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**Lawrence Livermore National Laboratory**



Lawrence Livermore National Security, LLC, Livermore, California 94551

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**First Semester 2012**  
**Compliance Monitoring Report**  
**Lawrence Livermore National Laboratory**  
**Site 300**

**Technical Editors**

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L. Ferry  
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**September 30, 2012**

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**Environmental Restoration Department**



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**September 30, 2012**

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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 2012. 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). The Eastern GSA post-shutdown monitoring requirements (Holtzapfel, 2007) are also included in this report.

During the reporting period of January through June 2012, approximately 5 million gallons of ground water and 47 million cubic feet of soil vapor were treated at Site 300, removing approximately 12 kilograms (kg) of volatile organic compounds (VOCs), 62 grams (g) of perchlorate, 850 kg of nitrate, 110 g of Research Department Explosive (RDX), 0.019 g of a mixture of tetrabutyl orthosilicate (TBOS) and tetrakis (2-ethylbutyl) silane (TKEBS) and 2.6 g of total uranium (Table Summ-1).

Since remediation began in 1991, approximately 401 million gallons of ground water and over 667 million cubic feet of soil vapor have been treated, removing approximately 580 kg of VOCs, 1.2 kg of perchlorate, 12,000 kg of nitrate, 1.7 kg of RDX, 9.5 kg of TBOS/TKEBS, and 0.015 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 COC data will be presented in the annual CMR report along with hydraulic capture zones for all HSUs.

Treatment facility operations and maintenance issues that occurred during the first semester 2012 and influent and effluent analytical data collected during the first semester 2012 are included in this report. Treatment facility pH data collected during the first semester 2012 are presented in Appendix A. Ground and surface water monitoring analytical data and ground water elevation measurements for the entire calendar year 2012 will be presented in the annual report. Analytical data from the analysis of soil samples (if collected) will be presented in the annual report.

## 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 is abandoned debris burial trenches that received craft shop debris. Leaching of solvents in the debris resulted in the release of contaminants to ground water.

A ground water extraction and treatment system (GWTS) 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 from the debris burial trenches, at a combined flow rate of 45 gallons per minute (gpm). The extracted ground water was treated in three 1,000-pound (lb) granular activated carbon (GAC) units that removed VOCs through adsorption. The treated effluent water was discharged to nearby Corral Hollow Creek.

Remediation efforts in the Eastern GSA have successfully reduced concentrations of TCE and other VOCs in ground water to below their respective 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 shutdown to determine if VOC concentrations rise or “rebound” above cleanup standards. With one exception described in subsection 2.1.3.3 below, VOC concentrations remain below their cleanup standards.

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

At the Central GSA, chlorinated solvents, mainly trichloroethylene (TCE), were used as degreasing agents in craft shops, such as Building 875. Rinse water from these degreasing operations was disposed of in dry wells. Typically, dry wells were gravel-filled holes about three to four feet deep and two feet 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. Contaminated ground water is extracted from eight wells (W-7I, W-875-07, W-875-08, W-873-07, W-872-02, W-7O, W-7P, and W-7R) at an approximate combined flow rate of 2.0 to 3.0 gpm. The Central GSA GWTS began receiving partially treated water from the Building 830-Distal South (830-DISS) facility at the end of the first semester 2007, increasing the flow rate to approximately 5.0 to 6.0 gpm. The current GWTS configuration includes particulate filtration, air stripping to remove VOCs from extracted water, and GAC to treat vapor effluent from the air stripper. Treated ground water is discharged to the surrounding natural vegetation using misting towers. Treated vapors are discharged to the atmosphere under permit from the San Joaquin Valley Unified Air Pollution Control District.

The Central GSA soil vapor extraction and treatment system (SVTS) began operation in the GSA adjacent to the Building 875 dry well contaminant source area in 1994 removing VOCs from soil vapor. Soil vapor is extracted from wells W-875-07, W-875-08, W-875-09, W-875-10, W-875-11, W-875-15 and W-7I, and at a combined total flow rate of approximately 35 standard cubic feet per minute (scfm). 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 2.1-2.

### **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. As discussed above, the Eastern GSA GWTS has been shut down since February 15, 2007. Therefore, only the Central GSA treatment system operations and monitoring information and data are presented and discussed in this section.

#### **2.1.1.1. GSA Facility Performance Assessment**

The monthly ground water and soil vapor discharge volumes and rates and operational hours for the first semester of 2012 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 is 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 the first semester of 2012 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 the first semester of 2012:

- The transfer pump to the misting towers failed, shutting down the GWTS on November 28. The SVTS was shut down on November 29 to prevent upconing of ground water. The misting tower heads were replaced on December 7. The discharge pump was repaired and installed on January 9. The GWTS was restarted on January 19, extracting from well W-7O only. The SVTS and remaining wells, except W-7P were brought back online February 6. Well W-7P was restarted on February 13.
- On April 11, a misting head on one of the effluent misting towers failed. On April 12, the tower with the broken misting tower was disconnected. The GWTS was restarted with the effluent misting from the remaining three towers. On May 1, the GWTS was shut down due to the dislocation of a misting tower head. The head was re-secured and the GWTS was restarted on May 10. The GWTS was operated during the workweek and shut down over the weekend for the remainder of the reporting period.

#### **2.1.1.3. GSA Compliance Summary**

The Central GSA GWTS operated in compliance with the RWQCB Substantive Requirements for Wastewater Discharge during the first semester 2012. The Central GSA SVTS system operated in compliance with San Joaquin Valley Unified 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.

### **2.1.1.5. GSA Treatment Facility and Extraction Wellfield Modifications**

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

### **2.1.2. GSA Surface Water and Ground Water Monitoring**

The sampling and analysis plans for ground water monitoring at the Central and Eastern GSA are presented in Tables 2.1-4 and 2.1-5, respectively. These tables also delineate and explain deviations from the sampling plan and indicate any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the Eastern GSA post-shutdown monitoring requirements with the following exceptions: one required analyses were not performed due to an inoperable pump and one required analysis was not performed because personnel could not sample the wells due to access restrictions. During the reporting period, ground water monitoring was conducted in accordance with the Central GSA CMP monitoring requirements with the following exceptions; four required analyses were not performed due to inoperable pumps and nine required analyses were not performed because there was insufficient water in the wells to collect the samples.

### **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 the first semester of 2012 are summarized in Table 2.1-6. 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**

The COCs in GSA ground water consist of the following VOCs: TCE, PCE, 1,1-DCA, 1,2-DCA, 1,1-DCE, 1,2-DCE, 1,1,1-TCA, bromodichloromethane, chloroform, and trichlorofluoromethane (Freon 11). TCE is the most prevalent VOC in GSA ground water, comprising 85-95% of the total VOCs detected.

In the Eastern GSA, VOCs are present at very low concentrations in ground water within Quaternary alluvial deposits (Qal) that directly overlie the Tnbs<sub>1</sub> bedrock. Since extraction and treatment began at the Eastern GSA in 1991, TCE concentrations in ground water have decreased from a historic maximum of 74 micrograms per liter (µg/L) (monitor well W-26R-03, 1992) to below its reporting limit (0.5 µg/L) in the majority of wells and to below the 5 µg/L cleanup standard for TCE in all wells. No other VOCs are detected in Eastern GSA ground water above the 0.5 µg/L reporting limit.

Within the Qal-Tnbs<sub>1</sub> hydrostratigraphic unit (HSU), VOC concentrations detected in ground water samples collected from Eastern GSA wells during the first semester 2012 ranged from 3 µg/L (monitor well W-26R-04, January) to <0.5 µg/L. TCE is the only VOC currently detected in Eastern GSA ground water. Ground water sampling of Eastern GSA wells during the first semester 2012 was conducted during first quarter (rather than typically scheduled second quarter) to collect final analytical results prior to the five-year anniversary of the treatment facility shutdown. These first semester 2012 data indicate that TCE and other VOCs have remained below their ground water cleanup standards in all Eastern GSA wells since the Eastern GSA GWTS was shut down in February 2007, with one exception described in subsection 2.1.3.3 below. DOE presented information to support the completion of remediation at the Eastern GSA and to initiate the closeout process at the February 24, 2012

Remedial Project Managers (RPM) Meeting. Decisions resulting from this meeting are summarized in subsection 2.1.3.3 below.

At the Central GSA, VOCs are the only COCs in ground water and soil vapor. There are three primary HSUs in the Central GSA:

- Qt-Tnsc<sub>1</sub> HSU, a shallow water bearing zone in the western portion of the Central GSA. This HSU includes saturated Qt deposits, and the Tnbs<sub>2</sub> sandstone and Tnsc<sub>1</sub> siltstone/claystone bedrock units that subcrop beneath the Qt.
- Tnbs<sub>1</sub> HSU, a deeper regional aquifer within the western portion of the Central GSA which consists of Tnbs<sub>1</sub> sandstone bedrock.
- Qal-Tnbs<sub>1</sub> HSU, a shallow water bearing zone within the eastern portion of the Central GSA. In the eastern portion of the Central GSA (near the sewage treatment pond), Qt deposits and the Tnbs<sub>2</sub> and Tnsc<sub>1</sub> bedrock units are not present. Qal deposits directly overlie the shallow Tnbs<sub>1</sub> bedrock that comprises the Qal-Tnbs<sub>1</sub> HSU in this area.

A VOC plume is present in Qt-Tnsc<sub>1</sub> and Qal-Tnbs<sub>1</sub> HSU ground water in the Central GSA. Prior to remediation, the maximum total VOC concentration detected in Central GSA ground water was 272,000 µg/L (Building 875 dry well pad area extraction well W-875-07, 1992). The maximum total VOC concentration detected during the first semester 2012 was 520 µg/L (Building 875 dry well pad area extraction well W-875-08, April). Wells W-875-07 and W-875-08 are located approximately 20 feet apart. While the majority of VOCs detected in the sample from this and other Building 875 dry well pad area wells consist of TCE, other VOCs detected in these wells in the first semester 2012 include PCE, 1,2-DCE, 1,1-DCE and trans-1,2-DCE. These additional VOCs were limited to extraction wells W-7I, W-875-07 and W-875-08. Of the VOCs detected in Central GSA ground water in the first semester 2012, TCE, PCE, cis-1,2-DCE and 1,1-DCE were detected at concentrations above their cleanup standards.

TCE soil vapor concentrations in the Central GSA Building 875 dry well pad area ranged from 0.054 to 0.57 parts per million on a volume per volume basis (ppm<sub>v/v</sub>) during the first semester 2012. These TCE vapor concentrations have decreased significantly from the historic maximum of 600 ppm<sub>v/v</sub> at SVTS startup in 1994.

Outside the dry well pad area, the majority of VOCs consist of TCE, with minor concentrations of PCE, 1,2-DCE, trans-1,2-DCE and Freon 11 detected during the first semester 2012. VOC concentrations (primarily TCE with minor PCE) in downgradient monitor well W-CGSA-1736 at the leading edge of the VOC plume to the east continue to decrease from a historic maximum of 14 µg/L in 2002 to 4 µg/L in the first semester 2012. During the first semester 2012, VOCs were detected in only one offsite monitor well W-35A-01 at a maximum concentration of 13 µg/L, consisting of TCE (12 µg/L) and PCE (0.8 µg/L). The historic maximum VOC concentration in well W-35A-01 is 545 µg/L in 1991. Ground water samples could not be collected from offsite monitor wells W-35A-09 and W-35A-10 during the first semester 2012, due to inoperable pumps. VOCs were not detected in samples collected from well W-35A-09 in 2011. A sample collected from well W-35A-10 in the second semester 2011 contained 11 µg/L of total VOCs. The VOCs detected in well W-35A-10 in the second semester 2011 were comprised of TCE at a concentration of 6.8 µg/L, slightly above its 5 µg/L drinking water maximum contaminant level (MCL) cleanup standard, and Freon 11 at a concentration of 4.4 µg/L, well below its 150 µg/L MCL cleanup standard.

VOCs were detected in only one ground water sample from a well in the deeper Tnbs<sub>1</sub> HSU (chloroform in well W-7E at a concentration of 1 µg/L).



### 2.1.3.3. GSA Remediation Optimization Evaluation

By 2007, ground water extraction and treatment had reduced: (1) VOC concentrations in all Eastern GSA wells to below ground water cleanup standards, (2) TCE concentrations to below the reporting limit (0.5 µg/L) in the majority of wells, and (3) concentrations of other VOCs to below the reporting limits in all Eastern GSA wells. In January 2007, DOE/LLNL proposed to initiate the “Requirements for Closeout” described in the Remedial Design document for the GSA OU (Rueth et al., 1998). These requirements specify: *when VOC concentrations in ground water have been reduced to cleanup standards, the ground water extraction and treatment system will be shut off and placed on standby.* The U.S. EPA, RWQCB, and DTSC approved this proposal and the Eastern GSA ground water extraction and treatment system was turned off and effluent discharge to Corral Hollow Creek was discontinued on February 15, 2007, thereby meeting the Substantive Requirements. As required by the GSA ROD, ground water monitoring was conducted to determine if VOC concentrations rebound above cleanup standards. By the end of the first semester 2012, TCE had been detected only once above the cleanup standard (7 µg/L in monitor well W-26R-01, in May 2009). Well W-26R-01 and nearby monitor well W-26R-04 were re-sampled in June 2009 with no TCE detections above the cleanup standard (Dibley et al., 2009b). These results were discussed with the U.S. EPA, DTSC, and RWQCB at the July 8, 2009 Remedial Project Managers (RPM) Meeting. The regulatory agencies concurred with continued monitoring and evaluation of TCE concentrations in Eastern GSA wells to verify that TCE concentrations are not rebounding. As mentioned in the previous subsection, TCE concentrations were below the 5 µg/L cleanup standard for all Eastern GSA ground water samples collected during the first semester 2012. Concentrations of other VOCs remained below ground water cleanup standards, as well as below reporting limits in all Eastern GSA wells.

On February 15, 2012, five years elapsed since post shutdown monitoring began. As mentioned in the GSA requirements for closeout, cleanup is considered complete when contaminant concentrations remain below the cleanup standards for five years. Therefore, DOE/NNSA presented information to support the completion of remediation at the Eastern GSA and to initiate the closeout process at the February 24, 2012 RPM Meeting. At the meeting, the regulatory agencies agreed to the following:

- Cleanup standards have been achieved and no rebound has occurred.
- The site is protective of human health and the environment.
- DOE/NNSA can initiate the process for closeout of the Eastern GSA portion of the GSA OU.
- Remediation completion will be documented in Memorandum to File.
- DOE/NNSA will immediately cease monitoring and maintenance of Eastern GSA wells with the exception of a few wells that will be used to monitor for other purposes.
- Once the regulators have concurred and the necessary documentation of cleanup completion is finished, DOE/NNSA will discontinue reporting for the Eastern GSA in the Compliance Monitoring Reports.

Additionally, the regulators accepted the schedule presented for decommissioning and demolition of the Eastern GSA treatment facility (fiscal year [FY] 2014) and extraction wellfield (FY2015-2016).

At the Central GSA, ground water extraction continues to adequately capture the highest concentrations in ground water. Remediation efforts have reduced VOC concentrations in Central GSA ground water from a historical maximum of 272,000 µg/L in 1992 (W-875-07) to a maximum total VOC concentration of 520 µg/L in the first semester 2012 (W-875-08). The leading edge of the VOC plume to the east continues to exhibit decreasing VOC trends as evaluated by concentration trends in monitor well W-CGSA-1736. VOCs are currently detected in only two offsite wells, W-35A-01 and

W-35A-10, located within 50 and 100 ft of the site boundary, respectively. VOC concentrations in well W-35A-01 have decreased from a historic maximum of 545 µg/L (1991) to a first semester 2012 maximum of 13 µg/L. The VOCs detected in well W-35A-01 in the first semester 2012 were comprised of TCE at a concentration of 12 µg/L, above its 5 µg/L MCL cleanup standard, and PCE at a concentration of 0.76 µg/L, below its 5 µg/L MCL cleanup standard. Although a ground water sample could not be collected from offsite monitor well W-35A-10 during the first semester 2012 due to an inoperable pump, total VOC concentrations have generally declined from a historic maximum of 86 µg/L (1994) to a second semester 2011 maximum of 11 µg/L. The VOCs detected in well W-35A-10 in the second semester 2011 were comprised of TCE at a concentration of 6.8 µg/L, slightly above its 5 µg/L drinking water maximum contaminant level (MCL) cleanup standard, and Freon 11 at a concentration of 4.4 µg/L, well below its 150 µg/L MCL cleanup standard.

During the first semester 2012, extraction well W-7R removed most of the ground water and extraction well W-875-08 removed most of the dissolved VOC mass. Significantly more VOC mass is being removed by soil vapor extraction than by ground water extraction. During the first semester 2012, 82 g of VOCs were removed from ground water and 220 g of VOCs were removed from vapor. Based on individual well vapor flow monitoring for the first semester 2012, SVE wells W-875-10, W-875-11 and W-875-15 removed most of the vapor mass.

As mentioned in the most recent GSA Five-Year Review (Valett et al., 2011a), further optimization of the Central GSA vapor treatment system during the next five years will include conducting pneumatic communication and additional rebound testing, and periodic reconfiguration of the extraction and air inlet wells.

#### **2.1.3.4. GSA OU Remedy Performance Issues**

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 at the Building 834 Complex have resulted in soil and ground water contamination with VOCs and TBOS/TKEBs. Nitrate concentrations in Building 834 ground water that exceed the cleanup standard (45 milligrams per liter [mg/L]) are likely the result of a combination of natural sources and septic system leachate. In addition, 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 ground water 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 well that covers the well screen and prevents soil vapor flow.

The current extraction wellfield consists of 13 dual extraction wells for both ground water and soil vapor. Ten extraction wells (W-834-B2, -B3, -D4, -D5, -D6, -D7, -D12, -D13, -J1, and -2001) are located within the core area and three (W-834-S1, -S12A, and -S13) in the leachfield area. Extraction well W-834-D5 is connected to the facility but has not been used for extraction since the facility was restarted in October 2004 because the capture area is similar to the capture area of extraction well W-834-D13. Ground water and soil vapor extraction well W-834-2001 was added to the system in March 2007. Extracted ground water from this well contains dissolved-phase diesel related to the former underground diesel storage tank. The GWTS extracts ground water at an approximate combined flow rate of 0.23 gpm and the SVTS extracts soil vapor at a combined flow rate of approximately 103 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.

### **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 the first semester of 2012 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 the first semester of 2012 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 the first semester of 2012:

- GWTS and SVTS were shut down on November 29 to protect against freeze damage. The SVTS was unable to start on February 8 due to blower issues. The blower issue was investigated and resolved, and the systems were restarted on February 14.
- A small water leak was discovered in the copper pipeline on February 22. Extraction at wells W-834-S12A, W-834-S1, and W-834-S13 was shut off to repair the pipeline. The copper line to extraction well W-834-S12A was repaired and three new ball valves were installed in the common pipeline from these three extraction wells to the treatment facility. Weather-degraded tubing and insulation were replaced on all three wells. Ground water extraction from these wells resumed on March 12.

### **2.2.1.3. Building 834 OU Compliance Summary**

The Building 834 GWTS operated in compliance with the RWQCB Substantive Requirements for Wastewater Discharge. The Building 834 SVTS operated in compliance with the San Joaquin Valley Unified Air Pollution Control District permit limitations.

### **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. The only modification made to the plan during this reporting period included no compliance monitoring in January due to the systems being offline for freeze protection.

### **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 and indicates any additions made to the CMP.

During this reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; seventy required analyses were not performed because there was insufficient water in the wells to collect the samples.

## **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 the first semester of 2012 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 (mainly TCE, but also PCE, cis-1,2-DCE, 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<sub>2</sub> perched 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 has not changed significantly, the maximum concentrations have decreased by more than one order-of-magnitude since remediation began in the mid 1990s. The highest VOC concentrations in ground water and soil vapor continue to be detected in the Building 834 core area. Active remediation has reduced VOC ground water concentrations in the more permeable Tpsg HSU from a historic maximum concentration of 1,060,000 µg/L (monitor well W-834-D3, 1993) to a first semester 2012 maximum concentration of 21,000 µg/L in a nearby core area extraction well (W-834-D13, March).

Underlying the Tpsg HSU, the Tps-Tnsc<sub>2</sub> HSU continues to exhibit the highest VOC ground water concentrations in the Building 834 OU and at Site 300. In this HSU, the maximum concentration during the first semester 2012 was 200,000 µg/L (monitor well W-834-A1, February). The historic maximum concentration for this well is 250,000 µg/L (2001). VOCs in ground water in well W-834-A1 have remained stable since this well was installed in 2000 to monitor the Tps-Tnsc<sub>2</sub> HSU. Another monitor well screened in the Tps-Tnsc<sub>2</sub> HSU, W-834-U1, had a first semester 2012 maximum concentration of 130,000 µg/L total VOCs (February 8). However, a subsequent sample from this well (February 15) yielded 61,000 µg/L total VOCs, a result more similar to concentrations typically observed in this well during the last few years. The historic maximum concentration for this well is 140,000 µg/L in 2000. Except for the February 8, 2012 result cited above, this well has generally shown a decreasing VOC concentration trend since 2000.

VOCs detected in Building 834 area ground water consist primarily of TCE. Other VOCs, including PCE, cis-1,2-DCE and chloroform have also been detected. During the first semester 2012, vinyl chloride was detected where *in situ* bioremediation is occurring in the core and the T2 distal areas. In the core area, cis-1,2-DCE and vinyl chloride are degradation products of TCE during anaerobic intrinsic biodegradation. For example, after core area well W-834-D3 was converted from a dual extraction to a monitor well in 2002, vinyl chloride has been consistently detected in this well at concentrations ranging from 37 to 520 µg/L, including a maximum of 251 µg/L in the first semester 2012. The historic maximum for this well is 520 µg/L, detected in 2003. The electron donor for this degradation is TBOS/TKEBS. In the T2 distal area, vinyl chloride (and ethene) is the result of an enhanced bioremediation treatability study that began in 2005. Further discussion of *in situ* bioremediation is presented in subsections 2.2.3.3 and 2.2.3.4 below.

In the Tpsg HSU, TCE has decreased in ground water from a historic maximum concentration of 800,000 µg/L (monitor well W-834-D3, 1993) to a first semester 2012 maximum concentration of 19,000 µg/L (extraction well W-834-D13, March). These wells are 30 feet apart and have typically exhibited the highest VOC concentrations. PCE has decreased from a historic maximum concentration of 10,000 µg/L (well W-834-D3, 1993) to a first semester 2012 maximum concentration of 140 µg/L (well W-834-D13, March). Cis-1,2-DCE has decreased from a historic maximum concentration of 540,000 µg/L (extraction well W-834-D4, 1990) to a first semester 2012 maximum concentration of 11,000 µg/L (same well, February). Chloroform has decreased from a historic maximum concentration of 950 µg/L (extraction well W-834-S1, 1989) to a first semester 2012 concentration (April) of 0.64 µg/L in the same well. The first semester 2012 maximum chloroform concentration is 2.6 µg/L (well W-834-D13, March), below the chloroform cleanup standard of 80 µg/L. The historic maximum concentration of chloroform in this well is also 2.6 µg/L (November 2007).

In the Tps-Tnsc<sub>2</sub> HSU, TCE has decreased from a historic maximum concentration of 250,000 µg/L (monitor well W-834-A1, 2001) to a first semester 2011 maximum concentration of 200,000 µg/L (same well, February). PCE has decreased from a historic maximum concentration of 7,900 µg/L (well W-834-A1, 2001) to a first semester 2012 maximum concentration of 960 µg/L (same well, February). Cis-1,2-DCE has decreased from a historic maximum concentration of 11,000 µg/L (monitor well W-834-U1, 2001) to a first semester 2012 maximum concentration of 5,030 µg/L (same well, February). Chloroform has not been detected above the cleanup standard of 80 µg/L.

During the first semester 2012, TCE soil vapor concentrations from the core area SVE wells ranged from 0.013 to 50 ppm<sub>v/v</sub>. These TCE vapor concentrations have decreased by two orders-of-magnitude from the maximum pre-remediation core area concentration of 3,200 ppm<sub>v/v</sub> (extraction well W-834-D4, 1989). Well W-834-D4 is located approximately 10 feet from well W-834-D3, where the historic maximum ground water VOC concentration in the Tpsg HSU was detected.

In the leachfield area, VOCs in the Tpsg HSU have decreased from a pre-remediation maximum of 179,200 µg/L (extraction well W-834-S1, 1988) to a first semester 2012 (April) maximum concentration of 3,300 µg/L in the same well. The first semester 2012 maximum concentration of 10,000 µg/L is from monitor well W-834-2113 (February). The historic maximum concentration in this well is 49,000 µg/L in 2008. VOCs in the underlying Tps-Tnsc<sub>2</sub> HSU in the leachfield area are significantly lower than in the core area. In the leachfield area, the first semester 2012 maximum VOC concentration in Tps-Tnsc<sub>2</sub> HSU ground water was 3,700 µg/L (monitor well W-834-S8, February). This HSU has exhibited stable VOC trends since monitoring began in 1989. During the first semester 2012, TCE soil vapor concentrations from the Tpsg HSU in the leachfield area ranged from 0.079 to 7.5 ppm<sub>v/v</sub>, significantly lower than the 710 ppm<sub>v/v</sub> maximum pre-remediation concentration measured in 2004.

In the distal area, VOC concentrations in the Tpsg HSU have decreased from a historic maximum of 86,000 µg/L (monitor well W-834-T2A, 1988) to a first semester 2012 maximum of 7,700 µg/L (monitor well W-834-T2D, February). These two wells are located within 50 feet of one another. Since 2005, this area has been the site 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. The underlying Tps-Tnsc<sub>2</sub> HSU is monitored by one well, W-834-2119, which contained a first semester 2012 maximum VOC concentration of 16,000 µg/L (February); historic VOC concentrations in this well have not changed significantly.

#### **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 (monitor well W-834-D3, 1995) to a first semester 2012 maximum of 35,600 µg/L (same well, February). This compound is found exclusively in the core area. TBOS/TKEBS concentrations vary from one sampling event to the next, probably because of varying amounts of free-phase TBOS/TKEBS in the subsurface. Historically, floating product has been measured intermittently in some core area wells; however, no floating product was observed during the first semester 2012. Because TBOS/TKEBS concentrations in Tpsg HSU wells in the leachfield and distal areas have historically been below reporting limits, sampling for TBOS/TKEBS in the leachfield and distal areas are performed biennial, with approximately half the wells sampled during even numbered years and half sampled during odd numbered years. In those leachfield and distal area wells sampled during the first semester 2012, TBOS/TKEBS concentrations were below reporting limits.

Both the concentration and extent of TBOS/TKEBS in ground water are greater in the Tpsg HSU than in the underlying Tps-Tnsc<sub>2</sub> HSU. During the first semester 2012, TBOS/TKEBS was not detected in the Tps-Tnsc<sub>2</sub> HSU. TBOS/TKEBS continues to be below the reporting limit in guard wells W-834-T1 and W-834-T3.

#### **2.2.3.2.3. Nitrate Concentrations and Distribution**

During the first semester 2012, nitrate was detected in ground water at concentrations exceeding the 45 mg/L cleanup standard in the Building 834 core, leachfield, and distal areas in the Tpsg and Tps-Tnsc<sub>2</sub> HSUs. Nitrate in Tpsg HSU ground water during the first semester 2012 ranged from a maximum concentration of 300 mg/L (monitor well W-834-M1, February) to below the 0.5 mg/L reporting limit. In the core area, nitrate in the Tpsg HSU varies spatially and temporally due to denitrification associated with the ongoing intrinsic *in situ* biodegradation of TCE. The introduction of oxygen into the subsurface during SVTS operation subdues intrinsic biodegradation and denitrification in some portions of the core area. In the underlying Tps-Tnsc<sub>2</sub> HSU, nitrate concentrations during the first semester 2012 ranged from a maximum of 120 mg/L (monitor well W-834-S8, February) to below the 0.5 mg/L reporting limit.

Although nitrate concentrations in ground water have decreased from a historic maximum of 749 mg/L (monitor well W-834-K1A, 2000), the continued presence of nitrate above the cleanup standard indicates that an ongoing source of nitrate to ground water exists due to a combination of both natural and anthropogenic sources. Nitrate was not detected in guard wells W-834-T1 and W-834-T3 during the first semester 2012.

#### **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. During the first semester 2012, diesel concentrations were measured in ground water from monitor well W-834-U1 at 331 µg/L and 230 µg/L (February 8 and 15, respectively). Diesel concentrations measured in ground water vary from one sampling event to the next, likely due to varying amounts of free-phase product in the subsurface. No floating product was detected in ground water during the first semester 2012.

During the first semester 2012, perchlorate was detected in ground water from monitor well W-834-2118 at a concentration of 5.1 µg/L (February); slightly above the 4 µg/L reporting limit but below the 6 µg/L cleanup standard. Perchlorate concentrations in this well have decreased from a historic maximum of 11 µg/L in 2005. During the first semester 2012, attempts to sample ground water for perchlorate from monitor wells W-834-S7 and W-834-A2 were unsuccessful due to dry conditions. Ground water from well W-834-S7 has historic perchlorate concentrations ranging from 8.8 to 11 µg/L; ground water from well W-834-A2 has not been analyzed for perchlorate. Semi-annual ground water monitoring for perchlorate will continue for monitor wells W-834-2118, W-834-S7 and W-834-A2.

#### **2.2.3.3. Building 834 OU Remediation Optimization Evaluation**

During the reporting period, no modifications were made to the core or leachfield area extraction wellfields. Substantially more VOC mass is being removed by soil vapor extraction than by ground water extraction. Of the 10,280 g of VOCs removed during the first semester 2012, 9,600 g was removed in the vapor-phase.

TCE biodegradation continues within the core area where significant amounts of TBOS/TKEBS are present. TBOS/TKEBS serves as an electron donor for intrinsic *in situ* biodegradation in this area. Historically, the primary byproduct of this biodegradation has been cis-1,2-DCE, although vinyl chloride has also been detected in some wells. During the first semester 2012, the treatment system was re-started on February 14, after having been off since November 29, 2011 due to freeze protection measures. One core area monitor well (W-834-D3) was sampled one week before re-start and two extraction wells (W-834-B3 and W-834-D4) were sampled the day of re-start in order to provide data regarding the accumulation of cis-1,2-DCE during the shutdown period as well as additional *in situ* biodegradation indicators. During the shutdown period, cis-1,2-DCE concentrations in well W-834-B3 decreased (from 2,300 to 1,000 µg/L), while cis-1,2-DCE concentrations in well W-834-D3 and well W-834-D4 increased (from 2,300 to 4,680 µg/L in W-834-D3 and from 8,100 to 11,000 µg/L in W-834-D4). Vinyl chloride was not detected in well W-834-B3, whereas vinyl chloride concentrations in W-834-D3 and W-834-D4 increased (from 73 to 251 µg/L in W-834-D3 and from <10 to 19 µg/L in W-834-D4). One week after re-start (February 21), samples were collected for bacterial analysis and field parameters were measured. In all three wells, bacteria appeared to be degrading VOCs by using available carbon sources. Oxidation reduction potential (ORP), pH, temperature, and specific conductance (SC) were measured as follows:

- W-834-B3: ORP = 160 millivolts (mV); pH = 8; temperature = 18.2 degrees Celsius (°C); and SC = 669 micromhos per centimeter (µmhos-cm).
- W-834-D3: ORP = -120 mV; pH = 8.3; temperature = 20.3 °C; and SC = 802 µmhos-cm.

- W-834-D4: ORP = -131 mV; pH = 8.2; temperature = 18.8 °C; and SC = 786 µmhos-cm.

On April 12, a ground water sample was collected from well W-834-D3 to be analyzed for light hydrocarbons. Ethane, ethylene, and methane were detected in this sample at concentrations of 0.52, 0.66, and 2.900 µg/L, respectively. The cumulative post treatment facility restart data presented above indicate that *in situ* biodegradation is most actively occurring in the core area in the vicinity of wells W-834-D3 and W-834-D4.

The extraction wellfield for the Tpsg HSU within the core area continues to adequately capture the highest VOC concentrations in ground water. Per the recommendations presented in the Five-Year Review Report for the Building 834 Operable Unit (Valett et al., 2011b), VOC concentrations in monitor well W-834-C5 and nearby well W-834-B4 will continue to be monitored closely during the next five years. If these wells exhibit stable or increasing VOC trends, installation of extraction wells in the vicinity of these wells may be considered. In the leachfield area, the extraction wellfield continues to capture some portions of the VOC plume in ground water. However, the areas with the highest concentrations (in the vicinity of monitor well W-834-2113) are not fully captured. VOC concentrations in well W-834-2113 will be monitored closely during the next five years. If this well exhibits stable or increasing VOC trends, additional actions, including conversion of this well to an extraction well, installation of an extraction well in the vicinity of well W-834-2113, or implementing *in situ* bioremediation in this area, may be considered.

As described in Section 2.2.3.4, enhanced *in situ* bioremediation is being evaluated as a long-term treatability test in the T2 distal area. Overall, VOC concentrations in the area impacted by the bioremediation experiment have decreased significantly due to a combination of *in situ* biostimulation, bioaugmentation and dilution.

VOC concentration trends in the underlying Tps-Tnsc<sub>2</sub> HSU will also continue to be monitored closely during the next five years. Per the recommendations presented in the Building 834 Five Year Review, if wells W-834-A1 and W-834-2119 exhibit stable or increasing VOC trends, installation of additional extraction wells in this area may be considered.

VOCs in ground water are expected to continue to decrease as remediation progresses. The deep regional Tnbs<sub>1</sub> aquifer continues to be free of contaminants as demonstrated by quarterly analyses of ground water from guard wells W-834-T1 and W-834-T3. These guard wells are both screened in the lower Tnbs<sub>1</sub> HSU.

#### **2.2.3.4. T2 Treatability Study**

The T2 treatability study began in 2005 and post-test rebound monitoring continued during the first semester 2012. The primary objective of this pilot-scale treatability test was to assess the performance of enhanced *in situ* bioremediation of TCE at concentrations greater than 10,000 µg/L in a heterogeneous, anisotropic, water-bearing zone typical of contaminant source areas at Site 300. Since 2005, progress of this test has been reported semi-annually in the CMRs. A detailed description of the test results, including procedures, performance assessment, conclusions, and recommendations were recently submitted as Appendix A of the Draft Building 834 Five Year Review.

During the first semester 2012, TCE concentrations were lowest in well W-834-1825 (original bioaugmentation well) at 9.2 µg/L, well W-834-1824 (injection well) at 54 µg/L, and well W-834-T2 (first downgradient performance well) at 87 µg/L, as compared to the remaining T2 area Tpsg HSU wells that ranged from 5,200 to 7,700 µg/L. Cis-1,2-DCE concentrations were highest in well W-834-T2 at 2,900 µg/L, with the remaining wells ranging from 1.2 to 59 µg/L. Vinyl chloride was also highest in W-834-T2 at 560 µg/L, with remaining wells ranging from 4.3 to 10 µg/L. On February 21, a sample was collected for bacterial analysis from well W-834-T2 and field parameters measured. Bacteria appeared to be degrading VOCs in the vicinity of well W-834-T2 by using available carbon sources.



Field parameter measurements for well W-834-T2 included: ORP (234 mV); pH (7.5); temperature (19.7 °C); and SC (2435  $\mu$ mhos-cm). On April 12, ground water samples were collected from T2 area wells W-834-T2, W-834-1824, W-834-1825, and W-834-1833 to be analyzed for light hydrocarbons. Ethane concentrations ranged from 0.054 to 0.34  $\mu$ g/L. Ethylene concentrations were highest in wells W-834-T2 and W-834-1825 at 290 and 83  $\mu$ g/L, respectively (remaining two wells ranged from 0.41 to 1.9  $\mu$ g/L). Methane concentrations were highest in wells W-834-T2, -1824, and -1825 at 8,800, 8,900, and 7,900  $\mu$ g/L, respectively, with W-834-1833 at 1.1  $\mu$ g/L. The cumulative data presented above 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.

#### **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 the remedy continues to be protective of human health and the environment, and effective in cleaning up the Tpsg HSU, it has not significantly decreased VOC concentrations in the underlying Tps-Tnsc<sub>2</sub> HSU beneath the core area.

### **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. This landfill was used from 1964 to 1973 to bury waste in nine unlined debris trenches and animal pits. The buried waste, which includes laboratory equipment, craft shop debris, 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 is 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 and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring and post-closure requirements with the following exceptions; forty-four required analyses were not performed because there was insufficient water in the wells to collect the samples and four required analyses were not performed due to an inoperable pump.

#### **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. Perchlorate and nitrate are secondary COCs. These constituents have historically been identified within the Qt-Tnbs<sub>1</sub> HSU. The concentrations of COCs have significantly declined below historic maximum levels in Pit 6 ground water.

As part of the recent Draft OU3/OU8 Five Year Review, the Qt-Tnbs<sub>1</sub> HSU was formally divided into the Qt-Tnbs<sub>1</sub> North HSU (portion north of the Corral Hollow-Carnegie Fault Zone) and the Qt-Tnbs<sub>1</sub> South HSU (portion within the Corral Hollow-Carnegie Fault Zone). A deeper water-bearing zone (Tnbs<sub>1</sub> Deep HSU) occurs beneath a low permeability confining layer at a depth of 170 feet within the Tnbs<sub>1</sub> stratigraphic unit. Based on evaluations of historical water elevation hydrographs, monitor wells EP6-07, K6-27, K6-34 and K6-35, which were previously designated as Tnbs<sub>1</sub> Deep HSU wells, are now assigned to the Qt-Tnbs<sub>1</sub> North HSU. The main criterion for reinterpreting the Qt-Tnbs<sub>1</sub> North HSU designation for these wells is that they exhibit a common hydraulic response to pumping from the nearby CARNRW water-supply wells

#### **2.3.2.1.1. VOC Concentrations and Distribution**

VOC COCs in Pit 6 Landfill ground water include chloroform, 1,2-DCA, cis-1,2-DCE, trans-1,2-DCE, PCE, 1,1,1-TCA and TCE. Of these VOCs, only TCE and cis-1,2-DCE were detected in Pit 6 Landfill ground water monitor wells at concentrations above the 0.5 µg/L reporting limit during the first semester 2012.

In the Qt-Tnbs<sub>1</sub> 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 the first semester 2012. No other VOCs were detected in the Qt-Tnbs<sub>1</sub> North HSU during the first semester 2012. Due to insufficient water, ground water samples from monitor wells EP6-08 and K6-24 have not been collected since April 2008 and January 2011, respectively. During the first semester 2012, two new wells were drilled in the Qt-Tnbs<sub>1</sub> HSU north of the fault in the vicinity of these wells, but were screened at greater depths. As shown on Figure 2.3-1, monitor well W-PIT6-2816 was drilled 30 feet east-southeast of well EP6-08 and well W-PIT6-2817 was drilled 50 feet east-southeast of well K6-24. VOCs were not detected in ground water samples from these new wells during the first semester 2012.

In the Qt-Tnbs<sub>1</sub> South HSU, TCE concentrations have decreased from a historic maximum of 250 µg/L (monitor well K6-19, 1988) to a first semester 2012 maximum concentration of 8.7 µg/L (well EP6-09, January). For two months in late 1998, ground water was extracted from well EP6-09 to determine the effect on TCE trends. During this period, TCE concentrations decreased from 14 to 1.4 µg/L. Since 1998, TCE concentrations in well EP6-09 have rebounded and have remained relatively stable. In the first semester 2012, TCE was detected in four wells in the Qt-Tnbs<sub>1</sub> South HSU (monitor wells EP6-09, K6-16, K6-18 and K6-19) at concentrations above the reporting limit, but exceeded the 5 µg/L cleanup standard in only one well (EP6-09). Cis-1,2-DCE was detected in ground water samples from a single Qt-Tnbs<sub>1</sub> South HSU well at a maximum concentration of 2.1 µg/L (monitor well K6-01S, January); below the 6 µg/L cleanup standard. The presence of cis-1,2-DCE, a degradation product of TCE, suggests that some natural dechlorination may be occurring.

TCE was not detected in the Tnbs<sub>1</sub> Deep HSU during the first semester 2012. During the first semester 2012, VOCs were not detected in samples collected from guard wells W-PIT6-1819, K6-17, K6-22 and K6-34 or from the four CARNRW wells.

#### **2.3.2.1.2. Tritium Concentrations and Distribution**

Tritium was detected above the 100 picoCuries per liter (pCi/L) reporting limit in samples from several wells completed in both the Qt-Tnbs<sub>1</sub> North and Qt-Tnbs<sub>1</sub> South HSUs. Tritium has never been detected in Pit 6 Landfill ground water at activities exceeding the 20,000 pCi/L cleanup standard.

In the Qt-Tnbs<sub>1</sub> North HSU, tritium activities have decreased from a historic maximum of 2,150 pCi/L (monitor well K6-36, 2000) to a first semester 2012 maximum activity of 156 pCi/L (well W-PIT6-1819, April). Well K6-36 has not been sampled since 2006 due to insufficient water. The historic maximum tritium activity in well W-PIT6-1819 is 295 pCi/L (2007). DOE collected samples for tritium analysis from the two new monitor wells W-PIT6-2816 and W-PIT6-2817 installed in the first semester 2012 in areas where wells screened in the Qt-Tnbs<sub>1</sub> North HSU had gone dry. Tritium was detected at an activity of 122 pCi/L in a ground water sample collected from well W-PIT6-2817 and was not detected above the 100 pCi/L reporting limit in well W-PIT6-2817.

In the Qt-Tnbs<sub>1</sub> South HSU, tritium activities have decreased from a historic maximum of 3,420 pCi/L (monitor well BC6-13, 2000) to a first semester 2012 maximum activity of 251 pCi/L (monitor well K6-19, January). Well BC6-13 has been dry since 2000. The historic maximum tritium activity in well K6-19 is 2,520 pCi/L (1999). In the first semester 2012, tritium was detected in three wells in the Qt-Tnbs<sub>1</sub> South HSU (wells K6-01S, K6-18 and K6-19) at activities above the reporting limit but well below the cleanup standard.

Tritium was not detected in the Tnbs<sub>1</sub> Deep HSU during the first semester 2012. During the first semester 2012, tritium activities were detected in ground water samples from guard well W-PIT6-1819 ranging from 112 pCi/L (January) to 156 pCi/L (April). Prior to the first semester 2012, tritium activities in well W-PIT6-1819 ranged from <100 pCi/L to 295 pCi/L. This well is used to define the downgradient extent of tritium in ground water with activities above the 100 pCi/L background level. It is located approximately 100 feet west of the Site 300 boundary within the Carnegie SVRA residence area and approximately 200 feet west of the CARNRW1 and CARNRW2 water supply wells. Tritium was not detected in guard wells K6-34, K6-22 or K6-17 during the first semester 2012. Tritium was not detected at activities above the 100 pCi/L reporting limit in any of the monthly ground water samples collected from the four CARNRW offsite wells during the first semester 2012.

#### **2.3.2.1.3. Perchlorate Concentrations and Distribution**

During first semester 2012, perchlorate was not detected at or above the 4 µg/L reporting limit in any Qt-Tnbs<sub>1</sub> North, Qt-Tnbs<sub>1</sub> South, or Tnbs<sub>1</sub> Deep HSU ground water samples, including samples collected from guard wells and the CARNRW water-supply wells. Perchlorate concentrations in ground water have steadily decreased from a historic maximum concentration of 65.2 µg/L (monitor well K6-19, 1998) to below the 4 µg/L reporting limit in all wells. DOE collected samples for perchlorate analysis from the two new monitor wells W-PIT6-2816 and W-PIT6-2817 installed in the first semester 2012 in areas where wells screened in the Qt-Tnbs<sub>1</sub> North HSU had gone dry. Perchlorate was not detected in ground water samples collected from wells W-PIT6-2816 and W-PIT6-2817.

#### **2.3.2.1.4. Nitrate Concentrations and Distribution**

During the first semester 2012, nitrate was detected in samples collected from wells completed within the Qt-Tnbs<sub>1</sub> North and South HSUs.

In the Qt-Tnbs<sub>1</sub> North HSU, nitrate was detected in one well during the first semester 2012 (well W-PIT6-1819) at a concentration of 8.1 mg/L, well below its 45 mg/L cleanup standard. DOE collected samples for nitrate analysis from the two new monitor wells W-PIT6-2816 and W-PIT6-2817 installed in the first semester 2012 in areas where wells screened in the Qt-Tnbs<sub>1</sub> North HSU had gone dry. Nitrate was detected at concentrations of 2.1 mg/L and <0.44 mg/L in ground water samples collected from wells W-PIT6-2816 and W-PIT6-2817, respectively.

In the Qt-Tnbs<sub>1</sub> South HSU, nitrate was detected in ground water above the 45 mg/L cleanup standard in one Pit 6 Landfill OU well (well K6-23) during the first semester 2012 (150 mg/L in January). Well K6-23 consistently yields ground water nitrate concentrations in excess of the cleanup

standard and is located in close proximity to the Building 899 septic system, which may be a potential source of the nitrate at this location.

Nitrate was not detected in the Tnbs<sub>1</sub> Deep HSU during the first semester 2012. During the first semester 2012, nitrate was detected in a ground water sample from guard well W-PIT6-1819 at a concentration of 8.1 mg/L. Nitrate was not detected in guard wells K6-34, K6-22 or K6-17 during the first semester 2012. Nitrate was not detected in water supply wells CARNRW1, CARNRW3 and CARNRW4 during the first semester 2012. Nitrate was detected in CARNRW2 during the first semester 2012 at concentrations ranging from <0.5 to 2.9 mg/L.

#### **2.3.2.1.5. Status of Uranium Statistical Limit Exceedence at Well EP6-08**

When sufficient ground water is available, samples from the six detection monitor wells at Pit 6 (EP6-06, EP6-08, EP6-09, K6-01S, K6-19 and K6-36) are collected and analyzed quarterly for total uranium by alpha spectrometry as part of the detection monitoring performed by the LLNL Water Guidance and Monitoring Group (WGMG). The resulting data are compared to Statistical Limits for each respective well. The Statistical Limits are calculated based on a statistical analysis of the historic uranium data for each well and are meant to define evidence of a potential release of the chemical from the landfill. These data and the corresponding comparison to the Statistical Limits are documented in the quarterly Pit 6 Post-Closure Monitoring Reports.

During January 2008, total uranium in a ground water sample from well EP6-08 exceeded its 1.5 pCi/L Statistical Limit with an initial activity of 2.8 pCi/L. As required by regulation, a 7-day letter indicating Statistically Significant Evidence of Release from the landfill was submitted to the RWQCB (Jackson, 2008) and the responsibility for determining if an actual release of uranium from Pit 6 had occurred was transferred to CERCLA investigations (Blake and Taffet, 2008a). Well EP6-08 was re-sampled twice later in January 2008 revealing uranium activities of 2.1 and 2.6 pCi/L. In April 2008, samples collected from well EP6-08 were analyzed for uranium by mass and alpha spectrometry. The mass spectrometry sample yielded a uranium-235/uranium-238 (<sup>235</sup>U/<sup>238</sup>U) atom ratio indicative of natural uranium (0.0072) and a total activity of 3 pCi/L (Blake and Taffet, 2008b). The alpha spectrometry sample yielded 2.2 pCi/L uranium. Although continued analysis of uranium samples was planned for well EP6-08, the well went dry after the April 2008 sampling episode and subsequent sampling has not been possible. As discussed in Section 2.3.2.1.1 of this report, during the first semester 2012, a new well, W-PIT6-2816 was drilled adjacent to well EP6-08 and screened at a greater depth within the Qt-Tnbs<sub>1</sub> HSU. In the absence of available ground water from well EP6-08, samples from this well will be analyzed for uranium by alpha spectrometry as part of the quarterly detection monitoring. DOE will also continue to attempt to collect samples from well EP6-08 every quarter. When sufficient water becomes available due to rising ground water levels, additional ground water samples will be collected for uranium analysis.

At present, the water table north of the fault zone has declined so that several monitor wells are dry or do not yield sufficient water for sampling. When sufficient water has been available, samples from the other five monitor wells at Pit 6 have continued to yield total uranium activities below their respective Statistical Limit for total uranium. During 2011, sufficient water to collect ground water samples for alpha spectrometric analysis of uranium was available from four detection monitor wells, EP6-06, EP6-09, K6-01S and K6-19, yielding maximum total uranium activities of 0.93, 2.8, 5, and 3.3 pCi/L, respectively. All these uranium activities are below the Statistical Limits for each respective well.

Although total uranium activities in samples from well EP6-08 were increasing slightly in the months leading up to the well going dry, all historic uranium data collected in the Pit 6 area are well below the 20 pCi/L uranium cleanup standard, have a <sup>235</sup>U/<sup>238</sup>U atom ratio indicative of natural uranium (for all mass spectrometric analyses), and are well within the range of natural background levels for

uranium. Therefore, these uranium activities do not indicate a release of uranium from the landfill. Once water levels rise, samples for uranium analysis will be collected from all of the detection monitor wells at Pit 6 to supplement the 2008-present monitoring data. Additionally, new well W-PIT6-2816, located adjacent to well EP6-08, will be sampled for uranium by alpha spectrometry on a quarterly basis while well EP6-08 is dry.

### **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 remedy 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 exhibit generally decreasing trends and ground water levels beneath the landfill remain well below the buried waste. Ground water elevations have decreased beneath two key monitor wells located north of the fault (wells EP6-08 and K6-24). During the first semester 2012, two new wells were drilled in the Qt-Tnbs<sub>1</sub> HSU in the vicinity of these wells and were screened at greater depths.

In general, VOCs in ground water near Pit 6 exhibit decreasing trends and the VOC plume extent is stable to decreasing. TCE concentrations in ground water remain above the 5 µg/L cleanup standard in samples from only one well (8.7 µg/L, EP6-09). These concentrations have remained relatively stable since 2008. If TCE concentrations increase or remain above the 5 µg/L cleanup standard, remedial measures such as pump-and-treat or enhanced *in situ* bioremediation may be considered for this well. The concentrations of other VOCs are below their cleanup standards in all Pit 6 Landfill ground water monitor wells; only cis-1,2-DCE was detected above the 0.5 µg/L reporting limit in a single well.

Tritium activities in ground water continue to decrease toward background levels and remain far below the 20,000 pCi/L cleanup standard. The maximum tritium activity detected in Pit 6 wells in the first semester 2012 was 251 pCi/L. These low activities show 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 65.2 µg/L (well K6-19, 1998) to below the reporting limit (4 µg/L). During the first semester 2012, perchlorate was not detected in ground water above the reporting limit (4 µg/L) in any samples collected from Pit 6 wells. Perchlorate concentrations have remained below the reporting limit in all Pit 6 wells for over three years, and in the future, perchlorate may be proposed for removal from the list of OU3 ground water COCs.

Nitrate continues to be consistently detected above its 45 mg/L cleanup standard in well K6-23. During the first semester 2012, nitrate was detected at a concentration of 150 mg/L in this well. Well K6-23 is located in close proximity to the Building 899 septic system, which may be a potential source of the nitrate at this location.

### **2.3.2.3. Pit 6 Landfill OU Performance Issues**

Historically, low ground water levels north of the fault have limited the ability to monitor the cleanup remedy for the Pit 6 Landfill OU. However, during the first semester 2012, two new wells (W-PIT6-2816 and W-PIT6-2817) were drilled in the Qt-Tnbs<sub>1</sub> HSU north of the fault at greater depths than existing monitor wells. Initial ground water sample results are generally consistent with historical results from shallower wells in the same vicinity. These two new wells will be added to the Pit 6 Landfill OU sampling and analysis plan and sampled semi-annually for primary COCs and annually for secondary COCs.

During the first semester 2012, all scheduled samples were collected from guard well W-PIT6-1819 and water-supply wells CARNRW1 and CARNRW2. 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.

Six 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), Building 817-Proximal (817-PRX), and Building 829-Source (829-SRC). 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. Initially, the system extracted from one extraction well, W-815-02 and consisted of aqueous-phase GAC, an ion-exchange system, and an anaerobic bioreactor for nitrate destruction. The treated effluent was discharged to a misting system. The anaerobic bioreactor was decommissioned in 2003. In 2005, the wellfield was expanded to include extraction well W-815-04, with a current combined flow rate of approximately 1.2 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 VOC and HE compound removal. In 2005, the discharge method of misting was replaced by injection of the treated effluent into well W-815-1918 for *in situ* denitrification in the Tnbs<sub>2</sub> 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 2.25 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. In 2005, the discharge method of misting was replaced by injection of the treated effluent into well W-815-2134 where an *in situ* natural denitrification process reduces the nitrate to nitrogen in the Tnbs<sub>2</sub> 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 boundary. Ground water was extracted from wells W-35C-04 and W-6ER at a combined flow rate of approximately 3 to 4 gpm. In 2011-2012, the 815-DSB extraction wellfield was expanded to include a new extraction well W-815-2608. The GWTS originally operated intermittently on solar-power until site power was installed in 2005 when 24-hour operations began. 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<sub>2</sub> aquifer. It pumps ground water intermittently using solar power at current flow rates ranging from 40 to 160 gallons per month. 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<sub>2</sub> HSU.

The 817-PRX GWTS began operation in September 2005 removing VOCs, RDX, and perchlorate from ground water. Initially, ground water was extracted from wells W-817-03 and W-817-04 at a combined flow rate of approximately 1.0 gpm, although the vast majority of ground water was extracted from well W-817-03. In 2007, the extraction wellfield was expanded to include extraction well, W-817-2318. Due to the low yield from ground water extraction well W-817-04, extraction from this well was discontinued in December 2007. Ground water is currently extracted at a combined flow rate of approximately 2.0 gpm. The current GWTS configuration includes a Cuno filter to remove particulates, two aqueous-phase GAC canisters connected in series for TCE and RDX removal, and three ion-exchange resin columns (also connected in series) for perchlorate removal. A third aqueous-phase GAC canister completes the treatment chain, and is placed in this position to remove any residual organic compounds that may be emitted from new ion-exchange resin. Treated ground water containing nitrate is injected into upgradient injection wells W-817-2109 and W-817-02 that were added in 2007. The treated effluent is split between the two injection wells where an *in situ* denitrification process reduces the nitrate to nitrogen in the Tnbs<sub>2</sub> HSU.

The 829-SRC GWTS began operation in August 2005 removing VOCs, nitrate, and perchlorate from ground water. The GWTS configuration included two ion-exchange columns containing ion-exchange resin connected in series for perchlorate removal, three aqueous phase GAC canisters (also connected in series) for VOC removal, and a biotreatment unit to treat nitrate. However, the biotreatment unit was not effectively removing nitrate. An Explanation of Significant Difference (ESD) (Ferry et al., 2010) was submitted to the regulatory agencies in 2010. The ESD documented the decision to use ion-exchange treatment media to remove nitrate from ground water, rather than the existing biotreatment unit. Modifications to 829-SRC were initiated in 2010 and were completed June 2011. Solar power continues to be used to extract ground water from well W-829-06 at a flow rate of approximately 1 to 10 gallons per day (gpd). The current configuration includes two ion-exchange resin columns connected in series for perchlorate and nitrate removal and three aqueous phase GAC canisters (also connected in series) for VOC removal. Treated effluent is injected into upgradient well W-829-08.

#### **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 in the first semester of 2012 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 is 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 the first semester of 2012 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, 817-PRX, and 829-SRC GWTSs during the reporting period:

815-SRC GWTS

- The GWTS was shut down on April 16 to replace spent GAC. The GWTS was restarted intermittently on April 23 while pH conditioning of new GAC was performed. The facility returned to full-time operations on April 25.

815-PRX GWTS

- The GWTS was shut down on from November 28 to February 8 protect against freeze damage.
- The GWTS shut down on March 15 due a low-flow alarm and was restarted March 19.
- Extraction well W-818-08 shut off on May 6. Electrical repairs were completed and the pumping from this well was reinitiated on May 9.
- The GWTS was shut down on June 28 for the remainder of the reporting period to replace spent granular activated carbon treatment media.

815-DSB GWTS

- The GWTS was restarted on January 5 after an interlock issue was resolved.
- The GWTS was restarted on May 7 and May 14 after shutting down due to a flow interlock alarm. The shut downs are believed to have been related to a build up of nitrogen gas that may be tripping the interlock system. The nitrogen gas is thought to be the result of the natural denitrification process that occurs in the confined aquifer in which the wells are completed.
- The GWTS was shut down from May 21 to May 23 to run power to the new extraction well (see Section 2.4.1.5).
- The DSB treatment facility was temporarily offline on June 27 for testing and verification of the new pipeline (see Section 2.4.1.5). It was restarted for a short period on June 28 for testing of the new extraction well and to collect facility start-up samples.

817-SRC GWTS

- The Building 817-Source ground water extraction and treatment system was shut down from November 28 to February 6 to protect against freeze damage.

817-PRX GWTS

- The Building 817-Proximal treatment facility operated intermittently the week of June 29 due to pressure issues. The problem is being evaluated.

829-SRC GWTS

- The GAC canisters and ion-exchange resin were replaced on January 30.
- The GWTS remained off until February 27 due to freeze protection and ongoing issues with the ion-exchange resin. As discussed in the 2011 Annual CMR, the anion-exchange resin used for perchlorate removal was determined to be contaminated with various VOCs. Due to the nature of these VOCs and the concentrations, the GAC at 829-SRC became prematurely loaded with these VOCs. Therefore, all treatment media were changed out. The only ion-exchange resin available that had tested clean was anion-exchange resin designed for uranium removal. This resin is also capable of removing perchlorate, although the loading capacity is uncertain. The uranium anion-exchange resin was put in place at 829-SRC for perchlorate removal. The media change-out was completed earlier in 2012, but due to potential freezing conditions, the system



was not restarted until February 27. The treated water from this facility was collected in a portable bubble tank due to new GAC causing an elevated pH above the discharge limit. By April 30, the pH was down to 8.4 after having treated 386 gallons. The collected water was neutralized and discharged to the injection well. The system was then operated normally, with the treated water being discharge directly to the injection well.

- The GWTS was temporarily shut down from May 2 to May 3. The treated effluent was again diverted to a portable bubble tank for additional resin and GAC loading evaluation.

#### **2.4.1.3. HEPA OU Compliance Summary**

The 815-SRC, 815-PRX, 815-DSB, 817-SRC, 817-PRX, and 829-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. The only modifications made to the plan included the following:

- 1) No compliance monitoring was conducted at the 815-PRX GWTS in January since it was shut down for freeze protection.
- 2) Additional monitoring was conducted at the 815-DSB GWTS in June as part of the restart monitoring conducted due to the wellfield modification.
- 3) No compliance monitoring was conducted at the 817-SRC GWTS in January since it was shut down for freeze protection.
- 4) No compliance monitoring was conducted at 829-SRC GWTS In January or February due to shutdown for freeze protection and treatment media evaluation.

#### **2.4.1.5. HEPA OU Treatment Facility and Extraction Wellfield Modifications**

The only modification made within the HEPA OU was related to the extraction wellfield for the 815-DSB GWTS. One new extraction well, W-815-2608, was added to the extraction wellfield. The first set of startup samples were collected on June 28, 2012 upon initiation of ground water extraction from this well.

#### **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 and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; twenty-three required analyses were not performed because there was insufficient water in the wells to collect the samples, eight required analyses were not performed due to access restrictions, and sixteen required analysis were not performed due to inoperable pumps.

#### **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 the first semester of 2012 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, but also including 1,1-DCE, cis-1,2-DCE, and chloroform) 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 HEPA ground water contamination occurs in the Tnbs<sub>2</sub> HSU. Some COCs (TCE, RDX, perchlorate, and nitrate) have also been detected in the 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<sub>1b</sub> HSU beneath the former Building 829 Waste Accumulation Area (WAA). The WAA is located in the northwest portion of HEPA (Figure 2.4-1). No contamination has been detected in the Upper and Lower Tnbs<sub>1</sub> HSUs in the HEPA OU. Figure 2.4-1 shows the location of new and existing wells in the HEPA OU.

##### **2.4.3.2.1. VOC Concentrations and Distribution**

VOCs (mainly TCE) have been detected in the sands and gravels of the Tpsg-Tps HSU near the 815-SRC and 817-PRX treatment facilities. Overall, these VOC concentrations have been stable or decreasing over time. During the first semester 2012, the maximum VOC concentration detected in samples from Tpsg-Tps wells was 37 µg/L in 817-PRX extraction well W-817-2318 (January). Historically, the maximum concentration of total VOCs detected in this HSU is 450 µg/L in monitor well W-815-01 in 1992. During the first semester 2012, limited recharge has led to insufficient water for sampling in some wells screened in the Tps-Tpsg HSU, including monitor well W-815-01. This monitor well has not been sampled since 1999. VOCs have remained below the 0.5 µg/L reporting limit in Tpsg-Tps well W-35C-05, located near the site boundary.

Of all the HE Process Area wells sampled during the first semester 2012, the VOCs detected in most wells were comprised entirely of TCE, except for five wells (monitor wells W-809-01, W-814-01 and W-815-1928, and extraction wells W-815-02 and W-815-04). Concentrations of 1,1-DCE below its 6 µg/L cleanup standard were detected in three wells, W-815-02, W-815-04 and W-809-01. Chloroform was detected at concentrations of 2.0 µg/L or less in three wells, W-815-1928, W-809-01 and W-814-01. These concentrations are considerably below the 80 µg/L cleanup standard. Samples collected in March 2012 from monitor well W-814-01, located near the former Building 814 lagoon, contained 1,2-DCA concentrations of 0.5 µg/L and 0.62 µg/L; slightly above the 0.5 µg/L cleanup standard. Cis-1,2-DCE was detected in two samples from W-814-01 in March 2012 at concentrations of less than 1.0 µg/L, significantly below the 6 µg/L cleanup standard. During the first semester 2012, carbon tetrachloride was detected in well W-814-01 on one occasion at a concentration of 0.51 µg/L (March); this concentration is slightly above the 0.5 µg/L State Maximum Contaminant Level (MCL) but below the 5 µg/L Federal MCL. Methylene chloride was detected in monitor well W-35C-07 in March 2012 at a concentration of 0.7 µg/L. Bromodichloromethane was detected in monitor well W-815-1928 in March 2012 at a concentration of 0.7 µg/L. In June 2012, bromomethane, chloroethane, chloromethane, and methylene chloride were also detected in ground water sampled from monitor well W-815-2608. None of these constituents were found in samples collected in March 2012 from the same well. Well W-815-2608 was converted to an 815-DSB extraction well on June 28, 2012.

In the Tnbs<sub>2</sub> HSU, the VOC plume is detached and has migrated from its source near Building 815. As a result, the highest VOC concentrations are found downgradient of Building 815 in the 815-PRX extraction wellfield. VOC concentrations in Tnbs<sub>2</sub> HSU ground water have decreased from a historic

maximum concentration of 110 µg/L in extraction well W-818-08 (1992) to a first semester 2012 maximum VOC concentration of 42 µg/L in the same well (March).

VOCs continue to be detected in ground water samples collected from Tnbs<sub>2</sub> HSU extraction well W-830-2216, located at the southern end of Building 832 Canyon. This contamination probably originates from sources located in both the Building 832 Canyon OU and in the HEPA OU. In June 2007, monitor well W-830-2216 was connected to the 830-DISS treatment facility as an extraction well. Since pumping began, VOC concentrations have continued to decrease from a historic maximum concentration of 20 µg/L in 2007 to a first semester 2012 maximum concentration of 5.4 µg/L (February). VOC concentrations in nearby monitor well W-830-13 have also decreased from a historic maximum of 26 µg/L in 2002 to a first semester 2012 maximum concentration of 8.6 µg/L (March).

During the first semester 2012, TCE was detected in three samples (two routine and one duplicate) collected from Tnbs<sub>2</sub> onsite guard well W-815-2110 and in two samples collected from Tnbs<sub>2</sub> onsite guard well W-815-2111. The maximum TCE concentration in either of these guard wells during the first semester 2012 was 2.1 µg/L in guard well W-815-2110 (March). During the first semester, no other COCs were detected in these guard wells, which are located near the southern site boundary. TCE was also detected in offsite guard well W-35B-04 at a concentration of 0.5 µg/L during the first semester 2012 (February). Low concentrations of VOCs have been sporadically detected in this guard well over the years. During the first semester 2012, VOCs were not detected in samples taken from any other onsite or offsite HEPA Tnbs<sub>2</sub> HSU guard wells.

During the first semester 2012, VOC concentrations were below the 0.5 µg/L reporting limit in 16 routine and duplicate monthly samples collected from offsite water-supply well GALLO1. Duplicate GALLO1 samples are collected monthly for quality assurance/quality control purposes. Both the routine and duplicate samples were collected on the same date and were sent to different laboratories for analysis.

At the 829-SRC treatment facility, VOC concentrations in ground water collected from extraction well W-829-06 (Tnsc<sub>1b</sub> HSU) have steadily decreased from a historic maximum of 1,013 µg/L in 1993 to a first semester 2012 maximum concentration of 15 µg/L (March and April). The VOCs detected in well W-829-06 during the first semester 2012 were comprised entirely of TCE. TCE concentrations detected in ground water in extraction well W-829-06 during the first semester 2012 were above the 5 µg/L cleanup standard. 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<sub>1</sub> HSU.

#### **2.4.3.2.2. HE Compound Concentrations and Distribution**

During the first semester 2012, RDX was detected at concentration of 98 µg/L in monitor well W-815-1928. RDX was also detected in March 2008 in this well at a concentration of 19 µg/L and in March 2003 at a concentration of <5 µg/L. The cause of these increasing RDX concentrations is unknown; however, an underground water pipeline leak may be mobilizing contaminants in the immediate vicinity of this well. Trihalomethanes such as bromodichloromethane have also been consistently reported in this well at low concentrations, suggesting a chlorinated water source. Shallow water was also observed at the ground surface immediately upgradient of well W-815-1928, near Tpsg-Tps monitor well W-815-03. Concentrations of 2-amino-4,6-dinitrotoluene (2-ADNT), 4-ADNT and HMX were also detected in monitor well W-815-1928 during the first semester 2012. RDX was not detected at concentrations above the 1 µg/L cleanup standard in any other ground water samples collected from the Tpsg-Tps HSU. However, because this HSU is only periodically saturated, many Tpsg-Tps monitor wells screened in this HSU, including well W-815-1928, are frequently dry. The historic maximum RDX concentration detected in ground water collected from the Tpsg-Tps HSU is 350 µg/L (1988) from well W-815-01; this well has been dry during all sampling attempts since 1999.

The maximum historic RDX concentration detected in Tnbs<sub>2</sub> HSU groundwater is 204 µg/L measured in 1992 in 817-SRC extraction well W-817-01. Since that time, stable RDX concentrations have generally been observed in most Tnbs<sub>2</sub> HSU wells located near the 815-SRC and 817-SRC treatment facilities, including extraction well W-817-01. During the first semester 2012, the maximum RDX concentration in ground water collected from this well was 50 µg/L (April). Due to the mobilization of RDX by injection of treated ground water into nearby injection well W-815-1918, concentrations in monitor well W-809-03, located slightly north and upgradient of W-815-1918 have been increasing. A maximum first semester 2012 RDX concentration of 168 µg/L was detected in August in monitor well W-809-03. First semester 2012 RDX concentrations in nearby extraction wells W-815-02 and W-815-04 remained stable. A new extraction well for the 815-SRC facility (W-815-2803) was installed during the first semester 2012 to increase hydraulic capture of HE compounds and perchlorate in the 815 source area. However, the initial baseline sample from this well did not detect HE compounds and the presence of HE compounds in this area will be determined by future monitoring of this well. The well is scheduled to be converted to an extraction well in late 2012.

To the southwest, the extent of the RDX plume has remained relatively stable and any future downgradient migration should be mitigated, as pumping from existing extraction well W-817-03 has recently been increased. HE compounds tend to sorb to the solid matrix and the extent of RDX contamination at the leading edge of the Tnbs<sub>2</sub> HSU RDX plume (west of 817-PRX) has remained relatively stable. HE compounds were not detected in 815-PRX extraction wells W-818-08 and W-818-09 during the first semester 2012. During the first semester 2012, RDX was not detected at concentrations above the 1 µg/L cleanup standard in any samples collected from Tnbs<sub>2</sub> HSU guard wells. During 2011, RDX was not detected at concentrations above the 1 µg/L cleanup standard in any ground water samples collected from wells located near the 829-SRC treatment facility in the Tnsc<sub>1b</sub> HSU.

HMX detections in the Tnbs<sub>2</sub> HSU have occurred near the 815-SRC and 817-SRC treatment facilities. HMX concentrations in Tnbs<sub>2</sub> HSU ground water have decreased from a historic maximum of 57 µg/L in 1995 (well W-817-01) to a first semester 2012 maximum concentration of 47 µg/L in the same well (April). HMX was also detected during the first semester 2012 at lower concentrations in several ground water samples collected from 815-SRC wells, including extraction well W-815-02 and W-809-03. HMX was also detected at a concentration of 1.3 µg/L (March) in downgradient monitor well W-6CD. In the past, neither HMX nor RDX have ever been detected in this well.

During the first semester 2012, nitrobenzene was not detected above the 2 µg/L reporting limit in any HEPA ground water samples. Previously, nitrobenzene was detected in the 817-SRC extraction well W-817-01, at a concentration of 6.2 µg/L (April 2008) and in one sample 4.1 µg/L collected from the influent to the 815-SRC GWTS during the same time period. These samples were the first time nitrobenzene had been detected in ground water in the HEPA. Additional samples taken from extraction well W-817-01 and from the 815-SRC influent have all been below the reporting limit for nitrobenzene.

During the first semester 2012, 4-ADNT was detected above its 2 µg/L reporting limit in monitor wells W-815-1928, W-809-03 and W-818-11. The highest historic concentration of 4-ADNT detected in the HEPA OU is 24 µg/L, measured in extraction well W-817-01 in September 1997. In 2008, 4-ADNT was also detected at a concentration of 7.5 µg/L in an influent sample to the 815-SRC GWTS. During the first semester 2012, 2-ADNT was detected above its 2 µg/L reporting limit in monitor well W-815-1928. Monitor well W-815-1928 was also discussed in the first paragraph of this section. During the first semester 2012, non-RDX compounds such as 4-ADNT were only detected in wells where RDX is also present.

#### 2.4.3.2.3. *Perchlorate Concentrations and Distribution*

During the first semester 2012, the maximum perchlorate concentration detected in Tpsg-Tps HSU ground water was 8.6 µg/L in 817-PRX extraction well W-817-2318 (January). The historic maximum perchlorate concentration detected in this well is 17 µg/L in 2008.

In the Tnbs<sub>2</sub> HSU, perchlorate concentrations have decreased from a historic maximum of 50 µg/L (extraction well W-817-01, 1998) to a first semester 2012 maximum concentration of 28 µg/L (same well, April). Overall, perchlorate concentrations near this extraction well remain stable. To the south, perchlorate was not detected above the reporting limit in monitor well W-818-06 during the first semester 2012. Last semester, this downgradient monitor well had a perchlorate concentration of 4.3 µg/L (March 2011), slightly above the reporting limit of 4.0 µg/L. To the north, the perchlorate concentrations increased from 9.1 µg/L (August 2011) to 12.6 µg/L (March 2011) in monitor well W-809-03 due to the mobilization of perchlorate by injection of treated ground water into nearby 815-SRC injection well W-815-1918. A perchlorate concentration of 10 µg/L (July 2012) was detected in the baseline sample collected from new well W-815-2803. This well is scheduled to be converted to an 815-SRC extraction well. Perchlorate was not detected in any of the Tnbs<sub>2</sub> HSU guard wells during the first semester 2012.

During the first semester 2012, perchlorate concentrations in Tnsc<sub>1b</sub> HSU extraction well W-829-06 have decreased from a historic maximum of 29 µg/L (2000) to a concentration of 8.5 µg/L (April). Perchlorate was not detected above its reporting limit in monitor well W-829-1940.

#### 2.4.3.2.4. *Nitrate Concentrations and Distribution*

During the first semester 2012, the maximum nitrate concentration detected in ground water from Tpsg-Tps HSU was 590 mg/L (well W-6CS, March). Because there are no known potential nitrate sources near this well such as known septic systems or other Site 300 operations, these elevated nitrate levels are suspected to be related to a pre-Site 300 sheep ranch that was discovered in a historic photo of the area. Ground water sampled from all other wells screened in this HSU had significantly lower nitrate concentrations. During the first semester 2012, the highest nitrate concentration found in other wells screened in this HSU was 100 mg/L (817-PRX extraction well W-817-2318, January).

During the first semester 2012, nitrate concentrations in ground water collected from the Tnbs<sub>2</sub> HSU ranged from <0.5 mg/L in the vicinity of the Site 300 boundary to a maximum of 130 mg/L (W-817-2609, March). Monitor well W-817-2609 was recently installed to monitor remediation south of the 817-PRX treatment facility. During the first semester 2012, nitrate was also detected at a concentration of 8.6 mg/L in offsite water-supply well GALLO1 (February); however, no nitrate was detected in 11 other samples collected during the first semester, including a duplicate sample collected on the same day. Duplicate samples are routinely collected as part of DOE/NNSA's quality assurance program. Nitrate was not detected above the 45 mg/L cleanup standard in ground water from any of the Tnbs<sub>2</sub> HSU guard wells sampled during this reporting period.

During the first semester 2012, the maximum nitrate concentration detected in a ground water collected from the Tnsc<sub>1b</sub> HSU was 75 mg/L (extraction well W-829-06, March). The maximum nitrate concentration detected in monitor well W-829-1940 during the first semester 2012 was 23 mg/L (March).

Throughout the reporting period, nitrate concentrations measured in ground water in the HEPA OU continue to support the interpretation that nitrate is being degraded *in situ* by natural processes. Due to microbial denitrification, nitrate concentrations remain below the 45 mg/L cleanup standard in all wells near the southern site boundary where ground water is present under confined conditions.

### 2.4.3.3. HEPA OU Remediation Optimization Evaluation

Remediation at the HEPA OU is managed by balancing ground water extraction at the site boundary with upgradient pumping in the source and proximal areas. This strategy is designed to capture the leading edge of the TCE plume and also to address contamination that exists in multiple, co-mingled plumes. Engineering evaluations and upgrades continued at the 815-DSB treatment facilities during the first semester 2012.

Contaminants in the Tpsg-Tps HSU, although limited in areal extent and concentration, include VOCs, perchlorate, high explosives compounds and nitrate. To remediate this HSU, efforts have been focused in the area with the highest concentrations located near 817-PRX extraction well W-817-2318. This extraction well removes ground water from the Tpsg-Tps HSU near Spring 5. Although remediation efforts are hampered by limited recharge, low ground water yield and dry conditions, concentrations of all COCs in the Tpsg-Tps HSU continue to decline with the exception of monitor well, W-815-1928. Concentrations of HE compounds continue to increase in this well, that may be due to the mobilization of contaminants by an upgradient possible leaking pipeline water source visible near the ground surface at monitor well W-815-03. The source of this water is unknown.

In the Tnbs<sub>2</sub> HSU, extraction wells W-818-08 and W-818-09 continue to capture the areas with the highest VOC concentrations. This extracted groundwater is treated at the 815-PRX treatment facility. During the early part of 2011, extraction flow rates were increased slightly at this facility, resulting in a larger zone of hydraulic capture. COC concentration trends in these wells have not changed significantly during the first semester 2012, as the wells continue to pull in contaminants from upgradient sources.

Extraction well flow rates at the 817-PRX facility are limited by the capacity of the two injection wells: W-817-02 and W-817-2109. To maximize injection capacity, treated ground water is now injected under pressure into these two injection wells. This pressurization allowed a moderate increase in flow rate from W-817-03 of 0.5 gpm for a total treatment facility rate of 2 gpm. An evaluation of mass removal under these increased pumping conditions is ongoing and will continue during the next two years to determine whether further modifications should be made to accommodate increased pumping at this facility. As described in previous CMRs, one new Tnbs<sub>2</sub> HSU well, W-817-2609, was installed during 2010. This monitor well was initially planned to be an extraction well; however, due to low yields it will remain a monitor well for the foreseeable future.

Located near the 815-DSB treatment facility, extraction wells W-6ER and W-35C-04 capture VOCs along the southern site boundary at the leading edge of the VOC plume. A new extraction well W-815-2608 was connected to the 815-DSB treatment facility on June 28, 2012. The well is expected to increase hydraulic capture near guard wells W-815-2111 and W-815-2110.

Well W-815-2803 was installed during the first semester 2012. This well will be converted to an extraction well and connected to the 815-SRC treatment facility during the second semester 2012. The purpose of the well is to increase hydraulic capture in the area located between the 815-SRC and 817-SRC treatment facility. RDX concentrations in this well were expected to be in the range of 50 µg/L; however, no HE compounds were detected above the reporting limit in this well. If confirmed by second semester 2012 monitoring data, this result is expected to significantly change the RDX contour map presented in the 2012 annual CMR. The concentrations of other COCs in samples from this well were within expected ranges: during the first semester 2012, total VOC, perchlorate and nitrate concentrations in ground water at well W-815-2803 were 0.88 µg/L, 10 µg/L and 100 mg/L, respectively.

Overall, the extent of the total VOC, perchlorate and nitrate plumes in the HEPA did not change significantly during the first semester 2012 and RDX concentrations continue to fluctuate near the leading edge of the RDX plume. HE compounds are relatively immobile and declining trends of these

COCs are due to focused remediation efforts in the source and proximal areas of this OU. Nevertheless, RDX concentrations continue to increase near monitor well W-809-03 due to the mobilization of RDX near 815-SRC injection well W-815-1918. RDX concentration trends in the 815-SRC extraction wells, W-815-02 and W-815-04, continue to decline.

At most wells, perchlorate concentrations in the Tnbs<sub>2</sub> HSU have decreased steadily since monitoring for this COC began in 1998. Historically, the 817-SRC (W-817-01) and 817-PRX (W-817-03 and W-817-04) extraction wells have had the highest perchlorate concentrations in the HEPA. Pumping from extraction well W-817-03 was increased during 2011 and the treated water is now injected under pressure into upgradient wells W-817-02 and W-817-2109. An evaluation of the impact of these increased flow rates on mass removal is underway. Perchlorate concentrations measured in ground water upgradient of the 815-SRC extraction wellfield remain stable, except at the leading edge of the plume where concentrations fluctuate near the 4 µg/L level. Near monitor well W-809-03, perchlorate concentrations are increasing due to the mobilization of RDX by injection of water in W-815-1918. Nitrate concentrations in the Tnbs<sub>2</sub> HSU near the Site 300 boundary continue to be at or near the reporting limit, demonstrating the continued effectiveness of monitored natural attenuation of nitrate in this area.

The 829-SRC GWTS is a small facility that extracts and treats perched ground water located beneath the WAA in the Tnsc<sub>1b</sub> HSU. During the first semester 2012, treated ground water was diverted to a portable water tank rather than being injected in well W-829-08 to allow for additional resin and GAC loading evaluations. This diversion is not expected to have any long-term impact on mass removal at this facility and injection into well W-829-08 is expected to resume during the second semester 2012.

Throughout the reporting period, pumping from HEPA extraction wells has been effective in capturing COCs and preventing contaminated ground water from reaching the Site 300 southern boundary. Upgradient reinjection of treated ground water has also been important in flushing out contaminants in many portions of the HEPA OU. In the future, upgradient and downgradient pumping will continue to be balanced. During the first semester 2012, no VOCs or other COCs were detected in offsite water-supply well, GALLO1 other than nitrate. Nitrate was detected in GALLO1 at a concentration of 8.6 mg/L in February 2012; however, the other 11 samples collected during the first semester were all below the reporting limit. On June 28, 2012, newly-installed well W-815-2608 was connected to the 815-DSB treatment facility. The addition of this well to the extraction wellfield is expected to increase hydraulic capture near guard wells W-815-2111 and W-815-2110 and in the vicinity of GALLO1. Close monitoring of VOC concentrations in the southern site boundary area will also continue, especially near offsite water-supply well GALLO1.

During the first semester 2012, the total VOC mass removed from all HEPA treatment facilities was 99 g; the total nitrate mass removed was 461 kg; the total perchlorate mass removed was 44 g; the total RDX removed was 107 g. Nitrate re-injected into the Tnbs<sub>2</sub> HSU undergoes *in situ* biotransformation to benign nitrogen gas by anaerobic-denitrifying bacteria.

#### **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. Preliminary 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. Uranium activities in ground water in the treatment zone have also declined as a result of reactions that promote uranium precipitation as a solid.

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 came 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 often 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 further 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 hill-slope, 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. Three existing monitor wells, NC7-25, NC7-63 and NC7-64, were converted to extraction wells and three wells were drilled to serve as extraction wells (W-PIT7-2305, W-PIT7-2306 and W-PIT7-2307). The GWTS removes uranium, VOCs, nitrate, and perchlorate from ground water in wells within the Quaternary alluvium/Weathered bedrock (Qal/WBR) HSU (NC7-63, NC7-64 and W-PIT7-2306), Tnbs<sub>1</sub>/Tnbs<sub>0</sub> bedrock HSU (NC7-25), and both HSUs (W-PIT7-2305 and W-PIT7-2307). Well NC7-25, screened in the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU, will only be pumped when ground water levels in the overlying Qal/WBR HSU are sufficiently low to avoid pulling ground water containing depleted uranium and other contaminants in the Qal/WBR HSU into the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU. These conditions are most likely to occur in late summer/early fall towards the end of the dry season. The GWTS extracts ground water at an approximate combined flow rate of 0.2 gpm. The current GWTS configuration includes three ion-exchange resin canisters for the removal of uranium followed by three ion-exchange resin canisters containing a nitrate-selective resin that is also effective in removing perchlorate. Ground water that has been treated to remove uranium, nitrate, and perchlorate 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 and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; thirty required analyses were not performed because there was insufficient water in the wells to collect the samples and ten required analyses were not performed due to inoperable pumps.

### **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<sub>1</sub>/Tnbs<sub>0</sub> HSUs.

### **2.5.2.1.1. Tritium Activities and Distribution**

The maximum tritium activities in ground water downgradient of Building 850 have decreased from a historic maximum of 566,000 pCi/L in 1985 (monitor well NC7-28) to a maximum of 38,300 pCi/L during the first semester of 2012 (monitor well NC7-70, May). Well NC7-70 is located at the northeast corner of Building 850 and about 20 feet downgradient (east) of the firing table. Well NC7-28 is located about 225 feet east and downgradient of well NC7-70. The 2011 maximum tritium activity of 53,300 pCi/L also occurred in a sample from well NC7-70 (May). The highest tritium activities in ground water continue to occur directly downgradient of the Building 850 Firing Table. The extent of the 20,000 pCi/L cleanup standard ground water tritium activity contour in both the Qal/WBR and Tnbs<sub>1</sub>/Tnbs<sub>0</sub> bedrock HSUs has decreased slightly compared to 2011. While tritium activities continue to decline in most portions of the Building 850 plume, ground water tritium activities in wells in the farthest downgradient portion of the plume near Pit 1 exhibit a slowly increasing trend. However, the overall extent of the 100 pCi/L tritium activity contours in both the Qal/WBR and Tnbs<sub>1</sub>/Tnbs<sub>0</sub> bedrock HSUs are similar to those of 2011.

Wells W-PIT2-2301 and W-PIT2-2302, both screened in the Qal/WBR HSU and located in Elk Ravine downgradient of the Pit 2 Landfill, yielded tritium activities within background range (<100 pCi/L) in all samples collected in 2011. During the first semester 2012 (May), this was again the case. Given the low activities of the Qal/WBR samples, tritium from Building 850 is apparently not present in this HSU in Elk Ravine. Overall, the extent of tritium in ground water with activities above the 20,000 pCi/L cleanup standard continues to decrease, and the extent of ground water with tritium in excess of background is stable (similar to that of previous years.)

### **2.5.2.1.2. Uranium Concentrations and Distribution**

Total uranium activities in ground water were below the 20 pCi/L cleanup standard in samples from wells at or downgradient of Building 850 during the first semester of 2012. The first semester 2012 maximum uranium activity in Building 850 ground water was 5.2 pCi/L in a sample from monitor well NC7-61 (February). The <sup>235</sup>U/<sup>238</sup>U atom ratio for this sample, as measured by mass spectrometry, indicates added depleted uranium. This well is screened across the Qal/WBR and Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSUs and is located about 550 feet downgradient of the Building 850 Firing Table. The maximum historic uranium activity measured in a sample from well NC7-61 is 10.4 pCi/L (1994). During the first semester 2012, monitor well NC7-28, located downgradient of the firing table and about 325 feet upgradient of well NC7-61, yielded samples containing 2.8 and 3.8 pCi/L of uranium, in January and May, respectively. Well NC7-28 has historically yielded the highest uranium activities at Building 850. Reducing conditions attributable to the enhanced bioremediation treatability study (see Section 2.5.2.2) appear to be partially responsible for the decline in uranium activities. Well NC7-28 is immediately downgradient of ethyl lactate injection well W-PIT7-2417.

Uranium analyses for the first semester 2012 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 [<sup>235</sup>U/<sup>238</sup>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 <sup>235</sup>U/<sup>238</sup>U atom ratio of less than 0.007. Historic uranium isotope data indicate that distributions of ground water within the Qal/WBR and Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSUs containing some added depleted uranium extend downgradient about 1,200 feet and 700 feet, respectively, from the Building 850 Firing Table and have remained relatively stable. Depleted uranium has also been detected in Qal/WBR and Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU ground water from wells downgradient of the Pit 2 Landfill and from wells in the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU south of the Pit 2 Landfill. The uranium isotope data for the first semester 2012 suggest this has not changed. However, the maximum uranium activities detected during the semester in Qal/WBR and Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU ground water from wells

downgradient of the Pit 2 Landfill were 0.69 pCi/L (monitor well W-PIT2-2301, May) and 4.2 pCi/L (monitor well W-PIT2-1934, April), respectively; significantly below the 20 pCi/L total uranium cleanup standard, and within the range of natural background levels.

#### **2.5.2.1.3. Nitrate Concentrations and Distribution**

Nitrate was detected at concentrations at or above the 45 mg/L cleanup standard in samples from six Building 850 area wells during the first semester 2012. The maximum nitrate concentration detected this semester was 180 mg/L in the May ground water sample from monitor well NC7-29. This historic local maximum of 180 mg/L was also detected in ground water samples from this same well in 2007 and 2009. Well NC7-29, screened in the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU, is located south and cross-gradient of Building 850. The first semester 2012 maximum nitrate concentration in wells located directly downgradient of the Building 850 source area was 53 mg/L in the May ground water sample from monitor well NC7-61. Concentrations of nitrate in ground water at the two treatment zone wells upgradient of well NC7-61, monitor wells NC7-28 and W-850-2417, were below the 0.5 to 1 mg/L reporting limit in samples collected in January and May from the two wells as a result of ethyl lactate injection (see Section 2.5.2.2 for details on the treatability study).

Historic data indicate that ground water nitrate concentrations in the Qal/WBR and Tnbs<sub>1</sub>/Tnbs<sub>0</sub> 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 the first semester 2012, perchlorate concentrations exceeding the 6 µg/L cleanup standard were detected in ground water samples from 23 wells east and south of Building 850 and east of Pit 1. Except for the *in situ* bioremediation treatment zone area, comprised of wells NC7-28 and W-850-2417, perchlorate concentrations are similar to or have decreased slightly from last year in samples from Qal/WBR and Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU wells immediately downgradient of Building 850. Wells downgradient of the Building 850 Firing Table continued to exhibit the highest perchlorate concentrations in the Building 850 area. At present, perchlorate concentrations in excess of the 6 µg/L cleanup standard in Qal/WBR and Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU ground water extend continuously 2,000 and 1,200 feet, respectively, from Building 850. The first semester 2012 maximum perchlorate concentration of 42 µg/L was detected in the June sample from well NC7-61, located 550 east of the firing table and directly downgradient of the *in situ* treatment zone (please see below) and screened in the Qal/WBR and Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSUs. A first semester 2012 sample (May) from well NC7-70, also screened in both HSUs and located 20 feet downgradient (east) of the firing table, contained 40.8 mg/L of perchlorate.

Prior to the beginning of the *in situ* treatability study, the maximum 2011 perchlorate concentration from well W-850-2417 was 74 µg/L (April). Several slugs of ethyl lactate followed by slugs of previously extracted perchlorate-bearing ground water were injected into this well in September and October of 2011 as the first phase of an *in situ* perchlorate bioremediation treatability study. As a consequence of the ensuing *in situ* bioremediation, subsequent samples of ground water from this well (October and November 2011) did not contain perchlorate in excess of the 4 µg/L reporting limit. Samples collected during the first semester 2012 from well W-850-2417 in January and February contained 11 and 8.2 mg/L, respectively, of perchlorate. The four monthly samples collected from March to June did not contain perchlorate at or in excess of the 4 mg/L reporting limit. Monthly first semester 2012 samples from well NC7-28 did not contain detectable perchlorate. A second phase of treatability testing occurred in April 2012 with the injection into well W-850-2417 of two slugs of ethyl lactate followed by slugs of previously-extracted perchlorate-bearing ground water. Additional details of this treatability test are discussed in Section 2.5.2.2.

The overall extent of perchlorate in ground water in and downgradient of the Building 850 area did not change significantly from last year and will continue to be closely monitored.

#### **2.5.2.1.5. HE Compound Concentrations and Distribution**

During the first semester 2012, ground water samples from 19 wells located in or downgradient of the Building 850 Firing Table were collected and analyzed for the HE compounds, HMX and RDX, at a reporting limit, generally, of 1 µg/L. Contract laboratory reporting limits were higher in the past, varying from 5 to 20 µg/L. The lower reporting limits have enabled definition of the extent of HMX and RDX in Qal/WBR HSU ground water. The source appears to be the Building 850 Firing Table.

During the first semester 2012, the 1 µg/L RDX cleanup standard was exceeded in a sample from one of the 19 wells sampled. Last year, the cleanup standard was exceeded in two of 23 wells sampled for RDX. The maximum RDX concentration of 3.8 µg/L was detected in the May 2012 sample from well NC7-61, located east (downgradient) of the Building 850 Firing Table. The historic maximum RDX concentration in a sample from this well is 7 µg/L (1999). Samples collected from well NC7-61 in February 2012 and all of 2011 did not contain RDX in excess of the reporting limit. Last year, the maximum RDX concentration of 6.5 µg/L was detected in an April 2011 sample from well W-850-2417 located directly east (downgradient) of the Building 850 Firing Table. The other well yielding detectable RDX in 2011 (5 mg/L, April) was well NC7-28, located 25 feet east of well W-850-2417 and screened in the same HSU. The October 2011 and first semester 2012 (January and May) samples from wells NC7-28 and W-850-2417 did not yield samples with detectable RDX. The data indicate that RDX exceeding the cleanup standard has decreased in extent from 2011 to the first semester 2012.

This semester, two wells yielded samples containing HMX above the reporting limit. These wells, NC7-61 and W-850-2417 yielded HMX at 3.9 µg/L (May) and 3.1 µg/L, (January), respectively. The historic maximum HMX concentrations in samples from wells NC7-61 and W-850-2417 are 7.7 µg/L (April 2010) and 11 µg/L (April 2010), respectively. These concentrations are significantly below the Regional Tapwater Screening Level for HMX (1,800 µg/L). Last year, HMX was detected above the reporting limit in samples from one well, NC7-28, which contained detectable HMX at concentrations of 15 µg/L (April) and 7.7 µg/L (October). HMX was not detected in samples from well NC7-28 during the first semester 2012. Due to the insufficient water for sampling, the extent of HMX in ground water has decreased from its 2010 limit, when NC7-54 was last sampled and yielded HMX (700 feet east and southeast of the Building 850 Firing Table), to the vicinity of wells NC7-61 and W-850-2417. Sampling and analysis of water from monitor well NC7-54 in the future will determine whether the extent has truly diminished. HE compounds were not detected above the reporting limit in ground water samples from wells screened in the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU downgradient of Building 850 or from wells screened in the underlying Tnsc<sub>0</sub> HSU. The distribution of HE compounds in ground water at Building 850 is less extensive compared to observations made since 2008, when regular sampling and analysis for these chemicals commenced.

This semester, the extent of HMX and RDX is confined to a small area immediately downgradient of the firing table.

#### **2.5.2.2. Building 850 Area of OU 5 Remediation Optimization Evaluation**

MNA is the selected remedy for remediation of tritium in ground water emanating from the Building 850 area. Recent data indicate MNA continues to be effective in reducing tritium activities in ground water. 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. The extent of the 20,000 pCi/L cleanup standard tritium activity contours in both HSUs continues to diminish. The significant decreases in activities and extent of the Building 850 tritium plume with

activities exceeding the cleanup standard indicate that natural attenuation (dispersion, radioactive decay and a decreasing source term) continues to be effective in reducing tritium activities in ground water. In general, ground water tritium activities continue to decline and are significantly below historic highs throughout the Building 850 plume. Although tritium activities are increasing slightly in the Pit 1 area, the leading edge of the tritium plume is stable, is well within the Site 300 interior, and is expected to attenuate within the boundaries of Site 300.

Total uranium activities in ground water were below the 20 pCi/L cleanup standard in samples from wells at or downgradient of the Building 850 area during the first semester 2012. The overall extent of total uranium activities at Building 850 has not changed significantly. The monitoring-only strategy for uranium at Building 850 continues to be protective given that: (1) total uranium activities in Building 850 ground water are below the 20 pCi/L cleanup standard; and (2) the areal extent of depleted uranium has not changed during the period of monitoring. Temporal trends in  $^{235}\text{U}/^{238}\text{U}$  isotope ratios from past samples have remained stable. The overall extent and maximum concentrations of nitrate and perchlorate in ground water are also similar to those observed in previous years and semesters. The exception was that nitrate and perchlorate concentrations decreased below reporting limits in the *in situ* perchlorate bioremediation treatment zone.

The *in situ* perchlorate bioremediation treatability study commenced at Building 850 during the second semester 2011 and continued this semester. 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. Prior to starting the test, perchlorate-bearing ground water was extracted from well W-850-2417 located directly downgradient of the Building 850 Firing Table, and was placed in an aboveground storage vessel. From mid-September to mid-October 2011, four five-gallon slugs of ethyl lactate, followed by a 50-gallon slug of the extracted perchlorate-bearing ground water, were injected into well W-850-2417. The 50 gallons of injected ground water mixed with and diluted the ethyl lactate, hastening its transport into the treatment zone. Nearby downgradient well NC7-28 and deeper well W-850-2416 were monitored to evaluate bioremediation performance.

In 2011, reducing conditions, as indicated by low dissolved oxygen concentrations (<1 mg/L) and negative ORP (oxidation-reduction potential), were measured in the treatment zone with *in situ* sensors within days of injection in well W-850-2417, and in less than 3 weeks at performance monitor well NC7-28. These reducing conditions continued through the end of 2011. The test remained in a monitoring and rebound mode through April 2012, when dissolved oxygen concentrations and ORP measurements indicated that reducing conditions no longer existed in the treatment zone. In April 2012, two individual slugs of 2.5 gallons of ethyl lactate were followed by two slugs of 45-50 gallons of contaminant-bearing water previously extracted from well W-850-2417.

Monitoring results indicate that microbial reduction significantly reduced perchlorate concentrations in wells W-850-2417 and NC7-28. Perchlorate concentrations in injection well W-850-2417 decreased from pre-test 2011 maximum of 74 to post-injection 2011 maxima of 13.6  $\mu\text{g/L}$ . By January 2012, perchlorate concentrations in well W-850-2417 had further decreased to 11  $\mu\text{g/L}$ , and were below the 4  $\mu\text{g/L}$  reporting limit in the March, April, and June 2012 samples. Perchlorate concentrations in downgradient performance monitor well decreased from a pre-test 2011 maximum of 71.3  $\mu\text{g/L}$  to below the 4  $\mu\text{g/L}$  reporting limit in the 2011 post-injection samples. Perchlorate concentrations in well NC7-28 remained below reporting limits in all monthly samples collected during the first semester 2012.

Although not specifically targeted for bioremediation, nitrate concentrations and uranium activities were also monitored in the injection well W-850-2417 and performance monitor well NC7-28. Nitrate concentrations in wells W-850-2417 and NC7-28 decreased from pre-test 2011 maximum concentrations of 52 and 57 mg/L, respectively, to below the 0.44 mg/L reporting limit following ethyl

lactate injection in 2011. Nitrate concentrations remained below reporting limits in all samples collected from these wells during the first semester 2012. Total uranium activities in wells W-850-2417 and NC7-28 also decreased from pre-injection 2011 maximum activities of 9.1 and 9.8 pCi/L, respectively, to 2011 post-injection activities of 3.5 and 2 pCi/L, respectively. Uranium activities in wells NC7-28 and W-850-2417 continued to decrease in the beginning of the first semester 2012 uranium activities to 2.8 and 1.7 pCi/L, respectively in January; but had increased slightly to 3.8 and 4.0 pCi/L, respectively, in the May 2012 samples. The decrease in uranium activities is a result of concurrent reduction of  $U^{+6}$  species in ground water to  $U^{+4}$  species, which form insoluble solids.

During the second semester of 2012, ground water will be extracted from well NC7-70, which is located immediately downgradient of the Building 850 Firing Table. To increase the volume of the treatment zone, additional slugs of ethyl lactate and extracted ground water will be injected into well NC7-70 which contains perchlorate at a concentration of 40.8  $\mu\text{g/L}$  (May 2012). As a part of this new injection phase, fluorescein, a non-toxic tracer, will be injected with the ethyl lactate 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, NC7-28 and NC7-61. The regulatory agencies will be kept apprised of the results of the treatability study and when additional slugs may be injected at well NC7-70.

### **2.5.2.3. 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 to make progress toward cleanup. Perchlorate, uranium, and RDX 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 (perchlorate, nitrate, uranium, HE compounds, metals, general mineral constituents, dissolved oxygen, Eh, ORP, pH, specific conductance and volatile fatty acids) will continue to be evaluated in preparation for injection at well NC7-70 and potential future injection at well W-850-2417. The results of this evaluation will be presented in future CMRs. The performance of this technology with respect to uranium and RDX remediation or stabilization will also continue to be evaluated.

### **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 the first semester of 2012 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 the first semester of 2012 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 2012:

- The GWTS ceased operation due to an interlock shutdown after a site-wide power outage that occurred on December 18. The system was unable to be restarted due to issues with the tank level float switch, therefore the facility was secured. The GWTS was restarted on January 9.
- Extraction wells NC7-63 and NC7-64 were shut down from November 28 to February 6 to protect against freeze damage.
- Extraction wells NC7-63 and PIT7-2306 were taken offline on April 4 to allow water levels in these wells to recover. Pumping from well W-PIT7-2306 was reinitiated on May 7.
- Extraction well W-PIT7-2305 was offline on April 4 while the glue applied as part of the wellhead modification cured, and was brought back on-line on April 5.

#### ***2.5.3.3. Pit 7 Complex Area of OU 5 Compliance Summary***

The PIT7-SRC GWTS operated in compliance with the RWQCB Substantive Requirements for Wastewater Discharge.

#### ***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 were made to the plan during this reporting period.

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

No modifications to the treatment facility or extraction wellfield occurred 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 and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; forty-five required analyses were not performed because there was insufficient water in the wells to collect the samples and ten required analysis were not performed due to an inoperable pump.

#### **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 the first semester of 2012 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<sub>1</sub>/Tnbs<sub>0</sub> HSUs.

#### **2.5.5.2.1. Tritium Activities and Distribution**

Overlapping 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. The ground water sample collected from well NC7-48 in May 2012 contained less than 100 pCi/L of tritium.

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 in 1998 to a first semester 2012 maximum tritium activity of 233,000 pCi/L in the January sample from monitor well NC7-51. Well NC7-51 is located about 40 feet northeast of Pit 5 and 60 feet east of Pit 3. The maximum 2011 tritium activity was 575,000 pCi/L (April) in samples from extraction well NC7-63, which is located directly downgradient of Pit 3. Subsequently, the October 2011 sample from this well contained 221,000 pCi/L. Well NC7-63 was not sampled this semester due to insufficient water to collect samples. Tritium activities in Qal/WBR ground water have generally declined slightly since 2011. Ground water elevations in the Qal/WBR HSU in the Pit 7 Complex in 2011-2012 have generally declined from their 2010-2011 maxima. Following the 2010-2011 rainfall season, water levels generally rose 1 to 2 feet. This was expected, as the drainage diversion system is not designed to completely prevent any water level rises but to minimize the influence of extreme storm events by diverting excess runoff and shallow subsurface flow during very heavy rainfall years (i.e., El Niño events) to prevent water table rises into the landfills. Ground water elevations in the Qal/WBR HSU have typically fluctuated within a narrow 4 feet range during the last few years. Ground water levels generally remain well below the bottoms of the Pit 7 Complex Landfills. In the Qal/WBR HSU, the region of ground water containing tritium in excess of the cleanup standard extends about 1,300 feet southeast from the northern edge of Pit 3. The extent of the 20,000 pCi/L cleanup standard ground water tritium activities in the Qal/WBR HSU in the Pit 7 Complex area is similar to that of 2011.

Tritium activities in the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 770,000 pCi/L in 1999 to a first semester 2012 maximum tritium activity of 203,000 pCi/L (April). Both the historic and first semester 2012 maximum tritium activities were detected in samples from extraction well NC7-25, located about 250 feet downgradient (northeast) of the Pit 3 Landfill. In general, tritium activities in the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU are similar or have declined slightly compared to 2011 measurements. The highest tritium activities in Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU in Pit 7 Complex area ground water, in excess of the 20,000 pCi/L cleanup standard, continue to extend about 800 feet northeast of Pit 3 and Pit 5. The extent of tritium in excess of the 20,000 pCi/L cleanup standard in the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU in the Pit 7 Complex area is also similar to 2011 observations.

Overall, the extent of tritium in ground water with activities in excess of the 100 pCi/L background levels remains stable, and is similar to that of 2011.

#### **2.5.5.2.2. Uranium Concentrations and Distribution**

Depleted uranium was previously released to ground water from sources in the Pits 3, 5, and 7 Landfills (Taffet et al., 2008). Uranium activities in Qal/WBR HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 781 pCi/L (well NC7-40, 1998) to a first semester 2012 maximum of 93.7 pCi/L (well NC7-64, April). The maximum historic uranium activity detected in a water sample from monitor well NC7-64 is 252 pCi/L (1998). Well NC7-64 is located directly downgradient (east) of Pit 3 near well NC7-63. The 2011 maximum activity of 172 pCi/L was detected in a sample from extraction well NC7-63. As stated previously, during the first semester 2012, well NC7-63 did not contain sufficient water to collect samples. Uranium activities exceeded the 20 pCi/L



cleanup standard in samples from 13 wells in the Qal/WBR HSU during the first semester 2012. All 13 wells are proximal to the landfills and have historically shown  $^{235}\text{U}/^{238}\text{U}$  isotopic ratios indicating some depleted uranium. The extent of uranium in excess of the cleanup standard in the Qal/WBR HSU is confined to an area directly east of Pit 3 and another area that extends from Pit 5 southeast about 500 feet. The extents of both these regions are stable and similar to what has been observed over the last few years. The extent of depleted uranium in Qal/WBR HSU ground water has changed little since the mid-1990s. However, the recent sample results (most recent 2.3 pCi/L of uranium, June 2012) from new extraction well W-PIT7-2704, completed at the northeast corner of Pit 5 indicates that the uranium in Qal/WBR HSU ground water in excess of the cleanup level is less extensive than previously depicted. Areas of depleted uranium in ground water are bounded by wells that have in the past, exhibited ground water isotope mass ratios indicative of natural uranium. Sorption and ion exchange may be responsible for slowing the migration of depleted uranium in ground water compared to conservative contaminants such as tritium.

The maximum uranium activity in a first semester 2012 sample from well W-PIT7-2305 screened in both the Qal/WBR and Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSUs was 15 pCi/L (April). A sample was collected in October 2011 from this well and analyzed by mass spectrometry; the isotope ratio indicated natural uranium (15 pCi/L of total uranium).

Uranium activities in the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU have decreased from a historic maximum of 51.45 pCi/L in 1998 to a first semester 2012 maximum of 33.6 pCi/L (April). The 2011 maximum activity was 35.5 pCi/L (June 2011). All these maximum uranium activities were detected in samples from extraction well NC7-25, located about 250 feet downgradient (northeast) of the Pit 3 Landfill. Well NC7-25 is the only Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU well that historically and currently yields ground water containing uranium in excess of the cleanup standard. All historic and current isotope ratio data indicate that the uranium in NC7-25 ground water is natural. Ground water samples from wells screened in the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU have not shown depleted uranium mass ratios indicating that depleted uranium has not migrated downward into the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU.

As is the case for the Building 850 portion of OU 5, uranium activity analyses for the first semester 2012 were performed primarily by alpha spectroscopy with selected samples analyzed by Inductively Coupled Plasma-Mass Spectrometry (ICP-MS).

#### **2.5.5.2.3. Nitrate Concentrations and Distribution**

Nitrate was detected at concentrations at or above the 45 mg/L cleanup standard in samples from two Pit 7 Complex area monitor wells, NC7-47 and W-PIT7-13, during the first semester 2012. These wells are located downgradient and northeast of the Pit 7 Complex area.

The maximum first semester 2012 nitrate concentration detected in the Pit 7 Complex area was 65 mg/L in the April sample from Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU well NC7-47, located northeast and far downgradient of Pit 3. The first semester 2012 maximum nitrate concentration in the Qal/WBR HSU was 44 mg/L (April) from extraction well NC7-64, located immediately downgradient of Pit 3. The 2011 maximum nitrate concentration detected in the Pit 7 Complex area was 90 mg/L in the April sample from Qal/WBR HSU extraction well NC7-63, located immediately downgradient of Pit 3 and 17 feet northeast of well NC7-64. As stated previously, this well was not sampled this semester due to insufficient water to collect a sample.

Historic data indicate that nitrate concentrations in the Qal/WBR and Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU ground water are limited in extent and relatively stable. Overall, maximum nitrate concentrations in Pit 7 Complex ground water have decreased from the historic maximum of 363 mg/L (2003). The distribution and concentrations of nitrate in ground water this year are generally similar to what was observed in 2011.

#### **2.5.5.2.4. Perchlorate Concentrations and Distribution**

During the first semester 2012, perchlorate was detected at concentrations exceeding the 6 µg/L cleanup standard in ground water samples from 16 wells directly northeast and southeast of the landfills.

Perchlorate concentrations in the 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 2012 maximum concentration of 17 µg/L, in the April sample from well W-PIT-2305, located about 65 feet east and downgradient of Pit 5. The Qal/WBR HSU wells that yielded samples containing perchlorate in excess of the 6 µg/L cleanup standard define an area that extends southeast about 1,200 feet from the middle of Pit 3.

Samples from two Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU wells, NC7-25 and NC7-68, contained perchlorate in excess of the 6 µg/L cleanup standard at maximum first semester 2012 concentrations of 9.4 and 11.8 µg/L (both April) respectively, and define an area that extends about 1,000 feet southeast along the edges of Pits 3 and 5.

The overall extent of perchlorate in ground water in the Pit 7 Complex area did not change significantly from 2011 to the first semester 2012.

#### **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. During the first semester 2012, VOCs were detected in ground water samples from seven Pit 7 Complex area wells: one well completed in the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU (monitor well K7-03), four completed in the Qal/WBR HSU (monitor wells NC7-51, W-PIT7-03, and W-PIT7-2704, and extraction well W-PIT7-2306), and two completed in both HSUs (monitor well K7-01 and extraction well W-PIT7-2307).

Total VOC concentrations in Qal/WBR HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 21.2 µg/L in 1995 (well NC7-51) to a first semester 2012 maximum of 6.2 µg/L (well W-PIT7-2306) comprised of 4.5 µg/L of TCE and 1.7 µg/L of 1,1-DCE. 1,1-DCE was not detected above the 0.5 µg/L reporting limit in samples from any other wells screened exclusively in the Qal/WBR HSU. The historic maximum total VOC concentration from well W-PIT7-2306 is 11.1 µg/L (6.7 µg/L of TCE and 4.4 µg/L of 1,1-DCE) detected in a 2007 sample.

The maximum first semester 2012 total VOC concentration measured in a Pit 7 Complex well completed in both the Qal/WBR and Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSUs was 1.5 µg/L comprised only of TCE (well W-PIT7-2307, April). In 2011, the maximum total VOC concentration in this well was 9.3 µg/L; 6.5 µg/L of TCE and 2.8 µg/L of 1,1-DCE exceeding the TCE cleanup standard of 5 µg/L but below the 1,1-DCE cleanup standard of 6 µg/L. This semester, TCE was also detected in a sample from well K7-01, also completed in the Qal/WBR and Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSUs, at a concentration of 1.2 µg/L; 1,1-DCE was not detected in the sample from K7-01 above the 0.5 µg/L reporting limit.

The maximum first semester 2012 total VOC concentration in a sample from a well screened only in the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU was 1.1 µg/L (well K7-03, April), which was comprised entirely of TCE. 1,1-DCE was not detected above the 0.5 µg/L reporting limit in the sample from well K7-03 or any other wells screened exclusively in the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU.

The data indicate that the extent of VOCs in ground water is limited to the area directly downgradient of Pit 5. Individual VOC concentrations were below cleanup standards in all Pit 7 Complex wells sampled during the first semester 2012. In 2011, wells W-PIT7-2306 and W-PIT7-2307 yielded samples with TCE concentrations slightly above the 5 µg/L cleanup standard.

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

Ground water extraction and treatment at the PIT7-SRC facility began in March 2010. Therefore, the operation timeframe (2 years and 4 months) and associated hydraulic and chemical data from the area are still insufficient to fully assess the effects of ground water extraction and treatment on COC concentration trends and the performance of the extraction wellfield. The total volume of water extracted and treated during the first semester 2012 at PIT7-SRC was 31,000 gallons. Well W-PIT7-2305 contributed nearly all of the flow (approximately 99%) to the PIT7-SRC facility at an average long-term extraction rate of <0.1 gpm. Concentrations of COCs in well W-PIT7-2305 ground water have fluctuated since pumping started in 2010, but have shown some decreases from pre-pumping conditions to present. For example:

- Tritium activities decreased from 73,900 pCi/L (January 2010) to 37,000 pCi/L (April 2012).
- Uranium activities decreased from 21 pCi/L (January 2010) to 15 pCi/L (April 2012). Since 2008, the water from this well has contained only natural uranium.
- TCE concentrations decreased from 0.88 µg/L (June 2007) to below the 0.5 µg/L reporting limit (April 2012).
- Perchlorate concentrations decreased very slightly from 15 µg/L (June 2009) to 14 µg/L (October 2011). Perchlorate concentrations subsequently increased slightly to 17 µg/L (April 2012).
- Nitrate concentrations remained virtually unchanged varying from 44 mg/L (August 2008) to 42 mg/L (April 2012).

Based on assessment of water levels and ground water COC trends at well W-PIT7-2307, it appears that ground water pumped to date, is derived primarily from the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> bedrock HSU. Because the well may have been largely pumping from the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU, pumping was suspended in early March 2011 and has remained off to avoid pulling contaminants from Qal/WBR HSU ground water into the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU. Ground water elevations have risen since pumping ceased and in April 2012 were still below the contact between coherent bedrock and the Qal/WBR HSU as defined by the seismic velocity boundary. Well W-PIT7-2305 has been pumping almost continuously during the first semester 2012, except for one day in April. Well NC7-64 was pumping after February 6, when freezing conditions eased. Pumping at wells NC7-64 and W-PIT7-2306 ceased on April 4 to allow water levels to recover. Well NC7-63 has remained offline during the first semester 2012 due to insufficient water. Well W-PIT7-2306 began pumping on May 7 with very low yields.

To increase plume capture and the volume of water containing concentrations of COCs in excess of cleanup standards, three additional extraction wells (wells W-PIT7-2703, W-PIT7-2704 and W-PIT7-2705) with locations shown on Figure 2.5-1 were installed during the period of May to July 2011 near the highest concentrations of uranium and perchlorate in the Qal/WBR HSU. The wells were drilled to the base of the Qal/WBR and completed with 12-inch diameter casing with screens extending to the base of this HSU. The first semester 2012 samples from wells W-PIT7-2703, W-PIT7-2704 and W-PIT7-2705 contained, respectively, (1) 70,800, 389 and 38,100 pCi/L of tritium, (2) 76, 2.3 and 66 pCi/L of uranium, (3) 8.3, <4, and 6.7 µg/L of perchlorate, and (4) 29, 19 and 27 mg/L of nitrate. VOCs (TCE) were only detected in the sample from well W-PIT7-2704 (0.53 µg/L). Based on these contaminant concentrations and hydraulic data, all three of these wells are being connected to the treatment system and will begin pumping during the second semester 2012 to increase mass removal. Contaminant mass removal can also be increased in 2012 by targeting Qal/WBR HSU ground water in well W-PIT7-2307 by raising the pump intake to the base of the Qal/WBR HSU once water levels in the well rise above the base of the HSU. Uranium mass removal will also be increased during the second quarter of 2012 by commencing pumping in Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU

well NC7-25. In the long term, continued pumping of extraction wells, the effects of the drainage diversion system, and rainfall hydrographs will be evaluated as to their overall influence on the extent of saturation and COC concentrations in the Qal/WBR HSU, and in turn, the distribution of ground water available for treatment at PIT7-SRC.

#### **2.5.5.4. Pit 7 Complex 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 Pit 7 Complex area during this reporting period. The remedy 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 continues to reduce the concentrations and mass of these contaminants in Pit 7 Complex ground water. As stated in the previous section, extraction wells W-PIT7-2305 and W-PIT7-2307 pumped the vast majority of ground water, and concentrations of tritium and uranium in samples collected from these wells remained similar to 2010. Uranium activities in these samples remained below cleanup standards. Continued operation of the PIT7-SRC facility and extraction from the three new extraction wells and well NC7-25 provide an opportunity for extraction of increased volumes of ground water and mass removal.

During the first semester 2012, tritium activities in treated effluent from PIT7-SRC were in the range of 28,000 to 48,100 pCi/L, which is equivalent to recent tritium activities in samples from wells completed adjacent to the infiltration trench (wells K7-01, NC7-16 and NC7-21). Since treatment and re-injection began, ground water tritium activity trends at these wells are stable or decreasing. 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 cleanup standards are limited in extent. TCE is present above the cleanup standard in only one well. Perchlorate concentrations are stable to decreasing. Nitrate concentrations and distribution have decreased from historic maxima.
- The extent of uranium in excess of the cleanup standard in the Qal/WBR HSU continues to be confined to an area directly immediately east of Pit 3 and another area that extends from Pit 5 southeast about 500 feet. The extents of both these regions have remained stable and similar to what has been observed over the last few years. The recent sample results from new extraction well W-PIT7-2704, completed at the northeast corner of Pit 5, indicate that the uranium in Qal/WBR HSU ground water in excess of the cleanup level is less extensive than previously depicted.
- Generally, tritium activities in wells downgradient of the infiltration trench are stable or 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 hill slopes 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. Ground water elevations in the Qal/WBR HSU generally decreased slightly during the 2011-2012 rainfall year. This is likely due primary to a decrease in rainfall in the 2011-2012 rainfall year (approximately 7 inches), compared to the above average rainfall in the 2010-2012 rainfall year (approximately 13 inches).
2. Maximum ground water rises into the pit waste and underlying contaminated bedrock as indicated by ground water elevation data:
  - During and following the 2009-2010, 2010-2011, and 2011-2102 rainfall seasons, ground water levels have remained well below the bottoms of the Pit 7 Complex Landfills.
  - 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. The 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 2005 and 2011 was greater than average and almost identical at 13.7 and 13.5 inches, respectively.
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 2012 maximum tritium activity of 233,000 pCi/L.
    - Uranium activities have decreased from a historic maximum of 781 pCi/L in 1998 to a first semester 2012 maximum of 93.7 pCi/L.
    - Nitrate concentrations have decreased from the historic maximum of 363 mg/L in 2003 to a first semester 2012 maximum of 90 mg/L.
    - Perchlorate concentrations have decreased from a historic maximum of 40 µg/L in 2009 to a first semester 2012 maximum of 17 µg/L.
    - Total VOC concentrations have decreased from a historic maximum of 21.2 µg/L in 1995 to a first semester 2012 maximum of 6.2 µg/L, with concentrations of all VOC COCs below cleanup standards.

Based on the evaluation of data collected during the first semester 2012 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. Ground water extraction was expanded in September 2006 from one well, W-854-02, extracting at a flow rate of approximately 1 gpm, to include wells W-854-18A, W-854-17, and W-854-2218 currently extracting at an approximate combined flow rate of 1.7 gpm. 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 of 45 to 50 scfm. This system consists of vapor-phase GAC to remove VOCs from extracted soil vapor. Treated vapors are discharged to the atmosphere under a permit issued by the San Joaquin Valley Unified Air Pollution Control District.

The 854-PRX GWTS began operation in November 2000 removing VOCs, nitrate, and perchlorate from ground water. Ground water is currently extracted at an approximate flow rate of 1.5 gpm from well W-854-03, located southeast of the Building 854 complex. The GWTS configuration includes two ion-exchange resin columns connected in-series for perchlorate removal, three aqueous-phase GAC units connected in series for VOC removal, and an aboveground containerized wetland biotreatment for nitrate removal prior to being discharged into an infiltration trench. In 2007, the treatment system was modified to replace the solar power with site power to increase the volume of extracted ground water by operating the GWTS 24-hours a day.

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. The current operational flow rate averaged over time is approximately 700 to 800 gallons 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.

### 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 and rates and operational hours for the first semester of 2012 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 the first semester of 2012 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 the first semester of 2012:

#### 854-SRC GWTS and SVTS

- The GWTS was shut down from November 28 to February 6 to protect against freeze damage. Extraction well W-854-2218 was restarted on February 8 after repairs were made to the pump.
- The SVTS was shut down from November 28 to February 10 after instrumentation issues identified during system restart after freeze protection were addressed. The SVTS was found to be offline on February 21, 23, and 27 and was restarted. An interlock check was performed. The facility was found offline on February 28 and was left off to replace the condensate knockout drum. The high water level switch wiring was repaired in the new condensate knockout vessel. The system controller was not properly functioning. The SVTS was restarted on March 7 after the controller was reprogrammed.
- The GWTS was shut down on February 15 due to a detection of TCE in the effluent sample (see Section 2.6.1.3). On February 22, the third GAC canister was removed, additional samples were collected, and the system was shut down pending analytical results. The results were below discharge limits. The system was restarted again for a second set of samples on February 23 and immediately shut down pending analytical results. New carbon vessels were installed on March 8. The GWTS was restarted on March 13 and an interlock check was performed.
- Extraction well W-854-02 was shut down from April 17 to April 18 to repair a leaking coupler.

#### 854-PRX GWTS

- No maintenance issue to report.

#### 854-DIS GWTS

- GWTS was shut down from November 28 to February 6 to protect against freeze damage. The system GAC was replaced on January 9.

### **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. Although TCE was detected in the effluent sample collected from the 854-SRC GWTS on February 13 at a concentration of 2.9 µg/L, this did not exceed the maximum daily effluent limit concentration of 5.0 µg/L. Since VOC concentrations were below analytical reporting limits in two additional effluent samples collected in the same month, the 854-SRC effluent also did not exceed the monthly median effluent discharge limit of 0.5 µg/L. Therefore, the 854-SRC GWTS remained within compliance. Nitrate concentrations in the 854-PRX GWTS extraction well and facility influent have continued to remain below the 45 mg/L nitrate cleanup standard since February 2010. The 854-SRC SVTS operated in compliance with San Joaquin Valley Unified 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. The only modifications to the plan included extra effluent monitoring at 854-SRC due to the TCE detection, and extra nitrate monitoring at the 854-PRX since it was not shut down for freeze protection as in previous years. The primary reason for shutting down the 854-PRX GWTS for freeze protection in previous years has been to prevent freeze damage to the acetate injection system and because the bacterial denitrification is greatly reduced due the colder temperatures. Since the influent nitrate concentrations have remained below the discharge limit, the GWTS was not shut down, and only the acetate injection system was freeze protected. In addition, no compliance monitoring was conducted at 854-DIS GWTS in December because it was shut down for freeze protection.

#### **2.6.1.5. Building 854 OU Treatment Facility and Extraction Wellfield Modifications**

There were no treatment facility or extraction wellfield modifications made to the 854-PRX, 854-DIS, or 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 delineates and explains deviations from the sampling plan and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions: twelve required analyses were not performed because there was insufficient water in the wells to collect the samples.

#### **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 the first semester of 2012 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, VOCs (TCE) and perchlorate are the primary COCs detected in ground water; nitrate is a secondary COC. These COCs have been identified primarily in the Tnbs<sub>1</sub>/Tnsc<sub>0</sub> HSU.

###### **2.6.3.2.1. VOC Concentrations and Distribution**

During the first semester 2012, the maximum concentration of VOCs in Tnbs<sub>1</sub>/Tnsc<sub>0</sub> HSU ground water was 100 µg/L (extraction well W-854-02, February). TCE comprises all of the VOCs observed in ground water at Building 854, except for low cis-1,2-DCE concentrations detected in samples from monitor well W-854-17 and extraction well W-854-2139. During the first semester 2012, the maximum cis-1,2-DCE ground water concentrations detected in wells W-854-17 and W-854-2139 were 0.64 µg/L and 0.61 µg/L, respectively, which is well below the 6 µg/L MCL cleanup standard. Overall, VOC concentrations in the Tnbs<sub>1</sub>/Tnsc<sub>0</sub> HSU have decreased nearly two orders of magnitude from a historic pre-remediation maximum of 2,900 µg/L (extraction well W-854-02, 1997).



Two VOC plumes exist in the Tnbs<sub>1</sub>/Tnsc<sub>0</sub> HSU: a northern plume and a less extensive southern plume. The northern plume encompasses the 854-SRC and 854-PRX areas and is separated from the southern plume by a region where VOC concentrations are below the 0.5 µg/L reporting limit (at wells W-854-1902 and W-854-1822). The southern plume is in the vicinity of former water-supply Well 13. While the extent of VOCs impacting Building 854 ground water with concentrations above the 0.5 µg/L reporting limit has remained relatively stable over time, since remediation began: (1) the portion 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 northern VOC plume with concentrations greater than 10 µg/L has decreased; and (3) the extent of the southern VOC plume with concentrations greater than 5 µg/L has decreased significantly.

VOCs were also detected in shallow perched ground water in monitor well W-854-10 (screened in the Tnbs<sub>1</sub> unit but above the Tnbs<sub>1</sub>/Tnsc<sub>0</sub> HSU) located in the Building 854 source area during 2008, 2009, 2010, 2011 and this semester at maximum concentrations of 34, 17, 41, 8.9 and 10 µg/L (May), respectively. The long-term total VOC concentrations in ground water at this well exhibit a slightly increasing trend with intermittent decreases. The recent intermittent increases and declines in VOC concentrations roughly correlate with declines and increases in water elevations in excess of 1 feet over a 3 month period suggesting that VOC concentrations in this thin perched water-bearing zone are diluted by intermittent recent recharge events. During this semester, as in 2011, VOCs were not detected in the sample from monitor well W-854-14, located near Building 858 and screened in a perched zone in the Tnbs<sub>1</sub>, also above the Tnbs<sub>1</sub>/Tnsc<sub>0</sub> HSU. During this semester, as in 2011, VOCs were not detected in the sample from the one Qls monitor well, W-850-15, that contained water. The maximum historic VOC (entirely TCE) vapor concentration within the Building 854 OU was measured in 854-SRC SVTS extraction well W-854-1834 (4.4 ppm<sub>v/v</sub>, November 2005). The maximum first semester 2012 TCE vapor concentration of 0.44 ppm<sub>v/v</sub> was measured in the February 2012 sample from this well.

#### **2.6.3.2.2. Perchlorate Concentrations and Distribution**

The maximum perchlorate concentrations in Tnbs<sub>1</sub>/Tnsc<sub>0</sub> HSU ground water are generally decreasing from the historic maximum of 27 µg/L in 2003 to a first semester 2012 maximum of 13.4 µg/L (May). Both the historic and recent maximum perchlorate concentrations were detected in monitor well W-854-1823, located downgradient of the 854-PRX facility.

The distribution of perchlorate in Tnbs<sub>1</sub>/Tnsc<sub>0</sub> HSU ground water observed during the first semester 2012 is similar to its extent in 2010 and 2011. During this semester, perchlorate was not detected in ground water samples from any well screened in the Qls HSU or perched Tnbs<sub>1</sub> water-bearing zones. In October 2010, 6.1 µg/L of perchlorate was reported in the sample from Qls HSU well W-854-15, but was not detected above the 4 µg/L reporting limit in the first semester 2010 sample or the two 2011 samples.

#### **2.6.3.2.3. Nitrate Concentrations and Distribution**

During the first semester 2012, the maximum nitrate concentration in Tnbs<sub>1</sub>/Tnsc<sub>0</sub> HSU ground water was 54 mg/L (extraction well W-854-02, April). Additionally, during the semester, nitrate was detected above its cleanup standard in the sample from monitor well W-854-14, screened in the perched Tnbs<sub>1</sub> water-bearing zone (230 mg/L, May) located near Building 858. The continued presence of elevated nitrate in samples from well W-854-14 could be due to impact from the Building 858 septic system. Geochemical data (nitrogen and oxygen isotopes) collected in the Building 854 OU, including Springs 10 and 11, as part of the Site 300 nitrate MNA study indicated some evidence of *in situ* denitrification in Neroly Formation ground water. The distribution of nitrate in the Tnbs<sub>1</sub>/Tnsc<sub>0</sub> HSU in the distal area remains low and essentially unchanged since this study was conducted. This semester, a sample from monitor well W-854-05, which is screened in the Qls HSU immediately north of the VOC

source area, contained nitrate at a concentration above the 45 mg/L cleanup standard (59 mg/L, May). Nitrate was not detected above the cleanup standard in the sample from monitor well W-854-10, which is screened in the perched Tnbs<sub>1</sub> water-bearing zone near the VOC source area.

### **2.6.3.3. Building 854 OU Remediation Optimization Evaluation**

Since the 2006 expansion of the 854-SRC GWTS wellfield, the total volume of extracted ground water and contaminant mass removed has increased significantly. Ground water extraction continues to adequately capture the highest VOC concentrations. Well W-854-2218 can be pumped at a higher sustainable yield and future optimization efforts at 854-SRC will include increased pumping of this extraction well. Increased pumping would add to the total volume of 854-SRC effluent discharged.

Prior to initiating rebound testing in 2010, VOC concentrations (all TCE) in the October 2010 vapor sample from 854-SRC SVTS well W-854-1834 had declined to 0.035 ppm<sub>v/v</sub>. The maximum historic TCE vapor concentration measured in well W-854-1834 is 4.4 ppm<sub>v/v</sub> (November 2005). By May 31, 2011, TCE concentrations had rebounded to 0.12 ppm<sub>v/v</sub>, at which time, vapor extraction recommenced. The maximum 2011 TCE vapor concentration of 0.42 ppm<sub>v/v</sub> was measured from well W-854-1834 on June 7, 2011. At this time, the system was again shut down for further vapor rebound test evaluation. A vapor sample was collected on July 11, 2011 and contained 0.46 ppm<sub>v/v</sub> of TCE. At that time, vapor extraction again recommenced. The vapor sample collected on October 11, 2012 contained 0.38 ppm<sub>v/v</sub> of TCE. This semester, the well yielded TCE vapor concentrations of 0.44 and 0.31 ppm<sub>v/v</sub>, in February and April, respectively. The decision on whether to continue operating the facility or to conduct another rebound period will be made after evaluation of the second semester 2012 VOC vapor data. During the first semester 2012, the 854-SRC SVTS removed 440 g of VOC vapor mass, compared to 570 g, removed during all of 2011. When operating, VOC mass continues to be removed from the source area due to relatively high vapor flow rates. This VOC mass is likely volatilizing from vadose zone sources beneath the Building 854 source area and VOC vapors from the underlying dissolved VOC plume in Tnbs<sub>1</sub>/Tnsc<sub>0</sub> ground water.

During the first semester 2012, the 854-PRX GWTS removed 22 g of VOC mass. In 2011, the GWTS removed 22 g of VOC mass. Well W-854-03 can be pumped at a higher sustainable yield and future optimization efforts at 854-PRX will include increased pumping of this extraction well

During the first semester 2012, the 854-DIS GWTS removed 1.0 g of VOC mass. In 2011, the GWTS removed 1.4 g of VOC mass. The one extraction well at the 854-DIS GWTS (W-854-2139) pumps at a low average rate of approximately 750 gallons per month because the well becomes rapidly dewatered and cannot sustain prolonged pumping.

### **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. 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 SVTS 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 both 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. Initially, ground water was extracted from nine wells at a combined total flow rate that initially ranged from 30 to 300 gpd. The total flow eventually dropped to 5 to 50 gpd due to lowering of the water table by pumping. In early 2005, the source area extraction wellfield was reduced to two wells (W-832-12 and W-832-15) operating with vacuum enhancement and a combined flow rate ranging from 60 to 220 gpd. In late 2005, the extraction wellfield was expanded to include three additional downgradient wells (W-832-01, W-832-10, and W-832-11). As a result, the combined flow rate increased to about 1,300 gpd, and VOC concentrations in 832-SRC facility influent increased four-fold. Well W-832-25 was connected to the 832-SRC facility in July 2006. Currently, ground water is extracted from wells W-832-01, W-832-10, W-832-11, W-832-12, W-832-15 and W-832-25 at an approximate combined flow rate of 0.16 gpm. Soil vapor is extracted from wells W-832-12 and W-832-15 at an approximate combined flow rate of approximately 3.0 to 4.4 scfm. The current GWTS configuration includes a Cuno filter for particulate filtration, 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 over the landscape for uptake and utilization of the nitrate by indigenous grasses. A positive displacement rotary lobe blower is used to create 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 Unified Air Pollution Control District.

The 830-SRC GWTS removes VOCs and perchlorate from ground water and the SVTS removes VOCs from soil vapor. The GWTS and SVTS began operation in February and May 2003, respectively. Ground water was extracted from four wells at a total flow rate ranging from 5 to 100 gpd. The 830-SRC extraction wellfield was expanded in 2006; seven GWTS extraction wells (W-830-49, W-830-1829, W-830-2213, W-830-2214, W-830-57, W-830-60, and W-830-2215) were added to the original three (W-830-1807, W-830-19, and W-830-59). The expansion well testing began in 2006. The tests were completed and the expanded wellfield was in full operation during the first semester 2007. During the second semester 2009, both wells W-830-1829 and W-830-2213 were converted back to monitor wells due to lack of water for extraction. In early 2010, the 830-SRC GWTS was modified so that ground water extracted from higher flow Upper Tnbs<sub>1</sub> HSU extraction wells (W-830-2215, W-830-60, and W-830-57) was routed around the 830-SRC ion-exchange canisters. Perchlorate has not been detected above the reporting limit (4 µg/L) since 2005 in these wells. This bypass is expected to improve the operation of the treatment facility by decreasing backpressure, allowing for increased ground water flow and mass removal rates. Ground water extracted from low-flow Tnsc<sub>1a</sub> well W-830-2214 still contains perchlorate above the discharge limit; this well does not bypass the perchlorate treatment system. The 830-SRC GWTS is currently extracting ground water at a combined flow rate of approximately 5 to 7 gpm. The GWTS configuration includes a Cuno filter for particulate filtration, two ion-exchange resin columns connected in-series to remove perchlorate, and three in-series aqueous-phase GAC units to remove VOCs. Nitrate-bearing treated effluent is then discharged via a misting tower over the landscape for uptake and utilization of the nitrate by indigenous grasses. The 830-SRC soil vapor extraction wellfield was also expanded to include well W-830-49 in 2006. Soil vapor is extracted from wells W-830-1807 and W-830-49 using a liquid ring vacuum pump at a current combined flow rate of approximately 30 to 33 scfm. 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 Unified Air Pollution Control District.

The 830-DISS GWTS began operation in July 2000 removing VOCs, perchlorate, and nitrate from ground water. Approximately 1 gpm of ground water was extracted from three wells (W-830-51, W-830-52, and W-830-53) using natural artesian pressure. The GWTS configuration consisted of a Cuno filter for particulate filtration, two aqueous-phase GAC units in series to remove VOCs, two in-series ion-exchange resin columns to remove perchlorate, and three bioreactor units for nitrate reduction. These units were open-container wetland bioreactors containing microorganisms that use nitrate during cellular respiration. Acetic acid was added to the process stream as a carbon source. Treatment system effluent was discharged via a storm drain that discharges to the Corral Hollow alluvium. At the request of the RWQCB, the facility was modified during the first semester 2007 to cease discharge of treated water to a surface water drainage way. The modification included the addition of a fourth well, W-830-2216, to the extraction wellfield. The GWTS is now extracting ground water at a combined flow rate of approximately 2 to 3 gpm. Currently, extracted ground water flows through ion-exchange canisters to remove perchlorate at the 830-DISS location. The water is piped to the Central GSA GWTS for VOC removal. Nitrate-bearing treated effluent is then discharged via a misting tower over 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**

The monthly ground water and soil vapor discharge volumes, rates, and operational hours for the first semester of 2012 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 the first semester of 2012 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 the first semester of 2012:

##### 830-SRC GWTS and SVTS

- Extraction wells W-830-19, W-830-57, W-830-59, and W-830-2214 were shut down from November 29 to February 6 to protect against freeze damage.
- Extraction wells W-830-60 and W-830-2215 were found offline on January 9 due to a wiring issue. The wiring was repaired and the wells were restarted the same day.
- The GWTS and SVTS shut down on March 2 due to a problem with the transformer on the power pole that supplies power to the facility. The systems were restarted on March 14 after the site electricians repaired the transformer and conductors.
- Misting of the GWTS effluent was rotated from the north misting tower to the south misting tower location on April 10.
- The GWTS and SVTS were shut down on April 16 to replace spent treatment media and to replace the pipeline associated with the W-830-1807 extraction well. Newly loaded GAC

vessels were installed on April 19. The pH conditioning of new GAC was completed and the systems were returned to full-time operations on April 24.

- The pumps in the extraction wells W-830-2214 and W-830-2215 were replaced and restarted on June 6. Extraction well W-830-59 pump was replaced and extraction was restarted on June 19.

#### 832-SRC GWTS and SVTS

- The GWTS and SVTS were shut down on December 28 due to a leak at the misting tower transfer pump. The pump was rebuilt and both systems were returned to operation on January 5.
- Extraction wells W-832-01, W-832-10, W-832-11, and W-832-25 were secured from November 29 to February 6 to protect against freeze damage.
- The GWTS was shut down on January 24 to replace piping. The facility was restarted on January 30.

#### 830-DISS GWTS

- The GWTS was shut down on November 28 due to discharge issues at the Central GSA GWTS. The system was restarted February 6, extracting from well W-830-51 and W-830-52 only. Extraction wells W-830-2216 and W-830-53 were brought online on February 13.
- The GWTS was shut down on April 11 and May 1 when the Central GSA GWTS was shut down. The GWTS was operated during the workweek and shut down over the weekend for the remainder of the reporting period.

#### **2.7.1.3. Building 832 Canyon OU Compliance Summary**

The 830-SRC, 832-SRC, and 830-DISS GWTSs operated in compliance with RWQCB Substantive Requirements during the reporting period. The 830-SRC SVTS operated in compliance with the San Joaquin Valley Unified Air Pollution Control District permit limitations.

#### **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. The only modifications made to the plan during this reporting period included no compliance monitoring samples were collected in January from the 830-DISS facility due to shutdown for freeze protection.

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

No treatment facility or wellfield modifications were made to any of the OU 7 GWTSs or SVTSs during this reporting period.

#### **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 and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; forty-four required analyses were not performed because there was insufficient water in the wells to collect the samples and nine required analyses were not performed due to inoperable pumps.

### **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 the first semester of 2012 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 Table Summ-1 and Table 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. Cis-1,2-DCE is a COC at both Buildings 830 and 832; chloroform and PCE are COCs at Building 830. Perchlorate and nitrate are the secondary COCs. These constituents have been identified primarily in the Qal/WBR, Tnsc<sub>1b</sub> and Tnsc<sub>1a</sub> HSUs. VOCs have also been detected at low concentrations in Building 832 Canyon in the Tnbs<sub>2</sub> and Upper Tnbs<sub>1</sub> HSUs.

##### **2.7.3.2.1. VOC Concentrations and Distribution**

VOCs detected in Building 830 area ground water consist primarily of TCE. During the first semester 2012, the other VOCs present above the reporting limit in the Building 830 source area were PCE, cis-1,2-DCE, trans-1,2-DCE (1 well), chloroform and 1,2-DCE. Of these VOCs, only TCE, PCE, 1,2-DCE and trans-1,2-DCE were detected at concentrations above their respective MCLs. VOC concentrations and distribution are discussed by HSU below.

Historically, ground water samples from wells located in the Building 830 source area have contained the highest VOC concentrations in the Qal/WBR HSU. Since remediation began in 1999 in the Building 830 source area, VOC concentrations in Qal/WBR HSU ground water near 830-SRC have decreased by an order-of-magnitude from a historic maximum of 10,000 µg/L (well SVI-830-035) in 2003 to a first semester 2012 maximum concentration of 1,600 µg/L (well SVI-830-035, February). VOC concentrations detected in soil vapor continue to decline in the Building 830 source area. VOC concentrations collected from dual extraction well W-830-1807 have decreased from a historic maximum concentration of 35 ppm<sub>v/v</sub> in January 2004 to a first semester 2012 maximum concentration of 0.79 ppm<sub>v/v</sub> (May). This well is screened across both the Qal/WBR and Tnsc<sub>1b</sub> HSUs. VOC concentrations detected in soil vapor collected from dual extraction well W-830-49 have decreased from a historic maximum concentration of 259 ppm<sub>v/v</sub> in 2007 to a first semester 2012 maximum concentration of 0.3 ppm<sub>v/v</sub> (May). This well is screened in the Tnsc<sub>1b</sub> HSU.

VOCs detected in Building 832 area ground water consist primarily of TCE. During the first semester 2012, the other VOCs present above the reporting limit in the Building 832 source area were cis-1,2-DCE, chloroform, Freon 11 and 1,2-DCE. Of these VOCs, only TCE and 1,2-DCE were detected in this area at concentrations above its MCL. Since remediation began in 1999 in the Building 832 source area, 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) in 1998 to a first semester 2012 maximum concentration of 220 µg/L in monitor well W-832-23 (February). Well W-832-23 is screened across both the Qal/WBR and Tnsc<sub>1b</sub> HSUs. Monitor well W-832-18, which is screened at a shallower depth than W-832-23, was dry during the first semester 2012 sampling event. Ground water samples for VOC analyses were also not collected during the first semester 2012 from other wells located in the Building 832 source area because the water table dropped below the screened intervals in these wells. These wells include W-832-14, W-832-16, W-832-18, W-832-19, W-832-21 and W-832-22. VOC concentrations detected in soil vapor are also declining in the Building 832 source area. VOC concentrations detected in soil vapor samples collected from well W-832-15 have decreased from a

historic maximum concentration of 1.8 ppm<sub>v/v</sub> in 2001 to a first semester 2012 maximum concentration of 0.12 ppm<sub>v/v</sub> (May). VOCs detected in well W-832-12 have also decreased from a maximum concentration of 1.1 ppm<sub>v/v</sub> in 2008 to a first semester 2012 maximum concentration of 0.046 ppm<sub>v/v</sub> (May). Both are dual extraction wells screened in both the Qal/WBR and Tnsc<sub>1b</sub> HSUs. During the first semester 2012, VOC concentrations in ground water samples taken from Qal/WBR HSU guard wells W-35B-01 and W-880-02 located south of Building 832 Canyon near the Site 300 southern boundary were below reporting limits (<0.5 µg/L) except on one occasion. In May 2012, VOC concentrations in guard well W-880-02 were 0.51 µg/L, slightly above the reporting limit of <0.5 µg/L. VOC concentrations in these wells have decreased from a historic maximum of 1.9 µg/L in well W-35B-01 in 2001.

Since remediation began in 2000 in the Building 830 source area, VOC concentrations in ground water in the Tnsc<sub>1b</sub> HSU have decreased from a historic maximum of 13,000 µg/L in extraction well W-830-49 (2003) to a first semester 2012 maximum of 2,900 µg/L in downgradient well W-830-19 (February and April). The maximum concentration observed in W-830-49 during the first semester 2012 was 1,300 µg/L (April). Although remediation efforts in the Tnsc<sub>1b</sub> HSU have been effective in decreasing the areas of highest concentrations, the overall extent of VOCs in this HSU has not changed significantly over the past several years due to limited recharge and low ground water yields. At the 830-DISS treatment facility, VOC concentrations in Tnsc<sub>1b</sub> HSU artesian wells W-830-51, W-830-52 and W-830-53, have decreased from a historic maximum of 170 µg/L in 2002 in extraction well W-830-51 to a first semester 2012 maximum concentration of 28 µg/L in the same well (February). Farther south along Building 832 Canyon, the leading edge of the Tnsc<sub>1b</sub> VOC plume continues to be contained within Site 300 boundary based on total VOC concentrations below the 0.5 µg/L reporting limit in guard wells W-830-1730 and W-4C. During the first semester 2012, a new monitor well, W-830-2806, was installed to the southwest of the Building 830 source area in the Tnsc<sub>1b</sub> HSU. This well will be added to the sampling plan after final well development and baseline sampling is complete. Since remediation of the Tnsc<sub>1a</sub> HSU began in early 2007, VOC concentrations in ground water have decreased from a historic maximum of 1,700 µg/L in monitor well W-830-27 (1998) to a first semester 2011 maximum concentration of 1,200 µg/L in extraction well W-830-2214 (February). The maximum concentration observed in monitor well W-830-27 during the first semester 2012 was 622 µg/L (February). Monitor well W-830-2311 was installed in 2007 to evaluate the downgradient extent of VOCs in the Tnsc<sub>1a</sub> HSU. This well is located near Spring 3 and had a total VOC concentration of 27 µg/L when sampled in March 2012. A new Tnsc<sub>1a</sub> guard well, W-830-2610, was completed in June 2010. This well will be added to the sampling plan after final well development and baseline sampling are completed; due to low yields and a high initial pH, development of this well is taking more time than normal.

Since remediation began in the Upper Tnbs<sub>1</sub> HSU, VOC concentrations in ground water have decreased from a historic maximum of 100 µg/L in monitor well W-830-28 (1998) to a first semester 2012 maximum concentration of 27 µg/L in extraction well W-830-60 (February). The maximum VOC concentration observed in monitor well W-830-28 during the first semester 2012 was 21 µg/L (February). During the first semester 2012, VOCs were not detected above the 0.5 µg/L reporting limit in guard wells W-830-15 and W-832-2112. Both wells are screened in the Upper Tnbs<sub>1</sub> HSU.

#### **2.7.3.2.2. HE Compound Concentrations and Distribution**

During the first semester 2012, HE compounds were not detected in ground water in any Building 832 Canyon OU wells.

#### **2.7.3.2.3. Perchlorate Concentrations and Distribution**

Perchlorate concentrations detected in Qal/WBR HSU ground water have decreased from a historic maximum of 51 µg/L (monitor well W-830-34, 1998) to a first semester maximum concentration of

13 µg/L (monitor well W-832-13, March). During the first semester 2012, perchlorate was not detected in ground water from monitor well W-830-34 above the reporting limit of 4.0 µg/L (February). The maximum perchlorate concentration detected in ground water from monitor well W-832-23 during the first semester 2012 was 7.4 µg/L (February). Well W-832-23, located slightly downgradient of the Building 832 source area, is used to monitor contaminant concentrations in both the Qal/WBR and Tnsc<sub>1b</sub> HSUs because the well is screened across both units. During the first semester 2012, perchlorate was not detected above the 4 µg/L reporting limit in Qal/WBR HSU guard wells W-35B-01 and W-880-02.

The maximum perchlorate concentration sampled in the Tnsc<sub>1b</sub> HSU ground water during the first semester 2012 was 7.4 µg/L in well W-832-23 (February). As discussed above, this well is screened in both the Tnsc<sub>1b</sub> and Qal/WBR HSUs. Historically, monitor well W-830-58 has contained the highest perchlorate ground water concentration in this HSU (26 µg/L, 2001). In February 2012, the perchlorate concentration in ground water from well W-830-58 was 7.7 µg/L. Perchlorate was not detected above the reporting limit in Tnsc<sub>1b</sub> HSU guard wells W-830-1730, W-4C or W-880-03 during the first semester 2012.

During the first semester 2012, the maximum perchlorate ground water concentration detected in the Tnsc<sub>1a</sub> HSU was 6.1 µg/L in extraction well W-832-25 (February). The highest historic perchlorate concentration detected in the Tnsc<sub>1a</sub> HSU is 13 µg/L measured in well W-832-25, in 1999.

During the first semester 2012, perchlorate was not detected above the reporting limit of 4 µg/L in any ground water samples collected from the Upper Tnbs<sub>1</sub> HSU.

#### **2.7.3.2.4. Nitrate Concentrations and Distribution**

Nitrate ground water concentrations remain high in the vicinity of the Building 832 and 830 source areas and low or below the reporting limit (<0.5 mg/L) in the downgradient, deeper parts of Building 832 Canyon Neroly bedrock HSUs.

During the first semester 2012, nitrate ground water concentrations detected in samples from the Qal/WBR HSU ranged from the <0.5 mg/L reporting limit (guard wells) near the site boundary to 180 mg/L in piezometer SVI-830-033 (February) located in the Building 830 source area. The historic maximum concentration of nitrate detected in the Qal/WBR HSU also occurred in SVI-830-033 (240 mg/L, 2008).

The maximum nitrate concentrations detected in samples of Tnsc<sub>1b</sub> HSU ground water during the first semester 2012 was 190 mg/L in extraction well W-830-49 (February). Historically, well W-830-49 has contained the highest nitrate concentrations in the Tnsc<sub>1b</sub> HSU (501 mg/L, 1998). Nitrate concentrations in the Tnsc<sub>1b</sub> guard wells during the first semester 2012 ranged from <0.5 mg/L to 2 mg/L in well W-830-1730 (February), significantly below the 45 mg/L cleanup standard.

During the first semester 2012, the maximum nitrate ground water concentration detected in samples from the Tnsc<sub>1a</sub> HSU was 110 mg/L in 830-SRC monitor well W-830-27 (February). Historically, well W-830-27 had the highest nitrate concentrations in the Tnsc<sub>1a</sub> HSU (160 mg/L, 2002).

Nitrate ground water concentrations detected in samples collected from the Upper Tnbs<sub>1</sub> ranged from <0.5 mg/L to 36 mg/L (W-26R-01, May) during the first semester 2012. Historically, well W-830-28 had the highest nitrate concentrations in the Upper Tnbs<sub>1</sub> HSU (21 mg/L, 1997). Nitrate ground water concentrations were not detected above the 45 mg/L cleanup standard in any Upper Tnbs<sub>1</sub> HSU guard wells during the first semester 2012. 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*.



### 2.7.3.3. *Building 832 Canyon OU Remediation Optimization Evaluation*

During the first semester 2012, ground water and soil vapor extraction wellfield operation continued to prevent offsite plume migration, reduce source area concentrations, and remove contaminant mass. The expanded 832-SRC and 830-SRC extraction wellfields have increased hydraulic capture, while preventing the downward migration of contaminants into deeper HSUs and/or laterally toward the site boundary and Site 300 water-supply wells, Well 18 and Well 20. Ground water yield from many 830-SRC and 832-SRC extraction wells continues to be low and hydraulic capture is difficult to assess because these wells cannot maintain continuous operation. The low yield is due to a combination of low hydraulic conductivity geologic materials, dewatering and limited recharge.

In the Qal/WBR and Tnsc<sub>1b</sub> HSUs, the extraction wellfield targets the highest VOC plume concentrations emanating from the Building 832 and Building 830 source areas, but steep terrain and unstable canyon bottom soil conditions limit the availability of sites for new wells. Ground water extraction is further constrained by limited recharge and declining water levels in both source areas. During the first semester 2012, some extraction wells were offline for part of the reporting period due to pump repairs and freeze protection. No long-term impact is expected as a result of these shutdowns.

At the 832-SRC, concentration trends in extraction wells have remained stable as declining water levels and low yields limit ground water extraction. Soil vapor extraction accounts for most of the VOC mass extracted from this area. During the first semester 2012, 7 g of total VOC mass were removed by the 832-SRC GWTS and 28 g were removed by the 832-SRC SVTS. At the 830-SRC, both ground water and soil vapor extraction play an important role in removing VOC mass. At 830-SRC, during the first semester 2012, 580 g of total VOC mass were removed by the GWTS and 460 g were removed by the SVTS. At 830-DISS GWTS, 30 g of VOC mass were removed during the first semester 2012. In addition, during the first semester 2012, a total of 221 kg of nitrate were removed by the 832-SRC, 830-SRC and 830-DISS GTWSs and a total of 4.97 g of perchlorate were removed by the 832-SRC, 830-SRC 830-DISS GWTSs.

The Tnsc<sub>1a</sub> extraction wellfield currently consists of two wells: W-830-2214, located near the 830-SRC and W-832-25, located downgradient of 832-SRC in the distal area of this plume. Active remediation of the Tnsc<sub>1a</sub> HSU began in 2007. Since that time, total VOC ground water concentrations have remained stable in W-832-25 and have increased in W-832-2214. Water levels continue to decline in both the 830-SRC and 832-SRC areas, limiting continuous extraction from the Tnsc<sub>1b</sub> and Tnsc<sub>1a</sub> HSUs. During the first semester 2012, one new monitor well, W-830-2806, was installed in the Tnsc<sub>1a</sub> HSU west of W-830-2701. This well will be added to the sampling and analysis plan after final well development and baseline sampling are completed.

Tnsc<sub>1a</sub> monitor well (W-830-2701) was installed near Upper Tnbs<sub>1</sub> HSU extraction well W-830-60 in 2011. This well will be evaluated to determine if it would be an effective extraction well to increase hydraulic capture in the Tnsc<sub>1a</sub> HSU downgradient of extraction well W-830-2214. VOC concentrations detected in this well ranged from 1.6 to 11 µg/L. Perchlorate concentrations were below the reporting limit of 4 µg/L and nitrate concentrations were significantly below the 45 mg/L cleanup standard. Per the recommendations of the Five-Year Review (Helmig et. al., 2011), this well may be connected the 830-SRC treatment facility depending on concentration trends.

Extraction wells in the Upper Tnbs<sub>1</sub> target areas with the highest total VOC concentrations. Since remediation began in this HSU, the overall extent of total VOCs has also decreased significantly and ground water samples collected from monitor well W-830-1832, which is located on the leading edge of the VOC plume, have been below the reporting limit for two years. Ground water in Upper Tnbs<sub>1</sub> guard wells W-830-15 and W-832-2112, located downgradient of well W-830-1832 and upgradient of water-supply Well 20, continues to show analytical results below the 45 mg/L cleanup standard for nitrate and below the reporting limits for all other COCs.

As described in Section 2.4 (High Explosives Process Area), well W-830-2216 extracts ground water from the Tnbs<sub>2</sub> HSU. The contamination in this well is due to a combination of sources located both in the HEPA and the Building 832 Canyon OUs. Since extraction began in 2007, total VOC concentrations in extraction well W-830-2216 have been consistently declining. During the first semester 2012, the maximum concentration of total VOCs in extraction well W-830-2216 was 5.4 µg/L (April). During the first semester 2012, the maximum total VOC concentration in nearby monitor well W-830-13, was 8.6 µg/L. The extracted ground water is treated at the 830-DISS treatment facility.

As extraction 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. Over the past year, the extent of the VOC plume in the Upper Tnbs<sub>1</sub> HSU has decreased slightly and this trend is expected to persist with continued pumping. VOC concentration trends in the Upper Tnbs<sub>1</sub> HSU continue to be monitored closely because pumping at water-supply Well 20 and backup water supply Well 18 has the potential to influence the distribution of contaminants. After Site 300 begins using the Hetch Hetchy reservoir as its main 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**

No 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-only 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 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, 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 any 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. This table delineates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; eleven required analyses were not performed due to an inoperable pump.

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

At Building 801, the 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.

During the first semester 2012, the maximum total VOC concentration detected in ground water samples from wells in the Building 801/Pit 8 Landfill area was 5.2 µg/L (well K8-01, May). This VOC concentration was comprised of 3.6 µg/L of TCE and 1.6 µg/L of 1,2-DCA. Of these COCs, only 1,2-DCA was detected above its cleanup standard of 0.5 µg/L during the first semester 2012. However, the first semester maximum 1,2-DCA concentration of 1.6 µg/L detected in well K8-01 ground water represents a decrease from the historic maximum 1,2-DCA concentration of 5 µg/L detected in the same well in 1990. TCE was not detected above its 5 µg/L cleanup standard and chloroform was not detected in any wells above the 0.5 µg/L reporting limit. VOC concentrations detected in ground water samples collected from wells downgradient of Building 801 have decreased from a historic maximum of 10 µg/L (well K8-01, 1990).

During the first semester 2012, perchlorate was not detected above its 4 µg/L reporting limit in ground water samples from any 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 2012 maximum nitrate concentration detected in ground water collected from the Building 801/Pit 8 Landfill area was 52 mg/L (well K8-04, May). This sample from monitor well K8-04 and a sample from monitor well K8-01 (49 mg/L, May) were the only samples that exceeded the 45 mg/L cleanup standard for nitrate. The historic maximum nitrate concentration observed in the area is 64 mg/L, detected in samples collected from well K8-01 in 2002. The historic maximum nitrate detection in well K8-04 is 61 mg/L (May 2009). Nitrate concentrations in ground water at the Building 801/Pit 8 Landfill are generally similar to previous semesters.

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

### **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. This table delineates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; eight required analyses were not performed because there was insufficient water in the wells to collect the samples.

#### **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 little evidence of saturation. When saturated, monitoring conducted since 1993 has shown a

decline in VOC concentrations in Tpsg HSU ground water. The historic maximum concentration of VOCs measured in the Tpsg HSU is 2,100 µg/L (entirely TCE) detected in monitor well W-833-03 in August 1992. The most recent sampling of well W-833-03 revealed 20 µg/L of VOCs (entirely TCE) in June 2000, showing a two orders of magnitude decrease in concentrations. Well W-833-03 has been consistently dry since 2000 including two attempts to sample in March and June 2012. During the first semester 2012, another monitor well screened in the Tpsg HSU, W-833-33, yielded a sample with 120 µg/L of VOCs (entirely TCE) (March). Last year, this well yielded a sample with 150 µg/L of VOCs (entirely TCE) (February 2011). The historic maximum VOC concentration detected in well W-833-33 is 170 µg/L (entirely TCE) in 2008. During the first semester 2012, other than well W-833-33, the remaining seven wells screened in the Tpsg HSU were either dry or contained insufficient water to collect a sample.

During the first semester 2012, VOCs were not detected in ground water samples collected from deep Tnbs<sub>1</sub> HSU monitor well W-833-30 (March), indicating that VOC contamination continues to be confined to the shallow Tpsg perched water-bearing zone. The historic maximum VOC concentration in well W-833-30 is 1.6 µg/L, entirely tetrachloroethene (PCE), detected in November 1992. This analytical result is suspect and considered spurious as it was only one of two reported detections of VOCs in a sample from this well. The other reported detection of VOCs occurred in the August 1992 sample, comprised of 0.7 µg/L of carbon disulfide and 0.8 µg/L of chloroform, both of which are likely laboratory artifacts.

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 were 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 Tnsc<sub>0</sub> 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. This table delineates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; nine required analyses were not performed due to an inoperable pump in well K9-04.

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

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 2011 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. HMX concentrations in ground water samples remain below the 1 µg/L reporting limit. Uranium activities in ground water samples remain very low (<1 pCi/L) and  $^{235}\text{U}/^{238}\text{U}$  atom ratios indicate the presence of only natural uranium. The results of the detection monitoring of the Pit 8 Landfill are discussed in Section 3.2.

These data continue to indicate that there have been 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. This table delineates any additions made to the CMP.

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

##### **2.8.4.2. Building 851 Contaminant Concentrations and Distribution**

At the Building 851 Firing Table, uranium is the primary and only COC detected in ground water there are no secondary COCs.

Uranium activities in ground water in the Building 851 Firing Table area have always been well below the 20 pCi/L 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. The first semester 2012 maximum total uranium activity detected in ground water samples from wells in the Building 851 area was 1.3 pCi/L (well W-851-08, May); samples from the three remaining wells contained uranium below reporting limits. The historic maximum uranium activity in well W-851-08 is 2.05 pCi/L observed in 1993. The historic maximum uranium activity in ground water at Building 851 is 3.2 pCi/L (well W-851-07, 1991); the first semester 2012 activity for well W-851-07 was below the reporting limit. The atom ratio of  $^{235}\text{U}/^{238}\text{U}$  indicated the presence of some depleted uranium in samples from wells W-851-06 and W-851-08 (barely depleted). The samples from wells W-851-05 and W-851-07 contained only natural uranium. Due to the low mass of  $^{235}\text{U}$  in the sample (less than reporting limit) for well W-851-05, the reporting limit was used as the numerator in the  $^{235}\text{U}/^{238}\text{U}$  ratio calculation, resulting in an atom ratio (<0.0081) that includes the range of atom ratios including that of enriched uranium. In reality, the uranium is wholly natural in this sample. Overall, uranium activities in ground water are similar to previous years and remain well below the 20 pCi/L cleanup standard and within the range of natural background levels.

### **3. Detection Monitoring, Inspection, and Maintenance Program for the Pits 2, 3, 4, 5, 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, 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.

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 the CMP monitoring requirements with the following exceptions; eight required analyses were not performed because there was insufficient water in the wells to collect the samples and nine required analyses were not performed due to inoperable pumps. There were no modifications made to the plan.

#### **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<sub>1</sub>/Tnbs<sub>0</sub> HSU beneath the Pit 2 Landfill currently ranges from over 50 feet to over 70 feet.

The first semester 2012 (May) ground water samples from monitor wells W-PIT2-2301 and W-PIT2-2302, screened in the Qal/WBR HSU and located in Elk Ravine downgradient from Pit 2 Landfill, did not contain tritium above the reporting limit/background activity (100 pCi/L). The maximum first semester 2012 tritium activity within the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU in the area immediately south of the Pit 2 Landfill was 3,520 ± 714 pCi/L (monitor well NC2-08, May). The historic maximum tritium activity of 49,100 pCi/L was detected in 1986 samples (January and August) from monitor well K2-01C. These data indicate that tritium activities in Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU ground water immediately downgradient of the landfill are decreasing and are currently a fraction of the historic maximum.

Uranium isotope data from ground water samples collected from Qal/WBR wells W-PIT2-2301 and W-PIT2-2302 during the first semester 2012 (May) contained low activities of total uranium (0.69 and 0.14 pCi/L, respectively). The maximum first semester 2012 uranium activity detected in a ground water sample from the Pit 2 area was 4.2 pCi/L (monitor well W-PIT2-1934, April). This well is completed in the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU. The uranium activities detected in both the Qal/WBR and Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU ground water samples are well within the range of natural uranium background. Prior to 2005, potable water was discharged near to maintain a wetland habitat for red-legged frogs (a Federally-listed endangered species) within a drainage channel that extends along the northern and eastern margin of the Pit 2 Landfill. While this discharge occurred, increased uranium concentrations in wells in the Pit 2 area were observed. The release of depleted uranium from Pit 2 may have occurred during this time period as a result of this discharge. This discharge was discontinued in 2005. Since the discharge was discontinued, total uranium activities in ground water from Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU

monitor wells W-PIT2-1934 and W-PIT2-1935, both located along the northern margin of the Pit 2 Landfill, have decreased. The samples collected from wells W-PIT2-1934 (above) and W-PIT2-1935 during the first semester 2012 and analyzed by mass spectrometry contained 4.5 and 1.8 pCi/L of uranium, respectively (May). The sample from well W-PIT2-1934 contained a small percentage of depleted uranium while the sample from well W-PIT2-1935 contained only natural uranium.

During the first semester 2012, perchlorate was detected above the 4 µg/L reporting limit but below the 6 µg/L cleanup standard in a sample from one Pit 2 area well (NC2-08, 5.2 µg/L, May). The other detection monitoring constituents: VOCs, nitrate, HE compounds, Title 26 metals, lithium, and fluoride concentrations/activities in samples collected during the first semester 2012 were either below reporting limits or within the range of background concentrations.

There was no evidence of a new contaminant releases from the Pit 2 Landfill indicated by the first semester 2012 ground water detection monitoring data.

### **3.1.3. Landfill Inspection Results**

The Pit 2 Landfill was inspected during the first semester of 2012. No problems were identified.

### **3.1.4. Annual Subsidence Monitoring Results**

Annual subsidence monitoring will be conducted during the second semester of 2012.

### **3.1.5. Maintenance**

No maintenance was necessary or conducted on Pit 2 during the first semester of 2012.

## **3.2. 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.

### **3.2.1. 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.

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; eleven required analyses were not performed due to inoperable pumps.

### **3.2.2. Contaminant Detection Monitoring Results**

Locations of buildings and monitor wells at Pit 8 are presented on 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. The highest concentration (5.2 µg/L) of VOCs, comprised of 3.6 µg/L of TCE and 1.6 µg/L of 1,2-DCA, during the first semester 2012 (May) continues to be observed at monitor well K8-01, located immediately upgradient of Pit 8. The presence of VOCs (1.5 µg/L of TCE and 0.8 µg/L of 1,2-DCA) in ground water samples from monitor well K8-04, immediately downgradient of the Pit 8 Landfill (2.3 µg/L, May) 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. The samples from these two wells contained 1,2-DCA in excess of the 0.5 µg/L cleanup

standard. The maximum first semester 2012 nitrate concentration detected in a ground water sample from a well in the Pit 8 Landfill area was 52 mg/L (monitor well K8-04, May). A duplicate sample from monitor well K8-01 (49 mg/L, May) was the only other sample from the Pit 8 area that exceeded the 45 mg/L cleanup standard for nitrate.

Tritium activities in all samples collected from wells in the Pit 8 Landfill area during the semester were below the reporting limit (<100 pCi/L), except for the regular and duplicate samples from monitor well K8-01 ( $110 \pm 76.7$  and  $141 \pm 66.0$  pCi/L, respectively). These activities are all within the range of background.

The other detection monitoring constituents: perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, and fluoride concentrations/activities in samples collected during the first semester 2012 from wells upgradient and downgradient of the Pit 8 Landfill were either below reporting limits or within the range of background concentrations.

Of the constituents monitored during the first semester 2012 as part of the Detection Monitoring Program in Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU ground water from Pit 8 Landfill area wells, only 1,2-DCA and nitrate exceeded applicable cleanup standards.

There was no evidence of a new contaminant releases from the Pit 8 Landfill indicated by the first semester 2012 ground water detection monitoring data.

### **3.2.3. Landfill Inspection Results**

The Pit 8 Landfill was inspected during the first semester of 2012. No problems were reported.

### **3.2.4. Annual Subsidence Monitoring Results**

Annual subsidence monitoring will be conducted during the second semester of 2012.

### **3.2.5. Maintenance**

No maintenance was conducted at Pit 8 during the first semester 2012.

## **3.3. 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.

### **3.3.1. 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.

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 the CMP monitoring requirements with the following exceptions; nine required analyses were not performed due to an inoperable pump.

### **3.3.2. Contaminant Detection Monitoring Results**

A map showing the locations of the building, landfill, and monitoring wells is presented on 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 the first semester 2012 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 in the first semester 2012.

### **3.3.3. Landfill Inspection Results**

The Pit 9 Landfill was inspected during the first semester of 2012.

### **3.3.4. Annual Subsidence Monitoring Results**

Annual subsidence monitoring will be conducted during the second semester of 2012.

### **3.3.5. Maintenance**

No maintenance was conducted at Pit 9 during the first semester of 2012.

## **3.4. 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 (i.e., 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 PCBs as these constituents may have been contained in the firing table gravels placed in the landfills.

### **3.4.1. 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 the CMP monitoring requirements with the following exceptions; ten required analyses were not performed due to an inoperable pump.

### **3.4.2. 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<sub>1</sub>/Tnbs<sub>0</sub> HSUs.
- K7-03, K7-10, NC7-26, and NC7-47: Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU.
- K7-09: Tnsc<sub>0</sub> HSU. Well K7-09 was not sampled this semester due to an inoperable pump.

Ground water extraction and treatment at the PIT7-Source facility began in March 2010. Pumping on the extraction wells (all completed in the Qal/WBR HSU) proximal to Pits 3 and 5 has an impact on the distribution and magnitudes of COC concentrations observed.

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

#### **3.4.2.1. 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).

The highest tritium activity detected in a first semester 2012 ground water sample from a Pit 7 Complex detection monitor well was 70,200 pCi/L (April) in Tnbs<sub>0</sub> well K7-03. Tritium activities in samples from this well have generally been declining from the historic maximum activity detected in a water sample from this well of 216,000 pCi/L in March 1993. Last year, the maximum tritium activity in a sample from this well was 71,000 pCi/L.

Tritium activities in samples from detection monitor well K7-01 have decreased from the historic maximum activity of 72,900 pCi/L in October 1999 to a first semester 2012 activity of 29,500 pCi/L detected in the May sample from this well. Last year, a maximum tritium activity of 38,600 pCi/L was detected in the May 2011 sample from this well.

Tritium activities in samples from detection monitor well NC7-26 have decreased from the historic maximum activity of 30,000 pCi/L to a current activity of 1,620 pCi/L in the May sample. Last year, the maximum tritium activity in a sample from this well was 1,800 pCi/L.

Tritium activities in all samples collected this semester from upgradient well K7-06, cross-gradient well 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, tritium activities and the extent of tritium in the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> and Qal/WBR HSUs in the Pit 7 Complex area are consistent with those observed in 2011 and no new release of tritium from the landfills is indicated by the first semester 2012 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.

#### **3.4.2.2. 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 cleanup standard in all detection monitor well samples collected during the first semester 2012. The maximum uranium activity in a first semester 2012 sample from a detection monitor well was 16 pCi/L (May) 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 cleanup standard since the 1997-1998 El Niño and <sup>235</sup>U/<sup>238</sup>U isotopic ratios have indicated added depleted uranium. The historic maximum uranium activity detected in a sample from this well was 27 pCi/L (September 1984).

The next highest uranium activity in a first semester detection monitor well sample was 5.9 pCi/L in the April 2012 sample from well NC7-48. Uranium activities in samples from this well have declined from the historic maximum of 104.9 pCi/L detected in this well after the 1997-98 El Niño (March 1998). Ground water samples from this well have historically contained depleted uranium.

Uranium activities in samples from all detection monitor wells have generally decreased from their historic maximum uranium activities. During the first semester, uranium activities in samples from wells K7-06, K7-10, NC7-26, and NC7-47 are generally near or below individual isotope detection limits.

The extent of uranium in Qal/WBR and Tnbs<sub>1</sub>/Tnbs<sub>0</sub> ground water is similar to recent years. Ground water uranium data from the first semester 2012 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.

#### **3.4.2.3. Nitrate**

The maximum nitrate concentration detected in a first semester 2012 sample from a Pit 7 Complex detection monitor well was 65 mg/L (April 2012) from Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSU well NC7-47. Ground water samples from well NC7-47 have never contained any other COCs in excess of background concentrations. None of the other detection monitoring wells yielded first semester 2012 samples containing nitrate concentrations in excess of the 45 mg/L cleanup standard. Nitrate concentrations in samples from the other detection monitor wells ranged from <0.5 mg/L at well NC7-26 to 41 mg/L at well K7-01. Nitrate concentrations trends in the detection monitoring wells are all stable, and generally decreasing from their historic maxima. The current distribution of nitrate in Pit 7 Complex ground water has declined from previous years. 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.

#### **3.4.2.4. Perchlorate**

Wells K7-01 (screened in the Qal/WBR and Tnbs<sub>1</sub>/Tnbs<sub>0</sub> HSUs) and K7-03 (screened in the Tnbs<sub>1</sub>/Tnbs<sub>0</sub> 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 10 µg/L and 6.7 µg/L of perchlorate, respectively, during the first semester 2012. The overall extent of perchlorate in ground water in the Pit 7 Complex area did not change significantly from 2011 to present. The current semester 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.

#### **3.4.2.5. Volatile Organic Compounds**

During the first semester 2012, VOCs were detected in samples from only two detection monitor wells at concentrations above reporting limits. These samples from wells K7-01 (June) and K7-03 (April) contained 1.2 and 1.1 µg/L of total VOCs (all as TCE), respectively. The historic maximum VOC concentrations in samples from these wells were 20 µg/L (well K7-01, May 1985) and 15.2 µg/L (well K7-03, July 1985). VOC concentrations have generally been declining in samples from these wells since the times of those maxima. The overall extent of VOCs in ground water in the Pit 7 Complex area did not change significantly from 2011 to present. The current 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.

#### **3.4.2.6. Title 26 Metals and Lithium**

During the first semester 2012, 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 during the semester from any of the landfills.

#### **3.4.2.7. High Explosives (HE) Compounds**

During the first semester 2012, 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 detection limits of 1-2 µg/L. These data did not indicate a release of HE compounds during the semester from any of the landfills.

#### **3.4.2.8. Polychlorinated Biphenyls (PCBs)**

During the first semester 2012, PCB compounds were not detected in ground water samples from the Pit 7 Complex area detection monitoring wells at concentrations in excess of individual compound detection limits of approximately 0.5 µg/L. These data do not indicate a release of PCBs during the year from any of the landfills.

#### **3.4.3. Landfill Inspection Results**

The Pit 7 landfill cap engineering inspection was conducted on May 2, 2012. The independent professional engineer recommended that vegetative debris be removed from the drainage ditch and that joints between concrete sections be sealed as needed. He also recommended repairing animal burrows greater than 6 inches in diameter. No other issues were observed. The Pit 3 and 5 Landfill covers were not inspected during the first semester 2012.

#### **3.4.4. Annual Subsidence Monitoring Results**

Annual subsidence monitoring of the Pit 7 landfill was conducted during the second semester of 2011. No evidence of subsidence was observed. The next annual subsidence monitoring will be conducted during the second semester of 2012.

#### **3.4.5. Maintenance**

Maintenance was not performed on any of the pit covers during the first semester of 2012. The drainage channels were cleared of debris, concrete joints were sealed, and the animal burrows in excess of 6 inches in diameter were filled early in the second semester of 2012.

### **3.5. 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).

#### **3.5.1. Drainage Diversion System Inspection Results**

Monthly rainy season inspections occurred during the first semester 2012. The drainage diversion system was inspected on January 12, March 13, and April 11 (post-season). Sediment and vegetative debris accumulation were noted. In addition, squirrel damage to the channel banks was also observed during all three first semester 2012 inspections. The animal burrow damage was confined to the eastern vegetated channel portion of the drainage diversion system.

#### **3.5.2. Drainage Diversion System Maintenance**

Vegetative debris and sediment buildup were removed during the first semester of 2012. In addition, during the first semester, squirrel damage to the channel banks was repaired and rip rap that had become dislodged was moved back to around pipes at southern settling basin.

### **3.6. Building 850 CAMU**

A CAMU was constructed in the Building 850 area of OU 5 in 2009 as part of the Building 850 Removal Action (Section 2.5). The Building 850 CAMU is inspected and maintained per the requirements of the Inspection and Maintenance Plan (SCS Engineers, 2010).

#### **3.6.1. Building 850 CAMU Inspection Results**

CAMU inspections are typically conducted during the second semester in July (post-season) and October (pre-season). The results of these inspections will be documented in the annual Compliance Monitoring Report.

#### **3.6.2. Building 850 CAMU Maintenance**

No maintenance was required.

## **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  $1 \times 10^{-6}$  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 institutional controls in place at Site 300 be evaluated annually. The completed Institutional Controls Monitoring Checklist for 2012 will be included in the Annual CMR.

### **4.1. Human Health Risk and Hazard Management**

The CMP/CP requires that the risk and hazard associated with volatile contaminants in the subsurface migrating upward into indoor and outdoor ambient air and being inhaled by workers be re-evaluated annually using current data, where the risk exceeds  $10^{-6}$  and the hazard indices exceeds 1.

The on-site worker inhalation risk associated with vapor intrusion from the subsurface into indoor and outdoor air is discussed in Section 4.1.1. The onsite worker inhalation risk associated with springs is discussed in Section 4.1.2.

#### **4.1.1. Annual Inhalation Risk Evaluation**

The CMP (Dibley et al., 2009a) requires that the risk and hazard associated with volatile contaminants in the subsurface migrating upward into indoor and outdoor ambient air and being inhaled by workers be re-evaluated annually using current data. The following risk evaluations were performed during 2011:

- Indoor Ambient Air in Building 834D
- Indoor Ambient Air in Building 830
- Indoor Ambient Air in Building 833

In both 2010 and 2011, the risk evaluation for Building 833 for indoor ambient air showed no human health risk for this exposure pathway. “No Risk” is defined as an individual and cumulative excess cancer risk below  $10^{-6}$  and a hazard quotient below 1. According to the procedures outlined in Section 6.1.1 and 6.1.2 of the CMP/CP for the Interim Remedies at LLNL Site 300, (Dibley et al., 2009a) the risk and hazard management for Building 833 is considered complete when the estimated risk has remained below  $10^{-6}$  and the hazard quotient has remained below 1 for two consecutive years.

Therefore, no human health risk for this pathway remains and risk re-evaluation will be discontinued in 2012.

The estimated risk in 2011 remained above  $10^{-6}$  and/or hazard quotient above 1 for the indoor ambient air exposure pathway evaluated at Building 834D and Building 830. The 2012 risk evaluations for these buildings will be performed and reported in the Annual CMR.

Institutional controls, such as restricting access to or activities in areas of elevated risk, remained in place during 2011 to prevent unacceptable exposure to contaminants during remediation for those buildings and areas that continue to show an unacceptable risk and/or hazard.

#### **4.1.2. Spring Ambient Air Inhalation Risk Evaluation**

##### **4.1.2.1. VOC-Contaminated Springs**

The CMP requires annual sampling of outdoor air above VOC-contaminated surface water, when surface water is present to determine VOC concentrations.

An unacceptable risk or hazard was identified during the baseline risk assessment (Webster-Scholten, 1994) for the inhalation of VOCs at four locations:

1. Spring 3 (Building 832 Canyon OU) – Cumulative risk  $7 \times 10^{-5}$ , hazard index 2.3 due to TCE and PCE.
2. Spring 5 (HEPA OU) – Cumulative risk  $1 \times 10^{-5}$ , due to 1,1-DCE and TCE.
3. Spring 7 (Pit 6 Landfill OU) – Cumulative risk  $4 \times 10^{-5}$ , hazard index 1.5 due to TCE, PCE 1,2-DCA, and chloroform.
4. The Carnegie State Vehicular Recreation Area pond (offsite, east of the Pit 6 Landfill) – Cumulative risk  $3 \times 10^{-6}$  (hypothetical), due to TCE.

The risk and hazard management evaluation for Spring 3 was completed in 2009. The estimated risk has remained below  $10^{-6}$  and the hazard index remained below 1 for two consecutive years. No unacceptable risk or hazard to onsite workers exists. Therefore, the annual ambient air inhalation risk evaluation was continued for the following springs in 2012:

- Ambient Air Near Spring 5 in the HEPA OU
- Ambient Air Near Spring 7 in the Pit 6 Landfill OU

No surface water or green hydrophilic vegetation was present at Springs 5 and 7 during first semester 2012, therefore no ambient air VOC sampling was performed. Springs 5 and 7 have been devoid of surface water or green hydrophilic vegetation since monitoring began in 2003. These springs will be monitored for the presence of surface water or green hydrophilic vegetation in 2013 and air samples will be collected if water is present.

Water-supply well CARNRW-2 is used to fill the Carnegie State Vehicular Recreation Area pond. The baseline risk assessment indicated that if the VOC source in the Pit 6 Landfill OU was not controlled, contaminated ground water could migrate to well CARNRW-2 and result in an unacceptable risk from inhaling VOC vapors volatilizing from the pond. However, an engineered cap was placed over the Pit 6 Landfill preventing infiltration of precipitation and further releases of contaminants from the landfill. The VOC plume originating from the Pit 6 Landfill has not impacted CARNRW-2. No unacceptable risk or hazard exists.

##### **4.1.2.2. Tritium-Contaminated Springs**

An unacceptable cumulative risk of  $1 \times 10^{-3}$  was identified in the baseline risk assessment for the inhalation of tritium at Well 8 Spring in the Building 850 area. The risk associated with the inhalation

of tritium vapors volatilizing from Well 8 Spring is based on the maximum tritium activity detected (770,000 pCi/L) in 1972. The tritium activities in Well 8 Spring have steadily declined over the decades. The 2009 CMP/CP indicated that the inhalation risk associated with tritium in surface water volatilizing into outdoor ambient air would be re-evaluated annually when surface water is present. The surface water will be sampled and analyzed for tritium semi-annually. The maximum activity will be compared to the current tritium vapor PRG for tap water.

The risk re-evaluation of Well 8 Spring could not be performed in 2011 due to lack of water in the spring. No samples were collected from Well 8 Spring in 2011. Sampling and risk re-evaluation will be conducted in 2012 if surface water is present. Workers do not occupy or plan to occupy the site in the near future, therefore site use restrictions will be maintained and the annual sampling continued until the activity remains below the PRG for two years.

The results of the 2012 risk re-evaluation will be presented in the Annual CMR.

## **4.2. Ecological Risk and Hazard Management**

### **4.2.1. Ecological Risk and Hazard Management Measures and Contingency Plan Actions Required by the 2009 Compliance Monitoring Report/Contingency Plan**

The ecological risk and hazard management measures described in the 2009 CMP/CP (Dibley et al., 2009a) were developed to meet the Remedial Action Objectives for environmental protection. These objectives are to:

1. Ensure ecological receptors important at the individual level of ecological organization (special-status species, i.e., State of California or federally-listed threatened or endangered species or State of California species of special concern) do not reside in areas where relevant hazard indices exceed 1.
2. Ensure changes in contaminant conditions do not threaten wildlife populations and vegetation communities.

The ecological risk and hazard management measures required by the 2009 CMP/CP include:

- Periodically evaluating available biological survey data from the Buildings 801, 851 and the HEPA to determine potential population-level impacts to ground squirrel and deer exposed to cadmium in surface soil in these areas, as well as re-evaluating the ecological hazard associated with cadmium in surface soil in these areas.
- Ensuring the integrity of the Pit 7 Complex landfill caps to prevent exposure to burrowing animals from uranium.
- Evaluating changes in existing contaminant and ecological conditions in OUs 1 through 8 every five years, including re-evaluating VOCs in burrow air in the event that ground water VOC concentrations increase to levels that previously posed a risk to burrowing animals.

As part of the contingency plan presented in the 2009 CMP/CP, periodic review of available biological survey data (e.g., preconstruction survey data, biological monitoring data, surveys conducted for Environmental Impact Statement/Environmental Impact Report (EIS/EIR) preparation, etc.) for the presence of new special status species is required. Any new special status species identified is to be evaluated for potential impact from the presence of contamination using the process laid out in the 2009 CMP/CP. The results of this evaluation will be reported on in the annual CMRs.

In addition to reporting on the ecological risk and hazard management and contingency plan measures described in the 2009 CMP/CP, this and future compliance monitoring reports will address several new constituents identified in surface soil and surface water during the most recent five year ecological review for which ecological hazard could not be adequately evaluated due to either a limited

data set or the lack of background data. The results of the most recent Five-Year Ecological Review were reported in the 2008 Annual CMR (Dibley et al., 2009b).

This report, and subsequent compliance monitoring reports prepared during the reporting period in which the 2009 CMP/CP is active, will report on ecological risk and hazard management measures and ecological contingency plan actions required by the 2009 CMP/CP.

#### **4.2.2. Cadmium in Surface Soil**

As described above, the 2009 CMP/CP requires that available biological survey data be periodically reviewed to identify changes in the abundance of deer or ground squirrel over time that could indicate impacts to the populations in the Buildings 801 and 851 areas, and the HEPA from cadmium in surface soil. However, as reported on in the 2011 First Semester CMR, an evaluation of the EPA Ecological Soil Screening Levels for cadmium (U.S. EPA 2005) and the cadmium baseline ecological risk assessment conducted in the Site-Wide Remedial Investigation (SWRI) (Webster-Scholten et al., 1994) concluded that deer and ground squirrels are not at risk from cadmium in surface soil in these areas. Therefore, reviewing available biological survey data from the Buildings 801 and 851 areas and the HEPA to identify changes in the abundance of deer or ground squirrel over time has been discontinued. However, available survey data will continue to be reviewed to identify the presence of burrowing or ground dwelling special status species, such as the California red-legged frog (*Rana draytonii*, a federal threatened species), the California tiger salamander (*Ambystoma californiense*, a federal threatened species), the Alameda whipsnake (*Masticophis lateralis euryxanthus*, a federal threatened species), and the Western spadefoot toad (*Spea hammondi*, a California species of special concern), as long as the potential for ecological impact from cadmium in surface soil persists. Data to be reviewed includes surveys conducted for all ground disturbing activities, and observations made by LLNL wildlife biologists. Results of this review are reported in the annual CMR, most recently in the 2011 Annual CMR (Dibley et al., 2012). No special status species currently reside in areas with potentially elevated ecological hazard due to the presence of cadmium in surface soil.

In addition to evaluating the available biological survey data from the Buildings 801, 851 and HEPA, the 2009 CMP/CP also requires a re-evaluation of the ecological hazard associated with cadmium in surface soil in these areas to determine if continuation of risk and hazard management measures are necessary. As described in the 2011 Annual CMR, the re-evaluation of ecological hazard associated with cadmium in surface soil in the Building 801 area and HEPA showed cadmium to no longer be an ecological hazard. Therefore, cadmium is no longer considered a contaminant of ecological concern in these areas, and will be dropped from further consideration. The re-evaluation of cadmium in the Building 851 area was inconclusive due to the lack of soil samples directly behind the Building 851 Firing Table. Additional surface soil sampling in this area is planned for the late summer/early fall of 2012.

#### **4.2.3. Uranium in Subsurface Soil within the Pit 7 Complex Landfills**

As part of the Five-Year Ecological Review reported on in the 2008 Annual CMR, results of samples of pit waste that were collected from borings through the Pit 3 and 5 landfills at depths 4 feet or greater were determined to contain uranium at concentrations that posed a hazard if ingested by ground squirrels, burrowing owls, and kit fox. While this area represents potential habitat for burrowing owls and kit fox, neither species has been observed in this area.

The 2009 CMP/CP requires the Pit 7 Complex landfills to be inspected and any burrows or holes in the cover filled to prevent unacceptable exposure of animals to the pit waste. This is done as part of the inspection and maintenance program for the Pit 7 Complex. Section 3.4.3 describes the quarterly landfill inspection results, Section 3.4.4 describes the annual subsidence monitoring results, and Section 3.4.5 describes any maintenance performed. Results of the 2010 inspections were reported on



in the 2010 Annual CMR (Dibley et al., 2011a). Results of the 2011 inspections were reported on in the 2011 Annual CMR. Results of the 2012 inspections will be reported on in the 2012 Annual CMR.

#### **4.2.4. Constituents Identified in the 2008 Five Year Ecological Review Requiring Additional Evaluation**

As reported in the 2010 First Semester CMR (Dibley et al., 2010), the ecological hazard of several new constituents detected in surface soil and surface water could not be adequately evaluated in the Five-Year Ecological Review due to either a limited data set or the lack of background data. In surface soil, the ecological hazard from potassium-40 (K-40) was not evaluated due to a limited data set and the lack of background data. To determine if a sampling effort to develop background levels of K-40 in surface soil is warranted, the literature will be reviewed to evaluate the potential for ecological hazard from K-40 in surface soil. Results of this review will be reported in future compliance monitoring reports.

The Five-Year Ecological Review concluded that chloride, ortho-phosphate, total phosphorus, nitrate plus nitrite, ammonia nitrogen and uranium in several springs required additional evaluation to determine their potential to cause ecological hazard. As reported in the 2010 First Semester CMR, additional evaluation showed that many of these constituents were within Site 300 background or the data were misinterpreted in the Five-Year Ecological Review, and thus were dropped from further consideration. Constituents that require additional evaluation include chloride in Spring 14, total phosphorus as P and ammonia in Spring 4, and total uranium in Springs 10 and 11.

Although the maximum chloride concentration detected in Spring 14 exceeds the maximum concentration observed in background springs, the chloride concentration in the most recent sample collected from Spring 14 was below the maximum concentration detected in the background springs. Chloride concentrations will be monitored in future samples collected from Spring 14.

The single sample from Spring 4 analyzed for total phosphorus as P exceeds the maximum concentration observed in the background springs. The maximum concentration of ammonia nitrogen in Spring 4 was detected in the most recent sample available that was analyzed for this constituent. Data for ammonia nitrogen are not available for the background springs. Therefore, future samples collected from Spring 4 will be analyzed for total phosphorus as P and ammonia nitrogen to determine representative concentrations of these constituents in this spring. In addition, future samples collected from the background springs will be analyzed for ammonia nitrogen to determine the background concentration of this constituent.

The maximum total uranium concentration as mg/L (estimated from uranium-238 results) in Spring 10 and Spring 11 slightly exceeded the Site 300 background concentration. These maximum concentrations were detected in the most recent sample available for both springs. Both samples were analyzed for uranium isotopes using mass spectrometry, and results from both springs showed a uranium-235/uranium-238 ratio of 0.0072. This is the natural ratio for these uranium isotopes, and indicates no added depleted uranium is present. Few of the background springs have had samples analyzed for uranium isotopes using the more precise mass spectrometry analytical analysis. The vast majority of available background uranium data are from alpha spectrometry analyses. Therefore, future samples collected from the current background springs will be analyzed for uranium isotopes using mass spectrometry.

Additional spring sampling is planned during the third quarter of 2012. Data from the additional spring sampling will be reported on in future compliance monitoring reports as they become available.

#### **4.2.5. Identification and Evaluation of New Special Status Species**

Contingency actions that are described in the 2009 CMP/CP include periodically evaluating available biological survey data (e.g., pre-construction survey data, biological monitoring data, surveys conducted for EIR/EIS preparation) for the presence of new special-status species and reporting the results of the evaluation in the annual compliance monitoring reports. New biological information collected since the completion of the Five-Year Ecological Review (years 2009 and 2010) was evaluated and reported on in the 2010 Annual CMR. For the year 2011, data from surveys conducted for all ground disturbing activities and observations made by LLNL wildlife biologists were evaluated and reported on in the 2011 Annual CMR. No new special-status species were identified in areas of potentially elevated ecological risk. New biological information collected during 2012 will be evaluated and reported on in the 2012 Annual CMR.

## **5. Data Management Program**

The management of data collected during first semester 2012 was subject to the 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 the 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. 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 on Linux servers. General maintenance and refinements were implemented to improve chains of custody, data entry verification, and querying abilities. Improvements and additions to the ERD data management process continued to be implemented in an ongoing effort to automate and improve the applications, including updates to verifications. The Treatment Facility Real Time (TFRT) application, a high frequency data acquisition system for treatment facilities and their associated extraction wells, continued to be improved and its scope of coverage extended, including the addition of a dashboard page and an operational summary page. The ability to handle one time only sampling was added to the Sample Planning and COC Tracking (SPACT) tool. The ability to automatically calculate hours of operation was added to the Self Monitoring Report tool. The server that hosts the web tool by which analytical laboratories upload electronic data was upgraded. Invoice Processing and Technical Release Representative tools used to electronically keep track of invoice payments were fine tuned to add new features to prevent reprocessing of already paid invoices, adding fields to streamline the process, allowing the inputs from the initial page to be saved, adding the ability to annotate invoices with comments for auditing, and adding the option to pick the organization by which the invoices are displayed. Features were added to the Oracle Software Corrective Action Request tool to prioritize and categorize requests and sort displayed requests. 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. Earth Vision software, which models

environmental data, license and server are being upgraded. Testing and preparation are in progress to upgrade Oracle from 11.2.0.2 to 11.2.0.3.

## **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**

Twenty-nine ERD SOPs were finalized and released as Revision 14 in May 2012. Revision 14 consists of the following procedures:

- SOP 1.1: Field Borehole Logging-Rev. 6.
- SOP 1.2: Borehole Sampling of Unconsolidated Sediments and Rock-Rev. 6.
- SOP 1.3: Drilling-Rev. 6.
- SOP 1.4: Well Installation-Rev. 6.
- SOP 1.5: Initial Well Development-Rev. 6.
- SOP 1.6: Borehole Geophysical Logging-Rev. 6.
- SOP 1.7: Well Closure-Rev. 5.
- SOP 1.10: Soil Vapor Surveys-Rev. 6.
- SOP 1.11: Soil Surface Flux Monitoring of Gaseous Emission-Rev. 3.
- SOP 1.13: Operation of the AMS TR7000 Well Management System-Rev. 1.
- SOP 1.15: Well Site Core Handling-Rev. 3.
- SOP 1.16: Four Wheel All Terrain Vehicle (ATV) Operation-Rev. 2.
- SOP 1.17: Soil Vapor Monitoring and Sampling-Rev. 4.
- SOP 4.1: General instructions for Field Personnel-Rev. 8.
- SOP 4.2: Sample Control and Documentation-Rev. 8.
- SOP 4.4: Guide to Packaging and Shipping of Samples-Rev. 7.
- SOP 4.5: General Equipment Decontamination-Rev. 6.
- SOP 4.6: Validation and Verification of Radiological and Nonradiological Data Generated by Analytical Laboratories-Rev. 6.
- SOP 4.7B: Site 300 Treatment and Disposal of Well Development and Well Purge Fluids-Rev. 5.
- SOP 4.8: Calibration/Verification and Maintenance of Measuring and Test Equipment (M&TE)-Rev. 7.

- SOP 4.9: Collection of Field QC Samples-Rev. 6.
- SOP 4.12: Quality Improvement Forms-Rev. 3.
- SOP 4.13: Standard Operating Procedure Process-Rev. 2.
- SOP 4.15: ERD Management Self-assessments, Observations, Verifications, and Inspections-Rev. 2.
- SOP 4.16: ERD Lockout/Tagout Program-Rev. 2.
- SOP 4.17: Change of Aqueous and Vapor Phase Granular Activated Carbon-Rev. 2.
- SOP 4.18: ERD Document Control--Rev. 1.
- SOP 5.5: Data Management Revision Receipt and Processing-Rev. 2.
- SOP 5.20: Cost Effective Sampling (CES) Algorithm Preparation-Rev. 1.

The following procedures were determined obsolete and were omitted from Revision 14:

- SOP 1.18: Deployment, Retrieval, Sampling and Maintenance of Instrumented Membrane Technology (IMT) Borehole-Liner Systems.
- SOP 2.12: Ground Water Monitor Well and Equipment Maintenance.

A number of procedures, as listed, will continue in the review and update process, and will be released as part of a subsequent revision:

- 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 4.7A: Livermore Site Treatment and Disposal of Well Development and Well Purge Fluids.
- SOP 4.14: Mapping with the Trimble Pathfinder Pro XR GPS System.

## 6.2. New Procedures

A new procedure titled, “Site 300 Treatment Media Inventory and Tracking Process” is being developed and will also be released in a subsequent revision. The procedure is part of ERD’s path forward to help ensure treatment media meets specific acceptance criteria prior to utilizing the material(s) at treatment facilities. Additionally, the procedure outlines processes to effectively track treatment media by type, quantity, and by facility where media is installed, as well as a treatment media sample collection and analysis plan. A process has begun to move procedures from the Operations and Maintenance Manual, Volume 1, into the set of SOPs. The procedures will undergo the review, update, and formatting process prior to including them with the next release of SOPs.

## 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 management work observations, verifications, and inspections (MOVIs) of ERD work activities. There were a total of nineteen MOVIs conducted during the first semester of 2012. The ES&H Directorate performed a Joint Functional Area Management Line Management Assessment (JFLMA) to determine if silica had been properly identified as a potential hazard in relevant work activities. ERD participated in the silica JFLMA by reviewing its work planning and work control documentation in which it was determined that silica had not been identified as a potential hazard on the Task Identification Process (TIP) List for drilling activities at the Site 300 and Livermore site. The TIP List was updated to include silica as a potential hazard along with related work controls. The revised TIP was reviewed, approved, and re-attached to Integration work Sheet 11276. Issues and deficiencies observed during assessments are tracked from inception to resolution using the institutional Issues Tracking System (ITS). The action item 32787.1.1 related to the silica JFLMA was successfully completed by ERD and closed out. To date, there are no open issues in the ITS database for Site 300 work activities.

The IWSs have begun the triennial review process, which includes a complete review and approval of the safety document by the ES&H team, the Facility Point of Contact, the Responsible Individual, and the Authorizing Individual. To date, one IWS has completed the review and approval process with six remaining IWSs to undergo the triennial review process.

#### **6.4. Quality Issues and Corrective Actions**

Quality improvement, nonconformance, and corrective action reporting is documented using the Quality Improvement Form (QIF). QIF (QIF-11-003) remains open from the last reporting period. QIF-11-003 was generated to describe the event where methylene chloride was detected in the 829-SRC Treatment Facility effluent due to the usage of contaminated resin. The corrective action for this issue is still in progress. Three QIFs were processed during the first semester 2012 reporting period. QIF-12-001 was developed to describe an event where a Contract Analytical Laboratory (CAL) reported EPA Method 8330 analytic results with failed Laboratory Control Sample (LCS) recoveries. Corrective action was successfully implemented and the QIF closed out. QIF-12-002 described an incident where a CAL courier made only a partial pick up of samples designated for analysis. The courier was re-trained and the QIF closed out. QIF-12-003 was developed due to a CAL that failed to send samples out to a subcontracted laboratory for analysis. The samples exceeded their Hold Time making it necessary for ERD to resample eight locations and re-submit for analysis. The analyses were performed at no cost to ERD. The CAL process for shipping samples out to subcontracted laboratories was improved and personnel were retrained. The QIF was successfully closed out.

#### **6.5. Analytical Quality Control**

Data review, validation, and verification are conducted on 100% of the incoming analytical data. 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 is qualified as rejected only when there is a serious deficiency in the ability to analyze the sample and meet QC criteria.

CALs are required to participate in a Proficiency Testing (PT) Program in which they analyze PT samples provided by an external source, as a means to evaluate a laboratory's performance in a specific area of testing. As a participant in the PT Program, BC Laboratories, Inc. performed nitroaromatics in water by EPA Method 8330, resulting in a failure of five of the fourteen compounds in the E8330LOW suite. The failed tests for compounds nitrobenzene, tetryl, and 2,4,6-trinitrotoluene were all biased high due to the reported value being above the acceptable upper control limit. False positives were reported for compounds 4-amino-2,6-dinitrotoluene and 2,4-dinitrotoluene. In evaluating the possible impact on ERD data, the compound tetryl was not an issue since the compound is not included in the 8330 suite of compounds utilized by ERD. Out of the remaining compounds that were reported biased-high or reported as false positives, there was a single positive detection of nitrobenzene found in the ERD data set. Nitrobenzene was detected in a ground water sample collected from W-812-02 on January 31, 2012. The monitor well will be re-sampled and submitted for the E8330LOW test during the third quarter of the 2012 calendar year. A collocated sample will also be collected at the same time but sent to a different CAL for the E8330LOW analysis. The sample results will be reported in the annual CMR.

## **6.6. Field Quality Control**

There were no issues regarding trip blank, field blank, or equipment blank analyses encountered during this reporting period.

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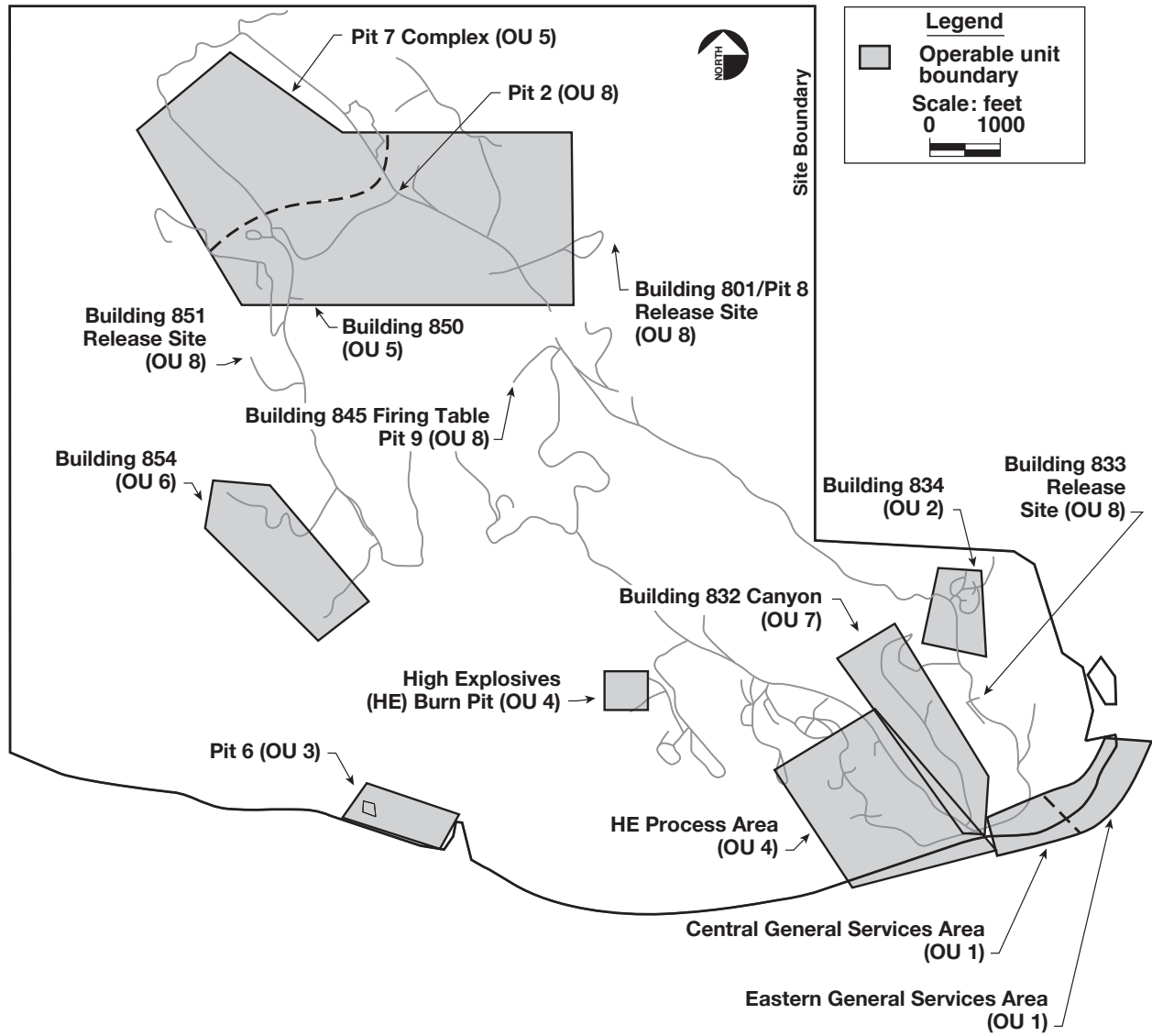
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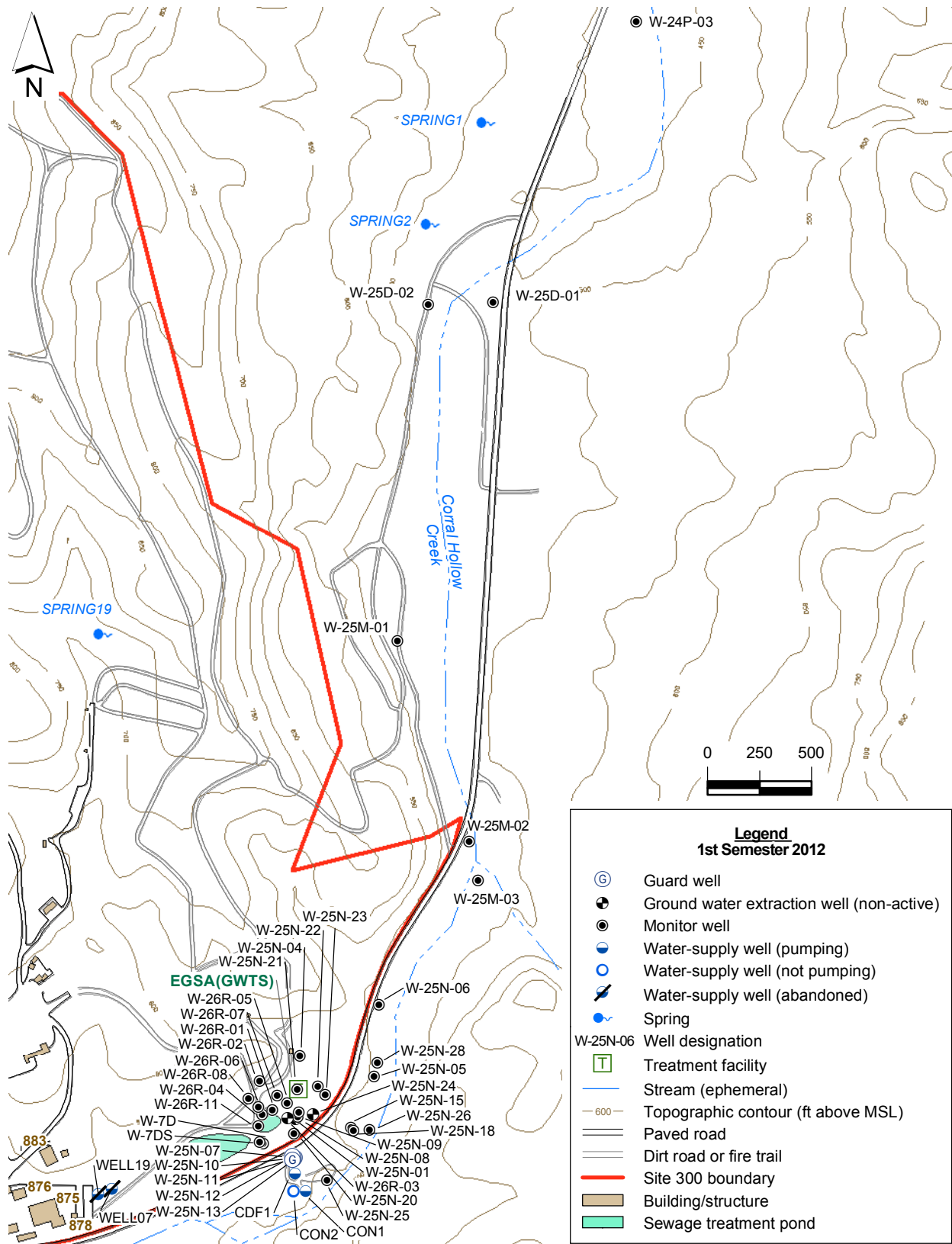
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Figure 2-1. Site 300 map showing Operable Unit locations.



**Figure 2.1-1. Eastern General Services Area Operable Unit site map showing monitor, extraction and water-supply wells, and treatment facilities.**

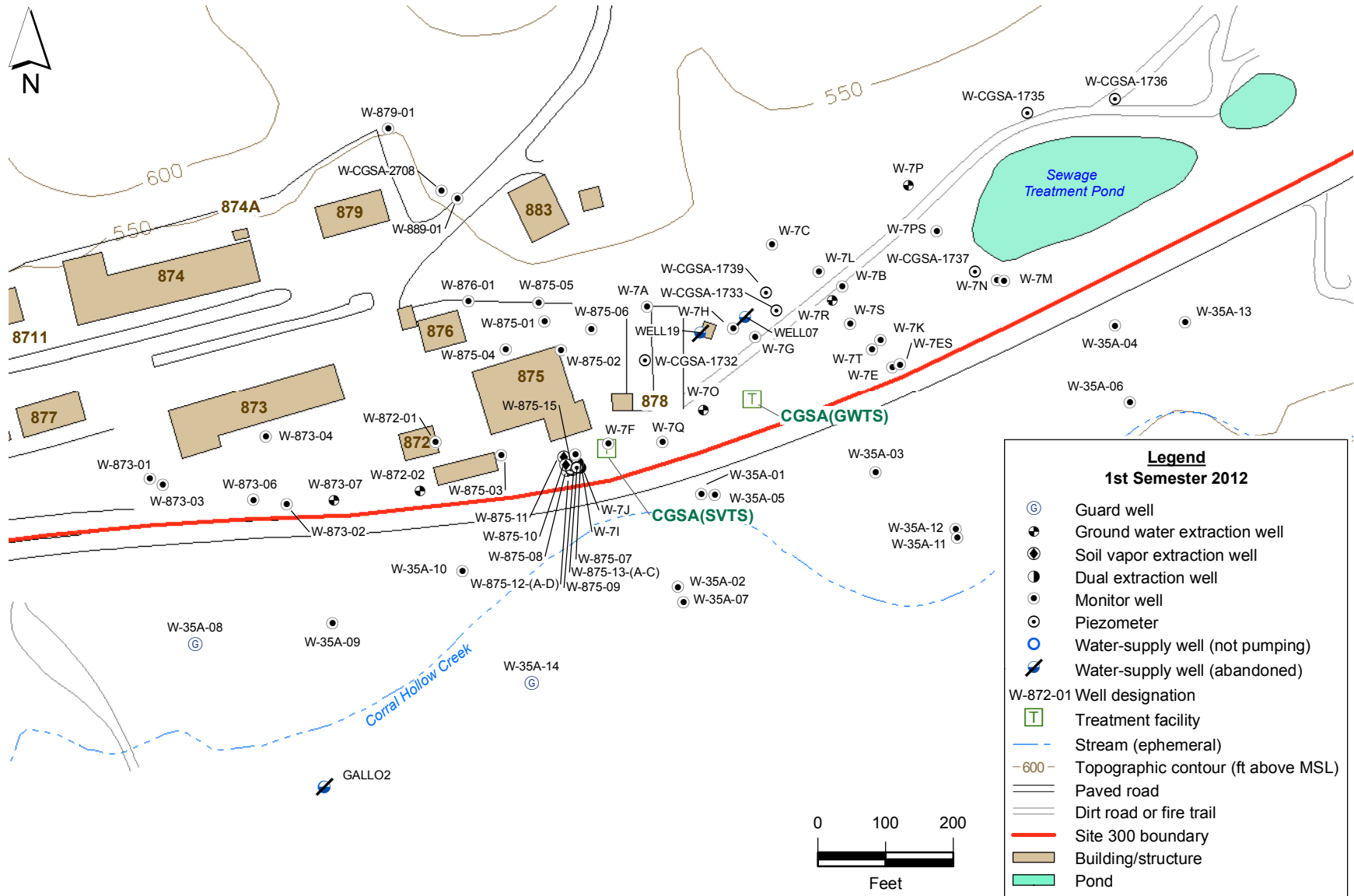
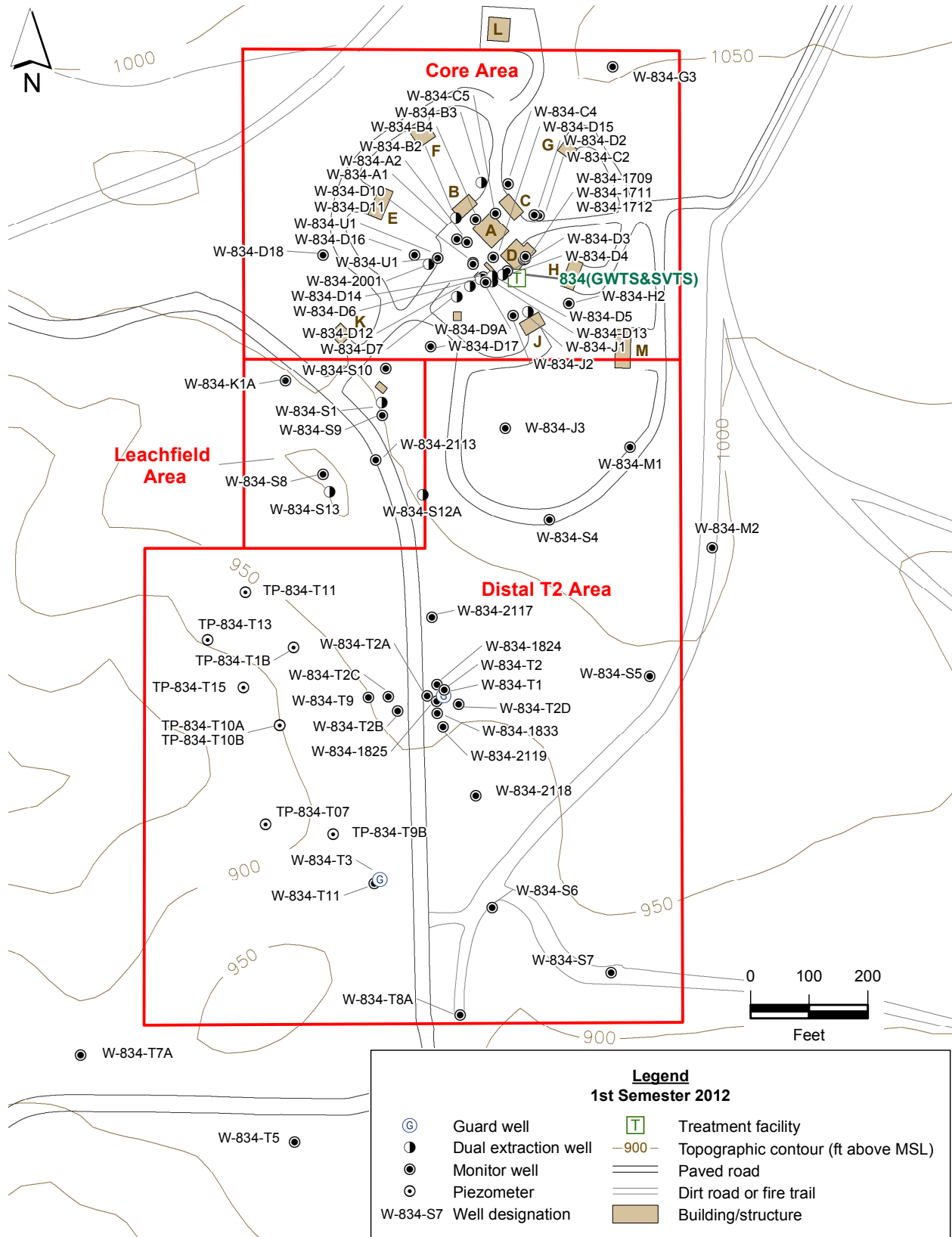


Figure 2.1-2. Central General Services Area Operable Unit site map showing monitor, extraction and water-supply wells, and treatment facilities.



**Figure 2.2-1. Building 834 Operable Unit site map showing monitor and extraction wells, and treatment facilities.**

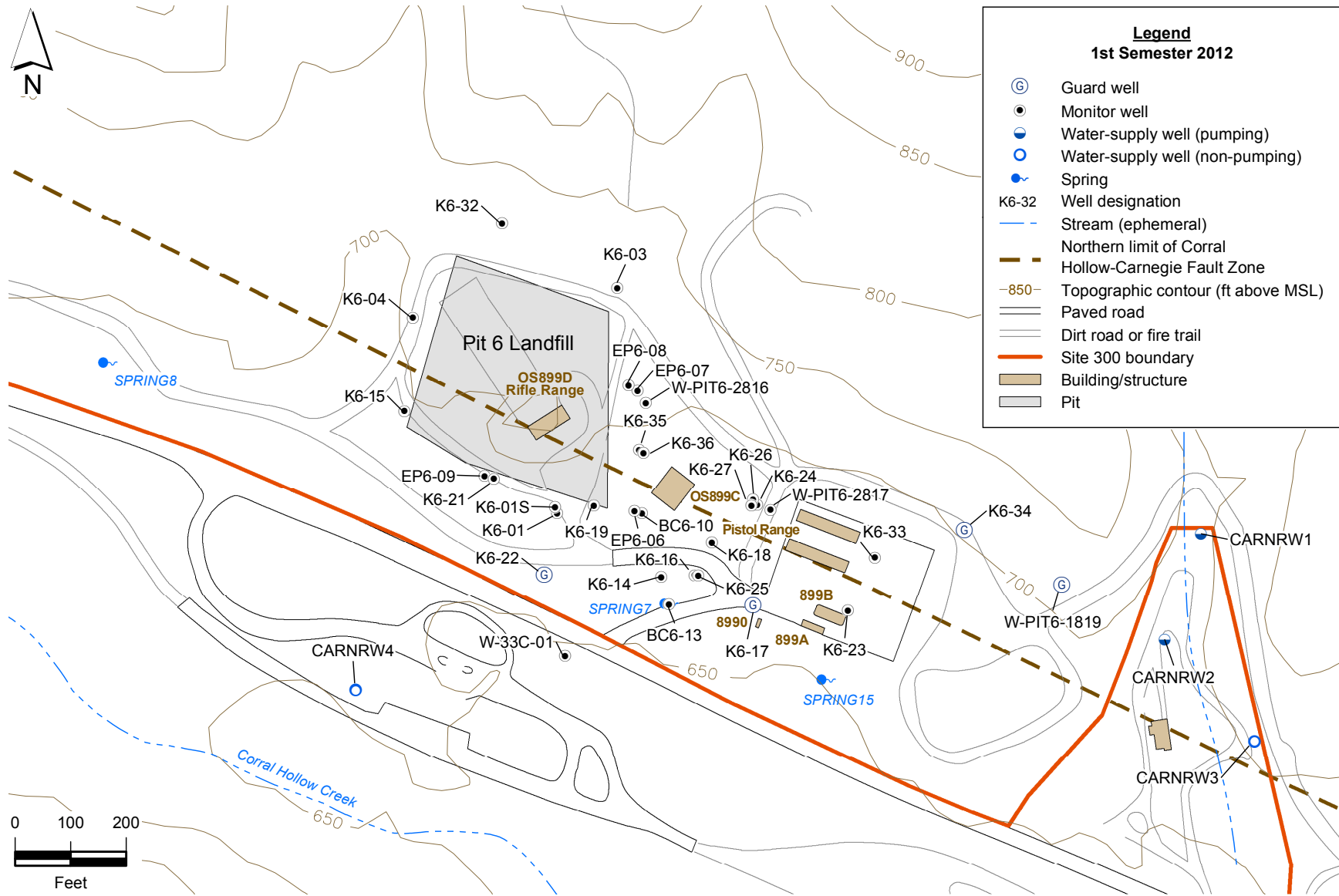


Figure 2.3-1. Pit 6 Landfill Operable Unit site map showing monitor and water-supply wells.





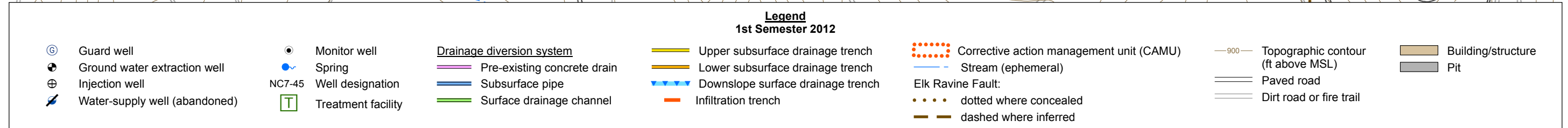
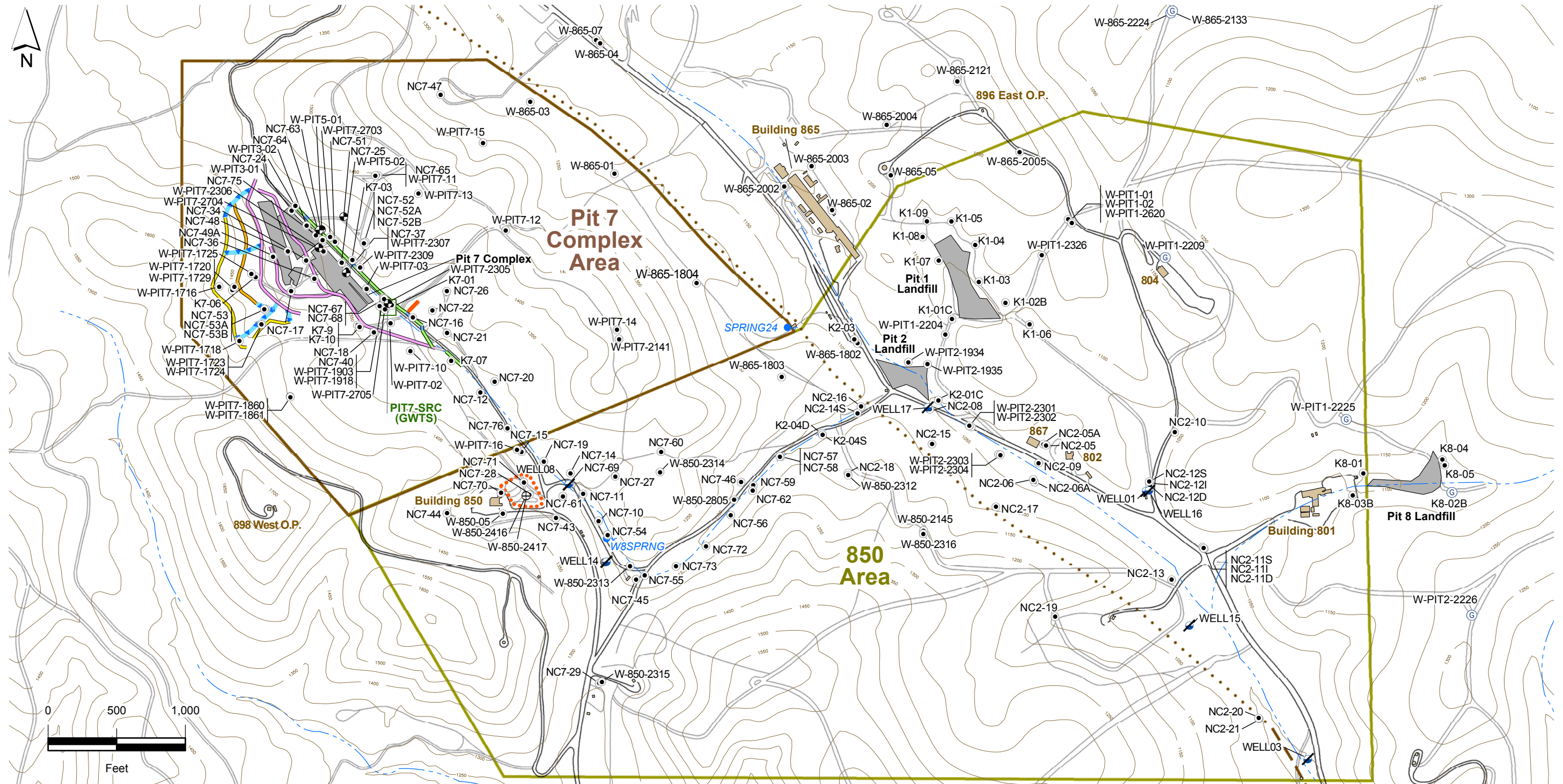


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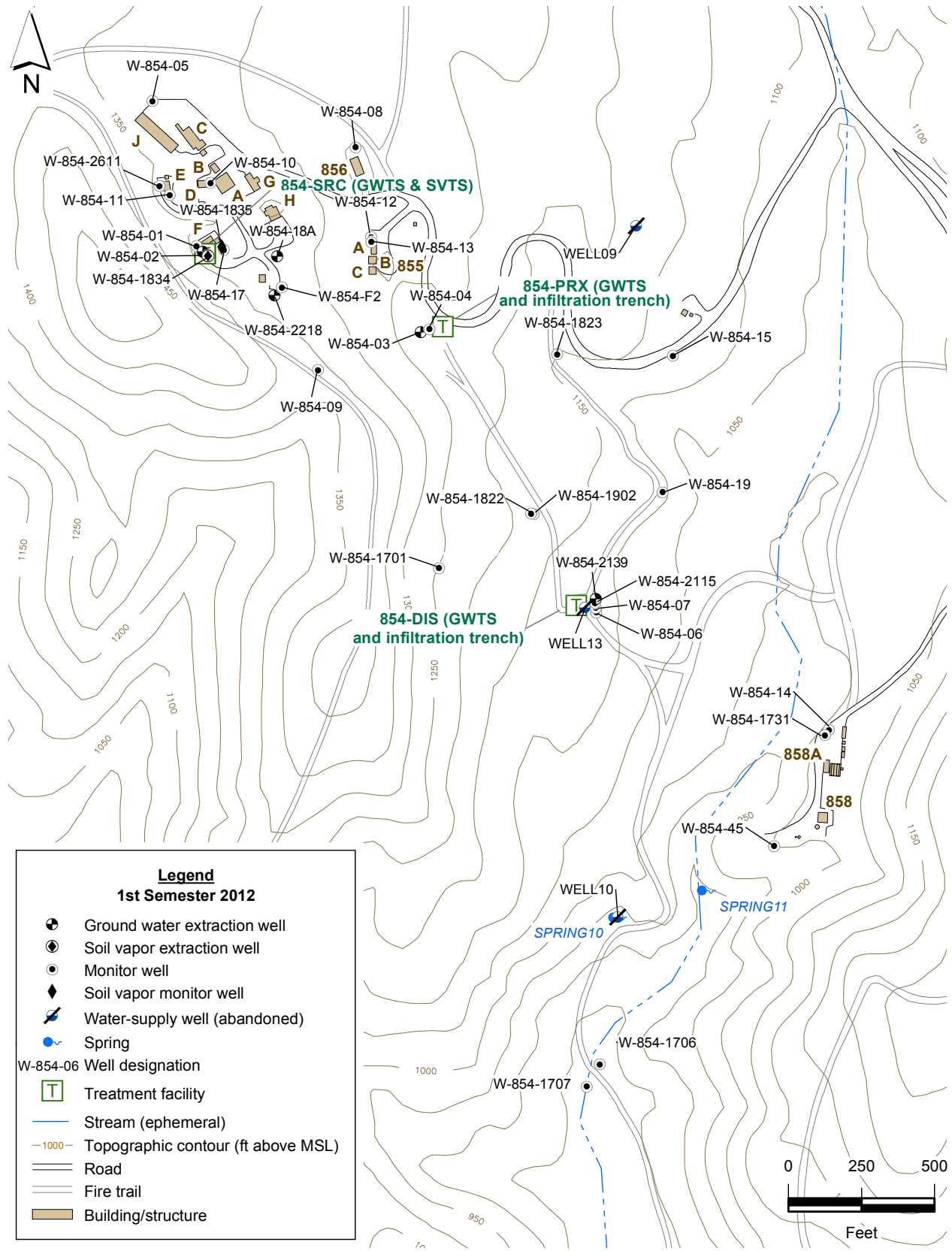


Figure 2.6-1. Building 854 Operable Unit site map showing monitor and extraction wells, and treatment facilities.

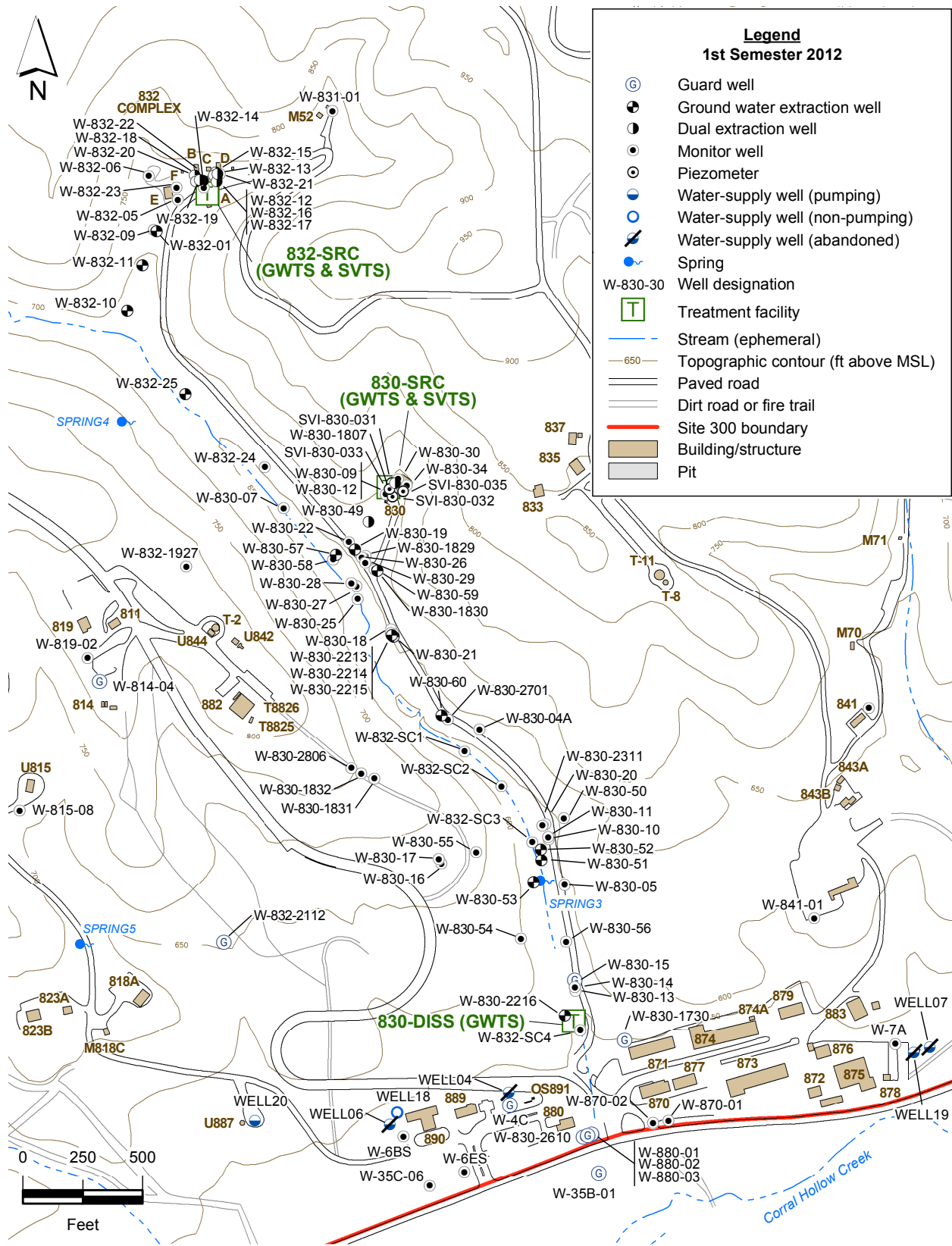


Figure 2.7-1. Building 832 Canyon Operable Unit site map showing monitor, extraction and water-supply wells, and treatment facilities.

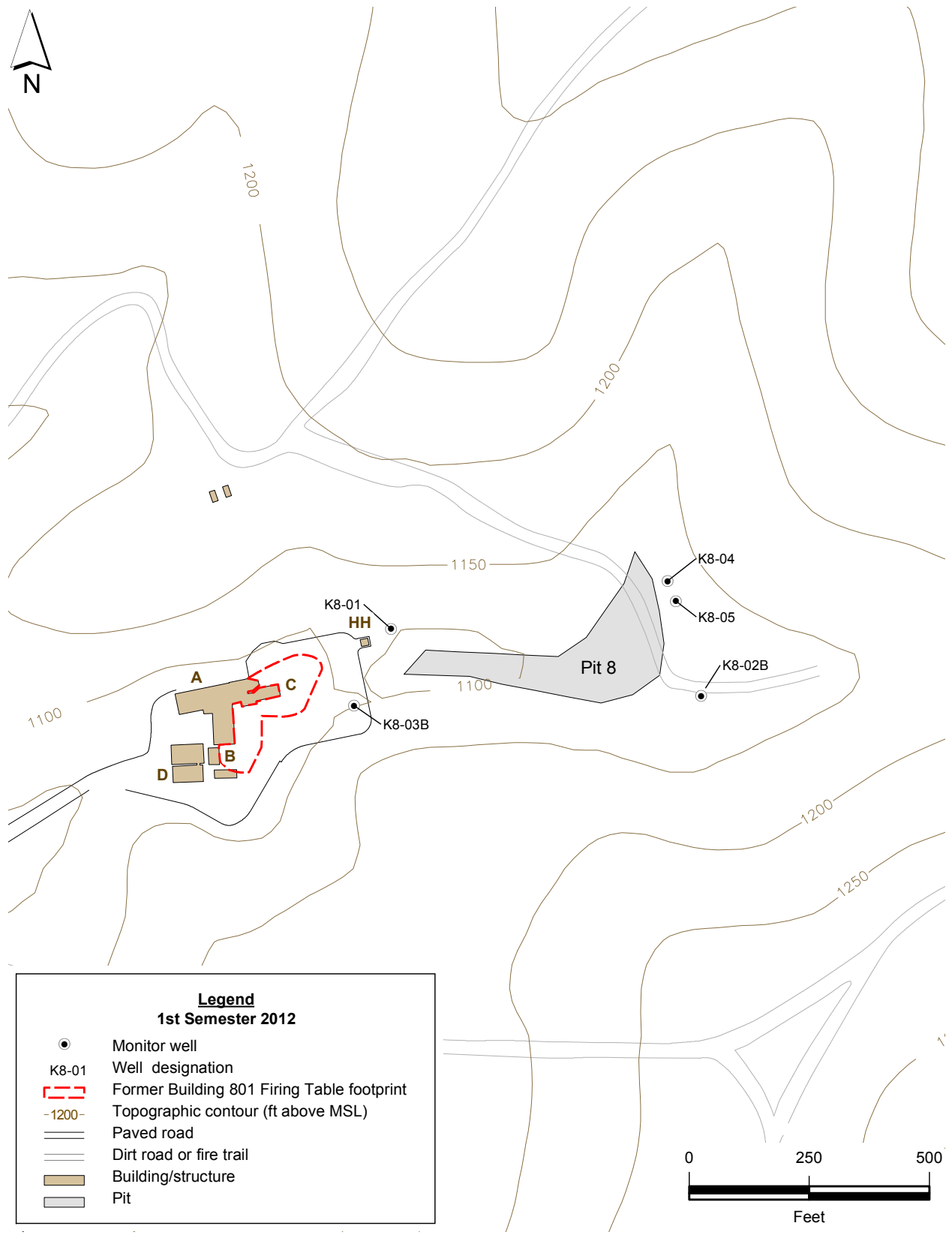


Figure 2.8-1. Building 801 Firing Table and Pit 8 Landfill site map showing monitor well locations.

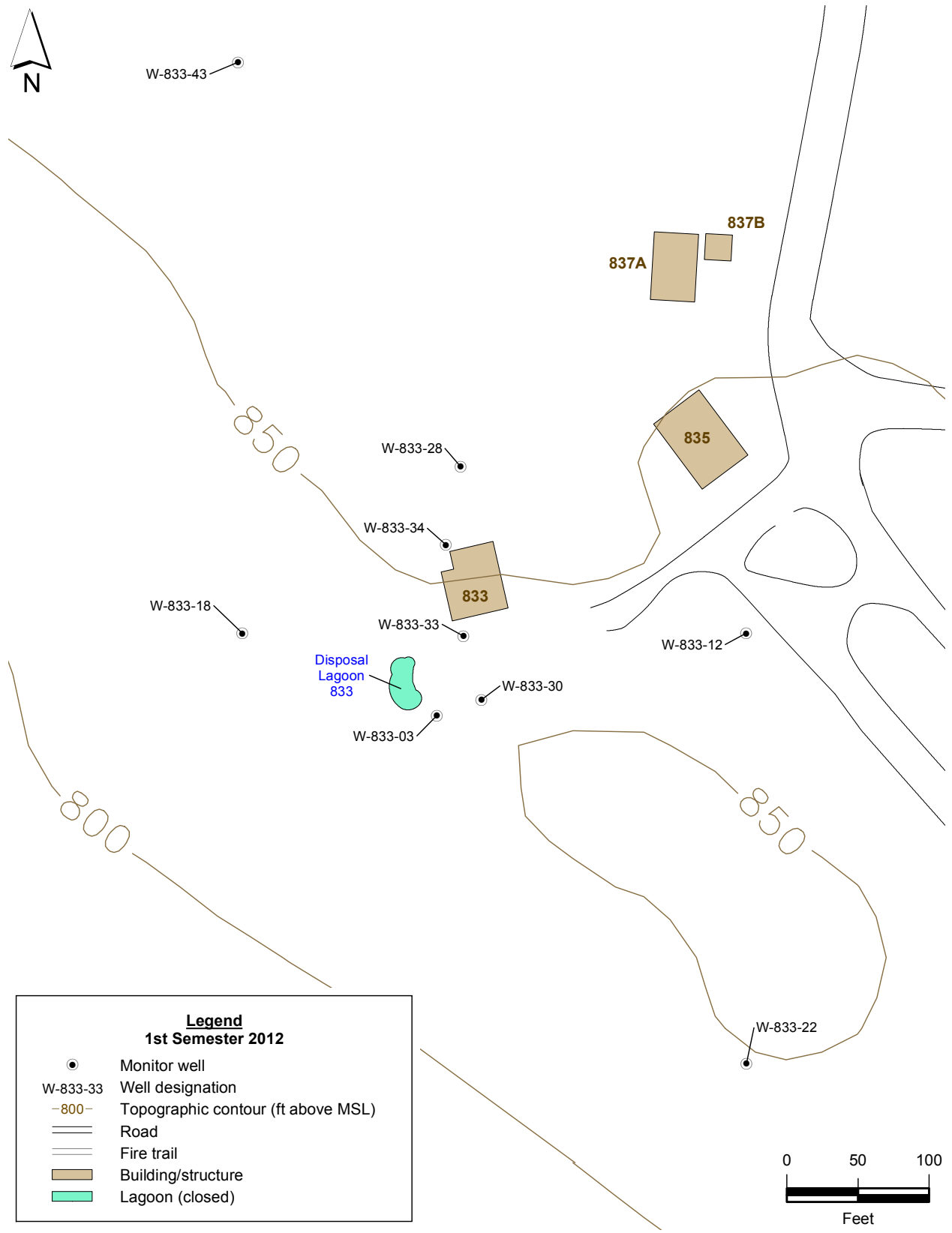


Figure 2.8-2. Building 833 site map showing monitor well locations.

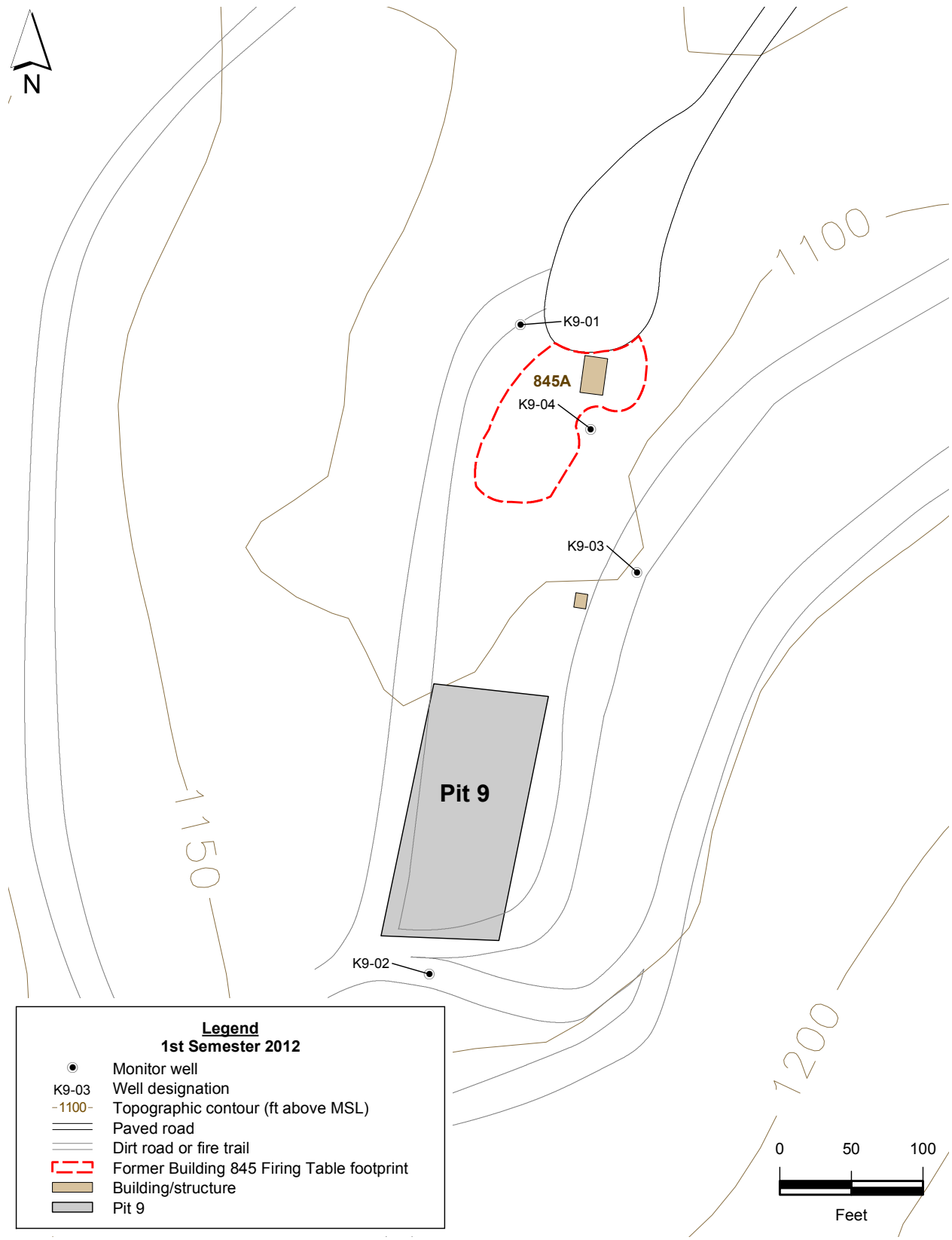


Figure 2.8-3. Building 845 Firing Table and Pit 9 Landfill site map showing monitor well locations.

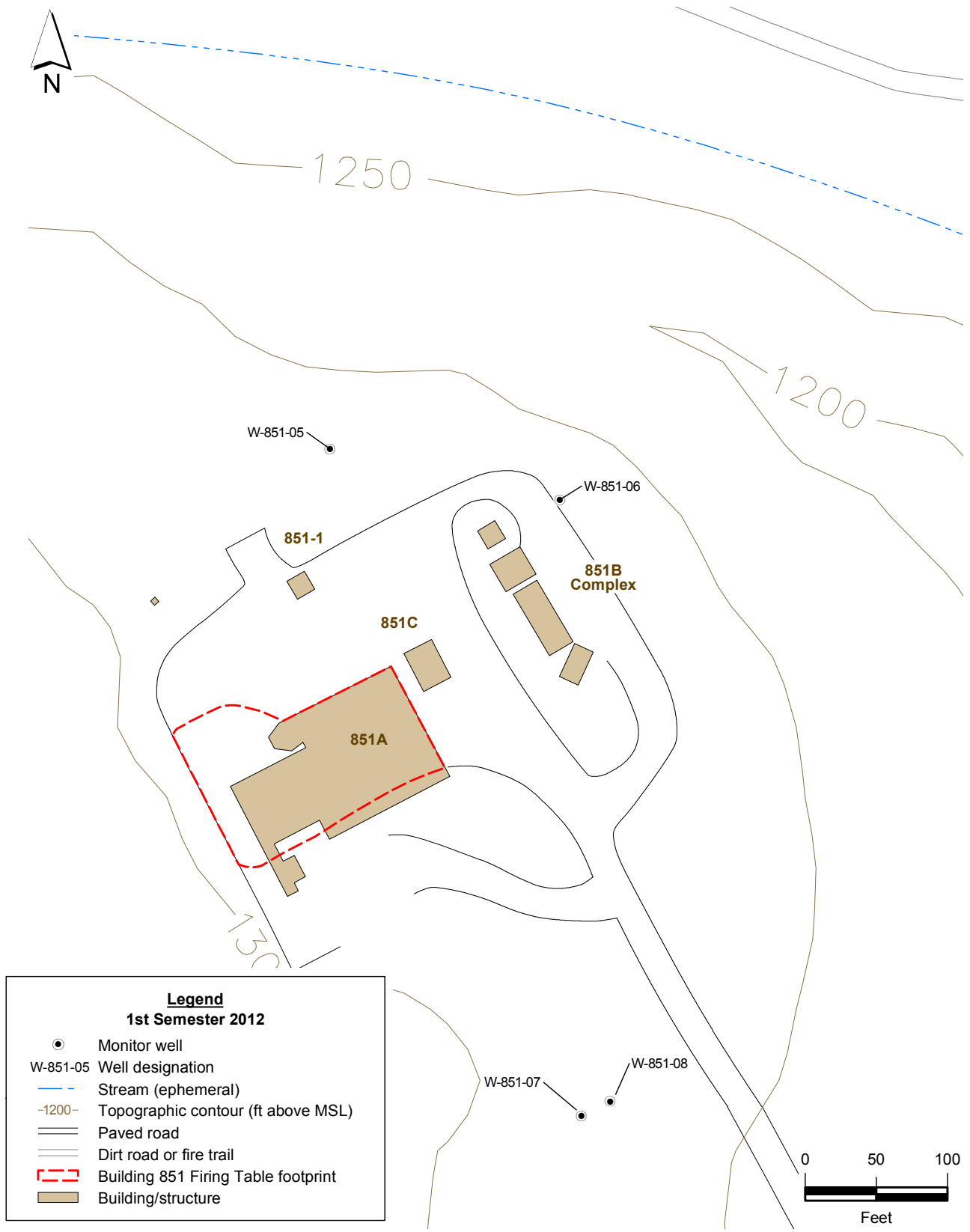


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- Table 2.6-7. Building 854 Operable Unit ground and surface water sampling and analysis plan.
- Table 2.6-8. Building 854-Source (854-SRC) mass removed, January 1, 2012 through June 30, 2012.
- Table 2.6-9. Building 854-Proximal (854-PRX) mass removed, January 1, 2012 through June 30, 2012.
- Table 2.6-10. Building 854-Distal (B854-DIS) mass removed, January 1, 2012 through June 30, 2012.
- Table 2.7-1. Building 832-Source (832-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2012 through June 30, 2012.
- Table 2.7-2. Building 830-Source (830-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2012 through June 30, 2012.
- Table 2.7-3. Building 830-Distal South (830-DISS) volumes of ground water and soil vapor extracted and discharged, January 1, 2012 through June 30, 2012.
- Table 2.7-4. Building 832 Canyon Operable Unit volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.
- Table 2.7-5. Building 832 Canyon Operable Unit perchlorate in ground water extraction and treatment system influent and effluent.
- Table 2.7-6. Building 832 Canyon Operable Unit treatment facility sampling and analysis plan.
- Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

- Table 2.7-8. Building 832-Source (832-SRC) mass removed, January 1, 2012 through June 30, 2012.
- Table 2.7-9. Building 830-Source (830-SRC) mass removed, January 1, 2012 through June 30, 2012.
- Table 2.7-10. Building 830-Distal South (830-DISS) mass removed, January 1, 2012 through June 30, 2012.
- Table 2.8-1. Building 801 and Pit 8 Landfill area ground water sampling and analysis plan.
- Table 2.8-2. Building 833 area ground water sampling and analysis plan.
- Table 2.8-3. Building 845 Firing Table and Pit 9 Landfill area ground water sampling and analysis plan.
- Table 2.8-4. Building 851 area ground water sampling and analysis plan.
- Table 3.1-1. Pit 2 Landfill area ground water sampling and analysis plan.

## Acronyms and Abbreviations

4-ADNT	4-Amino-2,6-dinitrotoluene
815	Building 815
817	Building 817
829	Building 829
832	Building 832
834	Building 834
850	Building 850
854	Building 854
A	Annual
As N	As nitrogen
As CaCO <sub>3</sub>	As calcium carbonate
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
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
cfm	Cubic feet per minute
CFV2	Second vapor phase granular activated carbon filter effluent
CGSA	Central General Services Area
CHC	Corral hollow creek
CMP/CP	Compliance Monitoring Plan/Contingency Plan
CMR	Compliance Monitoring Report
CO <sub>2</sub>	Carbon dioxide
COC	Contaminants of Concern
DCA	Dichloroethane
DCE	Dichloroethylene or dichloroethene
DIS	Discretionary sampling (not required by the CMP)
DISS	Distal south
DMW	Detection monitor well
DOE	Department of Energy
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
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
ft	Feet
ft <sup>3</sup>	Cubic feet
FY	Fiscal Year
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	<i>In Situ</i> 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
JFLMA	Joint Functional Area Management Line Management Assessment
K-40	Potassium-40

kft <sup>3</sup>	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
µg/m <sup>3</sup>	Micrograms per meters cubed
µmhos/cm	Micro ohms per centimeter
µS	Microsiemens
M	Monthly
MCL	Maximum Contaminant Level
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
MSL	Mean Sea Level
MTU	Miniature Treatment Unit
mV	Millivolts
MWB	Monitor well used for background
N	No
NB	Nitrobenzene
N <sub>2</sub>	Nitrogen
ng/L	Nanograms per liter
NO <sub>3</sub>	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
PCBs	Polychlorinated biphenyls
PCE	Tetrachloroethene
pCi/L	PicoCuries per liter
PPCP	Pharmaceutical and Personal Care Products
pH	A measure of the acidity or alkalinity of an aqueous solution
PHG	Public Health Goal
PLC	Programmatic logic control

ppb <sub>v</sub>	Parts per billion by volume
ppm <sub>v</sub>	Parts per million on a volume-to-volume basis
PBA	Programmatic Biological Assessment
PRX	Proximal
PRXN	Proximal north
PT	Proficiency Testing
PTMW	Plume Tracking Monitor Well
PTU	Portable Treatment Unit
Q	Quarterly
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
RDX	Research Department explosive
REA	Reanalysis
Redox	Reduction-oxidation reaction
REX	Resample
ROD	Record of Decision
RPM	Remedial Project Manager
RWQCB	Regional Water Quality Control Board
S	Semi-annual
SC	Specific conductance
Scfm	Standard cubic feet per minute
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
TCA	Trichloroethane
TFRT	Treatment Facility Real Time
THMs	trihalomethanes
TIP	Task Identification Process



TKEBS	Tetrakis (2-ethylbutyl) silane
TCE	Trichloroethene
TDS	Total dissolved solids
TF	Treatment facility
TNB	Trinitrobenzene
TNT	Trinitrotoluene
TRV	Toxicity Reference Value
$^{235}\text{U}/^{238}\text{U}$	Atom ratio of the isotopes uranium-235 and uranium-238
U.S.	United States
USFWS	U.S. Fish and Wildlife Service
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
WGMG	Water Guidance and Monitoring Group
WS	Water supply well
Y	Yes

## Hydrogeologic Units

- Lower Tnbs<sub>1</sub> = 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<sub>1a</sub>, Tnsc<sub>1b</sub>, Tnsc<sub>1c</sub> = Sandstone bodies within the Tnsc<sub>1</sub> Neroly middle siltstone/claystone (1a = deepest).
- Tnbs<sub>1</sub> = Lower member of the Neroly lower blue sandstone.
- Tnbs<sub>0</sub> = Neroly silty sandstone.
- Tnbs<sub>2</sub> = Miocene Neroly upper blue sandstone.
- Tnsc<sub>0</sub> = Tertiary Neroly Formation—lower siltstone/claystone member.
- Tnsc<sub>2</sub> = Miocene Neroly Formation—upper siltstone/claystone member.
- Tps = Pliocene non-marine unit.
- Tpsg = Miocene non-marine unit (gravel facies).
- Tts = Tesla Formation.
- UTnbs<sub>1</sub> = Upper member of the Neroly lower blue sandstone, above claystone marker bed.
- WBR = Weathered bedrock.

## Requested Analyses

- AS:UIISO = 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:UIISO = Uranium isotopes performed by mass spectrometry.
- T26METALS:ALL = Title 26 metals.
- TBOS:ALL = Tetrabutylorthosilicate/ Tetrakis (2-ethylbutyl) silane.

**Table Summ-1. Mass removed, January 1, 2012 through June 30, 2012.**

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	1,024	NA	82	NA	NA	NA	NA	NA
CGSA SVTS	NA	7,699	220	NA	NA	NA	NA	NA
834 GWTS	60	NA	680	NA	16	NA	0.019	NA
834 SVTS	NA	22,478	9,600	NA	NA	NA	NA	NA
815-SRC GWTS	431	NA	12	4.1	150	99	NA	NA
815-PRX GWTS	415	NA	45	10	130	NA	NA	NA
815-DSB GWTS	571	NA	22	NA	NA	NA	NA	NA
817-SRC GWTS	5	NA	0	0.50	1.5	0.88	NA	NA
817-PRX GWTS	532	NA	20	29	180	6.8	NA	NA
829-SRC GWTS	<1	NA	0.039	0.025	0.14	NA	NA	NA
PIT7-SRC GWTS	31	NA	0.17	1.8	4.6	NA	NA	2.6
854-SRC GWTS	624	NA	93	2.8	110	NA	NA	NA
854-SRC SVTS	NA	8,406	440	NA	NA	NA	NA	NA
854-PRX GWTS	266	NA	22	8.8	40	NA	NA	NA
854-DIS GWTS	7	NA	1.0	0.14	0.58	NA	NA	NA
832-SRC GWTS	24	NA	7.0	0.38	9.3	NA	NA	NA
832-SRC SVTS	NA	955	28	NA	NA	NA	NA	NA
830-SRC GWTS	821	NA	580	0.99	82	NA	NA	NA
830-SRC SVTS	NA	7,277	460	NA	NA	NA	NA	NA
830-DISS GWTS	483	NA	30	3.6	130	NA	NA	NA
<b>Total</b>	<b>5,294</b>	<b>46,816</b>	<b>12,000</b>	<b>62</b>	<b>850</b>	<b>110</b>	<b>0.019</b>	<b>2.6</b>

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, HSU undergoes in situ biotransformation to benign N<sub>2</sub> gas by anaerobic denitrifying bacteria. Nitrate mass removal is calculated assuming complete removal of nitrate from treated ground water. At Pit 7, re-injected effluent may contain nitrate concentrations below the discharge limit but above the detection limit. Thus, nitrate mass removal calculations at Pit 7 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	23,697	NA	26	NA	NA	NA	NA	NA
CGSA SVTS	NA	154,154	77	NA	NA	NA	NA	NA
834 GWTS	1,140	NA	45	NA	290	NA	9.5	NA
834 SVTS	NA	339,811	340	NA	NA	NA	NA	NA
815-SRC GWTS*	6,218	NA	0.15	260	2,200	1.6	NA	NA
815-PRX GWTS*	7,531	NA	0.82	180	2,200	NA	NA	NA
815-DSB GWTS	14,965	NA	0.56	NA	NA	NA	NA	NA
817-SRC GWTS*	39	NA	0	3.9	12	0.0067	NA	NA
817-PRX GWTS*	4,156	NA	0.17	360	1,500	0.11	NA	NA
829-SRC GWTS	6	NA	0.00037	0.19	1.5	NA	NA	NA
PIT7-SRC GWTS	158	NA	0.0027	7.3	22	NA	NA	0.015
854-SRC GWTS	10,253	NA	5.6	160	1,900	NA	NA	NA
854-SRC SVTS	NA	89,388	12	NA	NA	NA	NA	NA
854-PRX GWTS	3,619	NA	0.67	150	610	NA	NA	NA
854-DIS GWTS	55	NA	0.0072	0.96	4.3	NA	NA	NA
832-SRC GWTS	821	NA	0.26	21	320	NA	NA	NA
832-SRC SVTS	NA	22,870	2.0	NA	NA	NA	NA	NA
830-SRC GWTS	9,825	NA	6.3	19	750	NA	NA	NA
830-SRC SVTS	NA	61,198	52	NA	NA	NA	NA	NA
830-PRXN GWTS	1,949	NA	0.26	NA	22	NA	NA	NA
830-DISS GWTS	7,791	NA	1.5	65	1,900	NA	NA	NA
<b>Total</b>	<b>401,603</b>	<b>667,422</b>	<b>580</b>	<b>1,200</b>	<b>12,000</b>	<b>1.7</b>	<b>9.5</b>	<b>0.015</b>

Notes:

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 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 HSU undergoes in situ biotransformation to benign N<sub>2</sub> gas by anaerobic denitrifying bacteria. Nitrate mass removal is calculated assuming complete removal of nitrate from treated ground water. At Pit 7, re-injected effluent may contain nitrate concentrations below the discharge limit but above the detection limit. Thus, nitrate mass removal calculations at Pit 7 are overestimated.

**Table 2.1-1. Central General Services Area (CGSA) volumes of ground water and soil vapor extracted and discharged, January 1, 2012 through June 30, 2012.**

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
CGSA	January	0	312	0	36,697
	February	576	672	1,300	244,269
	March	696	696	1,618	259,338
	April	768	648	1,748	267,493
	May	744	312	1,623	85,677
	June	624	408	1,409	130,668
<b>Total</b>		<b>3,408</b>	<b>3,048</b>	<b>7,698</b>	<b>1,024,142</b>

**Table 2.1-2. Central 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	1/23/12	58	4.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.96	<0.5	<0.5	0.52	<0.5	<0.5
CGSA-I	4/2/12	17	0.71	<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-I <sup>a</sup>	4/2/12 DUP	19	0.75	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	1/23/12	<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	2/13/12	<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	3/7/12	<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	4/2/12	<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	5/14/12	<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	6/5/12	<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:

<sup>a</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.

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

**Table 2.1-2 (Cont.). Analyte detected but not reported in main table.**

Location	Date	Detection frequency
CGSA-I	1/23/12	0 of 18
CGSA-I	4/2/12	0 of 18
CGSA-I <sup>a</sup>	4/2/12 DUP	0 of 18
CGSA-E	1/23/12	0 of 18
CGSA-E	2/13/12	0 of 18
CGSA-E	3/7/12	0 of 18
CGSA-E	4/2/12	0 of 18
CGSA-E	5/14/12	0 of 18
CGSA-E <sup>a</sup>	6/5/12	0 of 18

Notes:

<sup>a</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.

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
<i>CGSA GWTS</i>			
Influent Port	CGSA-I	VOCs	Quarterly
		pH	Quarterly
Effluent Port	CGSA-E	VOCs	Monthly
		pH	Monthly
<i>834 SVTS</i>			
Influent Port	CGSA-VI	No Monitoring Requirements	
Effluent Port	CGSA-VE	VOCs	Weekly <sup>a</sup>
Intermediate GAC	CGSA-VCF4I	VOCs	Weekly <sup>a</sup>

**Notes:**

<sup>a</sup> 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. Central General Services 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-35A-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-35A-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-35A-02	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-35A-02	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-35A-03	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-35A-03	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-35A-04	PTMW	Qt-Tnsc1	A	WGMG	E502.2:ALL	4		
W-35A-04	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-35A-04	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-35A-05	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-35A-05	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-35A-06	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-35A-06	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-35A-07	PTMW	LTnbs1	S	CMP	E601:ALL	2	Y	
W-35A-07	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-35A-08	GW	Qt-Tnsc1	Q	CMP	E601:ALL	1	Y	
W-35A-08	GW	Qt-Tnsc1	Q	CMP	E601:ALL	2	Y	
W-35A-08	GW	Qt-Tnsc1	Q	CMP	E601:ALL	3		
W-35A-08	GW	Qt-Tnsc1	Q	CMP	E601:ALL	4		
W-35A-09	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	N	Inoperable pump.
W-35A-09	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-35A-10	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	N	Inoperable pump.
W-35A-10	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-35A-11	PTMW	LTnbs1	S	CMP	E601:ALL	2	Y	
W-35A-11	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-35A-12	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-35A-12	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-35A-13	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-35A-13	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-35A-14	GW	Qt-Tnsc1	Q	CMP	E601:ALL	1	Y	
W-35A-14	GW	Qt-Tnsc1	Q	CMP	E601:ALL	2	Y	
W-35A-14	GW	Qt-Tnsc1	Q	CMP	E601:ALL	3		
W-35A-14	GW	Qt-Tnsc1	Q	CMP	E601:ALL	4		
W-7A	PTMW	UTnbs1	S	CMP	E601:ALL	2	N	Inoperable pump.
W-7A	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-7B	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-7B	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-7C	PTMW	UTnbs1	S	CMP	E601:ALL	2	N	Inoperable pump.
W-7C	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-7E	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-7E	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-7ES	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-7ES	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-7F	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-7F	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-7G	PTMW	LTnbs1	S	CMP	E601:ALL	2	Y	
W-7G	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-7H	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-7H	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		

**Table 2.1-4. Central General Services 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-7I	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Insufficient water to collect sample.
W-7I	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	Y	
W-7I	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-7I	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-7J	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-7J	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-7K	PTMW	LTnbs1	S	CMP	E601:ALL	2	Y	
W-7K	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-7L	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-7L	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-7M	PTMW	LTnbs1	S	CMP	E601:ALL	2	Y	
W-7M	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-7N	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-7N	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-7O	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	Y	
W-7O	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	Y	
W-7O	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-7O	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-7P	EW	Qal-Tnbs1	S	DIS-TF	E601:ALL	1	Y	
W-7P	EW	Qal-Tnbs1	S	CMP-TF	E601:ALL	2	Y	
W-7P	EW	Qal-Tnbs1	S	DIS-TF	E601:ALL	3		
W-7P	EW	Qal-Tnbs1	S	CMP-TF	E601:ALL	4		
W-7PS	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	2	Y	
W-7PS	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	4		
W-7Q	PTMW	Qt-Tnsc1	S	DIS	E601:ALL	2	Y	
W-7Q	PTMW	Qt-Tnsc1	S	DIS	E601:ALL	4		
W-7R	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	Y	
W-7R	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	Y	
W-7R	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-7R	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-7S	PTMW	Qt-Tnsc1	S	DIS	E601:ALL	2	Y	
W-7S	PTMW	Qt-Tnsc1	S	DIS	E601:ALL	4		
W-7T	PTMW	Qt-Tnsc1	S	DIS	E601:ALL	2	Y	
W-7T	PTMW	Qt-Tnsc1	S	DIS	E601:ALL	4		
W-843-01	PTMW	LTnbs1	S	CMP	E601:ALL	2	Y	
W-843-01	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-843-02	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-843-02	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-872-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	N	Dry.
W-872-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-872-02	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	Y	
W-872-02	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	Y	
W-872-02	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-872-02	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-873-01	PTMW	LTnbs1	S	CMP	E601:ALL	2	Y	
W-873-01	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-873-02	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-873-02	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-873-03	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	

**Table 2.1-4. Central General Services 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-873-03	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-873-04	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-873-04	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-873-06	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-873-06	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-873-07	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	Y	
W-873-07	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	Y	
W-873-07	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-873-07	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-875-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-875-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-875-02	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-875-02	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-875-03	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-875-03	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-875-04	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-875-04	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-875-05	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-875-05	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-875-06	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-875-06	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-875-07	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	Y	
W-875-07	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	Y	
W-875-07	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-875-07	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-875-08	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	Y	
W-875-08	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	Y	
W-875-08	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-875-08	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-875-09	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Insufficient water to collect sample.
W-875-09	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	N	Dry.
W-875-09	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-875-09	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-875-10	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Insufficient water to collect sample.
W-875-10	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	N	Dry.
W-875-10	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-875-10	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-875-11	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Insufficient water to collect sample.
W-875-11	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	N	Insufficient water to collect sample.
W-875-11	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-875-11	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-875-15	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Insufficient water to collect sample.
W-875-15	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	N	Dry.
W-875-15	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-875-15	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-876-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	

**Table 2.1-4. Central General Services Area ground water sampling and analysis plan.**

<b>Sample Location</b>	<b>Location Type</b>	<b>Hydro Unit</b>	<b>Sampling Frequency</b>	<b>Sample Driver</b>	<b>Requested Analysis</b>	<b>Sampling Quarter</b>	<b>Sampled Y/N</b>	<b>Comment</b>
W-876-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-879-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-879-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-889-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-889-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-CGSA-1732	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	N	Insufficient water to collect sample.
W-CGSA-1732	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-CGSA-1733	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	N	Insufficient water to collect sample.
W-CGSA-1733	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-CGSA-1735	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	2	N	Insufficient water to collect sample.
W-CGSA-1735	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	4		
W-CGSA-1736	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	2	N	Partial Sample due to insufficient Water.
W-CGSA-1736	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	4		
W-CGSA-1737	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	2	Y	
W-CGSA-1737	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	4		
W-CGSA-1739	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-CGSA-1739	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		

**Table 2.1-5. Eastern General Services 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
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	E601:ALL	2	Y	
CDF1	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CDF1	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CDF1	WS	LTnbs1	M	CMP	E601:ALL	3		
CDF1	WS	LTnbs1	M	CMP	E601:ALL	3		
CDF1	WS	LTnbs1	M	CMP	E601:ALL	3		
CDF1	WS	LTnbs1	M	CMP	E601:ALL	4		
CDF1	WS	LTnbs1	M	CMP	E601:ALL	4		
CDF1	WS	LTnbs1	M	CMP	E601: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	E601:ALL	2	Y	
CON1	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CON1	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CON1	WS	LTnbs1	M	CMP	E601:ALL	3		
CON1	WS	LTnbs1	M	CMP	E601:ALL	3		
CON1	WS	LTnbs1	M	CMP	E601:ALL	3		
CON1	WS	LTnbs1	M	CMP	E601:ALL	4		
CON1	WS	LTnbs1	M	CMP	E601:ALL	4		
CON1	WS	LTnbs1	M	CMP	E601: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	E601:ALL	1	Y	
CON2	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CON2	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CON2	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CON2	WS	LTnbs1	M	CMP	E601:ALL	3		
CON2	WS	LTnbs1	M	CMP	E601:ALL	3		
CON2	WS	LTnbs1	M	CMP	E601:ALL	3		
CON2	WS	LTnbs1	M	CMP	E601:ALL	4		
CON2	WS	LTnbs1	M	CMP	E601:ALL	4		
CON2	WS	LTnbs1	M	CMP	E601:ALL	4		
W-24P-03	PTMW	Qal-Tnbs1	Q	DIS	AS:UISO	2	Y	
W-24P-03	PTMW	Qal-Tnbs1	Q	DIS	E601:ALL	1	Y	
W-24P-03	PTMW	Qal-Tnbs1	Q	DIS	E9060:ALL	2	Y	
W-24P-03	PTMW	Qal-Tnbs1	Q	DIS	GENMIN:ALL	2	Y	
W-25D-01	PTMW	Qal-Tnbs1	A	PSDMP	E601:ALL	1	Y	
W-25D-02	PTMW	Qal-Tnbs1	A	PSDMP	E601:ALL	1	Y	
W-25M-01	PTMW	Qal-Tnbs1	A	PSDMP	E601:ALL	1	Y	
W-25M-02	PTMW	Qal-Tnbs1	A	PSDMP	E601:ALL	1	Y	
W-25M-03	PTMW	Qal-Tnbs1	A	PSDMP	E601:ALL	1	Y	
W-25N-01	PTMW	Qal-Tnbs1	A	DIS	E200.8:AG	1	Y	
W-25N-01	PTMW	Qal-Tnbs1	A	DIS	E200.8:AS	1	Y	

**Table 2.1-5. Eastern General Services 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-25N-01	PTMW	Qal-Tnbs1	A	DIS	E200.8:BA	1	Y	
W-25N-01	PTMW	Qal-Tnbs1	A	DIS	E200.8:CD	1	Y	
W-25N-01	PTMW	Qal-Tnbs1	A	DIS	E200.8:CR	1	Y	
W-25N-01	PTMW	Qal-Tnbs1	A	DIS	E200.8:PB	1	Y	
W-25N-01	PTMW	Qal-Tnbs1	A	DIS	E200.8:SE	1	Y	
W-25N-01	PTMW	Qal-Tnbs1	A	DIS	E245.2:ALL	1	Y	
W-25N-01	PTMW	Qal-Tnbs1	S	PSDMP	E601:ALL	1	Y	
W-25N-01	PTMW	Qal-Tnbs1	A	DIS	GENMIN:ALL	1	Y	
W-25N-04	PTMW	LTnbs1	A	DIS	E200.8:AG	1	Y	
W-25N-04	PTMW	LTnbs1	A	DIS	E200.8:AS	1	Y	
W-25N-04	PTMW	LTnbs1	A	DIS	E200.8:BA	1	Y	
W-25N-04	PTMW	LTnbs1	A	DIS	E200.8:CD	1	Y	
W-25N-04	PTMW	LTnbs1	A	DIS	E200.8:CR	1	Y	
W-25N-04	PTMW	LTnbs1	A	DIS	E200.8:PB	1	Y	
W-25N-04	PTMW	LTnbs1	A	DIS	E200.8:SE	1	Y	
W-25N-04	PTMW	LTnbs1	A	DIS	E245.2:ALL	1	Y	
W-25N-04	PTMW	LTnbs1	A	PSDMP	E601:ALL	1	Y	
W-25N-04	PTMW	LTnbs1	A	DIS	GENMIN:ALL	1	Y	
W-25N-05	PTMW	Qal-Tnbs1	S	PSDMP	E601:ALL	1	Y	
W-25N-06	PTMW	Qal-Tnbs1	A	PSDMP	E601:ALL	1	Y	
W-25N-07	GW	Qal-Tnbs1	Q	PSDMP	E601:ALL	1	Y	
W-25N-08	PTMW	LTnbs1	A	PSDMP	E601:ALL	1	Y	
W-25N-09	PTMW	LTnbs1	A	PSDMP	E601:ALL	1	Y	
W-25N-10	GW	LTnbs1	Q	PSDMP	E601:ALL	1	Y	
W-25N-11	GW	LTnbs1	Q	PSDMP	E601:ALL	1	Y	
W-25N-12	GW	LTnbs1	Q	PSDMP	E601:ALL	1	Y	
W-25N-13	GW	LTnbs1	Q	PSDMP	E601:ALL	1	Y	
W-25N-15	PTMW	Qal-Tnbs1	A	PSDMP	E601:ALL	1	N	Inoperable pump.
W-25N-18	PTMW	LTnbs1	A	PSDMP	E601:ALL	1	Y	
W-25N-20	PTMW	Qal-Tnbs1	A	PSDMP	E601:ALL	1	N	No access.
W-25N-21	PTMW	LTnbs1	A	DIS	E200.8:AG	1	Y	
W-25N-21	PTMW	LTnbs1	A	DIS	E200.8:AS	1	Y	
W-25N-21	PTMW	LTnbs1	A	DIS	E200.8:BA	1	Y	
W-25N-21	PTMW	LTnbs1	A	DIS	E200.8:CD	1	Y	
W-25N-21	PTMW	LTnbs1	A	DIS	E200.8:CR	1	Y	
W-25N-21	PTMW	LTnbs1	A	DIS	E200.8:PB	1	Y	
W-25N-21	PTMW	LTnbs1	A	DIS	E200.8:SE	1	Y	
W-25N-21	PTMW	LTnbs1	A	DIS	E245.2:ALL	1	Y	
W-25N-21	PTMW	LTnbs1	A	PSDMP	E601:ALL	1	Y	
W-25N-21	PTMW	LTnbs1	A	DIS	GENMIN:ALL	1	Y	
W-25N-22	PTMW	Qal-Tnbs1	A	PSDMP	E601:ALL	1	Y	
W-25N-23	PTMW	Qal-Tnbs1	S	PSDMP	E601:ALL	1	Y	
W-25N-24	PTMW	Qal-Tnbs1	A	DIS	E200.8:AG	1	Y	
W-25N-24	PTMW	Qal-Tnbs1	A	DIS	E200.8:AS	1	Y	
W-25N-24	PTMW	Qal-Tnbs1	A	DIS	E200.8:BA	1	Y	
W-25N-24	PTMW	Qal-Tnbs1	A	DIS	E200.8:CD	1	Y	
W-25N-24	PTMW	Qal-Tnbs1	A	DIS	E200.8:CR	1	Y	
W-25N-24	PTMW	Qal-Tnbs1	A	DIS	E200.8:PB	1	Y	
W-25N-24	PTMW	Qal-Tnbs1	A	DIS	E200.8:SE	1	Y	
W-25N-24	PTMW	Qal-Tnbs1	A	DIS	E245.2:ALL	1	Y	

**Table 2.1-5. Eastern General Services Area ground water sampling and analysis plan.**

<b>Sample Location</b>	<b>Location Type</b>	<b>Hydro Unit</b>	<b>Sampling Frequency</b>	<b>Sample Driver</b>	<b>Requested Analysis</b>	<b>Sampling Quarter</b>	<b>Sampled Y/N</b>	<b>Comment</b>
W-25N-24	PTMW	Qal-Tnbs1	S	PSDMP	E601:ALL	1	Y	
W-25N-24	PTMW	Qal-Tnbs1	A	DIS	GENMIN:ALL	1	Y	
W-25N-25	PTMW	UTnbs1	A	PSDMP	E601:ALL	1	Y	
W-25N-26	PTMW	LTnbs1	A	PSDMP	E601:ALL	1	Y	
W-25N-28	PTMW	LTnbs1	A	PSDMP	E601:ALL	1	Y	
W-26R-01	PTMW	Qal-Tnbs1	S	WGMG	E300.0:NO3	2	Y	
W-26R-01	PTMW	Qal-Tnbs1	S	PSDMP	E601:ALL	1	Y	
W-26R-02	PTMW	LTnbs1	A	PSDMP	E601:ALL	1	Y	
W-26R-03	PTMW	Qal-Tnbs1	A	DIS	E200.8:AG	1	Y	
W-26R-03	PTMW	Qal-Tnbs1	A	DIS	E200.8:AS	1	Y	
W-26R-03	PTMW	Qal-Tnbs1	A	DIS	E200.8:BA	1	Y	
W-26R-03	PTMW	Qal-Tnbs1	A	DIS	E200.8:CD	1	Y	
W-26R-03	PTMW	Qal-Tnbs1	A	DIS	E200.8:CR	1	Y	
W-26R-03	PTMW	Qal-Tnbs1	A	DIS	E200.8:PB	1	Y	
W-26R-03	PTMW	Qal-Tnbs1	A	DIS	E200.8:SE	1	Y	
W-26R-03	PTMW	Qal-Tnbs1	A	DIS	E245.2:ALL	1	Y	
W-26R-03	PTMW	Qal-Tnbs1	S	PSDMP	E601:ALL	1	Y	
W-26R-03	PTMW	Qal-Tnbs1	A	DIS	GENMIN:ALL	1	Y	
W-26R-04	PTMW	Qal-Tnbs1	Q	DIS	AS:UIISO	2	Y	
W-26R-04	PTMW	Qal-Tnbs1	S	PSDMP	E601:ALL	1	Y	
W-26R-04	PTMW	Qal-Tnbs1	Q	DIS	E9060:ALL	2	Y	
W-26R-04	PTMW	Qal-Tnbs1	Q	DIS	GENMIN:ALL	2	Y	
W-26R-05	PTMW	Qal-Tnbs1	S	PSDMP	E601:ALL	1	Y	
W-26R-06	PTMW	Qal-Tnbs1	S	PSDMP	E601:ALL	1	Y	
W-26R-06	PTMW	Qal-Tnbs1	S	PSDMP	E601:ALL	3		
W-26R-07	PTMW	LTnbs1	A	PSDMP	E601:ALL	1	Y	
W-26R-08	PTMW	LTnbs1	A	PSDMP	E601:ALL	1	Y	
W-26R-11	PTMW	Qal-Tnbs1	S	DIS	E601:ALL	1	Y	
W-26R-11	PTMW	Qal-Tnbs1	S	DIS	E601:ALL	3		
W-7D	PTMW	LTnbs1	A	PSDMP	E601:ALL	1	Y	
W-7DS	PTMW	Qal-Tnbs1	A	PSDMP	E601:ALL	1	Y	
W-7DS	PTMW	Qal-Tnbs1	S	DIS	E601:ALL	3		

**Table 2.1-6. Central General Services Area (CGSA) mass removed, January 1, 2012 through June 30, 2012.**

<b>Treatment facility</b>	<b>Month</b>	<b>SVTS VOC mass removed (g)</b>	<b>GWTS VOC mass removed (g)</b>	<b>Perchlorate mass removed (g)</b>	<b>Nitrate mass removed (kg)</b>	<b>RDX mass removed (g)</b>	<b>TBOS/TKEBS mass removed (g)</b>
<b>CGSA</b>	<b>January</b>	<b>0</b>	<b>2.9</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
	<b>February</b>	<b>85</b>	<b>28</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
	<b>March</b>	<b>34</b>	<b>24</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
	<b>April</b>	<b>36</b>	<b>11</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
	<b>May</b>	<b>34</b>	<b>8.5</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
	<b>June</b>	<b>36</b>	<b>8.1</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
<b>Total</b>		<b>220</b>	<b>82</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>



**Table 2.2-1. Building 834 (834) volumes of ground water and soil vapor extracted and discharged, January 1, 2012 through June 30, 2012.**

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	474	475	2,905	7,515
	March	671	671	4,182	11,931
	April	792	792	5,768	14,809
	May	696	696	5,015	13,372
	June	649	649	4,607	11,898
<b>Total</b>		<b>3,282</b>	<b>3,283</b>	<b>22,477</b>	<b>59,525</b>

**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 ( $\mu\text{g/L}$ )	PCE ( $\mu\text{g/L}$ )	Carbon		Chloro- form ( $\mu\text{g/L}$ )	1,1-DCA ( $\mu\text{g/L}$ )	1,2-DCA ( $\mu\text{g/L}$ )	1,1-DCE ( $\mu\text{g/L}$ )	1,1,1- TCA ( $\mu\text{g/L}$ )	1,1,2- TCA ( $\mu\text{g/L}$ )	Freon 11 ( $\mu\text{g/L}$ )	Freon 113 ( $\mu\text{g/L}$ )	Vinyl chloride ( $\mu\text{g/L}$ )
				cis-1,2- DCE ( $\mu\text{g/L}$ )	trans-1,2- DCE ( $\mu\text{g/L}$ )									
834-I	2/15/12	2,000 D	7.5 D	640 D	<5 D	<5 D	<5 D	<5 D	<5 D	<5 D	<5 D	<5 D	<5 D	<5 D
834-I	4/2/12	2,300 D	23	330 D	<25 D	<0.5	0.55	<0.5	<0.5	0.9	<0.5	0.87	<0.5	<0.5
834-I <sup>a</sup>	4/2/12 DUP	2,500 D	27	332 D	4.4	<0.5	0.6	<0.5	<0.5	1.2	<0.5	1	0.8	<0.5
834-E	2/15/12	<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	3/5/12	<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	4/2/12	<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	5/2/12	<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	6/4/12	<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:

<sup>a</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.

No samples collected in January due to GWTS 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 (Cont.). Analyte detected but not reported in main table.**

Location	Date	Detection frequency	1,2-DCE (total) ( $\mu\text{g/L}$ )
834-I	2/15/12	1 of 18	640 D
834-I	4/2/12	1 of 18	330 D
834-I <sup>a</sup>	4/2/12 DUP	1 of 18	289
834-E	2/15/12	0 of 18	–
834-E	3/5/12	0 of 18	–
834-E	4/2/12	0 of 18	–
834-E	5/2/12	0 of 18	–
834-E <sup>a</sup>	6/4/12	0 of 18	–

Notes:

<sup>a</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.

No samples collected in January due to GWTS 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.**

<b>Location</b>	<b>Date</b>	<b>Diesel Range Organics (C12-C24) (<math>\mu\text{g/L}</math>)</b>
834-I	2/15/12	210
834-I	4/2/12	<200
834-I <sup>a</sup>	4/2/12 DUP	– <sup>b</sup>
834-E	2/15/12	<200
834-E	3/5/12	<200
834-E	4/2/12	<200
834-E	5/2/12	<200
834-E	6/4/12	<200

**Notes:**

<sup>a</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.

<sup>b</sup> Duplicate result reported incorrectly from contract laboratory; revised result not available at this time.

No samples collected in January due to GWTS 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 ( $\mu\text{g/L}$ )
834-I	2/15/12	<10
834-I	4/2/12	<10
834-I <sup>a</sup>	4/2/12 DUP	<10
834-E	2/15/12	<10
834-E	3/5/12	<10
834-E	4/2/12	<10
834-E	5/2/12	<10
834-E	6/4/12	<10

**Notes:**

<sup>a</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.

No samples collected in January due to GWTS 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
<i>834 GWTS</i>			
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
<i>834 SVTS</i>			
Influent Port	834-VI	No Monitoring Requirements	
Effluent Port	834-VE	VOCs	Weekly <sup>a</sup>
Intermediate GAC	834-VCF4I	VOCs	Weekly <sup>a</sup>

**Notes:**

<sup>a</sup> 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	E601: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	Y	
W-834-1711	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	Y	
W-834-1711	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	3		
W-834-1711	PTMW	Tps-Tnsc2	A	CMP	TBOS:ALL	1	Y	
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	E601:ALL	3		
W-834-1824	PTMW	Tpsg	Q	DIS	LITEHCS:ALL	2	Y	
W-834-1824	PTMW	Tpsg	E	CMP	TBOS:ALL	1	Y	
W-834-1825	PTMW	Tpsg	A	DIS	E200.7:FE	1	Y	
W-834-1825	PTMW	Tpsg	A	DIS	E200.8:MN	1	Y	
W-834-1825	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-1825	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-1825	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-1825	PTMW	Tpsg	Q	DIS	LITEHCS:ALL	2	Y	
W-834-1825	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	To be sampled in 2013.
W-834-1833	PTMW	Tpsg	A	DIS	E200.7:FE	1	Y	
W-834-1833	PTMW	Tpsg	A	DIS	E200.8:MN	1	Y	
W-834-1833	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-1833	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-1833	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-1833	PTMW	Tpsg	Q	DIS	LITEHCS:ALL	2	Y	
W-834-1833	PTMW	Tpsg	E	CMP	TBOS:ALL	1	Y	
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	CMP-TF	E601:ALL	3		
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	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	E601:ALL	3		
W-834-2113	PTMW	Tpsg	E	CMP	TBOS:ALL	1	Y	
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	E601:ALL	3		
W-834-2117	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	To be sampled in 2013.
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	DIS	E300.0:PERC	3		
W-834-2118	PTMW	Tpsg	S	CMP	E601: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-834-2118	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-2118	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	To be sampled in 2013.
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	E601:ALL	3		
W-834-2119	PTMW	Tps-Tnsc2	E	CMP	TBOS:ALL	1	Y	
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	E601:ALL	3		
W-834-A1	PTMW	Tps-Tnsc2	E	DIS	EM8015:DRANGE	1	Y	
W-834-A1	PTMW	Tps-Tnsc2	A	CMP	TBOS:ALL	1	Y	
W-834-A2	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-A2	PTMW	Tpsg	S	DIS	E300.0:PERC	1	N	Dry.
W-834-A2	PTMW	Tpsg	S	DIS	E300.0:PERC	3		
W-834-A2	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-A2	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-A2	PTMW	Tpsg	O	DIS	EM8015:DRANGE	1	N	To be sampled in 2013.
W-834-A2	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
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	E601:ALL	2	Y	
W-834-B2	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-B2	EW	Tpsg	S	DIS-TF	E601: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	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	E601:ALL	2	Y	
W-834-B3	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-B3	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-B3	EW	Tpsg	Q	DIS-TF	LITEHCS:ALL	2	Y	
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	N	Dry.
W-834-B4	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-B4	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-B4	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-C2	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-C2	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-C2	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-C2	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
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	E601:ALL	3		
W-834-C4	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-C5	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-C5	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-C5	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-C5	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-D2	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	N	Dry.

**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-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	E601:ALL	3		
W-834-D3	PTMW	Tpsg	Q	DIS	LITEHCS:ALL	2	Y	
W-834-D3	PTMW	Tpsg	A	CMP	TBOS:ALL	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	E601:ALL	2	Y	
W-834-D4	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-D4	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-D4	EW	Tpsg	Q	DIS-TF	LITEHCS:ALL	2	Y	
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	E601:ALL	3		
W-834-D5	EW	Tpsg	Q	DIS-TF	LITEHCS:ALL	2	Y	
W-834-D5	EW	Tpsg	A	CMP-TF	TBOS:ALL	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	E601:ALL	2	Y	
W-834-D6	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-D6	EW	Tpsg	S	DIS-TF	E601: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	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	E601:ALL	2	Y	
W-834-D7	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-D7	EW	Tpsg	S	DIS-TF	E601: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	Insufficient water to collect sample.
W-834-D10	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	N	Insufficient water to collect sample.
W-834-D10	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	3		
W-834-D10	PTMW	Tps-Tnsc2	O	DIS	EM8015:DRANGE	1	N	To be sampled in 2013.
W-834-D10	PTMW	Tps-Tnsc2	A	CMP	TBOS:ALL	1	N	Insufficient water to collect sample.
W-834-D11	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Insufficient water to collect sample.
W-834-D11	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Insufficient water to collect sample.
W-834-D11	PTMW	Tpsg	S	CMP	E601: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	E	DIS	EM8015:DRANGE	1	N	Insufficient water to collect sample.
W-834-D11	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Insufficient water to collect sample.
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	E601:ALL	2	Y	
W-834-D12	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-D12	EW	Tpsg	S	DIS-TF	E601: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	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	E601:ALL	2	Y	
W-834-D13	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-D13	EW	Tpsg	S	DIS-TF	E601: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	E601:ALL	3		
W-834-D14	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-D15	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Insufficient water to collect sample.
W-834-D15	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Insufficient water to collect sample.
W-834-D15	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-D15	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Insufficient water to collect sample.
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	E601:ALL	3		
W-834-D16	PTMW	Tpsg	O	DIS	EM8015:DRANGE	1	N	To be sampled in 2013.
W-834-D16	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-D17	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-D17	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-D17	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-D17	PTMW	Tpsg	O	DIS	EM8015:DRANGE	1	N	To be sampled in 2013.
W-834-D17	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-D18	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-D18	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-D18	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-D18	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
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	Insufficient water to collect sample.
W-834-H2	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Insufficient water to collect sample.
W-834-H2	PTMW	Tpsg	S	CMP	E601: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-H2	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Insufficient water to collect sample.
W-834-J1	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-J1	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-J1	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-J1	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-J1	EW	Tpsg	S	DIS-TF	E601: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	E601:ALL	3		
W-834-J2	PTMW	Tpsg	Q	DIS	LITEHCS:ALL	2	Y	
W-834-J2	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-J3	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-J3	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-J3	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-J3	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	To be sampled in 2013.
W-834-K1A	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-K1A	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-K1A	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-K1A	PTMW	Tpsg	E	DIS	EM8015:DRANGE	1	N	Dry.
W-834-K1A	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
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	E601:ALL	3		
W-834-M1	PTMW	Tpsg	E	CMP	TBOS:ALL	1	Y	
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	E601:ALL	3		
W-834-M2	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	Dry.
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	E601:ALL	2	Y	
W-834-S1	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-S1	EW	Tpsg	S	DIS-TF	E601: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	E	DIS	EM8015:DRANGE	1	N	Dry.
W-834-S10	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
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	E601:ALL	2	Y	
W-834-S12A	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-S12A	EW	Tpsg	S	DIS-TF	E601: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	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	E601:ALL	2	Y	
W-834-S13	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-S13	EW	Tpsg	S	DIS-TF	E601: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	E601:ALL	3		
W-834-S4	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	To be sampled in 2013.
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	E601:ALL	3		
W-834-S5	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	To be sampled in 2013.
W-834-S6	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-S6	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-S6	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-S6	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	Dry.
W-834-S7	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-S7	PTMW	Tpsg	S	DIS	E300.0:PERC	1	N	Dry.
W-834-S7	PTMW	Tpsg	S	DIS	E300.0:PERC	3		
W-834-S7	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-S7	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-S7	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	Dry.
W-834-S8	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-834-S8	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	Y	
W-834-S8	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	3		
W-834-S8	PTMW	Tps-Tnsc2	O	DIS	EM8015:DRANGE	1	N	To be sampled in 2013.
W-834-S8	PTMW	Tps-Tnsc2	O	CMP	TBOS:ALL	1	N	To be sampled in 2013.
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	E601:ALL	3		
W-834-S9	PTMW	Tps-Tnsc2	E	DIS	EM8015:DRANGE	1	Y	
W-834-S9	PTMW	Tps-Tnsc2	E	CMP	TBOS:ALL	1	Y	
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	E601:ALL	2	Y	
W-834-T1	GW	LTnbs1	Q	CMP	E601:ALL	3		
W-834-T1	GW	LTnbs1	Q	CMP	E601:ALL	4		
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	E601:ALL	3		
W-834-T11	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	Dry.
W-834-T2	PTMW	Tpsg	A	DIS	E200.7:FE	1	Y	
W-834-T2	PTMW	Tpsg	A	DIS	E200.8:MN	1	Y	
W-834-T2	PTMW	Tpsg	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-T2	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-T2	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-T2	PTMW	Tpsg	Q	DIS	LITEHCS:ALL	2	Y	
W-834-T2	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	To be sampled in 2013.
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	E601:ALL	3		
W-834-T2A	PTMW	Tpsg	E	CMP	TBOS:ALL	1	Y	
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	E601:ALL	3		
W-834-T2B	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	To be sampled in 2013.
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	E601:ALL	3		
W-834-T2C	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	Dry.
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	E601:ALL	3		
W-834-T2D	PTMW	Tpsg	E	CMP	TBOS:ALL	1	Y	
W-834-T3	GW	LTnbs1	S	CMP	E300.0:NO3	1	Y	
W-834-T3	GW	LTnbs1	S	CMP	E300.0:NO3	3		
W-834-T3	GW	LTnbs1	Q	CMP	E601:ALL	1	Y	
W-834-T3	GW	LTnbs1	Q	CMP	E601:ALL	2	Y	
W-834-T3	GW	LTnbs1	Q	CMP	E601:ALL	3		
W-834-T3	GW	LTnbs1	Q	CMP	E601:ALL	4		
W-834-T3	GW	LTnbs1	S	CMP	TBOS:ALL	1	Y	
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	E601:ALL	3		
W-834-T5	PTMW	Tps-Tnsc2	E	CMP	TBOS:ALL	1	Y	
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	E601:ALL	3		
W-834-T7A	PTMW	Tps-Tnsc2	O	CMP	TBOS:ALL	1	N	To be sampled in 2013.
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	E601:ALL	3		
W-834-T8A	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	To be sampled in 2013.
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	E601:ALL	3		
W-834-T9	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	To be sampled in 2013.
W-834-U1	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	Y	
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, 2012 through June 30, 2012.**

<b>Treatment facility</b>	<b>Month</b>	<b>SVTS VOC mass removed (g)</b>	<b>GWTS VOC mass removed (g)</b>	<b>Perchlorate mass removed (g)</b>	<b>Nitrate mass removed (kg)</b>	<b>RDX mass removed (g)</b>	<b>TBOS/TKEBS mass removed (g)</b>
<b>834</b>	<b>January</b>	<b>0</b>	<b>0</b>	<b>NA</b>	<b>0</b>	<b>NA</b>	<b>0</b>
	<b>February</b>	<b>1,900</b>	<b>92</b>	<b>NA</b>	<b>2.5</b>	<b>NA</b>	<b>0.019</b>
	<b>March</b>	<b>2,700</b>	<b>110</b>	<b>NA</b>	<b>3.0</b>	<b>NA</b>	<b>0</b>
	<b>April</b>	<b>3,800</b>	<b>170</b>	<b>NA</b>	<b>3.9</b>	<b>NA</b>	<b>0</b>
	<b>May</b>	<b>630</b>	<b>160</b>	<b>NA</b>	<b>3.3</b>	<b>NA</b>	<b>0</b>
	<b>June</b>	<b>580</b>	<b>140</b>	<b>NA</b>	<b>2.8</b>	<b>NA</b>	<b>0</b>
<b>Total</b>		<b>9,600</b>	<b>680</b>	<b>NA</b>	<b>16</b>	<b>NA</b>	<b>0.019</b>

**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	E601: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	N	Dry.
BC6-13	PTMW	Qt-Tnbs1	E	CMP	E300.0:PERC	1	N	Dry.
BC6-13	PTMW	Qt-Tnbs1	E	CMP	E601:ALL	1	N	Dry.
BC6-13	PTMW	Qt-Tnbs1	E	CMP	E906:ALL	1	N	Dry.
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: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	M	CMP	E601:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
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		

**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	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		
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		
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	E502.2:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E502.2:ALL	3		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E502.2: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	E601:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601: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
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601: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		
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	
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	E601:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601: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
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	
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	E601:ALL	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906: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
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	Q	WGMG	E300.0:NO3	1	Y	
EP6-06	DMW	LTnbs1	Q	WGMG	E300.0:NO3	2	Y	
EP6-06	DMW	LTnbs1	Q	WGMG	E300.0:NO3	3		
EP6-06	DMW	LTnbs1	Q	WGMG	E300.0:NO3	4		
EP6-06	DMW	LTnbs1	Q	WGMG	E300.0:PERC	1	Y	
EP6-06	DMW	LTnbs1	Q	WGMG	E300.0:PERC	2	Y	
EP6-06	DMW	LTnbs1	Q	WGMG	E300.0:PERC	3		
EP6-06	DMW	LTnbs1	Q	WGMG	E300.0:PERC	4		
EP6-06	DMW	LTnbs1	Q	WGMG	E8260:ALL	1	Y	
EP6-06	DMW	LTnbs1	Q	WGMG	E8260:ALL	2	Y	
EP6-06	DMW	LTnbs1	Q	WGMG	E8260:ALL	3		
EP6-06	DMW	LTnbs1	Q	WGMG	E8260:ALL	4		
EP6-06	DMW	LTnbs1	Q	WGMG	E906:ALL	1	Y	
EP6-06	DMW	LTnbs1	Q	WGMG	E906:ALL	2	Y	
EP6-06	DMW	LTnbs1	Q	WGMG	E906:ALL	3		
EP6-06	DMW	LTnbs1	Q	WGMG	E906:ALL	4		
EP6-07	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
EP6-07	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
EP6-07	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
EP6-07	PTMW	LTnbs1	S	CMP	E601:ALL	3		
EP6-07	PTMW	LTnbs1	S	CMP	E906:ALL	1	Y	
EP6-07	PTMW	LTnbs1	S	CMP	E906:ALL	3		
EP6-08	DMW	Qt-Tnbs1	Q	WGMG	E300.0:NO3	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	Q	WGMG	E300.0:NO3	2	N	Dry.
EP6-08	DMW	Qt-Tnbs1	Q	WGMG	E300.0:NO3	3		
EP6-08	DMW	Qt-Tnbs1	Q	WGMG	E300.0:NO3	4		
EP6-08	DMW	Qt-Tnbs1	Q	WGMG	E300.0:PERC	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	Q	WGMG	E300.0:PERC	2	N	Dry.
EP6-08	DMW	Qt-Tnbs1	Q	WGMG	E300.0:PERC	3		
EP6-08	DMW	Qt-Tnbs1	Q	WGMG	E300.0:PERC	4		
EP6-08	DMW	Qt-Tnbs1	Q	WGMG	E8260:ALL	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	Q	WGMG	E8260:ALL	2	N	Dry.
EP6-08	DMW	Qt-Tnbs1	Q	WGMG	E8260:ALL	3		
EP6-08	DMW	Qt-Tnbs1	Q	WGMG	E8260:ALL	4		
EP6-08	DMW	Qt-Tnbs1	Q	WGMG	E906:ALL	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	Q	WGMG	E906:ALL	2	N	Dry.
EP6-08	DMW	Qt-Tnbs1	Q	WGMG	E906:ALL	3		
EP6-08	DMW	Qt-Tnbs1	Q	WGMG	E906:ALL	4		
EP6-09	DMW	Qt-Tnbs1	Q	WGMG	E300.0:NO3	1	Y	
EP6-09	DMW	Qt-Tnbs1	Q	WGMG	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
EP6-09	DMW	Qt-Tnbs1	Q	WGMG	E300.0:NO3	3		
EP6-09	DMW	Qt-Tnbs1	Q	WGMG	E300.0:NO3	4		
EP6-09	DMW	Qt-Tnbs1	Q	WGMG	E300.0:PERC	1	Y	
EP6-09	DMW	Qt-Tnbs1	Q	WGMG	E300.0:PERC	2	Y	
EP6-09	DMW	Qt-Tnbs1	Q	WGMG	E300.0:PERC	3		
EP6-09	DMW	Qt-Tnbs1	Q	WGMG	E300.0:PERC	4		
EP6-09	DMW	Qt-Tnbs1	Q	WGMG	E8260:ALL	1	Y	
EP6-09	DMW	Qt-Tnbs1	Q	WGMG	E8260:ALL	2	Y	
EP6-09	DMW	Qt-Tnbs1	Q	WGMG	E8260:ALL	3		
EP6-09	DMW	Qt-Tnbs1	Q	WGMG	E8260:ALL	4		
EP6-09	DMW	Qt-Tnbs1	Q	WGMG	E906:ALL	1	Y	
EP6-09	DMW	Qt-Tnbs1	Q	WGMG	E906:ALL	2	Y	
EP6-09	DMW	Qt-Tnbs1	Q	WGMG	E906:ALL	3		
EP6-09	DMW	Qt-Tnbs1	Q	WGMG	E906:ALL	4		
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	S	CMP	E601:ALL	3		
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	Q	WGMG	E300.0:NO3	1	Y	
K6-01S	DMW	Qt-Tnbs1	Q	WGMG	E300.0:NO3	2	Y	
K6-01S	DMW	Qt-Tnbs1	Q	WGMG	E300.0:NO3	3		
K6-01S	DMW	Qt-Tnbs1	Q	WGMG	E300.0:NO3	4		
K6-01S	DMW	Qt-Tnbs1	Q	WGMG	E300.0:PERC	1	Y	
K6-01S	DMW	Qt-Tnbs1	Q	WGMG	E300.0:PERC	2	Y	
K6-01S	DMW	Qt-Tnbs1	Q	WGMG	E300.0:PERC	3		
K6-01S	DMW	Qt-Tnbs1	Q	WGMG	E300.0:PERC	4		
K6-01S	DMW	Qt-Tnbs1	Q	WGMG	E8260:ALL	1	Y	
K6-01S	DMW	Qt-Tnbs1	Q	WGMG	E8260:ALL	2	Y	
K6-01S	DMW	Qt-Tnbs1	Q	WGMG	E8260:ALL	3		
K6-01S	DMW	Qt-Tnbs1	Q	WGMG	E8260:ALL	4		
K6-01S	DMW	Qt-Tnbs1	Q	WGMG	E906:ALL	1	Y	
K6-01S	DMW	Qt-Tnbs1	Q	WGMG	E906:ALL	2	Y	
K6-01S	DMW	Qt-Tnbs1	Q	WGMG	E906:ALL	3		
K6-01S	DMW	Qt-Tnbs1	Q	WGMG	E906:ALL	4		
K6-03	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	N	Dry.
K6-03	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	N	Dry.
K6-03	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	N	Dry.
K6-03	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-03	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	N	Dry.
K6-03	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-04	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	N	Inoperable pump.
K6-04	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	N	Inoperable pump.
K6-04	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	N	Inoperable pump.
K6-04	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-04	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	N	Inoperable pump.
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	

**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
K6-14	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
K6-14	PTMW	LTnbs1	S	CMP	E601: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	E601: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	E601: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	
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	E601:ALL	2	Y	
K6-17	GW	Qt-Tnbs1	Q	CMP	E601:ALL	3		
K6-17	GW	Qt-Tnbs1	Q	CMP	E601: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		
K6-18	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	E601: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	Q	WGMG	E300.0:NO3	1	Y	
K6-19	DMW	Qt-Tnbs1	Q	WGMG	E300.0:NO3	2	Y	
K6-19	DMW	Qt-Tnbs1	Q	WGMG	E300.0:NO3	3		
K6-19	DMW	Qt-Tnbs1	Q	WGMG	E300.0:NO3	4		
K6-19	DMW	Qt-Tnbs1	Q	WGMG	E300.0:PERC	1	Y	
K6-19	DMW	Qt-Tnbs1	Q	WGMG	E300.0:PERC	2	Y	
K6-19	DMW	Qt-Tnbs1	Q	WGMG	E300.0:PERC	3		
K6-19	DMW	Qt-Tnbs1	Q	WGMG	E300.0:PERC	4		
K6-19	DMW	Qt-Tnbs1	Q	WGMG	E8260:ALL	1	Y	
K6-19	DMW	Qt-Tnbs1	Q	WGMG	E8260:ALL	2	Y	
K6-19	DMW	Qt-Tnbs1	Q	WGMG	E8260:ALL	3		
K6-19	DMW	Qt-Tnbs1	Q	WGMG	E8260:ALL	4		
K6-19	DMW	Qt-Tnbs1	Q	WGMG	E906:ALL	1	Y	
K6-19	DMW	Qt-Tnbs1	Q	WGMG	E906:ALL	2	Y	
K6-19	DMW	Qt-Tnbs1	Q	WGMG	E906:ALL	3		
K6-19	DMW	Qt-Tnbs1	Q	WGMG	E906: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
K6-21	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	E601:ALL	2	Y	
K6-22	GW	Qt-Tnbs1	Q	CMP	E601:ALL	3		
K6-22	GW	Qt-Tnbs1	Q	CMP	E601: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	
K6-23	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-23	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-23	PTMW	Qt-Tnbs1	S	CMP	E906: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	E601: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	E601: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	E601:ALL	3		
K6-26	PTMW	LTnbs1	S	CMP	E906:ALL	1	Y	
K6-26	PTMW	LTnbs1	S	CMP	E906:ALL	3		
K6-27	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
K6-27	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
K6-27	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
K6-27	PTMW	LTnbs1	S	CMP	E601:ALL	3		
K6-27	PTMW	LTnbs1	S	CMP	E906:ALL	1	Y	
K6-27	PTMW	LTnbs1	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.

**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
K6-32	PTMW	Qt-Tnbs1	S	CMP	E601: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	N	Insufficient water to collect sample.
K6-33	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	N	Insufficient water to collect sample.
K6-33	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	N	Insufficient water to collect sample.
K6-33	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-33	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	N	Insufficient water to collect sample.
K6-33	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-34	GW	LTnbs1	S	CMP	E300.0:NO3	1	Y	
K6-34	GW	LTnbs1	S	CMP	E300.0:NO3	3		
K6-34	GW	LTnbs1	S	CMP	E300.0:PERC	1	Y	
K6-34	GW	LTnbs1	S	CMP	E300.0:PERC	3		
K6-34	GW	LTnbs1	Q	CMP	E601:ALL	1	Y	
K6-34	GW	LTnbs1	Q	CMP	E601:ALL	2	Y	
K6-34	GW	LTnbs1	Q	CMP	E601:ALL	3		
K6-34	GW	LTnbs1	Q	CMP	E601:ALL	4		
K6-34	GW	LTnbs1	Q	CMP	E906:ALL	1	Y	
K6-34	GW	LTnbs1	Q	CMP	E906:ALL	2	Y	
K6-34	GW	LTnbs1	Q	CMP	E906:ALL	3		
K6-34	GW	LTnbs1	Q	CMP	E906:ALL	4		
K6-35	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
K6-35	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
K6-35	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
K6-35	PTMW	LTnbs1	S	CMP	E601:ALL	3		
K6-35	PTMW	LTnbs1	S	CMP	E906:ALL	1	Y	
K6-35	PTMW	LTnbs1	S	CMP	E906:ALL	3		
K6-36	DMW	Qt-Tnbs1	Q	WGMG	E300.0:NO3	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	Q	WGMG	E300.0:NO3	2	N	Dry.
K6-36	DMW	Qt-Tnbs1	Q	WGMG	E300.0:NO3	3		
K6-36	DMW	Qt-Tnbs1	Q	WGMG	E300.0:NO3	4		
K6-36	DMW	Qt-Tnbs1	Q	WGMG	E300.0:PERC	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	Q	WGMG	E300.0:PERC	2	N	Dry.
K6-36	DMW	Qt-Tnbs1	Q	WGMG	E300.0:PERC	3		
K6-36	DMW	Qt-Tnbs1	Q	WGMG	E300.0:PERC	4		
K6-36	DMW	Qt-Tnbs1	Q	WGMG	E8260:ALL	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	Q	WGMG	E8260:ALL	2	N	Dry.
K6-36	DMW	Qt-Tnbs1	Q	WGMG	E8260:ALL	3		
K6-36	DMW	Qt-Tnbs1	Q	WGMG	E8260:ALL	4		
K6-36	DMW	Qt-Tnbs1	Q	WGMG	E906:ALL	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	Q	WGMG	E906:ALL	2	N	Dry.
K6-36	DMW	Qt-Tnbs1	Q	WGMG	E906:ALL	3		
K6-36	DMW	Qt-Tnbs1	Q	WGMG	E906:ALL	4		
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	E601: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-33C-01	PTMW	Tts	S	CMP	E906:ALL	1	Y	
W-33C-01	PTMW	Tts	S	CMP	E906:ALL	3		
W-34-01	MWB	UTnbs1	A	DIS	E300.0:NO3	1	Y	
W-34-01	MWB	UTnbs1	A	DIS	E300.0:PERC	1	Y	
W-34-01	MWB	UTnbs1	A	DIS	E601:ALL	1	Y	
W-34-01	MWB	UTnbs1	A	DIS	E906:ALL	1	Y	
W-34-02	MWB	LTnbs1	A	DIS	E300.0:NO3	1	Y	
W-34-02	MWB	LTnbs1	A	DIS	E300.0:PERC	1	Y	
W-34-02	MWB	LTnbs1	A	DIS	E601:ALL	1	Y	
W-34-02	MWB	LTnbs1	A	DIS	E906:ALL	1	Y	
SPRING15	SPR	Qt-Tnbs1	O	CMP	E300.0:NO3	1	N	To be sampled in 2013.
SPRING15	SPR	Qt-Tnbs1	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
SPRING15	SPR	Qt-Tnbs1	O	CMP	E601:ALL	1	N	To be sampled in 2013.
SPRING15	SPR	Qt-Tnbs1	O	CMP	E906:ALL	1	N	To be sampled in 2013.
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	E601:ALL	2	Y	
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E601:ALL	3		
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E601: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	Tnbs1	U	DIS	DWMETALS:ALL	2	Y	Baseline sampling.
W-PIT6-2816	PTMW	Tnbs1	U	DIS	E200.7:SI	2	Y	Baseline sampling.
W-PIT6-2816	PTMW	Tnbs1	U	DIS	E300.0:PERC	2	Y	Baseline sampling.
W-PIT6-2816	PTMW	Tnbs1	U	DIS	E624:ALL	2	Y	Baseline sampling.
W-PIT6-2816	PTMW	Tnbs1	U	DIS	E8330LOW:ALL	2	Y	Baseline sampling.
W-PIT6-2816	PTMW	Tnbs1	U	DIS	E900:ALL	2	Y	Baseline sampling.
W-PIT6-2816	PTMW	Tnbs1	U	DIS	E906:ALL	2	Y	Baseline sampling.
W-PIT6-2816	PTMW	Tnbs1	U	DIS	GENMIN:ALL	2	Y	Baseline sampling.
W-PIT6-2816	PTMW	Tnbs1	U	DIS	KPA:UTOT	2	Y	Baseline sampling.
W-PIT6-2816	PTMW	Tnbs1	U	DIS	MS:UISO	2	Y	Baseline sampling.
W-PIT6-2817	PTMW	Tnbs1	U	DIS	DWMETALS:ALL	2	Y	Baseline sampling.
W-PIT6-2817	PTMW	Tnbs1	U	DIS	E200.7:SI	2	Y	Baseline sampling.
W-PIT6-2817	PTMW	Tnbs1	U	DIS	E300.0:PERC	2	Y	Baseline sampling.
W-PIT6-2817	PTMW	Tnbs1	U	DIS	E624:ALL	2	Y	Baseline sampling.
W-PIT6-2817	PTMW	Tnbs1	U	DIS	E8330LOW:ALL	2	Y	Baseline sampling.
W-PIT6-2817	PTMW	Tnbs1	U	DIS	E900:ALL	2	Y	Baseline sampling.
W-PIT6-2817	PTMW	Tnbs1	U	DIS	E906:ALL	2	Y	Baseline sampling.
W-PIT6-2817	PTMW	Tnbs1	U	DIS	GENMIN:ALL	2	Y	Baseline sampling.
W-PIT6-2817	PTMW	Tnbs1	U	DIS	KPA:UTOT	2	Y	Baseline sampling.
W-PIT6-2817	PTMW	Tnbs1	U	DIS	MS:UISO	2	Y	Baseline sampling.

**Table 2.4-1. Building 815-Source (815-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2012 through June 30, 2012.**

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	711	NA	72,923
	February	NA	670	NA	72,735
	March	NA	668	NA	67,037
	April	NA	635	NA	63,918
	May	NA	691	NA	79,355
	June	NA	651	NA	74,825
<b>Total</b>		NA	4,026	NA	430,793

**Table 2.4-2. Building 815-Proximal (815-PRX) volumes of ground water and soil vapor extracted and discharged, January 1, 2012 through June 30, 2012.**

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	150	NA	714
	March	NA	616	NA	118,607
	April	NA	768	NA	112,764
	May	NA	690	NA	94,497
	June	NA	655	NA	87,955
<b>Total</b>		NA	2,879	NA	414,537



**Table 2.4-3. Building 815-Distal Site Boundary (815-DSB) volumes of ground water and soil vapor extracted and discharged, January 1, 2012 through June 30, 2012.**

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	550	NA	92,400
	February	NA	695	NA	107,160
	March	NA	603	NA	96,579
	April	NA	690	NA	108,482
	May	NA	487	NA	80,137
	June	NA	546	NA	86,556
<b>Total</b>		NA	3,571	NA	571,314

**Table 2.4-4. Building 817-Source (817-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2012 through June 30, 2012.**

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	11	NA	754
	March	NA	13	NA	931
	April	NA	16	NA	1,141
	May	NA	15	NA	985
	June	NA	17	NA	962
<b>Total</b>		NA	72	NA	4,773

**Table 2.4-5. Building 817-Proximal (817-PRX) volumes of ground water and soil vapor extracted and discharged, January 1, 2012 through June 30, 2012.**

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	798	NA	102,763
	February	NA	679	NA	87,286
	March	NA	597	NA	76,552
	April	NA	849	NA	109,273
	May	NA	701	NA	88,409
	June	NA	544	NA	67,760
<b>Total</b>		NA	4,168	NA	532,043

**Table 2.4-6. Building 829-Source (829-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2012 through June 30, 2012.**

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	49	NA	18
	March	NA	649	NA	178
	April	NA	772	NA	190
	May	NA	670	NA	233
	June	NA	648	NA	186
<b>Total</b>		NA	2,788	NA	805

**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)
<i>Building 815-Distal Site Boundary</i>															
815-DSB-I	1/11/12	12	<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	4/3/12	13	<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 <sup>a</sup>	4/3/12 DUP	12	<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 <sup>b</sup>	6/19/12	12	<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 <sup>b</sup>	6/28/12	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
815-DSB-E	1/11/12	<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	2/13/12	<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	3/7/12	<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	4/3/12	<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	5/14/12	<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	6/19/12	<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 <sup>b</sup>	6/28/12	<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
<i>Building 815-Proximal<sup>c</sup></i>															
815-PRX-I	3/6/12	29	<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	4/2/12	27	<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 <sup>a</sup>	4/2/12 DUP	27	<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	3/6/12	<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	4/2/12	<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	5/2/12	<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	6/4/12	<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
<i>Building 815-Source</i>															
815-SRC-I	1/2/12	6.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.76	<0.5	<0.5	<0.5	<0.5	<0.5
815-SRC-I	4/2/12	6.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.73	<0.5	<0.5	<0.5	<0.5	<0.5
815-SRC-I <sup>a</sup>	4/2/12 DUP	7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<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)
<i>Building 815-Source continued</i>															
815-SRC-E	1/2/12	<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	2/13/12	<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	3/6/12	<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	4/2/12	<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	5/2/12	<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	6/4/12	<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
<i>Building 817-Proximal</i>															
817-PRX-I	1/2/12	12	<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	4/2/12	9.8	<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 <sup>a</sup>	4/2/12 DUP	10	<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	1/2/12	<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	2/13/12	<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	3/6/12	<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	4/2/12	<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	5/2/12	<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	6/4/12	<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
<i>Building 817-Source<sup>d</sup></i>															
817-SRC-I	2/13/12	<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	4/3/12	<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 <sup>a</sup>	4/3/12 DUP	<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	2/13/12	<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	3/6/12	<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	4/3/12	<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	5/2/12	<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	6/4/12	<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)
<i>Building 829-Source<sup>c</sup></i>															
829-SRC-I	3/15/12	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
829-SRC-I	4/3/12	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
829-SRC-I <sup>a</sup>	4/3/12 DUP	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
829-SRC-I <sup>c</sup>	6/4/12	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
829-SRC-E	3/15/12	<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
829-SRC-E	4/3/12	<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
829-SRC-E	5/7/12	<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
829-SRC-E	6/4/12	<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:

- <sup>a</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.
- <sup>b</sup> Extra monitoring conducted for facility re-start.
- <sup>c</sup> No samples collected in January and February due to GWTS shut down for freeze protection.
- <sup>d</sup> No samples collected in January due to GWTS shut down for freeze protection.
- <sup>e</sup> Extra monitoring conducted for VOC evaluations.

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

**Table 2.4-7 (Cont.). Analyte detected but not reported in main table.**

<b>Location</b>	<b>Date</b>	<b>Detection frequency</b>
<i>Building 815-Distal Site Boundry</i>		
815-DSB-I	1/11/12	0 of 18
815-DSB-I	4/3/12	0 of 18
815-DSB-I <sup>a</sup>	4/3/12 DUP	0 of 18
815-DSB-I <sup>b</sup>	6/19/12	0 of 18
815-DSB-I <sup>b</sup>	6/28/12	0 of 18
815-DSB-E	1/11/12	0 of 18
815-DSB-E	2/13/12	0 of 18
815-DSB-E	3/7/12	0 of 18
815-DSB-E	4/3/12	0 of 18
815-DSB-E	5/14/12	0 of 18
815-DSB-E	6/19/12	0 of 18
815-DSB-E <sup>b</sup>	6/28/12	0 of 18
<i>Building 815-Proximal<sup>c</sup></i>		
815-PRX-I	3/6/12	0 of 18
815-PRX-I	4/2/12	0 of 18
815-PRX-I <sup>a</sup>	4/2/12 DUP	0 of 18
815-PRX-E	3/6/12	0 of 18
815-PRX-E	4/2/12	0 of 18
815-PRX-E	5/2/12	0 of 18
815-PRX-E	6/4/12	0 of 18
<i>Building 815-Source</i>		
815-SRC-I	1/2/12	0 of 18
815-SRC-I	4/2/12	0 of 18
815-SRC-I <sup>a</sup>	4/2/12 DUP	0 of 18
815-SRC-E	1/2/12	0 of 18
815-SRC-E	2/13/12	0 of 18
815-SRC-E	3/6/12	0 of 18
815-SRC-E	4/2/12	0 of 18
815-SRC-E	5/2/12	0 of 18
815-SRC-E	6/4/12	0 of 18
<i>Building 817-Proximal</i>		
817-PRX-I	1/2/12	0 of 18
817-PRX-I	4/2/12	0 of 18
817-PRX-I <sup>a</sup>	4/2/12 DUP	0 of 18
817-PRX-E	1/2/12	0 of 18
817-PRX-E	2/13/12	0 of 18
817-PRX-E	3/6/12	0 of 18
817-PRX-E	4/2/12	0 of 18
817-PRX-E	5/2/12	0 of 18
817-PRX-E	6/4/12	0 of 18

**Table 2.4-7 (Cont.). Analyte detected but not reported in main table.**

<b>Location</b>	<b>Date</b>	<b>Detection frequency</b>
<i>Building 817-Source<sup>d</sup></i>		
817-SRC-I	2/13/12	0 of 18
817-SRC-I	4/3/12	0 of 18
817-SRC-I <sup>a</sup>	4/3/12 DUP	0 of 18
817-SRC-E	2/13/12	0 of 18
817-SRC-E	3/6/12	0 of 18
817-SRC-E	4/3/12	0 of 18
817-SRC-E	5/2/12	0 of 18
817-SRC-E	6/4/12	0 of 18
<i>Building 829-Source<sup>c</sup></i>		
829-SRC-I	3/15/12	0 of 18
829-SRC-I	4/3/12	0 of 18
829-SRC-I <sup>a</sup>	4/3/12 DUP	0 of 18
829-SRC-I <sup>e</sup>	6/4/12	0 of 18
829-SRC-E	3/15/12	0 of 18
829-SRC-E	4/3/12	0 of 18
829-SRC-E	5/7/12	0 of 18
829-SRC-E	6/4/12	0 of 18

**Notes:**

<sup>a</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.

<sup>b</sup> Extra monitoring conducted for facility re-start.

<sup>c</sup> No samples collected in January and February due to GWTS shut down for freeze protection.

<sup>d</sup> No samples collected in January due to GWTS shut down for freeze protection.

<sup>e</sup> Extra monitoring conducted for VOC evaluations.

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 NO <sub>3</sub> ) (mg/L)	Perchlorate (µg/L)
<i>Building 815-Distal Site Boundry</i>			
815-DSB-I	1/11/12	2 D	NR
815-DSB-I	4/3/12	<1 D	NR
<i>Building 815-Proximal<sup>a</sup></i>			
815-PRX-I	3/6/12	NR	6.7
815-PRX-I	4/2/12	NR	6.5
815-PRX-I <sup>b</sup>	4/2/12 DUP	NR	6.2
815-PRX-E	3/6/12	NR	<4
815-PRX-E	4/2/12	NR	<4
815-PRX-E	5/2/12	NR	<4
815-PRX-E	6/4/12	NR	<4
<i>Building 815-Source</i>			
815-SRC-I	1/2/12	NR	<4
815-SRC-I	4/2/12	NR	<4
815-SRC-I <sup>b</sup>	4/2/12 DUP	NR	<4
815-SRC-E	1/2/12	NR	<4
815-SRC-E	2/13/12	NR	<4
815-SRC-E	3/6/12	NR	<4
815-SRC-E	4/2/12	NR	<4
815-SRC-E	5/2/12	NR	<4
815-SRC-E	6/4/12	NR	<4
<i>Building 817-Proximal</i>			
817-PRX-I	1/2/12	NR	12
817-PRX-I	4/2/12	NR	16
817-PRX-I <sup>b</sup>	4/2/12 DUP	NR	16
817-PRX-E	1/2/12	NR	<4
817-PRX-E	2/13/12	NR	<4
817-PRX-E	3/6/12	NR	<4
817-PRX-E	4/2/12	NR	<4
817-PRX-E	5/2/12	NR	<4
817-PRX-E	6/4/12	NR	<4
<i>Building 817-Source<sup>c</sup></i>			
817-SRC-I	2/13/12	87	27 D
817-SRC-I	4/3/12	83	28 D
817-SRC-I <sup>b</sup>	4/3/12 DUP	NR	28 D
817-SRC-E	2/13/12	NR	<4



**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 NO <sub>3</sub> ) (mg/L)	Perchlorate (µg/L)
<i>Building 815-Source<sup>c</sup> continued</i>			
817-SRC-E	3/6/12	NR	<4
817-SRC-E	4/3/12	NR	<4
817-SRC-E	5/2/12	NR	<4
817-SRC-E	6/4/12	NR	<4
<i>Building 829-Source<sup>a</sup></i>			
829-SRC-I	3/15/12	75 D	7.5
829-SRC-I	4/3/12	70 D	8
829-SRC-I <sup>b</sup>	4/3/12 DUP	56 D	8.5
829-SRC-E	3/15/12	<0.5	<4
829-SRC-E	4/3/12	<0.5	<4
829-SRC-E	5/7/12	<0.5	<4
829-SRC-E	6/4/12	<0.5	<4

## Notes:

<sup>a</sup> No samples collected in January and February due to GWTS shut down for freeze protection.

<sup>b</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.

<sup>c</sup> No samples collected in January due to GWTS shut down for freeze protection.

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-TNB (µg/L)	1,3-DNB (µg/L)	TNT (µg/L)	2,4-DNT (µg/L)	2,6-DNT (µg/L)	2-Amino- 4,6- DNT (µg/L)	2-NT (µg/L)	3-NT (µg/L)	4-Amino- 2,6- DNT (µg/L)	4-NT (µg/L)	HMX (µg/L)	NB (µg/L)	RDX (µg/L)
<i>Building 815-Distal Site Boundry<sup>a</sup></i>														
<i>Building 815-Proximal<sup>b</sup></i>														
815-PRX-E	3/6/12	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1 O	<2	<1	<2
815-PRX-E	4/2/12	<2 IJ	<2 IJ	<2 IJ	<2 IJ	<2 IJ	<2 IJ	<2 IJ	<2 IJ	<2 IJ	<1 IJ	<2 IJ	<1 IJ	<2 IJ
<i>Building 815-Source</i>														
815-SRC-I	1/2/12	<2.3 D	<2.3 D	<2.3 D	<2.3 D	<2.3 D	<2.3 D	<2.3 D	<2.3 D	<2.3 D	9.5 DO	<2.3 D	61 D	<2.3 D
815-SRC-I	4/2/12	<2 D	<2 D	<2 D	<2 D	<2 D	<2 D	<2 D	<2 D	<2 D	9.1 D	<2 D	57 D	<2 D
815-SRC-I <sup>c</sup>	4/2/12 DUP	<2	<2	<2	<2	<2	<2	<2	5.5	<2	6.5	<2	45	<2
815-SRC-E	1/2/12	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1 O	<2	<1	<2
815-SRC-E	2/13/12	<2.5 DO	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<1.2 DO	<2.5 D	<1.2 DOL	<2.5 D
815-SRC-E	3/6/12	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1 O	<2	<1	<2
815-SRC-E	4/2/12	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
815-SRC-E	5/2/12	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1 L	<2
815-SRC-E	6/4/12	<2.7 D	<2.7 D	<2.7 D	<2.7 D	<2.7 D	<2.7 D	<2.7 D	<2.7 D	<2.7 D	<1.3 D	<2.7 D	<1.3 D	<2.7 D
<i>Building 817-Proximal</i>														
817-PRX-I	1/2/12	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<1.3 DO	<2.5 D	<1.3 D	<2.5 D
817-PRX-I	2/14/12	<2.6 D	<2.6 DLO	<2.6 DLO	<2.6 D	<2.6 D	<2.6 D	<2.6 D	<2.6 DLO	<2.6 D	<1.3 DO	<2.6 DLO	<1.3 D	<2.6 DLO
817-PRX-I	4/2/12	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	5.3	<2
817-PRX-I <sup>c</sup>	4/2/12 DUP	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	5.6	<2
817-PRX-I	4/23/12	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	5.5	<2
817-PRX-E	1/2/12	<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

**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-TNB (µg/L)	1,3-DNB (µg/L)	TNT (µg/L)	2,4-DNT (µg/L)	2,6-DNT (µg/L)	2-Amino- 4,6- DNT (µg/L)	2-NT (µg/L)	3-NT (µg/L)	4-Amino- 2,6- DNT (µg/L)	4-NT (µg/L)	HMX (µg/L)	NB (µg/L)	RDX (µg/L)
817-PRX-E	2/13/12	<2.4 DO	<2.4 D	<2.4 D	<2.4 D	<2.4 D	<2.4 D	<2.4 D	<2.4 D	<2.4 D	<1.2 DO	<2.4 D	<1.2 DOL	<2.4 D
817-PRX-E	3/6/12	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1 O	<2	<1	<2
817-PRX-E	4/2/12	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR	IR
817-PRX-E	4/23/12	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-PRX-E	5/2/12	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1 L	<2
817-PRX-E	6/4/12	<2.2 D	<2.2 D	<2.2 D	<2.2 D	<2.2 DO	<2.2 D	<2.2 D	<2.2 D	<2.2 D	<1.1 DO	<2.2 D	<1.1 D	<2.2 DO
<i>Building 817-Sourced<sup>d</sup></i>														
817-SRC-I	2/13/12	<2.7 D	<2.7 D	<2.7 D	<2.7 D	<2.7 D	<2.7 D	<2.7 D	<2.7 D	<2.7 D	<1.3 D	<2.7 D	<1.3 DS	<2.7 D
817-SRC-I	4/3/12	<2	<2 O	<2	<2	<2	<2	<2	<2	<2	47	<2	50	<2
817-SRC-I <sup>c</sup>	4/3/12 DUP	<2 IJ	<2 IJO	<2 IJ	<2 IJ	<2 IJ	<2 IJ	<2 IJ	<2 IJ	<2 IJ	35 IJ	<2 IJ	38 IJ	<2 IJ
817-SRC-E	2/13/12	<2.6 DO	<2.6 D	<2.6 D	<2.6 D	<2.6 D	<2.6 D	<2.6 D	<2.6 D	<2.6 D	<1.3 DO	<2.6 D	<1.3 DLO	<2.6 D
817-SRC-E	3/6/12	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1 O	<2	<1	<2
817-SRC-E	4/3/12	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-SRC-E	5/2/12	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1 L	<2
817-SRC-E	6/4/12	<2	<2	<2	<2	<2 O	<2	<2	<2	<2	<1 O	<2	<1	<2 O
<i>Building 829-Source<sup>e</sup></i>														

Notes:

<sup>a</sup> No high explosive compound monitoring required.

<sup>b</sup> No influent and only quarterly effluent high explosive monitoring required.

<sup>c</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.

<sup>d</sup> No samples collected in January due to GWTS shut down for freeze protection.

<sup>e</sup> No high explosive compound monitoring required.

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.**

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

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

Sample location	Sample identification	Parameter	Frequency
<i>817-PRX GWTS</i>			
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
<i>829-SRC GWTS</i>			
Influent Port	W-829-06-829-SRC-I	VOCs	Quarterly
		Perchlorate	Quarterly
		Nitrate	Quarterly
Effluent Port	829-SRC-E	VOCs	Monthly
		Perchlorate	Monthly
		Nitrate	Monthly
		pH	Monthly

**Notes:**

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	E502.2:ALL	2	Y	
GALLO1	WS	Tnbs2	Q	WGMG	E502.2:ALL	3		
GALLO1	WS	Tnbs2	Q	WGMG	E502.2: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	E601:ALL	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	3		
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	3		
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	3		
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	4		
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	4		
GALLO1	WS	Tnbs2	M	CMP	E601: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	
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		

**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
SPRING14	SPR	Tpsg-Tps	O	CMP	E300.0:NO3	1	N	To be sampled in 2013.
SPRING14	SPR	Tpsg-Tps	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
SPRING14	SPR	Tpsg-Tps	O	CMP	E601:ALL	1	N	To be sampled in 2013.
SPRING14	SPR	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2013.
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	E601: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	E601:ALL	2	Y	
W-35B-01	GW	Qal/WBR	Q	CMP	E601:ALL	3		
W-35B-01	GW	Qal/WBR	Q	CMP	E601: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	E601:ALL	2	Y	
W-35B-02	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-35B-02	GW	Tnbs2	Q	CMP	E601: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	E601:ALL	2	Y	
W-35B-03	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-35B-03	GW	Tnbs2	Q	CMP	E601: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	E601:ALL	2	Y	
W-35B-04	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-35B-04	GW	Tnbs2	Q	CMP	E601: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	

**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-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	E601:ALL	2	Y	
W-35B-05	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-35B-05	GW	Tnbs2	Q	CMP	E601: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	N	To be sampled in 2013.
W-35C-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-35C-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-35C-01	PTMW	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2013.
W-35C-02	PTMW	Tnbs1	O	CMP	E300.0:NO3	1	N	To be sampled in 2013.
W-35C-02	PTMW	Tnbs1	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-35C-02	PTMW	Tnbs1	S	CMP	E601:ALL	1	Y	
W-35C-02	PTMW	Tnbs1	S	CMP	E601:ALL	3		
W-35C-02	PTMW	Tnbs1	A	CMP	E8330LOW:ALL	1	Y	
W-35C-04	EW	Tnbs2	O	CMP-TF	E300.0:NO3	1	N	To be sampled in 2013.
W-35C-04	EW	Tnbs2	O	CMP-TF	E300.0:PERC	1	N	To be sampled in 2013.
W-35C-04	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-35C-04	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-35C-04	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-35C-04	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-35C-04	EW	Tnbs2	O	CMP-TF	E8330LOW:ALL	1	N	To be sampled in 2013.
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	N	To be sampled in 2013.
W-35C-05	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-35C-05	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-35C-05	PTMW	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2013.
W-35C-06	PTMW	Qal/WBR	E	CMP	E300.0:NO3	1	Y	
W-35C-06	PTMW	Qal/WBR	E	CMP	E300.0:PERC	1	Y	
W-35C-06	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
W-35C-06	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-35C-06	PTMW	Qal/WBR	A	CMP	E8330LOW:ALL	1	Y	
W-35C-07	PTMW	Tnsc2	E	CMP	E300.0:NO3	1	Y	
W-35C-07	PTMW	Tnsc2	E	CMP	E300.0:PERC	1	Y	
W-35C-07	PTMW	Tnsc2	S	CMP	E601:ALL	1	Y	
W-35C-07	PTMW	Tnsc2	S	CMP	E601:ALL	3		
W-35C-07	PTMW	Tnsc2	E	CMP	E8330LOW:ALL	1	Y	
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	E601:ALL	3		
W-35C-08	PTMW	Tnsc2	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2013.
W-4A	PTMW	Tnbs2	E	CMP	E300.0:NO3	1	N	Inoperable pump.
W-4A	PTMW	Tnbs2	E	CMP	E300.0:PERC	1	N	Inoperable pump.
W-4A	PTMW	Tnbs2	S	CMP	E601:ALL	1	N	Inoperable pump.
W-4A	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-4A	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1	N	Inoperable pump.
W-4AS	PTMW	Tpsg-Tps	Q	DIS	AS:UIISO	1	Y	
W-4AS	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-4AS	PTMW	Tpsg-Tps	E	CMP	E300.0:PERC	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-4AS	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-4AS	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-4AS	PTMW	Tpsg-Tps	E	CMP	E8330LOW:ALL	1	Y	
W-4AS	PTMW	Tpsg-Tps	Q	DIS	E9060:ALL	1	Y	
W-4AS	PTMW	Tpsg-Tps	Q	DIS	GENMIN:ALL	1	Y	
W-4B	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	N	To be sampled in 2013.
W-4B	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-4B	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-4B	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-4B	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2013.
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	E601:ALL	2	Y	
W-4C	GW	Tnsc1b	Q	CMP	E601:ALL	3		
W-4C	GW	Tnsc1b	Q	CMP	E601: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	Y	
W-6BD	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-6BD	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-6BD	PTMW	Tpsg-Tps	E	CMP	E8330LOW:ALL	1	Y	
W-6BS	PTMW	Qal/WBR	Q	DIS	AS:UIISO	1	Y	
W-6BS	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
W-6BS	PTMW	Qal/WBR	E	CMP	E300.0:PERC	1	Y	
W-6BS	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
W-6BS	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-6BS	PTMW	Qal/WBR	E	CMP	E8330LOW:ALL	1	Y	
W-6BS	PTMW	Qal/WBR	Q	DIS	E9060:ALL	1	Y	
W-6BS	PTMW	Qal/WBR	Q	DIS	GENMIN:ALL	1	Y	
W-6CD	PTMW	Tnbs2	E	CMP	E300.0:NO3	1	Y	
W-6CD	PTMW	Tnbs2	E	CMP	E300.0:PERC	1	Y	
W-6CD	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-6CD	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-6CD	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1	Y	
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	E601: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	E601: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	E601:ALL	3		
W-6EI	PTMW	Tnsc2	A	CMP	E8330LOW:ALL	1	Y	
W-6ER	EW	Tnbs2	O	CMP-TF	E300.0:NO3	1	N	To be sampled in 2013.

**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-6ER	EW	Tnbs2	O	CMP-TF	E300.0:PERC	1	N	To be sampled in 2013.
W-6ER	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-6ER	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-6ER	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-6ER	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-6ER	EW	Tnbs2	O	CMP-TF	E8330LOW:ALL	1	N	To be sampled in 2013.
W-6ES	PTMW	Qal/WBR	E	CMP	E300.0:NO3	1	N	Inoperable pump.
W-6ES	PTMW	Qal/WBR	E	CMP	E300.0:PERC	1	N	Inoperable pump.
W-6ES	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Inoperable pump.
W-6ES	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-6ES	PTMW	Qal/WBR	A	CMP	E8330LOW:ALL	1	N	Inoperable pump.
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	E601:ALL	3		
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	E601: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	E601:ALL	2	Y	
W-6H	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-6H	GW	Tnbs2	Q	CMP	E601: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	N	To be sampled in 2013.
W-6I	PTMW	Tpsg-Tps	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-6I	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-6I	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-6I	PTMW	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2013.
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	E601:ALL	2	Y	
W-6J	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-6J	GW	Tnbs2	Q	CMP	E601: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	Q	DIS	AS:UIISO	1	Y	
W-6K	PTMW	Tnbs2	Q	DIS	D-15N(NO3):ALL	1	Y	
W-6K	PTMW	Tnbs2	Q	DIS	D-18O(NO3):ALL	1	Y	
W-6K	PTMW	Tnbs2	E	CMP	E300.0:NO3	1	Y	
W-6K	PTMW	Tnbs2	E	CMP	E300.0:PERC	1	Y	
W-6K	PTMW	Tnbs2	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-6K	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-6K	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1	Y	
W-6K	PTMW	Tnbs2	Q	DIS	E9060:ALL	1	Y	
W-6K	PTMW	Tnbs2	Q	DIS	EXCESSN2:ALL	1	Y	
W-6K	PTMW	Tnbs2	Q	DIS	GENMIN:ALL	1	Y	
W-6L	PTMW	Tnbs2	Q	DIS	AS:UIISO	1	Y	
W-6L	PTMW	Tnbs2	Q	DIS	D-15N(NO3):ALL	1	Y	
W-6L	PTMW	Tnbs2	Q	DIS	D-18O(NO3):ALL	1	Y	
W-6L	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	N	To be sampled in 2013.
W-6L	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-6L	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-6L	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-6L	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2013.
W-6L	PTMW	Tnbs2	Q	DIS	E9060:ALL	1	Y	
W-6L	PTMW	Tnbs2	Q	DIS	EXCESSN2:ALL	1	Y	
W-6L	PTMW	Tnbs2	Q	DIS	GENMIN:ALL	1	Y	
W-806-06A	PTMW	Tnsc1b	O	CMP	E300.0:NO3	1	N	To be sampled in 2013.
W-806-06A	PTMW	Tnsc1b	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-806-06A	PTMW	Tnsc1b	O	CMP	E601:ALL	1	N	To be sampled in 2013.
W-806-06A	PTMW	Tnsc1b	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2013.
W-806-07	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	N	To be sampled in 2013.
W-806-07	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-806-07	PTMW	Tnbs2	O	CMP	E601:ALL	1	N	To be sampled in 2013.
W-806-07	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2013.
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	E601:ALL	3		
W-808-01	PTMW	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2013.
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	E601:ALL	3		
W-808-02	PTMW	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2013.
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	E601:ALL	3		
W-808-03	PTMW	UTnbs1	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2013.
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	E601: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	A	DIS	E300.0:PERC	3		
W-809-02	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-809-02	PTMW	Tnbs2	S	CMP	E601: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	

**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-809-03	PTMW	Tnbs2	A	DIS	E300.0:PERC	3		
W-809-03	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-809-03	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-809-03	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-809-03	PTMW	Tnbs2	A	DIS	E8330LOW:ALL	3		
W-809-04	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-809-04	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-809-04	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-809-04	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-809-04	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-810-01	PTMW	UTnbs1	A	CMP	E300.0:NO3	1	N	Unsafe conditions; access road washed out.
W-810-01	PTMW	UTnbs1	A	CMP	E300.0:PERC	1	N	Unsafe conditions; access road washed out.
W-810-01	PTMW	UTnbs1	S	CMP	E601:ALL	1	N	Unsafe conditions; access road washed out.
W-810-01	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-810-01	PTMW	UTnbs1	A	CMP	E8330LOW:ALL	1	N	Unsafe conditions; access road washed out.
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	E601: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	N	Inoperable pump.
W-814-02	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	N	Inoperable pump.
W-814-02	PTMW	Tnbs2	S	CMP	E601:ALL	1	N	Inoperable pump.
W-814-02	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-814-02	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	N	Inoperable pump.
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	E601: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	N	Inoperable pump.
W-814-04	GW	Tnsc1b	S	CMP	E300.0:NO3	3		
W-814-04	GW	Tnsc1b	S	CMP	E300.0:PERC	1	N	Inoperable pump.
W-814-04	GW	Tnsc1b	S	CMP	E300.0:PERC	3		
W-814-04	GW	Tnsc1b	Q	CMP	E601:ALL	1	N	Inoperable pump.
W-814-04	GW	Tnsc1b	Q	CMP	E601:ALL	2	N	Inoperable pump.
W-814-04	GW	Tnsc1b	Q	CMP	E601:ALL	3		
W-814-04	GW	Tnsc1b	Q	CMP	E601: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	E601: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	E601:ALL	3		
W-815-01	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Dry.

**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-815-02	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	E601:ALL	2	Y	
W-815-02	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-815-02	EW	Tnbs2	S	DIS-TF	E601: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		
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	E601:ALL	3		
W-815-03	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Dry.
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	E601:ALL	2	Y	
W-815-04	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-815-04	EW	Tnbs2	S	DIS-TF	E601: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	Unsafe conditions; well inaccessible due to washout around pad.
W-815-05	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Unsafe conditions; well inaccessible due to washout around pad.
W-815-05	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	N	Unsafe conditions; well inaccessible due to washout around pad.
W-815-05	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-815-05	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Unsafe conditions; well inaccessible due to washout around pad.
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	E601: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	E601:ALL	3		
W-815-07	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-815-08	PTMW	UTnbs1	A	CMP	E300.0:NO3	1	Y	
W-815-08	PTMW	UTnbs1	A	CMP	E300.0:PERC	1	Y	
W-815-08	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-815-08	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-815-08	PTMW	UTnbs1	A	CMP	E8330LOW:ALL	1	Y	
W-815-1928	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-815-1928	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	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-815-1928	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-815-1928	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-815-1928	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-815-2110	GW	Tnbs2	Q	DIS	D-15N(NO3):ALL	1	Y	
W-815-2110	GW	Tnbs2	Q	DIS	D-18O(NO3):ALL	1	Y	
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	E601:ALL	2	Y	
W-815-2110	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-815-2110	GW	Tnbs2	Q	CMP	E601:ALL	4		
W-815-2110	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-815-2110	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-815-2110	GW	Tnbs2	Q	DIS	EXCESSN2:ALL	1	Y	
W-815-2111	GW	Tnbs2	Q	DIS	D-15N(NO3):ALL	1	Y	
W-815-2111	GW	Tnbs2	Q	DIS	D-18O(NO3):ALL	1	Y	
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	E601:ALL	2	Y	
W-815-2111	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-815-2111	GW	Tnbs2	Q	CMP	E601: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	Q	DIS	EXCESSN2:ALL	1	Y	
W-815-2217	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	N	To be sampled in 2013.
W-815-2217	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-815-2217	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-815-2217	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-815-2217	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2013.
W-815-2608	PTMW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-815-2608	PTMW	Tnbs2	S	CMP-TF	E300.0:NO3	3		
W-815-2608	PTMW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-815-2608	PTMW	Tnbs2	S	CMP-TF	E300.0:PERC	3		
W-815-2608	PTMW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-815-2608	PTMW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-815-2608	PTMW	Tnbs2	Q	CMP-TF	E601:ALL	3		
W-815-2608	PTMW	Tnbs2	Q	CMP-TF	E601:ALL	4		
W-815-2608	PTMW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-815-2608	PTMW	Tnbs2	S	CMP-TF	E8330LOW:ALL	3		
W-815-2621	PTMW	Tnbs2	Q	DIS	D-15N(NO3):ALL	1	Y	
W-815-2621	PTMW	Tnbs2	Q	DIS	D-18O(NO3):ALL	1	Y	
W-815-2621	PTMW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-815-2621	PTMW	Tnbs2	S	CMP	E300.0:NO3	3		
W-815-2621	PTMW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-815-2621	PTMW	Tnbs2	S	CMP	E300.0:PERC	3		
W-815-2621	PTMW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-815-2621	PTMW	Tnbs2	Q	CMP	E601: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-815-2621	PTMW	Tnbs2	Q	CMP	E601:ALL	3		
W-815-2621	PTMW	Tnbs2	Q	CMP	E601:ALL	4		
W-815-2621	PTMW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-815-2621	PTMW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-815-2621	PTMW	Tnbs2	Q	DIS	EXCESSN2:ALL	1	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	AS:UIISO	2	Y	
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	
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	E601:ALL	2	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E601:ALL	3		
W-817-01	EW	Tnbs2	Q	DIS-TF	E601: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-817-01	EW	Tnbs2	Q	DIS-TF	E9060:ALL	2	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	GENMIN:ALL	2	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	E601:ALL	2	Y	
W-817-03	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-817-03	EW	Tnbs2	S	DIS-TF	E601: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	E601: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	E601: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	E601:ALL	3		
W-817-05	PTMW	Tnsc1b	A	CMP	E8330LOW:ALL	1	Y	
W-817-07	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-817-07	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-817-07	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-817-07	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-817-07	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
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	

**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	A	DIS-TF	E300.0:PERC	3		
W-817-2318	EW	Tpsg-Tps	S	CMP-TF	E601:ALL	1	Y	
W-817-2318	EW	Tpsg-Tps	S	DIS-TF	E601:ALL	2	Y	
W-817-2318	EW	Tpsg-Tps	S	CMP-TF	E601:ALL	3		
W-817-2318	EW	Tpsg-Tps	S	DIS-TF	E601: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	S	CMP	E300.0:NO3	1	Y	
W-817-2609	PTMW	Tnbs2	S	CMP	E300.0:NO3	3		
W-817-2609	PTMW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-817-2609	PTMW	Tnbs2	S	CMP	E300.0:PERC	3		
W-817-2609	PTMW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-817-2609	PTMW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-817-2609	PTMW	Tnbs2	Q	CMP	E601:ALL	3		
W-817-2609	PTMW	Tnbs2	Q	CMP	E601:ALL	4		
W-817-2609	PTMW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-817-2609	PTMW	Tnbs2	S	CMP	E8330LOW:ALL	3		
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	E601: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	E601:ALL	3		
W-818-03	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2013.
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	E601: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	E601:ALL	3		
W-818-06	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2013.
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	E601:ALL	3		
W-818-07	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1	Y	
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	E601:ALL	2	Y	
W-818-08	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-818-08	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-818-08	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	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	



**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-818-09	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	E601:ALL	2	Y	
W-818-09	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-818-09	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-818-09	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	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	E601: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	E601:ALL	3		
W-819-02	PTMW	UTnbs1	A	CMP	E8330LOW:ALL	1	Y	
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	E601:ALL	3		
W-823-01	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-823-01	PTMW	Tpsg-Tps	A	DIS	EM8015:DIESEL	1	Y	
W-823-02	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	N	To be sampled in 2013.
W-823-02	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-823-02	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-823-02	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-823-02	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2013.
W-823-02	PTMW	Tnbs2	A	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	Y	
W-823-03	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-823-03	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-823-03	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1	Y	
W-823-03	PTMW	Tnbs2	A	DIS	EM8015:DIESEL	1	Y	
W-823-13	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-823-13	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-823-13	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-823-13	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-823-13	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-827-01	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	N	To be sampled in 2013.
W-827-01	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-827-01	PTMW	Tnbs2	O	CMP	E601:ALL	1	N	To be sampled in 2013.
W-827-01	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2013.
W-827-02	PTMW	Tnsc1	O	CMP	E300.0:NO3	1	N	To be sampled in 2013.
W-827-02	PTMW	Tnsc1	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-827-02	PTMW	Tnsc1	O	CMP	E601:ALL	1	N	To be sampled in 2013.
W-827-02	PTMW	Tnsc1	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2013.
W-827-03	PTMW	UTnbs1	O	CMP	E300.0:NO3	1	N	To be sampled in 2013.
W-827-03	PTMW	UTnbs1	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-827-03	PTMW	UTnbs1	O	CMP	E601:ALL	1	N	To be sampled in 2013.
W-827-03	PTMW	UTnbs1	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2013.

**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-827-04	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	N	Insufficient water to collect sample.
W-827-04	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	N	Insufficient water to collect sample.
W-827-04	PTMW	LTnbs1	S	CMP	E601:ALL	1	N	Insufficient water to collect sample.
W-827-04	PTMW	LTnbs1	S	CMP	E601:ALL	3		
W-827-04	PTMW	LTnbs1	A	CMP	E8330LOW:ALL	1	N	Insufficient water to collect sample.
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	E601:ALL	3		
W-827-05	PTMW	LTnbs1	A	CMP	E8330LOW:ALL	1	Y	
W-829-06	EW	Tnsc1b	Q	CMP-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	CMP-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	CMP-TF	E601:ALL	1	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E601:ALL	2	Y	
W-829-06	EW	Tnsc1b	Q	CMP-TF	E601:ALL	3		
W-829-06	EW	Tnsc1b	Q	DIS-TF	E601:ALL	4		
W-829-06	EW	Tnsc1b	A	CMP-TF	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	E625: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	E601: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-829-1940	PTMW	Tnsc1b	A	CMP	E8330LOW:ALL	1	Y	
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	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	E601:ALL	2	Y	
WELL18	WS	Tnbs1	M	CMP	E601:ALL	2	Y	
WELL18	WS	Tnbs1	M	CMP	E601:ALL	2	Y	
WELL18	WS	Tnbs1	M	CMP	E601:ALL	3		
WELL18	WS	Tnbs1	M	CMP	E601:ALL	3		
WELL18	WS	Tnbs1	M	CMP	E601:ALL	3		
WELL18	WS	Tnbs1	M	CMP	E601:ALL	4		
WELL18	WS	Tnbs1	M	CMP	E601:ALL	4		
WELL18	WS	Tnbs1	M	CMP	E601: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	
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		

**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	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	E502.2:ALL	2	Y	
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	2	Y	
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	2	Y	
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	3		
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	3		
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	3		
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	4		
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	4		
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	4		
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		
WELL20	WS	Tnbs1	Q	WGMG	E906:ALL	1	Y	
WELL20	WS	Tnbs1	Q	WGMG	E906:ALL	2	Y	
WELL20	WS	Tnbs1	Q	WGMG	E906:ALL	3		

**Table 2.4-12. Building 815-Source (815-SRC) mass removed, January 1, 2012 through June 30, 2012.**

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	2.1	0.71	26	17	NA
	February	NA	2.1	0.71	26	17	NA
	March	NA	1.9	0.66	24	16	NA
	April	NA	1.8	0.62	23	15	NA
	May	NA	2.2	0.74	28	18	NA
	June	NA	2.0	0.70	27	17	NA
<b>Total</b>		NA	12	4.1	150	99	NA

**Notes:**

\*Nitrate re-injected into the Tnbs<sub>2</sub> HSU undergoes in-situ biotransformation to benign N<sub>2</sub> gas by anaerobic denitrifying bacteria.

**Table 2.4-13. Building 815-Proximal (815-PRX) mass removed, January 1, 2012 through June 30, 2012.**

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	NA	NA
	February	NA	0.085	0.018	0.22	NA	NA
	March	NA	13	2.9	38	NA	NA
	April	NA	12	2.8	36	NA	NA
	May	NA	9.9	2.3	30	NA	NA
	June	NA	9.3	2.2	28	NA	NA
<b>Total</b>		NA	45	10	130	NA	NA

**Notes:**

\*Nitrate re-injected into the Tnbs<sub>2</sub> HSU undergoes in-situ biotransformation to benign N<sub>2</sub> gas by anaerobic denitrifying bacteria.

**Table 2.4-14. Building 815-Distal Site Boundary (815-DSB) mass removed, January 1, 2012 through June 30, 2012.**

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	4.9	NA	NA	NA	NA
	February	NA	5.7	NA	NA	NA	NA
	March	NA	5.1	NA	NA	NA	NA
	April	NA	2.6	NA	NA	NA	NA
	May	NA	1.9	NA	NA	NA	NA
	June	NA	2.1	NA	NA	NA	NA
<b>Total</b>		NA	22	NA	NA	NA	NA

**Table 2.4-15. Building 817-Source (817-SRC) mass removed, January 1, 2012 through June 30, 2012.**

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	0.077	0.25	0.13	NA
	March	NA	0	0.095	0.31	0.17	NA
	April	NA	0	0.12	0.36	0.22	NA
	May	NA	0	0.10	0.31	0.19	NA
	June	NA	0	0.10	0.30	0.18	NA
<b>Total</b>		NA	0	0.50	1.5	0.88	NA

**Notes:**

\*Nitrate re-injected into the Tnbs<sub>2</sub> HSU undergoes in-situ biotransformation to benign N<sub>2</sub> gas by anaerobic denitrifying bacteria.

**Table 2.4-16. Building 817-Proximal (817-PRX) mass removed, January 1, 2012 through June 30, 2012.**

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	4.3	5.5	36	0	NA
	February	NA	3.4	4.7	30	1.4	NA
	March	NA	3.0	4.1	26	1.2	NA
	April	NA	4.4	5.9	38	1.7	NA
	May	NA	2.8	4.8	30	1.4	NA
	June	NA	1.9	3.8	23	1.1	NA
<b>Total</b>		NA	20	29	180	6.8	NA

## Notes:

\*Nitrate re-injected into the Tnbs, HSU undergoes in-situ biotransformation to benign N<sub>2</sub> gas by anaerobic denitrifying bacteria.

**Table 2.4-17. Building 829-Source (829-SRC) mass removed, January 1, 2012 through June 30, 2012.**

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	0.00062	0.00047	0.00063	NA	NA
	March	NA	0.0061	0.0047	0.0062	NA	NA
	April	NA	0.010	0.0061	0.040	NA	NA
	May	NA	0.012	0.0075	0.049	NA	NA
	June	NA	0.0099	0.0060	0.039	NA	NA
<b>Total</b>		NA	0.039	0.025	0.14	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:UIISO	1	Y	
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UIISO	2	Y	
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UIISO	3		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UIISO	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	A	WGMG	E8082A:ALL	1	Y	
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:UIISO	1	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UIISO	2	N	Inoperable pump.
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UIISO	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UIISO	4		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	N	Inoperable pump.
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	N	Inoperable pump.
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-02B	DMW	Tnbs1-Tnbs0	A	WGMG	E8082A:ALL	1	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	N	Inoperable pump.
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	N	Inoperable pump.
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	N	Inoperable pump.
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UIISO	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
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UIISO	2	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UIISO	3		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UIISO	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	A	WGMG	E8082A:ALL	1	Y	
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	Q	WGMG	E906:ALL	4		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UIISO	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UIISO	2	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UIISO	3		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UIISO	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	A	WGMG	E8082A:ALL	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	
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:UIISO	2	Y	
K1-06	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
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
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	Y	
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
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	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	A	WGMG	E8082A:ALL	1	Y	
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	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	A	WGMG	E8082A:ALL	1	Y	
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		

**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
K1-08	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	Q	WGMG	E906:ALL	4		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
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	A	WGMG	E8082A:ALL	1	Y	
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	
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	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		
K2-04D	PTMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	2	N	To be sampled in 2013.
K2-04D	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	2	Y	
K2-04D	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
K2-04D	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K2-04D	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K2-04D	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K2-04S	PTMW	Qal/WBR	E	CMP	AS:UISO	2	Y	
K2-04S	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2013.
K2-04S	PTMW	Qal/WBR	S	CMP	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		

**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
NC2-05	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UIISO	2	Y	
NC2-05	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-05	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-05	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-05	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-05	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-05A	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UIISO	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:UIISO	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:UIISO	2	Y	
NC2-09	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UIISO	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	
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:UIISO	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	CMP	E300.0:PERC	2	Y	
NC2-11D	PTMW	Tnbs1-Tnbs0	S	CMP	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:UIISO	2	Y	
NC2-11I	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UIISO	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:UIISO	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	

**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
NC2-11S	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-12D	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UIISO	2	Y	
NC2-12D	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-12D	PTMW	Tnbs1-Tnbs0	S	CMP	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:UIISO	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:UIISO	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:UIISO	2	Y	
NC2-13	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
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:UIISO	2	N	To be sampled in 2013.
NC2-14S	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2013.
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:UIISO	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:UIISO	2	Y	
NC2-16	PTMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	N	To be sampled in 2013.
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:UIISO	2	N	Inoperable pump.
NC2-17	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Inoperable pump.
NC2-17	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Inoperable pump.
NC2-17	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-17	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Inoperable pump.
NC2-17	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-18	PTMW	Tnbs1-Tnbs0	S	CMP	AS:UIISO	2	Y	
NC2-18	PTMW	Tnbs1-Tnbs0	S	CMP	AS:UIISO	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
NC2-18	PTMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	N	To be sampled in 2013.
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	Y	
NC2-19	PTMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	N	To be sampled in 2013.
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	N	To be sampled in 2013.
NC2-20	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	2	Y	
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	Y	
NC2-21	PTMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	N	To be sampled in 2013.
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	CMP	E300.0:PERC	1	Y	
NC7-10	PTMW	Qal/WBR	S	CMP	E300.0:PERC	3		
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	N	Insufficient water to collect sample.
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	N	To be sampled in 2013.
NC7-15	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	Y	
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	Y	
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	

**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
NC7-19	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	Q	DIS	DWMETALS:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	DWMETALS:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	E300.0:NO3	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	E300.0:NO3	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC7-28	PTMW	Tnbs1-Tnbs0	E	DIS	E8082A:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	E8330LOW:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	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	M	DIS	E906:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	E906:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	E906:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	E906:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	E906:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	LITEHCS:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	LITEHCS:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	LOWVFAS:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	LOWVFAS:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	MS:UISO	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	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	

**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
NC7-43	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	E	DIS	E8082A:ALL	2	Y	
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	N	To be sampled in 2013.
NC7-46	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2013.
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	Dry.
NC7-54	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Dry.
NC7-54	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-54	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
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	To be sampled in 2013.
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		
NC7-56	PTMW	Qal/WBR	O	CMP	AS:UISO	2	N	To be sampled in 2013.
NC7-56	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	Y	
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	To be sampled in 2013.
NC7-57	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	N	Dry.
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	Y	
NC7-58	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2013.
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	N	To be sampled in 2013.
NC7-59	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	Y	
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	



**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
NC7-59	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-60	PTMW	Tnsc0	E	CMP	AS:UIISO	2	Y	
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	Q	DIS	DWMETALS:ALL	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	DWMETALS:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	CMP	E300.0:PERC	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	CMP	E300.0:PERC	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	CMP	E300.0:PERC	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	CMP	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	Q	DIS	E8330LOW:ALL	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	E8330LOW:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	E906:ALL	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	E906:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	E906:ALL	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	E906:ALL	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	E906:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	E906:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	MS:UIISO	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UIISO	2	Y	
NC7-62	PTMW	Qal/WBR	E	CMP	AS:UIISO	2	Y	
NC7-62	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2013.
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:UIISO	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	A	CMP	E300.0:NO3	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	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
NC7-70	PTMW	Tnbs1-Tnbs0	S	DIS	E8330LOW: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	A	CMP	MS:UISO	2	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	DWMETALS:ALL	1	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	DWMETALS:ALL	2	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	E300.0:NO3	1	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	E300.0:NO3	2	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	E300.0:PERC	1	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	E300.0:PERC	1	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	E300.0:PERC	1	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	E300.0:PERC	2	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	E300.0:PERC	2	Y	
NC7-71	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-71	PTMW	Qal/WBR	Q	DIS	E8330LOW:ALL	1	Y	
NC7-71	PTMW	Qal/WBR	Q	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	M	DIS	E906:ALL	1	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	E906:ALL	1	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	E906:ALL	1	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	E906:ALL	2	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	E906:ALL	2	Y	
NC7-71	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-71	PTMW	Qal/WBR	Q	DIS	GENMIN:ALL	1	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	GENMIN:ALL	2	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	KPA:UTOT	1	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	KPA:UTOT	1	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	KPA:UTOT	1	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	KPA:UTOT	2	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	KPA:UTOT	2	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	MS:UISO	1	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	MS:UISO	2	Y	
NC7-72	PTMW	Qal/WBR	E	CMP	AS:UISO	2	Y	
NC7-72	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2013.
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	Y	
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	N	Dry.
SPRING24	SPR	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	N	To be sampled in 2013.
SPRING24	SPR	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Dry.
SPRING24	SPR	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	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
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	Y	
W-850-2145	PTMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	N	To be sampled in 2013.
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	Y	
W-850-2312	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	2	Y	
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	Y	
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		
W-850-2313	PTMW	Qal/WBR	A	DIS	MS:UISO	2	Y	
W-850-2314	PTMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	2	N	To be sampled in 2013.
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	N	To be sampled in 2013.
W-850-2316	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	2	Y	
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	Q	DIS	DWMETALS:ALL	1	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	DWMETALS:ALL	2	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	E300.0:NO3	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-850-2416	PTMW	Tnsc0	Q	DIS	E300.0:NO3	2	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	E300.0:PERC	1	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	E300.0:PERC	1	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	E300.0:PERC	1	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	E300.0:PERC	2	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	E300.0:PERC	2	Y	
W-850-2416	PTMW	Tnsc0	S	CMP	E300.0:PERC	4		
W-850-2416	PTMW	Tnsc0	Q	DIS	E8330LOW:ALL	1	Y	
W-850-2416	PTMW	Tnsc0	Q	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	M	DIS	E906:ALL	1	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	E906:ALL	1	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	E906:ALL	1	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	E906:ALL	2	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	E906:ALL	2	Y	
W-850-2416	PTMW	Tnsc0	S	CMP	E906:ALL	4		
W-850-2416	PTMW	Tnsc0	Q	DIS	GENMIN:ALL	1	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	GENMIN:ALL	2	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	KPA:UTOT	1	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	KPA:UTOT	1	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	KPA:UTOT	1	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	KPA:UTOT	2	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	KPA:UTOT	2	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	MS:UISO	1	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	MS:UISO	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	DWMETALS:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	DWMETALS:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	E300.0:NO3	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	E300.0:NO3	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	E8330LOW:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	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	M	DIS	E906:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	E906:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	E906:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	E906:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	E906:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	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	M	DIS	KPA:UTOT	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	LITEHCS:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	LITEHCS:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	LOWVFAS:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	LOWVFAS:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	MS:UISO	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	MS:UISO	2	Y	
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	DIS	DWMETALS:ALL	1	N	Dry.
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	Y	
W-865-1803	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	2	Y	
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	
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	CMP	E300.0:NO3	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-865-2133	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	3		
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	E601: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	To be sampled in 2013.
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 to collect sample.
W-PIT1-2204	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Insufficient water to collect sample.
W-PIT1-2204	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Insufficient water to collect sample.
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 to collect sample.
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	CMP	E300.0:PERC	1	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	2	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	3		
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	4		
W-PIT1-2209	GW	Tnbs1-Tnbs0	S	DIS	E601:ALL	2	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	1	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	2	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	3		
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	4		
W-PIT1-2225	GW	Tnbs1-Tnbs0	S	CMP	AS: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
W-PIT1-2225	GW	Tnbs1-Tnbs0	S	CMP	AS:UIISO	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:UIISO	1	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UIISO	2	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UIISO	3		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UIISO	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:UIISO	2	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	A	DIS	DWMETALS:ALL	2	Y	
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	DIS	E601: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	Q	WGMG	E906:ALL	4		
W-PIT7-16	PTMW	Tnsc0	A	CMP	AS:UIISO	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		

**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-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:UIISO	2	N	Dry.
W8SPRNG	SPR	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Dry.
W8SPRNG	SPR	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Dry.
W8SPRNG	SPR	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W8SPRNG	SPR	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Dry.
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, 2012 through June 30, 2012.**

<b>Treatment facility</b>	<b>Month</b>	<b>SVTS Operational hours</b>	<b>GWTS Operational hours</b>	<b>Volume of vapor extracted (thousands of cf)</b>	<b>Volume of ground water discharged (gal)</b>
<b>PIT7-SRC</b>	<b>January</b>	NA	<b>600</b>	NA	<b>3,301</b>
	<b>February</b>	NA	<b>701</b>	NA	<b>5,171</b>
	<b>March</b>	NA	<b>690</b>	NA	<b>4,997</b>
	<b>April</b>	NA	<b>772</b>	NA	<b>4,484</b>
	<b>May</b>	NA	<b>722</b>	NA	<b>5,777</b>
	<b>June</b>	NA	<b>690</b>	NA	<b>7,013</b>
<b>Total</b>		NA	<b>4,175</b>	NA	<b>30,743</b>

**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	1/11/12	2.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.98	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-I	4/3/12	0.56	<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 <sup>a</sup>	4/3/12 DUP	<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	1/11/12	<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	2/13/12	<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	3/12/12	<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	4/3/12	<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	5/7/12	<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	6/5/12	<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:

<sup>a</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.

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

**Table 2.5-3 (Cont.). Analyte detected but not reported in main table.**

Location	Date	Detection frequency
PIT7-SRC-I	1/11/12	0 of 18
PIT7-SRC-I	4/3/12	0 of 18
PIT7-SRC-I <sup>a</sup>	4/3/12 DUP	0 of 18
PIT7-SRC-E	1/11/12	0 of 18
PIT7-SRC-E	2/13/12	0 of 18
PIT7-SRC-E	3/12/12	0 of 18
PIT7-SRC-E	4/3/12	0 of 18
PIT7-SRC-E	5/7/12	0 of 18
PIT7-SRC-E	6/5/12	0 of 18

Notes:

<sup>a</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.

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.**

<b>Location</b>	<b>Date</b>	<b>Nitrate (as NO<sub>3</sub>) (mg/L)</b>	<b>Perchlorate (<math>\mu</math>g/L)</b>
PIT7-SRC-I	1/11/12	38	15
PIT7-SRC-I	4/3/12	40	12
PIT7-SRC-I <sup>a</sup>	4/3/12 DUP	40	11
PIT7-SRC-E	1/11/12	24	<4
PIT7-SRC-E	2/13/12	28	<4
PIT7-SRC-E	3/12/12	32	<4 L
PIT7-SRC-E	4/3/12	35	<4
PIT7-SRC-E	5/7/12	37	<4
PIT7-SRC-E	6/5/12	35	<4

Notes:

<sup>a</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.

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.**

<b>Location</b>	<b>Date</b>	<b>Total Uranium (pCi/L)</b>
PIT7-SRC-I	1/11/12	10.9 ± 1.56
PIT7-SRC-I	4/3/12	23.1 ± 2.31
PIT7-SRC-I <sup>a</sup>	4/3/12 DUP	23.3 ± 2.23
PIT7-SRC-E	1/11/12	<0.3
PIT7-SRC-E	2/13/12	<0.3
PIT7-SRC-E	3/12/12	<0.3
PIT7-SRC-E	4/3/12	<0.3
PIT7-SRC-E	5/7/12	<0.3
PIT7-SRC-E	6/5/12	<0.3

**Notes:**

<sup>a</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.

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.**

<b>Location</b>	<b>Date</b>	<b>Tritium (pCi/L)</b>
PIT7-SRC-I	1/11/12	28000 ± 5440
PIT7-SRC-I	4/3/12	42200 ± 8200
PIT7-SRC-I <sup>a</sup>	4/3/12 DUP	45200 ± 8780
PIT7-SRC-E	1/11/12	24900 ± 4840
PIT7-SRC-E	2/13/12	40800 ± 7940
PIT7-SRC-E	3/12/12	41000 ± 7970
PIT7-SRC-E	4/3/12	43500 ± 8440
PIT7-SRC-E	5/7/12	48100 ± 9340
PIT7-SRC-E	6/5/12	40200 ± 7810

Notes:

<sup>a</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.

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.**

<b>Sample location</b>	<b>Sample identification</b>	<b>Parameter</b>	<b>Frequency</b>
<i>PIT7-SRC GWTS</i>			
<b>Influent Port</b>	<b>PIT7-SRC-I</b>	<b>VOCs</b>	<b>Quarterly</b>
		<b>Uranium</b>	<b>Quarterly</b>
		<b>Perchlorate</b>	<b>Quarterly</b>
		<b>Nitrate</b>	<b>Quarterly</b>
		<b>Tritium<sup>a</sup></b>	<b>Quarterly</b>
		<b>pH</b>	<b>Quarterly</b>
<b>Effluent Port</b>	<b>PIT7-SRC-E</b>	<b>VOCs</b>	<b>Monthly</b>
		<b>Uranium</b>	<b>Monthly</b>
		<b>Perchlorate</b>	<b>Monthly</b>
		<b>Nitrate</b>	<b>Monthly</b>
		<b>Tritium<sup>a</sup></b>	<b>Monthly</b>
		<b>pH</b>	<b>Monthly</b>

**Notes:**

<sup>a</sup> 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	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	E340.2:ALL	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E601: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	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	E340.2:ALL	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E601: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	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	E340.2:ALL	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	E601: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	N	Dry.
K7-07	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
K7-07	PTMW	Qal/WBR	A	CMP	E601: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	AS:UISO	2	N	Inoperable pump.
K7-09	DMW	Tnsc0	A	CMP	E200.7:LI	2	N	Inoperable pump.
K7-09	DMW	Tnsc0	A	CMP	E300.0:NO3	2	N	Inoperable pump.
K7-09	DMW	Tnsc0	S	CMP	E300.0:PERC	2	N	Inoperable pump.
K7-09	DMW	Tnsc0	S	CMP	E300.0:PERC	4		
K7-09	DMW	Tnsc0	A	CMP	E340.2:ALL	2	N	Inoperable pump.
K7-09	DMW	Tnsc0	A	CMP	E601:ALL	2	N	Inoperable pump.
K7-09	DMW	Tnsc0	A	CMP	E8082A:ALL	2	N	Inoperable pump.
K7-09	DMW	Tnsc0	A	CMP	E8330LOW:ALL	2	N	Inoperable pump.
K7-09	DMW	Tnsc0	S	CMP	E906:ALL	2	N	Inoperable pump.

**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	S	CMP	E906:ALL	4		
K7-09	DMW	Tnsc0	A	CMP	T26METALS:ALL	2	N	Inoperable pump.
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	E340.2:ALL	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E601: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	Y	
NC7-12	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-12	PTMW	Qal/WBR	A	CMP	E601: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	Y	
NC7-16	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-16	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
NC7-16	PTMW	Qal/WBR	S	DIS	E906:ALL	1	Y	
NC7-16	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-16	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-16	PTMW	Qal/WBR	Q	DIS	MS:UISO	1	Y	
NC7-16	PTMW	Qal/WBR	A	CMP	MS:UISO	2	Y	
NC7-17	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-17	PTMW	Qal/WBR	A	DIS	E200.7:SI	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	Y	
NC7-17	PTMW	Qal/WBR	A	CMP	E601: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	E601: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	Y	
NC7-20	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2013.
NC7-20	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-20	PTMW	Qal/WBR	A	CMP	E601: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	



**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
NC7-21	PTMW	Qal/WBR	A	CMP	E601: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	E601: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	E601:ALL	2	Y	
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	A	DIS-TF	KPA:UTOT	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	E340.2:ALL	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E601: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	Y	
NC7-34	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-34	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-34	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
NC7-34	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-34	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-36	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC7-36	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-36	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
NC7-36	PTMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
NC7-36	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
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	E601:ALL	2	N	Dry.
NC7-37	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
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	E601: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	A	CMP	MS:UISO	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	E340.2:ALL	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E601: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	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	E340.2:ALL	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E601: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	Y	
NC7-49A	PTMW	Qal/WBR	E	CMP	E300.0:PERC	2	Y	
NC7-49A	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-49A	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-50	CW	Tmss	E	DIS	AS:UISO	2	Y	
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	E601: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	E601:ALL	2	Y	
NC7-52	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	1	Y	
NC7-52	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	3		

**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
NC7-53	PTMW	Qal/WBR	A	DIS	AS:UIISO	2	Y	
NC7-53	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2013.
NC7-53	PTMW	Qal/WBR	O	CMP	E300.0:PERC	2	N	To be sampled in 2013.
NC7-53	PTMW	Qal/WBR	O	DIS	E906:ALL	2	N	To be sampled in 2013.
NC7-63	EW	Qal/WBR	A	CMP-TF	AS:UIISO	2	N	Dry.
NC7-63	EW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	N	Dry.
NC7-63	EW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	N	Dry.
NC7-63	EW	Qal/WBR	A	CMP-TF	E601:ALL	2	N	Dry.
NC7-63	EW	Qal/WBR	S	CMP-TF	E906:ALL	2	N	Dry.
NC7-63	EW	Qal/WBR	S	CMP-TF	E906:ALL	4		
NC7-64	EW	Qal/WBR	A	CMP-TF	AS:UIISO	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	CMP-TF	E601:ALL	2	Y	
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	Q	DIS-TF	KPA:UTOT	1	Y	
NC7-64	EW	Qal/WBR	Q	DIS-TF	KPA:UTOT	2	Y	
NC7-65	PTMW	Tnsc0	A	CMP	AS:UIISO	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	E601: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:UIISO	2	Y	
NC7-67	PTMW	Tnsc0	A	CMP	AS:UIISO	2	Y	
NC7-67	PTMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
NC7-67	PTMW	Tnsc0	A	CMP	E300.0:PERC	2	Y	
NC7-67	PTMW	Tnsc0	A	CMP	E601: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:UIISO	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:UIISO	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	E601: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:UIISO	2	Y	
NC7-76	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2013.
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	A	DIS	DWMETALS:ALL	1	Y	
W-865-01	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	1	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
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-865-03	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	Y	
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.
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	E601:ALL	2	Y	
W-PIT7-03	PTMW	Qal/WBR	S	CMP	E601: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	E601: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.

**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-PIT7-11	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	E601: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:UIISO	2	N	To be sampled in 2013.
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	E601: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:UIISO	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	E601: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		
W-PIT7-14	PTMW	Tnsc0	O	DIS	AS:UIISO	2	N	To be sampled in 2013.
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:UIISO	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:UIISO	2	Y	
W-PIT7-1860	PTMW	Tnbs1-Tnbs0	E	DIS	AS:UIISO	2	Y	
W-PIT7-1860	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:PERC	2	Y	
W-PIT7-1860	PTMW	Tnbs1-Tnbs0	E	CMP	E906:ALL	2	Y	
W-PIT7-1861	PTMW	Qal/WBR	O	CMP	AS:UIISO	2	N	To be sampled in 2013.
W-PIT7-1861	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2013.
W-PIT7-1861	PTMW	Qal/WBR	O	CMP	E300.0:PERC	2	N	To be sampled in 2013.
W-PIT7-1861	PTMW	Qal/WBR	O	CMP	E906:ALL	2	N	To be sampled in 2013.
W-PIT7-1903	PTMW	Qal/WBR	A	DIS	AS:UIISO	2	Y	
W-PIT7-1903	PTMW	Qal/WBR	A	DIS	E300.0:O-PO2	2	Y	
W-PIT7-1904	PTMW	Qal/WBR	A	DIS	AS:UIISO	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:UIISO	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:UIISO	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:UIISO	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:UIISO	2	Y	
W-PIT7-1916	PTMW	Qal/WBR	A	DIS	E300.0:O-PO2	2	Y	
W-PIT7-1917	PTMW	Qal/WBR	A	DIS	AS:UIISO	2	Y	
W-PIT7-1917	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	

**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-PIT7-1918	PTMW	Qal/WBR	A	CMP	E601: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	CMP-TF	E601:ALL	2	Y	
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	Q	DIS-TF	KPA:UTOT	1	Y	
W-PIT7-2305	EW	Qal/WBR	Q	DIS-TF	KPA:UTOT	2	Y	
W-PIT7-2306	EW	Qal/WBR	A	CMP-TF	AS:UISO	2	Y	
W-PIT7-2306	EW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	Y	
W-PIT7-2306	EW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	Y	
W-PIT7-2306	EW	Qal/WBR	A	CMP-TF	E601:ALL	2	Y	
W-PIT7-2306	EW	Qal/WBR	S	CMP-TF	E906:ALL	2	Y	
W-PIT7-2306	EW	Qal/WBR	S	CMP-TF	E906:ALL	4		
W-PIT7-2306	EW	Qal/WBR	Q	DIS-TF	KPA:UTOT	1	Y	
W-PIT7-2306	EW	Qal/WBR	Q	DIS-TF	KPA:UTOT	2	Y	
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	CMP-TF	E601:ALL	2	Y	
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	Q	DIS-TF	KPA:UTOT	1	Y	
W-PIT7-2307	EW	Qal/WBR	Q	DIS-TF	KPA:UTOT	2	Y	
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	E601: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	AS:UISO	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT7-2704	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
W-PIT7-2704	PTMW	Qal/WBR	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.**

<b>Sample Location</b>	<b>Location Type</b>	<b>Hydro Unit</b>	<b>Sampling Frequency</b>	<b>Sample Driver</b>	<b>Requested Analysis</b>	<b>Sampling Quarter</b>	<b>Sampled Y/N</b>	<b>Comment</b>
W-PIT7-2704	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
W-PIT7-2704	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
W-PIT7-2704	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
W-PIT7-2704	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT7-2705	PTMW	Qal/WBR	A	CMP	AS:UIISO	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	S	CMP	E906:ALL	4		

**Table 2.5-9. Pit 7-Source (PIT7-SRC) mass removed, January 1, 2012 through June 30, 2012.**

<b>Treatment facility</b>	<b>Month</b>	<b>SVTS VOC mass removed (g)</b>	<b>GWTS VOC mass removed (g)</b>	<b>Perchlorate mass removed (g)</b>	<b>Nitrate mass removed (kg)</b>	<b>Total Uranium mass removed (g)</b>
<b>PIT7-SRC</b>	<b>January</b>	<b>NA</b>	<b>0.026</b>	<b>0.19</b>	<b>0.48</b>	<b>0.19</b>
	<b>February</b>	<b>NA</b>	<b>0.036</b>	<b>0.29</b>	<b>0.77</b>	<b>0.51</b>
	<b>March</b>	<b>NA</b>	<b>0.045</b>	<b>0.28</b>	<b>0.73</b>	<b>0.48</b>
	<b>April</b>	<b>NA</b>	<b>0.0081</b>	<b>0.28</b>	<b>0.70</b>	<b>0.44</b>
	<b>May</b>	<b>NA</b>	<b>0.022</b>	<b>0.35</b>	<b>0.87</b>	<b>0.48</b>
	<b>June</b>	<b>NA</b>	<b>0.032</b>	<b>0.42</b>	<b>1.0</b>	<b>0.53</b>
<b>Total</b>		<b>NA</b>	<b>0.17</b>	<b>1.8</b>	<b>4.6</b>	<b>2.6</b>



**Table 2.6-1. Building 854-Source (854-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2012 through June 30, 2012.**

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	0	0	0	0
	February	304	194	853	47,715
	March	526	384	1,507	104,587
	April	774	773	2,164	182,719
	May	703	722	1,962	153,811
	June	689	688	1,920	135,310
<b>Total</b>		<b>2,996</b>	<b>2,761</b>	<b>8,406</b>	<b>624,142</b>

**Table 2.6-2. Building 854-Proximal (854-PRX) volumes of ground water and soil vapor extracted and discharged, January 1, 2012 through June 30, 2012.**

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	815	NA	50,088
	February	NA	701	NA	42,977
	March	NA	690	NA	42,041
	April	NA	774	NA	46,677
	May	NA	722	NA	43,249
	June	NA	690	NA	40,808
<b>Total</b>		<b>NA</b>	<b>4,392</b>	<b>NA</b>	<b>265,840</b>

**Table 2.6-3. Building 854-Distal (854-DIS) volumes of ground water and soil vapor extracted and discharged, January 1, 2012 through June 30, 2012.**

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	23	NA	1,253
	March	NA	31	NA	1,485
	April	NA	34	NA	1,623
	May	NA	32	NA	1,478
	June	NA	29	NA	1,420
<b>Total</b>		NA	149	NA	7,259

**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)
<i>Building 854-Distal<sup>a</sup></i>															
854-DIS-I	2/13/12	31	<0.5	0.61	<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	4/2/12	26	<0.5	0.54	<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 <sup>b</sup>	4/2/12 DUP	26	<0.5	0.54	<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	2/13/12	<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	3/12/12	<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	4/2/12	<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	5/2/12	<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	6/5/12	<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
<i>Building 854-Proximal</i>															
854-PRX-I	1/9/12	22	<0.5	<0.5	<0.5	<0.5	0.62	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-PRX-I	4/2/12	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
854-PRX-I <sup>b</sup>	4/2/12 DUP	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
854-PRX-E	1/9/12	<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	2/13/12	<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	3/12/12	<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	4/2/12	<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	5/2/12	<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	6/5/12	<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 2.6-4. 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)
<i>Building 854-Distal<sup>a</sup></i>															
854-DIS-I	2/13/12	31	<0.5	0.61	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
<i>Building 854-Source<sup>a</sup></i>															
854-SRC-I	2/13/12	45	<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	4/2/12	41	<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 <sup>b</sup>	4/2/12 DUP	41	<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	2/13/12	2.9	<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
854-SRC-E <sup>c</sup>	2/21/12	<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 <sup>c</sup>	2/23/12	<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	3/14/12	<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	4/2/12	<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	5/2/12	<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	6/5/12	<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:

<sup>a</sup> No samples collected in January due to GWTS shut down for freeze protection.

<sup>b</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.

<sup>c</sup> Additional compliance samples required due the effluent hit on February 2, 2012.

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

**Table 2.6-4 (Cont.). Analyte detected but not reported in main table.**

Location	Date	Detection frequency
<i>Building 854-Distal<sup>d</sup></i>		
854-DIS-I	2/13/12	0 of 18
854-DIS-I	4/2/12	0 of 18
854-DIS-I <sup>b</sup>	4/2/12 DUP	0 of 18
854-DIS-E	2/13/12	0 of 18
854-DIS-E	3/12/12	0 of 18
854-DIS-E	4/2/12	0 of 18
854-DIS-E	5/2/12	0 of 18
854-DIS-E	6/5/12	0 of 18
<i>Building 854-Proximal</i>		
854-PRX-I	1/9/12	0 of 18
854-PRX-I	4/2/12	0 of 18
854-PRX-I <sup>b</sup>	4/2/12 DUP	0 of 18
854-PRX-E	1/9/12	0 of 18
854-PRX-E	2/13/12	0 of 18
854-PRX-E	3/12/12	0 of 18
854-PRX-E	4/2/12	0 of 18
854-PRX-E	5/2/12	0 of 18
854-PRX-E	6/5/12	0 of 18
<i>Building 854-Source<sup>a</sup></i>		
854-SRC-I	2/13/12	0 of 18
854-SRC-I	4/2/12	0 of 18
854-SRC-I <sup>b</sup>	4/2/12 DUP	0 of 18
854-SRC-E	2/13/12	0 of 18
854-SRC-E <sup>c</sup>	2/21/12	0 of 18
854-SRC-E <sup>c</sup>	2/23/12	0 of 18
854-SRC-E	3/14/12	0 of 18
854-SRC-E	4/2/12	0 of 18
854-SRC-E	5/2/12	0 of 18
854-SRC-E	6/5/12	0 of 18

**Notes:**

<sup>a</sup> No samples collected in January due to GWTS shut down for freeze protection.

<sup>b</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.

<sup>c</sup> Additional compliance samples required due the effluent hit on February 2, 2012.

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 NO <sub>3</sub> ) (mg/L)	Perchlorate (µg/L)
<i>Building 854-Distal<sup>f</sup></i>			
854-DIS-I	2/13/12	22	5.4
854-DIS-I	4/2/12	22	5.0
854-DIS-I <sup>b</sup>	4/2/12 DUP	23	5.3
854-DIS-E	2/13/12	1.2	<4
854-DIS-E	3/12/12	8.8	<4 L
854-DIS-E	4/2/12	14	<4
854-DIS-E	5/2/12	15	<4
854-DIS-E	6/5/12	5.9	<4
<i>Building 854-Proximal<sup>c</sup></i>			
854-PRX-I	1/9/12	41	8.3
854-PRX-I	2/13/12	43	–
854-PRX-I	3/12/12	40	–
854-PRX-I	4/2/12	42	7.7
854-PRX-I <sup>b</sup>	4/2/12 DUP	36 D	7.7
854-PRX-I	5/2/12	42	–
854-PRX-I	6/5/12	42	–
854-PRX-E	1/9/12	36	<4
854-PRX-E	2/13/12	39	<4
854-PRX-E	3/12/12	36	<4 L
854-PRX-E	4/2/12	38	<4
854-PRX-E	5/2/12	36	<4
854-PRX-E	6/5/12	34	<4
<i>Building 854-Source<sup>a,d</sup></i>			
854-SRC-I	2/13/12	–	<4 O
854-SRC-I	4/2/12	–	<4
854-SRC-I <sup>b</sup>	4/2/12 DUP	–	<4
854-SRC-E	2/13/12	–	<4
854-SRC-E	3/14/12	–	<4
854-SRC-E	4/2/12	–	<4
854-SRC-E	5/2/12	–	<4
854-SRC-E	6/5/12	–	<4

## Notes:

<sup>a</sup> No samples collected in January due to GWTS shut down for freeze protection.

<sup>b</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.

<sup>c</sup> Although not required, influent nitrate samples were collected monthly.

<sup>d</sup> 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
<b>854-SRC GWTS</b>			
Influent Port	854-SRC-I	VOCs	Quarterly
		Perchlorate	Quarterly
		pH	Quarterly
Effluent Port	854-SRC-E	VOCs	Monthly
		Perchlorate	Monthly
		pH	Monthly
<b>854-SRC SVTS</b>			
Influent Port	W-854-1834-854-SRC-VI	No Monitoring Requirements	
Effluent Port	854-SRC-E	VOCs	Weekly <sup>a</sup>
Intermediate GAC	854-SRC-VCF3I	VOCs	Weekly <sup>a</sup>
<b>854-PRX GWTS</b>			
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
<b>854-DIS GWTS</b>			
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:

<sup>a</sup> 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	E300.0:PERC	4		
W-854-01	PTWM	Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-01	PTWM	Tnsc0	S	CMP	E601:ALL	4		
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	E300.0:PERC	3		
W-854-02	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	4		
W-854-02	EW	Tnbs1-Tnsc0	S	DIS-TF	E601:ALL	1	Y	
W-854-02	EW	Tnbs1-Tnsc0	S	CMP-TF	E601:ALL	2	Y	
W-854-02	EW	Tnbs1-Tnsc0	S	DIS-TF	E601:ALL	3		
W-854-02	EW	Tnbs1-Tnsc0	S	CMP-TF	E601:ALL	4		
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	M	DIS-TF	E300.0:NO3	3		
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	3		
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	3		
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	4		
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	4		
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	4		
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	E300.0:PERC	3		
W-854-03	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:PERC	4		
W-854-03	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	1	Y	
W-854-03	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	2	Y	
W-854-03	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	3		
W-854-03	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	4		
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	E300.0:PERC	4		
W-854-04	PTWM	Tmss	S	CMP	E601:ALL	2	Y	
W-854-04	PTWM	Tmss	S	CMP	E601:ALL	4		
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	E300.0:PERC	4		
W-854-05	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	2	Y	
W-854-05	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	4		
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	E300.0:PERC	4		
W-854-06	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-06	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
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	E300.0:PERC	4		



**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-854-07	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-07	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
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	E300.0:PERC	4		
W-854-08	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-08	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-09	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-09	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-09	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-09	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-09	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
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	E300.0:PERC	4		
W-854-10	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	2	Y	
W-854-10	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	4		
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	E300.0:PERC	4		
W-854-11	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	N	Dry.
W-854-11	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-12	PTWM	Tmss	A	CMP	E300.0:NO3	2	N	Insufficient water to collect sample.
W-854-12	PTWM	Tmss	S	CMP	E300.0:PERC	2	N	Insufficient water to collect sample.
W-854-12	PTWM	Tmss	S	CMP	E300.0:PERC	4		
W-854-12	PTWM	Tmss	S	CMP	E601:ALL	2	N	Insufficient water to collect sample.
W-854-12	PTWM	Tmss	S	CMP	E601:ALL	4		
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	E300.0:PERC	4		
W-854-13	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-13	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
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	E300.0:PERC	4		
W-854-14	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	2	Y	
W-854-14	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	4		
W-854-15	PTWM	Qls-Tnbs1	Q	UK	D-15N(NO3):ALL	3		
W-854-15	PTWM	Qls-Tnbs1	Q	UK	D-18O(NO3):ALL	3		
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	E300.0:PERC	4		
W-854-15	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	2	Y	
W-854-15	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	4		
W-854-15	PTWM	Qls-Tnbs1	Q	UK	EXCESSN2:ALL	3		
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	E300.0:PERC	4		
W-854-17	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-17	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-18A	EW	Tnbs1-Tnsc0	A	CMP-TF	E300.0:NO3	2	Y	
W-854-18A	EW	Tnbs1-Tnsc0	S	DIS-TF	E300.0:PERC	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-854-18A	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	2	Y	
W-854-18A	EW	Tnbs1-Tnsc0	S	DIS-TF	E300.0:PERC	3		
W-854-18A	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	4		
W-854-18A	EW	Tnbs1-Tnsc0	S	DIS-TF	E601:ALL	1	Y	
W-854-18A	EW	Tnbs1-Tnsc0	S	CMP-TF	E601:ALL	2	Y	
W-854-18A	EW	Tnbs1-Tnsc0	S	DIS-TF	E601:ALL	3		
W-854-18A	EW	Tnbs1-Tnsc0	S	CMP-TF	E601:ALL	4		
W-854-19	PTWM	Qls-Tnbs1	O	CMP	E300.0:NO3	2	N	To be sampled in 2013.
W-854-19	PTWM	Qls-Tnbs1	O	CMP	E300.0:PERC	2	N	To be sampled in 2013.
W-854-19	PTWM	Qls-Tnbs1	O	CMP	E601:ALL	2	N	To be sampled in 2013.
W-854-1701	PTWM	Tnsc0	Q	UK	D-15N(NO3):ALL	3		
W-854-1701	PTWM	Tnsc0	Q	UK	D-18O(NO3):ALL	3		
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	E300.0:PERC	4		
W-854-1701	PTWM	Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-1701	PTWM	Tnsc0	S	CMP	E601:ALL	4		
W-854-1701	PTWM	Tnsc0	Q	UK	EXCESSN2:ALL	3		
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	E300.0:PERC	4		
W-854-1706	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	2	N	Dry.
W-854-1706	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	4		
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	E300.0:PERC	4		
W-854-1707	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-1707	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-1731	PTWM	Tnsc0	Q	UK	D-15N(NO3):ALL	3		
W-854-1731	PTWM	Tnsc0	Q	UK	D-18O(NO3):ALL	3		
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	E300.0:PERC	4		
W-854-1731	PTWM	Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-1731	PTWM	Tnsc0	S	CMP	E601:ALL	4		
W-854-1731	PTWM	Tnsc0	Q	UK	EXCESSN2:ALL	3		
W-854-1822	PTWM	Tnbs1-Tnsc0	Q	UK	D-15N(NO3):ALL	3		
W-854-1822	PTWM	Tnbs1-Tnsc0	Q	UK	D-18O(NO3):ALL	3		
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	E300.0:PERC	4		
W-854-1822	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-1822	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-1822	PTWM	Tnbs1-Tnsc0	Q	UK	EXCESSN2:ALL	3		
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	E300.0:PERC	4		
W-854-1823	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-1823	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-1902	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-1902	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-1902	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		

**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-854-1902	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-1902	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-2115	PTWM	Tnbs1-Tnsc0	Q	UK	D-15N(NO3):ALL	3		
W-854-2115	PTWM	Tnbs1-Tnsc0	Q	UK	D-18O(NO3):ALL	3		
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	E300.0:PERC	4		
W-854-2115	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-2115	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-2115	PTWM	Tnbs1-Tnsc0	Q	UK	EXCESSN2:ALL	3		
W-854-2139	EW	Tnbs1-Tnsc0	Q	UK	D-15N(NO3):ALL	3		
W-854-2139	EW	Tnbs1-Tnsc0	Q	UK	D-18O(NO3):ALL	3		
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:NO3	1	Y	
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:NO3	3		
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:NO3	4		
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	E300.0:PERC	3		
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:PERC	4		
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	1	Y	
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	2	Y	
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	3		
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	4		
W-854-2139	EW	Tnbs1-Tnsc0	Q	UK	EXCESSN2:ALL	3		
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	Y	
W-854-2218	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	2	Y	
W-854-2218	EW	Tnbs1-Tnsc0	S	DIS-TF	E300.0:PERC	3		
W-854-2218	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	4		
W-854-2218	EW	Tnbs1-Tnsc0	S	DIS-TF	E601:ALL	1	Y	
W-854-2218	EW	Tnbs1-Tnsc0	S	CMP-TF	E601:ALL	2	Y	
W-854-2218	EW	Tnbs1-Tnsc0	S	DIS-TF	E601:ALL	3		
W-854-2218	EW	Tnbs1-Tnsc0	S	CMP-TF	E601:ALL	4		
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	E300.0:PERC	4		
W-854-2611	PTMW	Tnbs1/Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-2611	PTMW	Tnbs1/Tnsc0	S	CMP	E601:ALL	4		
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	E300.0:PERC	4		
W-854-45	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-45	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-F2	PTWM	Qls-Tnbs1	O	CMP	E300.0:NO3	2	N	To be sampled in 2013.
W-854-F2	PTWM	Qls-Tnbs1	O	CMP	E300.0:PERC	2	N	To be sampled in 2013.
W-854-F2	PTWM	Qls-Tnbs1	O	CMP	E601:ALL	2	N	To be sampled in 2013.
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	E300.0:PERC	4		
SPRING10	SPR	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	N	Dry.
SPRING10	SPR	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		

**Table 2.6-7. Building 854 Operable Unit ground and surface water sampling and analysis plan.**

<b>Sample Location</b>	<b>Location Type</b>	<b>Hydro Unit</b>	<b>Sampling Frequency</b>	<b>Sample Driver</b>	<b>Requested Analysis</b>	<b>Sampling Quarter</b>	<b>Sampled Y/N</b>	<b>Comment</b>
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	E300.0:PERC	4		
SPRING11	SPR	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
SPRING11	SPR	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		

**Table 2.6-8. Building 854-Source (854-SRC) mass removed, January 1, 2012 through June 30, 2012.**

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	0	0	0	0	NA	NA
	February	57	8.1	0.18	7.9	NA	NA
	March	100	18	0.44	18	NA	NA
	April	100	25	0.76	32	NA	NA
	May	93	22	0.72	27	NA	NA
	June	91	20	0.69	24	NA	NA
<b>Total</b>		<b>440</b>	<b>93</b>	<b>2.8</b>	<b>110</b>	<b>NA</b>	<b>NA</b>

**Table 2.6-9. Building 854-Proximal (854-PRX) mass removed, January 1, 2012 through June 30, 2012.**

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	4.2	1.8	7.4	NA	NA
	February	NA	3.6	1.6	6.3	NA	NA
	March	NA	3.5	1.5	6.2	NA	NA
	April	NA	3.7	1.4	6.4	NA	NA
	May	NA	3.4	1.3	6.9	NA	NA
	June	NA	3.2	1.2	6.5	NA	NA
<b>Total</b>		<b>NA</b>	<b>22</b>	<b>8.8</b>	<b>40</b>	<b>NA</b>	<b>NA</b>

**Table 2.6-10. Building 854-Distal (854-DIS) mass removed, January 1, 2012 through June 30, 2012.**

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	0.17	0.024	0.10	NA	NA
	March	NA	0.21	0.029	0.12	NA	NA
	April	NA	0.23	0.031	0.13	NA	NA
	May	NA	0.20	0.029	0.12	NA	NA
	June	NA	0.20	0.027	0.11	NA	NA
<b>Total</b>		NA	1.0	0.14	0.58	NA	NA

**Table 2.7-1. Building 832-Source (832-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2012 through June 30, 2012.**

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	560	480	149	1,991
	February	696	696	157	3,892
	March	672	672	176	3,646
	April	792	792	193	4,940
	May	696	696	155	4,934
	June	648	648	126	4,754
<b>Total</b>		<b>4,064</b>	<b>3,984</b>	<b>956</b>	<b>24,157</b>

**Table 2.7-2. Building 830-Source (830-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2012 through June 30, 2012.**

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	819	581	1,721	209,910
	February	695	631	1,396	184,874
	March	386	378	764	67,270
	April	624	563	1,207	92,148
	May	652	420	1,136	97,231
	June	649	551	1,053	169,528
<b>Total</b>		<b>3,825</b>	<b>3,124</b>	<b>7,277</b>	<b>820,961</b>

**Table 2.7-3. Building 830-Distal South (830-DISS) volumes of ground water and soil vapor extracted and discharged, January 1, 2012 through June 30, 2012.**

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	552	NA	109,045
	March	NA	720	NA	131,276
	April	NA	648	NA	138,497
	May	NA	312	NA	36,934
	June	NA	408	NA	67,107
<b>Total</b>		NA	<b>2,640</b>	NA	<b>482,859</b>



**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)
<i>Building 830-Distal South<sup>a</sup></i>															
<i>Building 830-Source</i>															
830-SRC-I	1/9/12	98	<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
830-SRC-I	4/2/12	1,500 D	1.9	<0.5	<0.5	<0.5	0.85	<0.5	0.72	<0.5	<0.5	0.59	<0.5	<0.5	<0.5
830-SRC-I <sup>b</sup>	4/2/12 DUP	2,550 D	2.6	<0.5	<0.5	<0.5	0.9	<0.5	0.9	<0.5	<0.5	0.6	0.7	<0.5	<0.5
830-SRC-I2	1/9/12	17	<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
830-SRC-I2	4/2/12	16	<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
830-SRC-E	1/9/12	<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
830-SRC-E	2/13/12	<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
830-SRC-E	3/14/12	<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
830-SRC-E	4/2/12	<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
830-SRC-E	5/2/12	<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
830-SRC-E	6/6/12	<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
<i>Building 832-Source</i>															
832-SRC-I	1/9/12	55	<0.5	1	<0.5	<0.5	0.54	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
832-SRC-I	4/2/12	86	<0.5	1.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
832-SRC-I <sup>b</sup>	4/2/12 DUP	80	<0.5	1.8	<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	1/9/12	<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	2/13/12	<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	3/5/12	<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 2.7-4. 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)
<i>Building 830-Distal South<sup>a</sup></i>															
832-SRC-E	4/2/12	<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	5/2/12	<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	6/6/12	<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:

<sup>a</sup> No influent or effluent monitoring conducted due to VOC treatment at CGSA GWTS.

<sup>b</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.

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

**Table 2.7-4 (Cont.). Analyte detected but not reported in main table.**

Location	Date	Detection frequency	1,2-DCE (Total) ( $\mu\text{g/l}$ )
<i>Building 830-Distal South<sup>a</sup></i>			
<i>Building 830-Source</i>			
830-SRC-I	1/9/12	0 of 18	–
830-SRC-I	4/2/12	0 of 18	–
830-SRC-I <sup>b</sup>	4/2/12 DUP	0 of 18	–
830-SRC-I2	1/9/12	0 of 18	–
830-SRC-I2	4/2/12	0 of 18	–
830-SRC-E	1/9/12	0 of 18	–
830-SRC-E	2/13/12	0 of 18	–
830-SRC-E	3/14/12	0 of 18	–
830-SRC-E	4/2/12	0 of 18	–
830-SRC-E	5/2/12	0 of 18	–
830-SRC-E	6/6/12	0 of 18	–
<i>Building 832-Source</i>			
832-SRC-I	1/9/12	1 of 18	1
832-SRC-I	4/2/12	1 of 18	1.9
832-SRC-I <sup>b</sup>	4/2/12 DUP	1 of 18	1.8
832-SRC-E	1/9/12	0 of 18	–
832-SRC-E	2/13/12	0 of 18	–
832-SRC-E	3/5/12	0 of 18	–
832-SRC-E	4/2/12	0 of 18	–
832-SRC-E	5/2/12	0 of 18	–
832-SRC-E	6/6/12	0 of 18	–

## Notes:

<sup>a</sup> No influent or effluent monitoring conducted due to VOC treatment at CGSA GWTS.

<sup>b</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.

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 ( $\mu\text{g/L}$ )
<i>Building 830-Distal South<sup>a</sup></i>		
830-DISS-I	2/13/12	<4
830-DISS-I	4/2/12	<4
830-DISS-I	4/2/12 DUP	<4
830-DISS-E	2/13/12	<4
830-DISS-E	3/7/12	<4
830-DISS-E	4/2/12	<4
830-DISS-E	5/14/12	<4
830-DISS-E	6/5/12	<4
<i>Building 830-Source</i>		
830-SRC-I	1/9/12	<4
830-SRC-I	4/2/12	5.2
830-SRC-I <sup>b</sup>	4/2/12 DUP	<4
830-SRC-E	1/9/12	<4
830-SRC-E	2/13/12	<4
830-SRC-E	3/14/12	<4
830-SRC-E	4/2/12	<4
830-SRC-E	5/2/12	<4
830-SRC-E	6/6/12	<4
<i>Building 832-Source</i>		
832-SRC-I	1/9/12	5.9
832-SRC-I	4/2/12	6.9
832-SRC-I <sup>b</sup>	4/2/12 DUP	6.0
832-SRC-E	1/9/12	<4
832-SRC-E	2/13/12	<4
832-SRC-E	3/5/12	<4
832-SRC-E	4/2/12	<4
832-SRC-E	5/2/12	<4
832-SRC-E	6/6/12	<4

## Notes:

<sup>a</sup> No compliance monitoring conducted in January due to shut down of GWTS for freeze protection.

<sup>b</sup> Duplicate sampling and analysis performed in April as part of QA/QC process.

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
<i>832-SRC GWTS</i>			
Influent Port	832-SRC-I	VOCs	Quarterly
		Perchlorate	Quarterly
		pH	Quarterly
Effluent Port	832-SRC-E	VOCs	Monthly
		Perchlorate	Monthly
		PH	Monthly
<i>832-SRC SVTS</i>			
Influent Port	832-SRC-VI	No Monitoring Requirements	
Effluent Port	832-SRC-VE	VOCs	Weekly <sup>a</sup>
Intermediate GAC	832-SRC-VCF3I	VOCs	Weekly <sup>a</sup>
<i>830-SRC GWTS</i>			
Influent Port	830-SRC-I	VOCs	Quarterly
		Perchlorate	Quarterly
		PH	Quarterly
Effluent Port	830-SRC-E	VOCs	Monthly
		Perchlorate	Monthly
		PH	Monthly
<i>830-SRC SVTS</i>			
Influent Port	830-SRC-VI	No Monitoring Requirements	
Effluent Port	830-SRC-VE	VOCs	Weekly <sup>a</sup>
Intermediate GAC	830-SRC-VCF3I	VOCs	Weekly <sup>a</sup>
<i>830-DISS GWTS</i>			
Influent Port	830-DISS-I	Perchlorate	Quarterly
		pH	Quarterly
Effluent Port	830-DISS-E	Perchlorate	Monthly
		pH	Monthly

## Notes:

<sup>a</sup> 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	Y	
SPRING3	SPR	Qal/WBR	A	CMP	E300.0:PERC	1	Y	
SPRING3	SPR	Qal/WBR	S	CMP	E601:ALL	1	Y	
SPRING3	SPR	Qal/WBR	S	CMP	E601:ALL	3		
SPRING4	SPR	Tpsg-Tps	O	CMP	E300.0:NO3	1	N	To be sampled in 2013.
SPRING4	SPR	Tpsg-Tps	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
SPRING4	SPR	Tpsg-Tps	O	CMP	E601:ALL	1	N	To be sampled in 2013.
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-830-031	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
SVI-830-032	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
SVI-830-032	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	Y	
SVI-830-032	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
SVI-830-032	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
SVI-830-033	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
SVI-830-033	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	Y	
SVI-830-033	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
SVI-830-033	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
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	
SVI-830-035	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
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-830-04A	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
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-830-05	PTMW	Tnsc1c	S	CMP	E601:ALL	3		
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-830-07	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-830-09	PTMW	UTnbs1	O	CMP	E300.0:NO3	1	N	To be sampled in 2013.
W-830-09	PTMW	UTnbs1	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-830-09	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-830-09	PTMW	UTnbs1	S	CMP	E601:ALL	3		
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-830-10	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
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-830-11	PTMW	Tnsc1c	S	CMP	E601:ALL	3		
W-830-12	GW	LTnbs1	S	CMP	E300.0:NO3	1	N	Inoperable pump.
W-830-12	GW	LTnbs1	S	CMP	E300.0:NO3	3		
W-830-12	GW	LTnbs1	S	CMP	E300.0:PERC	1	N	Inoperable pump.
W-830-12	GW	LTnbs1	S	CMP	E300.0:PERC	3		

**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-830-12	GW	LTnbs1	Q	CMP	E601:ALL	1	N	Inoperable pump.
W-830-12	GW	LTnbs1	Q	CMP	E601:ALL	2	N	Inoperable pump.
W-830-12	GW	LTnbs1	Q	CMP	E601:ALL	3		
W-830-12	GW	LTnbs1	Q	CMP	E601:ALL	4		
W-830-13	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-830-13	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-830-13	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-830-13	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-830-13	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1	Y	
W-830-14	PTMW	Tnsc1b	E	CMP	E300.0:NO3	1	Y	
W-830-14	PTMW	Tnsc1b	E	CMP	E300.0:PERC	1	Y	
W-830-14	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-14	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-15	GW	UTnbs1	Q	DIS	AS:UISO	2	Y	
W-830-15	GW	UTnbs1	S	CMP	E300.0:NO3	1	Y	
W-830-15	GW	UTnbs1	S	CMP	E300.0:NO3	3		
W-830-15	GW	UTnbs1	S	CMP	E300.0:PERC	1	Y	
W-830-15	GW	UTnbs1	S	CMP	E300.0:PERC	3		
W-830-15	GW	UTnbs1	Q	CMP	E601:ALL	1	Y	
W-830-15	GW	UTnbs1	Q	CMP	E601:ALL	2	Y	
W-830-15	GW	UTnbs1	Q	CMP	E601:ALL	3		
W-830-15	GW	UTnbs1	Q	CMP	E601:ALL	4		
W-830-15	GW	UTnbs1	Q	DIS	E9060:ALL	2	Y	
W-830-15	GW	UTnbs1	Q	DIS	GENMIN:ALL	2	Y	
W-830-16	PTMW	Tnsc1b	O	CMP	E300.0:NO3	1	N	To be sampled in 2013.
W-830-16	PTMW	Tnsc1b	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-830-16	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-16	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-17	PTMW	Tnbs2	Q	DIS	AS:UISO	2	Y	
W-830-17	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-830-17	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-830-17	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-830-17	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-830-17	PTMW	Tnbs2	Q	DIS	E9060:ALL	2	Y	
W-830-17	PTMW	Tnbs2	Q	DIS	GENMIN:ALL	2	Y	
W-830-1730	GW	Tnsc1b	S	CMP	E300.0:NO3	1	Y	
W-830-1730	GW	Tnsc1b	S	CMP	E300.0:NO3	3		
W-830-1730	GW	Tnsc1b	S	CMP	E300.0:PERC	1	Y	
W-830-1730	GW	Tnsc1b	S	CMP	E300.0:PERC	3		
W-830-1730	GW	Tnsc1b	Q	CMP	E601:ALL	1	Y	
W-830-1730	GW	Tnsc1b	Q	CMP	E601:ALL	2	Y	
W-830-1730	GW	Tnsc1b	Q	CMP	E601:ALL	3		
W-830-1730	GW	Tnsc1b	Q	CMP	E601:ALL	4		
W-830-18	PTMW	UTnbs1	E	CMP	E300.0:NO3	1	Y	
W-830-18	PTMW	UTnbs1	E	CMP	E300.0:PERC	1	Y	
W-830-18	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-830-18	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-830-1807	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-830-1807	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-830-1807	EW	Qal/WBR-Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-1807	EW	Qal/WBR-Tnsc1b	S	CMP-TF	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-830-1807	EW	Qal/WBR-Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-1807	EW	Qal/WBR-Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-1807	EW	Qal/WBR-Tnsc1b	S	DIS-TF	E601:ALL	4		
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-830-1829	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
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-830-1830	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-1831	PTMW	Tnsc1b	O	CMP	E300.0:NO3	1	N	To be sampled in 2013.
W-830-1831	PTMW	Tnsc1b	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-830-1831	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-1831	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
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-830-1832	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-830-19	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-830-19	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-830-19	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-19	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-830-19	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-19	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-19	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-830-20	PTMW	UTnbs1	E	CMP	E300.0:NO3	1	Y	
W-830-20	PTMW	UTnbs1	E	CMP	E300.0:PERC	1	Y	
W-830-20	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-830-20	PTMW	UTnbs1	S	CMP	E601:ALL	3		
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-830-21	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
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-830-22	PTMW	Tnsc1a	S	CMP	E601:ALL	3		
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-830-2213	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-2214	EW	Tnsc1a	A	CMP-TF	E300.0:NO3	1	Y	
W-830-2214	EW	Tnsc1a	A	CMP-TF	E300.0:PERC	1	Y	
W-830-2214	EW	Tnsc1a	A	DIS-TF	E300.0:PERC	3		
W-830-2214	EW	Tnsc1a	S	CMP-TF	E601:ALL	1	Y	
W-830-2214	EW	Tnsc1a	S	DIS-TF	E601:ALL	2	Y	
W-830-2214	EW	Tnsc1a	S	CMP-TF	E601:ALL	3		
W-830-2214	EW	Tnsc1a	S	DIS-TF	E601:ALL	4		
W-830-2215	EW	UTnbs1	A	CMP-TF	E300.0:NO3	1	Y	
W-830-2215	EW	UTnbs1	A	CMP-TF	E300.0:PERC	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-830-2215	EW	UTnbs1	S	CMP-TF	E601:ALL	1	Y	
W-830-2215	EW	UTnbs1	S	DIS-TF	E601:ALL	2	Y	
W-830-2215	EW	UTnbs1	S	CMP-TF	E601:ALL	3		
W-830-2215	EW	UTnbs1	S	DIS-TF	E601:ALL	4		
W-830-2216	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	Y	
W-830-2216	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	Y	
W-830-2216	EW	Tnbs2	A	DIS-TF	E300.0:PERC	3		
W-830-2216	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-830-2216	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-830-2216	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-830-2216	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-830-2216	EW	Tnbs2	O	CMP-TF	E8330LOW:ALL	3		
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	
W-830-2311	PTMW	Tnsc1a	S	CMP	E601:ALL	3		
W-830-25	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	N	Insufficient water to collect sample.
W-830-25	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	N	Insufficient water to collect sample.
W-830-25	PTMW	Tnsc1b	S	CMP	E601:ALL	1	N	Insufficient water to collect sample.
W-830-25	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-26	PTMW	UTnbs1	E	CMP	E300.0:NO3	1	N	Dry.
W-830-26	PTMW	UTnbs1	E	CMP	E300.0:PERC	1	N	Dry.
W-830-26	PTMW	UTnbs1	S	CMP	E601:ALL	1	N	Dry.
W-830-26	PTMW	UTnbs1	S	CMP	E601:ALL	3		
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-830-27	PTMW	Tnsc1a	S	CMP	E601:ALL	3		
W-830-2701	PTMW	Tnsc1a	S	CMP	E300.0:NO3	1	Y	
W-830-2701	PTMW	Tnsc1a	S	CMP	E300.0:NO3	3		
W-830-2701	PTMW	Tnsc1a	S	CMP	E300.0:PERC	1	Y	
W-830-2701	PTMW	Tnsc1a	S	CMP	E300.0:PERC	3		
W-830-2701	PTMW	Tnsc1a	Q	CMP	E601:ALL	1	Y	
W-830-2701	PTMW	Tnsc1a	Q	CMP	E601:ALL	2	Y	
W-830-2701	PTMW	Tnsc1a	Q	CMP	E601:ALL	3		
W-830-2701	PTMW	Tnsc1a	Q	CMP	E601:ALL	4		
W-830-28	PTMW	UTnbs1	O	CMP	E300.0:NO3	1	N	To be sampled in 2013.
W-830-28	PTMW	UTnbs1	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-830-28	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-830-28	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-830-29	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
W-830-29	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
W-830-29	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
W-830-29	PTMW	LTnbs1	S	CMP	E601:ALL	3		
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-830-30	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
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	S	CMP	E601:ALL	3		
W-830-34	PTMW	Qal/WBR	E	CMP	E8330LOW:ALL	1	Y	
W-830-49	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-830-49	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-830-49	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-49	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-830-49	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-49	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-49	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-830-50	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-50	PTMW	Tnsc1b	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-830-50	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-50	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-51	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-830-51	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-830-51	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-51	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-830-51	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-51	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-51	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-830-52	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-830-52	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-830-52	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-52	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-830-52	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-52	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-52	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-830-53	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-830-53	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-830-53	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-53	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-830-53	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-53	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-53	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-830-54	PTMW	Tnsc1c	O	CMP	E300.0:NO3	1	N	To be sampled in 2013.
W-830-54	PTMW	Tnsc1c	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-830-54	PTMW	Tnsc1c	S	CMP	E601:ALL	1	Y	
W-830-54	PTMW	Tnsc1c	S	CMP	E601:ALL	3		
W-830-55	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-55	PTMW	Tnsc1b	E	CMP	E300.0:PERC	1	Y	
W-830-55	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-55	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-56	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-56	PTMW	Tnsc1b	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-830-56	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-56	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-57	EW	UTnbs1	A	CMP-TF	E300.0:NO3	1	Y	
W-830-57	EW	UTnbs1	A	CMP-TF	E300.0:PERC	1	Y	
W-830-57	EW	UTnbs1	S	CMP-TF	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-830-57	EW	UTnbs1	S	DIS-TF	E601:ALL	2	Y	
W-830-57	EW	UTnbs1	S	CMP-TF	E601:ALL	3		
W-830-57	EW	UTnbs1	S	DIS-TF	E601:ALL	4		
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-830-58	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-59	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-830-59	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-830-59	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-59	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-830-59	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-59	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-59	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-830-60	EW	UTnbs1	A	CMP-TF	E300.0:NO3	1	Y	
W-830-60	EW	UTnbs1	A	CMP-TF	E300.0:PERC	1	Y	
W-830-60	EW	UTnbs1	S	CMP-TF	E601:ALL	1	Y	
W-830-60	EW	UTnbs1	S	DIS-TF	E601:ALL	2	Y	
W-830-60	EW	UTnbs1	S	CMP-TF	E601:ALL	3		
W-830-60	EW	UTnbs1	S	DIS-TF	E601:ALL	4		
W-831-01	PTMW	LTnbs1	O	CMP	E300.0:NO3	1	N	To be sampled in 2013.
W-831-01	PTMW	LTnbs1	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-831-01	PTMW	LTnbs1	O	CMP	E601:ALL	1	N	To be sampled in 2013.
W-832-01	EW	Tnsc1b	Q	DIS-TF	AS:UIISO	1	Y	
W-832-01	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-832-01	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-832-01	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-832-01	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-832-01	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-832-01	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-832-01	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-832-01	EW	Tnsc1b	Q	DIS-TF	E9060:ALL	1	Y	
W-832-01	EW	Tnsc1b	Q	DIS-TF	GENMIN: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-832-06	PTMW	Tnsc1a	S	CMP	E601:ALL	3		
W-832-09	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
W-832-09	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
W-832-09	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
W-832-09	PTMW	LTnbs1	S	CMP	E601:ALL	3		
W-832-10	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-832-10	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-832-10	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-832-10	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-832-10	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-832-10	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-832-10	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-832-11	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-832-11	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-832-11	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		

**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-832-11	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-832-11	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-832-11	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-832-11	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-832-12	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-832-12	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-832-12	EW	Qal/WBR-Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-832-12	EW	Qal/WBR-Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-832-12	EW	Qal/WBR-Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-832-12	EW	Qal/WBR-Tnsc1b	S	CMP-TF	E601:ALL	3		
W-832-12	EW	Qal/WBR-Tnsc1b	S	DIS-TF	E601:ALL	4		
W-832-13	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-832-13	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-832-13	EW	Qal/WBR-Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-832-13	PTMW	Qal/WBR-Tnsc1b	S	CMP	E601:ALL	3		Converted to a PTMW as of 2nd semester 2012.
W-832-14	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	N	Insufficient water to collect sample.
W-832-14	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	N	Insufficient water to collect sample.
W-832-14	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	N	Insufficient water to collect sample.
W-832-14	PTMW	Tnsc1b	S	CMP	E601:ALL	3		Converted to a PTMW as of 2nd semester 2012.
W-832-15	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-832-15	EW	Qal/WBR-Tnsc1b	A	DIS-TF	E300.0:NO3	3		
W-832-15	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-832-15	EW	Qal/WBR-Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-832-15	EW	Qal/WBR-Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-832-15	EW	Qal/WBR-Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-832-15	EW	Qal/WBR-Tnsc1b	S	CMP-TF	E601:ALL	3		
W-832-15	EW	Qal/WBR-Tnsc1b	S	DIS-TF	E601:ALL	4		
W-832-15	EW	Qal/WBR-Tnsc1b	E	CMP-TF	E8330LOW:ALL	2	Y	
W-832-16	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	N	Insufficient water to collect sample.
W-832-16	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	N	Insufficient water to collect sample.
W-832-16	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	N	Insufficient water to collect sample.
W-832-16	PTMW	Tnsc1b	S	CMP	E601:ALL	3		Converted to a PTMW as of 2nd semester 2012.
W-832-17	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	N	Insufficient water to collect sample.
W-832-17	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	N	Insufficient water to collect sample.
W-832-17	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	N	Insufficient water to collect sample.
W-832-17	PTMW	Tnsc1b	S	CMP	E601:ALL	3		Converted to a PTMW as of 2nd semester 2012.
W-832-18	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:NO3	1	N	Dry.
W-832-18	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:PERC	1	N	Dry.

**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-832-18	EW	Qal/WBR-Tnsc1b	S	CMP-TF	E601:ALL	1	N	Dry.
W-832-18	PTMW	Qal/WBR-Tnsc1b	S	CMP	E601:ALL	3		Converted to a PTMW as of 2nd semester 2012.
W-832-19	PTMW	Qal/WBR-Tnsc1b	A	CMP	E300.0:NO3	1	N	Dry.
W-832-19	PTMW	Qal/WBR-Tnsc1b	A	CMP	E300.0:PERC	1	N	Dry.
W-832-19	PTMW	Qal/WBR-Tnsc1b	S	CMP	E601:ALL	1	N	Dry.
W-832-19	PTMW	Qal/WBR-Tnsc1b	S	CMP	E601:ALL	3		
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-832-1927	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-832-20	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	N	Dry.
W-832-20	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	N	Dry.
W-832-20	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	N	Dry.
W-832-20	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
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-832-21	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-832-2112	GW	UTnbs1	S	CMP	E300.0:NO3	1	Y	
W-832-2112	GW	UTnbs1	S	CMP	E300.0:NO3	3		
W-832-2112	GW	UTnbs1	S	CMP	E300.0:PERC	1	Y	
W-832-2112	GW	UTnbs1	S	CMP	E300.0:PERC	3		
W-832-2112	GW	UTnbs1	Q	CMP	E601:ALL	1	Y	
W-832-2112	GW	UTnbs1	Q	CMP	E601:ALL	2	Y	
W-832-2112	GW	UTnbs1	Q	CMP	E601:ALL	3		
W-832-2112	GW	UTnbs1	Q	CMP	E601:ALL	4		
W-832-22	EW	UTnbs1	A	CMP	E300.0:NO3	1	N	Dry.
W-832-22	EW	UTnbs1	A	CMP	E300.0:PERC	1	N	Dry.
W-832-22	EW	UTnbs1	S	CMP	E601:ALL	1	N	Dry.
W-832-22	EW	UTnbs1	S	CMP	E601:ALL	3		
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-832-23	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
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	
W-832-24	PTMW	Tnsc1a	S	CMP	E601:ALL	3		
W-832-25	EW	Tnsc1a	A	CMP-TF	E300.0:NO3	1	Y	
W-832-25	EW	Tnsc1a	A	CMP-TF	E300.0:PERC	1	Y	
W-832-25	EW	Tnsc1a	A	DIS-TF	E300.0:PERC	3		
W-832-25	EW	Tnsc1a	S	DIS-TF	E601:ALL	2	Y	
W-832-25	EW	Tnsc1a	S	DIS-TF	E601:ALL	4		
W-832-25	EW	Tnsc1a	S	CMP-TF	E624:ALL	1	Y	
W-832-25	EW	Tnsc1a	S	CMP-TF	E624:ALL	3		
W-832-SC1	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Dry.
W-832-SC1	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	N	Dry.
W-832-SC1	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-832-SC1	PTMW	Qal/WBR	S	CMP	E601:ALL	3		

**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-SC2	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Dry.
W-832-SC2	PTMW	Qal/WBR	E	CMP	E300.0:PERC	1	N	Dry.
W-832-SC2	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-832-SC2	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-832-SC3	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
W-832-SC3	PTMW	Qal/WBR	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-832-SC3	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
W-832-SC3	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
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	N	Dry.
W-832-SC4	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-832-SC4	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
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	To be sampled in 2013.
W-870-01	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-870-01	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-870-02	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-870-02	PTMW	Tnbs2	E	CMP	E300.0:PERC	1	Y	
W-870-02	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-870-02	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-880-01	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-880-01	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-880-01	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-880-01	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-880-01	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-880-01	GW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-880-01	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-880-01	GW	Tnbs2	Q	CMP	E601:ALL	4		
W-880-01	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-880-01	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-880-02	GW	Qal/WBR	S	CMP	E300.0:NO3	1	Y	
W-880-02	GW	Qal/WBR	S	CMP	E300.0:NO3	3		
W-880-02	GW	Qal/WBR	S	CMP	E300.0:PERC	1	Y	
W-880-02	GW	Qal/WBR	S	CMP	E300.0:PERC	3		
W-880-02	GW	Qal/WBR	Q	CMP	E601:ALL	1	Y	
W-880-02	GW	Qal/WBR	Q	CMP	E601:ALL	2	Y	
W-880-02	GW	Qal/WBR	Q	CMP	E601:ALL	3		
W-880-02	GW	Qal/WBR	Q	CMP	E601:ALL	4		
W-880-02	GW	Qal/WBR	S	CMP	E8330LOW:ALL	1	Y	
W-880-02	GW	Qal/WBR	S	CMP	E8330LOW:ALL	3		
W-880-03	GW	Tnsc1b	S	CMP	E300.0:NO3	1	N	Inoperable pump.
W-880-03	GW	Tnsc1b	S	CMP	E300.0:NO3	3		
W-880-03	GW	Tnsc1b	S	CMP	E300.0:PERC	1	N	Inoperable pump.
W-880-03	GW	Tnsc1b	S	CMP	E300.0:PERC	3		
W-880-03	GW	Tnsc1b	Q	CMP	E601:ALL	1	N	Inoperable pump.
W-880-03	GW	Tnsc1b	Q	CMP	E601:ALL	2	N	Inoperable pump.
W-880-03	GW	Tnsc1b	Q	CMP	E601:ALL	3		
W-880-03	GW	Tnsc1b	Q	CMP	E601:ALL	4		
W-880-03	GW	Tnsc1b	S	CMP	E8330LOW:ALL	1	N	Inoperable pump.
W-880-03	GW	Tnsc1b	S	CMP	E8330LOW:ALL	3		

**Table 2.7-8. Building 832-Source (832-SRC) mass removed, January 1, 2012 through June 30, 2012.**

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	4.8	0.38	0.035	0.69	NA	NA
	February	5.0	1.6	0.059	1.5	NA	NA
	March	6.7	1.3	0.062	1.4	NA	NA
	April	7.3	1.1	0.077	1.9	NA	NA
	May	2.2	1.4	0.078	1.9	NA	NA
	June	1.8	1.2	0.069	1.9	NA	NA
<b>Total</b>		<b>28</b>	<b>7.0</b>	<b>0.38</b>	<b>9.3</b>	<b>NA</b>	<b>NA</b>

**Table 2.7-9. Building 830-Source (830-SRC) mass removed, January 1, 2012 through June 30, 2012.**

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	100	42	0.057	14	NA	NA
	February	82	120	0.20	17	NA	NA
	March	27	110	0.25	12	NA	NA
	April	42	80	0.00016	11	NA	NA
	May	110	78	0	10	NA	NA
	June	100	150	0.49	18	NA	NA
<b>Total</b>		<b>460</b>	<b>580</b>	<b>0.99</b>	<b>82</b>	<b>NA</b>	<b>NA</b>

**Table 2.7-10. Building 830-Distal South (830-DISS) mass removed, January 1, 2012 through June 30, 2012.**

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	9.3	0.82	31	NA	NA
	March	NA	10	1.0	36	NA	NA
	April	NA	5.9	1.0	37	NA	NA
	May	NA	1.5	0.26	9.9	NA	NA
	June	NA	2.7	0.44	18	NA	NA
<b>Total</b>		NA	30	3.6	130	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:UIISO	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	E601:ALL	2	Y	
K8-01	PTMW	Tnbs1-Tnbs0	S	CMP	E601: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	AS:UIISO	4		
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	4		
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	1	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	2	N	Inoperable pump.
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	E340.2:ALL	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	1	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	2	N	Inoperable pump.
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:UIISO	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	N	Inoperable pump.
K8-03B	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UIISO	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	E601:ALL	2	Y	
K8-03B	PTMW	Tnbs1-Tnbs0	S	CMP	E601: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	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	E340.2:ALL	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	E601: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:UIISO	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	AS:UIISO	2	N	To be sampled in 2013.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E200.7:LI	2	N	To be sampled in 2013.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	N	To be sampled in 2013.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E300.0:PERC	2	N	To be sampled in 2013.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E340.2:ALL	2	N	To be sampled in 2013.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E601:ALL	2	N	To be sampled in 2013.

**Table 2.8-1. Building 801 and Pit 8 Landfill area ground water sampling and analysis plan.**

<b>Sample Location</b>	<b>Location Type</b>	<b>Hydro Unit</b>	<b>Sampling Frequency</b>	<b>Sample Driver</b>	<b>Requested Analysis</b>	<b>Sampling Quarter</b>	<b>Sampled Y/N</b>	<b>Comment</b>
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E8330LOW:ALL	2	N	To be sampled in 2013.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E906:ALL	2	N	To be sampled in 2013.
K8-05	DMW	Tnbs1-Tnbs0	O	DIS	MS:UISO	2	N	To be sampled in 2013.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	T26METALS:ALL	2	N	To be sampled in 2013.

**Table 2.8-2. Building 833 area ground water sampling and analysis plan.**

<b>Sample Location</b>	<b>Location Type</b>	<b>Hydro Unit</b>	<b>Sampling Frequency</b>	<b>Sample Driver</b>	<b>Requested Analysis</b>	<b>Sampling Quarter</b>	<b>Sampled Y/N</b>	<b>Comment</b>
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	Insufficient water to collect sample.
W-833-30	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-833-30	PTMW	Tpsg	S	CMP	E601: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	To be sampled in 2013.
W-841-01	PTMW	UTnbs1	O	CMP	E300.0:PERC	1	N	To be sampled in 2013.
W-841-01	PTMW	UTnbs1	A	CMP	E601:ALL	1	N	Dry.

**Table 2.8-3. Building 845 Firing Table and Pit 9 Landfill area ground water sampling and analysis plan.**

<b>Sample Location</b>	<b>Location Type</b>	<b>Hydro Unit</b>	<b>Sampling Frequency</b>	<b>Sample Driver</b>	<b>Requested Analysis</b>	<b>Sampling Quarter</b>	<b>Sampled Y/N</b>	<b>Comment</b>
K9-01	DMW	Tnsc0	A	CMP	E200.7:LI	2	Y	
K9-01	DMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
K9-01	DMW	Tnsc0	A	CMP	E300.0:PERC	2	Y	
K9-01	DMW	Tnsc0	A	CMP	E340.2:ALL	2	Y	
K9-01	DMW	Tnsc0	A	CMP	E601:ALL	2	Y	
K9-01	DMW	Tnsc0	A	CMP	E8330LOW:ALL	2	Y	
K9-01	DMW	Tnsc0	A	CMP	E906:ALL	2	Y	
K9-01	DMW	Tnsc0	A	CMP	MS:UIISO	2	Y	
K9-01	DMW	Tnsc0	A	CMP	T26METALS:ALL	2	Y	
K9-02	DMW	Tnsc0	A	CMP	E200.7:LI	2	Y	
K9-02	DMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
K9-02	DMW	Tnsc0	A	CMP	E300.0:PERC	2	Y	
K9-02	DMW	Tnsc0	A	CMP	E340.2:ALL	2	Y	
K9-02	DMW	Tnsc0	A	CMP	E601:ALL	2	Y	
K9-02	DMW	Tnsc0	A	CMP	E8330LOW:ALL	2	Y	
K9-02	DMW	Tnsc0	A	CMP	E906:ALL	2	Y	
K9-02	DMW	Tnsc0	A	CMP	MS:UIISO	2	Y	
K9-02	DMW	Tnsc0	A	CMP	T26METALS:ALL	2	Y	
K9-03	DMW	Tnsc0	A	CMP	E200.7:LI	2	Y	
K9-03	DMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
K9-03	DMW	Tnsc0	A	CMP	E300.0:PERC	2	Y	
K9-03	DMW	Tnsc0	A	CMP	E340.2:ALL	2	Y	
K9-03	DMW	Tnsc0	A	CMP	E601:ALL	2	Y	
K9-03	DMW	Tnsc0	A	CMP	E8330LOW:ALL	2	Y	
K9-03	DMW	Tnsc0	A	CMP	E906:ALL	2	Y	
K9-03	DMW	Tnsc0	A	CMP	MS:UIISO	2	Y	
K9-03	DMW	Tnsc0	A	CMP	T26METALS:ALL	2	Y	
K9-04	DMW	Tnsc0	A	CMP	E200.7:LI	2	N	Inoperable pump.
K9-04	DMW	Tnsc0	A	CMP	E300.0:NO3	2	N	Inoperable pump.
K9-04	DMW	Tnsc0	A	CMP	E300.0:PERC	2	N	Inoperable pump.
K9-04	DMW	Tnsc0	A	CMP	E340.2:ALL	2	N	Inoperable pump.
K9-04	DMW	Tnsc0	A	CMP	E601:ALL	2	N	Inoperable pump.
K9-04	DMW	Tnsc0	A	CMP	E8330LOW:ALL	2	N	Inoperable pump.
K9-04	DMW	Tnsc0	A	CMP	E906:ALL	2	N	Inoperable pump.
K9-04	DMW	Tnsc0	A	CMP	MS:UIISO	2	N	Inoperable pump.
K9-04	DMW	Tnsc0	A	CMP	T26METALS:ALL	2	N	Inoperable pump.

**Table 2.8-4. Building 851 area ground water sampling and analysis plan.**

<b>Sample Location</b>	<b>Location Type</b>	<b>Hydro Unit</b>	<b>Sampling Frequency</b>	<b>Sample Driver</b>	<b>Requested Analysis</b>	<b>Sampling Quarter</b>	<b>Sampled Y/N</b>	<b>Comment</b>
W-851-05	PTMW	Tmss	A	CMP	AS:UIISO	4		
W-851-05	PTMW	Tmss	O	CMP	E601:ALL	2	N	To be sampled in 2013.
W-851-05	PTMW	Tmss	A	CMP	MS:UIISO	2	Y	
W-851-06	PTMW	Tmss	A	CMP	AS:UIISO	4		
W-851-06	PTMW	Tmss	A	CMP	MS:UIISO	2	Y	
W-851-07	PTMW	Tmss	A	CMP	AS:UIISO	4		
W-851-07	PTMW	Tmss	A	CMP	MS:UIISO	2	Y	
W-851-08	PTMW	Tmss	A	CMP	AS:UIISO	4		
W-851-08	PTMW	Tmss	A	CMP	MS:UIISO	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	E200.7:LI	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	N	Inoperable pump.
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	E340.2:ALL	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	E601: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	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	E340.2:ALL	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	E601: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	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	E340.2:ALL	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	E601: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	
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	

**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	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	Y	
W-PIT2-2301	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
W-PIT2-2301	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
W-PIT2-2301	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
W-PIT2-2301	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT2-2301	PTMW	Qal/WBR	A	CMP	MS:UISO	2	Y	
W-PIT2-2302	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
W-PIT2-2302	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
W-PIT2-2302	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
W-PIT2-2302	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
W-PIT2-2302	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT2-2302	PTMW	Qal/WBR	A	CMP	MS:UISO	2	Y	
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		

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**Appendix A**  
**Results of Influent and Effluent pH Monitoring**

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# **Appendix A**

## **Results of Influent and Effluent pH Monitoring**

Table A-1. Results of influent and effluent pH, and effluent dissolved oxygen monitoring, January through June 2012.

**Table A-1. Results of influent and effluent pH, and effluent dissolved oxygen monitoring, January through June 2012.**

<b>Sample Location</b>	<b>Sample Date</b>	<b>Effluent pH Result</b>
<i>GSA OU</i>		
CGSA GWTS	01/23/2012	7.0
CGSA GWTS	02/13/2012	7.2
CGSA GWTS	03/07/2012	7.2
CGSA GWTS	04/02/2012	7.2
CGSA GWTS	05/14/2012	7.2
CGSA GWTS	06/05/2012	7.2
<i>Building 834 OU</i>		
834 GWTS	01/31/2012	NM
834 GWTS	02/15/2012	7.2
834 GWTS	03/05/2012	7.9
834 GWTS	04/02/2012	8.0
834 GWTS	05/02/2012	7.7
834 GWTS	06/04/2012	7.9
<i>HEPA OU</i>		
815-SRC GWTS	01/02/2012	7.5
815-SRC GWTS	02/13/2012	7.8
815-SRC GWTS	03/06/2012	7.7
815-SRC GWTS	04/02/2012	7.4
815-SRC GWTS	05/02/2012	8.0
815-SRC GWTS	06/04/2012	7.6
815-PRX GWTS	02/08/2012	7.6
815-PRX GWTS	03/06/2012	8.1
815-PRX GWTS	04/02/2012	7.8
815-PRX GWTS	05/02/2012	8.0
815-PRX GWTS	06/04/2012	7.8
815-PRX GWTS	12/29/2011	7.0
815-DSB GWTS	01/11/2012	7.0
815-DSB GWTS	02/13/2012	7.0

**Table A-1. Results of influent and effluent pH, and effluent dissolved oxygen monitoring, January through June 2012.**

<b>Sample Location</b>	<b>Sample Date</b>	<b>Effluent pH Result</b>
815-DSB GWTS	03/07/2012	7.0
815-DSB GWTS	04/03/2012	7.0
815-DSB GWTS	05/14/2012	7.0
815-DSB GWTS	06/19/2012	7.0
817-SRC GWTS	02/13/2012	7.9
817-SRC GWTS	03/06/2012	8.0
817-SRC GWTS	04/03/2012	8.2
817-SRC GWTS	05/02/2012	7.8
817-SRC GWTS	06/04/2012	7.5
817-SRC GWTS	12/29/2011	7.0
817-PRX GWTS	01/02/2012	7.5
817-PRX GWTS	02/13/2012	7.6
817-PRX GWTS	03/06/2012	7.7
817-PRX GWTS	04/02/2012	7.5
817-PRX GWTS	05/02/2012	7.6
817-PRX GWTS	06/04/2012	7.5
829-SRC GWTS	01/31/2012	NM
829-SRC GWTS	02/28/2012	NM
829-SRC GWTS	03/31/2012	NM
829-SRC GWTS	04/03/2012	8.4
829-SRC GWTS	05/07/2012	8.2
829-SRC GWTS	06/04/2012	8.2
<i>Building 850/Pit 7 Complex OU</i>		
PIT7-SRC GWTS	01/11/2012	7.0
PIT7-SRC GWTS	02/13/2012	7.0
PIT7-SRC GWTS	03/12/2012	7.0
PIT7-SRC GWTS	04/03/2012	7.0
PIT7-SRC GWTS	05/07/2012	7.0
PIT7-SRC GWTS	06/05/2012	7.0

**Table A-1. Results of influent and effluent pH, and effluent dissolved oxygen monitoring, January through June 2012.**

<b>Sample Location</b>	<b>Sample Date</b>	<b>Effluent pH Result</b>
<i>Building 854 OU</i>		
854-SRC GWTS	01/31/2012	NM
854-SRC GWTS	02/13/2012	7.0
854-SRC GWTS	03/14/2012	7.0
854-SRC GWTS	04/02/2012	7.0
854-SRC GWTS	05/02/2012	7.0
854-SRC GWTS	06/05/2012	7.0
854-PRX GWTS	01/09/2012	7.0
854-PRX GWTS	02/13/2012	7.0
854-PRX GWTS	03/12/2012	7.0
854-PRX GWTS	04/02/2012	7.0
854-PRX GWTS	05/02/2012	7.0
854-PRX GWTS	06/05/2012	7.0
854-DIS GWTS	01/31/2012	NM
854-DIS GWTS	02/13/2012	7.0
854-DIS GWTS	03/12/2012	7.0
854-DIS GWTS	04/02/2012	7.0
854-DIS GWTS	05/02/2012	7.0
854-DIS GWTS	06/05/2012	7.0
<i>832 Canyon OU</i>		
832-SRC GWTS	01/09/2012	7.7
832-SRC GWTS	02/13/2012	7.7
832-SRC GWTS	03/05/2012	7.9
832-SRC GWTS	04/02/2012	7.5
832-SRC GWTS	05/02/2012	7.2
832-SRC GWTS	06/06/2012	7.5
830-SRC GWTS	01/09/2012	7.8
830-SRC GWTS	02/13/2012	7.2
830-SRC GWTS	03/14/2012	7.3

**Table A-1. Results of influent and effluent pH, and effluent dissolved oxygen monitoring, January through June 2012.**

<b>Sample Location</b>	<b>Sample Date</b>	<b>Effluent pH Result</b>
830-SRC GWTS	04/02/2012	7.1
830-SRC GWTS	05/02/2012	7.6
830-SRC GWTS	06/06/2012	7.6
830-DISS GWTS	01/31/2012	NM
830-DISS GWTS	02/13/2012	7.0
830-DISS GWTS	03/07/2012	7.0
830-DISS GWTS	04/02/2012	7.0
830-DISS GWTS	05/14/2012	7.0
830-DISS GWTS	06/05/2012	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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## **Errata**

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**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-TNB (µg/L)	1,3-DNB (µg/L)	2,4-DNT (µg/L)	2,6-DNT (µg/L)	2-Amino- 4,6- DNT (µg/L)	2-NT (µg/L)	3-NT (µg/L)	4-Amino- 2,6- DNT (µg/L)	4-NT (µg/L)	HMX (µg/L)	NB (µg/L)	RDX (µg/L)	TNT (µg/L)
<i>Building 815-Distal Site Boundary<sup>a</sup></i>														
<i>Building 815-Proximal<sup>b</sup></i>														
815-PRX-E	7/13/11	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2 O	<1	<2
815-PRX-E <sup>c</sup>	10/3/11	<2.4 D	<2.4 D	<2.4 D	<2.4 D	<2.4 DO	<2.4 D	<2.4 D	<2.4 D	<2.4 D	<1.2 DO	<2.4 D	<1.2 D	<2.4 DO
<i>Building 815-Source</i>														
815-SRC-I	7/11/11	<2.6 D	<2.6 DO	<2.6 D	<2.6 D	<2.6 D	<2.6 D	<2.6 D	<2.6 D	<2.6 D	9.1 DO	<2.6 DO	64 DO	<2.6 D
815-SRC-I	10/3/11	<2	<2	<2 LO	<2	<2	<2	<2	<2	<2	4.9	<2	49	<2 LO
815-SRC-E	7/11/11	R	<2 O	<2	<2	<2	<2	<2	<2	<2	<1 O	<2 O	<1 O	<2
815-SRC-E	8/1/11	<2 O	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
815-SRC-E	9/6/11	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
815-SRC-E	10/3/11	<2	<2	<2	<2	<2 O	<2	<2	<2	<2	<1 O	<2	<1	<2 O
815-SRC-E <sup>c</sup>	11/1/11	<17 D	<17 D	<17 D	<17 D	<17 D	<17 D	<17 D	<17 D	<17 D	<8.3 D	<17 D	<8.3 D	<17 D
815-SRC-E	12/5/11	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1 O	<2	<1	<2
<i>Building 817-Proximal</i>														
817-PRX-I	7/18/11	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-PRX-I	10/3/11	<2	<2	<2 O	<2	<2	<2	<2	<2	<2	<1	<2	9.2	<2 O
817-PRX-E	7/18/11	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-PRX-E	8/1/11	<2 DO	<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	9/6/11	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-PRX-E	10/3/11	<2 D	<2 D	<2 D	<2 D	<2 DO	<2 D	<2 D	<2 D	<2 D	<1 DO	<2 D	<1 D	<2 DO
817-PRX-E	11/1/11	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-PRX-E	12/2/11	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1 O	<2	<1	<2
<i>Building 817-Source</i>														
817-SRC-I	7/13/11	<2	<2	<2	<2	<2	<2	<2	<2	<2	21	<2	47	<2
817-SRC-I	10/3/11	<2	<2	<2 O	<2	<2	<2	<2	<2	<2	<1 S	<2	<1 S	<2 O
817-SRC-I <sup>d</sup>	10/17/11	<2	<2	<2	<2	<2	<2	<2	<2	<2	19 O	<2	56 J	<2
817-SRC-E	7/13/11	<2 IJO	<2 IJO	<2 IJO	<2 IJO	<2 IJO	<2 IJO	<2 IJO	<2 IJO	<2 IJO	<1 IJO	<2 O	<1 IJO	<2 IJO
817-SRC-E	8/1/11	<2 O	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-SRC-E	9/6/11	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-SRC-E	10/3/11	<2 D	<2 D	<2 D	<2 D	<2 DO	<2 D	<2 D	<2 D	<2 D	<1 DO	<2 D	<1 D	<2 DO
817-SRC-E	11/1/11	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-SRC-E <sup>e</sup>	-													
<i>Building 829-Source<sup>f</sup></i>														

Notes:

- <sup>a</sup> No high explosive compound monitoring required.
  - <sup>b</sup> No influent and only quarterly effluent high explosive monitoring required.
  - <sup>c</sup> Due to sample dilution at CAL, PQLs were raised above normal reporting limit.
  - <sup>d</sup> Additional influent sample collected due to non-detects in previous sample.
  - <sup>e</sup> No samples collected in December due to GWTS shut down for freeze protection.
  - <sup>f</sup> No high explosive compound monitoring required.
- See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.



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