg/L in W-834-D3, both 2012) suggest at least partial degradation to a benign end product.

During first semester 2015, both cis-1,2-DCE and vinyl chloride were observed in core area Tpsg HSU ground water at maximum concentrations of 5,500 µg/L (W-834-C5, July) and 18 µg/L (W-834-D4, August), respectively. Ground water samples from core area wells (or any OU wells) were not analyzed for ethane and ethene, in first semester 2015.

The Tpsg HSU extraction wellfield within the core area continues to adequately capture the highest VOC concentrations in ground water. Per the recommendations presented in the third Five-Year Review Report for the Building 834 Operable Unit (Valett et al., 2012), VOC concentrations in monitor well W-834-C5 and nearby well W-834-B4 will continue to be observed closely during the subsequent five years (2012-2017). If these wells exhibit increasing VOC trends, installation of extraction wells in the vicinity of these wells may be considered. Since both wells were installed in 2000, VOCs in W-834-C5 have fluctuated seasonally with no apparent increasing or decreasing long-term trend and W-834-B4 has remained generally stable with a decreasing trend since 2010.

VOC concentration trends in the underlying Tps-Tnsc$_2$ HSU will also continue to be monitored closely during the five years (2012-2017) subsequent to the last Five-Year Review Report. Per the recommendations presented in the Building 834 Five-Year Review, if well W-834-A1 exhibits increasing VOC trends, installation of additional extraction wells in this area may be considered. Total VOC concentrations in this well have decreased from a historic maximum of 250,000 µg/L (2002) to a 2014 maximum of 180,000 µg/L to a first semester 2015 maximum of 6,900 µg/L (W-834-A1, February). Since 2002, there has been a decreasing VOC

concentration trend in this well. A February 2014 detection of cis-1,2-DCE at 33,000 µg/L in well W-834-A1 was considered very suspect and anomalously high (by an order-of-magnitude), compared to historic results for this well. The most recent cis-1,2-DCE result of 2,400 µg/L (February 2015) is consistent with historic results.

Leachfield Area

In the leachfield area, the extraction wellfield continues to capture some portions of the VOC plume in Tpsg HSU ground water. However, the areas with the highest concentrations (in the vicinity of monitor well W-834-2113) are not fully captured. In accordance with recommendations presented in the Building 834 Five Year Review, the leachfield area will undergo an extraction wellfield expansion by converting W-834-2113 from a monitor to extraction well planned for fiscal year 2016.

VOC concentration trends in the underlying Tps-$Tnsc_2$ HSU will also continue to be monitored closely during the five years (2012-2017) subsequent to the most recent Building 834 Five-Year Review. Per the recommendations presented in the Building 834 Five-Year Review, if distal area monitor well W-834-2119 exhibits increasing VOC trends, installation of additional extraction wells in this area may be considered. Since well W-834-2119 was constructed in 2005, VOC concentration trends have remained generally flat, within a range of 6,300 to 16,700 µg/L.

VOCs in ground water are expected to continue to decrease as remediation progresses. The deep regional $Tnbs_1$ aquifer continues to be free of contaminants as demonstrated by quarterly analyses of ground water as recently as June 2015 from guard wells W-834-T1 and W-834-T3, both screened in the Lower $Tnbs_1$ HSU.

2.2.3.4. T2 Treatability Study

Since 2005, the Tpsg HSU in the distal area has been the target of a long-term enhanced *in situ* bioremediation treatability study, including biostimulation using sodium lactate and bioaugmentation using KB-1, a consortium of dechlorinating bacteria that contain Dehalococcoides. This treatability study included post-biostimulation rebound monitoring, conducted in 2014. The primary objective of this pilot-scale treatability study was to assess the performance of enhanced *in situ* bioremediation of TCE at concentrations greater than 10,000 µg/L in a water-bearing zone typical of TCE contaminant source areas at Site 300. Since 2005, progress of this test has been reported semi-annually in the CMRs.

Last year, a draft Phase 2 pilot study work plan describing enhanced *in situ* bioremediation of TCE was submitted to regulators for review (LLNL, 2014). Planned activities include expansion of the original *in situ* bioremediation treatment zone at T2 by (1) implementing a small-scale recirculation cell extracting ground water from two nearby wells, W-834-T2A and W-834-T2D, (2) continuing to use well W-834-1824 as an injection well for biostimulation with a more effective form of lactate (ethyl lactate), and (3) using wells W-834-T2, W-834-1825 and W-834-1833 as performance monitor wells. In 2014, wells W-834-1824, W-834-1833 and W-834-T2 were sampled for analysis of bacteria, volatile fatty acids, and light hydrocarbons (W-834-1825 did not have sufficient water for sampling). The results indicated that Phase 1 *in situ* bioremediation continues to be successful and ideal conditions for Phase 2 implementation are present, with the exception that water levels in this area have declined significantly. Ethene production is ongoing, significant lactate is still present, and dechlorinating bacteria remain in

the subsurface at high levels. Performance during Phase 2 will be measured by how effectively the treatment zone can be expanded by the recirculation cells beyond the original Phase 1 treatment zone. Some of the Phase 2 infrastructure (piping and aboveground tanks) has been constructed but lack of available ground water in the wells has delayed the project.

In the T2 area, Tpsg HSU well W-834-1833 had VOC concentrations in 2013 of 4,100 µg/L (entirely TCE) dropping to 340 µg/L (almost all TCE) in 2014. The well did not have sufficient water for sampling during first semester 2015. This continues a steady decline from a historic maximum total VOC concentration of 21,000 µg/L (comprised entirely of TCE in 2004 in this well). Ethene was slightly above the reporting limit and had an oxidation/reduction potential (ORP) of -54 millivolts (mV) in February 2014.

Concentrations of cis-1,2-DCE and vinyl chloride during first semester 2015 were highest in well W-834-T2 at 230 µg/L and 180 µg/L, respectively (February). Ethene was detected in this well at 200 µg/L in February 2014. The total VOC concentration in this sample was 430 µg/L, declining steadily from 30,000 µg/L (entirely TCE) in 2004. The trend demonstrates the dechlorination of TCE to its degradation end product ethene through bioaugmentation with KB-1. Well W-834-T2 had an oxidation-reduction potential (ORP) of -169 millivolts (mV) in February 2014.

During first semester 2015, well W-834-1824 yielded 560 µg/L total VOCs comprised of 230 µg/L TCE, 320 µg/L cis-1,2-DCE and 7.8 µg/L vinyl chloride. Ethene was most recently detected at 3 µg/L and ORP measured in the field during sampling was -230 mV (February 2014). In 2004, this well yielded 26,000 µg/L total VOCs (mostly TCE). The trend also shows the dechlorination of TCE to its degradation end product ethene through bioaugmentation with KB-1.

During first semester 2015, well W-834-T2A yielded 3,700 µg/L total VOCs (mostly TCE, February) continuing a steady decline from 86,000 µg/L in 1988 and 5,500 µg/L in 2014. Although this well was outside the treatment zone of the treatability test, a 2013 ground water sample from this well contained 0.48 µg/L ethene and 22 µg/L ethane. The presence of ethane indicates continued biodegradation of ethene under highly anaerobic conditions most likely in the T2 treatment zone upgradient of W-834-T2A.

The cumulative 2014 and first semester 2015 data presented above, especially the continued presence of ethene, the overall reduction in total VOCs, and redox conditions indicate that enhanced *in situ* bioremediation of TCE continues in the T2 area, particularly in the vicinity of wells W-834-T2, W-834-1824 and W-834-1825 (based on 2013 data). Initially, VOCs exhibited some rebound in the treatment zone for several months following the end of Phase 1 biostimulation in 2008 but they now exhibit a decreasing trend to the lowest historical VOC levels. Additionally, total VOC concentrations in well W-834-2117, located upgradient of the T2 treatment zone, have declined steadily from 22,000 µg/L in 2005 to 6,000 µg/L in August 2014 to 4,300 µg/L in February 2015. Total VOC concentrations in well W-834-2118, located downgradient of the T2 treatment zone, have similarly decreased from 600 µg/L in 2005 to 130 µg/L in August 2014 to 100 µg/L in February 2015.

2.2.3.5. Building 834 OU Remedy Performance Issues

During the reporting period, there were no new issues that affect the performance of the cleanup remedy for the Building 834 OU. Although declining water levels have impacted the

ability to collect ground water samples and delayed the implementation of the second phase of the T2 enhanced bioremediation treatability test, soil vapor extraction in the core area continues to be an effective VOC mass removal method and continues to be protective of human health and the environment. Per the recommendations presented in the Building 834 Five Year Review, VOC trends are being monitored in Tps-$Tnsc_2$ HSU wells and installation of additional extraction wells in this HSU may be considered to increase the effectiveness of remediation of VOCs in the Tps-$Tnsc_2$ HSU beneath the core area. The perched water tables beneath the 834 area in the Tpsg and Tps/$Tnsc_2$ HSUs continue to decline as a result of extraction operations and ongoing regional drought conditions.

2.3. Pit 6 Landfill (Pit 6) OU 3

The Pit 6 Landfill covers an area of 2.6 acres near the southern boundary of Site 300. From 1964 to 1973, this landfill was used to bury waste in nine unlined debris trenches and animal pits. The buried waste, which includes shop and laboratory equipment and biomedical waste, is located on or adjacent to the Corral Hollow-Carnegie Fault. Farther east, the fault trends to the south of two nearby water-supply wells CARNRW1 and CARNRW2. These active water-supply wells are located about 1,000 feet east of the Pit 6 Landfill. They provide water for the nearby Carnegie State Vehicular Recreation Area and are monitored on a monthly basis.

The Pit 6 Landfill was capped and closed in 1997 under CERCLA to prevent further leaching of contaminants resulting from percolation of rainwater through the buried waste. The engineered, multi-layer cap is intended to prevent rainwater infiltration into the landfill, mitigate potential damage by burrowing animals and vegetation, prevent potential hazards from the collapse of void spaces in the buried waste, and prevent the potential flux of VOC vapors through the soil. Surface water flow onto the landfill is minimized by a diversion channel on the north side and drainage channels on the east, west, and south sides of the engineered cap.

A map of Pit 6 Landfill OU showing the locations of monitor and water-supply wells are presented on Figure 2.3-1.

2.3.1. Pit 6 Landfill OU Surface Water and Ground Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.3-1. This table also delineates and explains deviations from the sampling plan.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring and post-closure requirements with the following exceptions; a total of 16 required analyses in four different wells and four analyses for one spring were not performed because the wells and spring were dry or there was insufficient water to collect the samples.

The four wells and spring that were dry or had insufficient water to sample during first semester 2015 have been dry for several years. Of these wells and spring:

- K6-15 (dry since 1999) and K6-32 (dry since 2006) are located upgradient of the Pit 6 Landfill and have never had detectable VOCs.
- K6-21 (dry since 2000) has a nearby existing well (EP6-09) screened at a greater depth within the same HSU, which had available ground water and was successfully sampled for the same required analytes.

- K6-24 (dry since 2011) has a nearby existing well (W-PIT6-2817) screened at a greater depth within the same HSU, which had available ground water and was successfully sampled for the same required analytes.
- Spring 15 has been dry during sampling attempts since 1991 when it was last sampled.

2.3.2. Pit 6 Landfill OU Remediation Progress Analysis

This section is organized into three subsections: analysis of contaminant distribution and concentration trends; remediation optimization evaluation; and performance issues.

2.3.2.1. Pit 6 Landfill OU Contaminant Distribution and Concentration

At the Pit 6 Landfill OU, VOCs and tritium are the primary COCs detected in ground water. Nitrate is a secondary COC. These constituents have historically been identified within the Qt-Tnbs$_1$ HSU. The concentrations of COCs have significantly declined below historic maximum levels in Pit 6 ground water.

2.3.2.1.1. VOC Concentrations and Distribution

The VOC COCs in Pit 6 Landfill ground water include chloroform and TCE. During first semester 2015, TCE was detected in three Pit 6 Landfill ground water monitor wells at concentrations above its 0.5 µg/L reporting limit. However, TCE concentrations were below itsits 5 µg/L MCL cleanup standard in all Pit 6 Landfill monitor wells. While cis-1,2-DCE is no longer a COC, it was detected in one well, K6-01S, at a concentration of 2.1 µg/L, well below its cleanup standard (6 µg/L). No other VOCs, including chloroform, were detected in Pit 6 wells.

In the Qt-Tnbs$_1$ North HSU, TCE concentrations have decreased from a historic maximum of 1.4 µg/L (monitor well K6-36, 2001) to below the 0.5 µg/L reporting limit in all Qt-Tnbs$_1$ North HSU wells during first semester 2015. No other VOCs including chloroform were detected in the Qt-Tnbs$_1$ North HSU during the reporting period.

In the Qt-Tnbs$_1$ South HSU, TCE concentrations have decreased from a historic maximum of 250 µg/L (K6-19, 1988) to a first semester 2015 maximum of 3.2 µg/L (monitor well EP6-09, January), below its 5 µg/L MCL cleanup standard. During first semester 2015, TCE was detected in two other Qt-Tnbs$_1$ South HSU wells (K6-18 and K6-19) at concentrations above the reporting limit but below the 5 µg/L MCL cleanup standard. Well K6-01S had detectable cis-1,2-DCE at 2.1 µg/L (January) below the 6 µg/L MCL cleanup standard. While no longer a COC, the presence of cis-1,2-DCE, a common anaerobic degradation product of TCE, suggests that some natural dechlorination may be occurring. The historic maximum cis-1,2-DCE concentration detected in K6-01S was 9.8 µg/L (1992). No other VOCs including chloroform were detected in the Qt-Tnbs$_1$ South HSU during the reporting period.

No VOCs, including TCE and chloroform, were detected in the Tnbs$_1$ Deep HSU during first semester 2015. During the reporting period, VOCs were not detected in guard wells W-PIT6-1819, K6-17, K6-22 and K6-34 nor from the two active CARNRW water-supply wells and two inactive CARNRW water-supply wells.

2.3.2.1.2. Tritium Concentrations and Distribution

Including first semester 2015, tritium has never been detected in Pit 6 Landfill ground water at activities exceeding the 20,000 picoCuries per liter (pCi/L) MCL cleanup standard. During first semester 2015, tritium was detected above the 100 pCi/L reporting limit in three wells at the Pit 6 Landfill OU, all screened in the Qt-Tnbs$_1$ North HSU. This represents a decrease from

2014, when tritium above the 100 pCi/L reporting limit was detected in six wells at the Pit 6 Landfill OU, completed in both the Qt-$Tnbs_1$ North and Qt-$Tnbs_1$ South HSUs.

In the Qt-$Tnbs_1$ North HSU, tritium activities have decreased from a historic maximum of 2,150 pCi/L (monitor well K6-36, 2000) to a first semester 2015 maximum of 167 pCi/L (K6-33, January). Tritium was detected above the 100 pCi/L reporting limit in two other Qt-$Tnbs_1$ North HSU wells, W-PIT6-1819 (127 pCi/L, January) and CARNRW-2 (109 pCi/L, January).

In the Qt-$Tnbs_1$ South HSU, tritium activities have decreased from a historic maximum of 3,420 pCi/L (monitor well BC6-13, 2000) to a below the 100 pCi/L reporting limit in all wells screened in the Qt-$Tnbs_1$ South HSU including well K6-19, which had a 2014 maximum tritium activity of 150 pCi/L.

Tritium was not detected above 100 pCi/L in the $Tnbs_1$ Deep HSU during first semester 2015. The historic maximum tritium activity in this HSU is 1,680 pCi/L (monitor well K6-26, 1999), well below its 20,000 pCi/L MCL cleanup standard.

During first semester 2015, the tritium activity in guard well W-PIT6-1819 was 137 pCi/L (April); in 2014, the tritium activity was less than the reporting limit (<100 pCi/L) in this well. Guard well W-PIT6-1819 is used to define the downgradient extent of tritium in Pit 6 ground water with activities above the 100 pCi/L background level. Historical fluctuations across the 100 pCi/L level are not unprecedented. In 2013, W-PIT6-1819 yielded 149 pCi/L tritium and prior to 2013, tritium activities ranged from <100 pCi/L to 295 pCi/L (2007). This well is located approximately 100 feet west of the Site 300 boundary within the Carnegie SVRA residence area and about 200 feet west of the CARNRW1 and CARNRW2 water-supply wells. During 2014 and first semester 2015, tritium was not detected in guard wells K6-34, K6-22 or K6-17 nor at activities above the 100 pCi/L reporting limit in any of the monthly ground water samples from two of the four CARNRW offsite wells. Overall, the areal extent of the tritium plume with activities above 100 pCi/L, north and south of the fault, in both the Qt-$Tnbs_1$ North and Qt-$Tnbs_1$ South HSUs, has decreased significantly over the past few years.

2.3.2.1.3. Perchlorate Concentrations and Distribution

In the 2013 Five-Year Review for OUs 3 (Pit 6 Landfill) and 8, perchlorate was removed as a COC in Pit 6 ground water. Per the Five-Year Review, perchlorate will no longer be discussed in this section unless it is detected in a well. During first semester 2015, a routine and duplicate sample collected from well K6-16 (screened in the Qt-$Tnbs_1$ South HSU) yielded perchlorate at less than the reporting limit (4 µg/L) in the routine sample and 45.2 µg/L in the duplicate sample. The perchlorate result for the routine sample (<4 µg/L) was analyzed by a laboratory with an established track record. The duplicate sample (45.2 µg/L) was analyzed by a different (new) laboratory and diluted four-fold so the result of 45.2 µg/L is very suspect and anomalous in comparison to historical results. Perchlorate has not been detected in well K6-16 above the reporting limit (ranging from 3 to 20 µg/L) since 2000.

Perchlorate was also detected in well K6-18 at 7.9 µg/L during first semester 2015, barely above the MCL cleanup standard of 6 µg/L. In 2014, a duplicate sample from well K6-18 contained 8.7 µg/L perchlorate, above the MCL cleanup standard of 6 µg/L. However, the perchlorate concentration in the coincident routine sample collected from this well on the same day/time was below the reporting limit of 4 µg/L.

Except for K6-16 and K6-18, perchlorate was not detected at or above the 4 µg/L reporting limit in any Qt-$Tnbs_1$ North, Qt-$Tnbs_1$ South, or $Tnbs_1$ Deep HSU ground water samples, including samples collected from guard wells and the CARNRW water-supply wells.

2.3.2.1.4. Nitrate Concentrations and Distribution

During first semester 2015, nitrate was detected in samples collected from wells screened in the Qt-$Tnbs_1$ North and South HSUs.

In the Qt-$Tnbs_1$ North HSU, nitrate was detected in eight wells during first semester 2015, with the highest concentration at 3.3 mg/L (K6-04) far below the MCL cleanup standard of 45 mg/L and within the range of background. Nitrate was not detected in ground water samples from any wells completed in the Qt-$Tnbs_1$ North HSU at concentrations above the MCL cleanup standard or outside the range of nitrate background levels.

In the Qt-$Tnbs_1$ South HSU, nitrate was detected during first semester 2015, above the 45 mg/L MCL cleanup standard in two wells, monitor well K6-18 (233 mg/L, January) and K6-23 (86 mg/L, January). These two analytical results were very likely switched, with corrected concentrations of 233 mg/L for K6-23 and 86 mg/L for K6-18, more consistent with historical nitrate results. The historic maximum nitrate concentration detected in well K6-23 was 240 mg/L (2000). This well consistently yields ground water nitrate concentrations in excess of the MCL cleanup standard and is located in close proximity to the Building 899 septic system, which is recognized as a likely source of the nitrate at this location (Dibley et al., 2013). Three other wells completed in the Qt-$Tnbs_1$ South HSU contained detectable but low nitrate concentrations well below the 45 mg/L MCL cleanup standard. Except for the aforementioned wells K6-23 and K6-18, nitrate was not detected in ground water samples from any wells completed in the Qt-$Tnbs_1$ South HSU at concentrations above the MCL cleanup standard or outside the range of nitrate background levels.

During first semester 2015, nitrate was not detected above the 0.5 mg/L reporting limit, in wells screened in the $Tnbs_1$ Deep HSU. Nitrate has never been detected in this HSU above its 45 mg/L MCL cleanup standard.

During first semester 2015, nitrate was detected in guard well W-PIT6-1819 at a very low concentration of 0.91 mg/L. Historically, this well has yielded nitrate at very low concentrations or below the 0.5 mg/L reporting limit. During the reporting period, nitrate was not detected in: (1) guard wells K6-34, K6-22 or K6-17, or (2) water-supply well CARNRW1, above the reporting limit. Nitrate was detected in (1) water-supply well CARNRW2, (2) inactive water-supply well CARNRW3, and inactive water-supply well CARNRW4 at very low single-digit concentrations, well below its MCL cleanup standard of 45 mg/L.

2.3.2.2. Pit 6 Landfill OU Remediation Optimization Evaluation

The remedy for tritium and VOCs in ground water at the Pit 6 Landfill is Monitored Natural Attenuation (MNA). Ground water levels and contaminants are monitored on a regular basis to: (1) evaluate the efficacy of the natural attenuation in reducing contaminant concentrations, and (2) detect any new chemical releases from the landfill. In general, the primary ground water COCs (VOCs and tritium) at the Pit 6 Landfill OU continue to decline and ground water levels beneath the landfill remain approximately 50 ft below the buried waste.

In general, VOCs in ground water near Pit 6 continue to exhibit decreasing trends and the VOC plume areal extent is generally decreasing. Concentrations of the VOC COC chloroform are all below its reporting limit in all Pit 6 wells. Although no longer a COC, cis-1,2-DCE concentrations of have been below its 6 µg/L cleanup standard since 1993. TCE concentrations in ground water remain below the 5 µg/L MCL cleanup standard in samples from all Pit 6 Landfill OU wells including well EP6-09. As recommended in the recent Five-Year Review for OUs 3 and 8 (Buscheck et al., 2013), TCE concentrations will be monitored in well EP6-09 over the next succeeding five years and if concentrations increase or remain above 5 µg/L, remedial measures such as pump-and-treat or enhanced *in situ* bioremediation will be considered for this well. Since the beginning of 2013, TCE concentrations have exceeded the 5 µg/L MCL cleanup standard in EP6-09 only twice, at concentrations of 5.8 mg/L in January 2013 and 5.2 mg/L in January 2014 and were below this standard in first semester 2015.

Tritium activities in ground water continue to decrease toward background levels and remain far below the 20,000 pCi/L MCL cleanup standard. During first semester 2015, tritium was detected at concentrations slightly above the 100 pCi/L reporting limit in wells K6-33, W-PIT6-1819 and CARNRW2. These low activities indicate that the MNA remedy for tritium in ground water at the Pit 6 Landfill OU 3 continues to be effective.

Perchlorate concentrations in Pit 6 area ground water have decreased from a maximum of 65 µg/L (following the 1998 El Niño in well K6-19) to below its reporting limit (4 µg/L) in all but one Pit 6 Landfill OU well (K6-18, 7.9 µg/L, January) along with a suspect detection of 45.2 µg/L in well K6-16. The perchlorate concentration in the coincident routine sample collected from this well on the same day/time was below the reporting limit of 4 µg/L. Otherwise, perchlorate concentrations have remained below its reporting limit and its 6 µg/L MCL cleanup standard in all Pit 6 wells since March 2009.

Nitrate continues to be consistently detected in Pit 6 well K6-23 above its 45 mg/L MCL cleanup standard. As stated above, well K6-23 is located in close proximity to the Building 899 septic system, which is the likely source of the nitrate at this location.

2.3.2.3. Pit 6 Landfill OU Performance Issues

Currently, there is very little contamination above ground water cleanup standards at the Pit 6 Landfill OU. Based on these results, the remedy continues to be effective and protective of human health and the environment, and to make progress toward cleanup.

2.4. High Explosives Process Area (HEPA) OU 4

The HEPA has been used since the 1950s for the chemical formulation, mechanical pressing, and machining of high explosives (HE) compounds into shaped detonation charges. Surface spills from 1958 to 1986 resulted in the release of contaminants at the former Building 815 steam plant. Subsurface contamination is also attributed to HE waste water discharges into former unlined rinse water lagoons. Another minor source of contamination in ground water resulted from leaking contaminated waste stored at the former Building 829 Waste Accumulation Area (WAA) located near Building 829.

Five GWTSs operate in the HEPA: Building 815-Source (815-SRC), Building 815-Proximal (815-PRX), Building 815-Distal Site Boundary (815-DSB), Building 817-Source (817-SRC), and Building 817-Proximal (817-PRX). A sixth GWTS, Building 829-Source (829-SRC), was

dismantled in 2013 following approval by the regulatory agencies. As approved, water is still extracted from the same extraction well previously used at 829-SRC, but the water is now collected in a portable tank and transported to the 815-SRC GWTS for treatment. The details of this change were described in a previous CMR report (Dibley et al., 2014). A map of the HEPA OU showing the locations of monitor and extraction wells and treatment facilities is presented on Figure 2.4-1.

The 815-SRC GWTS began operation in September 2000 removing VOCs (primarily TCE), HE compounds (RDX and High Melting Explosive [HMX]), and perchlorate from ground water. Ground water is extracted from wells W-815-02, W-815-04 and W-815-2803 with a current combined flow rate of approximately 1.1 gpm. The current GWTS configuration includes two ion-exchange resin columns connected in series for perchlorate removal, and three aqueous-phase GAC canisters (also connected in series) for VOC and HE compound removal. The treated effluent is injected into well W-815-1918 for *in situ* denitrification in the $Tnbs_2$ HSU.

The 815-PRX GWTS began operation in October 2002 removing TCE and perchlorate from ground water. Ground water is extracted from wells W-818-08 and W-818-09 at a current combined flow rate of approximately 1.8 gpm. The current GWTS configuration includes a Cuno filter to remove particulates, two ion-exchange resin columns connected in series for perchlorate removal, and three aqueous-phase GAC canisters (also connected in series) for TCE removal. The treated effluent is injected into well W-815-2134 where an *in situ* natural denitrification process reduces the nitrate to nitrogen in the $Tnbs_2$ HSU.

The 815-DSB GWTS began operation in September 1999 removing low concentrations (less than 10 µg/L) of TCE from ground water extracted near the Site 300 southern boundary. Ground water is extracted from wells W-35C-04, W-6ER and W-815-2608 at a combined flow rate of approximately 3.8 gpm. The current GWTS configuration includes a Cuno filter to remove particulates and three aqueous-phase GAC canisters connected in series for TCE removal. The treated effluent is discharged to an infiltration trench.

The 817-SRC GWTS began operation in September 2003 removing HE compounds (RDX and HMX) and perchlorate from ground water. Well W-817-01 extracts ground water from a very low yield portion of the $Tnbs_2$ aquifer. It pumps ground water intermittently using solar power at current flow rates ranging from 200 to 350 gal per month, averaging approximately 0.01 gpm. The current GWTS configuration includes a Cuno filter to remove particulates, two ion-exchange resin columns connected in series for perchlorate removal, and three aqueous-phase GAC canisters (also connected in series) for HE compound removal. Treated ground water is injected into upgradient injection well W-817-06A where an *in situ* natural denitrification process reduces the nitrate to nitrogen in the $Tnbs_2$ HSU.

The 817-PRX GWTS began operation in September 2005 removing VOCs, RDX and perchlorate from ground water. Ground water is currently extracted from wells W-817-03 and W-817-2318 at a combined flow rate of about 1.6 gpm, with about 90% from W-817-03. The current GWTS configuration includes a Cuno filter to remove particulates, two ion-exchange resin columns connected in series for perchlorate removal, and three aqueous-phase GAC canisters (also connected in series) for removal of VOCs and HE compounds. Treated ground water containing nitrate is injected into upgradient injection wells W-817-2109 and W-817-02, where an *in situ* denitrification process reduces the nitrate to nitrogen in the $Tnbs_2$ HSU.

The 829-SRC GWTS began operation in August 2005 removing VOCs, nitrate and perchlorate from ground water. Currently, ground water is extracted from W-829-06 and transported to, and treated at, the 815-SRC ground water treatment system.

2.4.1. HEPA OU Ground Water Extraction and Treatment System Operations and Monitoring

This section is organized into four subsections: facility performance assessment; operations and maintenance issues; compliance summary; and sampling plan evaluation and modifications.

2.4.1.1. HEPA OU Facility Performance Assessment

The monthly ground water discharge volumes, extraction flow rates, and operational hours during first semester 2015 are summarized in Tables 2.4-1 through 2.4-6. The total volume of ground water extracted and treated and the total contaminant mass removed during the reporting period are presented in Table Summ-1. The total volume of ground water treated and discharged and the total contaminant mass removed are summarized in Table Summ-2. Analytical results for influent and effluent samples collected during first semester 2015 are presented in Tables 2.4-7 through 2.4-9. The pH measurement results are presented in Appendix A.

2.4.1.2. HEPA OU Operations and Maintenance Issues

The following maintenance activities and operational issues occurred at the 815-SRC, 815-PRX, 815-DSB, 817-SRC and 817-PRX GWTS, and the 829-SRC extraction well during first semester 2015:

<u>815-SRC GWTS</u>

- The GWTS was offline from the start of the reporting period until March 4 for freeze protection.
- The GWTS was offline from April 13 until April 20 to evaluate detections of HMX and RDX in the effluent sample collected on April 8. The contract analytical laboratory upon request reanalyzed the original April 8 samples, and no HMX or RDX were detected above the reporting limit of 1.0 µg/L. It was determined that chromatographic noise was incorrectly integrated into the results, and no HMX or RDX were actually present. While the laboratory was conducting their internal investigation, LLNL submitted an intermediate GAC sample to be sure no HE compounds had broken through the GAC. No HE compounds were detected in this sample either. The system was restarted after review of these results.
- The GWTS was offline from June 5 to June 8 due to a power outage from a grass fire.

<u>815-PRX GWTS</u>

- The GWTS was offline from the start of the reporting period until March 9 for freeze protection.
- The GWTS was offline from May 14 until May 18, and again from June 5 to June 8 due to power outages.

815-DSB GWTS

- The GWTS was offline on January 2, on April 24, and from June 5 to June 8 due to power outages.

817-SRC GWTS

- The GWTS was offline from the start of the reporting period until March 9 for freeze protection.
- The GWTS was offline from March 27 until May 4 to make repairs to the extraction well pump.
- The GWTS was offline from May 12 until May 19 to replace GAC vessels.

817-PRX GWTS

- The GWTS was offline from the start of the reporting period until March 9 for freeze protection, but was immediately shut down again, due to vacuum gauge problems. It was restarted on March 11 and compliance samples were collected, but was again shut down due to injection well problems. The GWTS was not restarted until May 5.
- The GWTS was shut down from May 13 to May 28 to repair a leak at the injection well.

829-SRC Extraction Well

- The GWTS was offline from the start of the reporting period until March 2 for freeze protection.
- No ground water extraction was conducted from April 30 to May 4 while the collected water was transferred to 815-SRC for treatment.

2.4.1.3. HEPA OU Compliance Summary

The 815-SRC, 815-PRX, 815-DSB, 817-PRX and 817-SRC GWTSs operated in compliance with the RWQCB Substantive Requirements for Wastewater Discharge.

2.4.1.4. HEPA OU Facility Sampling Plan Evaluation and Modifications

The HEPA OU facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The sampling and analysis plan is presented in Table 2.4-10. No modifications were made to the plan.

2.4.1.5. HEPA OU Treatment Facility and Extraction Wellfield Modifications

No modifications were made to any of the HEPA OU GWTSs or their associated extraction wellfield during this reporting period.

2.4.2. HEPA OU Ground Water and Surface Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.4-11. This table also explains deviations from the sampling plan.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions: a total of 53 required analyses in

12 different wells and two springs were not performed because the wells/springs were dry or contained insufficient water to collect the samples; and a total of 16 required analyses were not performed due to unsafe conditions at four different monitor wells (erosion near wells W-815-05 and W-823-13, and muddy trail conditions at wells W-806-06A and W-806-07).

2.4.3. HEPA OU Remediation Progress Analysis

This section is organized into four subsections: mass removal; contaminant concentrations and distribution; remediation optimization evaluation; and performance issues.

2.4.3.1. HEPA OU Mass Removal

The monthly ground water mass removal estimates for first semester 2015 are summarized in Tables 2.4-12 through 2.4-17. The total mass removed during the reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

2.4.3.2. HEPA OU Contaminant Concentrations and Distribution

At the HEPA OU, VOCs (mainly TCE) are the primary COCs detected in ground water; RDX, HMX, 4-Amino-2,6-dinitrotoluene (4-ADNT), perchlorate, and nitrate are secondary COCs. Most of the ground water contamination in the HEPA OU occurs in the $Tnbs_2$ HSU. Some COCs (TCE, RDX, HMX, perchlorate and nitrate) have also been detected in perched ground water of the Tpsg-Tps HSU in the vicinity of Buildings 815 and 817. Minor concentrations of VOCs, perchlorate and nitrate are also present in perched ground water located in the $Tnsc_{1b}$ HSU beneath the former Building 829 WAA. The WAA is located in the northwest portion of HEPA. No contamination has been detected in the Upper and Lower $Tnbs_1$ HSUs in the HEPA OU. Figure 2.4-1 shows the location of wells in the HEPA OU.

2.4.3.2.1. VOC Concentrations and Distribution

VOC concentrations and distribution in ground water in the Tpsg-Tps, $Tnbs_2$, and $Tnsc_{1b}$ HSUs in the HE Process Area are discussed below.

Tpsg-Tps HSU

VOCs, primarily TCE, but also 1,1-DCE, chloroform, cis-1,2-DCE, 1,2-DCA and carbon tetrachloride (CTET) have been detected in the sands and gravels of the Tpsg-Tps HSU. Total VOC concentrations in Tpsg-Tps HSU ground water have decreased from a historic maximum of 450 µg/L (W-815-01, 1992) to a first semester 2015 maximum of 18 µg/L, comprised entirely of TCE, in the May sample collected from 817-PRX extraction well W-817-2318. VOCs have remained below the 0.5 µg/L reporting limit in Tpsg-Tps monitor well W-35C-05, located near the southern site boundary. Drought conditions and limited recharge have led to insufficient or no ground water available for sampling in some wells screened in the Tps-Tpsg HSU.

During first semester 2015, VOCs other than TCE were only detected at concentrations above the 0.5 µg/L reporting limit in monitor wells W-809-01 and W-814-01. CTET detected in W-814-01 at 0.54 µg/L (March) exceeded the 0.5 µg/L State MCL but not the 5 µg/L Federal MCL cleanup standard. 1,2-DCA detected in W-814-01 at 0.72 µg/L (March) exceeded the 0.5 µg/L MCL cleanup standard. All other detections were below respective MCLs. Similar concentrations of the aforementioned VOCs were detected in Tpsg-Tps wells during 2014.

$Tnbs_2$ HSU

In the $Tnbs_2$ HSU, the highest VOC concentrations are found downgradient of Building 815 in the 815-PRX extraction wellfield. Total VOC concentrations in $Tnbs_2$ HSU ground water have decreased from a historic maximum of 110 µg/L in extraction well W-818-08 (1992) to a first semester 2015 maximum of 35 µg/L (April) in extraction well W-818-08.

During first semester 2015, TCE was the main VOC detected in the $Tnbs_2$ HSU with concentrations in 16 wells exceeding the 5 µg/L MCL cleanup standard. 1,1-DCE was detected at or slightly above the 0.5 µg/L reporting limit in extraction well W-815-02 and monitor well W-818-11 at concentrations of 0.62 µg/L (April) and 0.5 µg/L (March), respectively. Other VOCs were not detected in the $Tnbs_2$ HSU during first semester 2015.

VOCs continue to be detected in ground water from the $Tnbs_2$ HSU at the southern end of Building 832 Canyon. This contamination probably originates from sources located in both the Building 832 Canyon OU and the HEPA OU. Since June 2007, when extraction well W-830-2216 began pumping ground water, total VOC concentrations have steadily decreased from a historic maximum of 20 µg/L in 2007 to a first semester 2015 maximum of 3.8 µg/L (April). A similar decrease in VOC concentrations has been observed in nearby monitor well W-830-13. During first semester 2015, VOCs detected in W-830-2216 were comprised entirely of TCE; W-830-13 could not be sampled due to an inoperable pump.

During first semester 2015, TCE was detected at concentrations below the 5 µg/L MCL cleanup standard in five samples from $Tnbs_2$ onsite guard wells W-815-2110 and W-815-2111, located near the Site 300 southern boundary. The maximum TCE concentrations in these samples were 1.7 µg/L and 1.2 µg/L for W-815-2110 (June) and W-815-2111 (June), respectively. Similar TCE concentrations were detected in these wells in 2014. VOCs were not detected in any other onsite or offsite HEPA $Tnbs_2$ HSU guard wells. Thirteen routine and duplicate samples were collected from offsite water-supply well GALLO1 during first semester 2015. VOCs were not detected above the 0.5 µg/L reporting limit in any of these samples.

Overall, total VOC concentrations in the $Tnbs_2$ HSU remained stable or decreased slightly in first semester 2015. The extent of ground water containing total VOCs concentrations above the 0.5 µg/L reporting limit, 5 µg/L, and 10 µg/L remains similar to 2014, except for TCE detections at newly installed proposed injection wells W-817-3025 and W-817-3026 and no VOC detections at the former southwestern extent of the plume defined by monitor well W-870-02.

$Tnsc_{1b}$ HSU

Extraction well W-829-06 and monitor well W-829-08 screened in the $Tnsc_{1b}$ HSU contained TCE at concentrations exceeding the 5 µg/L MCL cleanup standard during first semester 2015. Total VOC concentrations in $Tnsc_{1b}$ HSU ground water have decreased from a historic maximum of 1,013 µg/L (W-829-06, 1993) to a first semester 2015 maximum of 23 µg/L (comprised entirely of TCE, April, same well). In March, TCE and cis-1,2-DCE concentrations in W-829-08 were 5.4 µg/L and 0.63 µg/L, respectively. VOCs have never been detected in ground water from nearby monitor well W-829-1940 or in nearby monitor wells screened in the Lower $Tnbs_1$ HSU.

2.4.3.2.2. HE Compound Concentrations and Distribution

During first semester 2015, the HE compounds HMX, RDX, and 4-ADNT were detected at concentrations exceeding reporting limits only in wells screened in the $Tnbs_2$ HSU. HMX

concentrations in $Tnbs_2$ HSU ground water in the HEPA OU have decreased from a historic maximum of 57 µg/L (W-817-01, 1995) to a first semester 2015 maximum of 35 µg/L (March) in extraction well W-817-01; significantly below the Regional Tapwater Screening Level of 1,000 µg/L (U.S. EPA, June 2015). RDX concentrations in $Tnbs_2$ HSU ground water in the HEPA OU have decreased from a historic maximum of 204 µg/L (817-SRC extraction well W-817-01, 1992) to a first semester 2015 maximum of 40 µg/L detected in extraction wells W-815-02 and W-817-01 (both March). 4-ADNT concentrations in $Tnbs_2$ HSU ground water have decreased from a historic maximum of 24 µg/L (W-817-01, 1997) to a first semester 2015 maximum of 2.7 µg/L detected in monitor well W-809-03 (March).

During first semester 2015, RDX was detected in 815-PRX extraction well W-818-09 at 3.2 µg/L (March) for the first time since 2011, when it was first detected at 2 µg/L. This detection, along with a first semester 2015 RDX detection of 3.6 µg/L (March) in W-818-01, has shifted the eastern extent of the plume to the east-southeast towards the W-818-09 capture zone. The southern extent of the RDX plume will be closely monitored to ensure HE compounds do not continue to migrate towards the Site 300 southern boundary. HE compounds were not detected in any $Tnbs_2$ HSU guard wells or other monitor wells near the Site 300 southern boundary.

RDX concentrations in 815-SRC extraction well W-815-04 continue to decrease, likely due to the influence of extraction well W-815-2803. Intended to increase the hydraulic capture of HE compounds in the 815 source area, W-815-2803 was connected to 815-SRC in second semester 2012 and since that time RDX compound concentrations have decreased in W-815-02 and W-815-04. From 2010 through 2014, W-809-03, located approximately 250 feet northeast of the 815-SRC treatment facility just north of 815-SRC effluent injection well W-815-1918, yielded the maximum concentrations of RDX when previously RDX was not detected or was slightly above the reporting limit. The increase in HE compounds observed in W-809-03 is likely due to the displacement of HE-bearing ground water in the vicinity of the W-815-1918 injection well. This increase appears to be transient and HE concentrations have generally exhibited a decreasing trend over the last two years. During first semester 2015, 817-SRC extraction well W-817-01 yielded the maximum concentration of RDX.

2.4.3.2.3. Perchlorate Concentrations and Distribution

Perchlorate concentrations and distribution in ground water in the Tpsg-Tps, $Tnbs_2$, and $Tnsc_{1b}$ HSUs in the HE Process Area are discussed below.

Tpsg-Tps HSU

During first quarter 2015, Tpsg-Tps HSU extraction well W-817-2318 and monitor well W-817-03A yielded perchlorate concentrations exceeding the 6 µg/L MCL cleanup standard at 16 µg/L and 13 µg/L, respectively (both March). These represent a slight decrease from the historic maximum perchlorate concentration of 18 µg/L in monitor well W-6CS.

$Tnbs_2$ HSU

In the $Tnbs_2$ HSU, nine wells yielded ground water with perchlorate concentrations exceeding the 6 µg/L MCL cleanup standard during first semester 2015. Wells with the highest perchlorate concentrations are located in the vicinity of the 817-SRC and 817-PRX treatment facilities. The first semester 2015 maximum perchlorate concentration of 23 µg/L (May) was measured in extraction well W-817-01; well W-817-01 also contained the 50 µg/L historic maximum (1998) and the 2014 maximum of 29 µg/L. Proposed 817-PRX injection wells

W-817-3025 and W-817-3026, installed in 2014, were baseline sampled in April 2015 and both contained 10 µg/L perchlorate. These detections, along with a March detection of 5.1 µg/L at well W-6G, have extended the leading edge of the perchlorate plume to the west-southwest. Perchlorate has not been detected in any of the $Tnbs_2$ HSU guard wells or other monitor wells located near the Site 300 southern boundary to date.

$Tnsc_{1b}$ HSU

Perchlorate concentrations in the $Tnsc_{1b}$ HSU have decreased from a historic maximum of 29 µg/L (extraction well W-829-06, 2000) to a first semester 2015 maximum of 13 µg/L (April) in the same well. This was the only $Tnsc_{1b}$ HSU well with perchlorate concentrations exceeding the 6 µg/L MCL cleanup standard and 4 µg/L reporting limit, during first semester 2015.

2.4.3.2.4. Nitrate Concentrations and Distribution

Nitrate concentrations and distribution in ground water in the Tpsg-Tps, $Tnbs_2$, and $Tnsc_{1b}$ HSUs in the HE Process Area are discussed below.

Tpsg-Tps HSU

Nitrate concentrations in Tpsg-Tps HSU ground water have increased from a previous historic maximum of 720 mg/L (2005) in monitor well W-6CS to a first semester 2015 (and new historic) maximum of 770 mg/L (March), in the same well. As there are no known nitrate sources associated with Site 300 operations located near this well, it is possible that a sheep ranch that predates Site 300 discovered in a historic photo of the area may be the source of this localized elevated nitrate. Other wells screened in the Tpsg-Tps HSU had significantly lower nitrate concentrations; the maximum in other Tpsg-Tps HSU wells during first semester 2015 was 112 mg/L (March) in monitor well W-809-01.

$Tnbs_2$ HSU

During 2014, nitrate concentrations in ground water collected from the $Tnbs_2$ HSU ranged from <0.5 mg/L in the vicinity of the Site 300 southern boundary to a maximum of 120 mg/L in monitor well W-817-2609, located near the 817-PRX GWTS. During first semester 2015, nitrate was not detected above the reporting limit in 11 routine and duplicate samples collected from offsite water-supply well GALLO1. Nitrate was not detected above the 45 mg/L MCL cleanup standard in ground water from any of the $Tnbs_2$ HSU guard wells sampled during first semester 2015. The first semester 2015 nitrate data from $Tnbs_2$ HSU wells continue to support the interpretation that nitrate is being degraded *in situ* by natural processes consistent with MNA. Due to microbial denitrification, nitrate concentrations remain below the 45 mg/L MCL cleanup standard in all wells near the southern site boundary where ground water is present under oxygen depleted, confined conditions.

$Tnsc_{1b}$ HSU

Nitrate concentrations in $Tnsc_{1b}$ HSU ground water have decreased from a historic maximum of 240 mg/L in extraction well W-829-06 to a first semester 2015 maximum of 73 mg/L (April) in the same well. Nitrate concentrations and distribution are similar to that of 2014.

2.4.3.3. HEPA OU Remediation Optimization Evaluation

Remediation at the HEPA OU is managed by balancing ground water extraction at the southern site boundary with pumping upgradient in the source and proximal areas. This strategy is designed to capture the leading edge of the VOC plume while minimizing the migration of

multiple, co-mingled plumes from the source areas. The overall spatial extent of total VOCs, HE compounds, perchlorate, and nitrate has slightly increased due to TCE, perchlorate, and nitrate detections in newly installed proposed 817-PRX injection wells W-817-3025 and W-817-3026 and HE compound detections in monitor well W-818-01 and extraction well W-818-09. To date, non-VOC comingled plumes remain in the source and proximal areas of the OU.

Although limited in areal extent, contaminants in the Tpsg-Tps HSU include VOCs, perchlorate, HE compounds and nitrate. During first semester 2015, COC concentrations in most wells were similar to those observed during 2014. Extraction well W-817-2318 extracts ground water from the Tpsg-Tps HSU in the area of highest VOC and perchlorate concentrations near Spring 5, downgradient of 817-SRC and adjacent to 817-PRX. Although declining water levels due to drought conditions and the low permeability of the HSU have hampered remediation efforts, TCE concentrations in W-817-2318 continue to decline, decreasing to first semester 2015 maximum of 18 µg/L from a 2014 maximum concentration of 25 µg/L and a 2007 historic maximum of 55 µg/L. During first semester 2015, HE compounds were not detected in any wells screened in the Tpsg-Tps HSU.

During first semester 2015, 815-PRX extraction wells W-818-08 and W-818-09 continued to exhibit hydraulic capture of ground water with the highest VOC concentrations, and extraction wells W-6ER, W-35C-04, and W-815-2608 continued to capture VOCs along the southern site boundary at the leading edge of the plume.

The overall footprint of the RDX plume in the $Tnbs_2$ HSU has extended to the east-southeast likely as a result of pumping by 815-PRX extraction wells, mainly W-818-09. Monitor wells W-818-01 and W-818-09 did not contain RDX above the 1 µg/L reporting limit in 2014; in first semester 2015, these wells contained RDX at 3.6 µg/L and 3.2 µg/L, respectively. 815-SRC extraction wells W-815-02, W-815-04 and W-815-2803, and 817-SRC extraction well W-817-01 continue to extract ground water from the areas with the highest RDX concentrations. RDX concentrations in W-815-04 have continued to decline since the addition of W-815-2803 to the 815-SRC treatment facility. Concurrently, RDX concentrations in monitor well W-809-03 declined from a 2012 maximum of 168 µg/L to a first semester 2015 concentration of 22 µg/L. RDX concentrations in extraction wells W-815-2803 and W-817-01 remained stable.

Perchlorate concentrations in the $Tnbs_2$ HSU have decreased steadily since monitoring for this COC began in 1998 and the trend continued during 2015 with lower concentrations in the majority of wells with historic perchlorate detections. The areas with the highest perchlorate concentrations continue to be located in the vicinity of the 817-SRC and 817-PRX treatment facilities. Baseline sampling of newly installed proposed 817-PRX injection wells W-817-3025 and W-817-3026 has extended the leading edge of the perchlorate plume to the west beyond Buildings 823 and south of 817-PRX injection wells W-817-02 and W-817-2109. Perchlorate concentrations in the confined portions of the $Tnbs_2$ HSU near the Site 300 southern boundary continue to be near or below the reporting limit.

Nitrate concentrations in the confined portions of the $Tnbs_2$ HSU near the Site 300 southern boundary continue to be near or below the reporting limit, demonstrating the continued effectiveness of MNA of nitrate even under pumping conditions.

Throughout the reporting period, pumping from HEPA extraction wells has been effective in capturing COCs and preventing farther migration of contaminated ground water towards the Site 300 southern boundary. During first semester 2015, VOCs above the reporting limit, were

not detected at offsite water-supply well GALLO1 and VOCs in onsite guard wells W-815-2110 and W-815-2111 remained stable at very low concentrations. Upgradient and downgradient pumping will continue to be balanced so that hydraulic capture at the Site 300 southern boundary is maintained without accelerating migration from upgradient sources. Close monitoring of VOC concentrations in the southern site boundary area will also continue, especially near offsite water-supply well GALLO1.

During first semester 2015, the total mass removed from all HEPA treatment facilities included 44 g of VOCs; 13 g of perchlorate; and 26 g of RDX. The volume of treated ground water decreased by approximately 37% from 2,142,000 gal (first semester 2014) to 1,350,000 gal (first semester 2015), likely the result of declining water levels due to drought conditions and an extended freeze protection period from December 2014 to March 2015 during which 815-SRC, 815-PRX, 817-SRC, and 817-PRX were not operational. Compared to first semester 2014, decreases in VOCs (40%), perchlorate (67%), and RDX (62%) mass removed were observed in first semester 2015. The large differences in perchlorate and RDX mass removed between first semester 2014 and first semester 2015 are attributed to prolonged 817-PRX GWTS downtime in 2015 as described in Section 2.4.1.2 and decreased extraction rates at 815-SRC due to drought conditions. Table Summ-1 lists the mass removed by each individual HEPA treatment facility. Nitrate in the $Tnbs_2$ HSU undergoes *in situ* biotransformation to benign nitrogen gas by anaerobic-denitrifying bacteria.

Installed in 2014, monitor wells W-817-3023 and W-815-3024 are awaiting baseline sampling, and planned injection wells, W-817-3025 and W-817-3026, having been baseline sampled, are awaiting injection tests to determine potential injection capacities. Baseline sampling of W-817-3023 and injection testing of W-817-3025 and W-817-3026 are planned for second semester 2015. W-815-3024 has been dry since installation but is routinely monitored for the presence of water for baseline sampling.

2.4.3.4. HEPA OU Remedy Performance Issues

There were no new issues that affect the performance of the cleanup remedy for the HEPA OU during this reporting period. The remedy continues to be effective and protective of human health and the environment.

2.5. Building 850/Pit 7 Complex OU 5

High explosive experiments were conducted at the Building 850 Firing Table from the 1950s until 2008. While explosives tests were conducted at Building 850, the firing table was covered with gravel to absorb the shock. The Building 850 Firing Table was routinely rinsed down with water after each experiment to reduce dust. Infiltrating water mobilized chemicals from the contaminated gravel to the underlying bedrock and ground water, however this practice was discontinued in 2004. Until 1989, gravels from the firing table surface were periodically removed and disposed of in several pits in the northwest part of the site.

A Corrective Action Management Unit (CAMU) was constructed in the Building 850 area of OU 5 in 2009 as part of the Building 850 Removal Action. A total of 27,592 cubic yards of polychlorinated biphenyl-, dioxin-, and furan-contaminated soil were excavated from the Building 850 Firing Table area, mixed with Portland cement and water, and consolidated and compacted to form the CAMU. Additional information on the Building 850 Removal Action is

presented in the Building 850 Action Memorandum (Dibley et al., 2008). Design information for the CAMU is presented in the construction subcontractor's 100% design submittal (SCS Engineers, 2009). The inspection and maintenance program for the CAMU program is described in Section 3. A map of the Building 850 area within OU 5 showing the locations of Building 850, the CAMU, and monitor wells are presented on Figure 2.5-1.

An *in situ* bioremediation treatability study for reduction of perchlorate in ground water immediately downgradient of Building 850 commenced in September 2011. A summary of the current status and preliminary results of the treatability study is presented in Section 2.5.2.2. Results indicate that the injection of ethyl lactate has resulted in bacterially-motivated reduction of perchlorate and nitrate in the treatment zone to concentrations below reporting limits.

The Pit 7 Complex area within OU 5 consists of the Pit 3, 4, 5 and 7 Landfills. The Pit 7 Complex landfills were used to dispose of firing table debris and gravel. These pits were constructed by excavating topsoil and alluvial materials to an average depth of 15 to 20 feet (Taffet et al., 1989). The majority of the waste material in the pits derived from the firing tables at Buildings 850 and 851, where aboveground detonations were conducted. The waste placed in the pits included wood, plastic, material, and debris from tent structures, pea gravel, and exploded test assemblies, some of which contained tritium and depleted uranium.

When rainfall increased to above normal levels, such as during El Niño years, the pit waste and underlying bedrock were inundated and residual contamination came into contact with shallow subsurface ground water. Ground water contaminants include tritium, uranium, perchlorate, nitrate and VOCs.

In 1992, an engineered cap was constructed over the Pit 7 Landfill (referred to as the Pit 7 Cap) in compliance with Resource Conservation and Recovery Act (RCRA) requirements. The design included interceptor trenches and surface water drainage channels, a top vegetative layer to prevent erosion, a biotic barrier layer to minimize animal burrowing, and a clay layer of very low permeability to prevent infiltration of precipitation and shallow subsurface interflow that could result in leaching of contaminants. The Pit 7 cap also covers 100% of Pit 4 and approximately 25 to 30% of Pit 3. The original compacted native soil cover on most of Pit 3 and all of Pit 5 remains intact.

The Pit 7 Drainage Diversion System, completed in March 2008, was designed to prevent additional releases of COCs from the pits and underlying bedrock to ground water. There are four components that comprise the drainage diversion system:

1. A subsurface drainage network on the western hillslope.
2. Upgraded riprap at the end of the existing north-flowing concrete channel for the Pit 7 Landfill cap.
3. A vegetated surface water diversion swale along the base of the eastern hillslope, along the paved road (Route 4), including several culverts under Route 4 and dirt fire trails.
4. An upgraded surface water-settling basin at the south end of the existing south-flowing concrete channel for the Pit 7 Landfill cap.

Additional information on the Pit 7 cap and Drainage Diversion System design is presented in the Remedial Design Document for the Pit 7 Complex (Taffet et al., 2008). The detection monitoring, inspection, and maintenance program for the Pit 7 Complex Landfills and the

inspection and maintenance program for the Drainage Diversion System are described in Section 3.

The Pit 7-Source (PIT7-SRC) GWTS began operation in May 2010. Ground water is currently extracted from Quaternary alluvium/Weathered bedrock (Qal/WBR) HSU wells, NC7-64, W-PIT7-2306, W-PIT7-2703, W-PIT7-2704 and W-PIT7-2705; $Tnbs_1/Tnbs_0$ bedrock HSU wells NC7-25 and W-PIT7-2307; and from well W-PIT7-2305, which is completed in both HSUs. The current GWTS configuration includes three ion-exchange resin canisters to remove uranium followed by three ion-exchange resin canisters containing a perchlorate-selective resin. An additional ion exchange column for removal of nitrate has been added in series, after the perchlorate removal columns, because the latter became saturated with nitrate and was not effective in removing nitrate. Ground water that has been treated to remove uranium, perchlorate and nitrate is then piped through three aqueous-phase GAC canisters to remove VOCs. The treated water, which still contains tritium, is discharged to an infiltration trench.

A map of the Pit 7 Complex area within OU 5 showing the locations of the landfills, drainage diversion system, extraction and monitor wells, and the treatment system is presented on Figure 2.5-1.

The Building 850 area of OU 5 is discussed in Sections 2.5.1 and 2.5.2. The Pit 7 Complex area of OU 5 is discussed in Sections 2.5.3 through 2.5.5.

2.5.1. Building 850 Area of OU 5 Ground Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.5-1. This table also delineates and explains deviations from the sampling plan.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions: a total of 33 required analyses from eight different wells and one spring were not performed because the wells were dry or contained insufficient water to collect the samples. A total of seven required analyses from well NC7-54 and W8SPRNG were not performed because the locations were inaccessible due to overgrown weeds.

2.5.2. Building 850 Area of OU 5 Remediation Progress Analysis

This section is organized into three subsections: analysis of contaminant distribution and concentration trends; remediation optimization evaluation; and performance issues.

2.5.2.1. Building 850 Area of OU 5 Contaminant Concentrations and Distribution

In the Building 850 area of OU 5, tritium and perchlorate are the primary COCs detected in ground water; depleted uranium and nitrate are secondary COCs. These constituents have been identified within the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs. The locations of the wells discussed in the following text appear on the Building 850 and Pit 7 Complex area site map (Figure 2.5-1).

2.5.2.1.1. Tritium Activities and Distribution

For the first time since elevated tritium activities in ground water were observed downgradient of Building 850 in the 1970s, maximum tritium activities do not exceed the 20,000 pCi/L MCL cleanup standard. The maximum tritium activities have decreased from a historic maximum of 566,000 pCi/L (monitor well NC7-28, 1985) to the first semester 2015 maximum of 18,700 pCi/L (June) in Qal/WBR HSU monitor well NC7-70. Tritium activities

and distribution in ground water in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs in the Building 850 Area are discussed below.

Qal/WBR HSU

Tritium activities exceeding the 20,000 pCi/L MCL cleanup standard were not detected in any ground water samples collected from Qal/WBR HSU monitor wells during first semester 2015. The first semester 2015 maximum tritium activity in ground water collected from the Qal/WBR HSU was 18,700 pCi/L from monitor well NC7-70. Well NC7-70 is located approximately 20 feet downgradient (east) of the Building 850 Firing Table and is the only well where tritium activity in ground water exceeded the 20,000 pCi/L MCL cleanup standard during 2014. Samples collected in April and October of 2014 contained 25,100 pCi/L and 23,200 pCi/L, respectively. Overall, tritium activities continue to decline in most portions of the Building 850 plume.

Wells W-PIT2-2301 and W-PIT2-2302, located in Elk Ravine downgradient of the Pit 2 Landfill, are monitored to determine the downgradient extent of tritium in the Qal/WBR HSU. However, neither well has contained sufficient water for sampling since 2012 when these wells yielded tritium activities within background range (<100 pCi/L), indicating that tritium from Building 850 was not present in the Qal/WBR HSU downgradient of the Pit 2 Landfill.

Beginning in 2013, the extent of tritium exceeding the 20,000 pCi/L MCL cleanup standard began to decrease significantly until now, in first semester 2015, tritium activities in ground water samples from all Qal/WBR wells have dropped below the 20,000 pCi/L MCL cleanup standard. The highest tritium activities are still detected in wells located immediately downgradient of the Building 850 Firing Table (NC7-70, W-850-2417, NC7-61, and NC7-28), but they no longer exceed the 20,000 pCi/L MCL cleanup standard. The extent of ground water with tritium in excess of background remains stable (similar to previous years).

$Tnbs_1/Tnbs_0$ HSU

During first semester 2015, tritium exceeding the 20,000 pCi/L MCL cleanup standard was not detected in any wells screened in the $Tnbs_1/Tnbs_0$ HSU. The maximum first semester 2015 tritium activity in the $Tnbs_1/Tnbs_0$ HSU was 8,040 pCi/L (May) in monitor well W-850-2316. The maximum 2014 tritium activity was 8,560 pCi/L in monitor well W-850-2145. Both W-850-2316 and W-850-2145 are located approximately 3,000 feet downgradient (east) of the Building 850 Firing Table. Overall, tritium activities in most $Tnbs_1/Tnbs_0$ HSU monitor wells have decreased since 2014 and the extent of ground water with tritium in excess of background is similar to previous years.

2.5.2.1.2. Uranium Concentrations and Distribution

During first semester 2015, uranium analyses were performed primarily by alpha spectroscopy with selected samples analyzed by Inductively Coupled Plasma - Mass Spectrometry (ICP-MS). High precision uranium isotope data (uranium-235/uranium-238 [$^{235}U/^{238}U$] atom ratio) for determining the presence of depleted uranium are only available by ICP-MS analysis. The presence of depleted uranium is indicated by a $^{235}U/^{238}U$ atom ratio of less than 0.007. Historic uranium isotope data indicate that regions of ground water containing some added depleted uranium extend downgradient about 1,200 feet within the Qal/WBR HSU, and 700 feet within the $Tnbs_1/Tnbs_0$ HSU, from the Building 850 Firing Table and have remained relatively stable. However, total uranium concentrations in both the Qal/WBR and $Tnbs_1/Tnbs_0$ HSU ground water remain below the 20 pCi/L MCL cleanup standard. Uranium

activities and distribution in ground water in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs in the Building 850 Area are discussed below.

Qal/WBR HSU

During first semester 2015, total uranium activities exceeding the 20 pCi/L MCL cleanup standard were not detected in any Qal/WBR HSU wells in the Building 850 area. The maximum first semester 2015 total uranium activity, measured in ethyl lactate injection well W-850-2417, was 14 pCi/L (February), an increase from the 2014 maximum activity of 9.6 pCi/L measured in well NC7-28. The historic maximum for the Building 850 area is 24 pCi/L (January 2013) in well NC7-28. Both wells W-850-2417 and NC7-28 are located within the *in situ* bioremediation treatment zone immediately downgradient of the Building 850 Firing Table. Overall, uranium activities remain similar to previous years in the Qal/WBR HSU wells within the Building 850 area, with the exception of those located within the *in situ* bioremediation treatment zone. Wells W-850-2417, NC7-70, and NC7-28 are located within the *in situ* bioremediation treatment zone. Prior to ethyl lactate injection, which began in September 2011, the maximum uranium activity in the three wells was 9.8 pCi/L in the July 2011 ground water sample collected from well NC7-28. After ethyl lactate injection and related ground water extraction and injection operations began (see Section 2.5.2.3 for details on the treatability study), uranium activities in these wells have ranged from below the reporting limits (0.1 pCi/L and 0.063 pCi/L for alpha spectroscopy and mass spectroscopy, respectively) to 24 pCi/L. Injection of ethyl lactate lowers the pH of the ground water and creates reducing conditions. Short-term decreases in total uranium activity in ground water are a product of reducing conditions that lower the solubility of uranium. Uranium activities can rebound as dissolved oxygen concentrations rise, and uranium activities in excess of pre-injection activities may result due to the lowered pH and oxidizing conditions that increase uranium solubility and may mobilize depleted and natural uranium sorbed/precipitated onto aquifer mineral surfaces.

$Tnbs_1/Tnbs_0$ HSU

Total uranium activities exceeding the 20 pCi/L MCL cleanup standard were not detected in ground water samples collected from $Tnbs_1/Tnbs_0$ HSU wells in the Building 850 area during first semester 2015. Since 2014, total uranium activities have decreased and are now below the MCL cleanup standard. The maximum first semester 2015 uranium activity detected was 18 pCi/L (April) in well NC7-29. During 2014, well NC7-29 and nearby well W-850-2315 contained ground water with activities of 24 pCi/L (April 2014, the historic maximum for $Tnbs_1/Tnbs_0$ HSU wells in the Building 850 area) and 21 pCi/L, respectively. Both wells are located approximately 1,400 feet southeast (crossgradient) of Building 850.

2.5.2.1.3. Nitrate Concentrations and Distribution

Nitrate was detected at concentrations at or above the 45 mg/L MCL cleanup standard in samples from 11 wells in the Building 850 area during first semester 2015. Nitrate concentrations and distribution in ground water in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs in the Building 850 Area are discussed below.

Qal/WBR HSU

During first semester 2015, the maximum nitrate concentration measured in a Qal/WBR HSU well was 61 mg/L (May) from monitor well K2-04S, located approximately 2,500 feet east of Building 850. The maximum historic nitrate concentration for ground water collected from a Qal/WBR HSU well in the Building 850 area is 186 mg/L, also from monitor well K2-04S

(August 1993). In the vicinity of the Building 850 firing table, four wells contained ground water with nitrate concentrations that exceeded the 45 mg/L MCL cleanup standard. Monitor well NC7-44, located upgradient of the firing table and the *in situ* bioremediation treatment zone, contained 57 mg/L of nitrate, and monitor wells NC7-10, NC7-11, and NC7-61, all located downgradient of the firing table and the *in situ* bioremediation treatment zone, contained 51 mg/L, 58 mg/L, and 54 mg/L of nitrate, respectively. Nitrate concentrations in wells NC7-28, NC7-70 and W-850-2417, located within the *in situ* bioremediation treatment zone, which had remained below the 0.5 mg/L reporting limit during 2014, rose above the reporting limit during first semester 2015, but still remained below the 45 mg/L MCL cleanup standard. The nitrate concentrations in the wells located within the *in situ* bioremediation treatment zone are related to ethyl lactate injection, ground water extraction, and ground water injection in wells W-850-2417 and NC7-70 (see Section 2.5.2.3 for details on the treatability study).

$Tnbs_1/Tnbs_0$ HSU

The first semester 2015 maximum nitrate concentration in the Building 850 area was 170 mg/L (April) in monitor well NC7-29, located southeast and crossgradient of Building 850. The historic local maximum nitrate concentration was 190 mg/L (2013) in the same well. The other $Tnbs_1/Tnbs_0$ HSU wells with nitrate concentrations exceeding the 45 mg/L MCL cleanup standard are located east of Building 850 (NC7-27), southeast of the Pit 2 Landfill (NC2-12S and NC2-19) and east of the Pit 1 Landfill (W-PIT1-2209 and W-PIT1-2620).

Historic data indicate that ground water nitrate concentrations in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs are limited in extent and relatively stable. Overall, except for the *in situ* bioremediation treatment zone, the distribution and concentrations of nitrate in ground water are generally consistent, or have declined slightly from those observed in previous years.

2.5.2.1.4. Perchlorate Concentrations and Distribution

During first semester 2015, perchlorate concentrations exceeding the 6 µg/L MCL cleanup standard were detected in 19 wells located east and south (downgradient) of Building 850, east (downgradient) of Pit 1, and southeast of Pit 2 in Elk Ravine. Perchlorate concentrations are similar to or have decreased slightly from 2014. Wells downgradient of the Building 850 Firing Table, with the exception of three wells (NC7-28, W-850-2417 and NC7-70) located within the *in situ* bioremediation treatment zone, continue to exhibit the highest perchlorate concentrations in the Building 850 area. Perchlorate concentrations and distribution in ground water in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs in the Building 850 Area are discussed below.

Qal/WBR HSU

The first semester 2015 maximum perchlorate concentration of 37 µg/L (May) was detected in well NC7-61. The same well yielded the 2014 maximum perchlorate concentration of 44 µg/L. Well NC7-61 is located 500 feet east of the firing table and directly downgradient of the *in situ* bioremediation treatment zone and is screened in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs. Ground water in the Qal/WBR HSU that contains perchlorate with concentrations in excess of the 6 µg/L MCL cleanup standard extends approximately 2,200 feet downgradient of the Building 850 firing table, similar to previous years. Within the *in situ* bioremediation treatment zone, ethyl lactate injections in September 2013 and May-June 2015 have kept perchlorate concentrations in well NC7-70 below the 4 µg/L reporting limit, while perchlorate concentrations in wells W-850-2417 and NC7-28 have rebounded from below the reporting limit during 2014 to concentrations that exceed the 6 µg/L MCL cleanup standard, 30 µg/L and

13 µg/L for W-850-2417 and NC7-28, respectively. Prior to ethyl lactate injection, the perchlorate concentrations in wells W-850-2417 and NC7-28 were 74 µg/L and 61 µg/L, respectively. Also, for the first time in the history of monitor well NC7-44, located west (outside) of the *in situ* bioremediation treatment zone approximately 400 feet upgradient of well NC7-70, perchlorate concentrations of 7.4 µg/L and 8.8 µg/L (routine and duplicate samples, respectively, from two different analytical laboratories) were reported. Prior to September 2011, when ethyl lactate injection began, perchlorate concentrations in NC7-44 had never been above the 4 µg/L reporting limit. However, given the distance upgradient from the treatment zone and the relatively small volumes of ground water involved, it is unclear how activities within the treatment zone could be the cause of the increased perchlorate concentrations in well NC7-44 (similar increases in other COCs were not observed).

$Tnbs_1/Tnbs_0$ HSU

The first semester 2015 maximum perchlorate concentration in wells screened in the $Tnbs_1/Tnbs_0$ HSU was 10 µg/L (April) in monitor well NC7-27, which also contained the 2014 maximum perchlorate concentration of 11 µg/L. Well NC7-27 is located approximately 900 feet east (downgradient) of the Building 850 firing table. Other $Tnbs_1/Tnbs_0$ HSU wells containing ground water with perchlorate concentrations exceeding the 6 µg/L MCL cleanup standard during first semester 2015 are located southeast of the Building 850 firing table (NC7-29), east of the Building 850 firing table (W-850-2145), southeast of the Pit 2 Landfill (NC2-12I and NC2-17), and east of the Pit 1 Landfill (W-PIT1-2326). During first semester 2015, the extent of ground water containing perchlorate at concentrations greater than the 4 µg/L reporting limit remained similar to 2014.

2.5.2.1.5. HE Compound Concentrations and Distribution

During first semester 2015, ground water samples from 21 wells located in the vicinity of Building 850 or downgradient of the Building 850 Firing Table were analyzed for HE compounds at a reporting limit, generally, of 1 µg/L. Only HMX and RDX were detected at concentrations exceeding the reporting limits. The source of HMX and RDX is the Building 850 Firing Table. HE compound concentrations and distribution in ground water in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs in the Building 850 Area are discussed below.

Qal/WBR HSU

During first semester 2015, wells NC7-10, NC7-61, NC7-70 and W-850-2417 contained RDX at concentrations that exceeded the 1 µg/L MCL cleanup standard. The maximum RDX concentration of 4.7 µg/L was detected in the May routine sample (the duplicate sample result was 3.4 µg/L) collected from well NC7-61. During 2014, well NC7-61 was the only well that consistently contained RDX at concentrations that exceeded the 1 µg/L MCL cleanup standard with the maximum 2014 concentration of 5.7 µg/L detected in the November sample. With the exception of well NC7-70, RDX has been detected in all of the wells in previous years. Following ethyl lactate injection into well W-850-2417, RDX concentrations in W-850-2417 and well NC7-28, located immediately downgradient of W-850-2417, have been mostly below the reporting limit until recently. The reducing conditions created following the injection of ethyl lactate are the likely cause of the decreased concentrations. RDX was never detected in well NC7-70 until extracted water from well W-850-2417 was injected as part of the *in situ* perchlorate bioremediation treatability study.

During first semester 2015, wells NC7-10, NC7-28, NC7-61, NC7-70 and W-850-2417, all located immediately downgradient of the Building 850 Firing Table, yielded HMX at concentrations above the reporting limit with the maximum of 6.5 µg/L (June) detected in well NC7-70. With the exception of well NC7-70, HMX has been detected in all of the wells during previous years. HMX concentrations in wells W-850-2417 and NC7-28 have decreased since ethyl lactate injection into well W-850-2417, likely the result of the reducing conditions that were created. As mentioned previously regarding RDX, the presence of HMX in ground water from well NC7-70 is due to injection of ground water from W-850-2417 as part of the *in situ* perchlorate bioremediation treatability. HMX concentrations in the Qal/WBR HSU are significantly below the HMX Regional Tapwater Screening Level of 1,000 µg/L (U.S. EPA, June 2015).

During first semester 2015, the extent of HE compounds in Building 850 ground water was limited to five wells located within 800 feet east (downgradient) of the Building 850 Firing Table.

$Tnbs_1/Tnbs_0$ HSU

During first semester 2015, HE compounds were not detected above the reporting limit, in ground water from wells screened in the $Tnbs_1/Tnbs_0$ HSU downgradient of Building 850 or from wells screened in the underlying $Tnsc_0$ HSU.

2.5.2.2. Building 850 Area of OU 5 Remediation Optimization Evaluation

Data collected during the reporting period indicate that natural attenuation (dispersion, radioactive decay, and a decreasing source term) has been effective in reducing all tritium activities in ground water to below the 20,000 pCi/L MCL cleanup standard. The highest tritium activities in ground water continue to be located directly downgradient of the tritium sources at the Building 850 Firing Table and continue to decline. In general, the footprint of the ground water tritium plume remains stable and activities continue to decline and are significantly below historic highs throughout the Building 850 plume. The leading edge of the tritium plume is stable, within the Site 300 interior, and is expected to completely attenuate within the boundaries of Site 300.

During first semester 2015, none of the wells in the Building 850 area contained ground water with total uranium activities that exceeded the 20 pCi/L MCL cleanup standard. The monitoring-only strategy for uranium at Building 850 continues to be protective given that: (1) total uranium activities in ground water at and downgradient from Building 850 are below the 20 pCi/L MCL cleanup standard, and (2) the areal extent of depleted uranium has not changed during the period of monitoring. Temporal trends in $^{235}U/^{238}U$ isotope ratios from past samples have remained stable.

During first semester 2015, the overall extent and maximum concentrations of nitrate and perchlorate in ground water are similar to those observed in 2014. Within the *in situ* perchlorate bioremediation treatment zone, perchlorate and nitrate concentrations in ground water samples from wells NC7-28, NC7-70 and W-850-2417 are either below reporting limits or significantly lower than pre-injection concentrations.

2.5.2.3. Building 850 Area of OU 5 Enhanced Bioremediation Treatability Study

The *in situ* perchlorate bioremediation treatability study commenced at Building 850 during second semester 2011. The objective of this study is to evaluate the efficacy of *in situ* enhanced bioremediation methods in reducing perchlorate concentrations in Building 850 ground water. To date, the test has consisted of injecting ethyl lactate mixed with ground water in wells W-850-2417 (ethyl lactate injections in 2011 and 2012) and NC7-70 (ethyl lactate injections in 2013 and 2015) to facilitate the *in situ* bioremediation of perchlorate by indigenous bacteria, while monitoring these and nearby wells NC7-28 and W-850-2416 to evaluate bioremediation performance.

Monitoring results indicate that microbial reduction reduced perchlorate concentrations in wells W-850-2417 and NC7-28 from pre-test 2011 maxima of 74 µg/L and 71 µg/L, respectively, to below the 4 µg/L reporting limit by 2012. Perchlorate concentrations remained below the reporting limit in almost all samples collected from these wells during 2013 and 2014. During first semester 2015, perchlorate concentrations in W-850-2417 and NC7-28 rebounded to concentrations of 30 µg/L and 13 µg/L, respectively, exceeding the 6 µg/L MCL cleanup standard but less than pre-injection levels. Perchlorate in injection well NC7-70 has been reduced from a pre-injection concentration of 52 µg/L and, due to more recent injection of ethyl lactate, concentrations remain below the reporting limit.

Although not specifically targeted for bioremediation, nitrate concentrations and uranium activities were also monitored in the injection wells W-850-2417 and NC7-70, and performance monitor well NC7-28. Nitrate concentrations in wells W-850-2417, NC7-70 and NC7-28 decreased from pre-injection maximum concentrations of 52 mg/L, 32 mg/L, and 57 mg/L, respectively, to below the 0.5 mg/L reporting limit following ethyl lactate injection. During first semester 2015 nitrate concentrations in these wells had rebounded and were greater than the reporting limit, but below pre-injection concentrations and the 45 mg/L MCL cleanup standard (20 mg/L, 9.4 mg/L, and 13 mg/L for W-850-2417, NC7-70, and NC7-28, respectively).

Total uranium activities in W-850-2417, NC7-28 and NC7-70 initially decreased following ethyl lactate injection but fluctuated with activities often exceeding the pre-injection values. In the case of well NC7-28, activity increased from a pre-injection value of 9.8 pCi/L to 24 pCi/L (January 2013), the historic maximum for the well and the Qal/WBR HSU in the Building 850 area. During first semester 2015, uranium activities in wells W-850-2417, NC7-28, and NC7-70 were 14 pCi/L, 7.1 pCi/L, and 8.4 pCi/L, respectively, exceeding the pre-injection activities in two of the three wells. Following ethyl lactate injection, decreasing uranium activities appear to result from concurrent reduction of U^{+6} species in ground water to U^{+4} species, which form insoluble mineral solids. Later increases likely arise from a combination of dissolution of natural U under low pH conditions and oxidation of reduced uranium from solids on mineral surfaces back into solution, coupled with arrival of pre-existing dissolved uranium from upgradient of the treatment area.

In March 2013, fluorescein, a non-toxic tracer, mixed with ground water was injected into NC7-70 to independently track the migration of injected fluids along the flow path from well NC7-70 downgradient through the treatment zone to wells W-850-2417 and NC7-28. Tracer was first detected in the December 4, 2013 ground water sample from well W-850-2417 followed by detection in well NC7-28 during first semester 2014. Monitoring of the tracer test

continued during first semester 2015 and a complete analysis of the results will be presented in the Building 850 Focused Feasibility Study report.

2.5.2.4. Building 850 Area of OU 5 Remedy Performance Issues

There were no new issues that affect the performance of the MNA cleanup remedy for tritium in the Building 850 area during this reporting period. The remedy for tritium continues to be effective and protective of human health and the environment, and tritium activities, now below the 20,000 pCi/L MCL cleanup standard, continue to decline. Perchlorate, uranium and RDX distribution in ground water downgradient of the Building 850 Firing Table will continue to be closely monitored and reported. The *in situ* bioremediation treatability study analytical results will continue to be evaluated and reported in future reports. The performance of this technology with respect to uranium and RDX remediation or stabilization will also be evaluated. During first semester 2015, a draft work plan (Madrid and Taffet, 2015) was submitted for the drilling and sampling of three boreholes within the footprint of the Building 850 Firing Table to determine if residual perchlorate exists in the unsaturated zone beneath the firing table. Ground water samples from these boreholes will also be analyzed for perchlorate.

2.5.3. Pit 7 Complex Area of OU 5 Ground Water Treatment System Operations and Monitoring

This section is organized into five subsections: facility performance assessment; operations and maintenance issues; compliance summary; facility sampling plan evaluation and modifications; and treatment facility and extraction wellfield modifications.

2.5.3.1. Pit 7 Complex Area of OU 5 Facility Performance Assessment

The monthly ground water discharge volumes and rates and operational hours for first semester 2015 are summarized in Table 2.5-2. The total volume of ground water extracted and treated, and masses removed during the reporting period are presented in Table Summ-1. The cumulative volume of ground water treated and discharged and masses removed are summarized in Table Summ-2. Analytical results for influent and effluent samples collected during first semester 2015 are presented in Tables 2.5-3 through 2.5-6. The pH measurement results are presented in Appendix A.

2.5.3.2. Pit 7 Complex Area of OU 5 Operations and Maintenance Issues

The following maintenance activities and operational issues occurred at the PIT7-SRC GWTS during first semester 2015:

- The GWTS was taken offline on January 14 to replace the influent and effluent meters.
- A double check valve was installed in well W-PIT7-2307 on March 31.
- The GWTS was taken offline on April 8 to allow for well recovery to facilitate quarterly sampling of extraction wells. The system was restarted upon completion of the sampling on April 13.
- A new double check valve was installed in well NC7-25 on April 9.
- The GWTS was offline from May 14 until May 18 due to a site-wide power outage.

- The GWTS was taken offline on June 10 to check influent and effluent meters. Sediment was flushed from lines, influent and effluent filters were replaced, and a bucket test was performed to check flow rate accuracy. The system was restarted on June 16.
- A new double check valve was installed in well W-PIT7-2305 on June 22.
- The GWTS was taken offline for less than 8 hours on June 30 for a change-out of the nitrate ion-exchange column.

2.5.3.3. Pit 7 Complex Area of OU 5 Compliance Summary

The PIT7-SRC GWTS operated within compliance with the RWQCB Substantive Requirements for Wastewater Discharge throughout the reporting period.

2.5.3.4. Pit 7 Complex Area of OU 5 Facility Sampling Plan Evaluation and Modifications

The PIT7-SRC treatment facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The treatment facility sampling and analysis plan is presented in Table 2.5-7. No modifications to the plan were made during this reporting period.

2.5.3.5. Pit 7 Complex Area of OU 5 Treatment Facility and Extraction Wellfield Modifications

No treatment facility or extraction wellfield modifications were made during this reporting period.

2.5.4. Pit 7 Complex Area of OU 5 Ground Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.5-8. This table also delineates and explains deviations from the sampling plan.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions: a total of 69 required analyses in 16 different wells were not performed because the wells were dry or there was insufficient water for sample collection.

2.5.5. Pit 7 Complex Area of OU 5 Remediation Progress Analysis

This section is organized into three subsections: analysis of contaminant distribution and concentration trends; remediation optimization evaluation; and performance issues.

2.5.5.1. Pit 7 Complex Area of OU 5 Mass Removal

The monthly ground water mass removal estimates for first semester 2015 are summarized in Table 2.5-9. The total mass removed during the reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

2.5.5.2. Pit 7 Complex Area of OU 5 Contaminant Concentrations and Distribution

In the Pit 7 Complex area of OU 5, tritium is the primary COC in ground water, and uranium, perchlorate, nitrate, and VOCs are secondary COCs. These constituents have been identified within the Qal/WBR and $Tnbs_1$/$Tnbs_0$ HSUs. The locations of the wells discussed in the following text appear on the Building 850 and Pit 7 Complex area site map (Figure 2.5-1).

2.5.5.2.1. Tritium Activities and Distribution

Commingled plumes of tritium in ground water extend from Pit 3 and Pit 5 Landfill sources. The Pit 7 Landfill is not an apparent source of tritium to ground water as most of the tritium-bearing experiments at Site 300 were conducted prior to its opening in 1979 (Taffet et al., 2008) and monitor well NC7-48, located directly downgradient of Pit 7 and upgradient of Pit 3, has generally yielded ground water samples that contain tritium activities within background ranges. Tritium activities in the ground water samples collected from well NC7-48 during first semester 2015 were below the 100 pCi/L reporting limit for tritium. Tritium activities and distribution in ground water in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs in the Pit 7 Complex Area are discussed below.

Qal/WBR HSU

Tritium activities in the Qal/WBR HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 2,660,000 pCi/L (NC7-63, 1998) to a first semester 2015 maximum of 173,000 pCi/L in monitor well NC7-51 (April). The 2014 and 2013 maximum tritium activities of 134,000 pCi/L and 144,000 pCi/L, respectively, were also detected in well NC7-51. Well NC7-51 is located about 40 feet northeast of Pit 5 and 60 feet east of Pit 3. In the Qal/WBR HSU, the region of ground water containing tritium in excess of the MCL cleanup standard extends about 1,600 feet southeast from the eastern edge of Pit 3. During first semester 2015, ground water tritium activities and the extent of tritium activities exceeding the 20,000 pCi/L MCL cleanup standard remain similar to those observed in 2014.

$Tnbs_1/Tnbs_0$ HSU

In the Pit 7 Complex area, tritium activities in $Tnbs_1/Tnbs_0$ HSU ground water have decreased from a historic maximum of 770,000 pCi/L (1999) to a first semester 2015 maximum of 180,000 pCi/L (April). Both the historic and first semester 2015 maximum tritium activities were detected in extraction well NC7-25, located about 250 feet downgradient (northeast) of the Pit 3 Landfill. Within the Pit 7 Complex area, $Tnbs_1/Tnbs_0$ HSU ground water with tritium activities in excess of the 20,000 pCi/L MCL cleanup standard extends about 800 feet northeast of Pit 3 and Pit 5, similar to that observed in 2014. In general, tritium activities in the $Tnbs_1/Tnbs_0$ HSU are similar to or have declined slightly from 2014 measurements.

Overall, the extent of tritium in ground water with activities in excess of the 100 pCi/L background level remains stable, and is similar to that observed in 2014.

2.5.5.2.2. Uranium Concentrations and Distribution

Uranium activities and distribution in ground water in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs in the Pit 7 Complex Area are discussed below.

Qal/WBR HSU

Uranium activities in Qal/WBR HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 781 pCi/L (monitor well NC7-40, 1998) to a first semester 2015 maximum of 116 pCi/L in extraction well NC7-64 (April). The first semester 2015 maximum is a slight increase from the 2014 maximum of 109 pCi/L detected in extraction well W-PIT7-2703. Both extraction wells, W-PIT7-2703 and NC7-64 are located directly downgradient (east) of Pit 3. Total uranium activities exceeded the 20 pCi/L MCL cleanup standard in 11 wells in the Qal/WBR HSU during first semester 2015.

All of the wells with uranium activities exceeding the 20 pCi/L MCL cleanup standard are proximal to the landfills and have historically shown $^{235}U/^{238}U$ isotopic ratios indicating some depleted uranium. The extent of uranium in excess of the MCL cleanup standard in the Qal/WBR HSU is confined to an area directly east of Pit 3 and another area that extends about 500 feet southeast from the center of Pit 5. The spatial extent of shallow ground water impacted with depleted uranium has been stable since the mid-1990s. Areas of depleted uranium in ground water are bounded by wells that exhibit $^{235}U/^{238}U$ atom ratios indicative of natural uranium. Sorption and ion exchange are likely responsible for retarding the migration of depleted uranium in ground water compared to conservative contaminants such as tritium.

$Tnbs_1/Tnbs_0$ HSU

In the Pit 7 Complex Area, only one well screened in the $Tnbs_1/Tnbs_0$ HSU contained ground water with a total uranium activity in excess of the 20 pCi/L MCL cleanup standard during first semester 2015. Extraction well NC7-25, located downgradient (east) of Pit 3, contained ground water with a total uranium activity of 83 pCi/L (April), a decrease from October 2014 when the total uranium activity was 100 pCi/L (the historic maximum for the $Tnbs_1/Tnbs_0$ HSU in the Pit 7 Complex Area). Well NC7-25 is the only $Tnbs_1/Tnbs_0$ HSU well that historically and currently yields ground water with uranium in excess of the MCL cleanup standard. All $^{235}U/^{238}U$ atom ratio data, until the October 2014 sample, indicated that the uranium in NC7-25 ground water was natural. The $^{235}U/^{238}U$ atom ratio measured in the October 2014 sample was 0.0066, indicating the presence of some depleted uranium ($^{235}U/^{238}U$ atom ratio data for 2015 will not available until the second semester). Two years after ground water extraction from well NC7-25 began in August 2012, uranium activities in the extracted ground water increased significantly and, for the first time, the $^{235}U/^{238}U$ atom ratio data indicate the presence of depleted uranium. The presence of some depleted uranium in the recent sample may be a result of migration of Qal/WBR water into the well capture zone. The increase in overall activity suggests movement of largely natural uranium-bearing water into the vicinity of this pumping well.

The maximum uranium activity in a well screened in both the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs during first semester 2015 was 26 pCi/L (April) in extraction well W-PIT7-2307.

As is the case for the Building 850 portion of OU 5, uranium activity analyses for first semester 2015 were performed primarily by alpha spectroscopy with selected samples analyzed by ICP-MS.

2.5.5.2.3. Nitrate Concentrations and Distribution

Nitrate concentrations and distribution in ground water in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs in the Pit 7 Complex Area are discussed below.

Qal/WBR HSU

During first semester 2015, ground water in two Qal/WBR HSU wells contained nitrate with concentrations at or above the 45 mg/L MCL cleanup standard. Nitrate concentrations in the Qal/WBR HSU have decreased from the historic maximum of 90 mg/L in well NC7-63 (2011) to a first semester 2015 maximum nitrate of 45 mg/L in April in both extraction well NC7-64 and monitor well NC7-51. Wells NC7-63, NC7-64 and NC7-51 are located immediately downgradient (east) of Pit 3. Well NC7-63 was dry during first semester 2015.

$Tnbs_1/Tnbs_0$ HSU

During first semester 2015, nitrate was detected at concentrations at or above the 45 mg/L MCL cleanup standard in samples from $Tnbs_1/Tnbs_0$ HSU wells NC7-47 and W-PIT7-13, both located downgradient and northeast of the Pit 7 Complex area. The first semester 2015 maximum nitrate concentration detected in this HSU, in the Pit 7 Complex area, was 64 mg/L in well NC7-47 (May). Well NC7-47 is also the location of the historic maximum nitrate concentration of 85 mg/L (2003). Ground water collected from well W-PIT7-13 contained 59 mg/L and 62 mg/L, for the routine and duplicates samples, respectively, in April.

The first semester 2015 maximum nitrate concentration in a well screened in both the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs was 48 mg/L in monitor well K7-01, located immediately downgradient of Pit 5.

Historic data indicate that nitrate concentrations in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSU ground water are limited in extent and relatively stable. The distribution and concentrations of nitrate in ground water during first semester 2015 are similar to what was observed in 2014.

2.5.5.2.4. Perchlorate Concentrations and Distribution

During first semester 2015, perchlorate was detected at concentrations exceeding the 6 µg/L MCL cleanup standard in 13 wells downgradient (east) of the landfills. Perchlorate concentrations and distribution in ground water in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs in the Pit 7 Complex Area are discussed below.

Qal/WBR HSU

Perchlorate concentrations in Qal/WBR HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 40 µg/L (extraction well W-PIT7-2306, 2009) to a first semester 2015 maximum of 13 µg/L (April) in extraction well W-PIT7-2305, located immediately downgradient of Pit 5. Well W-PIT7-2306 has not contained sufficient water for sampling since May 2012. The other Qal/WBR HSU wells with perchlorate exceeding the 6 µg/L MCL cleanup standard during first semester 2015 were monitor well NC7-51 and extraction wells NC7-64 and W-PIT7-2703, located immediately downgradient of Pit 3, and monitor wells NC7-40, W-PIT7-03, and W-PIT7-1918, and extraction well W-PIT7-2705, located immediately downgradient of Pit 5.

$Tnbs_1/Tnbs_0$ HSU

Perchlorate concentrations in $Tnbs_1/Tnbs_0$ HSU ground water have decreased from a historic maximum of 29 µg/L in monitor well K7-03 (2005) to the first semester 2015 maximum concentration of 10 µg/L, in extraction wells NC7-25 and W-PIT7-2307 (both in April). During first semester 2015, monitor wells NC7-68 and W-PIT7-2309 also contained perchlorate at concentrations exceeding the 6 µg/L MCL cleanup standard. Well NC7-25 is located downgradient of Pit 3, and wells NC7-68, W-PIT7-2309, and W-PIT7-2307 are located downgradient of Pit 5.

The first semester 2015 maximum perchlorate concentration in a well screened in both the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs was 11 µg/L in monitor well K7-01 (April). Well K7-01 is located immediately downgradient of Pit 5.

Overall, the extent of perchlorate at concentrations exceeding the 6 µg/L MCL cleanup standard in ground water in the Pit 7 Complex area did not change significantly from 2014 to first semester 2015.

2.5.5.2.5. VOC Concentrations and Distribution

The VOC COCs in Pit 7 Complex Area ground water include TCE and 1,1-DCE. Only TCE was detected in ground water samples from three Pit 7 Complex area wells during first semester 2015. Concentrations were below the TCE 5 µg/L MCL cleanup standard in all of the wells and have been so since 2011. VOC concentrations and distribution in ground water in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs in the Pit 7 Complex Area are discussed below.

Qal/WBR HSU

During first semester 2015, VOCs at concentrations above the 0.5 µg/L reporting limit were not detected in any of the Pit 7 Complex area Qal/WBR HSU monitor wells. During 2014, three wells contained VOCs at concentrations above the 0.5 µg/L reporting limit. Total VOC concentrations in Qal/WBR HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 21 µg/L in 1995 (monitor well NC7-51, located immediately downgradient of Pit 3, comprised of 15 µg/L TCE and 6.2 µg/L 1,1-DCE) to below the 0.5 µg/L reporting limit in first semester 2015.

$Tnbs_1/Tnbs_0$ HSU

During first semester 2015, TCE concentrations above the 0.5 µg/L reporting limit were detected in two Pit 7 Complex area $Tnbs_1/Tnbs_0$ HSU wells. Monitor well K7-03 contained 1.0 µg/L TCE (duplicate result, 0.92 µg/L in the routine sample, April) and extraction well W-PIT7-2307 contained 0.63 µg/L TCE (April). Total VOC concentrations in the $Tnbs_1/Tnbs_0$ HSU have decreased from the historic maximum of 15.2 µg/L (8.7 µg/L TCE, 4.5 µg/L 1,2-DCE, 0.8 µg/L PCE, and 1.2 µg/L 1,1,1-TCA) measured in 1985 in monitor well K7-03.

Monitor well K7-01, located immediately downgradient of Pit 5 and completed in both HSUs, contained 0.78 µg/L TCE (April).

2.5.5.3. Pit 7 Complex Area of OU 5 Remediation Optimization and Performance Evaluation

Ground water extraction and treatment at the PIT7-SRC facility began in March 2010. A wellfield expansion in second semester 2012 added wells W-PIT7-2703, W-PIT7-2704 and W-PIT7-2705 to the Pit 7 extraction wellfield. In addition to the new extraction wells, extraction of ground water from NC7-25, screened in the $Tnbs_1/Tnbs_0$ bedrock HSU, was initiated and the pump intake in well W-PIT7-2307 was raised to target the Qal/WBR HSU.

During first semester 2015, only five (NC7-25, NC7-64, W-PIT7-2305, W-PIT7-2703 and W-PIT7-2705) of the eight PIT7-SRC extraction wells operated throughout the entire semester due to the ongoing drought conditions. W-PIT7-2307 operated briefly in February and March until the water level dropped below the pump intake, and wells W-PIT7-2306 and W-PIT7-2704 did not contain sufficient water for pumping at any time during the semester. The lack of recharge combined with the low permeability of the HSU materials limited the long-term average ground water extraction flow rate from the entire PIT7-SRC extraction wellfield to less than 0.1 gpm with the majority of the flow contributed by well W-PIT7-2305. Table Summ-1 lists the volume of ground water treated from PIT7-SRC as 13,000 gal, but due to ongoing issues with check valves and flow meters the volume of ground water extracted and masses of COCs

removed may have been overestimated by as much as 50%. Repairs were completed and equipment was replaced during first semester 2015 and the volume and mass estimates for second semester 2015 should be more accurate.

Though the yields from the PIT7-SRC extraction wells are extremely low, the wells are located in areas with high COC concentrations and have been removing COC mass since ground water extraction began in 2010. Concentrations of COCs in ground water from well W-PIT7-2305, which provides most of the flow to the PIT7-SRC facility, have fluctuated since pumping started in 2010, but have shown decreases from pre-pumping conditions to present. For example:

- Tritium activities decreased from 73,900 pCi/L (2010) to 35,300 pCi/L (April 2015).
- Uranium activities decreased from 21 pCi/L (2010) to 16 pCi/L (April 2015). Since 2008, the ground water from this well has contained only natural uranium.
- TCE concentrations were below the 0.5 µg/L reporting limit (January 2010), were reported at 0.63, 0.67 and 0.52 µg/L in May 2010, October 2010 and April 2011, respectively, and have remained below the 0.5 µg/L reporting limit since October 2011.

In addition to the long-term trends observed in W-PIT7-2305, during first semester 2015 operation of W-PIT7-2307 during February and March extracted TCE from ground water in the Pit 7 Complex Area for the first time since 2013. Well NC7-25 was activated as an extraction in August 2012 to increase uranium mass removal. Until 2014, uranium in this well had historically always exhibited a natural $^{235}U/^{238}U$ atom ratio but exceeded the 20 pCi/L MCL cleanup standard. After two years of ground water extraction, the October 2014 ground water sample yielded a total uranium activity of 100 pCi/L, a significant increase and historic maximum for this well, with a $^{235}U/^{238}U$ ratio of 0.0066, indicating the presence of some depleted uranium for the first time in this well. The total uranium activity measured in the first semester 2015 ground water sample was 83 pCi/L (alpha spectrometry analysis, no atom ratio data available), indicating that operation of well NC7-25 has increased uranium mass removal. Given the low yields of the HSU materials and the current climate conditions, the PIT7-SRC extraction well field is operating as well as can be expected.

2.5.5.4. Pit 7 Complex Area of OU 5 Remedy Performance Issues

MNA for tritium continues to be effective and protective of human health and the environment, and to make progress toward cleanup. The extraction and treatment of uranium, perchlorate, VOCs and nitrate continue to reduce the concentrations and masses of these contaminants in Pit 7 Complex ground water.

During first semester 2015, tritium activities in treated effluent from PIT7-SRC ranged from 37,400 pCi/L to 43,600 pCi/L. Tritium activities in performance monitor wells NC7-16 and NC7-21, located directly downgradient of the effluent discharge trench, are lower than the treated effluent activities and continue to exhibit decreasing tritium trends. The tritium activities in these wells will continue to be closely monitored to assess any negative impacts to the distribution of tritium in ground water.

The performance summary of PIT7-SRC indicates that:

- Progress has been made in reducing COC concentrations towards cleanup standards. Uranium activities to date have remained relatively stable, and those in excess of MCL cleanup standards are limited in extent. TCE concentrations have dropped below the MCL cleanup standard. Perchlorate concentrations are stable to decreasing. Nitrate concentrations and distribution have decreased from historic maxima.
- The extent of uranium in excess of the MCL cleanup standard in the Qal/WBR HSU continues to be confined to an area immediately east of Pit 3 and another area that extends from Pit 5 southeast about 500 feet. The extents of uranium in both these regions have remained stable and similar to what has been observed over the last few years.
- Tritium activities in wells downgradient of the infiltration trench are decreasing, indicating that the discharge of tritium-bearing water is not adversely impacting downgradient ground water.

As discussed in the Remedial Design (RD) for the Pit 7 Complex (Taffet et al., 2008), the drainage diversion system design was not intended to capture 100% of the precipitation that falls in the Pit 7 Complex area. Rather, it was designed to divert excess surface water runoff and shallow subsurface recharge from the hillslopes to the west and east of the Pit 7 Complex landfills during high intensity storms and periods of extreme rainfall (i.e., the 1997-1998 El Niño) to minimize ground water contact with the pit waste and underlying contaminated bedrock. Thus, the drainage diversion system performance can best be evaluated during a future El Niño season or other period of very high rainfall.

Criteria indicating that the drainage diversion system is not operating as intended and corresponding recent performance include:

1. Ground water elevation responses to rainfall events observed in key monitoring wells are similar to those observed before the installation of the drainage diversion system:
    - Drainage diversion system performance is evaluated by 22 monitor wells outfitted in April 2010 with dedicated pressure transducers that measure ground water elevations.
    - Review of these data indicates that ground water elevation responses to rainfall are less than those observed prior to drainage diversion system installation in several wells. For example, in 2005, prior to installation of the drainage diversion system, ground water elevation in well NC7-17, located downgradient of the drainage diversion system at the south end of Pit 7, increased 5 inches per inch of rain received. In 2011, after installation of the drainage diversion system, ground water elevation increased less than 4 inches per inch of rain received for the same time period during the water year. These data indicate a 20% reduction in ground water elevation response to rainfall in well NC7-17 after installation of the drainage diversion system. Total precipitation received during water years 2004-2005 and 2010-2011 was greater than average and almost identical at 13.7 inches and 13.5 inches, respectively. Precipitation received during rainfall years following 2010-2011 has been below average and water elevation response evaluations have not been performed for these time periods.

2. Maximum ground water rises into the pit waste and underlying contaminated bedrock as indicated by ground water elevation data:
   - Ground water levels have remained well below the bottoms of the Pit 7 Complex Landfills. Ground water elevations in the Qal/WBR HSU have decreased since spring 2011 due to below average rainfall.
3. Increasing trends in tritium, uranium, VOCs or perchlorate activities/concentrations are observed over a period of at least four quarters in ground water samples from key wells downgradient of the landfills:
   - COC trends in Pit 7 Complex ground water are decreasing:
     - Tritium activities decreased from a historic maximum of 2,660,000 pCi/L in 1998 to a first semester 2015 maximum tritium activity of 180,000 pCi/L.
     - Uranium activities have decreased from a historic maximum of 781 pCi/L in 1998 to a first semester 2015 maximum of 116 pCi/L.
     - Nitrate concentrations have decreased from the historic maximum of 363 mg/L in 2003 to a first semester 2015 maximum of 64 mg/L.
     - Perchlorate concentrations have decreased from a historic maximum of 40 µg/L in 2009 to a first semester 2015 maximum of 13 µg/L.
     - Total VOC concentrations have decreased from a historic maximum of 21.2 µg/L in 1995 to a first semester 2015 maximum of 1.0 µg/L, with concentrations of all VOC COCs below cleanup standards.

Based on the evaluation of ground water elevation and contaminant activity/concentration data collected from Pit 7 Complex area wells against the performance criteria, the drainage diversion system appears to be operating as intended. However, it is important to note that the drainage diversion system is designed to divert recharge during peak events and has not yet been tested under the conditions for which it was designed.

2.6. Building 854 OU 6

The Building 854 Complex has been used to test the stability of weapons and weapon components under various environmental conditions and mechanical and thermal stresses. A map of the Building 854 OU showing the locations of monitor and extraction wells and treatment facilities is presented on Figure 2.6-1.

Three GWTSs are currently operated in the Building 854 OU; Building 854-Source (854-SRC), Building 854-Proximal (854-PRX), and Building 854-Distal (854-DIS). One SVTS is also operated at the 854-SRC facility.

The 854-SRC GWTS began operation in December 1999 removing VOCs and perchlorate from ground water. During first semester 2015, ground water was extracted from wells W-854-02 and W-854-2218 at an approximate combined flow rate ranging from 3.3 to 4.2 gpm. Operational flow rates will be higher in the future once interlock issues are addressed (discussed in Section 2.6.1.2) and these wells are able to extract water concurrently. The GWTS configuration includes a particulate filtration system, two ion-exchange resin columns connected in series for perchlorate removal, and three aqueous-phase GAC units connected in series for

VOC removal. Nitrate-bearing treated effluent is then discharged via a misting tower onto the landscape for uptake and utilization of the nitrate by indigenous grasses.

A SVTS began operation at the 854-SRC in November 2005. Soil vapor is currently extracted from well W-854-1834 at an approximate flow rate ranging from 34 to 46 scfm. This system consists of a rotary-lobe blower to create vacuum at the wellhead, and a series of pipes leading to vapor-phase GAC by which VOCs are removed from extracted soil vapor. Treated vapors are discharged to the atmosphere under a permit issued by the San Joaquin Valley Air Pollution Control District.

The 854-PRX GWTS began removing VOCs, nitrate and perchlorate from ground water in November 2000. During first semester 2015, ground water was extracted at an average flow rate of 5.6 gpm from a single extraction well, W-854-03, located southeast of the Building 854 complex. This flow rate is a significant increase from the extraction rate averaging 1.5 gpm before the 2014 facility upgrades. The GWTS configuration includes a particulate filtration system, two ion-exchange resin columns connected in series for perchlorate removal, and three aqueous-phase GAC units connected in series for VOC removal. An additional nitrate ion-exchange column is available in the event that nitrate concentrations approaches the discharge limit of 45 mg/L.

The 854-DIS GWTS is solar-powered and began operation in July 2006 removing VOCs and perchlorate from ground water. Ground water is extracted from well W-854-2139, which operates cyclically. The current operational flow rate averages approximately 450 gal per month. The GWTS configuration includes two ion-exchange resin columns connected in series for perchlorate treatment followed by three aqueous-phase GAC units connected in series for VOC removal prior to discharge to an infiltration trench. Nitrate concentrations are low at this location, so no nitrate removal is currently needed at this GWTS.

2.6.1. Building 854 OU Ground Water Treatment System Operations and Monitoring

This section is organized into five subsections: facility performance assessment; operations and maintenance issues; receiving water monitoring; compliance summary; and sampling plan evaluation and modifications.

2.6.1.1. Building 854 OU Facility Performance Assessment

The monthly ground water discharge volumes, rates and operational hours for first semester 2015 are summarized in Tables 2.6-1 through 2.6-3. The total volume of ground water treated and masses removed during the reporting period are presented in Table Summ-1. The cumulative volume of ground water treated and discharged and the masses removed are summarized in Table Summ-2. Analytical results for influent and effluent samples collected during first semester 2015 are presented in Tables 2.6-4 and 2.6-5. The pH measurement results are presented in Appendix A.

2.6.1.2. Building 854 OU Operations and Maintenance Issues

The following maintenance activities and operational issues occurred at the 854-SRC GWTS and SVTS, and 854-PRX and 854-DIS GWTSs during first semester 2015:

854-SRC GWTS and SVTS

- The GWTS was offline from the start of the reporting period until March 3 for freeze protection. Only one of the extraction wells, W-854-02, was brought online at this time due to ongoing interlock problems with the second extraction well, W-854-2218.
- Both the GWTS and the SVTS were offline from May 14 to May 18 due to a site-wide power outage.
- Extraction from W-854-2218 was attempted on May 19, but was shut off again on May 20. This well will remain offline until completion of the Remediation Evaluation Process (REVAL).

854-PRX GWTS

- The GWTS was offline from the start of first semester 2015, until January 5 due to a power outage.
- The GWTS was offline from offline from April 24 to April 28, due to a power outage.
- The GWTS was offline from May 14 to May 18 due to a site-wide power outage.

854-DIS GWTS

- The GWTS was offline from the start of first semester 2015 until March 2 for freeze protection.

2.6.1.3. Building 854 OU Compliance Summary

The 854-SRC, 854-PRX and 854-DIS GWTSs all operated in compliance with the RWQCB Substantive Requirements for Wastewater Discharge. The 854-SRC SVTS operated in compliance with San Joaquin Valley Air Pollution Control District permit limitations.

2.6.1.4. Building 854 OU Facility Sampling Plan Evaluation and Modifications

The Building 854 OU facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The sampling and analysis plan is presented in Table 2.6-6. There were no modifications to the plan during this reporting period.

2.6.1.5. Building 854 OU Treatment Facility and Extraction Wellfield Modifications

There were no treatment facility or extraction wellfield modifications performed for the 854-DIS, 854-PRX, and 854-SRC GWTSs, or the 854-SRC SVTS, during the reporting period.

2.6.2. Building 854 OU Ground Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.6-7. This table also explains any deviations from the sampling plan.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions:

- Two analyses in extraction well W-854-2218 were not performed because of an inoperable pump. This pump will be replaced as part of the engineering evaluation and upgrade of this facility scheduled for fiscal year 2016.

- A total of 24 analyses in seven different wells and one spring were not performed because the wells/spring were dry or contained insufficient water for sample collection.

2.6.3. Building 854 OU Remediation Progress Analysis

This section is organized into four subsections: mass removal; analysis of contaminant distribution and concentration trends; remediation optimization evaluation; and performance issues.

2.6.3.1. Building 854 OU Mass Removal

The monthly ground water mass removal estimates for first semester 2015 are summarized in Tables 2.6-8 through 2.6-10. The total mass removed during the reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

2.6.3.2. Building 854 OU Contaminant Concentrations and Distribution

At the Building 854 OU, TCE and perchlorate are the primary COCs detected in ground water; nitrate is a secondary COC. These COCs have been detected primarily in the $Tnbs_1/Tnsc_0$ HSU. The locations of the wells discussed in the following text are shown on the Building 854 OU site map (Figure 2.6-1).

2.6.3.2.1. VOC Concentrations and Distribution

Total VOCs are present primarily in the $Tnbs_1/Tnsc_0$ HSU and in one well screened in the shallower $Qls/Tnbs_1$ HSU.

$Qls/Tnbs_1$ HSU

In the Qls/Tnbs1 HSU, during first semester 2015, total VOCs at a concentration of 24 µg/L (May) were detected in shallow perched ground water in monitor well W-854-10 (screened in the $Tnbs_1$ unit but above the $Tnbs_1/Tnsc_0$ HSU), located in the Building 854 source area. During the reporting period, VOCs were not detected above the reporting limit in any other well completed in the Qls/Tnbs1 HSU.

$Tnbs_1/Tnsc_0$ HSU

Total VOC concentrations in $Tnbs_1/Tnsc_0$ HSU ground water have been reduced from a historic pre-remediation maximum of 2,900 µg/L (extraction well W-854-02, 1997) to a first semester 2015 maximum of 93 µg/L in the same well (March). TCE comprises all of the VOCs observed in ground water at Building 854, except for low cis-1,2-DCE concentrations detected in two wells. The first semester 2015 maximum cis-1,2-DCE concentrations in each of these wells were 16 µg/L in monitor well W-854-17 (May, above the 6 µg/L MCL cleanup standard) and 0.91 µg/L in extraction well W-854-2139 (April).

Two VOC plumes exist in the $Tnbs_1/Tnsc_0$ HSU: the northern plume and southern plume. The northern plume encompasses the 854-SRC and 854-PRX areas and is separated from the southern plume by a region where two wells, monitor wells W-854-1902 and W-854-1822, have not shown concentrations above the reporting limit since sampling began at these locations (2002). The high-concentration portion of the southern plume is in the vicinity of Well 13, a former water-supply well. The southern plume extends south, where low concentrations have been detected at Spring10 and Spring11. The overall extent of VOCs impacting Building 854 ground water with concentrations above the 0.5 µg/L reporting limit has remained relatively

stable since remediation began. However, (1) the extent of the northern VOC plume with concentrations greater than 50 µg/L has decreased and is currently limited to the immediate vicinity of the Building 854 source area; (2) the extent of the southern VOC plume with concentrations greater than 10 µg/L has decreased; and (3) VOC concentrations in the southern plume, although they fluctuate considerably, are still decreasing.

The maximum historic total VOC vapor concentration (entirely TCE) in the Building 854 source area was measured in 854-SRC SVTS extraction well W-854-1834 (4.4 $ppm_{v/v}$, November 2005). The first semester 2015 maximum total VOC vapor concentration for this well was 0.17 $ppm_{v/v}$, measured in April and collected during normal vapor extraction operation. The overall decline in total VOC vapor concentration indicates significant progress in remediation of VOCs in vapor in this area.

2.6.3.2.2. Perchlorate Concentrations and Distribution

Perchlorate is present in the $Tnbs_1/Tnsc_0$ HSU but not the shallower $Qls/Tnbs_1$ HSU.

$Qls/Tnbs_1$ HSU

During the reporting period, perchlorate concentrations were below the 4 µg/L reporting limit in all wells screened in the Qls HSU or perched $Tnbs_1$ water-bearing zones.

$Tnbs_1/Tnsc_0$ HSU

During first semester 2015, perchlorate concentrations at or exceeding its 6 µg/L MCL cleanup standard were detected in five $Tnbs_1/Tnsc_0$ HSU wells: extraction well W-854-02 and monitor wells W-854-07, W-854-08, W-854-45, and W-854-1823. Perchlorate concentrations in $Tnbs_1/Tnsc_0$ HSU ground water have decreased from a historic maximum of 27 µg/L (W-854-1823, 2003) to a first semester 2015 maximum of 15 µg/L in W-854-1823 (May). Monitor well W-854-1823 is located downgradient of the 854-PRX facility and perchlorate concentrations have been slightly declining in this well since 2003. The distribution and concentrations of perchlorate in $Tnbs_1/Tnsc_0$ HSU ground water during the reporting period are similar to those observed in previous years, except for a detection of 4.5 µg/L (W-854-08, May) that extends the perchlorate plume associated with W-854-03 farther upgradient. Perchlorate at 854-DIS, and near W-854-45 is not currently captured by any ground water extraction well(s).

2.6.3.2.3. Nitrate Concentrations and Distribution

During first semester 2015, the maximum nitrate concentration in Building 854 OU area ground water was 190 mg/L in monitor well W-854-14 (May), screened in the Qls HSU. Nitrate at this location has been steadily decreasing from the historic maximum of 270 mg/L (2009). Nitrate concentrations in well W-854-45 have shown a steadily increasing trend from 2004 (16 mg/L) to first semester 2015 (65 mg/L, March). However, other wells that contain nitrate above the 45 mg/L cleanup standard have steady or decreasing nitrate concentrations during this same period. All of the wells containing ground water with nitrate concentrations exceeding the 45 mg/L MCL cleanup standard were located in the vicinity of the Building 854 Complex or Building 858.

2.6.3.3. Building 854 OU Remediation Optimization Evaluation

During first semester 2015, the 854-SRC GWTS extracted 134,000 gal of ground water, which was a 73% decrease from first semester 2014, when 515,000 gal were extracted. Mass removals were similarly lower from first semester 2014 to 2015. The reduced volumes of extracted ground water and the accompanying lower mass removal estimates are in part due to

extraction well W-854-2218 being shut down after brief operation again due to continued interlock issues discussed in the 2014 Annual CMR. The 854-SRC GWTS continued to operate with only W-854-02 pumping through the end of the reporting period. The securing of W-854-2218 for most of the reporting period resulted in lower VOC, perchlorate, and nitrate mass removal during the first semester 2015 reporting period than during first semester 2014. However, ground water extraction continues to adequately capture the highest VOC concentrations. An engineering evaluation and upgrade of the 854-SRC GWTS and SVTS is underway and will address performance issues of W-854-2218 and contribute to more continuous operation of the GWTS.

At 854-SRC SVTS, 190 g of VOC vapor mass were removed during first semester 2015, compared to 120 g in first semester 2014. Mass removal was higher than in first semester 2014 due to the increased operational hours during the current reporting period. However, the gains in mass removal were not proportional to the gains in vapor volume extraction between the two semesters. Despite low VOC vapor concentrations, VOC mass continues to be removed from the source area due to relatively high vapor flow rates. This VOC mass is volatilizing from vadose zone sources beneath the Building 854 source area and from VOC vapors from the underlying dissolved VOC plume in $Tnbs_1/Tnsc_0$ ground water. Due to continued removal of VOC mass, DOE/LLNL plan to operate the 854-SRC SVTS until vapor concentrations remain below reporting limits after extended shutdown periods and SVE shutoff criteria have been met. Over the next several years, it will be determined if prerequisites to begin a SVE system shut-off evaluation have been attained. This process will begin later in 2015 with a planned one-month vapor-rebound test.

During first semester 2015, the 854-PRX GWTS removed 31 g of VOC mass, no perchlorate, and 190 kg of nitrate compared to first semester 2014, when the system removed 1.8 g of VOC mass, 0.84 g of perchlorate, and 4.5 kg of nitrate. The increases in removed VOC and nitrate mass are due to the increase in operational time and thus extracted volume of groundwater from 33,000 gal during first semester 2014 to 1.3 million gal during first semester 2015. The decrease in perchlorate mass removed is due to the decrease in perchlorate concentrations in ground water during first semester 2015, where both influent samples were below the 4 µg/L reporting limit.

During first semester 2015, the 854-DIS GWTS removed 0.25 g of VOC mass, no perchlorate, and 0.13 kg of nitrate. This is roughly on par with first semester 2014, when the 854-DIS GWTS removed 0.13 g of VOC mass, 0.014 g of perchlorate, and 0.092 kg of nitrate. The mass removal remains steady, though relatively low due to decreasing concentration trends and occasional non-detections of these COCs at these wells.

2.6.3.4. Building 854 OU Remedy Performance Issues

There were no new issues that affect the performance of the cleanup remedy for the Building 854 OU during this reporting period. As discussed in Section 2.6.3.3, the ongoing performance issue with the 854-SRC extraction well W-854-2218 will be addressed in the engineering evaluation and upgrade of this facility scheduled for fiscal year 2016.

The overall remedy continues to be effective and protective of human health and the environment, and to make progress toward cleanup.

2.7. Building 832 Canyon OU 7

Building 832 Canyon facilities were used to test the stability of weapons and associated components under various environmental conditions. Contaminants were released from Buildings 830 and 832 through piping leaks and surface spills during testing activities at these buildings.

Three GWTSs and two SVTSs are operated in the Building 832 Canyon OU: Building 832-Source (832-SRC), Building 830-Source (830-SRC), and Building 830-Distal South (830-DISS). The 832-SRC and 830-SRC facilities extract and treat ground water and soil vapor, while the 830-DISS facility extracts and treats ground water only.

A map of Building 832 OU showing the locations of monitor and extraction wells and treatment facilities is presented on Figure 2.7-1.

The 832-SRC GWTS removes VOCs and perchlorate from ground water and the SVTS removes VOCs from soil vapor. The GWTS and SVTS began operation in September and October 1999, respectively. Extraction wells in this area produce little water due to declining water levels. Typically, the Building 832-SRC GWTS extracts water from W-832-01, W-832-12, and W-832-25 at an approximate combined flow rate of 0.035 gpm, with wells in this area operating under cyclic conditions. During first semester 2015, ground water was extracted at an approximate combined flow rate averaging 0.1 gpm. This increased flow (from 0.035 to 0.1 gpm) stems from higher flow at W-832-01, where an evaluation is underway to determine the accuracy of flow totals. Due to declining water levels, extraction wells W-832-11, W-832-15, and W-832-10 produced negligible amounts of water during the same reporting period. Soil vapor was extracted from wells W-832-12 and W-832-15 at an approximate combined flow rate that ranged from approximately 3.90 to 4.25 scfm. The current GWTS configuration includes two ion-exchange resin columns connected in series to remove perchlorate, and three aqueous-phase GAC units (also connected in series) to remove VOCs. Nitrate-bearing treated effluent is then discharged via a misting tower onto the landscape for uptake and utilization of the nitrate by indigenous grasses. The current SVTS configuration includes a positive displacement rotary lobe blower that creates a vacuum at selected wellheads through a system of piping manifolds. The contaminated vapors are treated using three vapor-phase GAC units connected in series. Treated soil vapors are then discharged to the atmosphere under a permit issued by the San Joaquin Valley Air Pollution Control District.

The 830-SRC GWTS and SVTS began operation in February and May 2003, respectively. In 2014-2015, both systems were upgraded to replace aging system components and improve operational efficiencies during the REVAL process. The upgraded systems will become operational in September 2015. A detailed description of the upgraded systems will be included in the 2015 Annual CMR.

The 830-DISS GWTS began operation in July 2000, removing VOCs, perchlorate, and nitrate from ground water. Ground water is currently passively extracted under natural artesian pressure from wells W-830-51, W-830-52, W-830-53 and actively pumped from W-830-2216 at a combined flow rate that varies from approximately 2 to 6 gpm. Typically, W-830-52 and W-830-53 do not contribute a significant volume of ground water to the treatment facility except immediately after extended shutdown periods when these water levels are able to recover. Currently, extracted ground water from the four extraction wells flows through ion-exchange canisters to remove perchlorate at 830-DISS. The water is then piped to the Central GSA GWTS

for VOC removal and nitrate-bearing treated effluent is then discharged via a misting tower onto the landscape for uptake and utilization of the nitrate by indigenous grasses.

2.7.1. Building 832 Canyon OU Ground Water and Soil Vapor Extraction and Treatment System Operations and Monitoring

This section is organized into four subsections: facility performance assessment; operations and maintenance issues; compliance summary; and sampling plan evaluation and modifications.

2.7.1.1. Building 832 Canyon OU Facility Performance Assessment

For first semester 2015, monthly ground water and soil vapor discharge volumes, rates, and operational hours are summarized in Tables 2.7-1 through 2.7-3. The total volume of ground water and vapor extracted and treated and mass removed during the reporting period are presented in Table Summ-1. The cumulative volume of ground water and soil vapor treated and discharged and mass removed are summarized in Table Summ-2. Analytical results for influent and effluent samples collected during second semester 2014, are presented in Tables 2.7-4 and 2.7-5. The pH measurement results are presented in Appendix A.

2.7.1.2. Building 832 Canyon OU Operations and Maintenance Issues

The following maintenance activities and operational issues occurred at the 832-SRC GWTS and SVTS, 830-SRC GWTS and SVTS and 830-DISS GWTS during first semester 2015:

<u>832-SRC GWTS and SVTS</u>

- The GWTS and the SVTS were offline from the start of the reporting period until May 11 to replace the effluent discharge line, followed by conducting a pipeline flush and testing process to ensure residual VOCs in the glue used on the replacement polyvinyl chloride (PVC) effluent discharge piping were not released to effluent upon restart.
- The GWTS and the SVTS were offline from May 14 until May 18 due to a power outage.

<u>830-SRC GWTS and SVTS</u>

- Both the GWTS and the SVTS were shut down on August 19, 2014 for a complete system upgrade and remained offline throughout first semester 2015.

<u>830-DISS GWTS</u>

- The GWTS was offline from the start of the reporting period until April 1 for freeze protection.
- The GWTS was secured from April 10 to April 22 to investigate a detection of perchlorate in the effluent sample collected on April 8.
- The GWTS was shut down from May 13 until June 1, and from June 2 through end of the reporting period, due to the shut down of the CGSA GWTS.

2.7.1.3. Building 832 Canyon OU Compliance Summary

The 832-SRC and 830-DISS GWTSs operated in compliance with RWQCB Substantive Requirements during the reporting period. Although perchlorate was detected at a concentration of 4.0 µg/L in the effluent sample collected on April 8 from the 830-DISS GWTS, the

concentration was below the maximum daily limit of 6.0 µg/L. Two additional effluent samples were collected during the same month with no perchlorate detected above the reporting limit of 4.0 µg/L, resulting in a monthly median below 4.0 µg/L. The 830-SRC SVTS operated in compliance with the San Joaquin Valley Air Pollution Control District permit limitations. The 830-SRC GWTS and SVTS did not operate during this reporting period.

2.7.1.4. Building 832 Canyon OU Facility Sampling Plan Evaluation and Modifications

The Building 832 Canyon OU treatment facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The sampling and analysis plan is presented in Table 2.7-6. No modifications were made to any of the plans during this reporting period.

2.7.1.5. Building 832 Canyon OU Treatment Facility and Extraction Wellfield Modifications

During first semester 2015, one well (W-830-3102) was drilled near the Building 830 source area and completed in the Upper $Tnbs_1$ HSU and screened between 90 and 130 ft below ground surface. Two additional wells in OU7 are planned to be drilled and installed during second semester 2015: W-830-3101, a potential injection well screened in the $Tnbs_1$ HSU and W-832-3103, a groundwater monitor well screened in the Upper $Tnbs_1$ HSU. These wells will be discussed in further detail in the 2015 Annual CMR.

The Building 830-SRC GWTS and SVTS are currently undergoing construction to upgrade both systems. All new piping, media vessels, and electronic controls are being installed to improve long-term operational efficiencies. The main components and configuration of the treatment system will be very similar to the previous system, although the SVTS will be moved and placed adjacent to the GWTS and the new extraction well W-830-2701 will be operational. Details of the changes will be included in the 2015 Annual CMR.

2.7.2. Building 832 Canyon OU Ground Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.7-7. This table explains deviations from the sampling plan.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions:

- A total of 12 analyses in four different wells (W-830-13, W-830-17, W-830-29 and W-832-09) were not performed because of an inoperable pump. The pumps in wells W-830-13, W-830-29 and W-832-09 have been repaired or replaced. Investigation and plans for repair at well W-830-17 are still in progress.
- A total of 47 analyses in 16 different wells and two different springs were not performed because the wells or springs were dry or contained insufficient water for sample collection.
- A total of 11 analyses in three different artesian wells were not performed because the connected facilities were not operating and these wells were not equipped with ground water pumps.
- A total of six analyses in two different wells and one spring were not performed due to restricted access of unsafe conditions at the sampling locations.
- A total of 23 analyses in six different wells were not performed because the associated treatment facilities were turned off for freeze protection.

- A total of 42 analyses from ten different wells were not performed because the facility was undergoing engineering upgrades (REVAL) and the wells had not had their groundwater pumps re-installed yet.

2.7.3. Building 832 Canyon OU Remediation Progress Analysis

This section is organized into four subsections: mass removal; contaminant concentrations and distribution; remediation optimization evaluation; and performance issues.

2.7.3.1. Building 832 Canyon OU Mass Removal

The monthly ground water and soil vapor mass removal estimates for first semester 2015 are summarized in Tables 2.7-8 through 2.7-10. The total masses removed during the reporting period and cumulative mass estimates are summarized in Tables Summ-1 and Summ-2, respectively.

2.7.3.2. Building 832 Canyon OU Contaminant Concentrations and Distribution

At the Building 832 Canyon OU, VOCs (mostly TCE) are the primary COCs detected in ground water. The compound cis-1,2-DCE is a COC at both the Building 830 and 832 source areas; chloroform and PCE are COCs at the Building 830 source area. Perchlorate and nitrate are the secondary COCs. These constituents have been detected primarily in the Qal/WBR HSU, $Tnsc_{1b}$ HSU and $Tnsc_{1a}$ HSU. VOCs have also been detected at relatively low concentrations in the $Tnbs_2$ and Upper $Tnbs_1$ HSUs.

2.7.3.2.1. VOC Concentrations and Distribution

VOCs detected in Building 830 area ground water consist primarily of TCE. During first semester 2015, the other VOCs present above the reporting limit in the Building 830 area were PCE, cis-1,1-DCE, trans-1,2-DCE, and chloroform. Of these VOCs, only TCE was detected at concentrations above its MCL cleanup standard of 5 µg/L.

VOCs detected in Building 832 area ground water consist primarily of TCE. During first semester 2015, VOCs other than TCE present above the reporting limit in the Building 832 source area were cis-1,2-DCE, chloroform, 1,1,2-TCA, Freon 11, chloroethane, chloromethane, and methylene chloride. Of these VOCs, only TCE was detected at concentrations above its MCL cleanup standard of 5 µg/L.

VOC concentrations and distribution are discussed by HSU, below.

Qal/WBR HSU

Since remediation began in 2000 in the Building 830 source area, total VOC concentrations in Qal/WBR HSU ground water near 830-SRC have decreased by two orders-of-magnitude from a historic maximum of 10,000 µg/L (well SVI-830-035, 2003) to a first semester 2015 maximum of 480 µg/L in the same well (entirely TCE, February). Because the 830-SRC SVTS was secured during the entire first semester 2015, there were no vapor samples collected. A discussion of soil vapor VOC data will be included in the 2015 Annual CMR.

Since remediation began in 1999 in the Building 832 source area, ground water total VOC concentrations in wells screened in the Qal/WBR HSU have decreased from a historic maximum of 1,800 µg/L (well W-832-18, 1998) to a first semester 2015 maximum of 100 µg/L in monitor well W-832-23 (February). Well W-832-23 is screened in the Qal/WBR and $Tnsc_{1b}$ HSUs. Since 1999, total VOC concentrations in this well have seasonally-fluctuated in the range of

23 to 690 µg/L with no long-term trends. Total VOC concentrations in soil vapor are also declining in the Building 832 source area. Total VOC concentrations detected in soil vapor in well W-832-15 have decreased from a historic maximum concentration of 1.8 $ppm_{v/v}$ in 2001 to a first semester 2015 maximum of 0.036 $ppm_{v/v}$ (June). Neither W-832-15 nor W-832-12 have contained VOC concentrations in excess of 0.44 $ppm_{v/v}$ since 2011.

During the reporting period, total VOC concentrations in ground water samples taken from Qal/WBR HSU guard wells W-35B-01 and W-880-02, both located south of Building 832 Canyon near the Site 300 southern boundary, were below reporting limits (<0.5 µg/L).

$Tnbs_2$ HSU

As described in the HEPA section, well W-830-2216 extracts ground water from the $Tnbs_2$ HSU. COCs in this well are likely due to a combination of sources located in the HEPA and Building 832 Canyon OUs. Since extraction began in 2007, VOC concentrations in W-830-2216 have consistently declined. During first semester 2015, the maximum VOC concentration in W-830-2216 was 3.8 µg/L (April), continuing a downward trend from the historic maximum in this well of 20 µg/L (2007). TCE was the only VOC detected in W-830-2216 and W-830-13, during first semester 2015. The extracted ground water is treated at the 830-DISS and CGSA treatment facilities.

$Tnsc_{1b}$ HSU

Since remediation began in 2000 in the Building 830 source area, total VOC concentrations in ground water in the $Tnsc_{1b}$ HSU have decreased from a historic maximum of 13,000 µg/L in extraction well W-830-49 (2003) to a first semester 2015 maximum of 1,800 µg/L in monitor well W-830-1829 (March). Groundwater and soil vapor extraction wells in 830-SRC area were inoperable for sampling due to treatment facility upgrades in progress during first semester 2015.

In the 830-DISS area, total VOC concentrations in $Tnsc_{1b}$ HSU artesian wells W-830-51, W-830-52 and W-830-53, have decreased from a historic maximum of 170 µg/L (extraction well W-830-51, 2002) to a first semester 2015 maximum of 18 µg/L in the same well (April). Farther south along Building 832 Canyon, the leading edge of the $Tnsc_{1b}$ VOC plume continues to be contained within the Site 300 boundary based on total VOC concentrations below the 0.5 µg/L reporting limit in guard wells W-880-03, W-830-1730, and W-4C.

$Tnsc_{1a}$ HSU

Since remediation of the $Tnsc_{1a}$ HSU began in early 2007, total VOC concentrations in ground water at both 830 and 832 source areas have generally decreased from the historic maximum of 1,700 µg/L (monitor well W-830-27, 1998). However, in a baseline sample at new extraction well W-830-3019, total VOCs were detected at 1,500 µg/L (April). Plans are in place to connect well W-830-3019 to the 832-SRC GWTS and SVTS as a dual extraction well in the near future. Total VOCs measured in other wells during the reporting period were relatively stable compared to previous semesters.

Upper $Tnbs_1$ HSU

Since remediation began in the Upper $Tnbs_1$ HSU, total VOC concentrations in ground water have decreased from a historic maximum of 100 µg/L (monitor well W-830-28, 1998) to a first semester 2015 maximum of 23 µg/L in performance monitor well W-830-18 (February). VOC concentrations in well W-830-18 have increased since pumping of extraction well W-830-2215 began in 2006. This increasing trend in W-830-18 is an indication that the plume is being

captured. During the reporting period, VOCs were not detected above the 0.5 µg/L reporting limit in Upper $Tnbs_1$ guard wells W-830-15 and W-832-2112. VOCs have never been detected in these wells since installation in 1995 and 2005, respectively.

2.7.3.2.2. HE Compound Concentrations and Distribution

Including first semester 2015, HE compounds have never been detected in ground water in any Building 832 Canyon OU wells.

2.7.3.2.3. Perchlorate Concentrations and Distribution

In Building 832 Canyon OU, perchlorate has historically been detected in the Qal/WBR, $Tnsc_{1b}$, $Tnsc_{1a}$, and Upper $Tnbs_1$ HSUs.

During second semester 2014, perchlorate was initially detected above the reporting limit of 4 µg/L in one ground water sample collected from Upper $Tnbs_1$ guard well W-830-15 (86 µg/L, August 2014) and one sample from $Tnsc_{1b}$ guard well W-880-03 (7.3 µg/L, August 2014). The results for these samples were reviewed and determined to be lab errors, likely due to "matrix interference" which is a common problem with perchlorate analyses. During first semester 2015, samples from well W-830-15 did not show perchlorate concentrations above the reporting limit (March). Well W-880-03 was not sampled for perchlorate during first semester 2015.

Qal/WBR HSU

Perchlorate concentrations in the Qal/WBR HSU have decreased in the Building 830 and 832 source areas from a historic maximum of 51 µg/L in monitor well W-830-34 (1998) to a first semester 2015 maximum of 9.5 µg/L (monitor well W-832-13, February). During the reporting period, perchlorate was not detected above the 4 µg/L reporting limit in the 830-SRC area, 830-DISS area, or in Qal/WBR HSU guard wells W-35B-01 and W-880-02. However, several wells that have previously contained perchlorate have recently not had available water for sampling as the water table has declined beneath the well screens.

$Tnsc_{1b}$ HSU

In the Buildings 830 and 832 source areas, perchlorate concentrations continue a relatively stable to decreasing trend. During first semester 2015 the maximum perchlorate concentration detected in the $Tnsc_{1b}$ HSU was 9.6 µg/L (well W-832-13, February), slightly above the MCL cleanup level of 6 µg/L. Perchlorate was not detected above the reporting limit in $Tnsc_{1b}$ HSU guard wells W-830-1730 and W-4C during first semester 2015.

$Tnsc_{1a}$ HSU

Since remediation of the $Tnsc_{1a}$ HSU began in early 2007, total perchlorate concentrations in ground water at both the Buildings 830 and 832 source areas have generally remained stable or decreased. However, a baseline sample from new Building 832 source area well W-830-3019 yielded perchlorate at 18 µg/L (April), a historic maximum for $Tnsc_{1a}$ wells in the Building 832 Canyon OU. Plans are in place to connect W-830-3019 as a dual extraction well to the 832-SRC GWTS and SVTS in the near future.

Upper $Tnbs_1$ HSU

Since 2005, perchlorate detections in the Upper $Tnbs_1$ HSU have all been below the 4 µg/L reporting limit, except for lab errors as discussed previously.

2.7.3.2.4. Nitrate Concentrations and Distribution

During first semester 2015, nitrate concentrations in ground water remained high in the vicinity of the Buildings 832 and 830 source areas and low or below the reporting limit (0.5 mg/L) in the downgradient, deeper parts of all Building 832 Canyon HSUs.

Qal/WBR HSU

During first semester 2015, nitrate in Qal/WBR HSU ground water ranged from the <0.5 mg/L reporting limit in guard wells located near the site boundary to 120 mg/L in Building 830 source area monitor well W-830-34 (February) and 140 µg/L in Building 832 source area monitor well W-832-13 (February).

$Tnsc_{1b}$ HSU

Overall, nitrate concentrations in groundwater remained high but stable (between 20 and 140 mg/L) in the vicinity of the Buildings 832 and 830 source areas. During the reporting period, nitrate concentrations in the $Tnsc_{1b}$ guard wells were all below the reporting limit of 1 mg/L.

$Tnsc_{1a}$ HSU

Although nitrate concentrations remain high in the $Tnsc_{1a}$ HSU, they have decreased from a historic maximum of 160 mg/L (monitor well W-830-27, 2002) to first semester 2015 maxima of (1) 110 mg/L in the 830-SRC area (monitor well W-830-27, February) and (2) 102 mg/L in the 832-SRC area (extraction well W-832-3019, February).

Upper $Tnbs_1$ HSU

Historically, the highest nitrate concentration in the Upper $Tnbs_1$ HSU in the Building 832 Canyon OU was 21 mg/L in monitor well W-830-28 (1997). The first semester 2015 maximum for the Buildings 830 and 832 areas was 8.8 mg/L (same well), significantly below its 45 mg/L MCL cleanup standard. During first semester 2015, nitrate was not detected in guard wells W-830-15 or W-832-2112 above the reporting limit of 0.5 mg/L. The very low nitrate concentrations in the downgradient areas and the absence of detectable nitrate in the southern site boundary guard wells are consistent with the interpretation that nitrate is naturally attenuating *in situ* in the Upper $Tnbs_1$ HSU.

2.7.3.3. Building 832 Canyon OU Remediation Optimization Evaluation

During first semester 2015, ground water and soil vapor extraction wellfield operations continued in the Building 832 Canyon OU to prevent offsite plume migration, reduce source area concentrations, and remove contaminant mass. The expanded 832-SRC and 830-DISS extraction wellfields have maintained hydraulic capture and the 830-SRC extraction wellfield expansion and treatment facility upgrades will increase hydraulic capture of COCs. All Building 832 Canyon OU wellfields have continued to prevent the downward migration of contaminants into deeper HSUs and prevent and/or laterally toward the site boundary and Site 300 water-supply Wells 18 and 20. Ground water yields from many extraction wells continue to be low and hydraulic capture is difficult to assess in some areas because these wells cannot maintain continuous operation. The low yields are due to a combination of geologic materials with low hydraulic conductivity, and dewatering and limited recharge arising from drought conditions.

Qal/WBR HSU

The Qal/WBR extraction wells target VOCs emanating from the Building 832 and Building 830 source areas and the perchlorate plume emanating from the Building 832 source area. Steep terrain and unstable canyon bottom soil conditions limit the availability of new well sites. Ground water extraction is further constrained by limited recharge and declining water levels in both source areas. During parts of first semester 2015, many Qal/WBR extraction wells were offline due to pump repairs, treatment facility repairs, and freeze protection.

$Tnsc_{1b}$ and $Tnsc_{1a}$ HSU

Active remediation of the $Tnsc1_b$ and $Tnsc_{1a}$ HSUs began in 2007. Since then, ground water concentrations have remained stable or decreased in all extraction wells, although, in source areas, concentrations remain high. Water levels continue to decline in both the 830-SRC and 832-SRC areas, limiting continuous extraction from the $Tnsc_{1b}$ and $Tnsc_{1a}$ HSUs.

The 830-SRC GWTS is currently undergoing an engineering evaluation and upgrade to improve treatment facility performance and to connect $Tnsc_{1a}$ HSU well W-830-2701 to function as an extraction well. This new extraction well will be operated at a constant rate of approximately 3 gpm, increasing hydraulic capture in the $Tnsc_{1a}$ HSU downgradient of extraction well W-830-2214. The temporary shutdown of 830-SRC GWTS has provided an unprecedented opportunity for measurement of static water levels in Building 830 source area wellfields. No long-term impact to the cleanup remedy is expected as a result of this shutdown; the treatment facility is expected to resume operations during the next reporting period.

In 2014, two new wells were installed in the Building 832 source area: W-832-3019 and W-832-3020. Final well development at these two wells indicated that both wells are low-yield slow-recharge wells. However, because of the high concentrations at these wells, the mass-removal of COCs is expected to be high. Plans under the REVAL process are in place to connect both of these wells to the 832-SRC GWTS to function as extraction wells.

Upper $Tnbs_1$ HSU

During the reporting period, one new well, W-830-3102, was drilled and screened in the Upper $Tnbs_1$ HSU in the Building 830 source area just north of monitor well W-830-09. This well was intended to serve as a potential injection well for effluent from 830-SRC GWTS. Preliminary well development did not yield favorable hydraulic data for this purpose. Two other well installations were in progress as this report was being produced: W-830-3103, a monitor well screened in the Upper $Tnbs_1$ HSU approximately 1,000 ft north of monitor well W-819-02; and W-830-3101, an additional potential injection well located approximately 200 ft west of Building 833. Hydraulic tests to determine injection capacity of wells W-830-3101 and W-830-3102 will be conducted during the next reporting period and will be discussed in the 2015 Annual CMR.

$Tnbs_2$ HSU

In the $Tnbs_2$ HSU in Building 832 Canyon, remediation continues via extraction well W-830-2216. The source of contamination in this area is likely a combination of sources located in both the HEPA and the Building 832 Canyon area. The decreasing concentration trends in this extraction well and nearby monitor well W-830-13 suggest that remediation has been effective in removing mass in this area.

Mass Removal

In the Building 832-SRC area, COC concentration trends in extraction wells have remained stable for several years as declining water levels and low yields limit ground water extraction. In Building 832-SRC area, the volume of treated water decreased by 65% from 19,000 gal (first semester 2014) to 6,500 gal (first semester 2015). Masses of perchlorate and nitrate removed at 832-SRC GWTS were also lower than during first semester 2014, by 78% and 53%, respectively. However, despite the lower volume of extracted ground water, the mass of VOC removed during first semester 2015 (4.2 g) was two times higher than during first semester 2014 (2.1 g). This increase is due to the significantly higher than average flow at W-832-01 paired with higher VOC concentrations in the same well relative to previous years.

Several factors affect the generally low volumes of extracted ground water and thus the generally low mass removal from the 832-SRC GWTS. First, the 832-SRC GWTS was offline for maintenance. Second, dual-extraction well W-832-15 was inoperable for much of the reporting period for maintenance; this well typically accounts for a large portion of the mass removal in this area. The mass removal estimates for 832-SRC GWTS also contain possible errors that overestimate volume of extracted ground water. Additional check valve issues were identified after the end of first semester 2015 at extraction well W-832-01 similar to those described in the First Semester 2014 CMR (Ferry et al., 2014). These errors may have been further compounded by the variability of COC concentrations depending on sampling method or if the mass removal calculation relied on a previous COC concentration due to the unavailability of a well for sampling. Further analysis of the volumes of extracted ground water and mass removal at 832-SRC GWTS is underway and will be discussed in the 2015 Annual CMR.

During first semester 2015, the volume of vapor extracted at 832-SRC SVTS was 268,000 cf, a decrease of 73% from first semester 2014 (1,025,000 cf). The reduced operation of the SVTS (due to down-time for repairs to the associated GWTS) resulted in significant decreases in VOC mass removed, from 40 g during first semester 2015 to just 1.2 g during this reporting period.

At the 830-SRC treatment facility, no groundwater or soil vapor was extracted during first semester 2015 as the 830-SRC GWTS was offline for engineering evaluation and upgrades. The 830-SRC GWTS and SVTS facilities will be restarted during the next reporting period.

At 830-DISS GWTS, 7.8 g of VOC mass were removed during first semester 2015. This is a 56% decrease from first semester 2014 (18 g) and is due, in part, to the 60% decrease in volume of water treated at this facility, from 370,000 gal during first semester 2014 to 146,000 gal during first semester 2015. The reduced facility operational time and thus decreased flow volumes during the reporting period were due to facility upgrades at the CGSA GWTS and misting towers. In addition, the 832-SRC, 830-SRC, and 830-DISS GWTSs removed a combined total of 38 kg of nitrate and 1 g of perchlorate, during first semester 2015. Table Summ-1 summarizes the mass removed by each individual treatment facility.

As remediation proceeds from the 832-SRC, 830-SRC and 830-DISS extraction wells, it is expected that concentrations in all Building 832 Canyon HSUs will continue to decline and that declining water levels will have an impact on long term performance of extraction wells. VOC concentration trends in the Upper $Tnbs_1$ HSU continue to be monitored closely because of pumping of water-supply Well 20 and backup water-supply Well 18. This pumping has the potential to influence the distribution of COCs in the Upper $Tnbs_1$ HSU. After Site 300 begins

using the Hetch-Hetchy reservoir as its primary water supply, Well 20 will become a backup water-supply well and Well 18 will no longer be used.

2.7.3.4. Building 832 Canyon OU Remedy Performance Issues

Declining water levels due to drought conditions continue to impact the amount of ground water available for extraction and treatment. No other new issues were identified during this reporting period that could impact the long-term performance of the cleanup remedy for the Building 832 Canyon OU. The remedy continues to make progress toward cleanup and to be protective of human health and of the environment.

2.8. Site 300 Site-Wide OU 8

The Site 300 Site-Wide OU is comprised of release sites at which no significant impacts to ground water and no unacceptable risk to human health or the environment are present. For this reason, a monitoring interim remedy was selected for the release sites in the Site-Wide Record of Decision (U.S. DOE, 2008). The monitoring conducted during the reporting period for these release sites is discussed below.

2.8.1. Building 801 and Pit 8 Landfill

The Building 801 Firing Table was used for explosives testing until it was discontinued in 1998, and the firing table gravel and some underlying soil were removed. Waste fluid discharges to the Building 801 Dry Well from the late 1950s to 1984, resulted in VOC contamination of the soil and ground water. Debris from the firing table was buried in the nearby Pit 8 Landfill until 1974. A map of the Building 801 and Pit 8 Landfill area showing the locations of the building, firing table, landfill, and monitor wells is presented on Figure 2.8-1.

2.8.1.1. Building 801 and Pit 8 Landfill Ground Water Monitoring

Wells K8-01, -02B, -03B, -04, and -05 monitor Building 801 ground water contaminants that were released from the Building 801 dry well. Wells K8-02B, K8-04 and K8-05 are also used as monitor wells to detect releases from the Pit 8 Landfill. Detection monitoring of this landfill, which is discussed in Section 3.2, is conducted to determine if releases have occurred.

The sampling and analysis plan for ground water monitoring is presented in Table 2.8-1.

During the reporting period, ground water monitoring was conducted in accordance with CMP monitoring requirements with the following exceptions; a total of nine required analyses in one well (K8-05) were not performed because the well was dry.

2.8.1.2. Building 801 and Pit 8 Landfill Contaminant Concentrations and Distribution

At Building 801, VOCs, comprised of chloroform, 1,2-DCA and TCE are the primary COCs detected in ground water; perchlorate and nitrate are the secondary COCs. There are no COCs in ground water at the Pit 8 Landfill. The results of the detection monitoring of the Pit 8 Landfill are discussed in Section 3.2.

In the Building 801/Pit 8 Landfill area, five monitor wells are screened in the $Tnbs_1/Tnbs_0$ HSU. Wells K8-01, -02B, -03B and -04 were successfully sampled, as scheduled during first semester 2015. Well K8-05 has been dry since installation in 1988.

Total VOC concentrations in ground water in the vicinity of Building 801/Pit 8 Landfill have been relatively stable over time. In the $Tnbs_1/Tnbs_0$ HSU, total VOC concentrations have decreased from a historic maximum of 10 µg/L (monitor well K8-01, 1990) to a first semester 2015 maximum of 5 µg/L (same well, May) comprised of 3.4 µg/L TCE and 1.6 µg/L 1,2-DCA. These concentrations are within the ranges observed since 1990.

Of the COCs, only 1,2-DCA was detected above its MCL cleanup standard (0.5 µg/L) during first semester 2015 in two wells, K8-01 (1.6 µg/L) and K8-04 (0.91 µg/L). TCE was not detected above its 5 µg/L MCL cleanup standard and chloroform was not detected in any wells above its 0.5 µg/L reporting limit. Overall, total VOC concentrations detected in ground water samples collected from wells downgradient of Building 801 have decreased since 1990.

During first semester 2015, perchlorate was detected only once, in a duplicate sample from well K8-04 at 4.3 µg/L (May), barely above the reporting limit and below its MCL cleanup standard of 6 µg/L. The coincident routine sample (collected the same day and time) was below the reporting limit (4 µg/L). Perchlorate was not detected above its 4 µg/L reporting limit in ground water samples from any other Building 801/Pit 8 monitor wells.

Nitrate concentrations in ground water in the vicinity of Building 801/Pit 8 Landfill have been relatively stable over time. The first semester 2015 maximum nitrate concentration was 80 mg/L, measured in a routine sample collected in May; the duplicate sample contained 71 mg/L nitrate. Although the 80 mg/L result represents the historic maximum nitrate concentration observed in the area, these detections are within the range of 51 to 80 mg/L of nitrate observed in this well since 2004. Well K8-01 yielded a concentration of 46 mg/L of nitrate, just above the MCL cleanup standard of 45 mg/L. This concentration is within the range of 21 to 51 mg/L of nitrate observed in this well since 1998. The detections at wells K8-01 and K8-04 were the only first semester 2015 nitrate concentrations in the Pit 8 area that exceeded the 45 mg/L MCL cleanup standard. Nitrate concentrations detected in ground water during the reporting period at the Building 801/Pit 8 Landfill are generally similar to previous years.

Nitrate and 1,2-DCA are the only COCs remaining above their MCL cleanup standards at Building 801/Pit 8 Landfill.

2.8.2. Building 833

TCE was used as a heat-exchange fluid at Building 833 from 1959 to 1982 and was released through spills and rinse water disposal, resulting in TCE-contamination of soil and shallow perched ground water. A map showing the locations of the building and monitor wells is presented on Figure 2.8-2.

2.8.2.1. Building 833 Ground Water Monitoring

The sampling and analysis plan for ground water monitoring is presented in Table 2.8-2.

During the reporting period, ground water monitoring was conducted in accordance with CMP monitoring requirements with the following exceptions; a total of seven required analyses in seven different wells were not performed because the wells were dry or there was insufficient water to collect the samples and one analysis in well W-841-01 was not performed due to an inoperable pump which was replaced in May 2015.

2.8.2.2. Building 833 Contaminant Concentrations and Distribution

At Building 833, the VOCs TCE and cis-1,2-DCE are the primary COCs in ground water; there are no secondary COCs.

The Tpsg HSU is a shallow, highly ephemeral, perched water-bearing zone. During heavy rainfall events, this HSU may become saturated, but quarterly monitoring of the wells from 1993 to present has shown variable levels of saturation, including many wells that are now dry (W-833-03, -12, -18 -22, -28, -34 and -43). When saturated, monitoring conducted since 1988 has shown a significant decline in VOC concentrations in Tpsg HSU ground water compared to the highest levels, which were observed in the early 1990s.

In the Building 833 area, eight monitor wells are screened in the Tpsg HSU and one well (W-833-30) is screened in the deeper Lower $Tnbs_1$ HSU.

The historic maximum concentration of total VOCs measured in the Tpsg HSU in the Building 833 area was 2,100 µg/L (entirely TCE) detected in monitor well W-833-03 in 1992. This well has not been sampled, due to insufficient water, since June 2000, when 20 µg/L of total VOCs (entirely TCE), were detected. During first semester 2015, the only Tpsg HSU well with sufficient ground water to collect a sample was W-833-33 which yielded 130 µg/L total VOCs (entirely TCE, March). In 2014 and 2013, this well yielded 110 µg/L (both years) total VOCs (entirely TCE). The historic maximum total VOC concentration detected in well W-833-33 was 170 µg/L (entirely TCE) in 2008.

The other primary COC, cis-1,2-DCE, was not detected in samples from any Building 833 area wells, during first semester 2015. This compound has been detected only five times and most recently in 1993, all in well W-833-12. The historic maximum cis-1,2-DCE concentration was 58 µg/L, detected in W-833-12 in 1993. This compound has never been detected in any other Building 833 area wells.

During first semester 2015, VOCs were not detected in either routine or duplicate ground water samples collected in March from monitor well W-833-30, screened in the deeper Lower $Tnbs_1$ HSU, indicating that VOC contamination continues to be confined to the shallow Tpsg perched water-bearing zone.

TCE in Tpsg HSU ground water is the only COC remaining above its cleanup standard (5 µg/L) at Building 833.

2.8.3. Building 845 Firing Table and Pit 9 Landfill

The Building 845 Firing Table was used from 1958 until 1963 to conduct explosives experiments. Leaching from Building 845 Firing Table debris resulted in minor contamination of subsurface soil with depleted uranium and HMX detected in samples collected from boreholes drilled in 1989. A map showing the locations of the building, landfill, and monitor wells are presented on Figure 2.8-3.

2.8.3.1. Building 845 and Pit 9 Landfill Ground Water Monitoring

No ground water COCs have been identified for the Building 845/Pit 9 Landfill area. Wells K9-01 through K9-04 monitor ground water in the Building 845 and Pit 9 Landfill area to:

- Detect any future releases from the Pit 9 Landfill, and
- Detect any impacts to ground water from HMX and uranium in subsurface soil and rock.

These monitor wells are screened in the lower Neroly Formation $Tnbs_1/Tnbs_0$ HSU. Detection monitoring of the Pit 9 Landfill is discussed in Section 3.3.

The sampling and analysis plan for ground water monitoring is presented in Table 2.8-3.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements for all wells in this subarea.

2.8.3.2. Building 845 and Pit 9 Landfill Contaminant Concentrations and Distribution

In the Building 845 and Pit 9 Landfill area, four landfill detection monitor wells are screened in the $Tnbs_1/Tnbs_0$ HSU.

There are no ground water COCs at the Building 845 and the Pit 9 Landfill. The detection monitoring constituents: VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, and fluoride concentrations/activities in samples collected during first semester 2015 were either below reporting limits or within the range of background concentrations. Because uranium and the HE compound HMX were identified as COCs in subsurface soil at Building 845/Pit 9 Landfill, ground water in this area is monitored for these constituents.

During first semester 2015, HMX concentrations in ground water samples remained below the 1 µg/L reporting limit. Historically, HMX has not been detected above its reporting limit since the four area monitor wells were installed in 1989.

During first semester 2015, uranium activities in ground water samples remained very low (<1 pCi/L) and $^{235}U/^{238}U$ atom ratios indicated the presence of only natural uranium. The results of the detection monitoring of the Pit 9 Landfill are discussed in Section 3.2.

These first semester 2015 data continue to indicate no releases from the Pit 9 Landfill, nor impacts to ground water from HMX and uranium in subsurface soil.

2.8.4. Building 851 Firing Table

The Building 851 Firing Table has been used since 1962 to conduct explosives experiments. A map depicting the locations of the firing table and monitor wells is presented on Figure 2.8-4.

2.8.4.1. Building 851 Ground Water Monitoring

The sampling and analysis plan for ground water monitoring is presented in Table 2.8-4.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements for all wells in this subarea.

2.8.4.2. Building 851 Contaminant Concentrations and Distribution

In the Building 851 Firing Table area, four monitor wells are screened in the Tmss HSU. Uranium is the primary and only COC detected in ground water; there are no secondary COCs.

Uranium activities in Tmss HSU ground water in the Building 851 Firing Table area have always been well below the 20 pCi/L MCL cleanup standard for total uranium and within the range of background levels. Although background uranium activity at Site 300 may vary based on ground water age, major-ion chemistry, and aquifer lithology, single-digit uranium activities are clearly within the range of Site 300 background. However, ground water continues to be monitored to detect any impacts to ground water from uranium in subsurface soil and rock.

During first semester 2015, the maximum total uranium activity detected in the Building 851 area was 1.2 pCi/L in well W-851-08 (April); in 2014, this well yielded 1.1 pCi/L and the historic maximum uranium activity in this well was 2.06 pCi/L, observed in 1993. April samples from the three remaining wells contained uranium activities each below 0.0627 pCi/L. The historic maximum uranium activity in Tmss HSU ground water was 3.2 pCi/L (well W-851-07, 1991); as mentioned previously, the first semester 2015 activity for this well was <0.0627 pCi/L.

During first semester 2015, the atom ratio of $^{235}U/^{238}U$ indicated the presence of only natural uranium in the April sample from well W-851-08. Due to the low mass of ^{235}U in the samples (less than the reporting limit) for wells W-851-05, -06 and -07, the reporting limit was used as the numerator in the $^{235}U/^{238}U$ calculation, resulting in an atom ratio (which is not quantifiable) that includes the range of atom ratios including that of enriched uranium. In reality, the uranium is wholly natural in these samples. Overall, uranium activities in ground water during first semester 2015 are similar to previous years and remain well below the 20 pCi/L MCL cleanup standard and within the range of natural background levels.

3. Detection Monitoring, Inspection, and Maintenance Program for the Pits 2, 3, 4, 5, 6, 7, 8, and 9 Landfills and Inspection and Maintenance Program for the Drainage Diversion System and Building 850 CAMU

The Detection Monitoring Program is designed to detect any future releases of contaminants from the Pit 2, 3, 4, 5, 6, 7, 8, and 9 Landfills. This section presents the results for ground water detection monitoring of these landfills, and any landfill inspections or maintenance conducted during the reporting period. This section also includes any inspection and maintenance activities conducted for the Pit 7 Drainage Diversion System and Building 850 CAMU during the reporting period.

3.1. Pit 2 Landfill

The Pit 2 Landfill was used from 1956 until 1960 to dispose of firing table debris from Buildings 801 and 802. Ground water data indicate that a past discharge of potable water to support a red-legged frog habitat located upgradient from the landfill may have leached depleted uranium from the buried waste. The frogs were relocated and the water discharge was discontinued, thereby removing the leaching mechanism. No contaminants were identified in surface or subsurface soil at the Pit 2 Landfill. No risk to human or ecological receptors has been identified at the Pit 2 Landfill.

3.1.1. Sampling and Analysis Plan Modifications

Detection monitoring of detection monitor wells located downgradient of the Pit 2 Landfill, is conducted annually for VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, and fluoride. Detection monitoring wells for the Pit 2 Landfill include W-PIT2-1934, W-PIT2-1935, K2-01C and NC2-08.

The sampling and analysis plan for the Pit 2 Landfill ground water Detection Monitoring Program is presented in Table 3.1-1.

During the reporting period ground water monitoring was conducted in accordance with CMP monitoring requirements.

3.1.2. Contaminant Detection Monitoring Results

A map showing the locations of monitor wells and the Pit 2 Landfill is presented on Figure 2.5-1. Depth to ground water within the $Tnbs_1/Tnbs_0$ HSU beneath the Pit 2 Landfill currently ranges from over 50 feet to over 70 feet.

The maximum first semester 2015 tritium activity within the $Tnbs_1/Tnbs_0$ HSU in the area immediately south of the Pit 2 Landfill was 2,870 pCi/L in detection monitor well NC2-08. The historic maximum tritium activity of 49,100 pCi/L was detected in 1986 samples from detection monitor well K2-01C, located approximately 100 feet northeast of well NC2-08. Overall, tritium activities in Pit 2 Landfill detection monitor wells are decreasing.

The maximum Pit 2 area first semester 2015 uranium activity of 3.5 pCi/L, considerably less than the 20 pCi/L MCL cleanup standard and within the range of natural uranium background, was detected in ground water collected from monitor well W-PIT2-1934. Uranium activities in the Pit 2 area continue to decrease from the 27.4 pCi/L maximum historic uranium activity measured in a 1994 ground water sample collected from well K2-01C. During first semester 2015, the ground water sample collected from well K2-01C contained 2.8 pCi/L (routine sample, results of a reanalysis of the same sample were 1.2 pCi/L), a decrease from 7.6 pCi/L in May 2010 when the well was last sampled (unsafe conditions and an inoperable pump prevented sampling of this well until 2015). Prior to 2005, to maintain a wetland habitat for red-legged frogs (a Federally-listed endangered species) potable water was discharged within the drainage channel that extends along the northern and eastern margin of the Pit 2 Landfill. While this discharge occurred, increased uranium activities in wells in the Pit 2 area were observed and the $^{235}U/^{238}U$ atom ratios in ground water collected from wells K2-01C, W-PIT2-1934, and W-PIT2-1935 analyzed by mass spectrometry indicated the presence of depleted uranium. The release of depleted uranium from Pit 2 appears to have occurred during this time period as a result of this discharge. This discharge was discontinued in 2005 and since then, total uranium activities in ground water collected from the Pit 2 detection monitor wells have decreased and $^{235}U/^{238}U$ atom ratio data continue an increasing trend toward a natural $^{235}U/^{238}U$ atom ratio. During first semester 2015, $^{235}U/^{238}U$ atom ratios in ground water collected from wells NC2-08 and W-PIT2-1935 indicated only natural uranium, and $^{235}U/^{238}U$ atom ratios in wells K2-01C and W-PIT2-1934 (0.0069 and 0.0066, respectively) indicated the presence of some depleted uranium, but continued an increasing trend toward a natural $^{235}U/^{238}U$ atom ratio.

During first semester 2015, well K2-01C, with a concentration of 4.1 µg/L, was the only Pit 2 detection monitor well with a perchlorate concentration exceeding the 4 µg/L reporting limit. Due to a combination of unsafe conditions and an inoperable pump, K2-01C had not been sampled since November 2010 when the perchlorate concentration was 5.5 µg/L.

Nitrate concentrations in samples collected from the Pit 2 detection monitor wells during first semester 2015, with the exception of well W-PIT2-1934, remained below the 45 mg/L MCL cleanup standard. The nitrate concentration in well W-PIT2-1934 was 47 mg/L, an increase over the 42 mg/L measured in 2014.

The other detection monitoring constituents: VOCs, HE compounds, Title 26 metals, lithium, and fluoride concentrations in samples collected during first semester 2015 were either below reporting limits or within the range of background concentrations.

There was no evidence of new contaminant releases from the Pit 2 Landfill indicated by the first semester 2015 ground water detection monitoring data.

3.1.3. Landfill Inspection Results

During first semester 2015, the Pit 2 Landfill cover was inspected on February 12 and May 13. No problems were identified.

3.1.4. Annual Subsidence Monitoring Results

Annual subsidence monitoring will be conducted during second semester 2015.

3.1.5. Maintenance

No maintenance was necessary or conducted on Pit 2 during first semester 2015.

3.2. Pit 6 Landfill

The Pit 6 Landfill was used from 1964 to 1973 to bury waste in nine unlined debris trenches and animal pits, including shop and laboratory equipment and biomedical waste. The Pit 6 Landfill was capped and closed in 1997 to prevent further leaching of contaminants that likely resulted from percolation of rainwater through the buried waste. Detection monitoring of the Pit 6 Landfill is conducted to identify any future releases to ground water in accordance with the requirements of the Pit 6 Post-Closure Plan.

3.2.1. Sampling and Analysis Plan Modifications

Detection monitoring of wells located downgradient of the Pit 6 Landfill (EP6-06, EP6-08, EP6-09, K6-01S, K6-19 and K6-36) is conducted semi-annually for VOCs and tritium and annually for aromatic VOCs (benzene, toluene, ethylbenzene, and xylenes), beryllium, mercury, total uranium, gross alpha/beta, perchlorate, and nitrate. When detection monitor well K6-01S is dry, well K6-01 serves as an alternate detection monitor well and is sampled for the same constituents. Wells EP6-08 and K6-36 have been dry for the past several reporting periods. Beginning in 2013, nearby wells EP6-07 (near EP6-08) and K6-35 (near K6-36) were designated to serve as detection monitor wells and are sampled for the same constituents when EP6-08 and K6-35 are dry.

The sampling and analysis plan for the Pit 6 Landfill ground water Detection Monitoring Program is presented in Table 2.3-1.

During the reporting period, ground water monitoring was conducted in accordance with CMP monitoring requirements. Because wells EP6-08 and K6-36 were dry, wells EP6-07 (for EP6-08) and K6-35 (for K6-36) were successfully sampled for all the required semi-annual detection monitoring constituents that normally apply to EP6-08 and K6-36. Well K6-01S had available ground water for sampling and thus, well K6-01 was not needed to serve as an alternate detection monitor well.

3.2.2. Contaminant Detection Monitoring Results

A map showing the locations of monitor wells at the Pit 6 Landfill is presented on Figure 2.3-1. Analytical results for first semester 2015 are summarized in Table 2.3-2 and physical parameters measured during first semester 2015 sampling are included in Table 2.3-3. There was no evidence of a new contaminant release from the Pit 6 Landfill as indicated by the first semester 2015 ground water detection monitoring data.

Data collected during first semester 2015 do not differ significantly from the previous semester. Wells EP6-08 and K6-36 were once again dry and not sampled. Nearby wells EP6-07 and K6-35 did have available ground water and were sampled for the required detection monitoring constituents, effectively replacing EP6-08 and K6-36. Also, well K6-01S did contain ground water and was successfully sampled for the required detection monitoring constituents.

Tritium and VOCs that were released to ground water from the landfill prior to its capping in 1998 have been detected historically in Pit 6 Landfill detection monitor wells. During first semester 2015, tritium activities did not exceed statistical limits in ground water samples from any detection monitor wells and were less than the reporting limit of 100 pCi/L in all the wells including well K6-19. Well K6-19 yielded a 2014 maximum tritium activity of 150 pCi/L in the first quarter of this year; in the third quarter 2014, the tritium activity dropped to 120 pCi/L in a duplicate sample and <100 pCi/L in the routine sample from this well. The statistical limit for tritium in well K6-19 was revised from 100 pCi/L to 317 pCi/L, following a statistical analysis conducted in September 2013. The 2014 maximum tritium activity of 150 pCi/L was less than the statistical limit and lower than the 2013 maximum activity of 209 pCi/L detected in well K6-19. This tritium detection is not considered to be indicative of a new release. Tritium activities in well K6-19 have dropped since October 1999 when the historic maximum activity of 2,520 pCi/L was detected. Since then, tritium activities have generally decreased (Campbell, 2007; Blake et al., 2011) and have always been well below the 20,000 pCi/L MCL cleanup level.

During first semester 2015, VOCs were not detected in Pit 6 detection monitor wells above their applicable statistical limits. However, TCE was detected in January at 3.2 µg/L, in one Pit 6 detection monitor well (EP6-09) below its MCL cleanup level (5 µg/L). In 2014, this well yielded a maximum of 5.2 µg/L TCE, slightly above its MCL cleanup level but far below its statistical limit of 17 µg/L. The historic maximum TCE concentration in Pit 6 monitor wells was 250 µg/L, detected in well K6-19 (1988). TCE has declined to 2.3 µg/L in K6-19 during first semester 2015. Further discussion of VOC distribution is presented in Section 2.3.2.1.1 of this CMR report.

Except for a small detection of cis-1,2-DCE (2.1 µg/L, K6-01S, January) below its MCL cleanup level (6 µg/L) and statistical limit (7 µg/L), the other detection monitoring constituents in samples collected from the detection monitor wells during first semester 2015 were below reporting limits.

There was no evidence of new contaminant releases from the Pit 6 Landfill indicated by the first semester 2015 ground water detection monitoring data.

3.2.3. Landfill Inspection Results

Abri Engineering conducted the Pit 6 Landfill Annual Engineering Inspection during first semester on April 20, 2015 (Abri Environmental Engineering, 2015). Inspection results were

summarized in a May 2015 engineering inspection report. Other than observing accumulation of some vegetative debris in the concrete lined drainage ditch, no problems were reported. Site 300 Labor Shop personnel subsequently removed the vegetative debris.

3.2.4. Annual Subsidence Monitoring Results

The annual subsidence monitoring inspection will be conducted during second semester 2015.

3.2.5. Maintenance

A post-closure visual maintenance inspection was performed during this semester by LLNL staff on April 9, 2015. This inspection demonstrated the continued functional and structural integrity of the cap, vegetative cover, and drainage system.

3.3. Pit 8 Landfill

Pit 8 Landfill received debris from the Building 801 Firing Table until 1974, when it was covered with compacted soil. There is no evidence of contaminant releases from the landfill.

3.3.1. Sampling and Analysis Plan Modifications

Detection monitoring of wells located downgradient of the Pit 8 Landfill, is conducted annually for VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium and fluoride. Detection monitoring wells for the Pit 8 Landfill include downgradient wells K8-02B, K8-04 and K8-05. Data from wells K8-01 and K8-03B that are located upgradient from the Pit 8 Landfill and downgradient of the Building 801 release site are also used for comparative purposes.

The sampling and analysis plan for the Pit 8 Landfill ground water Detection Monitoring Program is presented in Table 2.8-1.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions: 9 required analyses were not performed because well K8-05 was dry.

3.3.2. Contaminant Detection Monitoring Results

A map of the Building 801 Firing Table and Pit 8 Landfill showing building, firing table, landfill, and monitor well locations is presented as Figure 2.8-1.

Historic and current data indicate that VOCs detected in ground water in the Pit 8 Landfill area are the result of releases from the former Building 801D dry well, which have migrated downgradient from Building 801 to the area beneath the landfill. During first semester 2015, VOCs were detected in the ground water samples from all of the Pit 8 Landfill area wells, with the exception of K8-05, which was dry. The duplicate sample from well K8-01, located upgradient of Pit 8 and downgradient of Building 801 and historically containing the highest VOC concentrations, contained the maximum VOC concentration of 5.0 µg/L, comprised of 3.4 µg/L of TCE and 1.6 µg/L of 1,2-DCA (the routine sample contained 4.8 µg/L, comprised of 3.3 µg/L TCE and 1.5 µg/L 1,2-DCA). The well K8-04 duplicate sample contained 2.6 µg/L of VOCs, comprised of 1.7 µg/L of TCE and 0.91 µg/L 1,2-DCA (the routine sample contained 2.3 µg/L, comprised of 1.5 µg/L TCE and 0.81 µg/L 1,2-DCA). Wells K8-02B and K8-03B

contained only TCE at concentrations of 1.5 µg/L and 0.7 µg/L, respectively. The presence of VOCs in the Pit 8 Landfill area wells appears to be a continuation of the VOC plume originating at the Building 801 dry well and not indicative of a release from the Pit 8 Landfill.

Nitrate concentrations in Pit 8 Landfill area wells K8-04 and K8-01 exceeded the 45 mg/L MCL cleanup standard during first semester 2015. The maximum first semester 2015 nitrate concentration was 80 mg/L in the routine sample (the duplicate sample contained 71 mg/L) collected from downgradient detection monitor well K8-04. Over the last several years, nitrate concentrations in well K8-04 have been slowly increasing. This semester, nitrate concentrations in well K8-01 were 46 mg/L in the duplicate sample and 45 mg/L in the routine sample. Overall, these nitrate results are similar to historical results, and are not indicative of a new release from the Pit 8 Landfill.

Tritium activities in ground water samples collected from wells in the Pit 8 Landfill area, with the exception of samples collected from well K8-01, were below the reporting limit (<100 pCi/L) during first semester 2015. Tritium activities in samples collected from well K8-01 were 174 pCi/L and 157 pCi/L for routine and duplicate samples, respectively. These tritium activities are all within or very close to the range of background, when considering reported measurement error. Because well K8-01 is located upgradient of the Pit 8 Landfill, tritium detections above the reporting limit are not indicative of a new release from the Pit 8 Landfill.

Perchlorate with a concentration of 4.3 µg/L, slightly greater than the 4 µg/L reporting limit, was detected in the routine sample collected from well K8-04. However, the results from the duplicate sample were below the reporting limit. Perchlorate concentrations in the other Pit 8 Landfill area wells did not exceed the 4 µg/L reporting limit.

The other detection monitoring constituents: HE compounds, uranium isotopes, Title 26 metals, lithium, and fluoride concentrations/activities in samples collected during first semester 2015 from wells upgradient/cross-gradient and downgradient of the Pit 8 Landfill were either below reporting limits or within the range of background concentrations.

Of the constituents monitored during first semester 2015 as part of the Detection Monitoring Program in $Tnbs_1$/$Tnbs_0$ HSU ground water from Pit 8 Landfill area wells, only nitrate and 1,2-DCA exceeded their applicable MCL cleanup standards.

There was no evidence of a new contaminant release from the Pit 8 Landfill indicated by the first semester 2015 ground water detection monitoring data.

3.3.3. Landfill Inspection Results

During first semester 2015, the Pit 8 Landfill cover was inspected on February 12 and May 13. No problems were identified.

3.3.4. Annual Subsidence Monitoring Results

Annual subsidence monitoring will be conducted during second semester 2015.

3.3.5. Maintenance

No maintenance was necessary at Pit 8 during first semester 2015.

3.4. Pit 9 Landfill

Debris generated at the Building 845 Firing Table was buried in the Pit 9 Landfill from 1958 until 1963. There has been no evidence of contaminant releases from the Pit 9 Landfill.

3.4.1. Sampling and Analysis Plan Modifications

Detection monitoring is conducted in wells located downgradient of the Pit 9 Landfill annually for VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium and fluoride. Detection monitoring wells for the Pit 9 Landfill include K9-01, K9-02, K9-03 and K9-04.

The sampling and analysis plan for the Pit 9 Landfill ground water Detection Monitoring Program is presented in Table 2.8-3.

During the reporting period, ground water monitoring was conducted in accordance with CMP monitoring requirements.

3.4.2. Contaminant Detection Monitoring Results

A Building 845 Firing Table and Pit 9 Landfill site map showing building, landfill, and monitor well locations is presented as Figure 2.8-3. The detection monitoring constituents: VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium and fluoride concentrations/activities in samples collected during first semester 2015 were either below reporting limits or within the range of background concentrations. There was no evidence of a new release from the Pit 9 Landfill during first semester 2015.

3.4.3. Landfill Inspection Results

During first semester 2015, the Pit 9 Landfill was inspected on February 19 and May 13. No problems were identified.

3.4.4. Annual Subsidence Monitoring Results

Annual subsidence monitoring will be conducted during second semester 2015.

3.4.5. Maintenance

No maintenance was necessary at Pit 9 during first semester 2015.

3.5. Pit 7 Complex Landfills

The Pit 3, 4, 5, and 7 Landfills are collectively designated the Pit 7 Landfill Complex. Firing table debris containing tritium, depleted uranium, and metals was placed in the pits in the 1950s through the 1980s. The Pit 4 and 7 Landfills, and about 25-30% of Pit 3, were capped in 1992. During years of above-normal rainfall (e.g., 1997-1998 El Niño), ground water rose into the bottom of the landfills and the underlying contaminated bedrock. This resulted in the release of tritium, uranium, VOCs, perchlorate and nitrate to ground water. In addition to these COCs, ground water samples from Pit 7 Complex detection monitor wells are also analyzed for metals, HE compounds, and polychlorinated biphenyls (PCBs) as these constituents may have been contained in the firing table gravels placed in the landfills.

3.5.1. Sampling and Analysis Plan Modifications

Detection monitoring is conducted in wells located downgradient of the Pit 7 Landfill Complex annually for VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, fluoride and PCBs.

The sampling and analysis plan for the Pit 7 Complex Landfill ground water Detection Monitoring Program is presented in Table 2.5-8.

During the reporting period, ground water monitoring was conducted in accordance with CMP monitoring requirements.

3.5.2. Contaminant Detection Monitoring Results

A map showing the locations of detection monitor wells and the Pit 7 Complex Landfill is presented on Figure 2.5-1. Wells K7-01, K7-03, K7-06, K7-09, K7-10, NC7-26, NC7-47 and NC7-48 comprise the current detection monitoring well network for the Pit 7 Complex. Wells K7-01, K7-03 and NC7-26 are located downgradient of Pit 5 and Pit 7; well K7-06 is upgradient of Pit 7, wells K7-09 and K7-10 are cross-gradient of Pits 3, 5 and 7; well NC7-48 is immediately downgradient of Pit 7, and well NC7-47 is far downgradient of Pits 3 and 7.

The detection monitor wells are screened in the following HSUs:

- NC7-48: Qal/WBR HSU.
- K7-01 and K7-06: Qal/WBR and $Tnbs_1$/$Tnbs_0$ HSUs.
- K7-03, K7-10, NC7-26 and NC7-47: $Tnbs_1$/$Tnbs_0$ HSU.
- K7-09: $Tnsc_0$ HSU.

Depth to ground water is currently a minimum of 10 to 15 feet below the buried waste in Landfill Pits 3, 4, 5 and 7.

3.5.2.1. Tritium

The Pit 3 and 5 Landfills have been identified as the sources of previous releases of tritium to ground water. The Pit 7 Landfill is not an apparent source of tritium in ground water as most of the tritium-bearing experiments conducted at Site 300 occurred prior to its opening in 1979 (Taffet et al., 2008).

During first semester 2015, tritium activities in ground water samples collected from Pit 7 Complex detection monitor wells K7-03 and K7-01 exceeded the 20,000 pCi/L MCL cleanup standard with activities of 56,900 pCi/L (routine sample, duplicate result was 49,900 pCi/L) and 31,000 pCi/L, respectively. Tritium activities in ground water samples from well K7-03 have generally been declining since the historic maximum activity 216,000 pCi/L in March 1993. The maximum 2014 ground water tritium activity in K7-03 was 71,500 pCi/L (April). Tritium activities in ground water samples from detection monitor well K7-01 have decreased from the historic maximum activity of 72,900 pCi/L in October 1999. The 2014 maximum tritium activity detected in a ground water sample from this well was 32,700 pCi/L (October).

Tritium activities in all samples collected during first semester 2015 from upgradient well K7-06, cross-gradient wells K7-09 and K7-10, downgradient well NC7-48, and far downgradient well NC7-47 were all below the 100 pCi/L reporting limit/background activity.

In general, the extent of tritium in the $Tnbs_1/Tnbs_0$ and Qal/WBR HSUs in the Pit 7 Complex area are consistent with those observed in 2014, and tritium activities continue to decrease. No new release of tritium from the landfills is indicated by the first semester 2015 ground water tritium data.

A discussion of tritium that was previously released to ground water from the Pit 7 Complex Landfills is presented in Section 2.5.5.2.1.

3.5.2.2. Uranium

Depleted uranium was previously released to ground water from sources in Pits 3, 5 and 7 (Taffet et al., 2008). Uranium activities were below the 20 pCi/L MCL cleanup standard in all detection monitor well samples collected during first semester 2015. The maximum first semester 2015 uranium activity in a sample from a detection monitor well was 16 pCi/L from well K7-01. Uranium activities in ground water samples from this well have generally fluctuated within a few pCi/L of the 20 pCi/L MCL cleanup standard since the 1997-1998 El Niño. The historic maximum uranium activity detected in this well was 27 pCi/L (September 1984).

The uranium activity in well NC7-48, the only detection monitor well containing depleted uranium, was 9.8 pCi/L. Uranium activities in this well have declined from the historic maximum of 105 pCi/L detected after the 1997-98 El Niño (March 1998). Ground water samples from this well have historically contained depleted uranium.

The extent of uranium in Qal/WBR and $Tnbs_1/Tnbs_0$ ground water is similar to recent years and uranium activities in samples from all detection monitor wells have generally decreased from their historic maximum uranium activities. Ground water uranium data from first semester 2015 do not indicate any new releases of uranium from the Pit 7 Complex Landfills. A discussion of uranium that was previously released to ground water from the Pit 7 Complex Landfills is presented in Section 2.5.5.2.2.

3.5.2.3. Nitrate

Ground water samples collected during first semester 2015 from Pit 7 Complex detection monitor wells NC7-47 and K7-01 contained nitrate at concentrations of 64 mg/L and 48 mg/L, respectively, exceeding the 45 mg/L MCL cleanup standard. Ground water samples from well NC7-47 have never contained any other COCs in excess of background concentrations. Overall, nitrate concentrations in the detection monitoring wells have remained stable, with occasional fluctuations, for the last decade. Current data do not indicate any new releases of nitrate from any of the landfills. A discussion of nitrate that was previously released to ground water from the Pit 7 Complex Landfills is presented in Section 2.5.5.2.3.

3.5.2.4. Perchlorate

Wells K7-01 (screened in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs) and K7-03 (screened in the $Tnbs_1/Tnbs_0$ HSU) are the only detection monitor wells from which ground water samples have historically contained perchlorate at concentrations in excess of the 4 µg/L reporting limit. Perchlorate concentrations in samples from these wells have decreased from the historic maximum of 25 µg/L at well K7-01 (July 2006) and 29 µg/L at well K7-03 (April 2005) to 11 µg/L and 5.7 µg/L (routine sample result, duplicate sample result was 5.2 µg/L) of perchlorate, respectively. The overall extent of perchlorate at concentrations exceeding the 6 µg/L MCL cleanup standard in ground water in the Pit 7 Complex area did not change

significantly from 2014 to first semester 2015. The first semester 2015 data do not indicate any new releases of perchlorate from any of the landfills. A discussion of perchlorate that was previously released to ground water from the Pit 7 Complex landfills is presented in Section 2.5.5.2.4.

3.5.2.5. Volatile Organic Compounds

During first semester 2015, VOCs were detected in samples from two detection monitor wells at concentrations above reporting limits. The samples from wells K7-01 and K7-03 contained 0.78 µg/L and 1.0 µg/L of TCE, respectively. The historic maximum VOC concentrations in samples from these wells were 20 µg/L (well K7-01, 1985) and 15.2 µg/L (well K7-03, 1985). VOC concentrations have generally been declining in samples from these wells since these 1985 maxima. The first semester 2015 data do not indicate any new releases of VOCs from any of the landfills. A discussion of VOCs that were previously released to ground water from the Pit 7 Complex Landfills is presented in Section 2.5.5.2.5.

3.5.2.6. Title 26 Metals and Lithium

During first semester 2015, Title 26 metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium and zinc) and lithium were not detected in ground water samples from the Pit 7 Complex area detection monitoring wells at concentrations in excess of background concentrations. These data did not indicate a release of metals from any of the landfills during reporting period.

3.5.2.7. High Explosives (HE) Compounds

During first semester 2015, HE compounds were not detected in ground water samples from the Pit 7 Complex area detection monitoring wells at concentrations in excess of individual compound reporting limits of 1 to 2 µg/L. These data did not indicate a release of HE compounds from any of the landfills during first semester 2015.

3.5.2.8. Polychlorinated Biphenyls (PCBs)

During first semester 2015, PCB compounds were not detected in ground water samples from the Pit 7 Complex area detection monitoring wells at concentrations in excess of the individual compound reporting limits of approximately 0.5 µg/L. The data indicate no release of PCBs from any of the landfills during the reporting period.

3.5.3. Landfill Inspection Results

An inspection of the Pit 7 Landfill Cap was conducted on April 9, 2015. The landfill cap was found to be in good condition and functioning as intended.

3.5.4. Annual Subsidence Monitoring Results

Annual subsidence monitoring will be conducted during second semester 2015.

3.5.5. Maintenance

No maintenance was required at Pit 7 during first semester 2015.

3.6. Pit 7 Complex Drainage Diversion System

A Drainage Diversion System was constructed in the Pit 7 Complex area of OU 5 in 2007-2008 (Section 2.6). The Pit 7 Drainage Diversion System is inspected and maintained per the requirements of the Inspection and Maintenance Plan (Taffet et al., 2008).

3.6.1. Drainage Diversion System Inspection Results

Monthly rainy season inspections were performed during first semester 2015. The drainage diversion system was inspected on January 15, February 9, March 12 and April 16.

3.6.2. Drainage Diversion System Maintenance

Vegetative debris was removed from basins, channels and rip-rap areas during first semester 2015.

3.7. Building 850 CAMU

A Corrective Action Management Unit (CAMU) was constructed in the Building 850 area of OU 5 in 2009 as part of the Building 850 Removal Action to permanently isolate excavated PCB-bearing soil above cleanup standards from the environment (Section 2.5). The Building 850 CAMU is inspected and maintained per the requirements of the Inspection and Maintenance Plan (SCS Engineers, 2010).

3.7.1. Building 850 CAMU Inspection Results

The CAMU was inspected once (February 9) immediately following a rainfall event (February 7-8) during first semester 2015. No evidence of excess vegetation, erosion, or sedimentation was observed and all controls were working as intended. CAMU inspections are typically conducted during second semester in July (post-season), immediately after major storms, and October (pre-season).

3.7.2. Building 850 CAMU Maintenance

Maintenance was not required during first semester 2015.

4. Risk and Hazard Management Program

The goal of the Site 300 Risk and Hazard Management Program is to protect human health and the environment by controlling exposure to contaminants during remediation. Risk and hazard management is conducted in areas of Site 300 where the exposure point risk exceeded 1×10^{-6} or the hazard index exceeded 1 in the baseline risk assessment. Institutional controls have been implemented to manage risks. The CMP/CP requires that the institution controls in place at Site 300 be evaluated annually. Per the CMP/CP requirements, the results of the following 2015 human health risk and hazard re-evaluation will be discussed in detail in the 2015 Annual CMR:

- Inhalation risk evaluation for VOCs migrating from subsurface soil into indoor ambient air in Buildings 830 and 834D.

- Inhalation risk evaluation for VOCs migrating from surface water into outdoor ambient air at Springs 5 and 7 and for tritium at Well 8 Spring.

The completed Institutional Controls Monitoring Checklist for 2015 will be included in the Annual CMR.

Per the CMP/CP requirements, the results of the following 2015 ecological risk and hazard management program will be discussed in the 2015 Annual CMR:

- Inspections of the Pit 7 Complex landfills and burrow/hole filling in the cover to prevent unacceptable exposure of animals to uranium in the pit waste.
- Evaluation of any new biological survey information collected during 2015 for the presence of new special-status species.
- Additional sampling for total phosphorus and ammonia nitrogen in Spring 4, chloride in Spring 14, and total uranium in Springs 10, 11, and 16 when/if sufficient water is available for sampling.

The results of the most recent (2014) human health and ecological risk and hazard re-evaluation are presented in the 2014 Annual CMR (Buscheck et al., 2015).

5. Data Management Program

The management of data collected during first semester 2015 was subject to Environmental Restoration Department (ERD) data management process and standard operating procedures (Goodrich and Lorega, 2012). This data management process tracks sample and analytical information from initial sampling plan through data storage in a relational database. As part of the standard operating procedures for data quality, this process includes sample planning, chain of custody tracking, sample collection history, electronic and hard copy analytical results receipt, strict data validation and verification, data quality control procedures, and data retrieval and presentation. Data management and data retrieval is facilitated by a web-based system known as The Environmental Information Management System (TEIMS). The use of this system promotes and provides a consistent data set of known quality. Quality assurance and quality control are performed consistently on all data.

5.1. Modifications to Existing Procedures

The relational database used to maintain the data for the CMR continued to be Oracle version 11.2.0.3 on Linux servers. General maintenance and refinements continued in both the database and the web application programming. Improvements and additions to the ERD data management process are continuously implemented in an ongoing effort to automate and upgrade the applications, including updating and adding verifications, improving field sheets to show preservation and remarks to samplers, refining the recently improved water level collection process, and updating the names of outdated requested analysis codes. The following requested analyses codes were revised prior to the second quarter CMP sampling: E601 to E624MOD and E502.2 to E524.2MOD. Also sample collect codes were consolidated from 46 codes to four (4) codes.

The Treatment Facility Real Time (TFRT) application, a high frequency data acquisition system for treatment facilities and associated extraction wells, continued to be improved by

extending options available to users and refining tools to improve usability. Improvements included: increasing the floating point precision displayed for sensors, adding site-specific contaminants of concern to the TFRT pumping well information webpage, improving the facility status notification process by adding text messaging capability, and adding several new operating parameter diagnostic checks.

The application known as Well Track is used to monitor requests for maintenance of wells. Improvements include adding the ability to store well video logs, adding creation of field sheet for video logging, and improving display of history tracking. Standard Operating Procedures are up to date.

5.2. New Procedures

The process of re-architecting existing computer programs that generate web pages continues, with the dual goals of improving maintainability and user efficiency. The Geographic Information Systems (GIS) spatial data engine (SDE) database was migrated from a Sun Solaris server to a Linux server.

6. Quality Assurance/Quality Control Program

LLNL conducted all compliance monitoring in accordance with the approved Quality Assurance Project Plan (QAPP) (Dibley, 1999) requirements for planning, performing, documenting, and verifying the quality of activities and data. The QAPP was prepared for CERCLA compliance and ensures that the precision, accuracy, completeness, and representativeness of project data are known and are of acceptable quality. The QAPP is used in conjunction with the LLNL ERD Standard Operating Procedures (SOPs), Operations and Maintenance Manuals (O&Ms), Work Plans, Sampling Plans, Integration Work Sheets (IWSs), and Site Safety Plans. Modifications to existing LLNL quality assurance/quality control (QA/QC) procedures, new QA/QC procedures that were implemented during this reporting period, self-assessments, quality issues and corrective actions, and analytical and field quality control are discussed in this section.

6.1. Modifications to Existing Procedures

Some ERD SOPs scheduled for release with the previous issue of Revision 14 remain in the review and update process as listed:

- SOP 1.8: Disposal of Investigation-Derived Wastes (Drill Cuttings, Core Samples, and Drilling Mud).
- SOP 1.14: Final Well Development/Specific Capacity Tests at LLNL Livermore Site and Site 300.
- SOP 2.8: Installation of Dedicated Sampling Devices.
- SOP 3.1: Water-Level Measurements.
- SOP 3.2: Pressure Transducer Field Calibration.
- SOP 3.3: Hydraulic Testing (Slug/Bail).
- SOP 3.4: Hydraulic Testing (Pumping).

- SOP 4.14: Mapping with the Trimble Pathfinder Pro XR GPS System.

Twenty-five SOPs are in the final review and approval process as follows:

- SOP 1.2 Borehole Sampling of Unconsolidated Sediments and Rock
- SOP 1.5: Initial Well Development
- SOP 1.18: Site 300 Treatment Media Acceptance Testing and Usage Tracking Process.
- SOP 1.19: Conditioning Treatment for Ion Exchange Resin.
- SOP 1.20: Carbon canister Removal and Carbon Conditioning.
- SOP 2.1: Pre-sample Purging of Wells.
- SOP 2.2: Field Measurements on Surface and Ground Waters.
- SOP 2.3: Sampling Monitor Wells with Electric Submersible Pumps, and Specific-Depth Grab Sampling Devices.
- SOP 2.4: Sampling Monitor Wells with a Bailer.
- SOP 2.5: Surface Water Sampling.
- SOP 2.6: Sampling for Volatile Organic Compounds.
- SOP 2.7: Pre-sample Purging and Sampling of Low-Yielding Monitor Wells.
- SOP 2.9: Sampling for Tritium in Ground Water.
- SOP 2.10: Well Disinfection and Coliform Bacteria Sampling.
- SOP 4.3: Sample Containers and Preservation.
- SOP 4.7A: Livermore Site Treatment and Disposal of Well Development and Well Purge Fluids.
- SOP 4.10: Records Management.
- SOP 5.1: Data Management Chain of Custody and Printed Analytical Result Receipt and Processing.
- SOP 5.3: Data Management Electronic Analytical Result Receipt and Processing for Sample, Analysis, and QC Data.
- SOP 5.4: Data Management Hand Entry of Analytical Results.
- SOP 5.5: Data Management Revision Receipt and Processing.
- SOP 5.8: Field Logbook Control.
- SOP 5.10: Data Management Receipt and Processing Lithology by Electronic Transfer.
- SOP 5.15: Preparation of Required Routine Groundwater and Treatment Facilities Sampling Plans.
- SOP 5.20: Cost Effective Sampling (CES) Algorithm Preparation.

Once approved the twenty-five procedures will be released as Revision 15.

6.2. New Procedures

A new procedure, SOP 1.18: Site 300 Treatment Media Acceptance Testing and Usage Tracking has been developed and finalized. Procedures affiliated with treatment facility processes such as “Carbon Canister Removal and Carbon Conditioning”, “Conditioning

Treatment for Ion Exchange" and "Removing Carbonate Deposits from Portable Treatment Unit Air Strippers Using Citric Acid" formerly included in the Operations and Maintenance Manual, Volume 1, will be moved into the SOPs binder except for the procedure "Removing Carbonate Deposits from Portable Treatment Unit Air Strippers Using Citric Acid" that has become obsolete. The other two procedures, SOP 1.19: Conditioning Treatment for Ion Exchange Resin and SOP 1.20: Carbon Canister Removal and Carbon Conditioning, have been reformatted, reviewed, and updated and are also in the final review and approval process. These procedures will be released as part of Revision 15.

6.3. Self-assessments

ERD participates in self-assessments, both formal and informal. Assessments are conducted to evaluate work activities to procedural, QA, management, and Integrated Safety Management System (ISMS) practices. External regulatory agencies and management performs frequent assessments and management work observations, verifications, and inspections (MOVIs) of ERD work activities. There were a total of 14 assessments consisting of MOVIs, Storm Water Pollution Prevention Program (SWPPP) and regulatory inspections conducted for the Site 300 CERCLA program during first semester 2015. Issues and deficiencies observed during assessments are tracked from inception to resolution using the institutional Issues Tracking System (ITS). There were no deficiencies associated with the assessments performed for the Site 300 program during this reporting period.

6.4. Work Planning and Control

The Institutional-Wide Work Planning and Control (WP&C) process is undergoing a major overhaul. A key component of the new process is that it will be a risk-based approach and will replace the current IWS system. The new WP&C process is planned for release late 2015.

The periodic scheduled reviews for the Integration Work Sheets (IWSs) required under the current WP&C process have been completed for the approximate dozen Site 300 IWSs.

6.5. Quality Issues and Corrective Actions

Quality improvement, nonconformance, and corrective action reporting is documented using the Quality Improvement Form (QIF).

One QIF was submitted during first semester 2015. QIF-15-001 was created to properly describe the method used to analyze ERD samples for volatile organic compounds (VOCs) by BC Laboratories. ERD and the Environmental Functional Area (EFA) organizations has historically used the requested analysis code "E601" when requesting environmental samples to be analyzed for VOCs. BC Labs has historically performed the VOCs analysis using a 624 column, which is a GC/MS method and not a GC method as denoted by the "E601" requested analysis code. The QIF describes a process as to how the data set will be managed in the TEIMS database for clarification should this question arise in the future. The QIF is currently in the review and approval process.

There were no additional QIFs generated during first semester 2015.

6.6. Analytical Quality Control

Data review, validation, and verification are conducted on 100% of the incoming analytical data in accordance with ERD SOP 4.6: Validation and Verification of Radiological and Nonradiological Data Generated by Analytical Laboratories. Contract analytical laboratories are contractually required to provide internal quality control (QC) checks in the form of method blanks, laboratory control samples, matrix spikes, and matrix spike or sample duplicate results with every analysis. During the data validation process, the analytical QC data and associated QC acceptance criteria (control limits) are reviewed. Data qualifier flags are assigned to analytical data that fall outside the QC acceptance criteria. Data qualifier flags and their definitions are listed in the Acronyms and Abbreviations in the Tables section of this report. The qualifier flags, when they exist, appear next to the analytical data presented in the treatment facility compliance tables of this report. Because rejected data are not used for decision-making, the rejected analytical data are not displayed in the tables, only the "R" flag is presented. Data are qualified as rejected only when there is a serious deficiency in the ability to analyze the sample and meet QC criteria. There were no off normal occurrences to report in relation to data validation and verification performed this semester.

6.7. Field Quality Control

During first semester 2015 reporting period, there were no problems with field QC samples to report.

6.8. Contract Analytical Laboratory Services

Blanket Agreements (BAs) for analytical laboratory services for Bid Package 1 (chemical analyses only, no radiological tests) were recently awarded to an incumbent laboratory, BC Laboratories, Inc. (Bakersfield, CA) and two new analytical laboratories. ERD first used the two new laboratories, Accutest Laboratories (San Jose, CA) and Test America (West Sacramento, CA), in late 2014. In early November 2014, a pilot study was conducted by developing a sampling plan consisting of collecting duplicate ground water samples and some vapor samples for analysis conducted by the new laboratories. Based on the performance of the new laboratories during the pilot study, the first quarter 2015 sample plan and usage of the laboratories for routine ground water and treatment facility sample analysis was developed accordingly. Test America's performance met LLNL's expectations and contractual obligations and only required fine-tuning of some details, which is completely expected when first using a new laboratory. Test America personnel were proactive in developing additional protocols to work through the details to meet LLNL requests. Due to laboratory QC and reporting issues encountered with the usage of Accutest, the laboratory was only scheduled to receive a small selection of inter laboratory collocated samples during the first sampling quarter of 2015. The inter laboratory collocated samples were submitted due to a continued effort on behalf of LLNL to assist the laboratory in trying to meet the QC and reporting obligations agreed to in the contract. Thus far, Accutest has not been successful in meeting those obligations.

Two ERD Department of Energy Consolidated Audit Program (DOECAP) auditors participated in the BC Labs audit performed in April 2015. There were no priority 1 findings but there were 13 priority 2 findings and one observation. The only technical finding consisted of continuing calibration verifications (CCVs) for VOCs testing not being performed according to

requirements set forth in the DOE/DOD Consolidated Quality Systems Manual for Environmental Laboratories. It is required that when a CCV% recovery fails the acceptance criteria (±20% of the true value) then the sample needs to be re-analyzed or flagged only when it is not possible to reanalyze. Subsequent to the April audit, the rate at which CCV% recovery fails have decreased significantly.

The previous BC Labs Priority 1 finding reported during second semester 2014 was successfully corrected and closed out ahead of the April 2015 audit. The finding had been issued due to the laboratory's inability to analyze a performance test (PT) sample within the acceptable limits for antimony in soil. There were no other open findings from previous audits. Findings and observations noted during contract analytical laboratory audits are managed by through the DOECAP system.

An initial DOECAP audit was performed at Test America in June 2015. The audit findings were ones to be expected from conducting an initial DOECAP audit. The majority of findings and observations were observed during the general laboratory practices and quality assurance management portion of the audit. Even though there were a large number of priority 2 findings (a total of 20) and some observations (a total of three), these were not technical in nature and overall, it was determined that the lab is technically sound and producing quality data.

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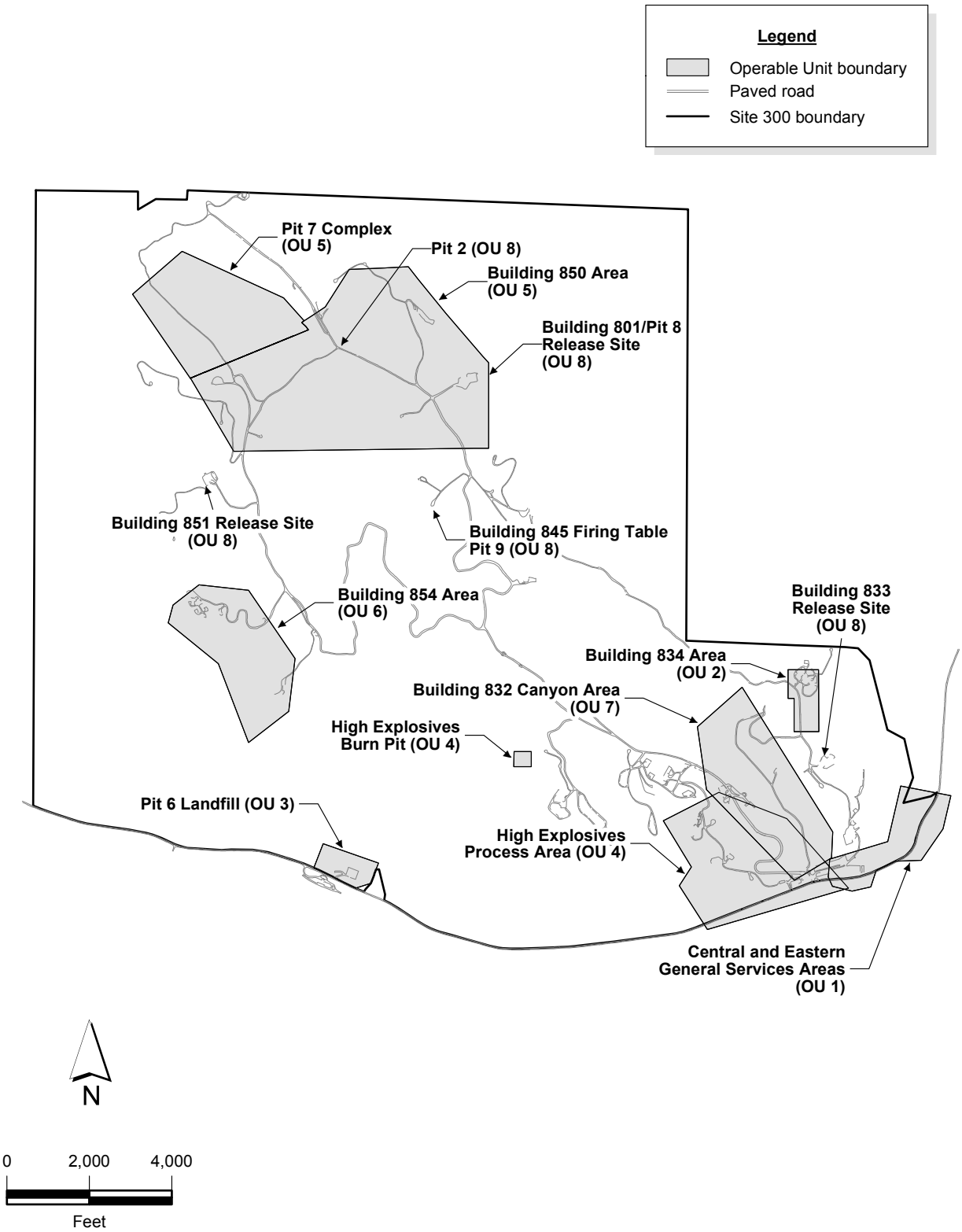

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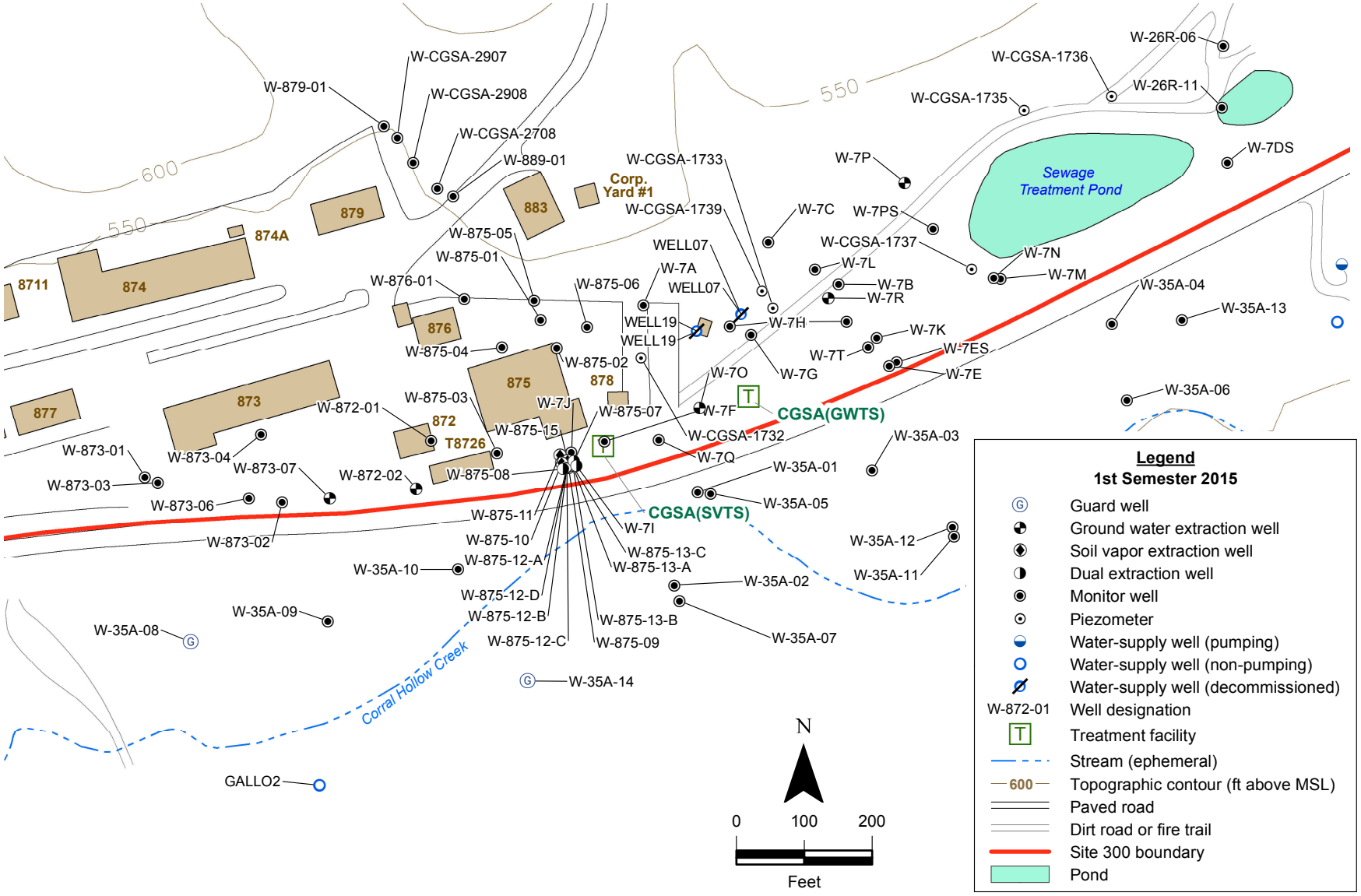

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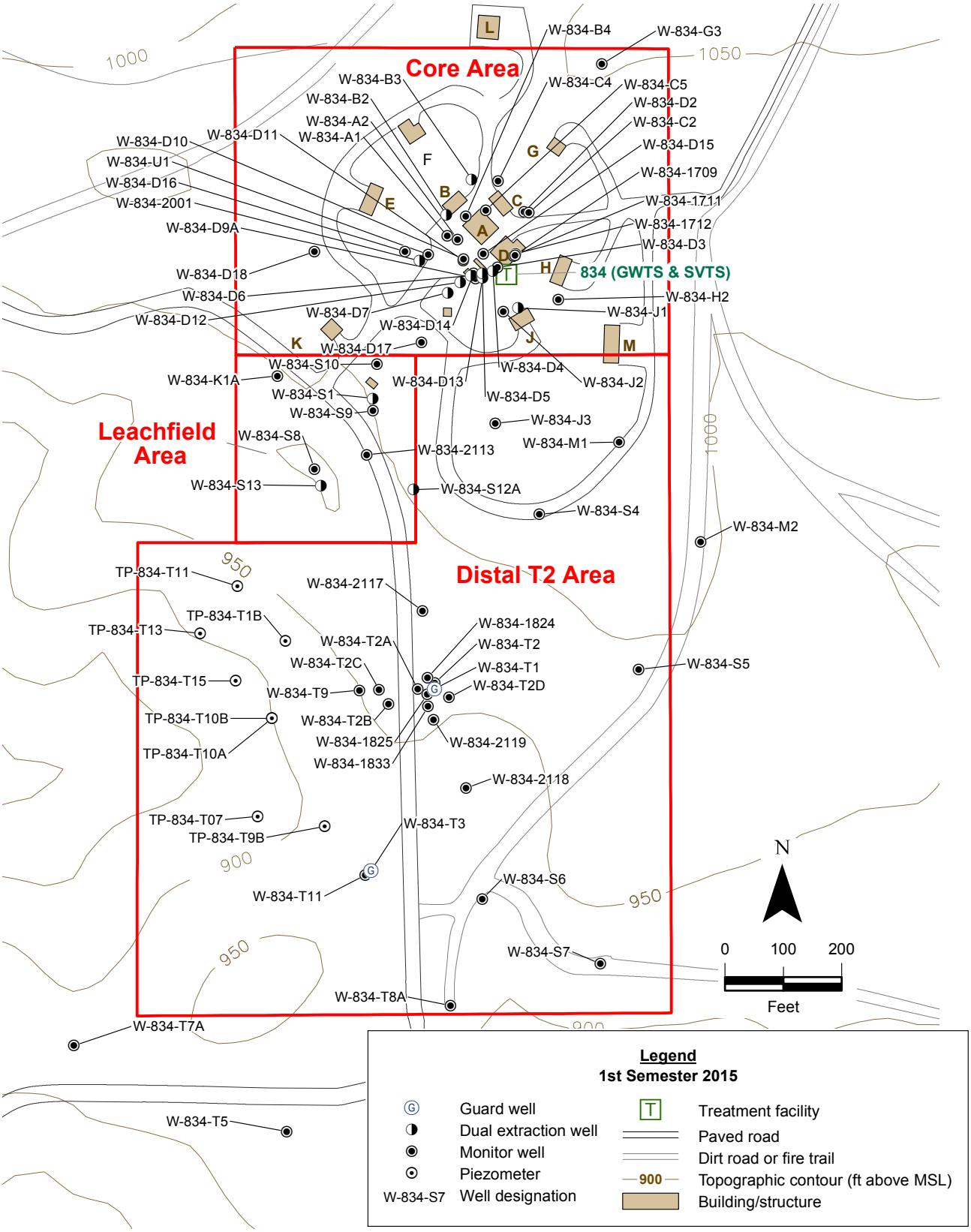

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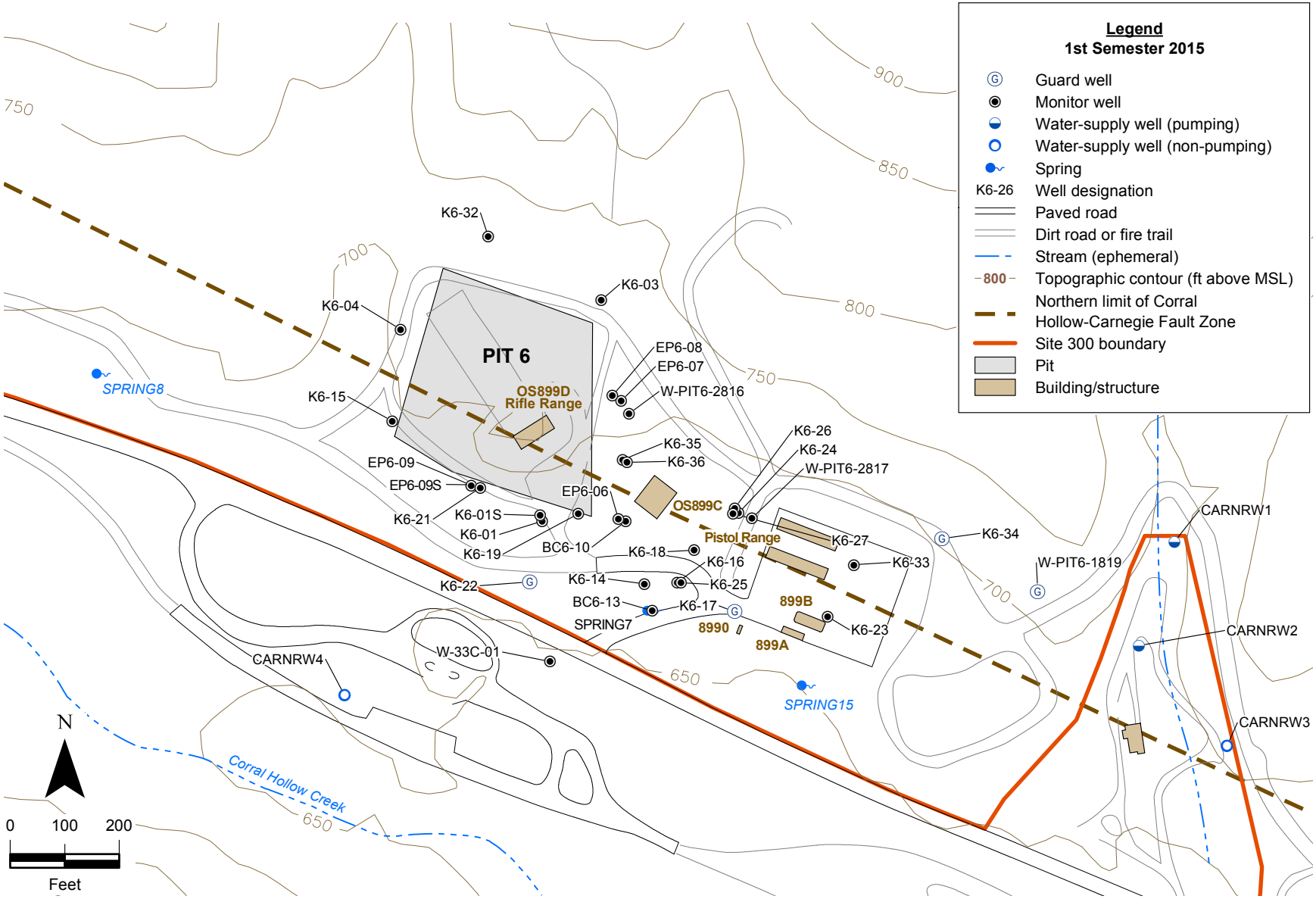

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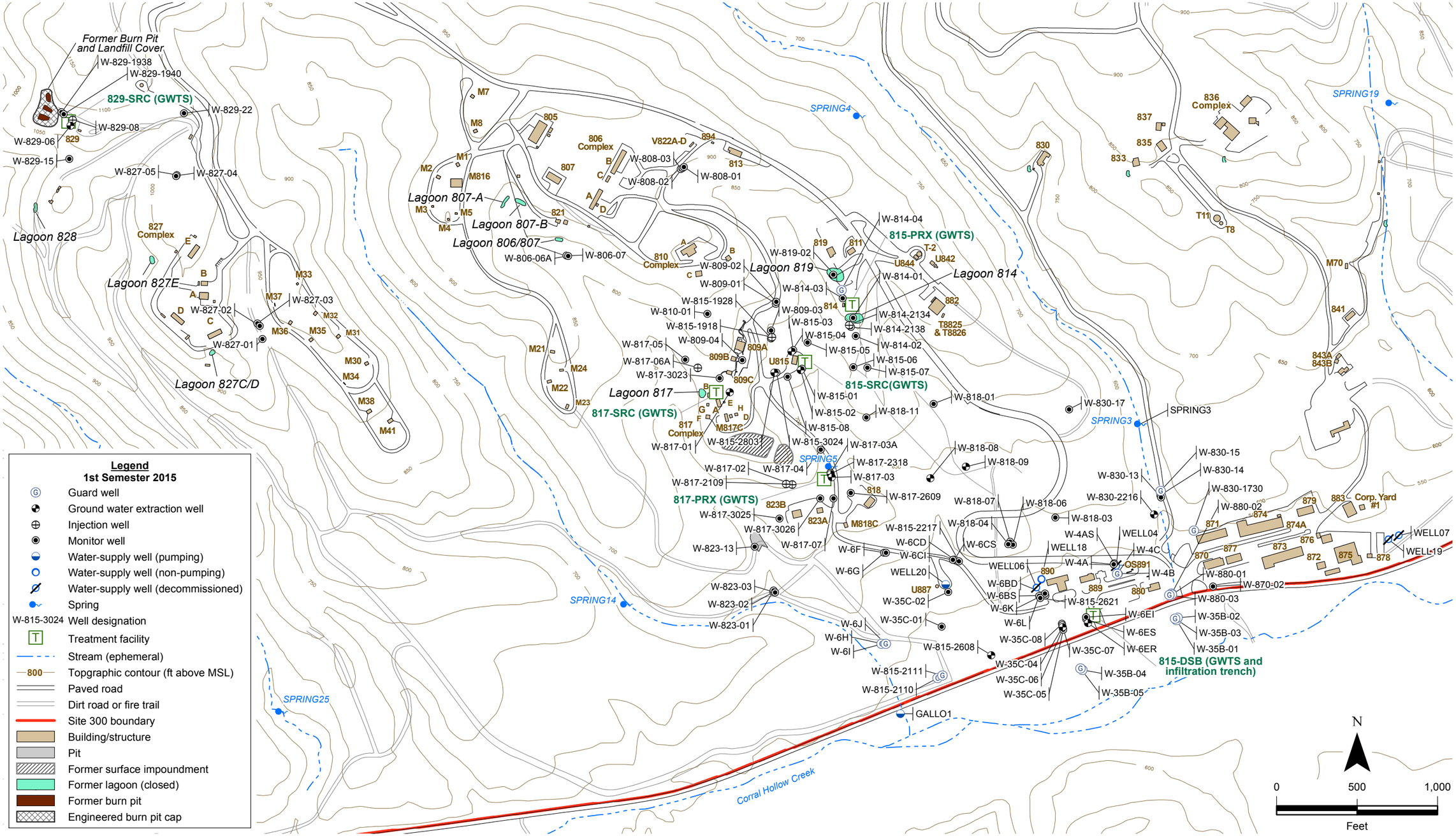

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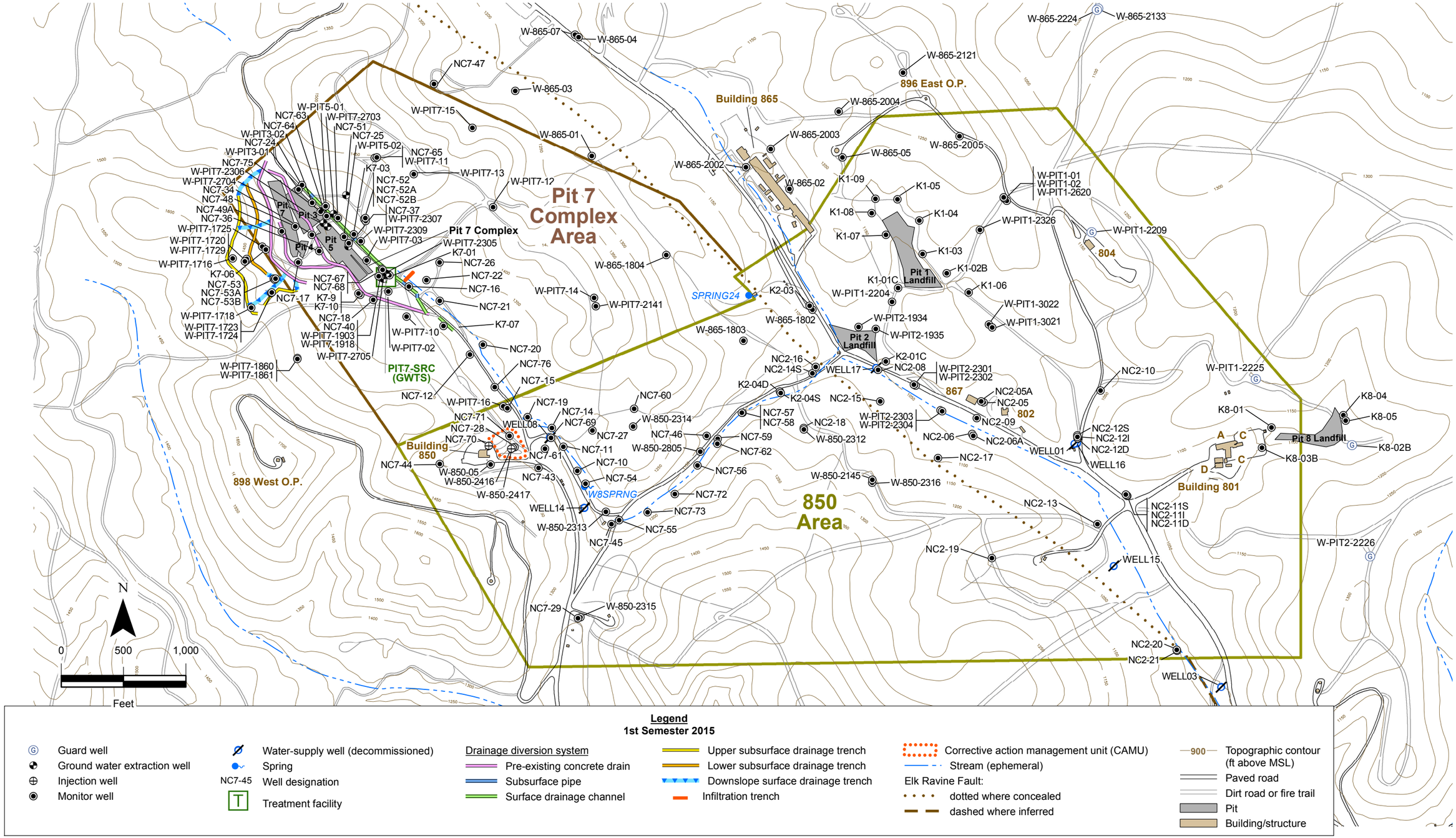

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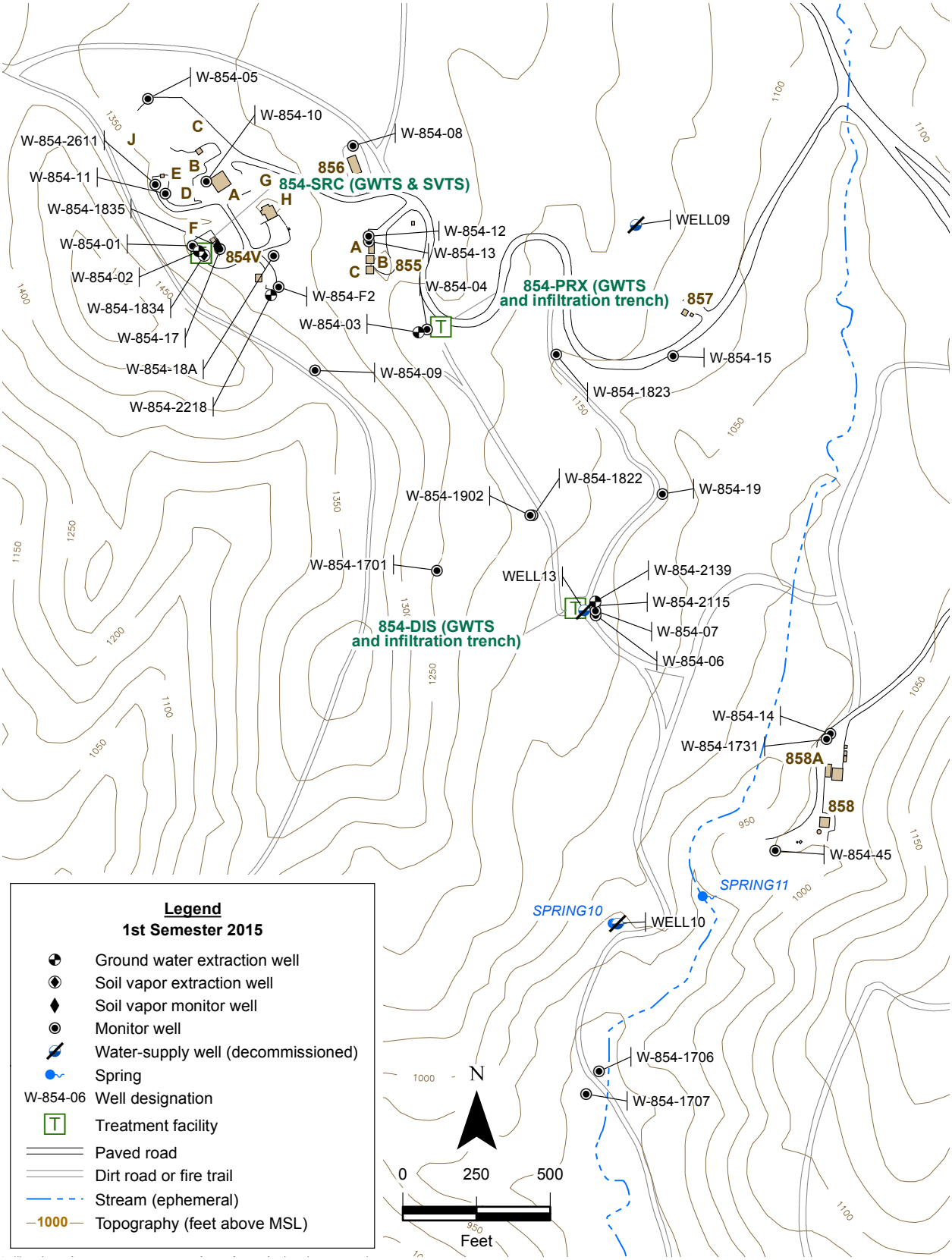

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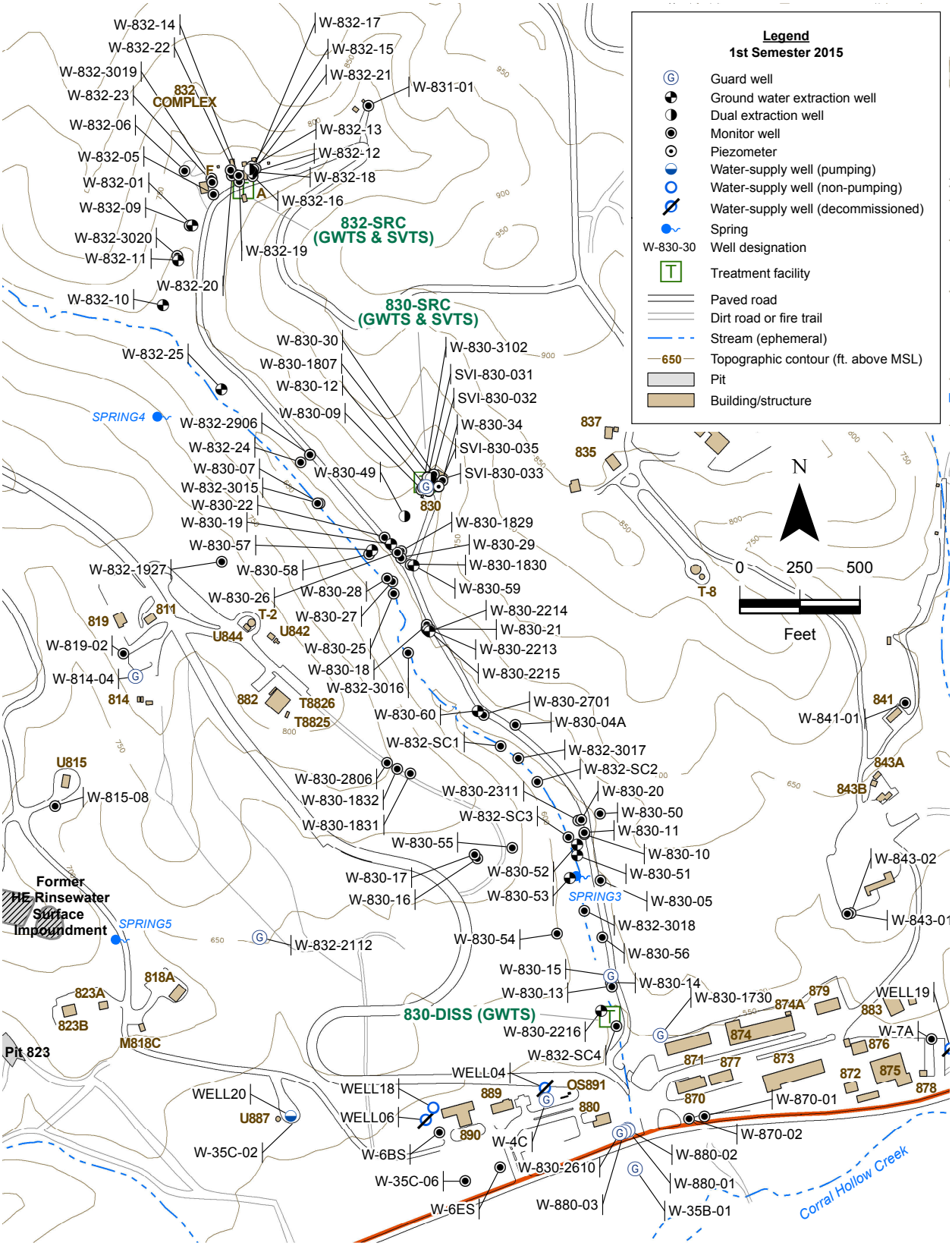

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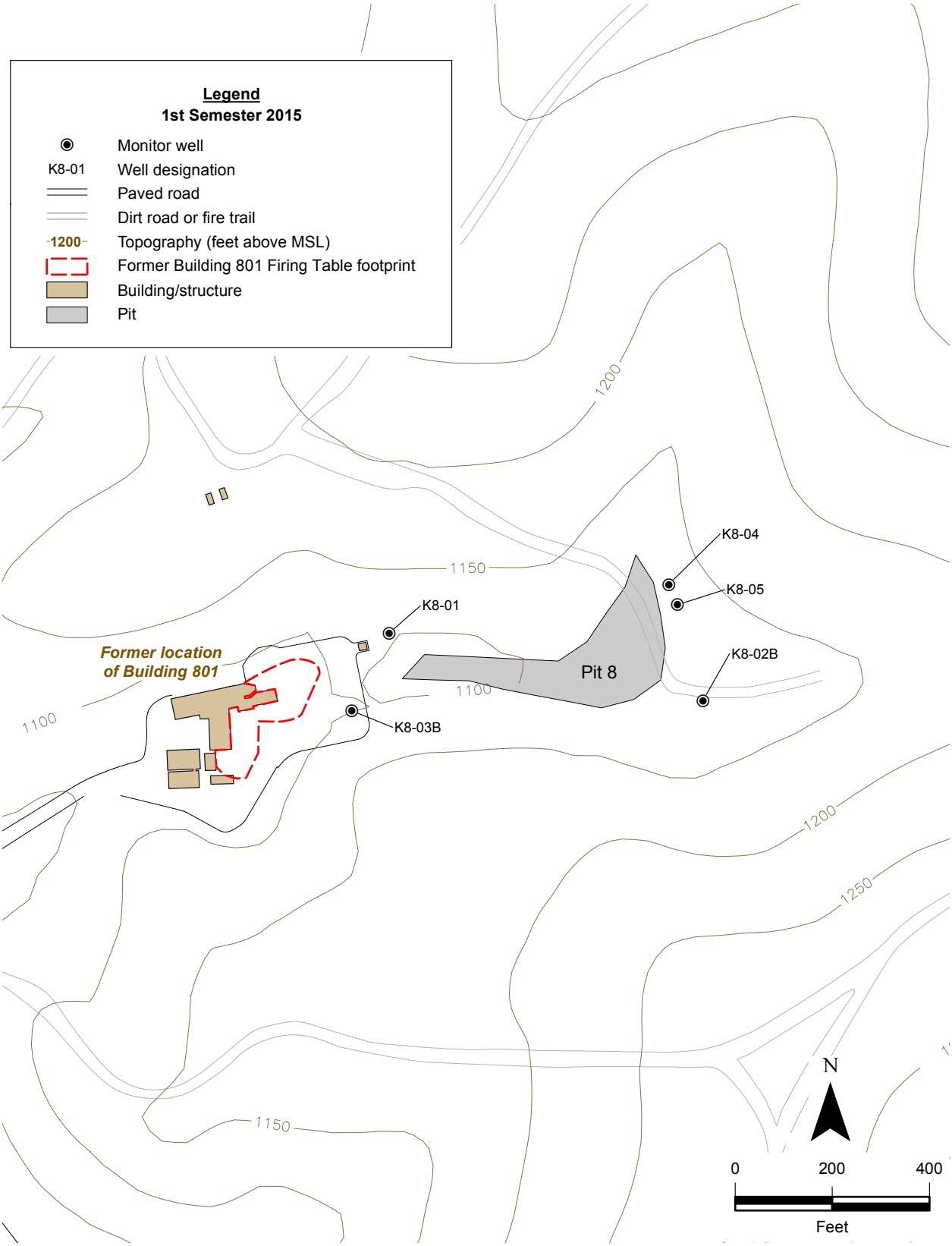

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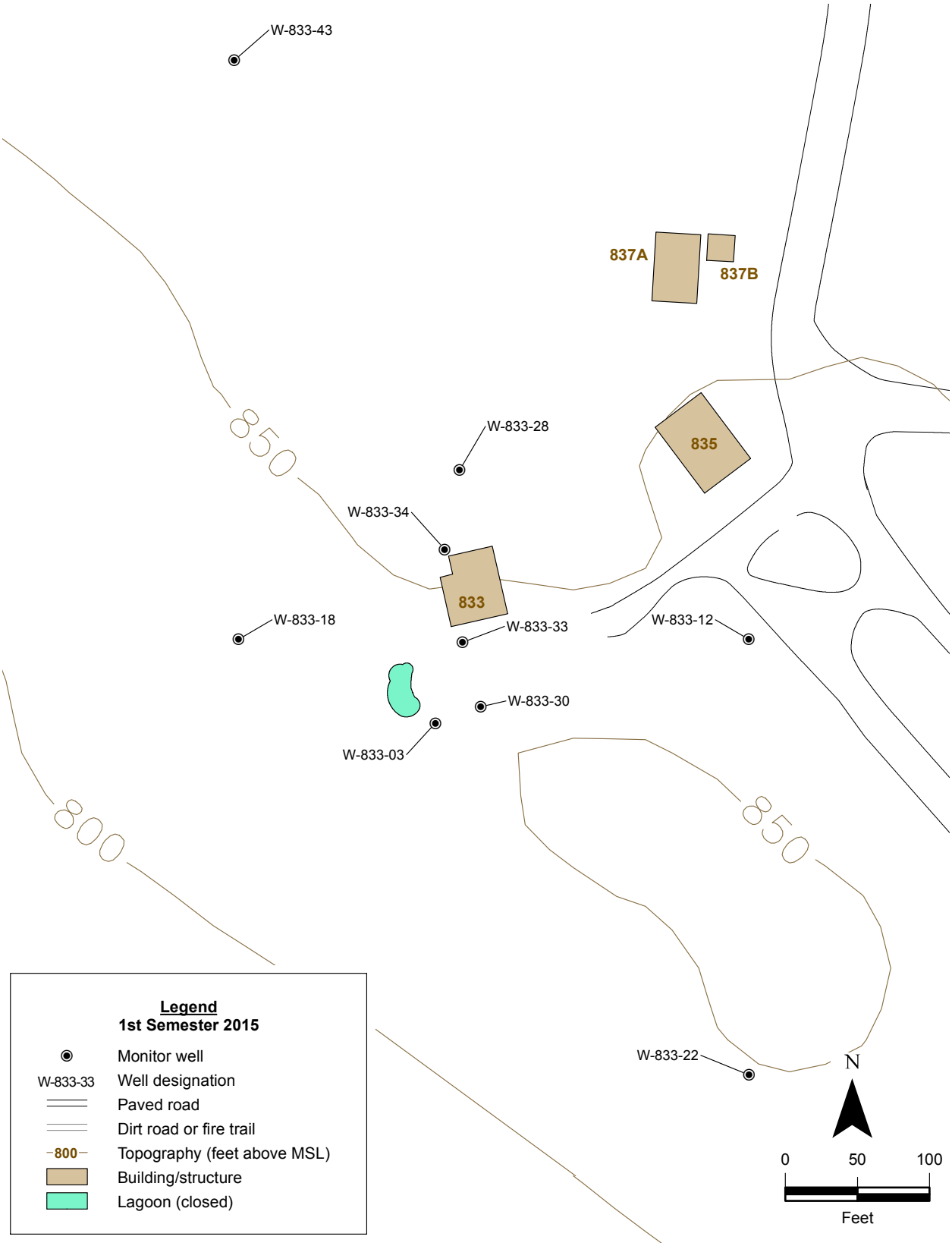

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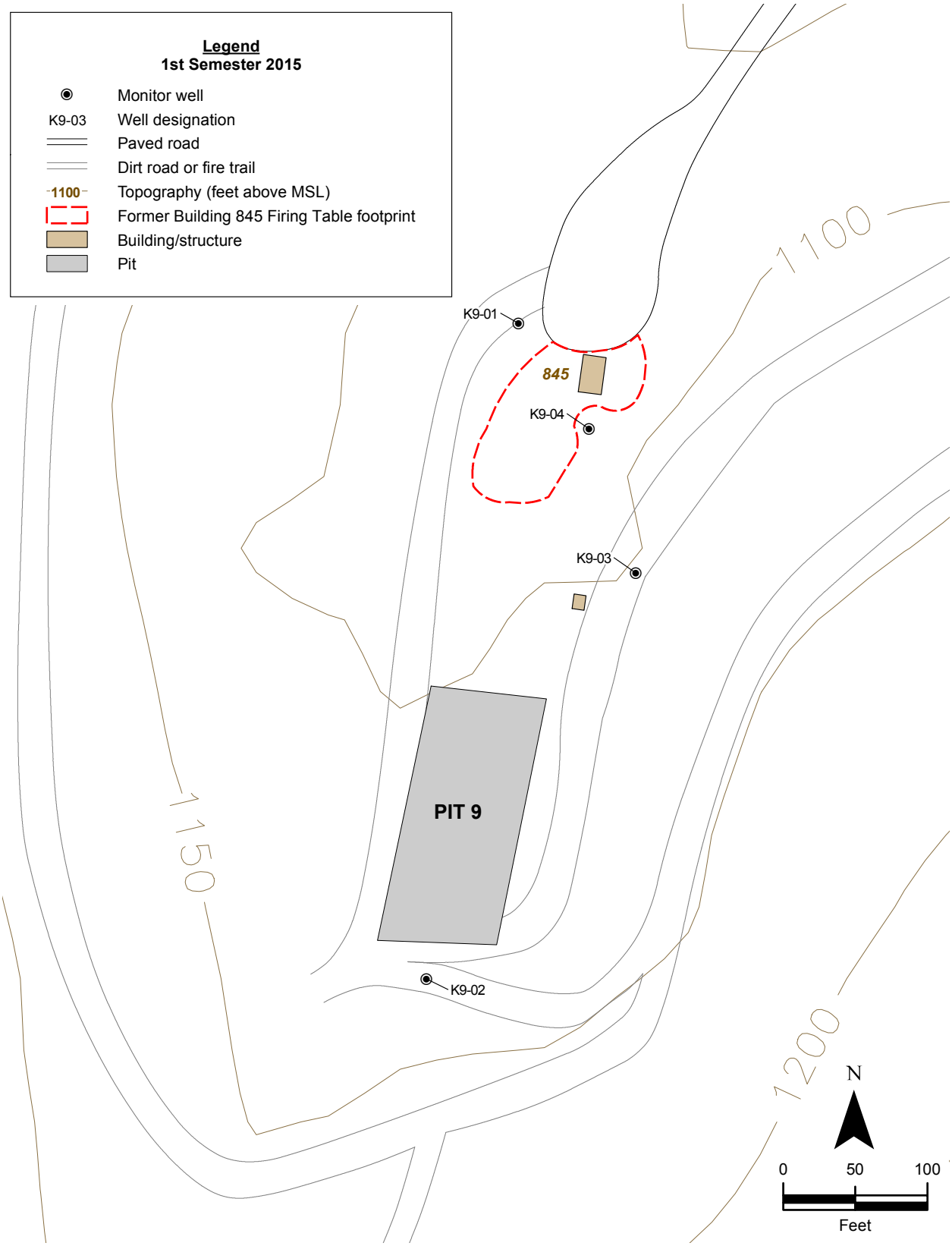

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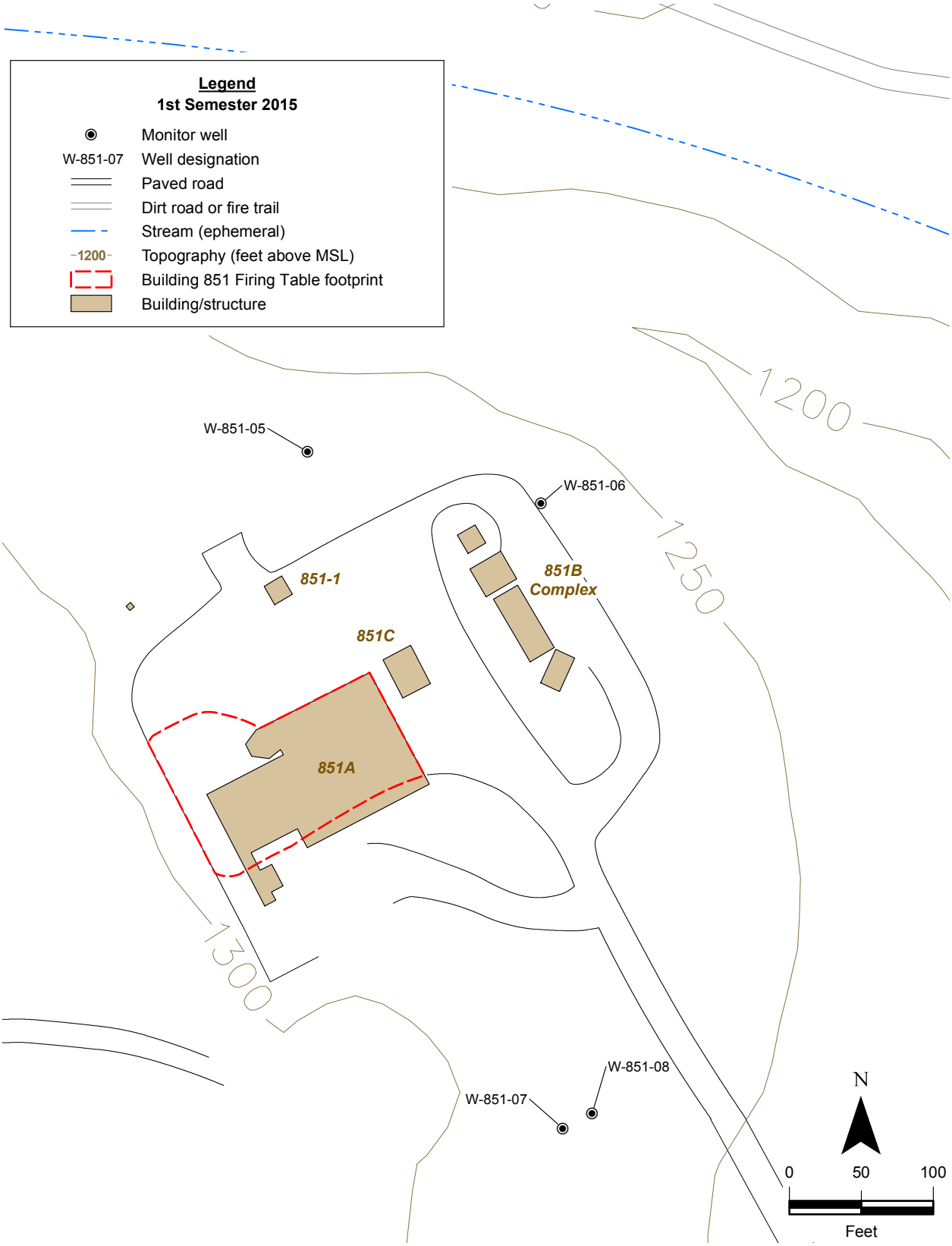

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Acronyms and Abbreviations

1,1-DCA	1,1-Dichloroethane
1,2-DCA	1,2-Dichloroethane
1,1-DCE	1,1-Dichloroethene
1,2-DCE	1,2-Dichloroethene (total)
1,1,1-TCA	1,1,1-Trichloroethane
1,1,2-TCA	1,1,2-Trichloroethane
2-ADNT	4-Amino-2,6-dinitrotoluene
4-ADNT	4-Amino-2,6-dinitrotoluene
815	Building 815
817	Building 817
829	Building 829
832	Building 832
834	Building 834
845	Building 845
850	Building 850
851	Building 851
854	Building 854
A	Annual
As N	As nitrogen
As $CaCO_3$	As calcium carbonate
BA	Blanket agreement
BTEX	Benzene, toluene, ethyl benzene, and xylene
°C	Degrees Celsius
C12-C24	Diesel range organic compounds in the carbon 12 to carbon 24 range
CAL	Contracted analytical laboratories
CAMU	Corrective Action Management Unit
CAP	Corrective and Preventative Action Program
CCVs	Continuing calibration verifications
CDFG	California Department of Fish and Game
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFE	Carbon filter effluent
CFI	Carbon filter influent
CF2I	Second aqueous phase granular carbon filter influent
CF3I	Third aqueous phase granular carbon filter influent
cf	Cubic feet
cfm	Cubic feet per minute
CFORM	Chloroform
CFV2	Second vapor phase granular activated carbon filter effluent
CGSA	Central General Services Area
CHC	Corral Hollow Creek
c-1,2-DCE	cis-1,2-Dichloroethene
cis-1,2-DCE	cis-1,2-Dichloroethene
CMP/CP	Compliance Monitoring Plan/Contingency Plan
CMR	Compliance Monitoring Report
CO_2	Carbon dioxide
COC	Contaminants of Concern

CT	Carbon Tetrachloride
CTET	Carbon tetrachloride
DEET	n,n-diethyl-meta-toluamide
DIS	Discretionary sampling (not required by the CMP)
DISS	Distal south
DMW	Detection monitor well
DOE	Department of Energy
DOECAP	Department of Energy Consolidated Audit Program
DSB	Distal Site Boundary
DTSC	Department of Toxic Substances Control
DUP	Duplicate or collocated QC sample
E	Effluent (acronym found in Treatment Facility Sampling Plan Tables)
E	Sample to be collected during even numbered years (i.e., 2012) (acronym found in Sampling Plan Tables)
EcoSSLs	Ecological Soil Screening Levels
EFA	Environmental Functional Area
EGSA	Eastern General Services Area
EIS/EIR	Environmental Impact Statement/Environmental Impact Report
EMS	Environmental Management System
EPA	Environmental Protection Agency
ERD	Environmental Restoration Department
ES&H	Environmental Safety and Health
EV	Effluent vapor
EW	Extraction well
Freon 11	Trichlorofluoromethane
Freon 113	1,1,2-trichloro-1,2,2-trifluoroethane
ft_3	Feet
ft^3	Cubic feet
g	Gram(s)
GAC	Granular activated carbon
gal	Gallon(s)
GIS	Geographic Information Systems
gpd	Gallons per day
gpm	Gallons per minute
GSA	General Services Area
GTU	Ground Water Treatment Unit.
GW	Guard well
GWTS	Ground Water Treatment System
HE	High Explosives
HEPA	High Explosives Process Area
H-H	Hetch-Hetchy
HMX	High-Melting Explosive
HQ	Hazard quotient
HSU	Hydrostratigraphic unit
I	Influent
ICP-MS	Inductively Coupled Plasma - Mass Spectrometry
ISMA	*In Situ* Microcosm Array
ISMS	Integrated Safety Management System
ISO	International Organization for Standardization
ITS	Issues Tracking System

IV	Influent vapor
IW	Injection well
IWS	Integrated Work Sheet
K-40	Potassium-40
kft^3	Thousands of cubic feet
kg	Kilograms
kgal	Thousands of gallons
km	Kilometers
LCS	Laboratory Control Sample
LHC	Light hydrocarbon
LLNL	Lawrence Livermore National Laboratory
µg/L	Micrograms per liter
$\mu g/m^3$	Micrograms per meters cubed
µmhos/cm	Micro ohms per centimeter
µS	Microsiemens
M	Monthly
MCL	Maximum Contaminant Level
MeCL	Methylene chloride
Mgal	Millions of gallons
Mg/kg/d	Milligram per kilogram per day
mg/L	Milligrams per liter
MNA	Monitored Natural Attenuation
MOVI	Management observations, verifications, and inspections
MSA	Management self-assessment
MSA	Mean Sea Level
MTU	Miniature Treatment Unit
mV	Millivolts
MWB	Monitor well used for background
N	No
NB	Nitrobenzene
N_2	Nitrogen
NO_3	Nitrate
NA	Not applicable
NT	Nitrotoluene
NTU	Nephelometric turbidity units
O	Sample to be collected during odd numbered years (i.e., 2013)
OR	Occurrence Report
ORP	Oxidation/reduction potential
OU	Operable unit
O&M	Operations and Maintenance
P/PO_4	Phosphorous
PCBs	Polychlorinated biphenyls
PCE	Tetrachloroethene
pCi/L	PicoCuries per liter
pH	A measure of the acidity or alkalinity of an aqueous solution
PHG	Public Health Goal
PLC	Programmatic logic control
ppb_v	Parts per billion by volume
ppm_v	Parts per million on a volume-to-volume basis
PBA	Programmatic Biological Assessment

PPCP	Pharmaceutical and Personal Care Product analytes
PRX	Proximal
PRXN	Proximal north
PSDMP	Post-Monitoring Shutdown Plan
PTMW	Plume Tracking Monitor Well
PTU	Portable Treatment Unit
PVC	Polyvinyl chloride
Q	Quarterly
QAL	Quaternary alluvium
QAPP	Quality Assurance Project Plan
QA/QC	Quality assurance/quality control
QIF	Quality Improvement Form
RAOs	Remedial Action Objectives
R1	Receiving water sampling point located 100 ft upstream
R2	Receiving water sampling point located 100 ft downstream
RCRA	Resource Conservation and Recovery Act
RDX	Research Department explosive
REA	Reanalysis
Redox	Reduction-oxidation reaction
REVAL	Remediation Evaluation Process
REX	Resample
ROD	Record of Decision
RPM	Remedial Project Manager
RWQCB	Regional Water Quality Control Board
S	Semi-annual
Scfm	Standard cubic feet per minute
SLs	Statistical Limits
SOP	Standard Operating Procedure
SOW	Statement of work
SPACT	Sample Planning and Chain of Custody Tracking
SPR	Spring
SRC	Source
STU	Solar-powered Treatment Unit
SVE	Soil Vapor Extraction
SVTS	Soil Vapor Treatment System
SVI	Soil Vapor Influent
SWEIS	Site-Wide Environmental Impact Statement
SWFS	Site Wide Feasibility Study
SWRI	Site-Wide Remedial Investigation
TBOS	Tetrabutyl orthosilicate
TCE	Trichloroethene
TCEP	tris (2-chloroethyl) phosphate
TDS	Total dissolved solids
TF	Treatment facility
TFRT	Treatment Facility Real Time
THMs	Trihalomethanes
TKEBS	Tetrakis (2-ethylbutyl) silane
TNB	Trinitrobenzene
TNT	Trinitrotoluene
Total-1,2-DCE	1,2-Dichloroethene (total)

Trans-1,2-DCE	Trans-1,2-dichloroethene
TRV	Toxicity Reference Value
TVOC	Total volatile organic compounds
t-1,2-DCE	trans-1,2-Dichloroethene
$^{235}U/^{238}U$	Atom ratio of the isotopes uranium-235 and uranium-238
U.S.	United States
USFWS	U.S. Fish and Wildlife Service
VC	Vinyl chloride
VCF4I	Fourth vapor phase granular activated carbon filter influent
VE	Vapor effluent
VES	Vapor extraction system
VI	Vapor influent
VOC	Volatile organic compound
WAA	waste accumulation area
WBR	Weathered bedrock
WGMG	Water Guidance and Monitoring Group
WS	Water supply well
Y	Yes

Hydrogeologic Units

Lower $Tnbs_1$ = Lower member of the Neroly lower blue sandstone, below claystone marker bed (regional aquifer).
Qal = Quaternary alluvium.
Qls = Quaternary landslide.
Qt = Quaternary terrace.
Tmss = Miocene Cierbo Formation—lower siltstone/claystone member.
$Tnsc_{1a}$, $Tnsc_{1b}$, $Tnsc_{1c}$ = Sandstone bodies within the $Tnsc_1$ Neroly middle siltstone/claystone (1a = deepest).
$Tnbs_1$ = Lower member of the Neroly lower blue sandstone.
$Tnbs_0$ = Neroly silty sandstone.
$Tnbs_2$ = Miocene Neroly upper blue sandstone.
$Tnsc_0$ = Tertiary Neroly Formation—lower siltstone/claystone member.
$Tnsc_2$ = Miocene Neroly Formation—upper siltstone/claystone member.
Tps = Pliocene non-marine unit.
Tpsg = Miocene non-marine unit (gravel facies).
Tts = Tesla Formation.
$UTnbs_1$ = Upper member of the Neroly lower blue sandstone, above claystone marker bed.
WBR = Weathered bedrock.

Data Qualifier Flag Definitions

B = Analyte found in method blank, sample results should be evaluated.
D = Analysis performed at a secondary dilution or concentration (i.e., vapor samples).
E = The analyte was detected below the LLNL reporting limit, but above the analytical laboratory minimum detection limit.
F = Analyte found in field blank, trip blank, or equipment blank.
G = Quantitated using fuel calibration, but does not match typical fuel fingerprint.
H = Sample analyzed outside of holding time, sample results should be evaluated.
I = Surrogate recoveries were outside of QC limits.
J = Analyte was positively identified; the associated numerical value is the proximate concentration of the analyte in the sample.
L = Spike accuracy not within control limits.
O = Duplicate spike or sample precision not within control limits.
R = Sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
S = Analytical results are rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria. The presence or absence of the analyte cannot be verified.
T = Analyte is tentatively identified compound; result is approximate.

Requested Analyses

AS:UISO =	Uranium isotopes performed by alpha spectrometry.
DWMETALS:ALL =	Drinking water metals suite performed by various analytical methods.
E200.7:FE =	Iron performed by EPA Method 200.7.
E200.7:Li =	Lithium performed by EPA Method 200.7.
E200.7:SI =	Silica performed by EPA Method 200.7.
E200.8:AS =	Arsenic performed by EPA Method 200.8.
E200.8:CR =	Chromium performed by EPA Method 200.8.
E200.8:MN =	Manganese performed by EPA Method 200.8.
E200.8:SE =	Selenium performed by EPA Method 200.8.
E300.0:NO3 =	Nitrate performed by EPA Method 300.0.
E300.0:PERC =	Perchlorate performed by EPA Method 300.0.
E300.0:O-PO2 =	Orthophosphate performed by EPA Method 300.0.
E340.2:ALL =	Fluoride performed by EPA method 340.2.
E502.2:ALL =	Volatile organic compounds performed by EPA Method 502.2.
E601:ALL =	Halogenated volatile organic compounds performed by EPA Method 601.
E624:ALL =	Volatile organic compounds performed by EPA Method 624.
E8082A =	Polychlorinated biphenyls performed by EPA Method 8082A.
E8260:ALL =	Volatile organic compounds performed by EPA Method 8260.
E8330LOW:ALL =	High explosive compounds performed by EPA Method 8330.
E8330:R+H =	High explosive compounds RDX and HMX performed by EPA Method 8330.
E8330:TNT =	Trinitrotoluene performed by EPA Method 8330.
E906:ALL =	Tritium performed by EPA Method 906.
EM8015:DIESEL =	Diesel range organic compounds performed by modified EPA Method 8015.
GENMIN:ALL =	General minerals suite performed by various analytical methods.
MS:UISO =	Uranium isotopes performed by mass spectrometry.
T26METALS:ALL =	Title 26 metals.
TBOS:ALL =	Tetrabutylorthosilicate/ Tetrakis (2-ethylbutyl) silane.

Ground Water Elevation Table Notes

ABD =	Abandoned.
AD =	Drilling of adjacent new wells disturbed water level.
BLOC =	Well Blocked.
BS =	Water detected below bottom of screened interval.
CB =	Installation completed as a Christy box.
DRY =	No water detected in well casing at time of measurement.
FA =	Flowing artesian well, water elevation converted.
FL =	Flowing.
ME =	Measuring error suspected.
MSL =	Mean Sea Level.
MT =	Measured twice.
NA =	Information not available.
NM =	Not Measured.
NOM =	Not on field map.
PD =	Predevelopment measurement.
PE =	Pump Extraction.
PF =	Pump not running at time of measurement.
PS =	Measurement taken just before sampling.
PT =	Pump test interfered with measurement.
RA =	Restricted access.
UC =	Unsafe conditions.
VE =	Vacuum Extraction.
WE =	Well equilibrium suspect.
WR =	Well recovery.

Table Summ-1. Mass removed, January 1, 2015 through June 30, 2015.

Treatment facility	Volume of ground water treated (thousands of gal)	Volume of soil vapor treated (thousands of cf)	Estimated total VOC mass removed (g)	Estimated total perchlorate mass removed (g)	Estimated total nitrate mass removed (kg)	Estimated total RDX mass removed (g)	Estimated total TBOS/ TKEBS mass removed (g)	Estimated total Uranium mass removed (g)
CGSA GWTS	642	NA	61	NA	NA	NA	NA	NA
CGSA SVTS	NA	9,272	140	NA	NA	NA	NA	NA
834 GWTS	52	NA	120	NA	25	NA	3.9	NA
834 SVTS	NA	16,586	1,200	NA	NA	NA	NA	NA
815-SRC GWTS	168	NA	2.3	2.2	63	21	NA	NA
815-PRX GWTS	264	NA	22	5.8	82	2.2	NA	NA
815-DSB GWTS	858	NA	18	NA	NA	NA	NA	NA
817-SRC GWTS	<1	NA	0	0.073	0.26	0.12	NA	NA
817-PRX GWTS	59	NA	2.0	5.1	21	2.8	NA	NA
829-SRC GWTS	<1	NA	0.025	0.014	0.081	NA	NA	NA
PIT7-SRC GWTS	13	NA	0.024	0.59	1.9	NA	NA	1.9
854-SRC GWTS	134	NA	44	3.2	27	NA	NA	NA
854-SRC SVTS	NA	10,899	190	NA	NA	NA	NA	NA
854-PRX GWTS	1,364	NA	31	0	190	NA	NA	NA
854-DIS GWTS	2	NA	0.25	0	0.13	NA	NA	NA
832-SRC GWTS	7	NA	4.2	0.11	2.6	NA	NA	NA
832-SRC SVTS	NA	267	1.2	NA	NA	NA	NA	NA
830-SRC GWTS	<1	NA	0	0	0	NA	NA	NA
830-SRC SVTS	NA	<1	0	NA	NA	NA	NA	NA
830-DISS GWTS	146	NA	7.8	0.99	36	NA	NA	NA
Total	**3,711**	**37,025**	**1,800**	**18**	**450**	**26**	**3.9**	**1.9**

Notes:

815 = Building 815.
817 = Building 817.
829 = Building 829.
830 = Building 830.
832 = Building 832.
834 = Building 834.
854 = Building 854.
cf = Cubic feet.
CGSA = Central General Services Area.
DIS = Distal.
DISS = Distal south.
DSB = Distal site boundary.
g = Grams.
gal = Gallons.
GWTS = Ground water treatment system.
kg = Kilograms.
NA = Not applicable.
PRX = Proximal.
RDX = Research Department Explosive.
SRC = Source.
SVTS = Soil vapor treatment system.
TBOS = Tetra 2-ethylbutylorthosilicate.
TKEBS = Tetrakis (2-ethylbutyl) silane.
VOC = Volatile organic compound.

Nitrate re-injected into the $Tnbs_2$ HSU undergoes *in situ* biotransformation to benign N_2 gas by anaerobic denitrifying bacteria. Nitrate mass removal is calculated assuming complete removal of nitrate from treated ground water. At Pit7, re-injected effluent may contain nitrate concentrations below the discharge limit but above the detection limit. Thus, nitrate mass removal calculations at Pit7 are overestimated.

Table Summ-2. Summary of cumulative remediation.

Treatment facility	Volume of ground water treated (thousands of gallons)	Volume of soil vapor treated (thousands of Cubic feet)	Estimated total VOC mass removed (kg)	Estimated total perchlorate mass removed (g)	Estimated total nitrate mass removed (kg)	Estimated total RDX mass removed (kg)	Estimated total TBOS/ TKEBS mass removed (kg)	Estimated total Uranium mass removed (kg)
EGSA GWTS	309,379	NA	7.6	NA	NA	NA	NA	NA
CGSA GWTS	26,995	NA	26	NA	NA	NA	NA	NA
CGSA SVTS	NA	210,344	78	NA	NA	NA	NA	NA
834 GWTS	1,463	NA	47	NA	390	NA	9.5	NA
834 SVTS	NA	490,128	360	NA	NA	NA	NA	NA
815-SRC GWTS*	8,409	NA	0.21	280	2,900	1.9	NA	NA
815-PRX GWTS*	9,433	NA	0.97	220	2,800	0.0022	NA	NA
815-DSB GWTS	21,145	NA	0.70	NA	NA	NA	NA	NA
817-SRC GWTS*	67	NA	0	6.9	21	0.011	NA	NA
817-PRX GWTS*	5,708	NA	0.22	490	2,000	0.16	NA	NA
829-SRC GWTS	9	NA	0.00054	0.31	2.4	NA	NA	NA
PIT7-SRC GWTS	186	NA	0.0025	8.3	26	NA	NA	0.023
854-SRC GWTS	12,987	NA	6.0	170	2,400	NA	NA	NA
854-SRC SVTS	NA	146,735	13	NA	NA	NA	NA	NA
854-PRX GWTS	5,921	NA	0.75	180	930	NA	NA	NA
854-DIS GWTS	75	NA	0.0094	1.2	5.8	NA	NA	NA
832-SRC GWTS	965	NA	0.29	24	380	NA	NA	NA
832-SRC SVTS	NA	27,344	2.1	NA	NA	NA	NA	NA
830-SRC GWTS	14,412	NA	8.6	26	1,000	NA	NA	NA
830-SRC SVTS	NA	82,183	54	NA	NA	NA	NA	NA
830-PRXN GWTS	1,949	NA	0.26	NA	22	NA	NA	NA
830-DISS GWTS	10,424	NA	1.7	80	2,500	NA	NA	NA
Total	**429,525**	**956,734**	**610**	**1,500**	**15,000**	**2.1**	**9.5**	**0.023**

Notes:

815 = Building 815.
817 = Building 817.
829 = Building 829.
830 = Building 830.
832 = Building 832.
834 = Building 834.
854 = Building 854.
CGSA = Central General Services Area.
DIS = Distal.
DISS = Distal south.
DSB = Distal site boundary.
EGSA = Eastern General Services Area.
GWTS = Ground water treatment system.
kg = Kilograms.
NA = Not applicable.
PRX = Proximal.
PRXN = Proximal North.
RDX = Research Department Explosive.
SRC = Source.
SVTS = Soil vapor treatment system.
TBOS = Tetra 2-ethylbutylorthosilicate.
TKEBS = Tetrakis (2-ethylbutyl) silane.
VOC = Volatile organic compound.
Nitrate re-injected into the $Tnbs_2$ HSU undergoes *in situ* biotransformation to benign N_2 gas by anaerobic denitrifying bacteria. Nitrate mass removal is calculated assuming complete removal of nitrate from treated ground water. At Pit7, re-injected effluent may contain nitrate concentrations below the discharge limit but above the detection limit. Thus, nitrate mass removal calculations at Pit7 are overestimated.

Table 2-1. Wells and boreholes installed during first semester 2015.

Well name	Planned well type	OU	Well/Borehole installation date	HSU	Drill Depth (ft-bgs)	Casing depth (ft-bgs)	Screened interval (ft-bgs)	Primary COCs	Primary COC sampling frequency	Secondary COCs	Secondary COC sampling frequency
W-830-3102	IW	OU7	5/13/15	$UTnbs_1$	133	130.5	90-130	VOCs	Semi-annually	Perchlorate, Nitrate	Annually

Notes:

bgs = Below ground surface.

COC = Contaminant of concern.

ft = Feet.

HSU = Hydrostratigraphic unit.

OU = Operable Unit.

IW = Injection Well.

Table 2.1-1. Central General Services Area (CGSA) volumes of ground water and soil vapor extracted and discharged, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
CGSA	January	744	0	1,621	0
	February	624	0	1,316	0
	March	768	360	1,605	147,190
	April	744	624	1,588	417,292
	May	672	60	1,449	33,784
	June	792	96	1,693	43,543
Total		4,344	1,140	9,272	641,809

Table 2.1-2. General Services Area Operable Unit volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Carbon tetra-chloride (µg/L)	Chloro-form (µg/L)	1,1-DCA (µg/L)	1,2-DCA (µg/L)	1,1-DCE (µg/L)	1,1,1-TCA (µg/L)	1,1,2-TCA (µg/L)	Freon 11 (µg/L)	Freon 113 (µg/L)	Vinyl chloride (µg/L)
CGSA-I	3/17/15	68	3.5	8.4	0.72	<0.5	<0.5	<0.5	<0.5	1.3	<0.5	<0.5	<0.5	<0.5	<0.5
CGSA-I	4/8/15	17	0.78	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CGSA-E	3/17/15	0.57	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CGSA-E	3/19/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CGSA-E	3/24/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CGSA-E	4/8/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CGSA-E	5/12/15	1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CGSA-E[a]	5/20/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CGSA-E[a]	5/26/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CGSA-E	6/2/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:

[a] Effluent resamples due to TCE detection on 5/12/15.

No samples collected in January or February due to shut down for freeze protection.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.1-2 (Con't). Analyte detected but not reported in main table.

Location	Date	Detection frequency	1,2-DCE (total) (µg/L)
CGSA-I	3/17/15	1 of 18	9.2
CGSA-I	4/8/15	0 of 18	-
CGSA-E	3/17/15	0 of 18	-
CGSA-E	3/19/15	0 of 18	-
CGSA-E	3/24/15	0 of 18	-
CGSA-E	4/8/15	0 of 18	-
CGSA-E	5/12/15	0 of 18	-
CGSA-E[a]	5/20/15	0 of 18	-
CGSA-E[a]	5/26/15	0 of 18	-
CGSA-E	6/2/15	0 of 18	-

Notes:

[a] Effluent resamples due to TCE detection on 5/12/15.

No samples collected in January or February due to shut down for freeze protection.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.1-3. Central General Services Area Operable Unit treatment facility sampling and analysis plan.

Sample location	Sample identification	Parameter	Frequency
CGSA GWTS			
Influent Port	**CGSA-I**	**VOCs**	**Quarterly**
		pH	**Quarterly**
Effluent Port	**CGSA-E**	**VOCs**	**Monthly**
		pH	**Monthly**
834 SVTS			
Influent Port	**CGSA-VI**	**No Monitoring Requirements**	
Effluent Port	**CGSA-VE**	**VOCs**	**Weekly[a]**
Intermediate GAC	**CGSA-VCF4I**	**VOCs**	**Weekly[a]**

Notes:

[a] **Weekly monitoring for VOCs will consist of the use of a flame-ionization detector, photo-ionization detector, or other District-approved VOC detection device.**

One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.1-4. General Services Area Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
CDF1	WS	LTnbs1	A	WGMG	E502.2:ALL	1	Y	
CDF1	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CDF1	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CDF1	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CDF1	WS	LTnbs1	M	CMP	E624MOD:ALL	2	Y	
CDF1	WS	LTnbs1	M	CMP	E624MOD:ALL	2	Y	
CDF1	WS	LTnbs1	M	CMP	E624MOD:ALL	2	Y	
CDF1	WS	LTnbs1	M	CMP	E624MOD:ALL	3		
CDF1	WS	LTnbs1	M	CMP	E624MOD:ALL	3		
CDF1	WS	LTnbs1	M	CMP	E624MOD:ALL	3		
CDF1	WS	LTnbs1	M	CMP	E624MOD:ALL	4		
CDF1	WS	LTnbs1	M	CMP	E624MOD:ALL	4		
CDF1	WS	LTnbs1	M	CMP	E624MOD:ALL	4		
CON1	WS	LTnbs1	A	WGMG	E502.2:ALL	1	Y	
CON1	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CON1	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CON1	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CON1	WS	LTnbs1	M	CMP	E624MOD:ALL	2	Y	
CON1	WS	LTnbs1	M	CMP	E624MOD:ALL	2	Y	
CON1	WS	LTnbs1	M	CMP	E624MOD:ALL	2	Y	
CON1	WS	LTnbs1	M	CMP	E624MOD:ALL	3		
CON1	WS	LTnbs1	M	CMP	E624MOD:ALL	3		
CON1	WS	LTnbs1	M	CMP	E624MOD:ALL	3		
CON1	WS	LTnbs1	M	CMP	E624MOD:ALL	4		
CON1	WS	LTnbs1	M	CMP	E624MOD:ALL	4		
CON1	WS	LTnbs1	M	CMP	E624MOD:ALL	4		
CON2	WS	LTnbs1	A	WGMG	E601:ALL	1	Y	
CON2	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CON2	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CON2	WS	LTnbs1	M	CMP	E624MOD:ALL	2	Y	
CON2	WS	LTnbs1	M	CMP	E624MOD:ALL	2	Y	
CON2	WS	LTnbs1	M	CMP	E624MOD:ALL	2	Y	
CON2	WS	LTnbs1	M	CMP	E624MOD:ALL	3		
CON2	WS	LTnbs1	M	CMP	E624MOD:ALL	3		
CON2	WS	LTnbs1	M	CMP	E624MOD:ALL	3		
CON2	WS	LTnbs1	M	CMP	E624MOD:ALL	4		
CON2	WS	LTnbs1	M	CMP	E624MOD:ALL	4		
CON2	WS	LTnbs1	M	CMP	E624MOD:ALL	4		
W-26R-01	PTMW	Qal-Tnbs1	1	DIS	D-15N(NO3):ALL	2	Y	
W-26R-01	PTMW	Qal-Tnbs1	1	DIS	D-18O(NO3):ALL	2	Y	
W-26R-01	PTMW	Qal-Tnbs1	1	DIS	EXCESSN2:ALL	2	Y	
W-26R-06	PTMW	Qal-Tnbs1	S	CMP	E624MOD:ALL	2	Y	
W-26R-06	PTMW	Qal-Tnbs1	S	CMP	E624MOD:ALL	4		
W-26R-11	PTMW	Qal-Tnbs1	S	DIS	E624MOD:ALL	2	Y	
W-35A-01	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-35A-01	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		

Table 2.1-4. General Services Area Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-35A-02	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-35A-02	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-35A-03	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-35A-03	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-35A-04	PTMW	Qt-Tnsc1	A	WGMG	E524.2MOD:ALL	4		
W-35A-04	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-35A-04	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-35A-05	PTMW	UTnbs1	S	CMP	E624MOD:ALL	2	Y	
W-35A-05	PTMW	UTnbs1	S	CMP	E624MOD:ALL	4		
W-35A-06	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-35A-06	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-35A-07	PTMW	LTnbs1	S	CMP	E624MOD:ALL	2	Y	
W-35A-07	PTMW	LTnbs1	S	CMP	E624MOD:ALL	4		
W-35A-08	GW	Qt-Tnsc1	Q	CMP	E601:ALL	1	Y	
W-35A-08	GW	Qt-Tnsc1	Q	CMP	E624MOD:ALL	2	Y	
W-35A-08	GW	Qt-Tnsc1	Q	CMP	E624MOD:ALL	3		
W-35A-08	GW	Qt-Tnsc1	Q	CMP	E624MOD:ALL	4		
W-35A-09	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-35A-09	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-35A-10	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-35A-10	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-35A-11	PTMW	LTnbs1	S	CMP	E624MOD:ALL	2	Y	
W-35A-11	PTMW	LTnbs1	S	CMP	E624MOD:ALL	4		
W-35A-12	PTMW	UTnbs1	S	CMP	E624MOD:ALL	2	Y	
W-35A-12	PTMW	UTnbs1	S	CMP	E624MOD:ALL	4		
W-35A-13	PTMW	UTnbs1	S	CMP	E624MOD:ALL	2	Y	
W-35A-13	PTMW	UTnbs1	S	CMP	E624MOD:ALL	4		
W-35A-14	GW	Qt-Tnsc1	Q	CMP	E601:ALL	1	Y	
W-35A-14	GW	Qt-Tnsc1	Q	CMP	E624MOD:ALL	2	Y	
W-35A-14	GW	Qt-Tnsc1	Q	CMP	E624MOD:ALL	3		
W-35A-14	GW	Qt-Tnsc1	Q	CMP	E624MOD:ALL	4		
W-7A	PTMW	UTnbs1	S	CMP	E624MOD:ALL	2	Y	
W-7A	PTMW	UTnbs1	S	CMP	E624MOD:ALL	4		
W-7B	PTMW	UTnbs1	S	CMP	E624MOD:ALL	2	Y	
W-7B	PTMW	UTnbs1	S	CMP	E624MOD:ALL	4		
W-7C	PTMW	UTnbs1	S	CMP	E624MOD:ALL	2	N	No pump installed.
W-7C	PTMW	UTnbs1	S	CMP	E624MOD:ALL	4		
W-7DS	PTMW	Qal-Tnbs1	S	CMP	E624MOD:ALL	2	Y	
W-7DS	PTMW	Qal-Tnbs1	S	CMP	E624MOD:ALL	4		
W-7E	PTMW	UTnbs1	S	CMP	E624MOD:ALL	2	Y	
W-7E	PTMW	UTnbs1	S	CMP	E624MOD:ALL	4		
W-7ES	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-7ES	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-7F	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-7F	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-7G	PTMW	LTnbs1	S	CMP	E624MOD:ALL	2	Y	

Table 2.1-4. General Services Area Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-7G	PTMW	LTnbs1	S	CMP	E624MOD:ALL	4		
W-7H	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-7H	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-7I	EW	Qt-Tnsc1	Q	DIS-TF	AS:UISO	1	Y	
W-7I	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	Y	
W-7I	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	2	Y	
W-7I	EW	Qt-Tnsc1	S	DIS-TF	E624MOD:ALL	3		
W-7I	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	4		
W-7J	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-7J	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-7K	PTMW	LTnbs1	S	CMP	E624MOD:ALL	2	Y	
W-7K	PTMW	LTnbs1	S	CMP	E624MOD:ALL	4		
W-7L	PTMW	UTnbs1	S	CMP	E624MOD:ALL	2	Y	
W-7L	PTMW	UTnbs1	S	CMP	E624MOD:ALL	4		
W-7M	PTMW	LTnbs1	S	CMP	E624MOD:ALL	2	Y	
W-7M	PTMW	LTnbs1	S	CMP	E624MOD:ALL	4		
W-7N	PTMW	UTnbs1	S	CMP	E624MOD:ALL	2	Y	
W-7N	PTMW	UTnbs1	S	CMP	E624MOD:ALL	4		
W-7O	EW	Qt-Tnsc1	Q	DIS-TF	AS:UISO	1	Y	
W-7O	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	Y	
W-7O	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	2	Y	
W-7O	EW	Qt-Tnsc1	S	DIS-TF	E624MOD:ALL	3		
W-7O	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	4		
W-7P	EW	Qal-Tnbs1	Q	DIS-TF	AS:UISO	1	Y	
W-7P	EW	Qal-Tnbs1	S	DIS-TF	E601:ALL	1	Y	
W-7P	EW	Qal-Tnbs1	S	CMP-TF	E624MOD:ALL	2	Y	
W-7P	EW	Qal-Tnbs1	S	DIS-TF	E624MOD:ALL	3		
W-7P	EW	Qal-Tnbs1	S	CMP-TF	E624MOD:ALL	4		
W-7PS	PTMW	Qal-Tnbs1	S	CMP	E624MOD:ALL	2	N	Dry.
W-7PS	PTMW	Qal-Tnbs1	S	CMP	E624MOD:ALL	4		
W-7Q	PTMW	Qt-Tnsc1	S	DIS	E624MOD:ALL	2	Y	
W-7R	EW	Qt-Tnsc1	Q	DIS-TF	AS:UISO	1	Y	
W-7R	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	Y	
W-7R	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	2	Y	
W-7R	EW	Qt-Tnsc1	S	DIS-TF	E624MOD:ALL	3		
W-7R	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	4		
W-7S	PTMW	Qt-Tnsc1	S	DIS	E624MOD:ALL	2	Y	
W-7T	PTMW	Qt-Tnsc1	S	DIS	E624MOD:ALL	2	Y	
W-843-01	PTMW	LTnbs1	S	CMP	E624MOD:ALL	2	Y	
W-843-01	PTMW	LTnbs1	S	CMP	E624MOD:ALL	4		
W-843-02	PTMW	UTnbs1	S	CMP	E624MOD:ALL	2	Y	
W-843-02	PTMW	UTnbs1	S	CMP	E624MOD:ALL	4		
W-872-01	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	N	Insufficient water.
W-872-01	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-872-02	EW	Qt-Tnsc1	Q	DIS-TF	AS:UISO	1	Y	
W-872-02	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	Y	

Table 2.1-4. General Services Area Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-872-02	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	2	Y	
W-872-02	EW	Qt-Tnsc1	S	DIS-TF	E624MOD:ALL	3		
W-872-02	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	4		
W-873-01	PTMW	LTnbs1	S	CMP	E624MOD:ALL	2	Y	
W-873-01	PTMW	LTnbs1	S	CMP	E624MOD:ALL	4		
W-873-02	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-873-02	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-873-03	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-873-03	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-873-04	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-873-04	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-873-06	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-873-06	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-873-07	EW	Qt-Tnsc1	Q	DIS-TF	AS:UISO	1	Y	
W-873-07	EW	Qt-Tnsc1	Q	DIS-TF	AS:UISO	2	Y	
W-873-07	EW	Qt-Tnsc1	Q	DIS-TF	AS:UISO	3		
W-873-07	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	Y	
W-873-07	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	2	Y	
W-873-07	EW	Qt-Tnsc1	S	DIS-TF	E624MOD:ALL	3		
W-873-07	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	4		
W-875-01	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-875-01	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-875-02	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-875-02	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-875-03	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	N	Insufficient water.
W-875-03	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-875-04	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-875-04	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-875-05	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-875-05	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-875-06	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-875-06	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-875-07	EW	Qt-Tnsc1	Q	DIS-TF	AS:UISO	1	Y	
W-875-07	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	Y	
W-875-07	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	2	Y	
W-875-07	EW	Qt-Tnsc1	S	DIS-TF	E624MOD:ALL	3		
W-875-07	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	4		
W-875-08	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	Y	
W-875-08	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	2	Y	
W-875-08	EW	Qt-Tnsc1	S	DIS-TF	E624MOD:ALL	3		
W-875-08	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	4		
W-875-09	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Dry.
W-875-09	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	2	N	Dry.
W-875-09	EW	Qt-Tnsc1	S	DIS-TF	E624MOD:ALL	3		
W-875-09	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	4		
W-875-10	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Dry.

Table 2.1-4. General Services Area Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-875-10	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	2	N	Dry.
W-875-10	EW	Qt-Tnsc1	S	DIS-TF	E624MOD:ALL	3		
W-875-10	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	4		
W-875-11	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Dry.
W-875-11	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	2	N	Dry.
W-875-11	EW	Qt-Tnsc1	S	DIS-TF	E624MOD:ALL	3		
W-875-11	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	4		
W-875-15	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Dry.
W-875-15	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	2	N	Dry.
W-875-15	EW	Qt-Tnsc1	S	DIS-TF	E624MOD:ALL	3		
W-875-15	EW	Qt-Tnsc1	S	CMP-TF	E624MOD:ALL	4		
W-876-01	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-876-01	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-879-01	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-879-01	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-889-01	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-889-01	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-CGSA-1732	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	N	Insufficient water.
W-CGSA-1732	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-CGSA-1733	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	N	Insufficient wate.
W-CGSA-1733	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-CGSA-1735	PTMW	Qal-Tnbs1	S	CMP	E624MOD:ALL	2	N	Dry.
W-CGSA-1735	PTMW	Qal-Tnbs1	S	CMP	E624MOD:ALL	4		
W-CGSA-1736	PTMW	Qal-Tnbs1	S	CMP	E624MOD:ALL	2	Y	
W-CGSA-1736	PTMW	Qal-Tnbs1	S	CMP	E624MOD:ALL	4		
W-CGSA-1737	PTMW	Qal-Tnbs1	S	CMP	E624MOD:ALL	2	Y	
W-CGSA-1737	PTMW	Qal-Tnbs1	S	CMP	E624MOD:ALL	4		
W-CGSA-1739	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	2	Y	
W-CGSA-1739	PTMW	Qt-Tnsc1	S	CMP	E624MOD:ALL	4		
W-CGSA-2708	PTMW	Qt-Tnsc1	Q	DIS-TF	E624MOD:ALL	2	N	Facility off for maintenance.
W-CGSA-2708	PTMW	Qt-Tnsc1	Q	DIS-TF	E624MOD:ALL	3		
W-CGSA-2708	PTMW	Qt-Tnsc1	Q	DIS-TF	E624MOD:ALL	4		

Table 2.1-5. Central General Services Area (CGSA) mass removed, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
CGSA	January	56	0	NA	NA	NA	NA
	February	45	0	NA	NA	NA	NA
	March	6.5	21	NA	NA	NA	NA
	April	6.6	31	NA	NA	NA	NA
	May	6.0	4.2	NA	NA	NA	NA
	June	24	5.3	NA	NA	NA	NA
Total		140	61	NA	NA	NA	NA

Table 2.2-1. Building 834 (834) volumes of ground water and soil vapor extracted and discharged, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
834	January	0	0	0	0
	February	0	0	0	0
	March	456	480	2,625	11,500
	April	672	672	4,336	13,510
	May	624	624	4,476	12,298
	June	689	696	5,149	14,749
Total		2,441	2,472	16,586	52,057

Table 2.2-2. Building 834 Operable Unit volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Carbon tetra-chloride (µg/L)	Chloro-form (µg/L)	1,1-DCA (µg/L)	1,2-DCA (µg/L)	1,1-DCE (µg/L)	1,1,1-TCA (µg/L)	1,1,2-TCA (µg/L)	Freon 11 (µg/L)	Freon 113 (µg/L)	Vinyl chloride (µg/L)
834-I	3/16/15	760 D	11	230 D	<5 D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.83
834-I	4/7/15	720 D	11	170 D	<25 D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
834-E	3/16/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
834-E	4/7/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
834-E	5/4/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
834-E	6/3/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:

No samples collected in January or February due to shut down for freeze protection.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.2-2 (Con't). Analyte detected but not reported in main table.

Location	Date	Detection frequency	1,2-DCE (total) (µg/L)
834-I	3/16/15	1 of 18	230 D
834-I	4/7/15	1 of 18	170 D
834-E	3/16/15	0 of 18	-
834-E	4/7/15	0 of 18	-
834-E	5/4/15	0 of 18	-
834-E	6/3/15	0 of 18	-

Notes:

No samples collected in January or February due to shut down for freeze protection.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.2-3. Building 834 Operable Unit diesel range organic compounds in ground water extraction and treatment system influent and effluent.

Location	Date	Diesel Range Organics (C12-C24) (µg/L)
834-I	3/16/15	<200
834-I	4/7/15	<200 O
834-E	3/16/15	<200
834-E	4/7/15	<200 O
834-E	5/4/15	<200
834-E	6/3/15	<200

Notes:

No samples collected in January or February due to shut down for freeze protection.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.2-4. Building 834 Operable Unit tetrabutyl orthosilicate/tetrakis (2-ethylbutyl) silane (TBOS/TKEBS) in ground water extraction and treatment system influent and effluent.

Location	Date	TBOS/TKEBS (µg/L)
834-I	3/16/15	22
834-I	4/7/15	19
834-E	3/16/15	<10
834-E	4/7/15	<10
834-E	5/4/15	<10
834-E	6/3/15	<10 O

Notes:

No samples collected in January or February due to shut down for freeze protection.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.2-5. Building 834 Operable Unit treatment facility sampling and analysis plan.

Sample location	Sample identification	Parameter	Frequency
834 GWTS			
Influent Port	**834-I**	**VOCs**	**Quarterly**
		TBOS/TKEBS	**Quarterly**
		Diesel	**Quarterly**
		pH	**Quarterly**
Effluent Port	**834-E**	**VOCs**	**Monthly**
		TBOS/TKEBS	**Monthly**
		Diesel	**Monthly**
		pH	**Monthly**
834 SVTS			
Influent Port	**834-VI**	**No Monitoring Requirements**	
Effluent Port	**834-VE**	**VOCs**	**Weekly[a]**
Intermediate GAC	**834-VCF4I**	**VOCs**	**Weekly[a]**

Notes:

[a] **Weekly monitoring for VOCs will consist of the use of a flame-ionization detector, photo-ionization detector, or other District-approved VOC detection device.**

One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-834-1709	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-1709	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-1709	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-1709	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-1711	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	N	Insuffient water.
W-834-1711	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	N	Insuffient water.
W-834-1711	PTMW	Tps-Tnsc2	S	CMP	E624MOD:ALL	3		
W-834-1711	PTMW	Tps-Tnsc2	A	CMP	TBOS:ALL	1	N	Insuffient water.
W-834-1824	PTMW	Tpsg	A	DIS	E200.7:FE	1	Y	
W-834-1824	PTMW	Tpsg	A	DIS	E200.8:MN	1	Y	
W-834-1824	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-1824	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-1824	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-1824	PTMW	Tpsg	E	CMP	TBOS:ALL	1		To be sampled in 2016.
W-834-1825	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Insuffient water.
W-834-1825	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Insuffient water.
W-834-1825	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-1825	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	Insuffient water.
W-834-1833	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Insuffient water.
W-834-1833	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Insuffient water.
W-834-1833	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-1833	PTMW	Tpsg	E	CMP	TBOS:ALL	1		To be sampled in 2016.
W-834-2001	EW	Tps-Tnsc2	A	CMP-TF	E300.0:NO3	1	Y	
W-834-2001	EW	Tps-Tnsc2	S	CMP-TF	E601:ALL	1	Y	
W-834-2001	EW	Tps-Tnsc2	S	DIS-TF	E624:ALL	2	Y	
W-834-2001	EW	Tps-Tnsc2	S	DIS-TF	E624:ALL	4		
W-834-2001	EW	Tps-Tnsc2	S	CMP-TF	E624MOD:ALL	3		
W-834-2001	EW	Tps-Tnsc2	S	DIS-TF	EM8015:DIESEL	1	Y	
W-834-2001	EW	Tps-Tnsc2	S	DIS-TF	EM8015:DIESEL	3		
W-834-2001	EW	Tps-Tnsc2	A	CMP-TF	TBOS:ALL	1	Y	
W-834-2001	EW	Tps-Tnsc2	A	DIS-TF	TBOS:ALL	3		
W-834-2113	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-2113	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-2113	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-2113	PTMW	Tpsg	E	CMP	TBOS:ALL	1		To be sampled in 2016.
W-834-2117	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-2117	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-2117	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-2117	PTMW	Tpsg	Q	DIS	NPDESMETAL:ALL	2	Y	
W-834-2117	PTMW	Tpsg	O	CMP	TBOS:ALL	1	Y	
W-834-2118	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-2118	PTMW	Tpsg	S	DIS	E300.0:PERC	1	Y	
W-834-2118	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-2118	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-2118	PTMW	Tpsg	Q	DIS	NPDESMETAL:ALL	2	Y	
W-834-2118	PTMW	Tpsg	O	CMP	TBOS:ALL	1	Y	

Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-834-2119	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-834-2119	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	Y	
W-834-2119	PTMW	Tps-Tnsc2	S	CMP	E624MOD:ALL	3		
W-834-2119	PTMW	Tps-Tnsc2	Q	DIS	NPDESMETAL:ALL	2	Y	
W-834-2119	PTMW	Tps-Tnsc2	E	CMP	TBOS:ALL	1		To be sampled in 2016.
W-834-A1	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-834-A1	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	Y	
W-834-A1	PTMW	Tps-Tnsc2	S	CMP	E624MOD:ALL	3		
W-834-A1	PTMW	Tps-Tnsc2	A	CMP	TBOS:ALL	1	Y	
W-834-A2	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-A2	PTMW	Tpsg	S	DIS	E300.0:PERC	1	Y	
W-834-A2	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-A2	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-A2	PTMW	Tpsg	O	DIS	EM8015:DRANGE	1	Y	
W-834-A2	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-B2	EW	Tpsg	Q	DIS-TF	AS:UISO	1	Y	
W-834-B2	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-B2	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-B2	EW	Tpsg	S	DIS-TF	E624MOD:ALL	2	Y	
W-834-B2	EW	Tpsg	S	CMP-TF	E624MOD:ALL	3		
W-834-B2	EW	Tpsg	S	DIS-TF	E624MOD:ALL	4		
W-834-B2	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-B2	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-B3	EW	Tpsg	Q	DIS-TF	AS:UISO	1	Y	
W-834-B3	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-B3	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-B3	EW	Tpsg	S	DIS-TF	E624MOD:ALL	2	Y	
W-834-B3	EW	Tpsg	S	CMP-TF	E624MOD:ALL	3		
W-834-B3	EW	Tpsg	S	DIS-TF	E624MOD:ALL	4		
W-834-B3	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-B3	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-B4	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-B4	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-B4	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-B4	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-C2	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-C2	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-C2	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-C2	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-C4	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-C4	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-C4	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-C4	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-C5	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-C5	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-C5	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		

Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-834-C5	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-D2	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	N	Dry.
W-834-D2	PTMW	LTnbs1	A	CMP	E601:ALL	1	N	Dry.
W-834-D2	PTMW	LTnbs1	A	CMP	TBOS:ALL	1	N	Dry.
W-834-D3	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-D3	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-D3	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-D3	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-D4	EW	Tpsg	Q	DIS-TF	AS:UISO	1	Y	
W-834-D4	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-D4	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-D4	EW	Tpsg	S	DIS-TF	E624MOD:ALL	2	Y	
W-834-D4	EW	Tpsg	S	CMP-TF	E624MOD:ALL	3		
W-834-D4	EW	Tpsg	S	DIS-TF	E624MOD:ALL	4		
W-834-D4	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-D4	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-D5	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-D5	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-D5	EW	Tpsg	S	CMP-TF	E624MOD:ALL	3		
W-834-D5	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-D6	EW	Tpsg	Q	DIS-TF	AS:UISO	1	Y	
W-834-D6	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-D6	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-D6	EW	Tpsg	S	DIS-TF	E624MOD:ALL	2	Y	
W-834-D6	EW	Tpsg	S	CMP-TF	E624MOD:ALL	3		
W-834-D6	EW	Tpsg	S	DIS-TF	E624MOD:ALL	4		
W-834-D6	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-D6	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-D7	EW	Tpsg	Q	DIS-TF	AS:UISO	1	Y	
W-834-D7	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-D7	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-D7	EW	Tpsg	S	DIS-TF	E624MOD:ALL	2	Y	
W-834-D7	EW	Tpsg	S	CMP-TF	E624MOD:ALL	3		
W-834-D7	EW	Tpsg	S	DIS-TF	E624MOD:ALL	4		
W-834-D7	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-D7	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-D9A	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	N	Dry.
W-834-D9A	PTMW	Tnbs2	A	CMP	E601:ALL	1	N	Dry.
W-834-D9A	PTMW	Tnbs2	A	CMP	TBOS:ALL	1	N	Dry.
W-834-D10	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	N	Dry.
W-834-D10	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	N	Dry.
W-834-D10	PTMW	Tps-Tnsc2	S	CMP	E624MOD:ALL	3		
W-834-D10	PTMW	Tps-Tnsc2	A	CMP	TBOS:ALL	1	N	Dry.
W-834-D11	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-D11	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-D11	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		

Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-834-D11	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-D12	EW	Tpsg	Q	DIS-TF	AS:UISO	1	Y	
W-834-D12	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-D12	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-D12	EW	Tpsg	S	DIS-TF	E624MOD:ALL	2	Y	
W-834-D12	EW	Tpsg	S	CMP-TF	E624MOD:ALL	3		
W-834-D12	EW	Tpsg	S	DIS-TF	E624MOD:ALL	4		
W-834-D12	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-D12	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-D13	EW	Tpsg	Q	DIS-TF	AS:UISO	1	Y	
W-834-D13	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-D13	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-D13	EW	Tpsg	S	DIS-TF	E624MOD:ALL	2	Y	
W-834-D13	EW	Tpsg	S	CMP-TF	E624MOD:ALL	3		
W-834-D13	EW	Tpsg	S	DIS-TF	E624MOD:ALL	4		
W-834-D13	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-D13	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-D14	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-D14	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-D14	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-D14	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-D15	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-D15	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-D15	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-D15	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-D16	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-D16	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-D16	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-D16	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-D17	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-834-D17	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Insufficient water.
W-834-D17	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-D17	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Insufficient water.
W-834-D18	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-D18	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-D18	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-D18	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-G3	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-G3	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Dry.
W-834-G3	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-H2	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-H2	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-H2	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-H2	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-J1	EW	Tpsg	Q	DIS-TF	AS:UISO	1	Y	
W-834-J1	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	

Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-834-J1	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-J1	EW	Tpsg	S	DIS-TF	E624MOD:ALL	2	Y	
W-834-J1	EW	Tpsg	S	CMP-TF	E624MOD:ALL	3		
W-834-J1	EW	Tpsg	S	DIS-TF	E624MOD:ALL	4		
W-834-J1	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-J1	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-J2	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-J2	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-J2	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-J2	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-J3	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-J3	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-J3	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-J3	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	Dry.
W-834-K1A	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-834-K1A	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Insufficient water.
W-834-K1A	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-K1A	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Insufficient water.
W-834-M1	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-M1	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-M1	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-M1	PTMW	Tpsg	E	CMP	TBOS:ALL	1		To be sampled in 2016.
W-834-M2	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-M2	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-M2	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-M2	PTMW	Tpsg	E	CMP	TBOS:ALL	1		To be sampled in 2016.
W-834-S1	EW	Tpsg	Q	DIS-TF	AS:UISO	1	Y	
W-834-S1	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-S1	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-S1	EW	Tpsg	S	DIS-TF	E624MOD:ALL	2	Y	
W-834-S1	EW	Tpsg	S	CMP-TF	E624MOD:ALL	3		
W-834-S1	EW	Tpsg	S	DIS-TF	E624MOD:ALL	4		
W-834-S1	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-S1	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-S10	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-S10	PTMW	Tpsg	S	CMP	E624:ALL	1	N	Dry.
W-834-S10	PTMW	Tpsg	S	CMP	E624:ALL	3		
W-834-S10	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-S12A	EW	Tpsg	Q	DIS-TF	AS:UISO	1	Y	
W-834-S12A	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-S12A	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-S12A	EW	Tpsg	S	DIS-TF	E624MOD:ALL	2	Y	
W-834-S12A	EW	Tpsg	S	CMP-TF	E624MOD:ALL	3		
W-834-S12A	EW	Tpsg	S	DIS-TF	E624MOD:ALL	4		
W-834-S12A	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-S12A	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		

Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-834-S13	EW	Tpsg	Q	DIS-TF	AS:UISO	1	Y	
W-834-S13	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-S13	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-S13	EW	Tpsg	S	DIS-TF	E624MOD:ALL	2	Y	
W-834-S13	EW	Tpsg	S	CMP-TF	E624MOD:ALL	3		
W-834-S13	EW	Tpsg	S	DIS-TF	E624MOD:ALL	4		
W-834-S13	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-S13	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-S4	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-S4	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-S4	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-S4	PTMW	Tpsg	O	CMP	TBOS:ALL	1	Y	
W-834-S5	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-S5	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-S5	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-S5	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	Dry.
W-834-S6	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-834-S6	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Insufficient water.
W-834-S6	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-S6	PTMW	Tpsg	E	CMP	TBOS:ALL	1		To be sampled in 2016.
W-834-S7	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-S7	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-S7	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-S7	PTMW	Tpsg	E	CMP	TBOS:ALL	1		To be sampled in 2016.
W-834-S8	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	N	Dry.
W-834-S8	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	N	Dry.
W-834-S8	PTMW	Tps-Tnsc2	S	CMP	E624MOD:ALL	3		
W-834-S8	PTMW	Tps-Tnsc2	O	CMP	TBOS:ALL	1	N	Dry.
W-834-S9	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-834-S9	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	Y	
W-834-S9	PTMW	Tps-Tnsc2	S	CMP	E624MOD:ALL	3		
W-834-S9	PTMW	Tps-Tnsc2	E	CMP	TBOS:ALL	1		To be sampled in 2016.
W-834-T1	GW	LTnbs1	S	CMP	E300.0:NO3	1	Y	
W-834-T1	GW	LTnbs1	S	CMP	E300.0:NO3	3		
W-834-T1	GW	LTnbs1	Q	CMP	E601:ALL	1	Y	
W-834-T1	GW	LTnbs1	Q	CMP	E624MOD:ALL	2	Y	
W-834-T1	GW	LTnbs1	Q	CMP	E624MOD:ALL	3		
W-834-T1	GW	LTnbs1	Q	CMP	E624MOD:ALL	4		
W-834-T1	GW	LTnbs1	Q	DIS	NPDESMETAL:ALL	2	Y	
W-834-T1	GW	LTnbs1	S	CMP	TBOS:ALL	1	Y	
W-834-T1	GW	LTnbs1	S	CMP	TBOS:ALL	3		
W-834-T11	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-T11	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-T11	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-T11	PTMW	Tpsg	E	CMP	TBOS:ALL	1		To be sampled in 2016.
W-834-T2	PTMW	Tpsg	A	DIS	E200.7:FE	1	Y	

Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-834-T2	PTMW	Tpsg	A	DIS	E200.8:MN	1	Y	
W-834-T2	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-T2	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-T2	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-T2	PTMW	Tpsg	O	CMP	TBOS:ALL	1	Y	
W-834-T2A	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-T2A	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-T2A	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-T2A	PTMW	Tpsg	E	CMP	TBOS:ALL	1		To be sampled in 2016.
W-834-T2B	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-T2B	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-T2B	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-T2B	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	Dry.
W-834-T2C	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-T2C	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-T2C	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-T2C	PTMW	Tpsg	E	CMP	TBOS:ALL	1		To be sampled in 2016.
W-834-T2D	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-T2D	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-T2D	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-T2D	PTMW	Tpsg	E	CMP	TBOS:ALL	1		To be sampled in 2016.
W-834-T3	GW	LTnbs1	S	CMP	E300.0:NO3	1	N	Inoperable pump.
W-834-T3	GW	LTnbs1	S	CMP	E300.0:NO3	3		
W-834-T3	GW	LTnbs1	Q	CMP	E601:ALL	1	N	Inoperable pump.
W-834-T3	GW	LTnbs1	Q	CMP	E624MOD:ALL	2	Y	
W-834-T3	GW	LTnbs1	Q	CMP	E624MOD:ALL	3		
W-834-T3	GW	LTnbs1	Q	CMP	E624MOD:ALL	4		
W-834-T3	GW	LTnbs1	S	CMP	TBOS:ALL	1	N	Inoperable pump.
W-834-T3	GW	LTnbs1	S	CMP	TBOS:ALL	3		
W-834-T5	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-834-T5	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	Y	
W-834-T5	PTMW	Tps-Tnsc2	S	CMP	E624MOD:ALL	3		
W-834-T5	PTMW	Tps-Tnsc2	E	CMP	TBOS:ALL	1		To be sampled in 2016.
W-834-T7A	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	N	Dry.
W-834-T7A	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	N	Dry.
W-834-T7A	PTMW	Tps-Tnsc2	S	CMP	E624MOD:ALL	3		
W-834-T7A	PTMW	Tps-Tnsc2	O	CMP	TBOS:ALL	1	N	Dry.
W-834-T8A	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-T8A	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-T8A	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-T8A	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	Dry.
W-834-T9	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-T9	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-T9	PTMW	Tpsg	S	CMP	E624MOD:ALL	3		
W-834-T9	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	6
W-834-U1	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	Y	

Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-834-U1	PTMW	Tps-Tnsc2	S	CMP	E624:ALL	1	Y	
W-834-U1	PTMW	Tps-Tnsc2	S	CMP	E624:ALL	3		
W-834-U1	PTMW	Tps-Tnsc2	A	DIS	EM8015:DIESEL	1	Y	
W-834-U1	PTMW	Tps-Tnsc2	A	CMP	TBOS:ALL	1	Y	

Table 2.2-7. Building 834 (834) mass removed, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
834	January	0	0	NA	0	NA	0
	February	0	0	NA	0	NA	0
	March	210	16	NA	6.1	NA	0.92
	April	320	21	NA	6.4	NA	0.96
	May	340	17	NA	5.8	NA	0.91
	June	290	64	NA	7.1	NA	1.1
Total		1,200	120	NA	25	NA	3.9

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
BC6-10	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
BC6-10	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
BC6-10	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
BC6-10	PTMW	LTnbs1	S	CMP	E624MOD:ALL	3		
BC6-10	PTMW	LTnbs1	S	CMP	E906:ALL	1	Y	
BC6-10	PTMW	LTnbs1	S	CMP	E906:ALL	3		
BC6-13	PTMW	Qt-Tnbs1	E	CMP	E300.0:NO3	1		To be sampled in 2016.
BC6-13	PTMW	Qt-Tnbs1	E	CMP	E300.0:PERC	1		To be sampled in 2016.
BC6-13	PTMW	Qt-Tnbs1	E	CMP	E624MOD:ALL	1		To be sampled in 2016.
BC6-13	PTMW	Qt-Tnbs1	E	CMP	E906:ALL	1		To be sampled in 2016.
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E624:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E624:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E624:ALL	3		
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E624:ALL	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	4		

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
CARNRW1	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	4		
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E8330:R+H	1	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E8330:R+H	2	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E8330:R+H	3		
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E8330:R+H	4		
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	3		
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3:ALL	3		
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3:ALL	4		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	AS:UISO	1	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	AS:UISO	2	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	AS:UISO	3		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	AS:UISO	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E502.2:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E524.2MOD:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E524.2MOD:ALL	3		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E524.2MOD:ALL	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	4		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E8330:R+H	1	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E8330:R+H	2	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E8330:R+H	3		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E8330:R+H	4		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	3		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3:ALL	3		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3:ALL	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E624MOD:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
EP6-06	DMW	LTnbs1	A	WGMG	AS:UISO	1	Y	
EP6-06	DMW	LTnbs1	A	WGMG	E160.1:ALL	1	Y	
EP6-06	DMW	LTnbs1	A	WGMG	E210.2:ALL	1	Y	
EP6-06	DMW	LTnbs1	A	WGMG	E245.2:ALL	1	Y	
EP6-06	DMW	LTnbs1	A	WGMG	E300.0:NO3	1	Y	
EP6-06	DMW	LTnbs1	A	WGMG	E300.0:PERC	1	Y	
EP6-06	DMW	LTnbs1	S	WGMG	E601:ALL	1	Y	

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
EP6-06	DMW	LTnbs1	A	WGMG	E602:ALL	1	Y	
EP6-06	DMW	LTnbs1	S	WGMG	E624MOD:ALL	3		
EP6-06	DMW	LTnbs1	A	WGMG	E900:ALL	1	Y	
EP6-06	DMW	LTnbs1	S	WGMG	E906:ALL	1	Y	
EP6-06	DMW	LTnbs1	S	WGMG	E906:ALL	3		
EP6-07	PTMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	Y	
EP6-07	PTMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	Y	
EP6-07	PTMW	Qt-Tnbs1	A	WGMG	E210.2:ALL	1	Y	
EP6-07	PTMW	Qt-Tnbs1	A	WGMG	E245.2:ALL	1	Y	
EP6-07	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
EP6-07	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
EP6-07	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
EP6-07	PTMW	Qt-Tnbs1	A	WGMG	E602:ALL	1	Y	
EP6-07	PTMW	Qt-Tnbs1	S	CMP	E624MOD:ALL	3		
EP6-07	PTMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	Y	
EP6-07	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
EP6-07	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
EP6-08	DMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	A	WGMG	E210.2:ALL	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	A	WGMG	E245.2:ALL	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	A	WGMG	E300.0:NO3	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	A	WGMG	E300.0:PERC	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	S	WGMG	E601:ALL	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	A	WGMG	E602:ALL	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	S	WGMG	E624MOD:ALL	3		
EP6-08	DMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	3		
EP6-09	DMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	Y	
EP6-09	DMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	Y	
EP6-09	DMW	Qt-Tnbs1	A	WGMG	E210.2:ALL	1	Y	
EP6-09	DMW	Qt-Tnbs1	A	WGMG	E245.2:ALL	1	Y	
EP6-09	DMW	Qt-Tnbs1	A	WGMG	E300.0:NO3	1	Y	
EP6-09	DMW	Qt-Tnbs1	A	WGMG	E300.0:PERC	1	Y	
EP6-09	DMW	Qt-Tnbs1	S	WGMG	E601:ALL	1	Y	
EP6-09	DMW	Qt-Tnbs1	A	WGMG	E602:ALL	1	Y	
EP6-09	DMW	Qt-Tnbs1	S	WGMG	E624MOD:ALL	3		
EP6-09	DMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	Y	
EP6-09	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	1	Y	
EP6-09	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	3		
K6-01	DMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	Y	
K6-01	DMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	Y	
K6-01	DMW	Qt-Tnbs1	A	WGMG	E210.2:ALL	1	Y	
K6-01	DMW	Qt-Tnbs1	A	WGMG	E245.2:ALL	1	Y	
K6-01	DMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
K6-01	DMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
K6-01	DMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
K6-01	DMW	Qt-Tnbs1	A	WGMG	E602:ALL	1	Y	

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K6-01	DMW	Qt-Tnbs1	S	CMP	E624MOD:ALL	3		
K6-01	DMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	Y	
K6-01	DMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-01	DMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-01S	DMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	Y	
K6-01S	DMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	Y	
K6-01S	DMW	Qt-Tnbs1	A	WGMG	E210.2:ALL	1	Y	
K6-01S	DMW	Qt-Tnbs1	A	WGMG	E245.2:ALL	1	Y	
K6-01S	DMW	Qt-Tnbs1	A	WGMG	E300.0:NO3	1	Y	
K6-01S	DMW	Qt-Tnbs1	A	WGMG	E300.0:PERC	1	Y	
K6-01S	DMW	Qt-Tnbs1	S	WGMG	E601:ALL	1	Y	
K6-01S	DMW	Qt-Tnbs1	A	WGMG	E602:ALL	1	Y	
K6-01S	DMW	Qt-Tnbs1	S	WGMG	E624MOD:ALL	3		
K6-01S	DMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	Y	
K6-01S	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	1	Y	
K6-01S	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	3		
K6-03	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
K6-03	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
K6-03	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
K6-03	PTMW	Qt-Tnbs1	S	CMP	E624MOD:ALL	3		
K6-03	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-03	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-04	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
K6-04	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
K6-04	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
K6-04	PTMW	Qt-Tnbs1	S	CMP	E624MOD:ALL	3		
K6-04	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-04	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-14	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
K6-14	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
K6-14	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
K6-14	PTMW	LTnbs1	S	CMP	E624MOD:ALL	3		
K6-14	PTMW	LTnbs1	S	CMP	E906:ALL	1	Y	
K6-14	PTMW	LTnbs1	S	CMP	E906:ALL	3		
K6-15	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	N	Dry.
K6-15	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	N	Dry.
K6-15	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	N	Dry.
K6-15	PTMW	Qt-Tnbs1	S	CMP	E624MOD:ALL	3		
K6-15	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	N	Dry.
K6-15	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-16	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
K6-16	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
K6-16	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
K6-16	PTMW	Qt-Tnbs1	S	CMP	E624MOD:ALL	3		
K6-16	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-16	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-17	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	1	Y	
K6-17	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	3		
K6-17	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	1	Y	

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K6-17	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	3		
K6-17	GW	Qt-Tnbs1	Q	CMP	E601:ALL	1	Y	
K6-17	GW	Qt-Tnbs1	Q	CMP	E624MOD:ALL	2	Y	
K6-17	GW	Qt-Tnbs1	Q	CMP	E624MOD:ALL	3		
K6-17	GW	Qt-Tnbs1	Q	CMP	E624MOD:ALL	4		
K6-17	GW	Qt-Tnbs1	Q	CMP	E906:ALL	1	Y	
K6-17	GW	Qt-Tnbs1	Q	CMP	E906:ALL	2	Y	
K6-17	GW	Qt-Tnbs1	Q	CMP	E906:ALL	3		
K6-17	GW	Qt-Tnbs1	Q	CMP	E906:ALL	4		
K6-17	GW	Qt-Tnbs1	S	WGMG	SM9221:ALL	1	Y	
K6-17	GW	Qt-Tnbs1	S	WGMG	SM9221:ALL	3		
K6-18	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
K6-18	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
K6-18	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
K6-18	PTMW	Qt-Tnbs1	S	CMP	E624MOD:ALL	3		
K6-18	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-18	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-19	DMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	Y	
K6-19	DMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	Y	
K6-19	DMW	Qt-Tnbs1	A	WGMG	E210.2:ALL	1	Y	
K6-19	DMW	Qt-Tnbs1	A	WGMG	E245.2:ALL	1	Y	
K6-19	DMW	Qt-Tnbs1	A	WGMG	E300.0:NO3	1	Y	
K6-19	DMW	Qt-Tnbs1	A	WGMG	E300.0:PERC	1	Y	
K6-19	DMW	Qt-Tnbs1	S	WGMG	E601:ALL	1	Y	
K6-19	DMW	Qt-Tnbs1	A	WGMG	E602:ALL	1	Y	
K6-19	DMW	Qt-Tnbs1	S	WGMG	E624MOD:ALL	3		
K6-19	DMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	Y	
K6-19	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	1	Y	
K6-19	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	3		
K6-21	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	N	Dry.
K6-21	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	N	Dry.
K6-21	PTMW	LTnbs1	A	CMP	E601:ALL	1	N	Dry.
K6-21	PTMW	LTnbs1	A	CMP	E906:ALL	1	N	Dry.
K6-22	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	1	Y	
K6-22	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	3		
K6-22	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	1	Y	
K6-22	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	3		
K6-22	GW	Qt-Tnbs1	Q	CMP	E601:ALL	1	Y	
K6-22	GW	Qt-Tnbs1	Q	CMP	E624MOD:ALL	2	Y	
K6-22	GW	Qt-Tnbs1	Q	CMP	E624MOD:ALL	3		
K6-22	GW	Qt-Tnbs1	Q	CMP	E624MOD:ALL	4		
K6-22	GW	Qt-Tnbs1	Q	CMP	E906:ALL	1	Y	
K6-22	GW	Qt-Tnbs1	Q	CMP	E906:ALL	2	Y	
K6-22	GW	Qt-Tnbs1	Q	CMP	E906:ALL	3		
K6-22	GW	Qt-Tnbs1	Q	CMP	E906:ALL	4		
K6-23	PTMW	Qt-Tnbs1	S	CMP	E300.0:NO3	1	Y	
K6-23	PTMW	Qt-Tnbs1	S	CMP	E300.0:NO3	3		
K6-23	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
K6-23	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K6-23	PTMW	Qt-Tnbs1	S	CMP	E624MOD:ALL	3		
K6-23	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-23	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-23	PTMW	Qt-Tnbs1	S	WGMG	SM9221:ALL	1	Y	
K6-23	PTMW	Qt-Tnbs1	S	WGMG	SM9221:ALL	3		
K6-24	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	N	Dry.
K6-24	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	N	Dry.
K6-24	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	N	Dry.
K6-24	PTMW	Qt-Tnbs1	S	CMP	E624MOD:ALL	3		
K6-24	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	N	Dry.
K6-24	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-25	PTMW	Tmss	A	CMP	E300.0:NO3	1	Y	
K6-25	PTMW	Tmss	A	CMP	E300.0:PERC	1	Y	
K6-25	PTMW	Tmss	S	CMP	E601:ALL	1	Y	
K6-25	PTMW	Tmss	S	CMP	E624MOD:ALL	3		
K6-25	PTMW	Tmss	S	CMP	E906:ALL	1	Y	
K6-25	PTMW	Tmss	S	CMP	E906:ALL	3		
K6-26	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
K6-26	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
K6-26	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
K6-26	PTMW	LTnbs1	S	CMP	E624MOD:ALL	3		
K6-26	PTMW	LTnbs1	S	CMP	E906:ALL	1	Y	
K6-26	PTMW	LTnbs1	S	CMP	E906:ALL	3		
K6-27	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
K6-27	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
K6-27	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
K6-27	PTMW	Qt-Tnbs1	S	CMP	E624MOD:ALL	3		
K6-27	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-27	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-32	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	N	Dry.
K6-32	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	N	Dry.
K6-32	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	N	Dry.
K6-32	PTMW	Qt-Tnbs1	S	CMP	E624MOD:ALL	3		
K6-32	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	N	Dry.
K6-32	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-33	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
K6-33	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
K6-33	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
K6-33	PTMW	Qt-Tnbs1	S	CMP	E624MOD:ALL	3		
K6-33	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-33	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-34	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	1	Y	
K6-34	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	3		
K6-34	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	1	Y	
K6-34	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	3		
K6-34	GW	Qt-Tnbs1	Q	CMP	E601:ALL	1	Y	
K6-34	GW	Qt-Tnbs1	Q	CMP	E624MOD:ALL	2	Y	
K6-34	GW	Qt-Tnbs1	Q	CMP	E624MOD:ALL	3		
K6-34	GW	Qt-Tnbs1	Q	CMP	E624MOD:ALL	4		

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K6-34	GW	Qt-Tnbs1	Q	CMP	E906:ALL	1	Y	
K6-34	GW	Qt-Tnbs1	Q	CMP	E906:ALL	2	Y	
K6-34	GW	Qt-Tnbs1	Q	CMP	E906:ALL	3		
K6-34	GW	Qt-Tnbs1	Q	CMP	E906:ALL	4		
K6-35	PTMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	Y	
K6-35	PTMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	Y	
K6-35	PTMW	Qt-Tnbs1	A	WGMG	E210.2:ALL	1	Y	
K6-35	PTMW	Qt-Tnbs1	A	WGMG	E245.2:ALL	1	Y	
K6-35	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
K6-35	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
K6-35	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
K6-35	PTMW	Qt-Tnbs1	A	WGMG	E602:ALL	1	Y	
K6-35	PTMW	Qt-Tnbs1	S	CMP	E624MOD:ALL	3		
K6-35	PTMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	Y	
K6-35	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-35	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-36	DMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	N	Insufficient water.
K6-36	DMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	N	Insufficient water.
K6-36	DMW	Qt-Tnbs1	A	WGMG	E210.2:ALL	1	N	Insufficient water.
K6-36	DMW	Qt-Tnbs1	A	WGMG	E245.2:ALL	1	N	Insufficient water.
K6-36	DMW	Qt-Tnbs1	A	WGMG	E300.0:NO3	1	N	Insufficient water.
K6-36	DMW	Qt-Tnbs1	A	WGMG	E300.0:PERC	1	N	Insufficient water.
K6-36	DMW	Qt-Tnbs1	S	WGMG	E601:ALL	1	N	Insufficient water.
K6-36	DMW	Qt-Tnbs1	A	WGMG	E602:ALL	1	N	Insufficient water.
K6-36	DMW	Qt-Tnbs1	S	WGMG	E624MOD:ALL	3		
K6-36	DMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	N	Insufficient water.
K6-36	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	1	N	Insufficient water.
K6-36	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	3		
W-33C-01	PTMW	Tts	A	CMP	E300.0:NO3	1	Y	
W-33C-01	PTMW	Tts	A	CMP	E300.0:PERC	1	Y	
W-33C-01	PTMW	Tts	S	CMP	E601:ALL	1	Y	
W-33C-01	PTMW	Tts	S	CMP	E624MOD:ALL	3		
W-33C-01	PTMW	Tts	S	CMP	E906:ALL	1	Y	
W-33C-01	PTMW	Tts	S	CMP	E906:ALL	3		
SPRING15	SPR	Qt-Tnbs1	O	CMP	E300.0:NO3	1	N	Dry.
SPRING15	SPR	Qt-Tnbs1	O	CMP	E300.0:PERC	1	N	Dry.
SPRING15	SPR	Qt-Tnbs1	O	CMP	E601:ALL	1	N	Dry.
SPRING15	SPR	Qt-Tnbs1	O	CMP	E906:ALL	1	N	Dry.
SPRING15	SPR	Qt-Tnbs1	Q	WGMG	NUTRIENTS:ALL	1	N	Dry.
SPRING15	SPR	Qt-Tnbs1	Q	WGMG	NUTRIENTS:ALL	2	N	Dry.
SPRING15	SPR	Qt-Tnbs1	Q	WGMG	NUTRIENTS:ALL	3		
SPRING15	SPR	Qt-Tnbs1	Q	WGMG	NUTRIENTS:ALL	4		
W-PIT6-1819	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	1	Y	
W-PIT6-1819	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	3		
W-PIT6-1819	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	1	Y	
W-PIT6-1819	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	3		
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E601:ALL	1	Y	
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E624MOD:ALL	2	Y	
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E624MOD:ALL	3		

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E624MOD:ALL	4		
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E906:ALL	1	Y	
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E906:ALL	2	Y	
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E906:ALL	3		
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E906:ALL	4		
W-PIT6-2816	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
W-PIT6-2816	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
W-PIT6-2816	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
W-PIT6-2816	PTMW	Qt-Tnbs1	S	CMP	E624MOD:ALL	3		
W-PIT6-2816	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
W-PIT6-2816	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
W-PIT6-2817	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
W-PIT6-2817	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
W-PIT6-2817	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
W-PIT6-2817	PTMW	Qt-Tnbs1	S	CMP	E624MOD:ALL	3		
W-PIT6-2817	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
W-PIT6-2817	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		

Table 2.3-2. Pit 6 Landfill Detection Monitoring constituents of concern (VOCs and tritium only), detection monitoring wells, Statistical Limits (SLs), Maximum Contaminant Level (MCLs), and analytical results for First Semester 2015.

COC	Well	SL	MCL	1/7/15	1/8/15	1/12/15	1/12/15 DUP	1/14/15	1/14/15 DUP
Tritium (pCi/L)	EP6-06	100	20000	<100	-	-	-	-	-
	EP6-07	141	20000	-	-	<100	<100	-	-
	EP6-09	138	20000	-	-	-	-	<100	<100
	K6-01S	167	20000	-	<100	-	-	-	-
	K6-19	317	20000	<100	-	-	-	-	-
	K6-35	157	20000	<100	-	-	-	-	-
Chloroform (µg/L)	EP6-06	0.5	80	<0.5	-	-	-	-	-
	EP6-07	-	80	-	-	<0.5	<0.5	-	-
	EP6-09	0.5	80	-	-	-	-	<0.5	<0.5
	K6-01S	0.5	80	-	<0.5	-	-	-	-
	K6-19	1.5	80	<0.5	-	-	-	-	-
	K6-35	-	80	<0.5	-	-	-	-	-
1,2-Dichloroethane (µg/L)	EP6-06	0.5	0.5	<0.5	-	-	-	-	-
	EP6-07	-	0.5	-	-	<0.5	<0.5	-	-
	EP6-09	0.5	0.5	-	-	-	-	<0.5	<0.5
	K6-01S	0.5	0.5	-	<0.5	-	-	-	-
	K6-19	0.5	0.5	<0.5	-	-	-	-	-
	K6-35	-	0.5	<0.5	-	-	-	-	-
cis-1,2-Dichloroethene (µg/L)	EP6-06	0.5	6	<0.5	-	-	-	-	-
	EP6-07	-	6	-	-	<0.5	<0.5	-	-
	EP6-09	0.5	6	-	-	-	-	<0.5	<0.5
	K6-01S	7	6	-	2.1	-	-	-	-
	K6-19	0.5	6	<0.5	-	-	-	-	-
	K6-35	-	6	<0.5	-	-	-	-	-
Methylene chloride (µg/L)	EP6-06	1	5	<1	-	-	-	-	-
	EP6-07	-	5	-	-	<1	<1	-	-
	EP6-09	1	5	-	-	-	-	<1	<1
	K6-01S	1	5	-	<1	-	-	-	-
	K6-19	1	5	<1	-	-	-	-	-
	K6-35	-	5	<1	-	-	-	-	-
Tetrachloroethene (µg/L)	EP6-06	0.5	5	<0.5	-	-	-	-	-
	EP6-07	-	5	-	-	<0.5	<0.5	-	-
	EP6-09	0.5	5	-	-	-	-	<0.5	<0.5
	K6-01S	0.5	5	-	<0.5	-	-	-	-
	K6-19	0.5	5	<0.5	-	-	-	-	-
	K6-35	-	5	<0.5	-	-	-	-	-
1,1,1-Trichloroethane (µg/L)	EP6-06	0.5	200	<0.5	-	-	-	-	-
	EP6-07	-	200	-	-	<0.5	<0.5	-	-
	EP6-09	0.5	200	-	-	-	-	<0.5	<0.5
	K6-01S	0.5	200	-	<0.5	-	-	-	-
	K6-19	0.5	200	<0.5	-	-	-	-	-
	K6-35	-	200	<0.5	-	-	-	-	-
Trichloroethene (TCE) (µg/L)	EP6-06	0.5	5	<0.5	-	-	-	-	-
	EP6-07	-	5	-	-	<0.5	<0.5	-	-
	EP6-09	17	5	-	-	-	-	3.2	3
	K6-01S	1.5	5	-	<0.5	-	-	-	-
	K6-19	13	5	2.3	-	-	-	-	-
	K6-35	-	5	<0.5	-	-	-	-	-

Table 2.3-3. Pit 6 Landfill detection monitoring physical parameters for First Semester 2015.

Location	Date	Field Temperature (Degrees C)	Field pH (Units)	Field Specific Conductance (µmhos/cm)	Total dissolved solids (TDS) (mg/L)
EP6-06	1/7/15	20	8.61	1,241	840 D
EP6-07	1/12/15	20.1	7.46	1,056	740 D
EP6-07	1/12/15 DUP	-	-	-	730 D
EP6-09	1/14/15	20	7.69	1,671	1,200 D
EP6-09	1/14/15 DUP	-	-	-	1,200 D
K6-01S	1/8/15	21.6	8.08	3,279	2,600 D
K6-19	1/7/15	21	8.41	1,224	810 D
K6-35	1/7/15	20.2	8.61	1,042	710 D

Table 2.4-1. Building 815-Source (815-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
815-SRC	January	NA	0	NA	0
	February	NA	0	NA	0
	March	NA	615	NA	38,052
	April	NA	581	NA	38,637
	May	NA	575	NA	30,121
	June	NA	656	NA	61,464
Total		NA	2,427	NA	168,274

Table 2.4-2. Building 815-Proximal (815-PRX) volumes of ground water and soil vapor extracted and discharged, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
815-PRX	January	NA	0	NA	0
	February	NA	0	NA	0
	March	NA	526	NA	60,094
	April	NA	681	NA	69,384
	May	NA	532	NA	54,464
	June	NA	773	NA	80,052
Total		NA	2,512	NA	263,994

Table 2.4-3. Building 815-Distal Site Boundary (815-DSB) volumes of ground water and soil vapor extracted and discharged, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
815-DSB	January	NA	582	NA	134,608
	February	NA	489	NA	111,103
	March	NA	763	NA	176,481
	April	NA	718	NA	158,022
	May	NA	501	NA	114,254
	June	NA	737	NA	163,981
Total		NA	3,790	NA	858,449

Table 2.4-4. Building 817-Source (817-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
817-SRC	January	NA	0	NA	0
	February	NA	0	NA	0
	March	NA	6	NA	308
	April	NA	0	NA	0
	May	NA	4	NA	238
	June	NA	4	NA	247
Total		NA	14	NA	793

Table 2.4-5. Building 817-Proximal (817-PRX) volumes of ground water and soil vapor extracted and discharged, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
817-PRX	January	NA	0	NA	0
	February	NA	0	NA	0
	March	NA	8	NA	1,057
	April	NA	0	NA	0
	May	NA	197	NA	14,629
	June	NA	510	NA	43,617
Total		NA	715	NA	59,303

Table 2.4-6. Building 829-Source (829-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
829-SRC	January	NA	0	NA	0
	February	NA	0	NA	0
	March	NA	671	NA	51
	April	NA	744	NA	94
	May	NA	529	NA	68
	June	NA	838	NA	82
Total		NA	2,782	NA	295

Table 2.4-7. High Explosives Process Area Operable Unit volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Carbon tetra-chloride (µg/L)	Chloro-form (µg/L)	1,1-DCA (µg/L)	1,2-DCA (µg/L)	1,1-DCE (µg/L)	1,1,1-TCA (µg/L)	1,1,2-TCA (µg/L)	Freon 11 (µg/L)	Freon 113 (µg/L)	Vinyl chloride (µg/L)
Building 815-Distal Site Boundary															
815-DSB-I	**1/6/15**	**5.2**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-DSB-I	**4/8/15**	**5.9**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-DSB-E	**1/6/15**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-DSB-E	**2/10/15**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-DSB-E	**3/3/15**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-DSB-E	**4/8/15**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-DSB-E	**5/5/15**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-DSB-E	**6/2/15**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
Building 815-Proximal[a]															
815-PRX-I	**3/10/15**	**21**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-PRX-I	**4/7/15**	**25**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-PRX-E	**3/10/15**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-PRX-E	**4/7/15**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-PRX-E	**5/4/15**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-PRX-E	**6/1/15**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
Building 815-Source[a]															
815-SRC-I	**3/9/15**	**3.9**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-SRC-I	**4/8/15**	**3.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-SRC-E	**3/9/15**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-SRC-E	**4/8/15**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-SRC-E	**5/5/15**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-SRC-E	**6/2/15**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
Building 817-Proximal[a, b]															
817-PRX-I	**3/11/15**	**14**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
817-PRX-I	**5/11/15**	**8.4**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
817-PRX-E	**3/11/15**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
817-PRX-E	**5/11/15**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
817-PRX-E	**6/1/15**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**

Table 2.4-7. High Explosives Process Area Operable Unit volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Carbon tetra-chloride (µg/L)	Chloro-form (µg/L)	1,1-DCA (µg/L)	1,2-DCA (µg/L)	1,1-DCE (µg/L)	1,1,1-TCA (µg/L)	1,1,2-TCA (µg/L)	Freon 11 (µg/L)	Freon 113 (µg/L)	Vinyl chloride (µg/L)
Building 817-Source[a, c]															
817-SRC-I	3/9/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-SRC-I	5/12/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-SRC-E	3/9/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-SRC-E	5/12/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-SRC-E	6/1/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Building 829-Source[a]															
829-SRC-I	3/16/15	20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
829-SRC-I	4/9/15	23	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:

[a] No samples collected in January or February due to shut down for freeze protection.

[b] No samples collected in April due to problems with injection wells.

[c] No samples collected in April due to problems with extraction well.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.4-7 (Con't). Analyte detected but not reported in main table.

Location	Date	Detection frequency
Building 815-Distal Site Boundary		
815-DSB-I	**1/6/15**	**0 of 18**
815-DSB-I	**4/8/15**	**0 of 18**
815-DSB-E	**1/6/15**	**0 of 18**
815-DSB-E	**2/10/15**	**0 of 18**
815-DSB-E	**3/3/15**	**0 of 18**
815-DSB-E	**4/8/15**	**0 of 18**
815-DSB-E	**5/5/15**	**0 of 18**
815-DSB-E	**6/2/15**	**0 of 18**
Building 815-Proximal[a]		
815-PRX-I	**3/10/15**	**0 of 18**
815-PRX-I	**4/7/15**	**0 of 18**
815-PRX-E	**3/10/15**	**0 of 18**
815-PRX-E	**4/7/15**	**0 of 18**
815-PRX-E	**5/4/15**	**0 of 18**
815-PRX-E	**6/1/15**	**0 of 18**
Building 815-Source[a]		
815-SRC-I	**3/9/15**	**0 of 18**
815-SRC-I	**4/8/15**	**0 of 18**
815-SRC-E	**3/9/15**	**0 of 18**
815-SRC-E	**4/8/15**	**0 of 18**
815-SRC-E	**5/5/15**	**0 of 18**
815-SRC-E	**6/2/15**	**0 of 18**
Building 817-Proximal[a,b]		
817-PRX-I	**3/11/15**	**0 of 18**
817-PRX-I	**5/11/15**	**0 of 18**
817-PRX-E	**3/11/15**	**0 of 18**
817-PRX-E	**5/11/15**	**0 of 18**
817-PRX-E	**6/1/15**	**0 of 18**
Building 817-Source[a,c]		
817-SRC-I	**3/9/15**	**0 of 18**
817-SRC-I	**5/12/15**	**0 of 18**
817-SRC-E	**3/9/15**	**0 of 18**
817-SRC-E	**5/12/15**	**0 of 18**
817-SRC-E	**6/1/15**	**0 of 18**
Building 829-Source[a]		
829-SRC-I	**3/16/15**	**0 of 18**
829-SRC-I	**4/9/15**	**0 of 18**

Notes:

[a] **No samples collected in January or February due to shut down for freeze protection.**

[b] **No samples collected in April due to problems with injection wells.**

[c] **No samples collected in April due to problems with extraction well.**

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.4-8. High Explosives Process Area Operable Unit nitrate and perchlorate in ground water extraction and treatment system influent and effluent.

Location	Date	Nitrate as NO3 (mg/L)	Perchlorate (µg/L)
Building 815-Distal Site Boundary[a]			
815-DSB-I	1/6/15	<0.5	-
815-DSB-I	4/8/15	<1 D	-
Building 815-Proximal[b, c]			
815-PRX-I	3/10/15	-	5.9
815-PRX-I	4/7/15	-	6.2
815-PRX-E	3/10/15	-	<4
815-PRX-E	4/7/15	-	<4
815-PRX-E	5/4/15	-	<4
815-PRX-E	6/1/15	-	<4
Building 815-Source[b, c]			
815-SRC-I	3/9/15	-	4.6
815-SRC-I	4/8/15	-	6.2
815-SRC-E	3/9/15	-	<4
815-SRC-E	4/8/15	-	<4
815-SRC-E	5/5/15	-	<4
815-SRC-E	6/2/15	-	<4
Building 817-Proximal[b, c, d]			
817-PRX-I	3/11/15	-	18
817-PRX-I	5/11/15	-	23 D
817-PRX-E	3/11/15	-	<4
817-PRX-E	5/11/15	-	<4
817-PRX-E	6/1/15	-	<4
Building 817-Source[b, c, e]			
817-SRC-I	3/9/15	88 D	26 D
817-SRC-I	5/12/15	-	23 D
817-SRC-E	3/9/15	-	<4
817-SRC-E	5/12/15	-	<4
817-SRC-E	6/1/15	-	<4
Building 829-Source[a, f]			
829-SRC-I	3/16/15	71 D	11
829-SRC-I	4/9/15	73 D	13

Notes:

[a] No nitrate or perchlorate monitoring required; nitrate measured for trend analysis only.

[b] No nitrate monitoring required.

[c] No samples collected in January or February due to shut down for freeze protection.

[d] No samples collected in April due to problems with injection wells.

[e] No samples collected in April due to problems with extraction well.

[f] No effluent samples collected due to ground water treatment being conducted at 815-SRC.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.4-9. High Explosives Process Area Operable Unit high explosive compounds in ground water extraction and treatment system influent and effluent.

Location	Date	1,3,5-Trinitro-benzene (µg/L)	1,3-Dinitro-benzene (µg/L)	2,4-Dinitro-toluene (µg/L)	2,6-Dinitro-toluene (µg/L)	2-Amino-4,6-dinitro-toluene (µg/L)	2-Nitro-toluene (µg/L)	3-Nitro-toluene (µg/L)	4-Amino-2,6-dinitro-toluene (µg/L)	4-Nitro-toluene (µg/L)	HMX (µg/L)	Nitro-benzene (µg/L)	RDX (µg/L)	TNT (µg/L)
Building 815-Distal Site Boundry[a]														
Building 815-Proximal[a]														
Building 815-Source[b]														
815-SRC-I	3/9/15	<2 O	<2 O	<2	<2	<2	<2	<2	<2	<2	11	<2 O	47	<2 O
815-SRC-I	4/8/15	<2 O	<2 O	<2 O	<2 O	<2 O	<2 O	<2 O	<2 O	<2 O	18	<2 O	37 O	<2 O
815-SRC-E	3/9/15	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
815-SRC-E	4/8/15	<2 O	<2 O	<2 O	<2 O	<2 O	<2 O	<2 O	<2 O	<2 O	<1 O	<2 O	<1 O	<2 O
815-SRC-E	5/5/15	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
815-SRC-E	6/2/15	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
Building 817-Proximal[b, c]														
817-PRX-I	3/11/15	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	8.9	<2
817-PRX-I	5/11/15	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	7	<2
817-PRX-E	3/11/15	<2 O	<2 O	<2 O	<2 O	<2 O	<2 O	<2 O	<2 O	<2 O	<1 O	<2 O	<1 O	<2 O
817-PRX-E	5/11/15	<2 D	<2 D	<2 D	<2 D	<2 D	<2 D	<2 D	<2 D	<2 D	<1 D	<2 D	<1 D	<2 D
817-PRX-E	6/1/15	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
Building 817-Source[b, d]														
817-SRC-I	3/9/15	<2	<2	<2	<2	<2	<2	<2	<2	<2	35	<2	40	<2
817-SRC-I	5/12/15	<2	<2	<2	<2	<2	<2	<2	<2	<2	12	<2	39	<2
817-SRC-E	3/9/15	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-SRC-E	5/12/15	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-SRC-E	6/1/15	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
Building 829-Source[a]														
829-SRC-I	3/16/15	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2

Notes:

[a] No high explosive compound monitoring required.

[b] No samples collected in January or February due to shut down for freeze protection.

[c] No samples collected in April due to problems with injection wells.

[d] No samples collected in April due to problems with extraction well.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.4-10. High Explosives Process Area Operable Unit treatment facility sampling and analysis plan.

Sample location	Sample identification	Parameter	Frequency
815-SRC GWTS			
Influent Port	**815-SRC-I**	**VOCs**	**Quarterly**
		HE Compounds	**Quarterly**
		Perchlorate	**Quarterly**
Effluent Port	**815-SRC-E**	**VOCs**	**Monthly**
		HE Compounds	**Monthly**
		Perchlorate	**Monthly**
		pH	**Monthly**
815-PRX GWTS			
Influent Port	**815-PRX-I**	**VOCs**	**Quarterly**
		Perchlorate	**Quarterly**
Effluent Port	**815-PRX-E**	**VOCs**	**Monthly**
		HE Compounds	**Quarterly**
		Perchlorate	**Monthly**
		pH	**Monthly**
815-DSB GWTS			
Influent Port	**815-DSB-I**	**VOCs**	**Quarterly**
Effluent Port	**815-DSB-E**	**VOCs**	**Monthly**
		pH	**Monthly**
817-SRC GWTS			
Influent Port	**W-817-01-817-SRC-I**	**VOCs**	**Quarterly**
		HE Compounds	**Quarterly**
		Perchlorate	**Quarterly**
Effluent Port	**817-SRC-E**	**VOCs**	**Monthly**
		HE Compounds	**Monthly**
		Perchlorate	**Monthly**
		pH	**Monthly**

Table 2.4-10 (Con't.). High Explosives Process Area Operable Unit treatment facility sampling and analysis plans.

Sample location	Sample identification	Parameter	Frequency
817-PRX GWTS			
Influent Port	**817-PRX-I**	**VOCs**	**Quarterly**
		HE Compounds	**Quarterly**
		Perchlorate	**Quarterly**
Effluent Port	**817-PRX-E**	**VOCs**	**Monthly**
		HE Compounds	**Monthly**
		Perchlorate	**Monthly**
		pH	**Monthly**
829-SRC GWTS			
Influent Port	**W-829-06-829-SRC-I**	**VOCs**	**Quarterly**
		Perchlorate	**Quarterly**
		Nitrate	**Quarterly**
Effluent Port[a]	**829-SRC-E**	**NA**	**NA**

Notes:

[a] Effluent monitoring no longer required due to extracted water being treated at 815-SRC GWTS.

One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	3		
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	3		
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	3		
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	4		
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	4		
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	4		
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	3		
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	3		
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	3		
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	4		
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	4		
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	4		
GALLO1	WS	Tnbs2	Q	WGMG	E502.2:ALL	1	Y	
GALLO1	WS	Tnbs2	Q	WGMG	E524.2MOD:ALL	2	Y	
GALLO1	WS	Tnbs2	Q	WGMG	E524.2MOD:ALL	3		
GALLO1	WS	Tnbs2	Q	WGMG	E524.2MOD:ALL	4		
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E624MOD:ALL	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E624MOD:ALL	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E624MOD:ALL	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E624MOD:ALL	3		
GALLO1	WS	Tnbs2	M	CMP	E624MOD:ALL	3		
GALLO1	WS	Tnbs2	M	CMP	E624MOD:ALL	3		
GALLO1	WS	Tnbs2	M	CMP	E624MOD:ALL	4		
GALLO1	WS	Tnbs2	M	CMP	E624MOD:ALL	4		
GALLO1	WS	Tnbs2	M	CMP	E624MOD:ALL	4		
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	2	Y	

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	3		
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	3		
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	3		
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	4		
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	4		
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	4		
SPRING14	SPR	Tpsg-Tps	O	CMP	E300.0:NO3	1	N	Dry.
SPRING14	SPR	Tpsg-Tps	O	CMP	E300.0:PERC	1	N	Dry.
SPRING14	SPR	Tpsg-Tps	O	CMP	E601:ALL	1	N	Dry.
SPRING14	SPR	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	N	Dry.
SPRING5	SPR	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Dry.
SPRING5	SPR	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Dry.
SPRING5	SPR	Tpsg-Tps	S	CMP	E601:ALL	1	N	Dry.
SPRING5	SPR	Tpsg-Tps	S	CMP	E624MOD:ALL	3		
SPRING5	SPR	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Dry.
W-35B-01	GW	Qal/WBR	S	CMP	E300.0:NO3	1	Y	
W-35B-01	GW	Qal/WBR	S	CMP	E300.0:NO3	3		
W-35B-01	GW	Qal/WBR	S	CMP	E300.0:PERC	1	Y	
W-35B-01	GW	Qal/WBR	S	CMP	E300.0:PERC	3		
W-35B-01	GW	Qal/WBR	Q	CMP	E601:ALL	1	Y	
W-35B-01	GW	Qal/WBR	Q	CMP	E624MOD:ALL	2	Y	
W-35B-01	GW	Qal/WBR	Q	CMP	E624MOD:ALL	3		
W-35B-01	GW	Qal/WBR	Q	CMP	E624MOD:ALL	4		
W-35B-01	GW	Qal/WBR	S	CMP	E8330LOW:ALL	1	Y	
W-35B-01	GW	Qal/WBR	S	CMP	E8330LOW:ALL	3		
W-35B-02	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-35B-02	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-35B-02	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-35B-02	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-35B-02	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-35B-02	GW	Tnbs2	Q	CMP	E624MOD:ALL	2	Y	
W-35B-02	GW	Tnbs2	Q	CMP	E624MOD:ALL	3		
W-35B-02	GW	Tnbs2	Q	CMP	E624MOD:ALL	4		
W-35B-02	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-35B-02	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-35B-03	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-35B-03	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-35B-03	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-35B-03	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-35B-03	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-35B-03	GW	Tnbs2	Q	CMP	E624MOD:ALL	2	Y	
W-35B-03	GW	Tnbs2	Q	CMP	E624MOD:ALL	3		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-35B-03	GW	Tnbs2	Q	CMP	E624MOD:ALL	4		
W-35B-03	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-35B-03	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-35B-04	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-35B-04	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-35B-04	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-35B-04	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-35B-04	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-35B-04	GW	Tnbs2	Q	CMP	E624MOD:ALL	2	Y	
W-35B-04	GW	Tnbs2	Q	CMP	E624MOD:ALL	3		
W-35B-04	GW	Tnbs2	Q	CMP	E624MOD:ALL	4		
W-35B-04	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-35B-04	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-35B-05	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-35B-05	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-35B-05	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-35B-05	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-35B-05	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-35B-05	GW	Tnbs2	Q	CMP	E624MOD:ALL	2	Y	
W-35B-05	GW	Tnbs2	Q	CMP	E624MOD:ALL	3		
W-35B-05	GW	Tnbs2	Q	CMP	E624MOD:ALL	4		
W-35B-05	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-35B-05	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-35C-01	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-35C-01	PTMW	Tpsg-Tps	O	CMP	E300.0:PERC	1	Y	
W-35C-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-35C-01	PTMW	Tpsg-Tps	S	CMP	E624MOD:ALL	3		
W-35C-01	PTMW	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	Y	
W-35C-02	PTMW	Tnbs1	O	CMP	E300.0:NO3	1	Y	
W-35C-02	PTMW	Tnbs1	O	CMP	E300.0:PERC	1	Y	
W-35C-02	PTMW	Tnbs1	S	CMP	E601:ALL	1	Y	
W-35C-02	PTMW	Tnbs1	S	CMP	E624MOD:ALL	3		
W-35C-02	PTMW	Tnbs1	A	CMP	E8330LOW:ALL	1	Y	
W-35C-04	EW	Tnbs2	Q	DIS-TF	AS:UISO	1	Y	
W-35C-04	EW	Tnbs2	O	CMP-TF	E300.0:NO3	1	Y	
W-35C-04	EW	Tnbs2	O	CMP-TF	E300.0:PERC	1	Y	
W-35C-04	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-35C-04	EW	Tnbs2	S	DIS-TF	E624MOD:ALL	2	Y	
W-35C-04	EW	Tnbs2	S	CMP-TF	E624MOD:ALL	3		
W-35C-04	EW	Tnbs2	S	DIS-TF	E624MOD:ALL	4		
W-35C-04	EW	Tnbs2	O	CMP-TF	E8330LOW:ALL	1	Y	
W-35C-05	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-35C-05	PTMW	Tpsg-Tps	O	CMP	E300.0:PERC	1	Y	
W-35C-05	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-35C-05	PTMW	Tpsg-Tps	S	CMP	E624MOD:ALL	3		
W-35C-05	PTMW	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	Y	
W-35C-06	PTMW	Qal/WBR	E	CMP	E300.0:NO3	1		To be sampled in 2016.
W-35C-06	PTMW	Qal/WBR	E	CMP	E300.0:PERC	1		To be sampled in 2016.
W-35C-06	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
W-35C-06	PTMW	Qal/WBR	S	CMP	E624MOD:ALL	3		
W-35C-06	PTMW	Qal/WBR	E	CMP	E8330LOW:ALL	1		To be sampled in 2016.
W-35C-07	PTMW	Tnsc2	E	CMP	E300.0:NO3	1		To be sampled in 2016.
W-35C-07	PTMW	Tnsc2	E	CMP	E300.0:PERC	1		To be sampled in 2016.
W-35C-07	PTMW	Tnsc2	S	CMP	E601:ALL	1	Y	
W-35C-07	PTMW	Tnsc2	S	CMP	E624MOD:ALL	3		
W-35C-07	PTMW	Tnsc2	E	CMP	E8330LOW:ALL	1		To be sampled in 2016.
W-35C-08	PTMW	Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-35C-08	PTMW	Tnsc2	A	CMP	E300.0:PERC	1	Y	
W-35C-08	PTMW	Tnsc2	S	CMP	E601:ALL	1	Y	
W-35C-08	PTMW	Tnsc2	S	CMP	E624MOD:ALL	3		
W-35C-08	PTMW	Tnsc2	O	CMP	E8330LOW:ALL	1	Y	
W-4A	PTMW	Tnbs2	E	CMP	E300.0:NO3	1		To be sampled in 2016.
W-4A	PTMW	Tnbs2	E	CMP	E300.0:PERC	1		To be sampled in 2016.
W-4A	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-4A	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-4A	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1		To be sampled in 2016.
W-4AS	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-4AS	PTMW	Tpsg-Tps	E	CMP	E300.0:PERC	1		To be sampled in 2016.
W-4AS	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-4AS	PTMW	Tpsg-Tps	S	CMP	E624MOD:ALL	3		
W-4AS	PTMW	Tpsg-Tps	E	CMP	E8330LOW:ALL	1		To be sampled in 2016.
W-4B	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	Y	
W-4B	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	Y	
W-4B	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-4B	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-4B	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	Y	
W-4C	GW	Tnsc1b	S	CMP	E300.0:NO3	1	Y	
W-4C	GW	Tnsc1b	S	CMP	E300.0:NO3	3		
W-4C	GW	Tnsc1b	S	CMP	E300.0:PERC	1	Y	
W-4C	GW	Tnsc1b	S	CMP	E300.0:PERC	3		
W-4C	GW	Tnsc1b	Q	CMP	E601:ALL	1	Y	
W-4C	GW	Tnsc1b	Q	CMP	E624MOD:ALL	2	Y	
W-4C	GW	Tnsc1b	Q	CMP	E624MOD:ALL	3		
W-4C	GW	Tnsc1b	Q	CMP	E624MOD:ALL	4		
W-6BD	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-6BD	PTMW	Tpsg-Tps	E	CMP	E300.0:PERC	1		To be sampled in 2016.
W-6BD	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-6BD	PTMW	Tpsg-Tps	S	CMP	E624MOD:ALL	3		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-6BD	PTMW	Tpsg-Tps	E	CMP	E8330LOW:ALL	1		To be sampled in 2016.
W-6BS	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
W-6BS	PTMW	Qal/WBR	E	CMP	E300.0:PERC	1		To be sampled in 2016.
W-6BS	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
W-6BS	PTMW	Qal/WBR	S	CMP	E624MOD:ALL	3		
W-6BS	PTMW	Qal/WBR	E	CMP	E8330LOW:ALL	1		To be sampled in 2016.
W-6CD	PTMW	Tnbs2	E	CMP	E300.0:NO3	1		To be sampled in 2016.
W-6CD	PTMW	Tnbs2	E	CMP	E300.0:PERC	1		To be sampled in 2016.
W-6CD	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-6CD	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-6CD	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1		To be sampled in 2016.
W-6CI	PTMW	Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-6CI	PTMW	Tnsc2	A	CMP	E300.0:PERC	1	Y	
W-6CI	PTMW	Tnsc2	S	CMP	E601:ALL	1	Y	
W-6CI	PTMW	Tnsc2	S	CMP	E624MOD:ALL	3		
W-6CI	PTMW	Tnsc2	A	CMP	E8330LOW:ALL	1	Y	
W-6CS	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-6CS	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-6CS	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-6CS	PTMW	Tpsg-Tps	S	CMP	E624MOD:ALL	3		
W-6CS	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-6EI	PTMW	Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-6EI	PTMW	Tnsc2	A	CMP	E300.0:PERC	1	Y	
W-6EI	PTMW	Tnsc2	S	CMP	E601:ALL	1	Y	
W-6EI	PTMW	Tnsc2	S	CMP	E624MOD:ALL	3		
W-6EI	PTMW	Tnsc2	A	CMP	E8330LOW:ALL	1	Y	
W-6ER	EW	Tnbs2	Q	DIS-TF	AS:UISO	1	Y	
W-6ER	EW	Tnbs2	O	CMP-TF	E300.0:NO3	1	Y	
W-6ER	EW	Tnbs2	O	CMP-TF	E300.0:PERC	1	Y	
W-6ER	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-6ER	EW	Tnbs2	S	DIS-TF	E624MOD:ALL	2	Y	
W-6ER	EW	Tnbs2	S	CMP-TF	E624MOD:ALL	3		
W-6ER	EW	Tnbs2	S	DIS-TF	E624MOD:ALL	4		
W-6ER	EW	Tnbs2	O	CMP-TF	E8330LOW:ALL	1	Y	
W-6ER	EW	Tnbs2	1	DIS	EXCESSN2:ALL	2	Y	
W-6ES	PTMW	Qal/WBR	E	CMP	E300.0:NO3	1		To be sampled in 2016.
W-6ES	PTMW	Qal/WBR	E	CMP	E300.0:PERC	1		To be sampled in 2016.
W-6ES	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
W-6ES	PTMW	Qal/WBR	S	CMP	E624MOD:ALL	3		
W-6ES	PTMW	Qal/WBR	E	CMP	E8330LOW:ALL	1		To be sampled in 2016.
W-6F	PTMW	Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-6F	PTMW	Tnsc2	A	CMP	E300.0:PERC	1	Y	
W-6F	PTMW	Tnsc2	S	CMP	E601:ALL	1	Y	
W-6F	PTMW	Tnsc2	S	CMP	E624MOD:ALL	3		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-6F	PTMW	Tnsc2	A	CMP	E8330LOW:ALL	1	Y	
W-6G	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-6G	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-6G	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-6G	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-6G	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-6H	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-6H	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-6H	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-6H	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-6H	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-6H	GW	Tnbs2	Q	CMP	E624MOD:ALL	2	Y	
W-6H	GW	Tnbs2	Q	CMP	E624MOD:ALL	3		
W-6H	GW	Tnbs2	Q	CMP	E624MOD:ALL	4		
W-6H	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-6H	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-6I	PTMW	Tpsg-Tps	O	CMP	E300.0:NO3	1	Y	
W-6I	PTMW	Tpsg-Tps	O	CMP	E300.0:PERC	1	Y	
W-6I	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-6I	PTMW	Tpsg-Tps	S	CMP	E624MOD:ALL	3		
W-6I	PTMW	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	Y	
W-6J	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-6J	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-6J	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-6J	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-6J	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-6J	GW	Tnbs2	Q	CMP	E624MOD:ALL	2	Y	
W-6J	GW	Tnbs2	Q	CMP	E624MOD:ALL	3		
W-6J	GW	Tnbs2	Q	CMP	E624MOD:ALL	4		
W-6J	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-6J	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-6K	PTMW	Tnbs2	E	CMP	E300.0:NO3	1		To be sampled in 2016.
W-6K	PTMW	Tnbs2	E	CMP	E300.0:PERC	1		To be sampled in 2016.
W-6K	PTMW	Tnbs2	S	CMP	E601:ALL	1	N	Insufficient water.
W-6K	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-6K	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1		To be sampled in 2016.
W-6L	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	N	Insufficient water.
W-6L	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	N	Insufficient water.
W-6L	PTMW	Tnbs2	S	CMP	E601:ALL	1	N	Insufficient water.
W-6L	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-6L	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	Insufficient water.
W-806-06A	PTMW	Tnsc1b	O	CMP	E300.0:NO3	1	N	Insufficient water.
W-806-06A	PTMW	Tnsc1b	O	CMP	E300.0:PERC	1	N	Insufficient water.
W-806-06A	PTMW	Tnsc1b	O	CMP	E601:ALL	1	N	Insufficient water.

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-806-06A	PTMW	Tnsc1b	O	CMP	E8330LOW:ALL	1	N	Insufficient water.
W-806-07	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	N	Insufficient water.
W-806-07	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	N	Insufficient water.
W-806-07	PTMW	Tnbs2	O	CMP	E601:ALL	1	N	Insufficient water.
W-806-07	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	Insufficient water.
W-808-01	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-808-01	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-808-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-808-01	PTMW	Tpsg-Tps	S	CMP	E624MOD:ALL	3		
W-808-01	PTMW	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	Y	
W-808-02	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Dry
W-808-02	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Dry
W-808-02	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	N	Dry
W-808-02	PTMW	Tpsg-Tps	S	CMP	E624MOD:ALL	3		
W-808-02	PTMW	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	N	Dry
W-808-03	PTMW	UTnbs1	A	CMP	E300.0:NO3	1	Y	
W-808-03	PTMW	UTnbs1	A	CMP	E300.0:PERC	1	Y	
W-808-03	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-808-03	PTMW	UTnbs1	S	CMP	E624MOD:ALL	3		
W-808-03	PTMW	UTnbs1	O	CMP	E8330LOW:ALL	1	Y	
W-809-01	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-809-01	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-809-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-809-01	PTMW	Tpsg-Tps	S	CMP	E624MOD:ALL	3		
W-809-01	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-809-02	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-809-02	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-809-02	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-809-02	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-809-02	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-809-03	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-809-03	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-809-03	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-809-03	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-809-03	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-809-04	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Dry.
W-809-04	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Dry.
W-809-04	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	N	Dry.
W-809-04	PTMW	Tpsg-Tps	S	CMP	E624MOD:ALL	3		
W-809-04	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Dry.
W-810-01	PTMW	UTnbs1	A	CMP	E300.0:NO3	1	Y	
W-810-01	PTMW	UTnbs1	A	CMP	E300.0:PERC	1	Y	
W-810-01	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-810-01	PTMW	UTnbs1	S	CMP	E624MOD:ALL	3		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-810-01	PTMW	UTnbs1	A	CMP	E8330LOW:ALL	1	Y	
W-814-01	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-814-01	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-814-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-814-01	PTMW	Tpsg-Tps	S	CMP	E624MOD:ALL	3		
W-814-01	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-814-02	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-814-02	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-814-02	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-814-02	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-814-02	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-814-03	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Dry.
W-814-03	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Dry.
W-814-03	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	N	Dry.
W-814-03	PTMW	Tpsg-Tps	S	CMP	E624MOD:ALL	3		
W-814-03	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Dry.
W-814-04	GW	Tnsc1b	S	CMP	E300.0:NO3	1	Y	
W-814-04	GW	Tnsc1b	S	CMP	E300.0:NO3	3		
W-814-04	GW	Tnsc1b	S	CMP	E300.0:PERC	1	Y	
W-814-04	GW	Tnsc1b	S	CMP	E300.0:PERC	3		
W-814-04	GW	Tnsc1b	Q	CMP	E601:ALL	1	Y	
W-814-04	GW	Tnsc1b	Q	CMP	E624MOD:ALL	2	Y	
W-814-04	GW	Tnsc1b	Q	CMP	E624MOD:ALL	3		
W-814-04	GW	Tnsc1b	Q	CMP	E624MOD:ALL	4		
W-814-2138	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-814-2138	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-814-2138	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-814-2138	PTMW	Tpsg-Tps	S	CMP	E624MOD:ALL	3		
W-814-2138	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-815-01	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Dry.
W-815-01	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Dry.
W-815-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	N	Dry.
W-815-01	PTMW	Tpsg-Tps	S	CMP	E624MOD:ALL	3		
W-815-01	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Dry.
W-815-02	EW	Tnbs2	Q	DIS-TF	AS:UISO	1	Y	
W-815-02	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	Y	
W-815-02	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	Y	
W-815-02	EW	Tnbs2	A	DIS-TF	E300.0:PERC	3		
W-815-02	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-815-02	EW	Tnbs2	S	DIS-TF	E624MOD:ALL	2	Y	
W-815-02	EW	Tnbs2	S	CMP-TF	E624MOD:ALL	3		
W-815-02	EW	Tnbs2	S	DIS-TF	E624MOD:ALL	4		
W-815-02	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	Y	
W-815-02	EW	Tnbs2	A	DIS-TF	E8330LOW:ALL	3		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-815-03	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Dry.
W-815-03	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Dry.
W-815-03	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	N	Dry.
W-815-03	PTMW	Tpsg-Tps	S	CMP	E624MOD:ALL	3		
W-815-03	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Dry.
W-815-04	EW	Tnbs2	Q	DIS-TF	AS:UISO	1	Y	
W-815-04	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	Y	
W-815-04	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	Y	
W-815-04	EW	Tnbs2	A	DIS-TF	E300.0:PERC	3		
W-815-04	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-815-04	EW	Tnbs2	S	DIS-TF	E624MOD:ALL	2	Y	
W-815-04	EW	Tnbs2	S	CMP-TF	E624MOD:ALL	3		
W-815-04	EW	Tnbs2	S	DIS-TF	E624MOD:ALL	4		
W-815-04	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	Y	
W-815-04	EW	Tnbs2	A	DIS-TF	E8330LOW:ALL	3		
W-815-05	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Restricted access.
W-815-05	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Restricted access.
W-815-05	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	N	Restricted access.
W-815-05	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Restricted access.
W-815-06	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-815-06	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-815-06	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-815-06	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-815-06	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-815-07	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-815-07	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-815-07	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-815-07	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-815-07	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-815-08	PTMW	UTnbs1	E	CMP	E300.0:NO3	1		To be sampled in 2016.
W-815-08	PTMW	UTnbs1	E	CMP	E300.0:PERC	1		To be sampled in 2016.
W-815-08	PTMW	UTnbs1	A	CMP	E601:ALL	1	Y	
W-815-08	PTMW	UTnbs1	E	CMP	E8330LOW:ALL	1		To be sampled in 2016.
W-815-1928	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-815-1928	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Insufficient water.
W-815-1928	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	N	Insufficient water.
W-815-1928	PTMW	Tpsg-Tps	S	CMP	E624MOD:ALL	3		
W-815-1928	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Insufficient water.
W-815-2110	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-815-2110	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-815-2110	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-815-2110	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-815-2110	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-815-2110	GW	Tnbs2	Q	CMP	E624MOD:ALL	2	Y	

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-815-2110	GW	Tnbs2	Q	CMP	E624MOD:ALL	3		
W-815-2110	GW	Tnbs2	Q	CMP	E624MOD:ALL	4		
W-815-2110	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-815-2110	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-815-2111	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-815-2111	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-815-2111	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-815-2111	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-815-2111	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-815-2111	GW	Tnbs2	Q	CMP	E624MOD:ALL	2	Y	
W-815-2111	GW	Tnbs2	Q	CMP	E624MOD:ALL	3		
W-815-2111	GW	Tnbs2	Q	CMP	E624MOD:ALL	4		
W-815-2111	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-815-2111	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-815-2111	GW	Tnbs2	1	DIS	EXCESSN2:ALL	2	Y	
W-815-2217	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	Y	
W-815-2217	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	Y	
W-815-2217	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-815-2217	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-815-2217	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	Y	
W-815-2608	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	Y	
W-815-2608	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	Y	
W-815-2608	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-815-2608	EW	Tnbs2	S	DIS-TF	E624MOD:ALL	2	Y	
W-815-2608	EW	Tnbs2	S	CMP-TF	E624MOD:ALL	3		
W-815-2608	EW	Tnbs2	S	DIS-TF	E624MOD:ALL	4		
W-815-2608	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	Y	
W-815-2621	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-815-2621	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-815-2621	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-815-2621	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-815-2621	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-815-2803	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	Y	
W-815-2803	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	Y	
W-815-2803	EW	Tnbs2	A	DIS-TF	E300.0:PERC	3		
W-815-2803	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-815-2803	EW	Tnbs2	S	DIS-TF	E624MOD:ALL	2	Y	
W-815-2803	EW	Tnbs2	S	CMP-TF	E624MOD:ALL	3		
W-815-2803	EW	Tnbs2	S	DIS-TF	E624MOD:ALL	4		
W-815-2803	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	Y	
W-815-2803	EW	Tnbs2	A	DIS-TF	E8330LOW:ALL	3		
W-817-01	EW	Tnbs2	A	DIS-TF	E300.0:NO3	1	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E300.0:PERC	1	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E300.0:PERC	2	Y	

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-817-01	EW	Tnbs2	Q	DIS-TF	E300.0:PERC	3		
W-817-01	EW	Tnbs2	Q	DIS-TF	E300.0:PERC	4		
W-817-01	EW	Tnbs2	Q	DIS-TF	E601:ALL	1	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E624MOD:ALL	2	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E624MOD:ALL	3		
W-817-01	EW	Tnbs2	Q	DIS-TF	E624MOD:ALL	4		
W-817-01	EW	Tnbs2	Q	DIS-TF	E8330LOW:ALL	1	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E8330LOW:ALL	2	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E8330LOW:ALL	3		
W-817-01	EW	Tnbs2	Q	DIS-TF	E8330LOW:ALL	4		
W-817-03	EW	Tnbs2	Q	DIS-TF	AS:UISO	1	Y	
W-817-03	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	Y	
W-817-03	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	Y	
W-817-03	EW	Tnbs2	A	DIS-TF	E300.0:PERC	3		
W-817-03	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-817-03	EW	Tnbs2	S	DIS-TF	E624MOD:ALL	2	Y	
W-817-03	EW	Tnbs2	S	CMP-TF	E624MOD:ALL	3		
W-817-03	EW	Tnbs2	S	DIS-TF	E624MOD:ALL	4		
W-817-03	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	Y	
W-817-03	EW	Tnbs2	A	DIS-TF	E8330LOW:ALL	3		
W-817-03A	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-817-03A	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-817-03A	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-817-03A	PTMW	Tpsg-Tps	S	CMP	E624MOD:ALL	3		
W-817-03A	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-817-04	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-817-04	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-817-04	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-817-04	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-817-04	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-817-05	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-817-05	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-817-05	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-817-05	PTMW	Tnsc1b	S	CMP	E624MOD:ALL	3		
W-817-05	PTMW	Tnsc1b	A	CMP	E8330LOW:ALL	1	Y	
W-817-07	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-817-07	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	N	Insufficient water.
W-817-07	PTMW	Tnbs2	S	CMP	E601:ALL	1	N	Insufficient water.
W-817-07	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-817-07	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	N	Insufficient water.
W-817-2318	EW	Tpsg-Tps	A	CMP-TF	E300.0:NO3	1	Y	
W-817-2318	EW	Tpsg-Tps	A	CMP-TF	E300.0:PERC	1	Y	
W-817-2318	EW	Tpsg-Tps	A	DIS-TF	E300.0:PERC	3		
W-817-2318	EW	Tpsg-Tps	S	CMP-TF	E601:ALL	1	Y	

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-817-2318	EW	Tpsg-Tps	S	DIS-TF	E624MOD:ALL	2	Y	
W-817-2318	EW	Tpsg-Tps	S	CMP-TF	E624MOD:ALL	3		
W-817-2318	EW	Tpsg-Tps	S	DIS-TF	E624MOD:ALL	4		
W-817-2318	EW	Tpsg-Tps	A	CMP-TF	E8330LOW:ALL	1	Y	
W-817-2318	EW	Tpsg-Tps	A	DIS-TF	E8330LOW:ALL	3		
W-817-2609	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-817-2609	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-817-2609	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-817-2609	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-817-2609	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-817-3025	PTMW	Tnbs2	1	DIS-TF	DWMETALS:ALL	2	Y	New well baseline sampling.
W-817-3025	PTMW	Tnbs2	1	DIS-TF	E200.7:SI	2	Y	New well baseline sampling.
W-817-3025	PTMW	Tnbs2	1	DIS-TF	E300.0:PERC	2	Y	New well baseline sampling.
W-817-3025	PTMW	Tnbs2	1	DIS-TF	E300.0:PERC	2	Y	New well baseline sampling.
W-817-3025	PTMW	Tnbs2	1	DIS-TF	E300.0:PERC	2	Y	New well baseline sampling.
W-817-3025	PTMW	Tnbs2	1	DIS-TF	E624B:ALL	2	Y	New well baseline sampling.
W-817-3025	PTMW	Tnbs2	1	DIS-TF	E8330LOW:ALL	2	Y	New well baseline sampling.
W-817-3025	PTMW	Tnbs2	1	DIS-TF	E900:ALL	2	Y	New well baseline sampling.
W-817-3025	PTMW	Tnbs2	1	DIS-TF	E906:ALL	2	Y	New well baseline sampling.
W-817-3025	PTMW	Tnbs2	1	DIS-TF	GENMIN:ALL	2	Y	New well baseline sampling.
W-817-3025	PTMW	Tnbs2	1	DIS-TF	KPA:UTOT	2	Y	New well baseline sampling.
W-817-3025	PTMW	Tnbs2	1	DIS-TF	MS:UISO	2	Y	New well baseline sampling.
W-817-3026	PTMW	Tnbs2	1	DIS-TF	DWMETALS:ALL	2	Y	New well baseline sampling.
W-817-3026	PTMW	Tnbs2	1	DIS-TF	E200.7:SI	2	Y	New well baseline sampling.
W-817-3026	PTMW	Tnbs2	1	DIS-TF	E300.0:PERC	2	Y	New well baseline sampling.
W-817-3026	PTMW	Tnbs2	1	DIS-TF	E300.0:PERC	2	Y	New well baseline sampling.
W-817-3026	PTMW	Tnbs2	1	DIS-TF	E300.0:PERC	2	Y	New well baseline sampling.
W-817-3026	PTMW	Tnbs2	1	DIS-TF	E624B:ALL	2	Y	New well baseline sampling.
W-817-3026	PTMW	Tnbs2	1	DIS-TF	E8330LOW:ALL	2	Y	New well baseline sampling.
W-817-3026	PTMW	Tnbs2	1	DIS-TF	E900:ALL	2	Y	New well baseline sampling.
W-817-3026	PTMW	Tnbs2	1	DIS-TF	E906:ALL	2	Y	New well baseline sampling.
W-817-3026	PTMW	Tnbs2	1	DIS-TF	GENMIN:ALL	2	Y	New well baseline sampling.
W-817-3026	PTMW	Tnbs2	1	DIS-TF	KPA:UTOT	2	Y	New well baseline sampling.
W-817-3026	PTMW	Tnbs2	1	DIS-TF	MS:UISO	2	Y	New well baseline sampling.
W-818-01	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-818-01	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-818-01	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-818-01	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-818-01	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-818-03	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-818-03	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-818-03	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-818-03	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-818-03	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	Y	

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-818-04	PTMW	Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-818-04	PTMW	Tnsc2	A	CMP	E300.0:PERC	1	Y	
W-818-04	PTMW	Tnsc2	S	CMP	E601:ALL	1	Y	
W-818-04	PTMW	Tnsc2	S	CMP	E624MOD:ALL	3		
W-818-04	PTMW	Tnsc2	A	CMP	E8330LOW:ALL	1	Y	
W-818-06	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-818-06	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-818-06	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-818-06	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-818-06	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	Y	
W-818-07	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-818-07	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-818-07	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-818-07	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-818-07	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1		To be sampled in 2016.
W-818-08	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	Y	
W-818-08	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	Y	
W-818-08	EW	Tnbs2	A	DIS-TF	E300.0:PERC	3		
W-818-08	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-818-08	EW	Tnbs2	S	DIS-TF	E624MOD:ALL	2	Y	
W-818-08	EW	Tnbs2	S	CMP-TF	E624MOD:ALL	3		
W-818-08	EW	Tnbs2	S	DIS-TF	E624MOD:ALL	4		
W-818-08	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	Y	
W-818-09	EW	Tnbs2	1	DIS	D-15N(NO3):ALL	2	Y	
W-818-09	EW	Tnbs2	1	DIS	D-18O(NO3):ALL	2	Y	
W-818-09	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	Y	
W-818-09	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	Y	
W-818-09	EW	Tnbs2	A	DIS-TF	E300.0:PERC	3		
W-818-09	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-818-09	EW	Tnbs2	S	DIS-TF	E624MOD:ALL	2	Y	
W-818-09	EW	Tnbs2	S	CMP-TF	E624MOD:ALL	3		
W-818-09	EW	Tnbs2	S	DIS-TF	E624MOD:ALL	4		
W-818-09	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	Y	
W-818-09	EW	Tnbs2	1	DIS	EXCESSN2:ALL	2	Y	
W-818-11	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-818-11	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-818-11	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-818-11	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-818-11	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-819-02	PTMW	UTnbs1	A	CMP	E300.0:NO3	1	Y	
W-819-02	PTMW	UTnbs1	A	CMP	E300.0:PERC	1	Y	
W-819-02	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-819-02	PTMW	UTnbs1	S	CMP	E624MOD:ALL	3		
W-819-02	PTMW	UTnbs1	A	CMP	E8330LOW:ALL	1	Y	

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-823-01	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-823-01	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-823-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-823-01	PTMW	Tpsg-Tps	S	CMP	E624MOD:ALL	3		
W-823-01	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-823-01	PTMW	Tpsg-Tps	O	DIS	EM8015:DIESEL	1	Y	
W-823-02	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	Y	
W-823-02	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	Y	
W-823-02	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-823-02	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-823-02	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	Y	
W-823-02	PTMW	Tnbs2	O	DIS	EM8015:DIESEL	1	Y	
W-823-03	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-823-03	PTMW	Tnbs2	E	CMP	E300.0:PERC	1		To be sampled in 2016.
W-823-03	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-823-03	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-823-03	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1		To be sampled in 2016.
W-823-03	PTMW	Tnbs2	O	DIS	EM8015:DIESEL	1	Y	
W-823-13	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	N	Restricted access.
W-823-13	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	N	Restricted access.
W-823-13	PTMW	Tnbs2	S	CMP	E601:ALL	1	N	Restricted access.
W-823-13	PTMW	Tnbs2	S	CMP	E624MOD:ALL	3		
W-823-13	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	N	Restricted access.
W-827-01	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	N	Dry.
W-827-01	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	N	Dry.
W-827-01	PTMW	Tnbs2	O	CMP	E601:ALL	1	N	Dry.
W-827-01	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	Dry.
W-827-02	PTMW	Tnsc1	O	CMP	E300.0:NO3	1	Y	
W-827-02	PTMW	Tnsc1	O	CMP	E300.0:PERC	1	Y	
W-827-02	PTMW	Tnsc1	O	CMP	E601:ALL	1	Y	
W-827-02	PTMW	Tnsc1	O	CMP	E8330LOW:ALL	1	Y	
W-827-03	PTMW	UTnbs1	O	CMP	E300.0:NO3	1	N	Dry.
W-827-03	PTMW	UTnbs1	O	CMP	E300.0:PERC	1	N	Dry.
W-827-03	PTMW	UTnbs1	O	CMP	E601:ALL	1	N	Dry.
W-827-03	PTMW	UTnbs1	O	CMP	E8330LOW:ALL	1	N	Dry.
W-827-04	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	N	Dry.
W-827-04	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	N	Dry.
W-827-04	PTMW	LTnbs1	S	CMP	E601:ALL	1	N	Dry.
W-827-04	PTMW	LTnbs1	S	CMP	E624MOD:ALL	3		
W-827-04	PTMW	LTnbs1	A	CMP	E8330LOW:ALL	1	N	Dry.
W-827-05	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
W-827-05	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
W-827-05	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
W-827-05	PTMW	LTnbs1	S	CMP	E624MOD:ALL	3		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-827-05	PTMW	LTnbs1	A	CMP	E8330LOW:ALL	1	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:NO3	1	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:NO3	2	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:NO3	3		
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:NO3	4		
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:PERC	1	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:PERC	2	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:PERC	3		
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:PERC	4		
W-829-06	EW	Tnsc1b	Q	DIS-TF	E601:ALL	1	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E624MOD:ALL	2	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E624MOD:ALL	3		
W-829-06	EW	Tnsc1b	Q	DIS-TF	E624MOD:ALL	4		
W-829-06	EW	Tnsc1b	A	DIS-TF	E8330LOW:ALL	1	Y	
W-829-08	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-829-08	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-829-08	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-829-08	PTMW	Tnsc1b	S	CMP	E624MOD:ALL	3		
W-829-08	PTMW	Tnsc1b	A	CMP	E8330LOW:ALL	1	Y	
W-829-15	DMW	LTnbs1	A	WGMG	E300.0:PERC	2	Y	
W-829-15	DMW	LTnbs1	A	WGMG	E624:ALL	2	Y	
W-829-15	DMW	LTnbs1	A	WGMG	E8330:R+H	2	Y	
W-829-15	DMW	LTnbs1	A	WGMG	E8330:TNT	2	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E300.0:PERC	1	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E300.0:PERC	2	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E300.0:PERC	3		
W-829-1938	DMW	LTnbs1	Q	WGMG	E300.0:PERC	4		
W-829-1938	DMW	LTnbs1	Q	WGMG	E624:ALL	1	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E624:ALL	2	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E624:ALL	3		
W-829-1938	DMW	LTnbs1	Q	WGMG	E624:ALL	4		
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:R+H	1	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:R+H	2	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:R+H	3		
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:R+H	4		
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:TNT	1	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:TNT	2	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:TNT	3		
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:TNT	4		
W-829-1940	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-829-1940	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-829-1940	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-829-1940	PTMW	Tnsc1b	S	CMP	E624MOD:ALL	3		
W-829-1940	PTMW	Tnsc1b	A	CMP	E8330LOW:ALL	1	Y	

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-829-22	DMW	LTnbs1	A	WGMG	E300.0:PERC	2	Y	
W-829-22	DMW	LTnbs1	A	WGMG	E624:ALL	2	Y	
W-829-22	DMW	LTnbs1	A	WGMG	E8330:R+H	2	Y	
W-829-22	DMW	LTnbs1	A	WGMG	E8330:TNT	2	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	1	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	1	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	1	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	2	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	2	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	2	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	3		
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	3		
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	3		
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	4		
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	4		
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	4		
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	1	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	1	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	1	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	2	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	2	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	2	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	3		
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	3		
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	3		
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	4		
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	4		
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	4		
WELL18	WS	Tnbs1	M	CMP	E601:ALL	1	Y	
WELL18	WS	Tnbs1	M	CMP	E601:ALL	1	Y	
WELL18	WS	Tnbs1	M	CMP	E601:ALL	1	Y	
WELL18	WS	Tnbs1	M	CMP	E624MOD:ALL	2	Y	
WELL18	WS	Tnbs1	M	CMP	E624MOD:ALL	2	Y	
WELL18	WS	Tnbs1	M	CMP	E624MOD:ALL	2	Y	
WELL18	WS	Tnbs1	M	CMP	E624MOD:ALL	3		
WELL18	WS	Tnbs1	M	CMP	E624MOD:ALL	3		
WELL18	WS	Tnbs1	M	CMP	E624MOD:ALL	3		
WELL18	WS	Tnbs1	M	CMP	E624MOD:ALL	4		
WELL18	WS	Tnbs1	M	CMP	E624MOD:ALL	4		
WELL18	WS	Tnbs1	M	CMP	E624MOD:ALL	4		
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	1	Y	
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	1	Y	
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	1	Y	
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	2	Y	

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	2	Y	
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	2	Y	
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	3		
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	3		
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	3		
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	4		
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	4		
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	4		
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	1	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	1	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	1	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	2	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	2	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	2	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	3		
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	3		
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	3		
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	4		
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	4		
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	4		
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	1	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	1	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	1	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	2	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	2	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	2	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	3		
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	3		
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	3		
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	4		
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	4		
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	4		
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	1	Y	
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	1	Y	
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	1	Y	
WELL20	WS	Tnbs1	M	WGMG	E524.2MOD:ALL	2	Y	
WELL20	WS	Tnbs1	M	WGMG	E524.2MOD:ALL	2	Y	
WELL20	WS	Tnbs1	M	WGMG	E524.2MOD:ALL	2	Y	
WELL20	WS	Tnbs1	M	WGMG	E524.2MOD:ALL	3		
WELL20	WS	Tnbs1	M	WGMG	E524.2MOD:ALL	3		
WELL20	WS	Tnbs1	M	WGMG	E524.2MOD:ALL	3		
WELL20	WS	Tnbs1	M	WGMG	E524.2MOD:ALL	4		
WELL20	WS	Tnbs1	M	WGMG	E524.2MOD:ALL	4		
WELL20	WS	Tnbs1	M	WGMG	E524.2MOD:ALL	4		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	1	Y	
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	1	Y	
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	1	Y	
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	2	Y	
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	2	Y	
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	2	Y	
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	3		
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	3		
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	3		
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	4		
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	4		
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	4		

Table 2.4-12. Building 815-Source (815-SRC) mass removed, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
815-SRC	January	NA	0	0	0	0	NA
	February	NA	0	0	0	0	NA
	March	NA	0.34	0.50	14	4.8	NA
	April	NA	0.54	0.47	15	4.7	NA
	May	NA	0.40	0.37	11	3.6	NA
	June	NA	1.0	0.81	23	8.0	NA
Total		NA	2.3	2.2	63	21	NA

Notes:

***Nitrate re-injected into the $Tnbs_2$ HSU undergoes in-situ biotransformation to benign N_2 gas by anaerobic denitrifying bacteria.**

Table 2.4-13. Building 815-Proximal (815-PRX) mass removed, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
815-PRX	January	NA	0	0	0	0	NA
	February	NA	0	0	0	0	NA
	March	NA	4.7	1.3	19	0.51	NA
	April	NA	6.0	1.5	22	0.58	NA
	May	NA	4.7	1.2	17	0.45	NA
	June	NA	7.0	1.8	25	0.65	NA
Total		NA	22	5.8	82	2.2	NA

Notes:

***Nitrate re-injected into the $Tnbs_2$ HSU undergoes in-situ biotransformation to benign N_2 gas by anaerobic denitrifying bacteria.**

Table 2.4-14. Building 815-Distal Site Boundary (815-DSB) mass removed, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
815-DSB	January	NA	2.8	NA	NA	NA	NA
	February	NA	2.3	NA	NA	NA	NA
	March	NA	3.6	NA	NA	NA	NA
	April	NA	3.3	NA	NA	NA	NA
	May	NA	2.3	NA	NA	NA	NA
	June	NA	3.3	NA	NA	NA	NA
Total		NA	18	NA	NA	NA	NA

Table 2.4-15. Building 817-Source (817-SRC) mass removed, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
817-SRC	January	NA	0	0	0	0	NA
	February	NA	0	0	0	0	NA
	March	NA	0	0.030	0.10	0.047	NA
	April	NA	0	0	0	0	NA
	May	NA	0	0.021	0.079	0.035	NA
	June	NA	0	0.022	0.082	0.037	NA
Total		NA	0	0.073	0.26	0.12	NA

Notes:

***Nitrate re-injected into the $Tnbs_2$ HSU undergoes in-situ biotransformation to benign N_2 gas by anaerobic denitrifying bacteria.**

Table 2.4-16. Building 817-Proximal (817-PRX) mass removed, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
817-PRX	January	NA	0	0	0	0	NA
	February	NA	0	0	0	0	NA
	March	NA	0.036	0.085	0.33	0.039	NA
	April	NA	0	0	0	0	NA
	May	NA	0.49	1.3	5.1	0.70	NA
	June	NA	1.4	3.8	15	2.1	NA
Total		NA	2.0	5.1	21	2.8	NA

Notes:

***Nitrate re-injected into the $Tnbs_2$ HSU undergoes in-situ biotransformation to benign N_2 gas by anaerobic denitrifying bacteria.**

Table 2.4-17. Building 829-Source (829-SRC) mass removed, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
829-SRC	January	NA	0	0	0	NA	NA
	February	NA	0	0	0	NA	NA
	March	NA	0.0039	0.0021	0.014	NA	NA
	April	NA	0.0082	0.0046	0.026	NA	NA
	May	NA	0.0059	0.0034	0.019	NA	NA
	June	NA	0.0071	0.0040	0.023	NA	NA
Total		NA	0.025	0.014	0.081	NA	NA

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	Y	
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	Y	
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-01C	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	Y	
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	Y	
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-02B	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-02B	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
K1-04	DMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	1		To be sampled in 2016.
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-04	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-04	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-06	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	N	Dry.
K1-06	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Dry.
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	N	Dry.
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	N	Dry.
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	N	Dry.
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	N	Dry.
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-06	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
K1-07	DMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	1		To be sampled in 2016.
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-07	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-07	DMW	Tnbs1-Tnbs0	A	DIS	MS:UISO	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-08	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
K1-09	DMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	1		To be sampled in 2016.
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-09	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K2-03	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
K2-03	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K2-03	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
K2-03	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K2-03	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K2-03	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K2-04S	PTMW	Qal/WBR	E	CMP	AS:UISO	2		To be sampled in 2016.
K2-04S	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	Y	
K2-04S	PTMW	Qal/WBR	A	WGMG	E300.0:PERC	2	Y	
K2-04S	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
K2-04S	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
K2-04S	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC2-05	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	N	Dry.
NC2-05	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Dry.
NC2-05	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Dry.
NC2-05	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-05	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Dry.
NC2-05	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-05A	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-05A	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-05A	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-05A	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-05A	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-05A	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-06	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-06	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-06	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-06	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-06	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-06	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-06A	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-06A	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-06A	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-06A	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-06A	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-06A	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
NC2-09	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-09	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-09	PTMW	Tnbs1-Tnbs0	A	DIS	E300.0:PERC	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC2-09	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-09	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-10	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-10	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-10	PTMW	Tnbs1-Tnbs0	A	DIS	E300.0:PERC	2	Y	
NC2-10	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-10	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-11D	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-11D	PTMW	Tnbs1-Tnbs0	S	WGMG	E300.0:PERC	2	Y	
NC2-11D	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-11D	PTMW	Tnbs1-Tnbs0	S	WGMG	E300.0:PERC	4		
NC2-11D	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-11D	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-11D	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
NC2-11I	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-11I	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-11I	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-11I	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-11I	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-11I	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-11S	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-11S	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-11S	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-11S	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-11S	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-11S	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-12D	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-12D	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-12D	PTMW	Tnbs1-Tnbs0	A	WGMG	E300.0:PERC	2	Y	
NC2-12D	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-12D	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-12D	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-12I	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-12I	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-12I	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-12I	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-12I	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-12I	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-12S	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-12S	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-12S	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-12S	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-12S	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-12S	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-13	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-13	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC2-13	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-13	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-13	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-13	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-14S	PTMW	Qal/WBR	O	CMP	AS:UISO	2	Y	
NC2-14S	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	Y	
NC2-14S	PTMW	Qal/WBR	S	CMP	E300.0:PERC	1	Y	
NC2-14S	PTMW	Qal/WBR	S	CMP	E300.0:PERC	3		
NC2-14S	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC2-14S	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC2-15	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-15	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-15	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-15	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-15	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-15	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-16	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2		To be sampled in 2016.
NC2-16	PTMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	Y	
NC2-16	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	1	Y	
NC2-16	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	3		
NC2-16	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-16	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-17	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-17	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-17	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-17	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-17	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-17	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-18	PTMW	Tnbs1-Tnbs0	S	CMP	AS:UISO	2	Y	
NC2-18	PTMW	Tnbs1-Tnbs0	S	CMP	AS:UISO	4		
NC2-18	PTMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	Y	
NC2-18	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-18	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-18	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-18	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-19	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2		To be sampled in 2016.
NC2-19	PTMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	Y	
NC2-19	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-19	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-19	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-19	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-20	PTMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	2	Y	
NC2-20	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	2		To be sampled in 2016.
NC2-20	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
NC2-20	PTMW	Tnbs1-Tnbs0	A	CMP	E906:ALL	2	Y	
NC2-21	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2		To be sampled in 2016.

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC2-21	PTMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	Y	
NC2-21	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
NC2-21	PTMW	Tnbs1-Tnbs0	A	CMP	E906:ALL	2	Y	
NC7-10	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-10	PTMW	Qal/WBR	S	DIS	E300.0:PERC	1	Y	
NC7-10	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
NC7-10	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-10	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-10	PTMW	Qal/WBR	A	CMP	MS:UISO	2	Y	
NC7-11	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-11	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-11	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-11	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-11	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-11	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-14	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
NC7-14	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
NC7-14	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Dry.
NC7-14	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-14	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-14	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-15	PTMW	Qal/WBR	O	CMP	AS:UISO	2	Y	
NC7-15	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2		To be sampled in 2016.
NC7-15	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-15	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
NC7-15	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-15	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-19	PTMW	Qal/WBR	E	CMP	AS:UISO	2		To be sampled in 2016.
NC7-19	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-19	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-19	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-19	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
NC7-19	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-19	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-27	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC7-27	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-27	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC7-27	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC7-27	PTMW	Tnbs1-Tnbs0	S	DIS	E8330LOW:ALL	2	Y	
NC7-27	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-27	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-28	PTMW	Tnbs1-Tnbs0	S	DIS	DWMETALS:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	E300.0:PERC	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	E300.0:PERC	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-28	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC7-28	PTMW	Tnbs1-Tnbs0	S	DIS	E8330LOW:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-28	PTMW	Tnbs1-Tnbs0	S	DIS	GENMIN:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	S	DIS	KPA:UTOT	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	S	DIS	LITEHCS:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	S	DIS	LOWVFAS:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
NC7-29	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC7-29	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-29	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC7-29	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC7-29	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-29	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-43	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC7-43	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-43	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC7-43	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC7-43	PTMW	Tnbs1-Tnbs0	S	DIS	E8330LOW:ALL	2	Y	
NC7-43	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-43	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-44	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC7-44	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-44	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC7-44	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC7-44	PTMW	Tnbs1-Tnbs0	S	DIS	E8330LOW:ALL	2	Y	
NC7-44	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-44	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-46	PTMW	Qal/WBR	O	CMP	AS:UISO	2	Y	
NC7-46	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	Y	
NC7-46	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-46	PTMW	Qal/WBR	A	CMP	E906:ALL	2	Y	
NC7-54	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Restricted access.
NC7-54	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Restricted access.
NC7-54	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-54	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Restricted access.
NC7-54	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-55	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
NC7-55	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	Dry.
NC7-55	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Dry.
NC7-55	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-55	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-55	PTMW	Qal/WBR	S	CMP	E906:ALL	4		

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-56	PTMW	Qal/WBR	O	CMP	AS:UISO	2	Y	
NC7-56	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2		To be sampled in 2016.
NC7-56	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-56	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-56	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
NC7-56	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-56	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-57	PTMW	Qal/WBR	O	CMP	AS:UISO	2	N	Dry.
NC7-57	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2		To be sampled in 2016.
NC7-57	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Dry.
NC7-57	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-57	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-57	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-58	PTMW	Qal/WBR	E	CMP	AS:UISO	2		To be sampled in 2016.
NC7-58	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	Y	
NC7-58	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-58	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-58	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-58	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-59	PTMW	Qal/WBR	O	CMP	AS:UISO	2	Y	
NC7-59	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2		To be sampled in 2016.
NC7-59	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-59	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-59	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-59	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-60	PTMW	Tnsc0	E	CMP	AS:UISO	2		To be sampled in 2016.
NC7-60	PTMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
NC7-60	PTMW	Tnsc0	S	CMP	E300.0:PERC	1	Y	
NC7-60	PTMW	Tnsc0	S	CMP	E300.0:PERC	3		
NC7-60	PTMW	Tnsc0	S	DIS	E8330LOW:ALL	2	Y	
NC7-60	PTMW	Tnsc0	S	CMP	E906:ALL	2	Y	
NC7-60	PTMW	Tnsc0	S	CMP	E906:ALL	4		
NC7-61	PTMW	Tnbs1-Tnbs0	S	DIS	DWMETALS:ALL	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
NC7-61	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
NC7-61	PTMW	Tnbs1-Tnbs0	O	DIS	E8082A:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	S	DIS	E8330LOW:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	S	WGMG	E906:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	S	WGMG	E906:ALL	4		
NC7-61	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-61	PTMW	Tnbs1-Tnbs0	S	DIS	GENMIN:ALL	1	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-61	PTMW	Tnbs1-Tnbs0	S	DIS	KPA:UTOT	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
NC7-62	PTMW	Qal/WBR	E	CMP	AS:UISO	2		To be sampled in 2016.
NC7-62	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	Y	
NC7-62	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-62	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-62	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-62	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-69	PTMW	Tmss	A	CMP	AS:UISO	2	Y	
NC7-69	PTMW	Tmss	A	CMP	E300.0:NO3	2	Y	
NC7-69	PTMW	Tmss	S	CMP	E300.0:PERC	2	Y	
NC7-69	PTMW	Tmss	S	CMP	E300.0:PERC	4		
NC7-69	PTMW	Tmss	S	DIS	E8330LOW:ALL	2	Y	
NC7-69	PTMW	Tmss	S	CMP	E906:ALL	2	Y	
NC7-69	PTMW	Tmss	S	CMP	E906:ALL	4		
NC7-70	PTMW	Tnbs1-Tnbs0	S	DIS	DWMETALS:ALL	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	S	DIS	E300.0:NO3	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	S	DIS	E300.0:PERC	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC7-70	PTMW	Tnbs1-Tnbs0	O	CMP	E8082A:ALL	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	S	DIS	E8330LOW:ALL	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-70	PTMW	Tnbs1-Tnbs0	S	DIS	GENMIN:ALL	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	S	DIS	KPA:UTOT	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	S	DIS	LITEHCS:ALL	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	S	DIS	LOWVFAS:ALL	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
NC7-71	PTMW	Qal/WBR	S	DIS	DWMETALS:ALL	1	Y	
NC7-71	PTMW	Qal/WBR	S	DIS	E300.0:NO3	1	Y	
NC7-71	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	E300.0:PERC	1	Y	
NC7-71	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-71	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-71	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	E9060:ALL	1	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	E9060:ALL	2	Y	
NC7-71	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-71	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-71	PTMW	Qal/WBR	S	DIS	GENMIN:ALL	1	Y	
NC7-71	PTMW	Qal/WBR	S	DIS	KPA:UTOT	1	Y	
NC7-71	PTMW	Qal/WBR	A	CMP	MS:UISO	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-72	PTMW	Qal/WBR	E	CMP	AS:UISO	2		To be sampled in 2016.
NC7-72	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	Y	
NC7-72	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-72	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-72	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
NC7-72	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-72	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-73	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-73	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2		To be sampled in 2016.
NC7-73	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-73	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-73	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
NC7-73	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-73	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
SPRING24	SPR	Tnbs1-Tnbs0	E	CMP	AS:UISO	2		To be sampled in 2016.
SPRING24	SPR	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	N	Dry.
SPRING24	SPR	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Dry.
SPRING24	SPR	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
SPRING24	SPR	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Dry.
SPRING24	SPR	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-05	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
W-850-05	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
W-850-05	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
W-850-05	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
W-850-05	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
W-850-05	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
W-850-05	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-850-2145	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2		To be sampled in 2016.
W-850-2145	PTMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	Y	
W-850-2145	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2145	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2145	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-850-2145	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-2312	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2		To be sampled in 2016.
W-850-2312	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	2		To be sampled in 2016.
W-850-2312	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2312	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2312	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-850-2312	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-2313	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
W-850-2313	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2		To be sampled in 2016.
W-850-2313	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
W-850-2313	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
W-850-2313	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
W-850-2313	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
W-850-2313	PTMW	Qal/WBR	S	CMP	E906:ALL	4		

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-850-2313	PTMW	Qal/WBR	A	DIS	MS:UISO	2	Y	
W-850-2314	PTMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	2	Y	
W-850-2314	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-850-2314	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2314	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2314	PTMW	Tnbs1-Tnbs0	S	DIS	E8330LOW:ALL	2	Y	
W-850-2314	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-850-2314	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-2315	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
W-850-2315	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-850-2315	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2315	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2315	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-850-2315	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-2316	PTMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	2	Y	
W-850-2316	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	2		To be sampled in 2016.
W-850-2316	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2316	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2316	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-850-2316	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-2416	PTMW	Tnsc0	S	DIS	DWMETALS:ALL	1	Y	
W-850-2416	PTMW	Tnsc0	S	DIS	E300.0:NO3	1	Y	
W-850-2416	PTMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-850-2416	PTMW	Tnsc0	S	DIS	E300.0:PERC	1	Y	
W-850-2416	PTMW	Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-850-2416	PTMW	Tnsc0	S	CMP	E300.0:PERC	4		
W-850-2416	PTMW	Tnsc0	S	DIS	E8330LOW:ALL	2	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	E9060:ALL	1	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	E9060:ALL	2	Y	
W-850-2416	PTMW	Tnsc0	S	CMP	E906:ALL	2	Y	
W-850-2416	PTMW	Tnsc0	S	CMP	E906:ALL	4		
W-850-2416	PTMW	Tnsc0	S	DIS	GENMIN:ALL	1	Y	
W-850-2416	PTMW	Tnsc0	S	DIS	KPA:UTOT	1	Y	
W-850-2416	PTMW	Tnsc0	A	CMP	MS:UISO	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	S	DIS	DWMETALS:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	S	DIS	E300.0:NO3	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	E300.0:PERC	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2417	PTMW	Tnbs1-Tnbs0	S	DIS	E8330LOW:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-2417	PTMW	Tnbs1-Tnbs0	S	DIS	GENMIN:ALL	1	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-850-2417	PTMW	Tnbs1-Tnbs0	S	DIS	KPA:UTOT	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	S	DIS	LITEHCS:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	S	DIS	LOWVFAS:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	S	DIS	MS:UISO	1	Y	
W-850-2805	PTMW	Tnbs1/Tnbs0	A	CMP	AS:UISO	2	Y	
W-850-2805	PTMW	Tnbs1/Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-850-2805	PTMW	Tnbs1/Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2805	PTMW	Tnbs1/Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2805	PTMW	Tnbs1/Tnbs0	S	CMP	E906:ALL	2	Y	
W-850-2805	PTMW	Tnbs1/Tnbs0	S	CMP	E906:ALL	4		
W-865-02	PTMW	Tnbs1-Tnbs0	A	DIS	DWMETALS:ALL	1	Y	
W-865-02	PTMW	Tnbs1-Tnbs0	S	DIS	E300.0:NO3	1	Y	
W-865-02	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	1	Y	
W-865-02	PTMW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	
W-865-02	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	1	Y	
W-865-02	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	3		
W-865-05	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	1	N	Dry.
W-865-05	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	1	N	Dry.
W-865-05	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	3		
W-865-1802	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
W-865-1802	PTMW	Tnbs1-Tnbs0	A	DIS	E300.0:NO3	2	Y	
W-865-1802	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
W-865-1802	PTMW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	
W-865-1802	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-865-1802	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-865-1803	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2		To be sampled in 2016.
W-865-1803	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	2		To be sampled in 2016.
W-865-1803	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-865-1803	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-865-1803	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-865-1803	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-865-2005	PTMW	Tnbs1-Tnbs0	A	DIS	DWMETALS:ALL	1	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	S	DIS	E300.0:NO3	1	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
W-865-2005	PTMW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
W-865-2121	PTMW	Tnbs1-Tnbs0	A	DIS	DWMETALS:ALL	1	Y	
W-865-2121	PTMW	Tnbs1-Tnbs0	S	DIS	E300.0:NO3	1	Y	
W-865-2121	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	1	Y	
W-865-2121	PTMW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-865-2121	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-865-2121	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-865-2133	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	1	Y	
W-865-2133	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	3		
W-865-2133	GW	Tnbs1-Tnbs0	A	DIS	DWMETALS:ALL	1	Y	
W-865-2133	GW	Tnbs1-Tnbs0	S	DIS	E300.0:NO3	1	Y	
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	1	Y	
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	2	Y	
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	3		
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	4		
W-865-2133	GW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	1	Y	
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	2	Y	
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	3		
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	4		
W-865-2224	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	2	Y	
W-865-2224	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	4		
W-865-2224	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	2	Y	
W-865-2224	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	4		
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	1	Y	
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	2	Y	
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	3		
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	4		
W-865-2224	GW	Tnbs1-Tnbs0	S	DIS	E624MOD:ALL	2	Y	
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	1	Y	
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	2	Y	
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	3		
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	4		
W-PIT1-01	PTMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	1	N	Dry.
W-PIT1-01	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	1	N	Dry.
W-PIT1-01	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	3		
W-PIT1-01	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	1	N	Dry.
W-PIT1-01	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	3		
W-PIT1-2204	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Insufficient water.
W-PIT1-2204	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Insufficient water.
W-PIT1-2204	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Insufficient water.
W-PIT1-2204	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
W-PIT1-2204	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Insufficient water.
W-PIT1-2204	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT1-2209	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	2	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	4		
W-PIT1-2209	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	2	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	4		
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	4		
W-PIT1-2209	GW	Tnbs1-Tnbs0	S	DIS	E624MOD:ALL	2	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	4		
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
W-PIT1-2225	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	2	Y	
W-PIT1-2225	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	4		
W-PIT1-2225	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	2	Y	
W-PIT1-2225	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	4		
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	1	Y	
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	2	Y	
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	3		
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	4		
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	1	Y	
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	2	Y	
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	3		
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	4		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2		To be sampled in 2016.
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	A	DIS	DWMETALS:ALL	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	A	DIS	E300.0:NO3	2	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	S	DIS	E624MOD:ALL	2	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
W-PIT1-3021	PTMW	Tnbs1/Tnbs0	1	DIS	DWMETALS:ALL	2	Y	New well Baseline sampling.
W-PIT1-3021	PTMW	Tnbs1/Tnbs0	1	DIS	E200.7:SI	2	Y	New well Baseline sampling.
W-PIT1-3021	PTMW	Tnbs1/Tnbs0	1	DIS	E300.0:PERC	2	Y	New well Baseline sampling.
W-PIT1-3021	PTMW	Tnbs1/Tnbs0	1	DIS	E624B:ALL	2	Y	New well Baseline sampling.
W-PIT1-3021	PTMW	Tnbs1/Tnbs0	1	DIS	E8330LOW:ALL	2	Y	New well Baseline sampling.
W-PIT1-3021	PTMW	Tnbs1/Tnbs0	1	DIS	E900:ALL	2	Y	New well Baseline sampling.
W-PIT1-3021	PTMW	Tnbs1/Tnbs0	1	DIS	E906:ALL	2	Y	New well Baseline sampling.
W-PIT1-3021	PTMW	Tnbs1/Tnbs0	1	DIS	GENMIN:ALL	2	Y	New well Baseline sampling.
W-PIT1-3021	PTMW	Tnbs1/Tnbs0	1	DIS	KPA:UTOT	2	Y	New well Baseline sampling.
W-PIT1-3021	PTMW	Tnbs1/Tnbs0	1	DIS	MS:UISO	2	Y	New well Baseline sampling.
W-PIT1-3022	PTMW	Tnbs1/Tnbs0	1	DIS	DWMETALS:ALL	2	Y	New well Baseline sampling.
W-PIT1-3022	PTMW	Tnbs1/Tnbs0	1	DIS	E200.7:SI	2	Y	New well Baseline sampling.
W-PIT1-3022	PTMW	Tnbs1/Tnbs0	1	DIS	E300.0:PERC	2	Y	New well Baseline sampling.
W-PIT1-3022	PTMW	Tnbs1/Tnbs0	1	DIS	E624B:ALL	2	Y	New well Baseline sampling.
W-PIT1-3022	PTMW	Tnbs1/Tnbs0	1	DIS	E8330LOW:ALL	2	Y	New well Baseline sampling.
W-PIT1-3022	PTMW	Tnbs1/Tnbs0	1	DIS	E900:ALL	2	Y	New well Baseline sampling.
W-PIT1-3022	PTMW	Tnbs1/Tnbs0	1	DIS	E906:ALL	2	Y	New well Baseline sampling.
W-PIT1-3022	PTMW	Tnbs1/Tnbs0	1	DIS	GENMIN:ALL	2	Y	New well Baseline sampling.
W-PIT1-3022	PTMW	Tnbs1/Tnbs0	1	DIS	KPA:UTOT	2	Y	New well Baseline sampling.
W-PIT1-3022	PTMW	Tnbs1/Tnbs0	1	DIS	MS:UISO	2	Y	New well Baseline sampling.
W-PIT7-16	PTMW	Tnsc0	A	CMP	AS:UISO	2	Y	
W-PIT7-16	PTMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-PIT7-16	PTMW	Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-PIT7-16	PTMW	Tnsc0	S	CMP	E300.0:PERC	4		
W-PIT7-16	PTMW	Tnsc0	S	DIS	E8330LOW:ALL	2	Y	
W-PIT7-16	PTMW	Tnsc0	S	CMP	E906:ALL	2	Y	
W-PIT7-16	PTMW	Tnsc0	S	CMP	E906:ALL	4		
W8SPRNG	SPR	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	N	Restricted access.
W8SPRNG	SPR	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Restricted access.
W8SPRNG	SPR	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Restricted access.
W8SPRNG	SPR	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W8SPRNG	SPR	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Restricted access.
W8SPRNG	SPR	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		

Table 2.5-2. Pit 7-Source (PIT7-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
PIT7-SRC	January	NA	336	NA	1,236
	February	NA	402	NA	2,269
	March	NA	792	NA	2,870
	April	NA	603	NA	2,076
	May	NA	582	NA	2,237
	June	NA	768	NA	2,439
Total		NA	3,483	NA	13,127

Table 2.5-3. Pit 7-Source (PIT7-SRC) volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Carbon tetra-chloride (µg/L)	Chloro-form (µg/L)	1,1-DCA (µg/L)	1,2-DCA (µg/L)	1,1-DCE (µg/L)	1,1,1-TCA (µg/L)	1,1,2-TCA (µg/L)	Freon 11 (µg/L)	Freon 113 (µg/L)	Vinyl chloride (µg/L)
PIT7-SRC-I	1/6/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-I	4/8/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-E	1/6/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-E	2/17/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-E	3/2/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-E	4/8/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-E	5/5/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-E	6/8/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.5-3 (Con't). Analyte detected but not reported in main table.

Location	Date	Detection frequency
PIT7-SRC-I	1/6/15	0 of 18
PIT7-SRC-I	4/8/15	0 of 18
PIT7-SRC-E	1/6/15	0 of 18
PIT7-SRC-E	2/17/15	0 of 18
PIT7-SRC-E	3/2/15	0 of 18
PIT7-SRC-E	4/8/15	0 of 18
PIT7-SRC-E	5/5/15	0 of 18
PIT7-SRC-E	6/8/15	0 of 18
PIT7-SRC-E	6/8/15	0 of 18

Notes:

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.5-4. Pit 7-Source (PIT7-SRC) nitrate and perchlorate in ground water extraction and treatment system influent and effluent.

Location	Date	Nitrate as NO3 (mg/L)	Perchlorate (µg/L)
PIT7-SRC-I	1/6/15	34	11 L
PIT7-SRC-I	4/8/15	40	12
PIT7-SRC-E	1/6/15	<0.5	<4
PIT7-SRC-E	2/17/15	<0.5	<4
PIT7-SRC-E	3/2/15	<0.5	<4
PIT7-SRC-E	4/8/15	16	<4
PIT7-SRC-E	5/5/15	27	<4
PIT7-SRC-E	6/8/15	34	<4

Notes:

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.5-5. Pit 7-Source (PIT7-SRC) total uranium in ground water extraction and treatment system influent and effluent.

Location	Date	Total Uranium by Alpha Spec (calculated) (pCi/L)
PIT7-SRC-I	1/6/15	26.4 ± 3.51
PIT7-SRC-I	4/8/15	27.9 ± 2.94
PIT7-SRC-E	1/6/15	<0.3
PIT7-SRC-E	2/17/15	<0.3
PIT7-SRC-E	3/2/15	<0.3
PIT7-SRC-E	4/8/15	<0.3
PIT7-SRC-E	5/5/15	<0.3
PIT7-SRC-E	6/8/15	<0.3

Notes:

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.5-6. Pit 7-Source (PIT7-SRC) tritium in ground water extraction and treatment system influent and effluent.

Location	Date	Tritium (pCi/L)
PIT7-SRC-I	1/6/15	40100 ± 7790
PIT7-SRC-I	4/8/15	43200 ± 8400
PIT7-SRC-E	1/6/15	40200 ± 7810
PIT7-SRC-E	2/17/15	43600 ± 8480
PIT7-SRC-E	3/2/15	41500 ± 8070
PIT7-SRC-E	4/8/15	37400 ± 7260
PIT7-SRC-E	5/5/15	42900 ± 8330
PIT7-SRC-E	6/8/15	39200 ± 7620

Notes:

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.5-7. Pit 7-Source (PIT7-SRC) treatment facility sampling and analysis plan.

Sample location	Sample identification	Parameter	Frequency
PIT7-SRC GWTS			
Influent Port	**PIT7-SRC-I**	**VOCs**	**Quarterly**
		Uranium	**Quarterly**
		Perchlorate	**Quarterly**
		Nitrate	**Quarterly**
		Tritium[a]	**Quarterly**
		pH	**Quarterly**
Effluent Port	**PIT7-SRC-E**	**VOCs**	**Monthly**
		Uranium	**Monthly**
		Perchlorate	**Monthly**
		Nitrate	**Monthly**
		Tritium[a]	**Monthly**
		pH	**Monthly**

Notes:

[a] Although tritium is not treated/removed by the PIT7-SRC GWTS, tritium activities will be monitoring to determine levels that are being discharged to the infiltration trench.

One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	ANIONS:FL	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E624MOD:ALL	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E8082A:ALL	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	ANIONS:FL	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E624MOD:ALL	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E8082A:ALL	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	ANIONS:FL	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	E624MOD:ALL	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	E8082A:ALL	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K7-07	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
K7-07	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2		To be sampled in 2016.
K7-07	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
K7-07	PTMW	Qal/WBR	A	CMP	E624MOD:ALL	2	N	Dry.
K7-07	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
K7-07	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
K7-09	DMW	Tnsc0	A	CMP	ANIONS:FL	2	Y	
K7-09	DMW	Tnsc0	A	CMP	AS:UISO	2	Y	
K7-09	DMW	Tnsc0	A	CMP	E200.7:LI	2	Y	
K7-09	DMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
K7-09	DMW	Tnsc0	S	CMP	E300.0:PERC	2	Y	
K7-09	DMW	Tnsc0	S	CMP	E300.0:PERC	4		

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K7-09	DMW	Tnsc0	A	CMP	E624MOD:ALL	2	Y	
K7-09	DMW	Tnsc0	A	CMP	E8082A:ALL	2	Y	
K7-09	DMW	Tnsc0	A	CMP	E8330LOW:ALL	2	Y	
K7-09	DMW	Tnsc0	S	CMP	E906:ALL	2	Y	
K7-09	DMW	Tnsc0	S	CMP	E906:ALL	4		
K7-09	DMW	Tnsc0	A	CMP	T26METALS:ALL	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	ANIONS:FL	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E624MOD:ALL	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E8082A:ALL	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
NC7-12	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-12	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2		To be sampled in 2016.
NC7-12	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-12	PTMW	Qal/WBR	A	CMP	E624MOD:ALL	2	Y	
NC7-12	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-12	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-12	PTMW	Qal/WBR	A	DIS	MS:UISO	2	Y	
NC7-16	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Insufficient water.
NC7-16	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Insufficient water.
NC7-16	PTMW	Qal/WBR	A	CMP	E624MOD:ALL	2	N	Insufficient water.
NC7-16	PTMW	Qal/WBR	S	DIS	E906:ALL	1	Y	
NC7-16	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Insufficient water.
NC7-16	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-16	PTMW	Qal/WBR	Q	DIS	MS:UISO	1	Y	
NC7-17	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-17	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-17	PTMW	Qal/WBR	E	CMP	E300.0:PERC	2		To be sampled in 2016.
NC7-17	PTMW	Qal/WBR	A	CMP	E624MOD:ALL	2	Y	
NC7-17	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-17	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-18	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-18	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-18	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-18	PTMW	Qal/WBR	A	CMP	E624MOD:ALL	2	Y	
NC7-18	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-18	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-20	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Insufficient water.
NC7-20	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	Y	
NC7-20	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-20	PTMW	Qal/WBR	A	CMP	E624MOD:ALL	2	Y	
NC7-20	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-20	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-21	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-21	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-21	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-21	PTMW	Qal/WBR	A	CMP	E624MOD:ALL	2	Y	
NC7-21	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-21	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-22	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
NC7-22	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
NC7-22	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
NC7-22	PTMW	Qal/WBR	A	CMP	E624MOD:ALL	2	N	Dry.
NC7-22	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-22	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-24	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
NC7-24	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
NC7-24	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
NC7-24	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-24	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-25	EW	Tnbs1-Tnbs0	A	CMP-TF	AS:UISO	2	Y	
NC7-25	EW	Tnbs1-Tnbs0	A	CMP-TF	E300.0:NO3	2	Y	
NC7-25	EW	Tnbs1-Tnbs0	A	CMP-TF	E300.0:PERC	2	Y	
NC7-25	EW	Tnbs1-Tnbs0	A	DIS-TF	E300.0:PERC	4		
NC7-25	EW	Tnbs1-Tnbs0	A	CMP-TF	E624MOD:ALL	2	Y	
NC7-25	EW	Tnbs1-Tnbs0	A	DIS-TF	E624MOD:ALL	4		
NC7-25	EW	Tnbs1-Tnbs0	S	CMP-TF	E906:ALL	2	Y	
NC7-25	EW	Tnbs1-Tnbs0	S	CMP-TF	E906:ALL	4		
NC7-25	EW	Tnbs1-Tnbs0	S	DIS-TF	KPA:UTOT	2	Y	
NC7-25	EW	Tnbs1-Tnbs0	S	DIS-TF	KPA:UTOT	4		
NC7-25	EW	Tnbs1-Tnbs0	A	DIS-TF	MS:UISO	4		
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	ANIONS:FL	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E624MOD:ALL	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E8082A:ALL	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
NC7-34	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
NC7-34	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
NC7-34	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
NC7-34	PTMW	Qal/WBR	A	CMP	E624MOD:ALL	2	N	Dry.

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-34	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-34	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-36	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	N	Insufficient water.
NC7-36	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Insufficient water.
NC7-36	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	N	Insufficient water.
NC7-36	PTMW	Tnbs1-Tnbs0	A	CMP	E624MOD:ALL	2	N	Insufficient water.
NC7-36	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Insufficient water.
NC7-36	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-37	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
NC7-37	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
NC7-37	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
NC7-37	PTMW	Qal/WBR	A	CMP	E624MOD:ALL	2	N	Dry.
NC7-37	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-37	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-40	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-40	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-40	PTMW	Qal/WBR	A	CMP	E624MOD:ALL	2	Y	
NC7-40	PTMW	Qal/WBR	S	DIS	E906:ALL	1	Y	
NC7-40	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-40	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-40	PTMW	Qal/WBR	Q	DIS	MS:UISO	1	Y	
NC7-40	PTMW	Qal/WBR	Q	DIS	MS:UISO	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	ANIONS:FL	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E624MOD:ALL	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E8082A:ALL	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E906:ALL	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	ANIONS:FL	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E200.7:LI	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E624MOD:ALL	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E8082A:ALL	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E8330LOW:ALL	2	Y	
NC7-48	DMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-48	DMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-48	DMW	Qal/WBR	A	CMP	MS:UISO	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	T26METALS:ALL	2	Y	
NC7-49A	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-49A	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2		To be sampled in 2016.
NC7-49A	PTMW	Qal/WBR	E	CMP	E300.0:PERC	2		To be sampled in 2016.

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-49A	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-49A	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-51	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-51	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-51	PTMW	Qal/WBR	A	CMP	E624MOD:ALL	2	Y	
NC7-51	PTMW	Qal/WBR	S	DIS	E906:ALL	1	Y	
NC7-51	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-51	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-51	PTMW	Qal/WBR	Q	DIS	MS:UISO	1	Y	
NC7-51	PTMW	Qal/WBR	A	CMP	MS:UISO	2	Y	
NC7-52	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC7-52	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-52	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
NC7-52	PTMW	Tnbs1-Tnbs0	A	CMP	E624MOD:ALL	2	Y	
NC7-52	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	1	Y	
NC7-52	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	3		
NC7-53	PTMW	Qal/WBR	A	DIS	AS:UISO	2	Y	
NC7-53	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	Y	
NC7-53	PTMW	Qal/WBR	O	CMP	E300.0:PERC	2	Y	
NC7-53	PTMW	Qal/WBR	O	DIS	E906:ALL	2	Y	
NC7-63	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Insufficient water.
NC7-63	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Insufficient water.
NC7-63	PTMW	Qal/WBR	A	CMP	E624MOD:ALL	2	N	Insufficient water.
NC7-63	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Insufficient water.
NC7-63	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-63	PTMW	Qal/WBR	A	CMP	MS:UISO	2	N	Insufficient water.
NC7-64	EW	Qal/WBR	A	CMP-TF	AS:UISO	2	Y	
NC7-64	EW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	Y	
NC7-64	EW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	Y	
NC7-64	EW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		
NC7-64	EW	Qal/WBR	A	CMP-TF	E624MOD:ALL	2	Y	
NC7-64	EW	Qal/WBR	A	DIS-TF	E624MOD:ALL	4		
NC7-64	EW	Qal/WBR	S	CMP-TF	E906:ALL	2	Y	
NC7-64	EW	Qal/WBR	S	CMP-TF	E906:ALL	4		
NC7-64	EW	Qal/WBR	S	DIS-TF	KPA:UTOT	2	Y	
NC7-64	EW	Qal/WBR	S	DIS-TF	KPA:UTOT	4		
NC7-64	EW	Qal/WBR	A	DIS-TF	MS:UISO	4		
NC7-65	PTMW	Tnsc0	A	CMP	AS:UISO	2	Y	
NC7-65	PTMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
NC7-65	PTMW	Tnsc0	A	CMP	E300.0:PERC	2	Y	
NC7-65	PTMW	Tnsc0	A	CMP	E624MOD:ALL	2	Y	
NC7-65	PTMW	Tnsc0	S	CMP	E906:ALL	2	Y	
NC7-65	PTMW	Tnsc0	S	CMP	E906:ALL	4		
NC7-65	PTMW	Tnsc0	A	DIS	MS:UISO	2	Y	
NC7-67	PTMW	Tnsc0	A	CMP	AS:UISO	2	Y	
NC7-67	PTMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-67	PTMW	Tnsc0	A	CMP	E300.0:PERC	2	Y	
NC7-67	PTMW	Tnsc0	A	CMP	E624MOD:ALL	2	Y	
NC7-67	PTMW	Tnsc0	S	CMP	E906:ALL	2	Y	
NC7-67	PTMW	Tnsc0	S	CMP	E906:ALL	4		
NC7-68	PTMW	Tnbs1-Tnbs0	A	DIS	AS:UISO	2	Y	
NC7-68	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-68	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
NC7-68	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-68	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-75	PTMW	Tnsc0	A	CMP	AS:UISO	2	Y	
NC7-75	PTMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
NC7-75	PTMW	Tnsc0	S	CMP	E300.0:PERC	2	Y	
NC7-75	PTMW	Tnsc0	S	CMP	E300.0:PERC	4		
NC7-75	PTMW	Tnsc0	A	CMP	E624MOD:ALL	2	Y	
NC7-75	PTMW	Tnsc0	S	CMP	E906:ALL	2	Y	
NC7-75	PTMW	Tnsc0	S	CMP	E906:ALL	4		
NC7-76	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-76	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	Y	
NC7-76	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-76	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-76	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-865-01	PTMW	Tnbs1-Tnbs0	1	DIS	AGEDATING:ALL	2	Y	
W-865-01	PTMW	Tnbs1-Tnbs0	A	DIS	DWMETALS:ALL	1	Y	
W-865-01	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	1	Y	
W-865-01	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	1	Y	
W-865-01	PTMW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	
W-865-01	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	1	Y	
W-865-01	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	3		
W-865-01	PTMW	Tnbs1-Tnbs0	1	DIS	H3BYHELIUM:ALL	2	Y	
W-865-03	PTMW	Tnbs1-Tnbs0	A	DIS	E300.0:NO3	1	Y	
W-865-03	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	1	Y	
W-865-03	PTMW	Tnbs1-Tnbs0	A	DIS	E906:ALL	1	Y	
W-865-1804	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	1		To be sampled in 2016.
W-865-1804	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	1	Y	
W-865-1804	PTMW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	
W-865-1804	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	1	Y	
W-865-1804	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	3		
W-PIT3-01	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
W-PIT3-01	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
W-PIT3-01	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
W-PIT3-01	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT3-01	PTMW	Qal/WBR	A	CMP	MS:UISO	2	N	Dry.
W-PIT3-02	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
W-PIT3-02	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
W-PIT3-02	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
W-PIT3-02	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-PIT3-02	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT5-01	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
W-PIT5-01	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
W-PIT5-01	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
W-PIT5-01	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
W-PIT5-01	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT5-02	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
W-PIT5-02	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
W-PIT5-02	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
W-PIT5-02	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
W-PIT5-02	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT7-02	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
W-PIT7-02	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
W-PIT7-02	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
W-PIT7-02	PTMW	Qal/WBR	S	CMP	E906:ALL	1	Y	
W-PIT7-02	PTMW	Qal/WBR	S	CMP	E906:ALL	3		
W-PIT7-03	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
W-PIT7-03	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
W-PIT7-03	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
W-PIT7-03	PTMW	Qal/WBR	S	CMP	E624MOD:ALL	2	Y	
W-PIT7-03	PTMW	Qal/WBR	S	CMP	E624MOD:ALL	4		
W-PIT7-03	PTMW	Qal/WBR	A	CMP	E906:ALL	1	Y	
W-PIT7-10	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
W-PIT7-10	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
W-PIT7-10	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
W-PIT7-10	PTMW	Qal/WBR	A	CMP	E624MOD:ALL	2	Y	
W-PIT7-10	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
W-PIT7-10	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT7-11	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	N	Dry.
W-PIT7-11	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Dry.
W-PIT7-11	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	N	Dry.
W-PIT7-11	PTMW	Tnbs1-Tnbs0	A	CMP	E624MOD:ALL	2	N	Dry.
W-PIT7-11	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Dry.
W-PIT7-11	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT7-12	PTMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	2	Y	
W-PIT7-12	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-PIT7-12	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
W-PIT7-12	PTMW	Tnbs1-Tnbs0	A	CMP	E624MOD:ALL	2	Y	
W-PIT7-12	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-PIT7-12	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT7-13	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
W-PIT7-13	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-PIT7-13	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
W-PIT7-13	PTMW	Tnbs1-Tnbs0	A	CMP	E624MOD:ALL	2	Y	
W-PIT7-13	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-PIT7-13	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-PIT7-14	PTMW	Tnsc0	O	DIS	AS:UISO	2	Y	
W-PIT7-14	PTMW	Tnsc0	A	CMP	E300.0:PERC	2	Y	
W-PIT7-14	PTMW	Tnsc0	A	CMP	E906:ALL	2	Y	
W-PIT7-14	PTMW	Tnsc0	A	DIS	MS:UISO	2	Y	
W-PIT7-15	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-PIT7-15	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
W-PIT7-15	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-PIT7-15	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT7-15	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
W-PIT7-1860	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:PERC	2		To be sampled in 2016.
W-PIT7-1860	PTMW	Tnbs1-Tnbs0	E	CMP	E906:ALL	2		To be sampled in 2016.
W-PIT7-1861	PTMW	Qal/WBR	O	CMP	AS:UISO	2	Y	
W-PIT7-1861	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	Y	
W-PIT7-1861	PTMW	Qal/WBR	O	CMP	E300.0:PERC	2	Y	
W-PIT7-1861	PTMW	Qal/WBR	O	CMP	E906:ALL	2	Y	
W-PIT7-1904	PTMW	Qal/WBR	A	DIS	AS:UISO	2	Y	
W-PIT7-1904	PTMW	Qal/WBR	A	DIS	E300.0:O-PO2	2	Y	
W-PIT7-1905	PTMW	Qal/WBR	A	DIS	AS:UISO	2	Y	
W-PIT7-1905	PTMW	Qal/WBR	A	DIS	E300.0:O-PO2	2	Y	
W-PIT7-1907	PTMW	Qal/WBR	A	DIS	AS:UISO	2	Y	
W-PIT7-1907	PTMW	Qal/WBR	A	DIS	E300.0:O-PO2	2	Y	
W-PIT7-1915	PTMW	Qal/WBR	A	DIS	AS:UISO	2	Y	
W-PIT7-1915	PTMW	Qal/WBR	A	DIS	E300.0:O-PO2	2	Y	
W-PIT7-1916	PTMW	Qal/WBR	A	DIS	AS:UISO	2	Y	
W-PIT7-1916	PTMW	Qal/WBR	A	DIS	E300.0:O-PO2	2	Y	
W-PIT7-1918	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
W-PIT7-1918	PTMW	Qal/WBR	A	DIS	E300.0:O-PO2	2	Y	
W-PIT7-1918	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
W-PIT7-1918	PTMW	Qal/WBR	A	CMP	E624MOD:ALL	2	Y	
W-PIT7-1918	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
W-PIT7-1918	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT7-1918	PTMW	Qal/WBR	A	CMP	MS:UISO	2	Y	
W-PIT7-1919	PTMW	Qal/WBR	A	DIS	AS:UISO	2	Y	
W-PIT7-1919	PTMW	Qal/WBR	A	DIS	E300.0:O-PO2	2	Y	
W-PIT7-2141	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-PIT7-2141	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-PIT7-2141	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-PIT7-2141	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-PIT7-2141	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT7-2141	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
W-PIT7-2305	EW	Qal/WBR	A	CMP-TF	AS:UISO	2	Y	
W-PIT7-2305	EW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	Y	
W-PIT7-2305	EW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	Y	
W-PIT7-2305	EW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		
W-PIT7-2305	EW	Qal/WBR	A	CMP-TF	E624MOD:ALL	2	Y	
W-PIT7-2305	EW	Qal/WBR	A	DIS-TF	E624MOD:ALL	4		

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-PIT7-2305	EW	Qal/WBR	S	CMP-TF	E906:ALL	2	Y	
W-PIT7-2305	EW	Qal/WBR	S	CMP-TF	E906:ALL	4		
W-PIT7-2305	EW	Qal/WBR	S	DIS-TF	KPA:UTOT	2	Y	
W-PIT7-2305	EW	Qal/WBR	S	DIS-TF	KPA:UTOT	4		
W-PIT7-2305	EW	Qal/WBR	A	DIS-TF	MS:UISO	4		
W-PIT7-2306	EW	Qal/WBR	A	CMP-TF	AS:UISO	2	N	Insufficient water.
W-PIT7-2306	EW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	N	Insufficient water.
W-PIT7-2306	EW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	N	Insufficient water.
W-PIT7-2306	EW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		
W-PIT7-2306	EW	Qal/WBR	A	CMP-TF	E624MOD:ALL	2	N	Insufficient water.
W-PIT7-2306	EW	Qal/WBR	A	DIS-TF	E624MOD:ALL	4		
W-PIT7-2306	EW	Qal/WBR	S	CMP-TF	E906:ALL	2	N	Insufficient water.
W-PIT7-2306	EW	Qal/WBR	S	CMP-TF	E906:ALL	4		
W-PIT7-2306	EW	Qal/WBR	A	DIS-TF	KPA:UTOT	3		
W-PIT7-2306	EW	Qal/WBR	A	DIS-TF	MS:UISO	4		
W-PIT7-2307	EW	Qal/WBR	A	CMP-TF	AS:UISO	2	Y	
W-PIT7-2307	EW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	Y	
W-PIT7-2307	EW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	Y	
W-PIT7-2307	EW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		
W-PIT7-2307	EW	Qal/WBR	A	CMP-TF	E624MOD:ALL	2	Y	
W-PIT7-2307	EW	Qal/WBR	A	DIS-TF	E624MOD:ALL	4		
W-PIT7-2307	EW	Qal/WBR	S	CMP-TF	E906:ALL	2	Y	
W-PIT7-2307	EW	Qal/WBR	S	CMP-TF	E906:ALL	4		
W-PIT7-2307	EW	Qal/WBR	A	DIS-TF	KPA:UTOT	3		
W-PIT7-2307	EW	Qal/WBR	A	DIS-TF	MS:UISO	4		
W-PIT7-2309	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
W-PIT7-2309	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
W-PIT7-2309	PTMW	Qal/WBR	A	CMP	E624MOD:ALL	2	Y	
W-PIT7-2309	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
W-PIT7-2309	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT7-2309	PTMW	Qal/WBR	A	CMP	MS:UISO	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	A	CMP-TF	AS:UISO	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		
W-PIT7-2703	PTMW	Qal/WBR	A	CMP-TF	E624MOD:ALL	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	A	DIS-TF	E624MOD:ALL	4		
W-PIT7-2703	PTMW	Qal/WBR	S	CMP-TF	E906:ALL	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	S	CMP-TF	E906:ALL	4		
W-PIT7-2703	PTMW	Qal/WBR	S	CMP-TF	KPA:UTOT	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	S	CMP-TF	KPA:UTOT	4		
W-PIT7-2703	PTMW	Qal/WBR	A	DIS-TF	MS:UISO	4		
W-PIT7-2704	PTMW	Qal/WBR	A	CMP-TF	AS:UISO	2	N	Insufficient water.
W-PIT7-2704	PTMW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	N	Insufficient water.
W-PIT7-2704	PTMW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	N	Insufficient water.
W-PIT7-2704	PTMW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-PIT7-2704	PTMW	Qal/WBR	A	CMP-TF	E624MOD:ALL	2	N	Insufficient water.
W-PIT7-2704	PTMW	Qal/WBR	A	DIS-TF	E624MOD:ALL	4		
W-PIT7-2704	PTMW	Qal/WBR	S	CMP-TF	E906:ALL	2	N	Insufficient water.
W-PIT7-2704	PTMW	Qal/WBR	S	CMP-TF	E906:ALL	4		
W-PIT7-2704	PTMW	Qal/WBR	A	CMP-TF	KPA:UTOT	3		
W-PIT7-2704	PTMW	Qal/WBR	A	DIS-TF	MS:UISO	4		
W-PIT7-2705	PTMW	Qal/WBR	A	CMP-TF	AS:UISO	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		
W-PIT7-2705	PTMW	Qal/WBR	A	CMP-TF	E624MOD:ALL	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	A	DIS-TF	E624MOD:ALL	4		
W-PIT7-2705	PTMW	Qal/WBR	S	CMP-TF	E906:ALL	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	S	CMP-TF	E906:ALL	4		
W-PIT7-2705	PTMW	Qal/WBR	S	CMP-TF	KPA:UTOT	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	S	CMP-TF	KPA:UTOT	4		
W-PIT7-2705	PTMW	Qal/WBR	A	DIS-TF	MS:UISO	4		

Table 2.5-9. Pit 7-Source (PIT7-SRC) mass removed, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	Total Uranium mass removed (g)
PIT7-SRC	January	NA	0	0.053	0.17	0.20
	February	NA	0.018	0.093	0.25	0.34
	March	NA	0.0064	0.12	0.38	0.43
	April	NA	< 0.0001	0.097	0.33	0.30
	May	NA	0	0.10	0.36	0.31
	June	NA	0	0.11	0.39	0.31
Total		NA	0.024	0.59	1.9	1.9

Table 2.6-1. Building 854-Source (854-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
854-SRC	January	705	0	1,982	0
	February	656	0	1,363	0
	March	784	307	2,188	67,689
	April	655	97	1,827	19,630
	May	582	102	1,624	25,958
	June	696	94	1,915	20,811
Total		4,078	600	10,899	134,088

Table 2.6-2. Building 854-Proximal (854-PRX) volumes of ground water and soil vapor extracted and discharged, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
854-PRX	January	NA	597	NA	202,312
	February	NA	668	NA	208,242
	March	NA	789	NA	267,889
	April	NA	656	NA	223,145
	May	NA	585	NA	196,961
	June	NA	790	NA	265,420
Total		NA	4,085	NA	1,363,969

Table 2.6-3. Building 854-Distal (854-DIS) volumes of ground water and soil vapor extracted and discharged, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
854-DIS	January	NA	0	NA	0
	February	NA	0	NA	0
	March	NA	12	NA	403
	April	NA	6	NA	153
	May	NA	14	NA	524
	June	NA	34	NA	728
Total		NA	66	NA	1,808

Table 2.6-4. Building 854 Operable Unit volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Carbon tetra-chloride (µg/L)	Chloro-form (µg/L)	1,1-DCA (µg/L)	1,2-DCA (µg/L)	1,1-DCE (µg/L)	1,1,1-TCA (µg/L)	1,1,2-TCA (µg/L)	Freon 11 (µg/L)	Freon 113 (µg/L)	Vinyl chloride (µg/L)
Building 854-Distal[a]															
854-DIS-I	3/9/15	33	<0.5	0.84	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-DIS-I	4/8/15	37	<0.5	0.91	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-DIS-E	3/9/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-DIS-E	4/8/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-DIS-E	5/5/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-DIS-E	6/1/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Building 854-Proximal															
854-PRX-I	1/7/15	8.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-PRX-I	4/8/15	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-PRX-E	1/7/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-PRX-E	2/3/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-PRX-E	3/2/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-PRX-E	4/8/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-PRX-E	5/6/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-PRX-E	6/1/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Building 854-Source[a]															
854-SRC-I	3/9/15	93	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-SRC-I	4/8/15	83	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-SRC-E	3/9/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-SRC-E	4/8/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-SRC-E	5/5/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-SRC-E	6/1/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:

[a] **No samples collected in January or February due to shut down for freeze protection.**

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.6-4 (Con't). Analyte detected but not reported in main table.

Location	Date	Detection frequency
Building 854-Distal[a]		
854-DIS-I	**3/9/15**	**0 of 18**
854-DIS-I	**4/8/15**	**0 of 18**
854-DIS-E	**3/9/15**	**0 of 18**
854-DIS-E	**4/8/15**	**0 of 18**
854-DIS-E	**5/5/15**	**0 of 18**
854-DIS-E	**6/1/15**	**0 of 18**
Building 854-Proximal		
854-PRX-I	**1/7/15**	**0 of 18**
854-PRX-I	**4/8/15**	**0 of 18**
854-PRX-E	**1/7/15**	**0 of 18**
854-PRX-E	**2/3/15**	**0 of 18**
854-PRX-E	**3/2/15**	**0 of 18**
854-PRX-E	**4/8/15**	**0 of 18**
854-PRX-E	**5/6/15**	**0 of 18**
854-PRX-E	**6/1/15**	**0 of 18**
Building 854-Source[a]		
854-SRC-I	**3/9/15**	**0 of 18**
854-SRC-I	**4/8/15**	**0 of 18**
854-SRC-E	**3/9/15**	**0 of 18**
854-SRC-E	**4/8/15**	**0 of 18**
854-SRC-E	**5/5/15**	**0 of 18**
854-SRC-E	**6/1/15**	**0 of 18**

Notes:

[a] No samples collected in January or February due to shut down for freeze protection.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.6-5. Building 854 Operable Unit nitrate and perchlorate in ground water extraction and treatment system influent and effluent.

Location	Date	Nitrate as NO3 (mg/L)	Perchlorate (µg/L)
Building 854-Distal[a]			
854-DIS-I	3/9/15	20	<4
854-DIS-I	4/8/15	19	<4
854-DIS-E	3/9/15	7.3	<4
854-DIS-E	4/8/15	6.8	<4
854-DIS-E	5/5/15	8.4	<4
854-DIS-E	6/1/15	12	<4
Building 854-Proximal[b]			
854-PRX-I	1/7/15	35	<4 L
854-PRX-I	2/3/15	37	-
854-PRX-I	3/2/15	38	-
854-PRX-I	4/8/15	40 D	<4
854-PRX-I	5/6/15	36 D	-
854-PRX-I	6/1/15	38 D	-
854-PRX-E	1/7/15	35	<4
854-PRX-E	2/3/15	37	<4
854-PRX-E	3/2/15	39	<4
854-PRX-E	4/8/15	40	<4
854-PRX-E	4/22/15	39	-
854-PRX-E	5/6/15	38	<4
854-PRX-E	6/1/15	37 D	<4
Building 854-Source[a, c]			
854-SRC-I	3/9/15	-	5.9
854-SRC-I	4/8/15	-	6.5
854-SRC-E	3/9/15	-	<4
854-SRC-E	4/8/15	-	<4
854-SRC-E	5/5/15	-	<4
854-SRC-E	6/1/15	-	<4

Notes:

[a] No samples collected in January or February due to shut down for freeze protection.

[b] Extra monthly nitrate samples for trend analysis.

[c] Nitrate monitoring not required.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.6-6. Building 854 Operable Unit treatment facility sampling and analysis plan.

Sample location	Sample identification	Parameter	Frequency
854-SRC GWTS			
Influent Port	**854-SRC-I**	**VOCs**	**Quarterly**
		Perchlorate	**Quarterly**
		pH	**Quarterly**
Effluent Port	**854-SRC-E**	**VOCs**	**Monthly**
		Perchlorate	**Monthly**
		pH	**Monthly**
854-SRC SVTS			
Influent Port	**W-854-1834-854-SRC-VI**	**No Monitoring Requirements**	
Effluent Port	**854-SRC-E**	**VOCs**	**Weekly[a]**
Intermediate GAC	**854-SRC-VCF3I**	**VOCs**	**Weekly[a]**
854-PRX GWTS			
Influent Port	**W-854-03-854-PRX-I**	**VOCs**	**Quarterly**
		Perchlorate	**Quarterly**
		Nitrate	**Quarterly**
		pH	**Quarterly**
Effluent Port	**854-PRX-BTU-I**	**VOCs**	**Monthly**
Effluent Port	**854-PRX-E**	**Perchlorate**	**Monthly**
		Nitrate	**Monthly**
		pH	**Monthly**
854-DIS GWTS			
Influent Port	**W-854-2139-854-DIS-I**	**VOCs**	**Quarterly**
		Perchlorate	**Quarterly**
		Nitrate	**Quarterly**
		pH	**Quarterly**
Effluent Port	**854-DIS-E**	**VOCs**	**Monthly**
		Perchlorate	**Monthly**
		Nitrate	**Monthly**
		pH	**Monthly**

Notes:

[a] Weekly monitoring for VOCs will consist of the use of a flame-ionization detector, photo-ionization detector, or other District-approved VOC detection device.

One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.6-7. Building 854 Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-854-01	PTWM	Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-01	PTWM	Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-01	PTWM	Tnsc0	S	CMP	E624MOD:ALL	2	Y	
W-854-02	EW	Tnbs1-Tnsc0	A	CMP-TF	E300.0:NO3	2	Y	
W-854-02	EW	Tnbs1-Tnsc0	S	DIS-TF	E300.0:PERC	1	Y	
W-854-02	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	2	Y	
W-854-02	EW	Tnbs1-Tnsc0	S	DIS-TF	E601:ALL	1	Y	
W-854-02	EW	Tnbs1-Tnsc0	S	CMP-TF	E624MOD:ALL	2	Y	
W-854-03	EW	Tnbs1-Tnsc0	Q	DIS-TF	AS:UISO	2	Y	
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	1	Y	
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	1	Y	
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	1	Y	
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	2	Y	
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	2	Y	
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	2	Y	
W-854-03	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:PERC	1	Y	
W-854-03	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:PERC	2	Y	
W-854-03	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	1	Y	
W-854-03	EW	Tnbs1-Tnsc0	Q	DIS-TF	E624MOD:ALL	2	Y	
W-854-04	PTWM	Tmss	A	CMP	E300.0:NO3	2	Y	
W-854-04	PTWM	Tmss	S	CMP	E300.0:PERC	2	Y	
W-854-04	PTWM	Tmss	S	CMP	E624MOD:ALL	2	Y	
W-854-05	PTWM	Qls-Tnbs1	A	CMP	E300.0:NO3	2	Y	
W-854-05	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	2	Y	
W-854-05	PTWM	Qls-Tnbs1	S	CMP	E624MOD:ALL	2	Y	
W-854-06	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-06	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-06	PTWM	Tnbs1-Tnsc0	S	CMP	E624MOD:ALL	2	Y	
W-854-07	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-07	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-07	PTWM	Tnbs1-Tnsc0	S	CMP	E624MOD:ALL	2	Y	
W-854-08	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-08	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-08	PTWM	Tnbs1-Tnsc0	S	CMP	E624MOD:ALL	2	Y	
W-854-09	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	N	Insufficient water.
W-854-09	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	N	Insufficient water.
W-854-09	PTWM	Tnbs1-Tnsc0	S	CMP	E624MOD:ALL	2	N	Insufficient water.
W-854-10	PTWM	Qls-Tnbs1	A	CMP	E300.0:NO3	2	Y	
W-854-10	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	2	Y	
W-854-10	PTWM	Qls-Tnbs1	S	CMP	E624MOD:ALL	2	Y	
W-854-11	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	N	Dry.
W-854-11	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	N	Dry.
W-854-11	PTWM	Tnbs1-Tnsc0	S	CMP	E624MOD:ALL	2	N	Dry.
W-854-12	PTWM	Tmss	A	CMP	E300.0:NO3	2	N	Insufficient water.
W-854-12	PTWM	Tmss	S	CMP	E300.0:PERC	2	N	Insufficient water.
W-854-12	PTWM	Tmss	S	CMP	E624MOD:ALL	2	N	Insufficient water.

Table 2.6-7. Building 854 Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-854-13	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-13	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-13	PTWM	Tnbs1-Tnsc0	S	CMP	E624MOD:ALL	2	Y	
W-854-14	PTWM	Qls-Tnbs1	A	CMP	E300.0:NO3	2	Y	
W-854-14	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	2	Y	
W-854-14	PTWM	Qls-Tnbs1	S	CMP	E624MOD:ALL	2	Y	
W-854-15	PTWM	Qls-Tnbs1	A	CMP	E300.0:NO3	2	Y	
W-854-15	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	2	Y	
W-854-15	PTWM	Qls-Tnbs1	S	CMP	E624MOD:ALL	2	Y	
W-854-17	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-17	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-17	PTWM	Tnbs1-Tnsc0	S	CMP	E624MOD:ALL	2	Y	
W-854-18A	PTMW	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-18A	PTMW	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-18A	PTMW	Tnbs1-Tnsc0	S	CMP	E624MOD:ALL	2	Y	
W-854-19	PTWM	Qls-Tnbs1	O	CMP	E300.0:NO3	2	N	Dry.
W-854-19	PTWM	Qls-Tnbs1	O	CMP	E300.0:PERC	2	N	Dry.
W-854-19	PTWM	Qls-Tnbs1	O	CMP	E624MOD:ALL	2	N	Dry.
W-854-45	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-45	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-45	PTWM	Tnbs1-Tnsc0	S	CMP	E624MOD:ALL	2	Y	
W-854-1701	PTWM	Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-1701	PTWM	Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-1701	PTWM	Tnsc0	S	CMP	E624MOD:ALL	2	Y	
W-854-1706	PTWM	Qls-Tnbs1	A	CMP	E300.0:NO3	2	N	Dry.
W-854-1706	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	2	N	Dry.
W-854-1706	PTWM	Qls-Tnbs1	S	CMP	E624MOD:ALL	2	N	Dry.
W-854-1707	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-1707	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-1707	PTWM	Tnbs1-Tnsc0	S	CMP	E624MOD:ALL	2	Y	
W-854-1731	PTWM	Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-1731	PTWM	Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-1731	PTWM	Tnsc0	S	CMP	E624MOD:ALL	2	Y	
W-854-1822	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-1822	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-1822	PTWM	Tnbs1-Tnsc0	S	CMP	E624MOD:ALL	2	Y	
W-854-1823	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-1823	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-1823	PTWM	Tnbs1-Tnsc0	S	CMP	E624MOD:ALL	2	Y	
W-854-1902	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	N	Dry.
W-854-1902	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	N	Dry.
W-854-1902	PTWM	Tnbs1-Tnsc0	S	CMP	E624MOD:ALL	2	N	Dry.
W-854-2115	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-2115	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-2115	PTWM	Tnbs1-Tnsc0	S	CMP	E624MOD:ALL	2	Y	
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:NO3	1	Y	

Table 2.6-7. Building 854 Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:NO3	2	Y	
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:PERC	1	Y	
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:PERC	2	Y	
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	1	Y	
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E624MOD:ALL	2	Y	
W-854-2218	EW	Tnbs1-Tnsc0	A	CMP-TF	E300.0:NO3	2	Y	
W-854-2218	EW	Tnbs1-Tnsc0	S	DIS-TF	E300.0:PERC	1	N	Well pump off until after REVAL.
W-854-2218	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	2	Y	
W-854-2218	EW	Tnbs1-Tnsc0	S	DIS-TF	E601:ALL	1	N	Well pump off until after REVAL.
W-854-2218	EW	Tnbs1-Tnsc0	S	CMP-TF	E624MOD:ALL	2	Y	
W-854-2611	PTMW	Tnbs1/Tnsc0	1	DIS	D-15N(NO3):ALL	2	Y	
W-854-2611	PTMW	Tnbs1/Tnsc0	1	DIS	D-18O(NO3):ALL	2	Y	
W-854-2611	PTMW	Tnbs1/Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-2611	PTMW	Tnbs1/Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-2611	PTMW	Tnbs1/Tnsc0	S	CMP	E624MOD:ALL	2	Y	
W-854-2611	PTMW	Tnbs1/Tnsc0	1	DIS	EXCESSN2:ALL	2	Y	
W-854-F2	PTWM	Qls-Tnbs1	O	CMP	E300.0:NO3	2	N	Dry.
W-854-F2	PTWM	Qls-Tnbs1	O	CMP	E300.0:PERC	2	N	Dry.
W-854-F2	PTWM	Qls-Tnbs1	O	CMP	E624MOD:ALL	2	N	Dry.
SPRING10	SPR	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	N	Dry.
SPRING10	SPR	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	N	Dry.
SPRING10	SPR	Tnbs1-Tnsc0	S	CMP	E624MOD:ALL	2	N	Dry.
SPRING11	SPR	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
SPRING11	SPR	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
SPRING11	SPR	Tnbs1-Tnsc0	S	CMP	E624MOD:ALL	2	Y	

Table 2.6-8. Building 854-Source (854-SRC) mass removed, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
854-SRC	January	18	0	0	0	NA	NA
	February	12	0	0	0	NA	NA
	March	19	24	1.7	14	NA	NA
	April	47	6.5	0.51	4.1	NA	NA
	May	42	6.9	0.49	5.0	NA	NA
	June	50	6.9	0.54	4.3	NA	NA
Total		190	44	3.2	27	NA	NA

Table 2.6-9. Building 854-Proximal (854-PRX) mass removed, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
854-PRX	January	NA	6.2	0	27	NA	NA
	February	NA	6.4	0	29	NA	NA
	March	NA	8.2	0	39	NA	NA
	April	NA	3.4	0	34	NA	NA
	May	NA	3.0	0	27	NA	NA
	June	NA	4.0	0	38	NA	NA
Total		NA	31	0	190	NA	NA

Table 2.6-10. Building 854-Distal (854-DIS) mass removed, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
854-DIS	January	NA	0	0	0	NA	NA
	February	NA	0	0	0	NA	NA
	March	NA	0.052	0	0.031	NA	NA
	April	NA	0.022	0	0.011	NA	NA
	May	NA	0.075	0	0.038	NA	NA
	June	NA	0.10	0	0.052	NA	NA
Total		NA	0.25	0	0.13	NA	NA

Table 2.7-1. Building 832-Source (832-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
832-SRC	January	0	0	0	0
	February	0	0	0	0
	March	0	0	0	0
	April	0	0	0	0
	May	312	312	80	2,309
	June	792	792	188	4,332
Total		1,104	1,104	268	6,641

Table 2.7-2. Building 830-Source (830-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
830-SRC	January	0	0	0	0
	February	0	0	0	0
	March	0	0	0	0
	April	0	0	0	0
	May	0	0	0	0
	June	0	0	0	0
Total		0	0	0	0

Table 2.7-3. Building 830-Distal South (830-DISS) volumes of ground water and soil vapor extracted and discharged, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
830-DISS	January	NA	0	NA	0
	February	NA	0	NA	0
	March	NA	0	NA	0
	April	NA	336	NA	124,632
	May	NA	24	NA	5,357
	June	NA	96	NA	16,013
Total		NA	456	NA	146,002

Table 2.7-4. Building 832 Canyon Operable Unit volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Carbon tetra-chloride (µg/L)	Chloro-form (µg/L)	1,1-DCA (µg/L)	1,2-DCA (µg/L)	1,1-DCE (µg/L)	1,1,1-TCA (µg/L)	1,1,2-TCA (µg/L)	Freon 11 (µg/L)	Freon 113 (µg/L)	Vinyl chloride (µg/L)
Building 830-Distal South[a]															
Building 832-Source[b]															
832-SRC-I	5/13/15	36	<0.5	0.71	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
832-SRC-E	5/13/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
832-SRC-E	6/1/15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:

[a] No influent or effluent monitoring conducted due to VOC treatment at CGSA GWTS.

[b] No samples collected until May 2015 due to shutdown for replacement and testing of effluent pipeline.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.7-4 (Con't). Analyte detected but not reported in main table.

Location	Date	Detection Frequency
Building 830-Distal South[a]		
Building 832-Source[b]		
832-SRC-I	5/13/15	0 of 8
832-SRC-E	5/13/15	0 of 8
832-SRC-E	6/1/15	0 of 8

Notes:

[a] No influent or effluent monitoring conducted due to VOC treatment at CGSA GWTS.

[b] No samples collected until May 2015 due to shutdown for replacement and testing of effluent pipeline.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.7-5. Building 832 Canyon Operable Unit perchlorate in ground water extraction and treatment system influent and effluent.

Location	Date	Perchlorate (µg/L)
Building 830-Distal South[a]		
830-DISS-I	**4/8/15**	**4.1**
830-DISS-E	**4/8/15**	**4**
830-DISS-E	**4/15/15**	**<4**
830-DISS-E	**4/20/15**	**<4**
830-DISS-E	**5/12/15**	**<4**
830-DISS-E	**6/2/15**	**<4**
Building 832-Source[b]		
832-SRC-I	**5/13/15**	**4.2**
832-SRC-E	**5/13/15**	**<4**
832-SRC-E	**6/1/15**	**<4**

Notes:

[a] No samples collected in January, February, and March due to shut down for freeze protection.

[b] No samples collected until May 2015 due to shutdown for replacement and testing of effluent pipeline.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.7-6. Building 832 Canyon Operable Unit treatment facility sampling and analysis plan.

Sample location	Sample identification	Parameter	Frequency
832-SRC GWTS			
Influent Port	**832-SRC-I**	**VOCs**	**Quarterly**
		Perchlorate	**Quarterly**
		pH	**Quarterly**
Effluent Port	**832-SRC-E**	**VOCs**	**Monthly**
		Perchlorate	**Monthly**
		PH	**Monthly**
832-SRC SVTS			
Influent Port	**832-SRC-VI**	**No Monitoring Requirements**	
Effluent Port	**832-SRC-VE**	**VOCs**	**Weekly[a]**
Intermediate GAC	**832-SRC-VCF3I**	**VOCs**	**Weekly[a]**
830-SRC GWTS			
Influent Port	**830-SRC-I**	**VOCs**	**Quarterly**
		Perchlorate	**Quarterly**
		PH	**Quarterly**
Effluent Port	**830-SRC-E**	**VOCs**	**Monthly**
		Perchlorate	**Monthly**
		PH	**Monthly**
830-SRC SVTS			
Influent Port	**830-SRC-VI**	**No Monitoring Requirements**	
Effluent Port	**830-SRC-VE**	**VOCs**	**Weekly[a]**
Intermediate GAC	**830-SRC-VCF3I**	**VOCs**	**Weekly[a]**
830-DISS GWTS			
Influent Port	**830-DISS-I**	**Perchlorate**	**Quarterly**
		pH	**Quarterly**
Effluent Port	**830-DISS-E**	**Perchlorate**	**Monthly**
		pH	**Monthly**

Notes:

[a] Weekly monitoring for VOCs will consist of the use of a flame-ionization detector, photo-ionization detector, or other District-approved VOC detection device.

One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
SPRING3	SPR	Qal/WBR	A	CMP	E300.0:NO3	1	N	Dry.
SPRING3	SPR	Qal/WBR	A	CMP	E300.0:PERC	1	N	Dry.
SPRING3	SPR	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
SPRING4	SPR	Tpsg-Tps	O	CMP	E300.0:NO3	1	N	Dry.
SPRING4	SPR	Tpsg-Tps	O	CMP	E300.0:PERC	1	N	Dry.
SPRING4	SPR	Tpsg-Tps	O	CMP	E601:ALL	1	N	Dry.
SVI-830-031	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
SVI-830-031	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	Y	
SVI-830-031	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
SVI-830-032	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Insufficient water.
SVI-830-032	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	N	Insufficient water.
SVI-830-032	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Insufficient water.
SVI-830-033	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Insufficient water.
SVI-830-033	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	N	Insufficient water.
SVI-830-033	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Insufficient water.
SVI-830-035	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
SVI-830-035	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	Y	
SVI-830-035	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
W-830-04A	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-04A	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-830-04A	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-05	PTMW	Tnsc1c	A	CMP	E300.0:NO3	1	Y	
W-830-05	PTMW	Tnsc1c	A	CMP	E300.0:PERC	1	Y	
W-830-05	PTMW	Tnsc1c	S	CMP	E601:ALL	1	Y	
W-830-07	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Dry.
W-830-07	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	N	Dry.
W-830-07	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-830-09	PTMW	UTnbs1	1	DIS	D-15N(NO3):ALL	2	Y	
W-830-09	PTMW	UTnbs1	1	DIS	D-18O(NO3):ALL	2	Y	
W-830-09	PTMW	UTnbs1	O	CMP	E300.0:NO3	1	Y	
W-830-09	PTMW	UTnbs1	O	CMP	E300.0:PERC	1	Y	
W-830-09	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-830-09	PTMW	UTnbs1	1	DIS	EXCESSN2:ALL	2	Y	
W-830-10	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-10	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-830-10	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-11	PTMW	Tnsc1c	A	CMP	E300.0:NO3	1	Y	
W-830-11	PTMW	Tnsc1c	A	CMP	E300.0:PERC	1	Y	
W-830-11	PTMW	Tnsc1c	S	CMP	E601:ALL	1	Y	
W-830-12	GW	LTnbs1	S	CMP	E300.0:NO3	1	Y	
W-830-12	GW	LTnbs1	S	CMP	E300.0:PERC	1	Y	
W-830-12	GW	LTnbs1	Q	CMP	E601:ALL	1	Y	
W-830-12	GW	LTnbs1	Q	CMP	E624MOD:ALL	2	Y	
W-830-13	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	N	Inoperable pump.
W-830-13	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	N	Inoperable pump.
W-830-13	PTMW	Tnbs2	S	CMP	E601:ALL	1	N	Inoperable pump.

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-830-13	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1		To be sampled in 2016.
W-830-14	PTMW	Tnsc1b	E	CMP	E300.0:NO3	1		To be sampled in 2016.
W-830-14	PTMW	Tnsc1b	E	CMP	E300.0:PERC	1		To be sampled in 2016.
W-830-14	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-15	GW	UTnbs1	S	CMP	E300.0:NO3	1	Y	
W-830-15	GW	UTnbs1	S	CMP	E300.0:PERC	1	Y	
W-830-15	GW	UTnbs1	Q	CMP	E601:ALL	1	Y	
W-830-15	GW	UTnbs1	Q	CMP	E624MOD:ALL	2	Y	
W-830-16	PTMW	Tnsc1b	O	CMP	E300.0:NO3	1	Y	
W-830-16	PTMW	Tnsc1b	O	CMP	E300.0:PERC	1	Y	
W-830-16	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-17	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	N	Inoperable pump.
W-830-17	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	N	Inoperable pump.
W-830-17	PTMW	Tnbs2	S	CMP	E601:ALL	1	N	Inoperable pump.
W-830-18	PTMW	UTnbs1	E	CMP	E300.0:NO3	1		To be sampled in 2016.
W-830-18	PTMW	UTnbs1	E	CMP	E300.0:PERC	1		To be sampled in 2016.
W-830-18	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-830-20	PTMW	UTnbs1	E	CMP	E300.0:NO3	1		To be sampled in 2016.
W-830-20	PTMW	UTnbs1	E	CMP	E300.0:PERC	1		To be sampled in 2016.
W-830-20	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-830-20	PTMW	UTnbs1	1	DIS	EXCESSN2:ALL	2	Y	
W-830-21	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-21	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-830-21	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-22	PTMW	Tnsc1a	A	CMP	E300.0:NO3	1	Y	
W-830-22	PTMW	Tnsc1a	A	CMP	E300.0:PERC	1	Y	
W-830-22	PTMW	Tnsc1a	S	CMP	E601:ALL	1	Y	
W-830-25	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	N	Dry.
W-830-25	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	N	Dry.
W-830-25	PTMW	Tnsc1b	S	CMP	E601:ALL	1	N	Dry.
W-830-26	PTMW	UTnbs1	E	CMP	E300.0:NO3	1		To be sampled in 2016.
W-830-26	PTMW	UTnbs1	E	CMP	E300.0:PERC	1		To be sampled in 2016.
W-830-26	PTMW	UTnbs1	S	CMP	E601:ALL	1	N	Dry.
W-830-27	PTMW	Tnsc1a	A	CMP	E300.0:NO3	1	Y	
W-830-27	PTMW	Tnsc1a	A	CMP	E300.0:PERC	1	Y	
W-830-27	PTMW	Tnsc1a	S	CMP	E601:ALL	1	Y	
W-830-28	PTMW	UTnbs1	O	CMP	E300.0:NO3	1	Y	
W-830-28	PTMW	UTnbs1	O	CMP	E300.0:PERC	1	Y	
W-830-28	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-830-29	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	N	Inoperable pump.
W-830-29	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	N	Inoperable pump.
W-830-29	PTMW	LTnbs1	S	CMP	E601:ALL	1	N	Inoperable pump.
W-830-30	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
W-830-30	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	Y	
W-830-30	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
W-830-34	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-830-34	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	Y	
W-830-34	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
W-830-34	PTMW	Qal/WBR	E	CMP	E8330LOW:ALL	1		To be sampled in 2016.
W-830-50	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-50	PTMW	Tnsc1b	O	CMP	E300.0:PERC	1	Y	
W-830-50	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-51	EW	Tnsc1b	1	DIS	D-15N(NO3):ALL	2	Y	
W-830-51	EW	Tnsc1b	1	DIS	D-18O(NO3):ALL	2	Y	
W-830-51	EW	Tnsc1b	1	DIS	EXCESSN2:ALL	2	Y	
W-830-53	EW	Tnsc1b	1	DIS	D-15N(NO3):ALL	2	Y	
W-830-53	EW	Tnsc1b	1	DIS	D-18O(NO3):ALL	2	Y	
W-830-53	EW	Tnsc1b	1	DIS	EXCESSN2:ALL	2	Y	
W-830-54	PTMW	Tnsc1c	O	CMP	E300.0:NO3	1	Y	
W-830-54	PTMW	Tnsc1c	O	CMP	E300.0:PERC	1	Y	
W-830-54	PTMW	Tnsc1c	S	CMP	E601:ALL	1	Y	
W-830-55	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-55	PTMW	Tnsc1b	E	CMP	E300.0:PERC	1		To be sampled in 2016.
W-830-55	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-56	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-56	PTMW	Tnsc1b	O	CMP	E300.0:PERC	1	Y	
W-830-56	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-58	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-58	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-830-58	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-1730	GW	Tnsc1b	S	CMP	E300.0:NO3	1	Y	
W-830-1730	GW	Tnsc1b	S	CMP	E300.0:PERC	1	Y	
W-830-1730	GW	Tnsc1b	Q	CMP	E601:ALL	1	Y	
W-830-1730	GW	Tnsc1b	Q	CMP	E624MOD:ALL	2	Y	
W-830-1829	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-1829	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-830-1829	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-1830	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-1830	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-830-1830	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-1831	PTMW	Tnsc1b	O	CMP	E300.0:NO3	1	Y	
W-830-1831	PTMW	Tnsc1b	O	CMP	E300.0:PERC	1	Y	
W-830-1831	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-1832	PTMW	UTnbs1	A	CMP	E300.0:NO3	1	Y	
W-830-1832	PTMW	UTnbs1	A	CMP	E300.0:PERC	1	Y	
W-830-1832	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-830-2213	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-2213	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-830-2213	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-2311	PTMW	Tnsc1a	A	CMP	E300.0:NO3	1	Y	
W-830-2311	PTMW	Tnsc1a	A	CMP	E300.0:PERC	1	Y	
W-830-2311	PTMW	Tnsc1a	S	CMP	E601:ALL	1	Y	

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-830-2806	PTMW	Tnsc1a	S	CMP	E300.0:NO3	1	Y	
W-830-2806	PTMW	Tnsc1a	S	CMP	E300.0:PERC	1	Y	
W-830-2806	PTMW	Tnsc1a	Q	CMP	E601:ALL	1	Y	
W-830-2806	PTMW	Tnsc1a	Q	CMP	E624MOD:ALL	2	Y	
W-831-01	PTMW	LTnbs1	O	CMP	E300.0:NO3	1	Y	
W-831-01	PTMW	LTnbs1	O	CMP	E300.0:PERC	1	Y	
W-831-01	PTMW	LTnbs1	O	CMP	E601:ALL	1	Y	
W-832-06	PTMW	Tnsc1a	A	CMP	E300.0:NO3	1	Y	
W-832-06	PTMW	Tnsc1a	A	CMP	E300.0:PERC	1	Y	
W-832-06	PTMW	Tnsc1a	S	CMP	E601:ALL	1	Y	
W-832-09	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	N	Inoperable pump.
W-832-09	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	N	Inoperable pump.
W-832-09	PTMW	LTnbs1	S	CMP	E601:ALL	1	N	Inoperable pump.
W-832-13	PTMW	Qal/WBR-Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-832-13	PTMW	Qal/WBR-Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-832-13	PTMW	Qal/WBR-Tnsc1b	S	CMP	E601:ALL	1	Y	
W-832-14	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-832-14	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-832-14	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-832-16	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-832-16	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	N	Insufficient water.
W-832-16	PTMW	Tnsc1b	S	CMP	E601:ALL	1	N	Insufficient water.
W-832-17	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-832-17	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	N	Insufficient water.
W-832-17	PTMW	Tnsc1b	S	CMP	E601:ALL	1	N	Insufficient water.
W-832-18	PTMW	Qal/WBR-Tnsc1b	A	CMP	E300.0:NO3	1	N	Dry.
W-832-18	PTMW	Qal/WBR-Tnsc1b	A	CMP	E300.0:PERC	1	N	Dry.
W-832-18	PTMW	Qal/WBR-Tnsc1b	S	CMP	E601:ALL	1	N	Dry.
W-832-19	PTMW	Qal/WBR-Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-832-19	PTMW	Qal/WBR-Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-832-19	PTMW	Qal/WBR-Tnsc1b	S	CMP	E601:ALL	1	Y	
W-832-20	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-832-20	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	N	Insufficient water.
W-832-20	PTMW	Tnsc1b	S	CMP	E601:ALL	1	N	Insufficient water.
W-832-21	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Dry.
W-832-21	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	N	Dry.
W-832-21	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-832-22	PTMW	UTnbs1	A	CMP	E300.0:NO3	1	N	Dry.
W-832-22	PTMW	UTnbs1	A	CMP	E300.0:PERC	1	N	Dry.
W-832-22	PTMW	UTnbs1	A	CMP	E601:ALL	1	N	Dry.
W-832-23	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-832-23	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-832-23	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-832-24	PTMW	Tnsc1a	A	CMP	E300.0:NO3	1	Y	
W-832-24	PTMW	Tnsc1a	A	CMP	E300.0:PERC	1	Y	
W-832-24	PTMW	Tnsc1a	S	CMP	E601:ALL	1	Y	

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-832-1927	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-832-1927	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-832-1927	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-832-2112	GW	UTnbs1	S	CMP	E300.0:NO3	1	Y	
W-832-2112	GW	UTnbs1	S	CMP	E300.0:PERC	1	Y	
W-832-2112	GW	UTnbs1	Q	CMP	E601:ALL	1	Y	
W-832-2112	GW	UTnbs1	Q	CMP	E624MOD:ALL	2	Y	
W-832-2906	PTMW	UTnbs1	S	CMP	E300.0:NO3	1	Y	
W-832-2906	PTMW	UTnbs1	S	CMP	E300.0:PERC	1	Y	
W-832-2906	PTMW	UTnbs1	Q	CMP	E601:ALL	1	Y	
W-832-2906	PTMW	UTnbs1	Q	CMP	E624MOD:ALL	2	Y	
W-832-3019	EW	Tnsc1a	1	DIS	DWMETALS:ALL	2	Y	New well baseline sampling.
W-832-3019	EW	Tnsc1a	1	DIS	E200.7:SI	2	Y	New well baseline sampling.
W-832-3019	EW	Tnsc1a	S	CMP	E300.0:NO3	1	Y	
W-832-3019	EW	Tnsc1a	S	CMP	E300.0:PERC	1	Y	
W-832-3019	EW	Tnsc1a	1	DIS	E300.0:PERC	2	Y	New well baseline sampling.
W-832-3019	EW	Tnsc1a	1	DIS	E624B:ALL	2	Y	New well baseline sampling.
W-832-3019	EW	Tnsc1a	1	DIS	E8330LOW:ALL	2	Y	New well baseline sampling.
W-832-3019	EW	Tnsc1a	1	DIS	E900:ALL	2	Y	New well baseline sampling.
W-832-3019	EW	Tnsc1a	1	DIS	E906:ALL	2	Y	New well baseline sampling.
W-832-3019	EW	Tnsc1a	1	DIS	GENMIN:ALL	2	Y	New well baseline sampling.
W-832-3019	EW	Tnsc1a	1	DIS	KPA:UTOT	2	Y	New well baseline sampling.
W-832-3019	EW	Tnsc1a	1	DIS	MS:UISO	2	Y	New well baseline sampling.
W-832-3019	EW	Tnsc1a	1	DIS	TBOS:ALL	2	Y	New well baseline sampling.
W-832-3020	PTMW	Tnsc1a	1	DIS	DWMETALS:ALL	2	Y	New well baseline sampling.
W-832-3020	PTMW	Tnsc1a	1	DIS	E200.7:SI	2	Y	New well baseline sampling.
W-832-3020	PTMW	Tnsc1a	1	DIS	E300.0:PERC	2	Y	New well baseline sampling.
W-832-3020	PTMW	Tnsc1a	1	DIS	E624B:ALL	2	Y	New well baseline sampling.
W-832-3020	PTMW	Tnsc1a	1	DIS	E8330LOW:ALL	2	Y	New well baseline sampling.
W-832-3020	PTMW	Tnsc1a	1	DIS	E900:ALL	2	Y	New well baseline sampling.
W-832-3020	PTMW	Tnsc1a	1	DIS	E906:ALL	2	Y	New well baseline sampling.
W-832-3020	PTMW	Tnsc1a	1	DIS	GENMIN:ALL	2	Y	New well baseline sampling.
W-832-3020	PTMW	Tnsc1a	1	DIS	KPA:UTOT	2	Y	New well baseline sampling.
W-832-3020	PTMW	Tnsc1a	1	DIS	MS:UISO	2	Y	New well baseline sampling.
W-832-3020	PTMW	Tnsc1a	1	DIS	TBOS:ALL	2	Y	New well baseline sampling.
W-832-3020	PTMW	Tnsc1a	S	CMP	E300.0:NO3	1	N	Insufficient water.
W-832-3020	PTMW	Tnsc1a	S	CMP	E300.0:PERC	1	N	Insufficient water.
W-832-SC1	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Restricted access.
W-832-SC1	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	N	Restricted access.
W-832-SC1	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Restricted access.
W-832-SC2	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Dry.
W-832-SC2	PTMW	Qal/WBR	E	CMP	E300.0:PERC	1		To be sampled in 2016.
W-832-SC2	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-832-SC3	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Restricted access.
W-832-SC3	PTMW	Qal/WBR	O	CMP	E300.0:PERC	1	N	Restricted access.
W-832-SC3	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Restricted access.

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-832-SC4	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Dry.
W-832-SC4	PTMW	Qal/WBR	E	CMP	E300.0:PERC	1		To be sampled in 2016.
W-832-SC4	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-870-01	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Dry.
W-870-01	PTMW	Qal/WBR	O	CMP	E300.0:PERC	1	N	Dry.
W-870-01	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-870-02	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-870-02	PTMW	Tnbs2	E	CMP	E300.0:PERC	1		To be sampled in 2016.
W-870-02	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-880-01	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-880-01	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-880-01	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-880-01	GW	Tnbs2	Q	CMP	E624MOD:ALL	2	Y	
W-880-01	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-880-02	GW	Qal/WBR	S	CMP	E300.0:NO3	1	Y	
W-880-02	GW	Qal/WBR	S	CMP	E300.0:PERC	1	Y	
W-880-02	GW	Qal/WBR	Q	CMP	E601:ALL	1	Y	
W-880-02	GW	Qal/WBR	Q	CMP	E624MOD:ALL	2	Y	
W-880-02	GW	Qal/WBR	S	CMP	E8330LOW:ALL	1	N	Insufficient water.
W-880-03	GW	Tnsc1b	S	CMP	E300.0:NO3	1	Y	
W-880-03	GW	Tnsc1b	S	CMP	E300.0:PERC	1	Y	
W-880-03	GW	Tnsc1b	Q	CMP	E601:ALL	1	Y	
W-880-03	GW	Tnsc1b	Q	CMP	E624MOD:ALL	2	Y	
W-880-03	GW	Tnsc1b	S	CMP	E8330LOW:ALL	1	Y	

Table 2.7-8. Building 832-Source (832-SRC) mass removed, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
832-SRC	January	0	0	0	0	NA	NA
	February	0	0	0	0	NA	NA
	March	0	0	0	0	NA	NA
	April	0	0	0	0	NA	NA
	May	0.81	1.4	0.036	0.91	NA	NA
	June	0.40	2.8	0.074	1.7	NA	NA
Total		1.2	4.2	0.11	2.6	NA	NA

Table 2.7-9. Building 830-Source (830-SRC) mass removed, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
830-SRC	January	0	0	0	0	NA	NA
	February	0	0	0	0	NA	NA
	March	0	0	0	0	NA	NA
	April	0	0	0	0	NA	NA
	May	0	0	0	0	NA	NA
	June	0	0	0	0	NA	NA
Total		0	0	0	0	NA	NA

Table 2.7-10. Building 830-Distal South (830-DISS) mass removed, January 1, 2015 through June 30, 2015.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
830-DISS	January	NA	0	0	0	NA	NA
	February	NA	0	0	0	NA	NA
	March	NA	0	0	0	NA	NA
	April	NA	6.9	0.83	32	NA	NA
	May	NA	0.19	0.035	1.2	NA	NA
	June	NA	0.64	0.12	3.7	NA	NA
Total		NA	7.8	0.99	36	NA	NA

Table 2.8-1. Building 801 and Pit 8 Landfill area ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K8-01	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
K8-01	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K8-01	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
K8-01	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K8-01	PTMW	Tnbs1-Tnbs0	S	CMP	E624MOD:ALL	2	Y	
K8-01	PTMW	Tnbs1-Tnbs0	S	CMP	E624MOD:ALL	4		
K8-01	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K8-01	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	ANIONS:FL	2	Y	
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	4		
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
K8-02B	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	2	Y	
K8-02B	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	4		
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	1	Y	
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	2	Y	
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	3		
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	4		
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	E624MOD:ALL	2	Y	
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	1	Y	
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	2	Y	
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	3		
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	4		
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K8-03B	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
K8-03B	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K8-03B	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
K8-03B	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K8-03B	PTMW	Tnbs1-Tnbs0	S	CMP	E624MOD:ALL	2	Y	
K8-03B	PTMW	Tnbs1-Tnbs0	S	CMP	E624MOD:ALL	4		
K8-03B	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K8-03B	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	ANIONS:FL	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	E624MOD:ALL	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	ANIONS:FL	2	N	Dry.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	2	N	Dry.

Table 2.8-1. Building 801 and Pit 8 Landfill area ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E200.7:LI	2	N	Dry.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	N	Dry.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E300.0:PERC	2	N	Dry.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E624MOD:ALL	2	N	Dry.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E8330LOW:ALL	2	N	Dry.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E906:ALL	2	N	Dry.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	T26METALS:ALL	2	N	Dry.

Table 2.8-2. Building 833 area ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-833-03	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Dry.
W-833-12	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Dry.
W-833-18	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Dry.
W-833-22	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Dry.
W-833-28	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Insuffient water.
W-833-30	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
W-833-30	PTMW	LTnbs1	S	CMP	E624MOD:ALL	3		
W-833-33	PTMW	Tpsg	A	CMP	E601:ALL	1	Y	
W-833-34	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Dry.
W-833-43	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Dry.
W-840-01	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
W-840-01	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
W-840-01	PTMW	LTnbs1	A	CMP	E601:ALL	1	Y	
W-841-01	PTMW	UTnbs1	O	CMP	E300.0:NO3	1	N	Inoperable pump.
W-841-01	PTMW	UTnbs1	O	CMP	E300.0:PERC	1	N	Inoperable pump.
W-841-01	PTMW	UTnbs1	A	CMP	E601:ALL	1	N	Inoperable pump.

Table 2.8-3. Building 845 Firing Table and Pit 9 Landfill area ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	ANIONS:FL	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	E200.7:LI	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:NO3	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:PERC	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	E624MOD:ALL	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	E906:ALL	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	MS:UISO	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	ANIONS:FL	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	E200.7:LI	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:NO3	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:PERC	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	E624MOD:ALL	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	E906:ALL	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	DIS	MS:UISO	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	ANIONS:FL	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	E200.7:LI	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:NO3	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:PERC	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	E624MOD:ALL	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	E906:ALL	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	MS:UISO	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	ANIONS:FL	2	Y	
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	E200.7:LI	2	Y	
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:NO3	2	Y	
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:PERC	2	Y	
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	E624MOD:ALL	2	Y	
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	E906:ALL	2	Y	
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	MS:UISO	2	Y	
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	T26METALS:ALL	2	Y	

Table 2.8-4. Building 851 area ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-851-05	PTMW	Tmss	A	CMP	AS:UISO	4		
W-851-05	PTMW	Tmss	Q	DIS	E300.0:PERC	2	Y	
W-851-05	PTMW	Tmss	O	CMP	E624MOD:ALL	2	Y	
W-851-05	PTMW	Tmss	A	CMP	MS:UISO	2	Y	
W-851-06	PTMW	Tmss	A	CMP	AS:UISO	4		
W-851-06	PTMW	Tmss	Q	DIS	E300.0:PERC	2	Y	
W-851-06	PTMW	Tmss	A	CMP	MS:UISO	2	Y	
W-851-07	PTMW	Tmss	A	CMP	AS:UISO	4		
W-851-07	PTMW	Tmss	Q	DIS	E300.0:PERC	2	Y	
W-851-07	PTMW	Tmss	A	CMP	MS:UISO	2	Y	
W-851-08	PTMW	Tmss	A	CMP	AS:UISO	4		
W-851-08	PTMW	Tmss	A	CMP	MS:UISO	2	Y	

Table 3.1-1. Pit 2 Landfill area ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	ANIONS:FL	2	Y	
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K2-01C	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
K2-01C	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	E624MOD:ALL	2	Y	
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K2-01C	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K2-01C	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	ANIONS:FL	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	E624MOD:ALL	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-08	DMW	Tnbs1-Tnbs0	A	DIS	MS:UISO	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	ANIONS:FL	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	E624MOD:ALL	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	ANIONS:FL	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	E624MOD:ALL	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
W-PIT2-2226	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	2	Y	

Table 3.1-1. Pit 2 Landfill area ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-PIT2-2226	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	4		
W-PIT2-2226	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	2	Y	
W-PIT2-2226	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	4		
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	1	Y	
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	2	Y	
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	3		
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	4		
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	1	Y	
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	2	Y	
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	3		
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	4		
W-PIT2-2301	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Insufficient water.
W-PIT2-2301	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Insufficient water.
W-PIT2-2301	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
W-PIT2-2301	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Insufficient water.
W-PIT2-2301	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT2-2301	PTMW	Qal/WBR	A	CMP	MS:UISO	2	N	Insufficient water.
W-PIT2-2302	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Insufficient water.
W-PIT2-2302	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Insufficient water.
W-PIT2-2302	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
W-PIT2-2302	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Insufficient water
W-PIT2-2302	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT2-2302	PTMW	Qal/WBR	A	CMP	MS:UISO	2	N	Insufficient water.
W-PIT2-2303	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
W-PIT2-2303	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Dry.
W-PIT2-2303	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
W-PIT2-2303	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
W-PIT2-2303	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT2-2303	PTMW	Qal/WBR	A	CMP	MS:UISO	2	N	Dry.
W-PIT2-2304	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	N	Dry.
W-PIT2-2304	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Dry.
W-PIT2-2304	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Dry.
W-PIT2-2304	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-PIT2-2304	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Dry.
W-PIT2-2304	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		

Appendix A

Results of Influent and Effluent pH Monitoring

Appendix A

Results of Influent and Effluent pH Monitoring

Table A-1. Results of influent and effluent pH, January through June 2015.

A-1. Results of infuent and effluent pH, January through June 2015.

Sample Location	Sample Date	Effluent pH Result
GSA OU		
CGSA GWTS	**01/31/2015**	**NM**
CGSA GWTS	**02/28/2015**	**NM**
CGSA GWTS	**03/17/2015**	**7.0**
CGSA GWTS	**04/08/2015**	**7.2**
CGSA GWTS	**05/12/2015**	**7.0**
CGSA GWTS	**06/02/2015**	**7.0**
Building 834 OU		
834 GWTS	**01/31/2015**	**NM**
834 GWTS	**02/28/2015**	**NM**
834 GWTS	**03/16/2015**	**7.9**
834 GWTS	**04/07/2015**	**8.0**
834 GWTS	**05/04/2015**	**8.0**
834 GWTS	**06/03/2015**	**7.9**
HEPA OU		
815-SRC GWTS	**01/31/2015**	**NM**
815-SRC GWTS	**02/28/2015**	**NM**
815-SRC GWTS	**03/09/2015**	**7.0**
815-SRC GWTS	**04/08/2015**	**7.0**
815-SRC GWTS	**05/05/2015**	**7.0**
815-SRC GWTS	**06/02/2015**	**7.0**
815-PRX GWTS	**01/31/2015**	**NM**
815-PRX GWTS	**02/28/2015**	**NM**
815-PRX GWTS	**03/10/2015**	**7.5**
815-PRX GWTS	**04/07/2015**	**7.8**
815-PRX GWTS	**05/04/2015**	**7.8**
815-PRX GWTS	**06/01/2015**	**7.3**

A-1. Results of infuent and effluent pH, January through June 2015.

Sample Location	Sample Date	Effluent pH Result
HEPA OU Continued		
815-DSB GWTS	**01/06/2015**	**7.0**
815-DSB GWTS	**02/10/2015**	**7.0**
815-DSB GWTS	**03/03/2015**	**7.0**
815-DSB GWTS	**04/08/2015**	**7.0**
815-DSB GWTS	**05/05/2015**	**7.0**
815-DSB GWTS	**06/02/2015**	**7.0**
817-SRC GWTS	**01/31/2015**	**NM**
817-SRC GWTS	**02/28/2015**	**NM**
817-SRC GWTS	**03/09/2015**	**7.0**
817-SRC GWTS	**04/30/2015**	**NM**
817-SRC GWTS	**05/12/2015**	**7.0**
817-SRC GWTS	**06/01/2015**	**7.0**
817-PRX GWTS	**01/31/2015**	**NM**
817-PRX GWTS	**02/28/2015**	**NM**
817-PRX GWTS	**03/11/2015**	**7.0**
817-PRX GWTS	**04/30/2015**	**NM**
817-PRX GWTS	**05/11/2015**	**7.0**
817-PRX GWTS	**06/01/2015**	**7.0**
829-SRC GWTS	**01/31/2015**	**NM**
829-SRC GWTS	**02/28/2015**	**NM**
829-SRC GWTS	**03/31/2015**	**NM**
829-SRC GWTS	**04/30/2015**	**NM**
829-SRC GWTS	**05/31/2015**	**NM**
829-SRC GWTS	**06/30/2015**	**NM**

A-1. Results of infuent and effluent pH, January through June 2015.

Sample Location	Sample Date	Effluent pH Result
Building 850/Pit 7 Complex OU		
PIT7-SRC GWTS	**01/06/2015**	**7.0**
PIT7-SRC GWTS	**02/17/2015**	**7.0**
PIT7-SRC GWTS	**03/02/2015**	**7.0**
PIT7-SRC GWTS	**04/08/2015**	**7.0**
PIT7-SRC GWTS	**05/05/2015**	**7.0**
PIT7-SRC GWTS	**06/08/2015**	**7.0**
Building 854 OU		
854-SRC GWTS	**01/31/2015**	**NM**
854-SRC GWTS	**02/28/2015**	**NM**
854-SRC GWTS	**03/09/2015**	**7.0**
854-SRC GWTS	**04/08/2015**	**7.0**
854-SRC GWTS	**05/05/2015**	**7.0**
854-SRC GWTS	**06/01/2015**	**7.0**
854-PRX GWTS	**02/03/2015**	**7.0**
854-PRX GWTS	**03/02/2015**	**7.0**
854-PRX GWTS	**04/08/2015**	**7.0**
854-PRX GWTS	**05/06/2015**	**7.0**
854-PRX GWTS	**06/01/2015**	**7.0**
854-PRX GWTS	**12/30/2014**	**7.0**
854-DIS GWTS	**01/31/2015**	**NM**
854-DIS GWTS	**02/28/2015**	**NM**
854-DIS GWTS	**03/09/2015**	**7.0**
854-DIS GWTS	**04/08/2015**	**7.0**
854-DIS GWTS	**05/05/2015**	**7.0**
854-DIS GWTS	**06/01/2015**	**7.0**

A-1. Results of infuent and effluent pH, January through June 2015.

Sample Location	Sample Date	Effluent pH Result
832 Canyon OU		
832-SRC GWTS	01/31/2015	NM
832-SRC GWTS	02/28/2015	NM
832-SRC GWTS	03/31/2015	NM
832-SRC GWTS	04/30/2015	NM
832-SRC GWTS	05/13/2015	7.1
832-SRC GWTS	06/01/2015	7.4
830-SRC GWTS	02/28/2015	NM
830-SRC GWTS	03/31/2015	NM
830-SRC GWTS	04/30/2015	NM
830-SRC GWTS	05/31/2015	NM
830-SRC GWTS	06/30/2015	NM
830-DISS GWTS	01/31/2015	NM
830-DISS GWTS	02/28/2015	NM
830-DISS GWTS	03/31/2015	NM
830-DISS GWTS	04/08/2015	7.0
830-DISS GWTS	05/12/2015	7.0
830-DISS GWTS	06/02/2015	7.0

Notes:

834 = Building 834.
815 = Building 815.
817 = Building 817.
829 = Building 829.
854 = Building 854..
832 = Building 832.
830 = Building 830.
CGSA = Central General Services Area.
EGSA = Eastern General Services Area.
DISS = Distal south.
DSB = Distal site boundary.
GWTS = Ground water treatment system.
PRX = Proximal.
PRXN = Proximal North.
SRC = Source.
NA = Not applicable.
NM = Not measured due to facility not operating during this period.
NR = Not required.
OU = Operable unit.
pH = A measure of the acidity or alkalinity of an aqueous solution.
mg/L = Milligrams per liter.

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