**ERID-257592**

LA-UR-14-24516
June 2014
EP2014-0263

# Storm Water Performance Monitoring in the Los Alamos/Pueblo Watershed during 2013

Los Alamos
NATIONAL LABORATORY
EST. 1943

Prepared by the Environmental Programs Directorate

EP2014-0263

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June 2014

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## EXECUTIVE SUMMARY

This fourth annual monitoring report provides a summary of analytical data, discharge measurements, geomorphic changes, and precipitation data associated with storm water samples collected from the Los Alamos and Pueblo (LA/P) watershed from June 2013 to November 2013. Monitoring objectives include collecting data to evaluate the effect of watershed mitigations installed in the LA/P watershed on stream flow and sediment and contaminant transport. Watershed mitigations being evaluated include the DP Canyon grade-control structure (GCS) and associated floodplains; Pueblo Canyon wing ditch, willow planting, wetland, and GCS; the Los Alamos Canyon low-head weir; and the storm water detention basins and associated willow planting below the Los Alamos Canyon Solid Waste Management Unit (SWMU) 01-001(f) drainage. Pursuant to Section VII of the Compliance Order on Consent, Los Alamos National Laboratory (the Laboratory) had implemented interim measures to reduce migration of contaminants within the LA/P watershed. These mitigations have been implemented with the overall goal of working together to minimize the potentially erosive nature of storm water runoff, to enhance deposition of sediment, and to reduce access of contaminated sediments to flood erosion.

Gage and sampling locations are situated within the LA/P watershed to monitor the hydrology and sediment transport along the length of the watershed, including stations that bound the mitigations. However, the topography, geology, geomorphology, and meteorology of the watershed are complex; thus, monitoring runoff and precipitation is also complex and challenging. Stage height, which is then converted to discharge using rating curves developed for each individual gage, is monitored at 5-min intervals at a series of gages using shaft-encoder float sensors, self-contained bubbler pressure sensors, and ultrasonic probe sensors. Precipitation data are collected across the Laboratory by means of five meteorological towers and an extended rain gage network. Sampling for analyte suites specific to each reach of the watershed is conducted using ISCO 3700 portable automated samplers configured to begin sampling routines when a preset stage height or after a discharge peak is recorded at the data logger. Sampling equipment and the extended rain-gage network are deactivated during the winter months (December to March) and reactivated in the spring.

Geomorphic changes were monitored at the nine sediment transport mitigation sites that have been established in the LA/P watershed. Cross-sections upgradient and downgradient and a thalweg profile of each site were surveyed following the summer 2013 monsoon season. Surveys were supplemented with sediment-thickness measurements obtained from hand-dug or hand-augered holes along the survey transect. The net changes in cross-sectional areas from the previous year were calculated and used to estimate total deposition or erosion over the surveyed area.

The Los Alamos Canyon watershed experienced a large number of runoff events in 2013, including runoff from the Las Conchas burn area in the upper watershed of Los Alamos and Guaje Canyons and the 1000-yr precipitation event on September 13. Runoff from the burn area had high concentrations of suspended sediment, which is typical after wildland fires. Pueblo Canyon, not affected by the fire, had 1 runoff event in 2013 beginning in the upper watershed that extended through the length of the wetland, past the GCS, and into lower Los Alamos Canyon. In contrast, Los Alamos Canyon had 6 events that extended through the watershed, past the low-head weir, and into lower Los Alamos Canyon. A large number of events (18) flowed past the DP Canyon GCS because a majority of the watershed is impervious Los Alamos County townsite that drains into the canyon above the GCS. Attenuation of flow and associated sediment transport through the Pueblo Canyon wetland and associated GCS, Los Alamos low-head weir and associated sediment retention basins, and DP Canyon GCS is a primary goal of the sediment transport mitigation activities conducted in LA/P watershed, and all structures performed as designed in 2013, despite damage incurred by flooding on September 13.

The 2013 monitoring data in upper Los Alamos Canyon indicate a substantial reduction in suspended sediment concentration (SSC) as floods passed through the low-head weir and associated sediment retention basins. This structure is, therefore, performing as designed. By contrast, SSC was much higher at gaging station E109.9 in lower Los Alamos Canyon as a result of floods in Guaje Canyon originating from the Las Conchas burn area.

In DP Canyon, which primarily receives runoff from the Los Alamos townsite, direct comparison of runoff and sediment yield above and below the GCS and upstream floodplains was possible in four events in 2013. Sediment yield decreased downstream between bounding stations (E038 and E039.1), which is consistent with the intent of the GCS in this canyon. Peak discharge between these gages also decreased, indicating attenuation of flood energy.

Net sediment deposition occurred in most surveyed areas in the Los Alamos and DP Canyons in 2013, which is consistent with the goal of sediment transport mitigation control. In Pueblo Canyon, net erosion occurred during September 13 flooding. Although the September 2013 flood event resulted in significant erosion in most surveyed areas in Pueblo Canyon, the magnitude of the erosion was likely reduced by the sediment mitigation structures and willow plantings. The upper Los Alamos Canyon sediment detention basins appear to have contained much of the sediment transported by the small drainage below SWMU 01-001(f). The surveys document that the sediment transport mitigation sites are currently operating as desired and are not undergoing net erosion over the period of this monitoring program.

Concentrations of Polychlorinated biphenyls (PCBs) measured at E109.9 in lower Los Alamos Canyon are similar to those measured in upper Los Alamos Canyon above Laboratory sites, at E026, and are consistent with the transport of PCBs from the Las Conchas burn area down Guaje Canyon. PCB in the burn area have a source in atmospheric fallout and were released during the fire. Off-site transport of PCBs with Las Conchas burn area, Los Alamos townsite, and Laboratory sources occurred in 2013. The weir and associated sediment retention basins were effective at substantially reducing this transport. The transport of radionuclides in storm water with a Laboratory source was also substantially reduced by the settling of sediment above the Los Alamos Canyon weir.

Continued monitoring in 2014 is expected to confirm the sediment transport mitigation structures and associated wetlands, and floodplains in the LA/P watershed are performing as intended and document expected recovery of the wetland in Pueblo Canyon.

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**Acronyms and Abbreviations**

| | |
|---|---|
| ASTM | American Society for Testing and Materials |
| BDD | Buckman Direct Diversion |
| cfs | cubic feet per second |
| Consent Order | Compliance Order on Consent |
| DOE | Department of Energy (U.S.) |
| EPA | Environmental Protection Agency (U.S.) |
| GCS | grade-control structure |
| GPS | global positioning system |
| CVS | cross-vane structure |
| ICP | inductively coupled plasma |
| IMWP | interim measures work plan |
| Laboratory | Los Alamos National Laboratory |
| LANL | Los Alamos National Laboratory |
| LA/P | Los Alamos and Pueblo (watershed) |
| LIDAR | light detecting and ranging |
| MDL | method detection limit |
| MSS | Maintenance and Site Services (Laboratory group) |
| NMED | New Mexico Environment Department |
| NMWQCC | New Mexico Water Quality Control Commission |
| PCB | polychlorinated biphenyl |
| RPD | relative percent difference |
| RPF | Records Processing Facility |
| SIMWP | supplemental interim measures work plan |
| SSC | suspended sediment concentration |
| SWMU | solid waste management unit |
| TAL | target analyte list (EPA) |
| TCDD | tetrachlorodibenzodioxin |
| TEF | toxicity equivalency factor |
| TEQ | toxic equivalency quotient |
| TSS | total suspended solids |
| UTL | upper tolerance limit |
| VE | vertical exaggeration |
| WWTP | wastewater treatment plant |

## 1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility owned by the U.S. Department of Energy (DOE) that is managed by Los Alamos National Security, LLC. The Laboratory is located in north-central New Mexico approximately 60 mi northeast of Albuquerque and 20 mi northwest of Santa Fe. The Laboratory site comprises an area of 36 $mi^2$, mostly on the Pajarito Plateau, which consists of a series of mesas separated by eastward-draining canyons. It also includes part of White Rock Canyon along the Rio Grande to the east.

This fourth annual monitoring report provides a summary of analytical data, discharge measurements, and precipitation data associated with storm water collected from the Los Alamos and Pueblo (LA/P) watershed from June 2013 to November 2013. In addition, the geomorphic changes at the sediment transport mitigation sites in the LA/P watershed are also included in this report as Appendix A. This monitoring was performed pursuant to Section VII of the Compliance Order on Consent (the Consent Order) to reduce migration of contaminants within the LA/P watershed and pursuant to the New Mexico Environment Department– (NMED-) approved “Interim Measure Work Plan to Mitigate Contaminated Sediment Transport in Los Alamos and Pueblo Canyons” (IMWP) (LANL 2008, 101714; NMED 2008, 103007) and the approved “Supplemental Interim Measures Work Plan to Mitigate Contaminated Sediment Transport in Los Alamos and Pueblo Canyons” (SIMWP) (LANL 2008, 105716; NMED 2009, 105014). Hydrologic and geomorphic monitoring in 2013 were performed in accordance with the approved “2013 Monitoring Plan for Los Alamos and Pueblo Canyons Sediment Transport Mitigation Project, Revision 1” (LANL 2013, 243432; NMED 2013, 523106).

Monitoring objectives include collecting data to evaluate the effect of watershed mitigations installed in the LA/P watershed on stream flow and sediment and on contaminant transport. The discussion of flow and analytical results for suspended sediment and constituent concentrations focuses on an evaluation of the overall watershed performance, with specific emphasis on the effects of the mitigations implemented per the IMWP and SIMWP. The discussion of geomorphic stability in Appendix A focuses on sediment stability and mobility in the watershed as a measure of the overall stability of the watershed and the performance of the sediment-mitigation structures.

The NMED approval with modifications for the 2013 monitoring plan for sediment transport mitigation (LANL 2013, 243432; NMED 2013, 523106) also directed the Laboratory to monitor storm water above and below the detention basins below the Solid Waste Management Unit (SWMU) 01-001(f) drainage in upper Los Alamos Canyon. Watershed mitigations evaluated in this report include the DP Canyon grade-control structure (GCS) and associated floodplain; Pueblo Canyon willow planting, wetlands, and GCS; the Los Alamos Canyon low-head weir; and the storm water detention basins and associated vegetative buffer below the SWMU 01-001(f) drainage in Los Alamos Canyon.

The watershed addressed in this monitoring report is potentially contaminated with both hazardous and radioactive components. Corrective actions at the Laboratory are subject to Consent Order. Information on radioactive materials and radionuclides, including the results of sampling and analysis of radioactive constituents, is voluntarily provided to the NMED in accordance with DOE policy.

### 1.1 Project Goals and Methods

The mitigations specified in the IMWP and SIMWP have been implemented with the overall goal of minimizing the potentially erosive nature of storm water runoff to enhance deposition of sediment and to reduce or eliminate the susceptibility of contaminated sediments to flood erosion. Figure 1.1-1 shows the locations of the mitigations and monitoring stations, including stream gages, in the LA/P watershed. In the

Pueblo Canyon watershed, the central focus of the mitigations is to maintain a physically, hydrologically, and biologically functioning wetland that can reduce peak flows and trap suspended solids because of the presence of thick wetland vegetation. Stabilization and enhancement of the wetland were partially addressed with installation of a GCS designed to inhibit headcutting at the terminus of the wetland and to potentially promote establishment of additional riparian or wetland vegetation beyond the current terminus of the wetland. Mitigations in upper portions of Pueblo Canyon above the wetland are designed primarily to reduce the flood peaks and to enhance channel/floodplain interaction before floods reach the wetland. Gages are situated within the watershed to monitor the overall hydrology and sediment transport along the length of the watershed, including stations that bound the wetland.

In DP and Los Alamos Canyons, mitigations included stabilizing and potentially partially burying the channel and adjacent floodplains in reach DP-2 in DP Canyon, which is a source of contaminants entrained in frequent floods that originate from a portion of the Los Alamos County townsite. A GCS was installed in the lower part of reach DP-2 with a height that may encourage channel aggradation, thus reducing the potential for erosion of contaminated sediment deposits in adjacent banks during floods. Channel aggradation in reach DP-2 should also encourage spreading of floodwaters, thus reducing peak discharge because of transmission loss within the reach and enhancing sediment deposition. Lower flood peaks should also reduce the erosion of contaminated sediment deposits downcanyon of the GCS. Mitigations in Los Alamos Canyon several kilometers below the DP Canyon confluence involved removing accumulated sediment behind the low-head weir to increase the residence time of floodwaters and to enhance settling of suspended solids and associated contaminants.

Additional mitigations were implemented in Los Alamos Canyon under a separate administrative requirement (LANL 2008, 104020; NMED 2009, 105858) to address polychlorinated biphenyl (PCB) contamination associated with SWMU 01-001(f). The mitigation actions at that location involved removing contaminated sediment from the canyon wall and constructing detention basins at the bottom of the associated hillside drainage to promote the settling of contaminated sediments in runoff from the canyon wall.

Between September 10 and 17, 2013, New Mexico and Colorado received a historically large amount of precipitation (Figure 1.1-2). Los Alamos County, New Mexico, received between 200% and 600% of the normal precipitation for this time period (Figure 1.1-3), and the Laboratory received approximately 450% percent of its average precipitation for September (Figure 1.1-4). As a result, the Laboratory was inundated with rain, including the extremely large, greater-than-1000-yr return period precipitation event that occurred between September 12 and 13 (Table 1.1-1). With saturated antecedent soil conditions from the September 10 storm, when the September 12 to September 13 storm hit, the flooding damaged the Laboratory’s environmental infrastructure, including access roads, groundwater monitoring wells, gage stations, watershed controls, and control measures installed under the National Pollutant Discharge Elimination System Permit.

# 2.0 DISCHARGE AND PRECIPITATION MEASUREMENTS AND SAMPLING IN THE LA/P

## 2.1 Discharge and Precipitation Measurements and Sampling in the LA/P Watershed

Measurements of discharge and surface-water sampling were conducted at 13 gages in the LA/P watershed in 2013. Gages located at five concrete, trapezoidal, supercritical-flow flumes are designated Los Alamos above the Rio Grande (E109.9), Los Alamos below low-head weir (E050.1), Pueblo below grade-control structure (E060.1), DP below grade-control structure (E039.1), and Los Alamos above low-head weir (E042.1). Eight other gages that complete the monitoring network in the LA/P watershed are designated as Pueblo above Acid (E055), South Fork of Acid Canyon (E055.5), Acid above Pueblo (E056), Los Alamos below Ice Rink (E026), Los Alamos above DP Canyon (E030), DP above Technical Area 21 (E038), Pueblo above the wastewater treatment plant (E059), and DP above

Los Alamos Canyon (E040). Although gage station E099 in lower Guaje watershed is not part of the formal Los Alamos/Pueblo monitoring network, post-fire floods emanating from burn scars in the Guaje watershed consistently impact E109.9, and thus E099 is discussed in this report. Figure 1.1-1 shows the locations of stream gages and watershed mitigations within the Laboratory's property boundary and on adjacent land owned by the County of Los Alamos and Pueblo de San Ildenfonso.

Stage height was monitored at each LA/P gage at 5-min intervals in the LA/P watershed. Sutron 9210 data loggers stored each recorded stage-height measurement as it was made. Discharge was computed for each 5-min stage measurement using rating curves for each individual gage. Shaft-encoder float sensors installed in stilling wells were used to measure water levels at E026, E030, E039.1, E042.1, E050.1, E059, E060.1, E099, and E109.9. Self-contained bubbler pressure sensors (Sutron Accubar) were used to measure water levels at E038, E055, E055.5, and E056 and to provide backup sensing at E109.9, E050.1, and E060.1. An ultrasonic probe sensor (Siemens Miltronics "The Probe") was used to measure water levels at E040 and provided additional backup sensing at E109.9. In 2013, approximately 1,000,000 individual stage measurements were recorded at the 13 gage stations monitored within the LA/P watershed.

A complete record of 5-min stage height measurements for the monitoring period from June 1, 2013, to October 31, 2013, exists at E030, E038, E039.1, E050.1, E055, E055.5, and E056. Five-minute stage height measurements are incomplete at seven gage stations damaged by the September 13 high-flow event: E026, E040, E059, E099, and E109.9 incomplete from September 13 to November 30; E042.1 incomplete from September 13 to September 20; and E060.1 incomplete from September 13 to September 19.

Storm water programs at the Laboratory use precipitation data collected at the Laboratory's meteorological towers. In addition, a seasonal, extended rain gage network is deployed during the months from April to November to coincide with storm water monitoring periods. Using a geographic information system, storm water monitoring stations are assigned to an individual rain gage using the method of Thiessen polygons. Rain gages, meteorological towers, Thiessen polygons, and the drainage area for each stream gage associated with the LA/P watershed are presented in Figure 2.1-1.

Sampling was conducted using ISCO 3700 portable automated samplers. At E026, E038, E039.1, E042.1, E050.1, E059, E060.1, and E109.9, two ISCO samplers were installed. At locations where two samplers were installed, one sampler was configured with a 24-bottle carousel to monitor primarily suspended sediment, and the second sampler was configured with a 12-bottle carousel to monitor inorganic and organic chemicals and radionuclides. At locations where a single sampler was installed, the sampler was configured with a 12-bottle carousel to monitor suspended sediment, inorganic and organic chemicals, and radionuclides. Sampler intake lines were set above the bottom of the channel or gage and were placed perpendicularly to the direction of flow. The placement of trip levels and sampler intake lines is presented in Table 2.1-1.

Sampling equipment at gages in LA/P watershed was shut down during the winter months and reactivated in the spring. During the 2013 monitoring period, requests were issued weekly to field personnel to inspect activated gages and sampling equipment. Gaging and sampling equipment at the 13 LA/P gaging stations was connected via telemetry to a base station, allowing real-time access to gage discharge measurements and battery state of charge. Inspectors reviewed telemetry daily to ensure gages were functioning correctly. Inspectors inspected gaging stations and samplers when telemetry readings indicated discharge had occurred or the equipment problems existed.

### 2.2 Sampling at the Detention Basins below the SWMU 01-001(f) Drainage and in Graduation Canyon

In 2013, nine storm water samples were collected with automated samplers above two constructed detention basins below the SWMU 01-001(f) drainage at location CO111041. Storm water discharge ponded in the detention basins, and sampling was triggered on two occasions at CO101038, at the culvert at the terminus of the vegetative buffer below the lower basin. Sampling locations and storm water control features at the detention basins below the SWMU 01-001(f) drainage are identified in Figure 2.2-1.

### 2.3 Sampling at the Gage Stations in the LA/P Watershed

During the monitoring period in 2013 (June 1 to October 31), discharge was measured above 10 cubic feet per second (cfs) at any gage station on 31 d. Sampling and analyses of inorganic and organic chemicals, radionuclides, and suspended sediment occurred on 17 d with runoff events from 1 or more of the 13 gage stations in the LA/P watershed. A total of 45 sampling events occurred, with a sampling event defined as the collection of one or more samples from a specific gaging station during a specific runoff event. Several sampling events spanned midnight. Maximum daily discharge at all gages on days when flow reached or exceeded 5 cfs at E050.1, E060.1, or E109.9; 40 cfs at E038; or 10 cfs at the other gages is presented in Table 2.3-1. Table 2.3-1 also summarizes the runoff events sampled at each station. In 2013, the threshold discharge at a station was reached 100 times, and sampling was conducted 50 of these times, resulting in an overall sampling efficiency of 50%.

### 2.4 Samples Collected in the LA/P Watershed

Sample suites presented in the monitoring plan vary according to the monitoring location and are based on key indicator constituents for a given portion of the watershed. Following the Las Conchas fire, americium-241 was added to the analytical suite at E026 and E030, and cyanide was added at all stream gages downstream from the burn area in Los Alamos Canyon (E026, E030, E042.1, E050.1, and E109.9). Analyses were obtained from storm water collected at sampling locations as presented in Table 2.4-1. In cases where insufficient water was collected to perform all planned analyses, analyses were prioritized in the order presented in Table 2.4-1. Up to 24 samples per event were collected for suspended sediment analysis from a single ISCO sampler containing a 24-bottle carousel at the lower watershed gages (E042.1, E050.1, E059, E060.1, and E109.9); gages in upper DP Canyon (E038 and E039.1); and the upstream gage in Los Alamos Canyon, downstream from the Las Conchas burn area (E026) (Figures 1.0-1 and 2.1-1). Suspended sediment analyses at all other locations were obtained from the first and last sample in an ISCO sampler containing a 12-bottle carousel. Suspended sediment analyses when conducted using U.S. Environmental Protection Agency (EPA) Method 160.2, from an aliquot of sample, were reported using the designation “Total Suspended Solids” (TSS). Suspended sediment analyses when conducted using American Society for Testing and Materials method D3977-97, from an entire sample, were reported using the designation “Suspended Sediment Concentration” (SSC).

EPA target analyte list (TAL) metals were analyzed in filtered and unfiltered samples at all locations. When a sufficient sample volume was collected, radionuclides were analyzed in filtered and unfiltered samples at E109.9. Other required analyses were conducted from unfiltered samples. Sample collection times were recorded for each individual sample bottle filled, which allowed more precise estimation of discharge and SSCs at the time samples were collected.

Analyses were conducted using the analytical methods presented in Table 2.4-2. Detection limits are provided for comparison purposes but are affected by sample-specific factors that are not fully known until after the sample is analyzed. Such sample-specific factors can include available sample volume, matrix interferences, and sample dilution. In samples with suspended sediment content of approximately 10% or greater, analyses for selected radionuclides and metals were conducted on separate solid and liquid fractions. The final result reported by the analytical laboratory was a calculated concentration of the recombined solid phase and liquid phase analyses. Table 2.4-3 presents the prioritization matrix that was used to help guide the submission of analyses during 2013. The complete sequence and timing of analyses planned, samples collected, and analyses requested at each gage station are presented in Table 2.4-4.

Analyses planned and analyses performed differ during the year for several reasons including the following:

1. Incomplete sample volumes were collected.
   a. Minimum volumes are required to obtain specified detection limits.
   b. Lowest priority analyses are omitted when incomplete volumes are collected.
2. Samples are collected in glass or polyethylene bottles.
   a. Organic chemical analyses are conducted on samples collected in glass bottles.
   b. Boron was analyzed as an addition to the TAL metal suite, and samples were collected in polyethylene bottles.
3. The high sediment content of samples collected precluded the analysis of samples using analytical techniques designed for water matrixes; instead, samples with the highest sediment content were separated into solid and liquid fractions, which were analyzed separately and mathematically recombined.
4. Several samplers were programmed incorrectly, causing incomplete sample collection during several storm events.

### 2.5 Operational Issues

During 2013, the Laboratory authorized field crews to perform weekly inspections at gages and samplers in the LA/P watershed. Inspections were authorized to occur at sampling and stage measurement equipment following a rain event that resulted in discharge. Additionally, flumes at E039.1, E042.1, E050.1, E060.1, and E109.9 were inspected for sedimentation after each discharge event and cleaned on the first workday after sedimentation occurred. If inspectors were unable to repair damaged equipment at the time of inspection, additional resources were made available as quickly as possible to make repairs.

In a letter dated August 9, 2013, and received by the Laboratory on August 12, 2013, Pueblo de San Ildefonso notified the Laboratory that access to gage station E109.9 was being terminated. Pursuant to Section III.N of the Consent Order, on August 27, 2013, the Laboratory notified NMED of a force majeure event resulting from the termination of access to gaging station E109.9 on Pueblo land (LANL 2013, 249066). NMED responded on October 16, 2013, with a notice of agreement of the force majeure event (NMED 2013, 523698). The flume and stilling well at E109.9 were cleared of sediment 12 times during the 2013 monitoring season before access restrictions went into effect. The gage and equipment at E109.9 and E099 that had been damaged by flooding on September 13 have not been repaired.

Pursuant to Section III.H.3 of the Consent Order, on September 25, 2013, the Laboratory notified NMED of another force majeure event resulting from flooding on September 13 (LANL 2013, 250037). NMED responded on January 3, 2014, with a notice of agreement that a force majeure event had occurred (NMED 2014, 524130).

The sampling efficiency within the Los Alamos and Pueblo watershed before access restrictions at E099 and E109.9 caused by the August 12 Pueblo de San Ildefonso restrictions and the September 13 flooding was 74%, with 46 samples collected from 62 events. The sampling efficiency after September 13 flooding and after Pueblo de San Ildefonso access restrictions on August 12 was 11%, with 4 samples collected from 38 events.

## 2.6 Deviations from Work Plan

Gaging equipment at E050.1, E060.1, and E109.9 were to be inspected weekly throughout the year; automated samplers and equipment at other gages were to be inspected weekly from June 1 to October 31 and at least monthly from November 1 to May 31. Equipment found to be damaged or malfunctioning was to be repaired within 5 business days after the problem was discovered. Samples were to be retrieved from the field within 1 business day of sample collection using the following priority order, if necessary:

- Los Alamos above the Rio Grande at E109.9. Before access restrictions, 8 of 8 samples were collected within 1 business day.
- Lower watershed at E042.1, E050.1, E059, and E060.1. Before the September 13 storm, 7 of 7 samples were collected within 1 business day.
- Upper watershed at E026, E030, E055, E055.5, E056, CO101038, and CO111041. Before the September 13 storm, 7 of 15 samples were collected within 1 business day.
- DP Canyon at E038, E039.1, and E040. Before the September 13 storm, 3 of 15 samples were collected within 1 business day.

The duration between sample collection and sample retrieval is documented in Table 2.6-1. In 2013, samples were retrieved from gage stations 58 times. Samples were collected at gages 26 times within the first business day. The 9 samples collected on September 12 and 13 were all retrieved more than 1 d after collection because the Laboratory restricted access to gage stations and samplers to ensure safe working conditions. The sample collected on August 9 at E109.9 was not retrieved until September 11 during a temporary lifting of access restrictions.

Damage occurring to samplers and gage monitoring equipment is documented in Table 2.6-2. In 2013, 10 stations were damaged or malfunctioned a total of 28 times. The stations monitoring and sampling equipment were repaired within 5 business days on 22 of these occasions. Discharge could have exceeded triggering stage heights on 11 d because of silting or damage to gages, as noted in Table 2.6-2.

Battery voltage, stage height, and sensor function at each gage station were remotely monitored daily. An on-site inspection was performed if any malfunction or sample collection event was observed. Samplers and monitoring equipment at E050.1, E060.1, and E109.9 were physically inspected weekly between November 1, 2012, and October 31, 2013, except between December 18, 2012, and January 3, 2014, during Laboratory closure. Also, inspections were performed infrequently at E109.9 after August 12, 2013. Because gage station functionality was assessed daily using telemetry, physical inspections at other gages were performed on a more varied schedule that ranged from 1 to 23 d between inspections from June 1 to October 31, 2013, and ranged from 1 to 58 d between inspections from November 1, 2012, to May 31, 2013. The dates of each physical inspection at each station are documented in Table 2.6-3.

A lapse in federal appropriations beginning on October 1, 2013, continued for 18 days, until October 18, 2013. Following this programmatic pause, an additional 5 working days were necessary to safely restart field activities to allow subcontractors to return to work. Normal operations resumed on October 28, 2013. With the exception of inspections required at E050.1 and E060.1 to maintain the early notification system for the Buckman Direct Diversion Project, no inspections, maintenance, or repairs were performed between early October and early November (LANL 2013, 250080).

## 3.0 WATERSHED HYDROLOGY

The topography, geology, geomorphology, and meteorology of the LA/P watershed are quite complex and include mesas, canyons, and large elevation gradients; alluvium, volcanic tuff, pumice, and basalt; ephemeral streams, evolving stream networks (both laterally and vertically), and sediment-laden stream discharge; winter snowfall that can create spring snowmelt, intense summer monsoonal rainfall, and occasional late summer to fall tropical storm activity. Consequently, monitoring of the LA/P watershed runoff is also complex and challenging.

### 3.1 Drainage Areas and Impermeable Surfaces

Drainage areas unique to each gage station (Figure 2.1-1) were developed using the ArcHydro Data Model in ArcGIS. Model inputs were developed using an elevation grid created from 4-ft light detecting and ranging (LIDAR) images, a digital elevation model from 2000, surface-water drainage culverts from the Laboratory and the County of Los Alamos, and manual site-specific controls based on field assessments. Each drainage area defines the area that drains to the particular gage station from either the next upstream gage station or the headwaters of the watershed, as determined by the model inputs.

The impermeable surface area was derived from the urban-sparse-bare rock land cover type within the taxonomic-level classification system developed in the Land Cover Map for the Eastern Jemez Region (McKown et al. 2003, 087150). The specific grid data set selected to provide the land cover type was the quarter-hectare smoothed taxonomic level. Within each gage station drainage area, the urban-sparse-bare rock land cover type was spatially queried for total acreage based upon the number of 50-ft × 50-ft grid cells that fell within the drainage boundary. This total area was then divided by the total area of the entire drainage area to derive the percent impermeable surface area. The following assumptions were made in determining the percent impermeable surface area: (1) the only available land cover data were from 2002–2003, and therefore newer impermeable surfaces may not be captured; and (2) urban-sparse-bare rock grid cells that may have overlapped two drainage areas were spatially queried based upon where the center of the cell resided rather than the exact amount of each cell that fell within each drainage area.

A significant factor in the frequency of discharge at each gage is the ratio of permeable to impermeable surface area discharging to the gage or within the canyon drainage (Table 3.1-1). The Las Conchas fire affected this relationship because of soil hydrophobicity (infiltration decreases), lack of vegetation (through fall increases and evapotranspiration decreases), and lack of litter (infiltration decreases) following a medium- to high-intensity forest fire, leading to an increase in runoff, as occurred after the Cerro Grande fire (Gallaher and Koch 2004, 088747). The effect of the fire was particularly evident at E109.9, which measures discharge from a total drainage area of 37,800 acres, with 11% impermeable surface area before the fire and an additional 13% of the watershed experiencing high- or moderate-severity burn during the fire. Gage E109.9 recorded discharge greater than 5 cfs only 4 times during the 2010 monitoring period (pre-fire), 15 times during the 2011 monitoring period (1 yr post-fire), 14 times during the 2012 monitoring period (2 yr post-fire), and 17 times before being destroyed by September 13, 2013, flooding (3 yr post-fire).

### 3.2 Water and Sediment Transmission

Figure 3.2-1 is a flow diagram of the LA/P watershed displaying each gage station and the location of sediment transport mitigation sites. Figure 3.2-2 shows box and whisker plots of suspended sediment (both TSS and SSC) for DP, Los Alamos, and Pueblo/Acid Canyons from up- to downstream over the past 4 yr of monitoring. September 13, 2013 plots are shown on a different scale. As expected, Los Alamos Canyon had higher concentrations of suspended sediment as a result of the Las Conchas fire (compare the pre-fire year 2010 with the post-fire years 2011, 2012, and 2013). Indeed, the SSCs in DP and Pueblo/Acid Canyons (with the exception of E059) are significantly less than in Los Alamos Canyon. In general, the suspended sediment in Los Alamos Canyon decreases from E026 to E050.1, particularly after crossing the Los Alamos Canyon low-head weir (between E042.1 and E050.1), increases greatly after the Guaje Canyon confluence (E099), and decreases slightly at E109.9. The influence of Guaje Canyon is extreme because 15% of the 21,000-acre watershed experienced moderate- to high-burn severity during the Las Conchas fire.

For runoff events exceeding sampling triggers in 2013, Figure 3.2-3 shows hydrographs for DP, Los Alamos, and Pueblo/Acid Canyons from up to downstream. Figure 3.2-3 also shows separate hydrographs for E099, which is a baseline station in Guaje Canyon not on Laboratory property but upstream of E109.9, along with E050.1, E060.1, and E109.9, which are lower boundary stations in the LA/P watershed. Table 3.2-1 summarizes the flood bore transmission downstream in the lower LA/P watershed, including travel time of flood bore from the upstream to the downstream station, peak discharges of the flood bore at the station, and the percent reduction in peak discharge between the stations for every sampled runoff event in 2013. The flood bore is defined as the leading edge of the storm hydrograph as it transmits downcanyon and peak discharge is the maximum 5-min instantaneous flow rate measured during a flood. The focus was on peak discharge because it is related to stream power, and in ephemeral streams in semiarid climates, the greater the stream power, the greater the erosive force, hence the greater the sediment transport (Bagnold 1977, 111753; Graf 1983, 111754; Lane et al. 1994, 111757).

As flood bores move from up- to downstream, peak discharge can either increase by means of alluvial groundwater and/or tributary contributions or decrease because of transmission losses (infiltration). In some events, downstream stations experienced discharge before upstream stations because of inputs from intermediate tributary drainages or localized storms centered closer to the downstream station. In 2013, this occurred one time between E050.1 and E109.9 because of discharge from Guaje Canyon, four times between E099 and E109.9 because of the close proximity of the two stations (the peaks occur within 10 to 20 min of one another), and one time on September 12, 2013, between E099 and E109.9, possibly because of localized precipitation in the E109.9 area. A summary of the peak discharge increases and decreases (Tables 3.2-2) between stations provides insight into the stream network.

In the lower part of Los Alamos Canyon, between E050.1 and E109.9, the peak discharge increased for all 23 runoff events (96% average increase), indicating this section tends to gain rather than lose volume. Discharge above 5 cfs was measured at E050.1 for 11 events, 10 of which may have contributed to discharge at E109.9. Of the 10 events where E050.1 may have contributed to E109.9: during 4 events E099 may also have contributed; during 2 events E099 did not contribute; and during 4 events E099 and E109.9 were not operational. Discharge above 5 cfs was measured at E060.1 for 2 events, both of which may have contributed to E109.9, 1 of which E099 may also have contributed, and 1 of which E099 and E109.9 were not operational. In the stretch from E060.1 to E109.9, peak discharge increased in all 24 runoff events (99% average increase), indicating this channel section tends to gain rather than lose volume. Gain in this channel comes from tributaries between the confluence of Pueblo and upper Los Alamos Canyon and E109.9 in lower Los Alamos Canyon.

These relationships indicate runoff from Guaje Canyon and localized precipitation contributed to discharge measured at E109.9 in multiple events (also see Figure 3.2-3). The discharge values for E099 are considered estimates because of the wide open channel and the validity of a rating curve for this site; however, when E099 was operational, the peak discharge increased for 17 of 20 runoff events (87% average increase) and decreased for 3 events (43% average decrease), indicating this section tends to gain rather than lose volume. Discharge above 5 cfs was measured at E099 for 14 events, 13 of which may have contributed to discharge at E109.9. Discharge above 5 cfs was measured at E109.9 for 24 events, 10 of which had no or very little discharge at E050.1, E060.1, and E099, indicating a fair number of localized precipitation events occurred.

Figure 3.2-4 shows the hydrograph and sedigraph for each station sampled through all or most of the duration of a runoff event plotted as time since the peak. The SSC data for September 12, 2013, for E026 and E109.9 was not used in calculations or plots because the sampler intake clogged (Figure 3.2-4).

Table 3.2-3 shows the Pearson's correlation coefficients between discharge and SSC for these stations and runoff events. Concurrent times as well as various time lags are displayed. Pearson's correlation coefficients are computed as follows:

$$corr_{Q_t,TSS_t} = \frac{\sum_{t=0}^{n}(Q_t-\bar{Q})(SSC_t-\overline{SSC})}{\sqrt{\sum_{t=0}^{n}(Q_t-\bar{Q})^2\sum_{t=0}^{n}(SSC_t-\overline{SSC})^2}}$$ **Equation 3.2-1**

where $Q_t$ is the discharge at time *t*, $SSC_t$ is the SSC at time *t*, *n* is the number of measurements to be correlated (*t* = *1, 2, …, n*), and

$$\bar{Q} = \frac{\sum_{t=0}^{n} Q_t}{n}$$ **Equation 3.2-2**

$$\overline{SSC} = \frac{\sum_{t=0}^{n} SSC_t}{n}$$ **Equation 3.2-3**

The peak SSC can occur after the peak discharge; thus, lags between 0 and 30 min are presented with the discharge lagging behind the SSC to align the peaks (after 30 min, the correlations were reduced for all stations and all runoff events). For example, when the Pearson's correlation coefficient between $Q_t$ and $SSC_{t+5}$, is computed, the SSC time series begins 5 min after the discharge time series.

For stations E038, E039.1, E042.1, E050.1, E099, and E109.9, discharge is reasonably positively correlated to SSC with little to no lag. The exceptions are when the sampler intake clogged. Figure 3.2-5 shows the linear relationship between sediment yield and runoff volume for the stations where SSC was measured throughout the runoff event over the past 2 yr of monitoring; Table 3.2-4 presents the 2012 and 2013 values shown in Figure 3.2-5. Although SSC and instantaneous discharge are not always highly correlated as a result of localized precipitation, sediment availability, or antecedent conditions, the linear relationship between sediment yield and runoff volume is well established (Onodera et al. 1993, 111759; Nichols 2006, 111758; Mingguo et al. 2007, 111756). The July 2011 Las Conchas fire greatly affected this relationship during 2011 (LANL 2012, 222836); however, in 2012, and even more so in 2013, the relationship is tighter, perhaps indicating that the LA/P watershed is recovering.

The runoff volume for each event was computed as follows:

$$V = \sum_{i=0}^{n} Q(t_i)(t_{i+1}-t_i) \quad ,$$ **Equation 3.2-4**

Where $n$ = the number of instantaneous discharge measurements taken throughout the runoff event,

$t$ = the time, $i$, at which an instantaneous discharge measurement is taken, and

$Q(t_i)$ = the discharge ($ft^3/s$) at time $t_i$ (multiplied by 60 to convert from $ft^3/s$ to $ft^3/min$).

The mass of sediment for each runoff event was computed by

$$M = \sum_{j=0}^{n} Q(t_j)(t_{j+1} - t_j)\, SSC(t_j) \quad ,$$ **Equation 3.2-5**

Where $n$ = the number of SSC samples taken throughout the storm event,

$t_j$ = the time, $j$, at which an SSC sample is taken,

$Q(t_j)$ = the discharge ($ft^3/s$) at time $t_j$ interpolated from the instantaneous discharge measurements taken at time $t_i$ (multiplied by 60 to convert from $ft^3/s$ to $ft^3/min$), and

$SSC(t_j)$ = SSC (mg/L) at time $t_j$ (multiplied by $28.3 \times 10^{-6}$ to convert from mg/L to $kg/ft^3$).

Figure 3.2-6, like Figure 3.2-5, shows the linear relationship between sediment yield and peak discharge, which is not as robust as the relationship between sediment yield and runoff volume during the past 2 yr. The effects of the Las Conchas fire can also be seen in the peak discharge relationship, which is tighter in 2012 and 2013 than it was in 2011.

Appendix B presents plots of discharge (hydrographs), precipitation (hyetographs) and SSC (sedigraphs) versus time for each date and station when samples were collected. The precipitation shown is associated with the precipitation-station-based Thiessen polygons that overlay the individual gage's watershed area, thus potentially contributing to the discharge measured at the station. As expected, discharge lags precipitation, and when several pulses occur in the hyetograph, consequential peaks occur in the hydrograph.

## 3.3 Geomorphic Changes

Topographic surveys to measure sediment deposition and erosion were conducted at the following sediment transport mitigation sites: Pueblo Canyon cross-vane structures, upper Pueblo Canyon willow-planting area, Pueblo Canyon wing ditch, lower Pueblo Canyon willow-planting area, upper Los Alamos Canyon sediment detention basins, DP Canyon GCS, and Los Alamos Canyon low-head weir. A complete summary of the methods and detailed results is provided in Appendix A.

Although the September 2013 flood event resulted in significant erosion in most surveyed areas in Pueblo Canyon, the magnitude of the erosion was likely reduced by the sediment mitigation structures and willow plantings. The engineered structures in Los Alamos and DP Canyons appear to have enhanced sediment deposition in these areas. No actions are recommended at this time, except for continued annual resurveys.

### 3.3.1 Pueblo Canyon

Net erosion occurred in most surveyed areas in the Pueblo Canyon watershed during monsoonal flood events in 2013. This is in contrast to net deposition measured in most surveyed areas in 2010, 2011, and 2012. The Cross Vane Structure, Upper Pueblo Willow, Lower Pueblo Willow, and Pueblo Canyon GCS sediment mitigation areas all experience net erosion, whereas the Wing Ditch area experienced net deposition. The relatively large magnitude of the September 2013 flood event resulted in significant channel widening and incision in the areas that experienced net erosion. Many previously established willows were uprooted and washed downstream, reducing the density of willows in all willow planting areas. However, in areas with previously established thick willow patches (the upper two-thirds of the upper Pueblo willow planting area), willows that were laid down by monsoonal floods have resprouted and should effectively recolonize the area. Willows have also been replanted in the lower Pueblo willow planting area. The Pueblo Canyon GCS was effective in causing sediment deposition in the lower part of the Pueblo Canyon GCS monitoring area. The survival of thick willow patches and sedimentation above the Pueblo Canyon GCS and in the Wing Ditch area are consistent with the goal of the sediment transport mitigation work plans (LANL 2008, 101714; LANL 2008, 105716). Field observations indicate that much of the eroded sediment in Pueblo Canyon was originally deposited in the floods that occurred after the Cerro Grande fire, which contains relatively low contaminant concentrations. In addition, some of the bank erosion includes uncontaminated pre-1943 sediment, and erosion of these areas does not contribute to the contaminant load in storm water. However, some areas of post-1942, pre–Cerro Grande sediment deposits were also eroded, adding to the contaminant load in storm water.

### 3.3.2 Los Alamos Canyon

Net sediment deposition occurred in most surveyed areas in the Los Alamos canyon watershed in 2013, which is consistent with the goal of the sediment transport mitigation work plans (LANL 2008, 101714; LANL 2008, 105716). Net sediment deposition in DP Canyon, the upper Los Alamos Canyon sediment detention basins, and the Los Alamos weir in 2013 is greater than recorded in 2012 (or in previous years). It appears that sediment deposition behind the engineered structures in the Los Alamos Canyon watershed has been enhanced by the construction of these structures, although how far this effect propagates upstream behind the DP Canyon GCS is uncertain.

## 3.4 Impact and Efficiency of Watershed Mitigations

The DP and Pueblo Canyon GCSs were constructed to help reduce erosive flood energy and to cause upstream aggradation to bury existing stream channels, potentially to bury existing floodplain deposits, and in Pueblo Canyon, to stabilize an eroding wetland. As a result, the GCSs should help reduce sediment transported during flood events. The Pueblo Canyon wing ditch was designed to divert floodwater from the main channel into an adjacent abandoned channel, spreading water more broadly over a wetland and decreasing surface water flow velocities. Willows were planted in Pueblo Canyon to aid in surface stabilization, flow reduction, and sediment accumulation.

**DP Canyon:** In 2013, storm water sampling conducted in DP Canyon on June 14, June 30, July 12, and July 28 was performed above (E038) and below (E039.1) the GCS and associated floodplains (Figure 3.4-1). Analyses performed from samples collected during these runoff events allow direct evaluation of changes in discharge and sediment transport through this part of DP Canyon. Sample collection began within 5 min of initial discharge (triggered above 40 cfs for E038 and 10 cfs for E039.1). For E038 and E039.1, respectively, the calculated sediment yield is: June 14, 5.1 and 0.3 $yd^3$; June 30, 5.0 and 0.1 $yd^3$; July 12, 38.8 and 33.7 $yd^3$; and July 28, 2.1 and 0.4 $yd^3$ (Table 3.2-4). Between these two stations, or from above to below the GCS, there is a 178%, 192%, 14%, and 136% relative percent difference (RPD) decrease in sediment yield for these events, respectively.

Decreasing storm water velocity allows for infiltration to be increased. Increasing infiltration reduces the distance that a storm surge travels in the stream channel and decreases the distance that sediment and associated contaminants entrained in the water column travel. Increasing infiltration reduces peak discharge but can also decrease the total volume of storm water passing through a gage station. In 2013, the peak discharge decreased in 12 of 20 runoff events between E038 and E039.1, with an average decrease of 66%, and increased in 8 of 20 events with an average increase of 22% (Table 3.4-1). For the June 14, June 30, July 12, and July 28 events, the runoff volume for E038 and E039.1, respectively, is: 3.0 and 1.3 acre-ft; 1.9 and 0.8 acre-ft; 13.7 and 16.3 acre-ft; and 1.6 and 1.2 acre-ft (Table 3.2-4). Between these two stations, or from above to below the GCS, there is a 77%, 82%, and 26% RPD decrease in runoff volume on June 14, June 30, and July 28, and a 17% RPD increase in runoff volume on July 12, most likely caused by additional contributions from local runoff because of the widespread nature of the July 12 storm.

In addition to examining coinciding sampling events, watershed mitigation performance can be assessed by examining overall statistics over time. Figure 3.4-2 shows box and whisker plots for E038 and E039.1 for TSS, SSC, and peak discharge over the past 4 yr of monitoring. These plots indicate overall reductions in TSS and SSC over the 4 yr and minor reductions in mean peak discharge (i.e., erosive force) over the 4 yr through this part of DP Canyon, consistent with the goals of the sediment transport mitigation activities.

**Pueblo Canyon:** In 2013, no sampling was performed in Pueblo Canyon above (E059) or below (E060.1) the GCS and upstream wetland for the same runoff event because the only event with discharge at both stations was the September 13 event, which destroyed both stations (Table 3.4-1). Therefore, overall statistics over the past 4 yr of monitoring must be used to assess performance. Figure 3.4-2 shows box and whisker plots for E059 and E060.1 for TSS, SSC, and peak discharge. As these plots indicate, peak discharge was effectively attenuated through the Pueblo Canyon wetland in 2010 and 2013, resulting in little to no transport from the upper Pueblo watershed into lower Los Alamos Canyon. This is consistent with the goals of the sediment transport mitigation activities. It should also be noted that discharge was measured at E059 for three events during which no discharge was measured at E060.1, regardless of the tributary from the Los Alamos Airport that regularly discharges storm water runoff into the wetland. Thus, the discharge magnitude is being reduced through this area, which is a primary goal of the mitigation actions. In addition, TSS and SSC magnitude was reduced through the mitigation structures in 2010 (no samples were collected at E060.1 during 2011, 2012, or 2013).

**Los Alamos Canyon:** Sampling was performed in Los Alamos Canyon on July 12, August 5, and September 10 above (E042.1) and below (E050.1) the low-head weir. Analyses performed from samples collected during these runoff events allow direct evaluation of the effect of the weir and associated basins on flow and sediment transport. Each event had downstream decreases in peak discharge, total runoff volume, and SSC (Figure 3.4-3). More specifically, between E042.1 and E050.1 for the three events sampled at the same time, there is a 182%, 132%, and 144% RPD decrease in sediment yield, respectively, and a 129%, 139%, and 93% RPD decrease in runoff volume, respectively. In addition, in 2013, the peak discharge decreased in 12 of 15 runoff events between E042.1 and E050.1, with an average decrease of 80% (Table 3.4-1). The peak discharge increased in 3 of 15 runoff events between E042.1 and E050.1, with an average increase of 44%; however, these storms occurred after the September 13 event during which the low-head weir was filled and continued to dewater for several months. Sediment trapping efficiency is expected to be higher in smaller events and events early in the season before the retention basins have filled with water. Flow is reduced through the weir and the upstream sediment retention basins, allowing sediment to settle out of suspension; thus, this mitigation feature is performing as designed.

In addition to examining coinciding sampling events, performance of the weir and upstream sediment retention basins can be assessed by examining overall statistics over the past 4 yr of monitoring. Figure 3-4.2 shows box and whisker plots for E042.1 and E050.1 for TSS, SSC, and peak discharge. These plots show major reductions in TSS and SSC, particularly in response to the post-fire years (2011, 2012, and 2013) and minor reductions in mean peak discharge; thus, the weir is performing well.

# 4.0 ANALYTICAL RESULTS

Appendix C contains all analytical results obtained from storm water runoff samples collected in the LA/P watershed during 2013. Data packages for these analyses are included with this report (on CD).

## 4.1 Data Exceptions

Storm water samples collected at E109.9 on September 12, 2013, were impacted by flooding on September 13. During September 13 flooding, the Greenlee storage box was filled with flood water and sediment. The ISCO samplers were tipped on edge and sample bottles were filled with flood water. Samples were analyzed despite the loss of integrity to provide insight into water passing the gage during the peak of flooding on September 13. Figures 3.2-4 and 4.1-1 show the lack of correlation between September 12 discharge and SSC of the individual sample bottles.

Low bias of analytical results in high-solid content storm water has been observed in analyses performed by gamma spectroscopy, alpha spectroscopy, inductively coupled plasma (ICP) mass spectroscopy and ICP optical emission spectroscopy. This low bias can be avoided when the solid phase and liquid phase of each biphasic sample are analyzed separately and the results mathematically recombined. Both samples collected at E099 and 7 of 9 samples collected at E109.9 in 2013 contained sufficient sediment to perform biphasic analyses. Calculated biphasic results are reported with an analytical method ending in "_CALC."

## 4.2 Analytes Exceeding Comparison Values

As explained in the IMWP, several actions were taken as part of an interim measure under Section VII.B of the Consent Order to mitigate transport of contaminated sediments in the LA/P watershed (LANL 2008, 101714). The analytical results from monitoring are presented and evaluated within this context. The mitigation actions were not undertaken with the objective of reducing concentrations of water-borne contaminants to specific levels, and the analytical results are therefore not compared with water-quality standards or other criteria for that purpose or for the purpose of evaluating compliance with regulatory requirements. For this report, monitoring results are compared with water-quality standards to narrow the list of specific constituents for conceptual model discussions in this report and to provide a basis for potential future revisions to the analytical suites. The New Mexico Water Quality Control Commission (NMWQCC) Standards for Interstate and Intrastate Surface Waters (New Mexico Administrative Code 20.6.4) establish surface water standards for New Mexico. The NMWQCC classifies all surface water within the Laboratory boundary with segment-specific designated uses. The LA/P stream segments are classified as ephemeral or intermittent, with designated uses of limited aquatic life, livestock watering, wildlife habitat, and secondary contact. Some of the standards are for total concentrations, which are compared with data from unfiltered surface water samples. Other standards are for dissolved concentrations, which are compared with data from filtered samples. Table 4.2-1 presents the NMWQCC standards used as numeric values for comparison with monitoring results for the purposes stated above. When chemicals have comparison values for multiple designated uses, the smallest value was selected to compare with analytical results. Table 4.2-2 presents the comparison of detected analytical results from 2013 with the standards in Table 4.2-1. Analytical constituents most frequently detected above these comparison values are aluminum, total PCBs, and dioxins and furans.

Dioxin and furan congeners were detected in 4 of 6 samples analyzed in 2013. Additionally, 43 samples analyzed for PCBs were reported to contain detected concentrations of eleven PCB congeners with assigned toxicity equivalency factors (TEFs). These dioxin and furan and PCB results were converted to concentrations equivalent in toxicity (toxic equivalency quotients [TEQs]) to 2,3,7,8-tetrachlorodibenzodioxin (2,3,7,8-TCDD) for comparison with the NMWQCC standard. The TEQs were calculated using the TEFs presented in Table 4.2-3 (Van den Berg et al. 2006, 106990). The detected concentration of each congener was multiplied by its TEF, and these products were summed for each detected congener to obtain the TEQ for a sample. The TEQs for each sample analyzed for dioxins and furans or PCBs are presented in Table 4.2-4, and range over 4 orders of magnitude ($1.550 \times 10^{-8}$ to $4.087 \times 10^{-4}$ µg/L).

## 4.3 Relationships between Discharge, SSC, and Contaminant Concentrations

Discharge was calculated from stage height using a rating curve, which is the relationship between discharge in cubic feet per second and height of the water in feet, developed for each individual gage. Stage height was measured at 5-min interval and logged continuously during each sampled storm event. SSC and particle size were measured during each storm in conjunction with inorganic and organic chemicals and radionuclides. Because of low bias inherent in TSS analyses, TSS was measured less frequently in 2013 than in previous years.

TSS, SSC, and instantaneous discharge estimates were calculated for each sample using a linear relationship between the two corresponding analytically determined TSSs and SSCs or the two corresponding physically measured discharge, as follows:

$$y = mx+b, \qquad \textbf{Equation 4.3-1}$$

where $y$ = the calculated TSS, SSC, or discharge at the time of sample collection,

$m$ =the slope of the line,

$x$ = the time differential in minutes between TSS or SSC sample collection or discharge measurements, and

$b$ = the concentration of analytically determined TSS or SSC before sample analyses or corresponding physically determined discharge.

The slope $m$ is determined by dividing the difference in TSS, SSC, or discharge by the difference in time, in minutes, between TSS or SSC sample collection or discharge measurements before and after analytical sample collection. Using this equation, TSS, SSC, and instantaneous discharge were calculated for samples collected. Where analytical results are not bounded by sediment results, the concentration of the nearest sediment result is used as an estimate of the sediment concentration at the time the sample was collected. If TSS or SSC was not measured during a storm an estimate was not produced. The calculated TSSs, SSCs, and instantaneous discharges are presented in Table 4.3-1.

Relationships between calculated SSC and filtered and unfiltered analytical results can be used to evaluate contaminant sources in the LA/P watershed. This evaluation in turn provides insight into performance of watershed mitigations conducted in the watershed and the usefulness of future monitoring strategies. Background concentrations of inorganic chemicals, naturally occurring radionuclides, and fallout radionuclides within uncontaminated canyon sediments at the Laboratory are presented in a report (LANL 1998, 059730) and accepted by regulatory authorities. In unfiltered storm water with known concentrations of suspended sediment, background concentrations of inorganic chemicals, naturally occurring radionuclides, and fallout radionuclides will be below an upper tolerance limit (UTL) for canyon sediments. Where the concentrations of metals and radionuclides in unfiltered storm water are greater than background concentrations external contributions to background can be assumed.

Figures 4.3-1 through 4.3-32 present scatterplots of metals and radionuclides analyzed in Los Alamos and Pueblo Canyons with associated American Society for Testing and Materials (ASTM) method C1070-01 suspended sediment measurements collected in 2012 and 2013. Fewer results from 2012 were associated with the ASTM suspended sediment measurement method. Suspended sediment and associated analytical data points were removed from the plots from storm water collected at E038 on

July 7, 2012, where suspended sediment was underestimated, from storm water collected at E109.9 on September 12, 2013, where sample integrity was not maintained, and from storm water collected at CO101038 and CO111041 at the detention basins below the SWMU 01-001(f) drainage where canyon sediments are not monitored.

Plots show unfiltered metals concentrations in storm water less than the background UTL for canyon sediments for 10 metals: aluminum (Figure 4.3-1), antimony (Figure 4.3-2), arsenic (Figure 4.3-3), beryllium (Figure 4.3-4), iron (Figure 4.3-5), mercury (Figure 4.3-6), nickel (Figure 4.3-7), selenium (Figure 4.3-8), silver (Figure 4.3-9), and thallium (Figure 4.3-10). Also, activities of unfiltered uranium-234 (Figure 4.3-11), uranium-235 (Figure 4.3-12), and uranium-238 (Figure 4.3-13) in storm water are less than the background UTL for canyon sediments at all LA/P watershed gages. Despite the lack of a source of these metals and radionuclides above background values, dissolved aluminum has concentrations of filtered metals in storm water above applicable water-quality standards.

Barium (Figure 4.3-14), cobalt (Figure 4.3-15), and manganese (Figure 4.3-16) frequently exceed concentrations expected solely from canyon sediment carried in unfiltered LA/P storm water. However, unfiltered barium, cobalt, and manganese concentrations in storm water are strongly correlated across all sediment concentrations and at all Los Alamos and Pueblo gage stations, Figure-4.3-17. The strong correlation indicates canyon sediments are the single naturally occurring background source for barium, cobalt, and manganese in the LA/P watershed. Filtered manganese results are sometimes above the acute aquatic life standard in samples with greater than 10% suspended sediment content. The three largest results for these three metals were obtained at E030 and E042.1 during 2012 and were not repeated during 2013.

Results for unfiltered cadmium (Figure 4.3-18), chromium (Figure 4.3-19), copper (Figure 4.3-20), lead (Figure 4.3-21), vanadium (Figure 4.3-22), and zinc (Figure 4.3-23) show results greater than would be expected of sediment background in low sediment content samples. Filtered zinc and copper results are sometimes above acute aquatic life standards. The “Evaluation of Sediment and Alluvial Groundwater in DP Canyon” (LANL 1999, 063915) showed that in DP Canyon cadmium, chromium, copper, lead, and zinc have a Los Alamos townsite origin. The Los Alamos and Pueblo Canyons investigation report (LANL 2004, 087390), which includes DP Canyon, paints a more complex picture of sources of metals from Los Alamos town site, historical releases from the Laboratory, and ash from wild fire. No metals originating from the Las Conchas fire, Laboratory activity or Los Alamos townsite were above concentrations expected in background canyon sediments at E109.9.

Non-detected metals are reported at the value of the quantitation limit but non-detect is determined to the value of the method detection limit (MDL). Nondetected filtered results for silver (Figure 4.3-9), cadmium (Figure 4.3-18), and thallium (Figure 4.3-10) are greater than their respective water-quality standards. The reported MDL for dissolved silver is 0.2 µg/L, the MDL for dissolved cadmium is 0.11 µg/L, and the MDL for dissolved thallium is 0.45 µg/L. Because the MDLs are below their respective water-quality standards, the analytes, if present, are detected at concentrations below the standards.

The Los Alamos and Pueblo Canyons investigation report (LANL 2004, 087390) identifies americium-241, cesium-137, plutonium-238, plutonium-239/240, and strontium-90 as radionuclide chemicals of potential concern. DP and Los Alamos Canyons downcanyon from SWMU 21-011(k) contain the largest amounts of americium-241, cesium-137, and strontium-90 in the watershed. Acid and Pueblo Canyons downcanyon from the TA-01 and TA-45 outfalls and from SWMU 00-030(g) contain an estimated 86% of the plutonium-239/240 inventory at the Laboratory.

Activities of cesium-137 (Figure 4.3-24) in storm water are detected above UTLs for canyon sediments at E040, E042.1, E050.1, and E109.9. Cesium-137 is below canyon sediment background at E026 and E030 in Los Alamos Canyon, at E038 and E039.1 in DP Canyon, and at all locations in Pueblo Canyon. Normalized concentrations of cesium-137 decrease from E040 downcanyon. This identifies DP canyon, below the gage at E039.1 as the current source of cesium-137 activity in the Los Alamos/Pueblo watershed and is consistent with the findings in the Los Alamos and Pueblo Canyons investigation report.

Activities of strontium-90 (Figure 4.3-25) in storm water are detected above UTLs for canyon sediments at E039.1, E040, E042.1, and E050.1. Strontium-90 is below canyon sediment background at E026, E030, and E109.9 in Los Alamos Canyon, at E038 in DP Canyon, and at all locations in Pueblo Canyon. Normalized concentrations of strontium-90 decrease from E039.1 downcanyon. This identifies DP Canyon, above the gage at E039.1 as the source of strontium-90 activity in the Los Alamos/Pueblo watershed and is consistent the findings in  the Los Alamos and Pueblo Canyons investigation report (LANL 2004, 087390).

Activities of americium-241 (Figure 4.3-26) in storm water are detected above UTLs for canyon sediments at E030, E039.1, E040, E042.1, and E050.1. Americium-241 is below canyon sediment background at E026 and E109.9 in Los Alamos Canyon, E038 in DP Canyon, and at all locations in Pueblo Canyon. The largest normalized concentrations of americium-241 are at E040 and E042.1. This is consistent with SWMU 21-011(k) as the source of americium-241 activity in DP and Los Alamos Canyons.

Americium-241 was added to the analytical suite at E026 and E030 following the Los Conchas fire. Concentrations of americium-241 normalized to suspended sediment content increased to levels above canyon sediment background values in 2011 and 2012. In 2013, americium-241 decreased to levels below 0.04 pCi/g expected in canyon sediments not affected by Laboratory activities or ash at E026 and E030. Figure 4.3-27 shows the activities of americium-241 in storm water normalized to SSCs at E026 and E030 since 2000.

Activities of plutonium-239/240 (Figure 4.3-28) in storm water do not exceed background UTLs at E026 in Los Alamos Canyon or at the head of Pueblo Canyon at E055. Other gages in the LA/P watershed are found to contain plutonium-239/240 above canyon sediment background concentrations. The largest exceedances of background UTLs are measured at E055.5 and E056 in Acid Canyon. Exceedances of background UTLs are also observed at E030 in Los Alamos Canyon and at E039.1 and E040 in DP Canyon. Sources of plutonium-239/240 are identified in Los Alamos Canyon above the gage at E030, DP Canyon above the gage at E039.1, and most prominently in Acid Canyon. These observations are consistent with the findings in the Los Alamos and Pueblo Canyons investigation report (LANL 2004, 087390). Plutonium-239/240 normalized to suspended sediment measured at E109.9 was below canyon sediment background before the flooding of September 13. However, the flood carried storm water with sediments containing plutonium-239/240 approximately 10 times background from Pueblo Canyon.

Activities of plutonium-238 (Figure 4.3-29) in storm water do not exceed background UTLs at E026 and E030 in Los Alamos Canyon; at E038, E039.1, or E040 in DP Canyon; or at E055 in upper Pueblo Canyon. The largest exceedances of detected plutonium-238 are at E042.1 and E050.1, indicating a primary source in Los Alamos Canyon above E042.1, which is consistent with a primary source from SWMU 21-011(k) discharges. Activities of plutonium-238 normalized to SSCs in storm water collected on July 8 at E109.9 were 1.2 and 1.4 times the canyon sediment background of 0.006 pCi/g. The September 13 flood also contained storm water with sediments transporting plutonium-238 from Pueblo Canyon that were above canyon sediment background but were not detected.

Concentrations of total PCBs (Figure 4.3-30) in storm water do not correlate with the sediment content of the sample. In the LA/P watershed, the human health organism only standard of 0.00064 µg/L is exceeded at all gages in all samples. The acute aquatic life standard of 2 µg/L is not exceeded in storm water samples at any gage station. The distribution and concentration of PCBs in the LA/P watershed is consistent with a complex mixture of sources, including atmospheric deposition, townsite runoff, and Laboratory sources. The largest concentrations of total PCBs were detected at E030 in Los Alamos Canyon and at E059 in Pueblo Canyon from Laboratory sources.

Cyanide was added to the analytical suite at gages E026, E030, E042.1, E050.1, and E109.9, which were affected by ash after the Los Conchas fire. Concentrations of total cyanide in storm water were detected above the acute aquatic life standard of 22 µg/L twice in 2013 (Figure 4.3-31). Concentrations of cyanide normalized to suspended sediment content increased to levels above canyon sediment background values in 2011 and 2012. In 2013, cyanide decreased to levels below 0.82 mg/kg, as expected in canyon sediments not affected by Laboratory activity or ash. Figure 4.3-32 shows the activities of cyanide in storm water normalized to SSCs at all gage stations since 2000.

### 4.4 Storm Water Sampling below SWMU 01-001(f)

Results for the five storm water samples analyzed for total PCBs collected at the inlet to the upper detention basin below the SWMU 01-001(f) drainage range from 5.3 µg/L to 21.8 µg/L. Total PCB results for the two storm water samples collected at the culvert at the terminus of the vegetative buffer below the lower basin are 0.108 µg/L and 0.398 µg/L. Total PCB results are within the range of results for samples collected in 2011 and 2012. The higher result suggests the hill slope continues to be a source of PCBs even after sediment and rock were removed during corrective action at SWMU 01-001(f) in 2010. Analytical results from all samples collected at locations CO111041 and CO101038 are presented in Table 4.4-1.

## 5.0 CONCLUSIONS

The Los Alamos Canyon watershed experienced a large number of runoff events in 2013.Storms from September 10 to September 13, 2013, generated intense flooding, damaging the gaging network and storm water controls in the Los Alamos and Pueblo watershed. The Las Conchas burn area in the upper watersheds of Los Alamos Canyon and Guaje Canyon continue to contribute to increasing storm water discharges, but concentrations of fire-related cyanide and americium-241 have returned to pre-fire levels. Attenuation of flow and associated sediment transport is a primary goal of the sediment transport mitigation activities, and despite erosion through the Pueblo Canyon wetland, controls performed successfully and as intended in 2013.The 2013 monitoring data in upper Los Alamos watershed indicate a substantial reduction in SSC and peak discharge as floods passed through the low-head weir and associated sediment retention basins. These structures are, therefore, performing as designed. By contrast, the SSC was much higher at gaging station E109.9 in lower Los Alamos Canyon as a result of floods in Guaje Canyon from the Las Conchas burn area.

DP Canyon primarily receives runoff from the Los Alamos County townsite. Direct comparison of runoff and sediment yield above and below the GCS and upstream floodplains was possible during four storms. A reduction in sediment yield was observed between bounding stations (E038 and E039.1), and sediments continue to aggrade above the GCS. The DP Canyon mitigations are performing as designed.

Net sediment deposition occurred in most surveyed areas in the Los Alamos and DP Canyons experiencing monsoonal flood events in 2013, which is consistent with the goal of the sediment transport mitigation work plans. Pueblo Canyon experienced net erosion but the GCS and wetlands were effective in decreasing effects of the September 13 flood. Sediments containing plutonium-238 and plutonium-239/240 were transported to the Rio Grande from Pueblo Canyon during the September 13 flood.

Analytical data collected from storm water samples in 2013 indicate that for the 8 analytes exceeding NMWQCC water-quality standards (used as comparison values), total PCBs has a recognized source at Laboratory sites and off-site transport. The weir and associated sediment retention basins were effective at substantially reducing this transport. Concentrations of PCBs measured at E109.9 in lower Los Alamos Canyon are similar to those measured in upper Los Alamos Canyon above Laboratory sites at E026 and are consistent with the transport of PCBs from the Las Conchas burn area down Guaje Canyon. PCBs in the burn area have a global source because of atmospheric deposition and have accumulated in the watershed over time.

## 6.0 REFERENCES AND MAP DATA SOURCES

### 6.1 References

*The following list includes all documents cited in this report. Parenthetical information following each reference provides the author(s), publication date, and ER ID. This information is also included in text citations. ER IDs are assigned by the Environmental Programs Directorate's Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the master reference set.*

*Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau and the Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority.*

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### 6.2 Map Data Sources

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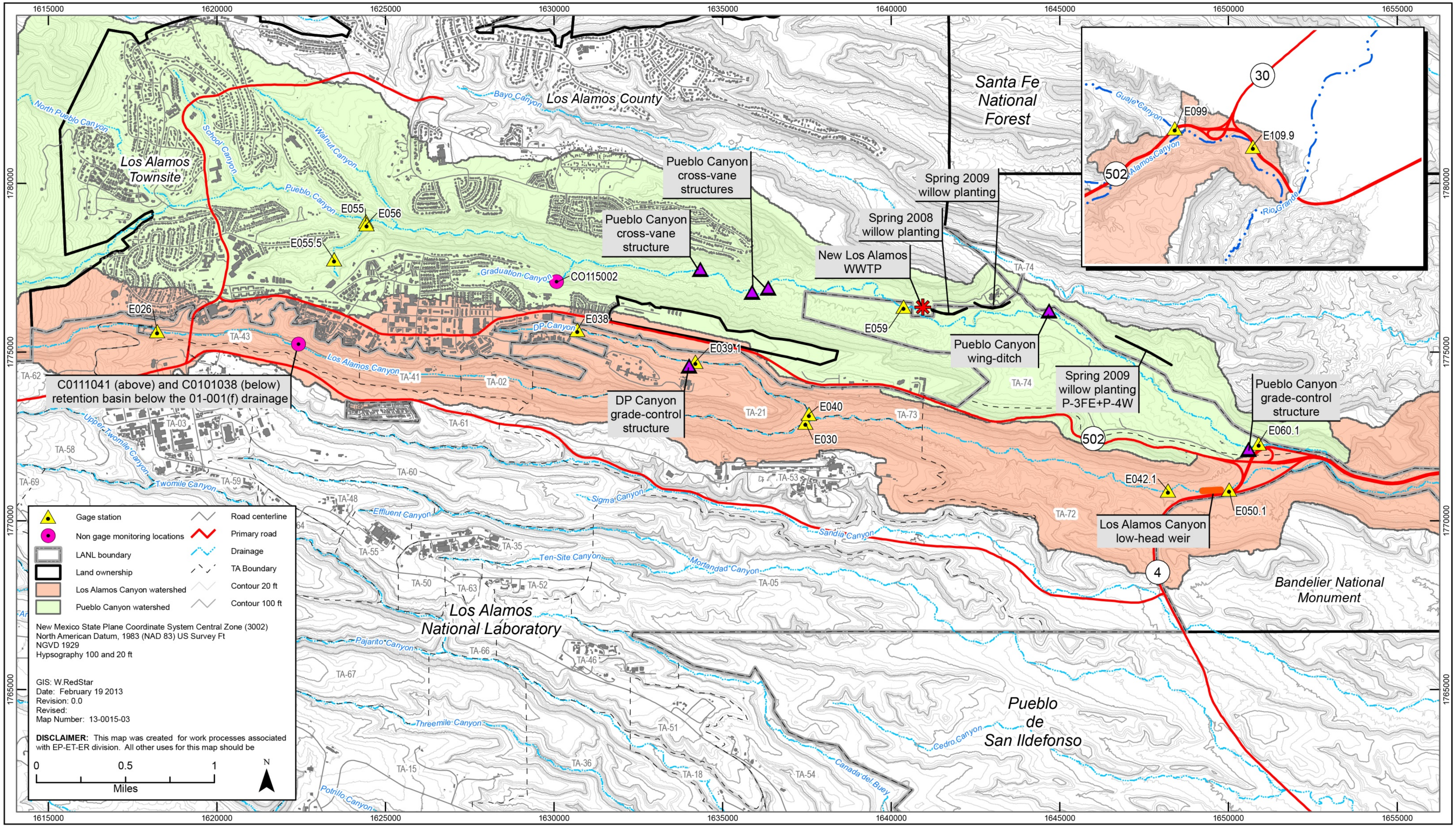



**Figure 1.1-1 Los Alamos and Pueblo Canyons showing monitoring locations and sediment transport mitigation sites**

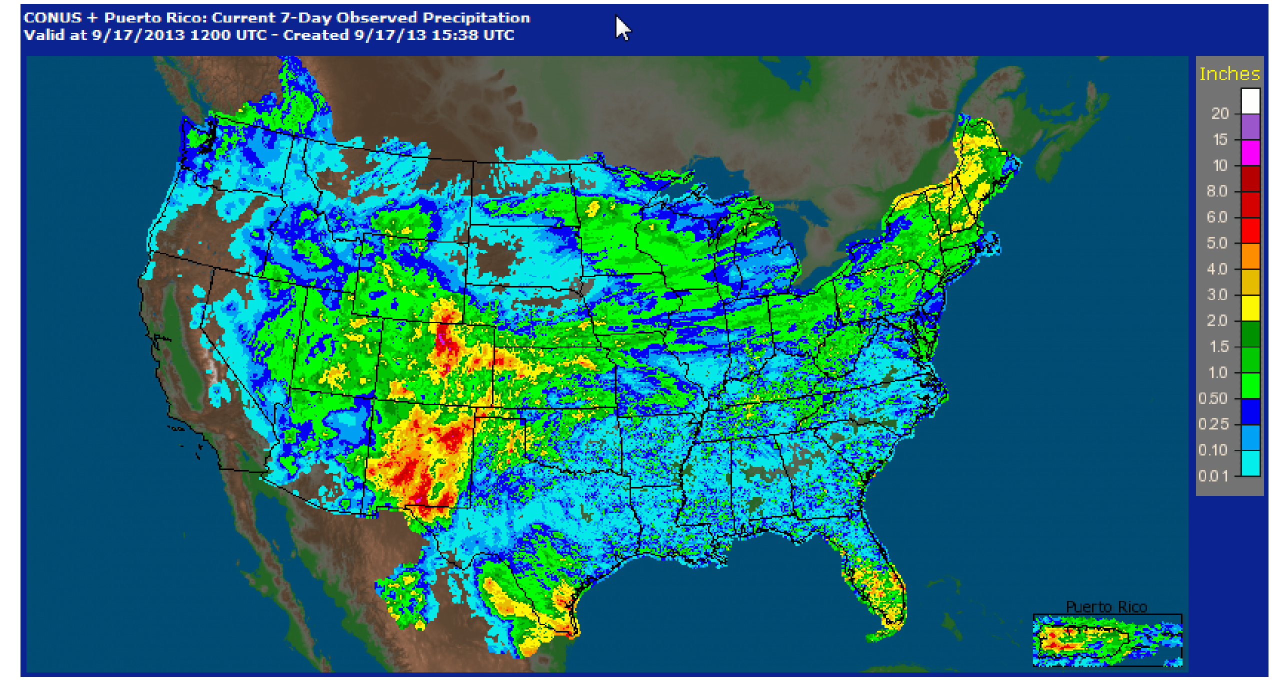



**Figure 1.1-2 Radar-observed precipitation for the continental U.S. for 9/10/13 to 9/17/13, courtesy of NOAA**

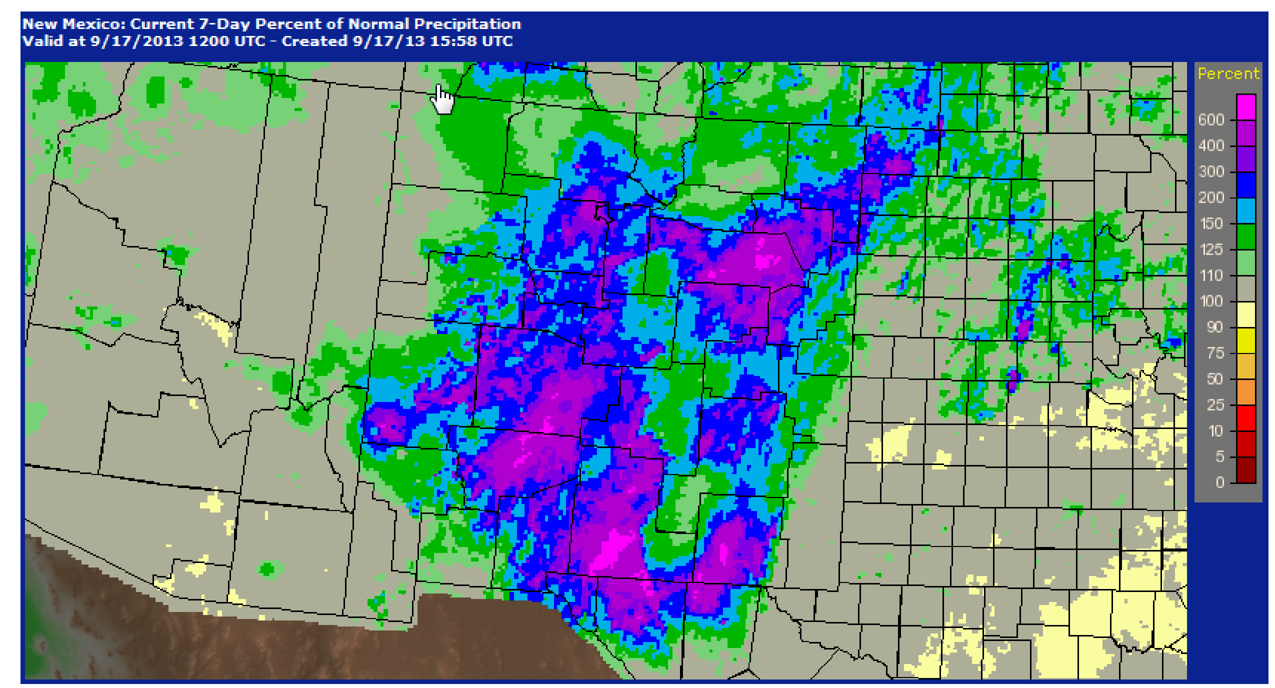



**Figure 1.1-3 Percent of normal precipitation for New Mexico for 9/10/13 to 9/17/13, courtesy of NOAA**

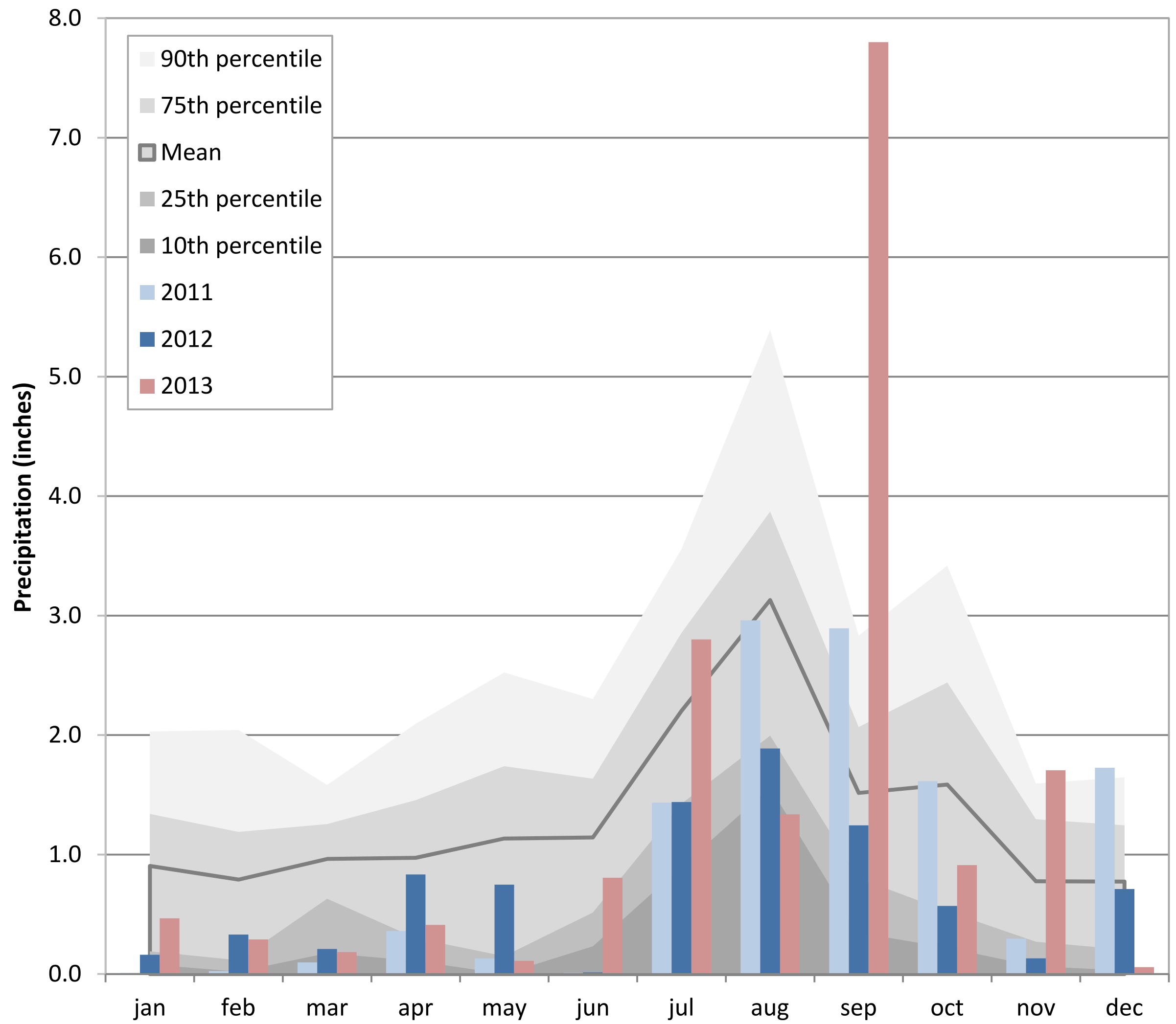



**Figure 1.1-4 Total precipitation for each month of 2011, 2012, and 2013 based on meteorological tower data averaged over the Laboratory (mean and percentiles are based on data from 1992 to 2010)**

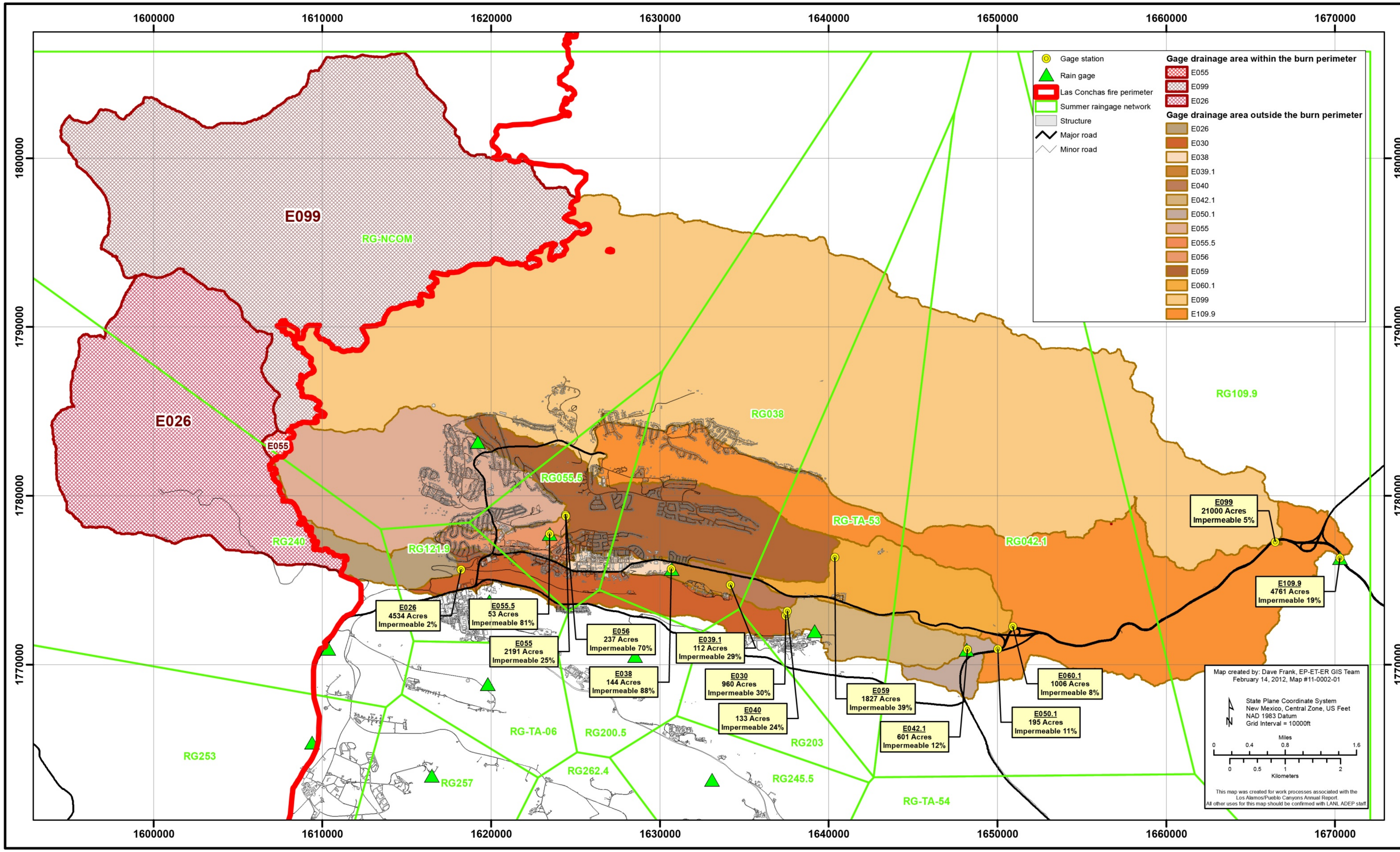



**Figure 2.1-1** Los Alamos Canyon watershed showing drainage areas for each stream gage and associated rain gages, Thiessen polygons, and extent of the Las Conchas burn area

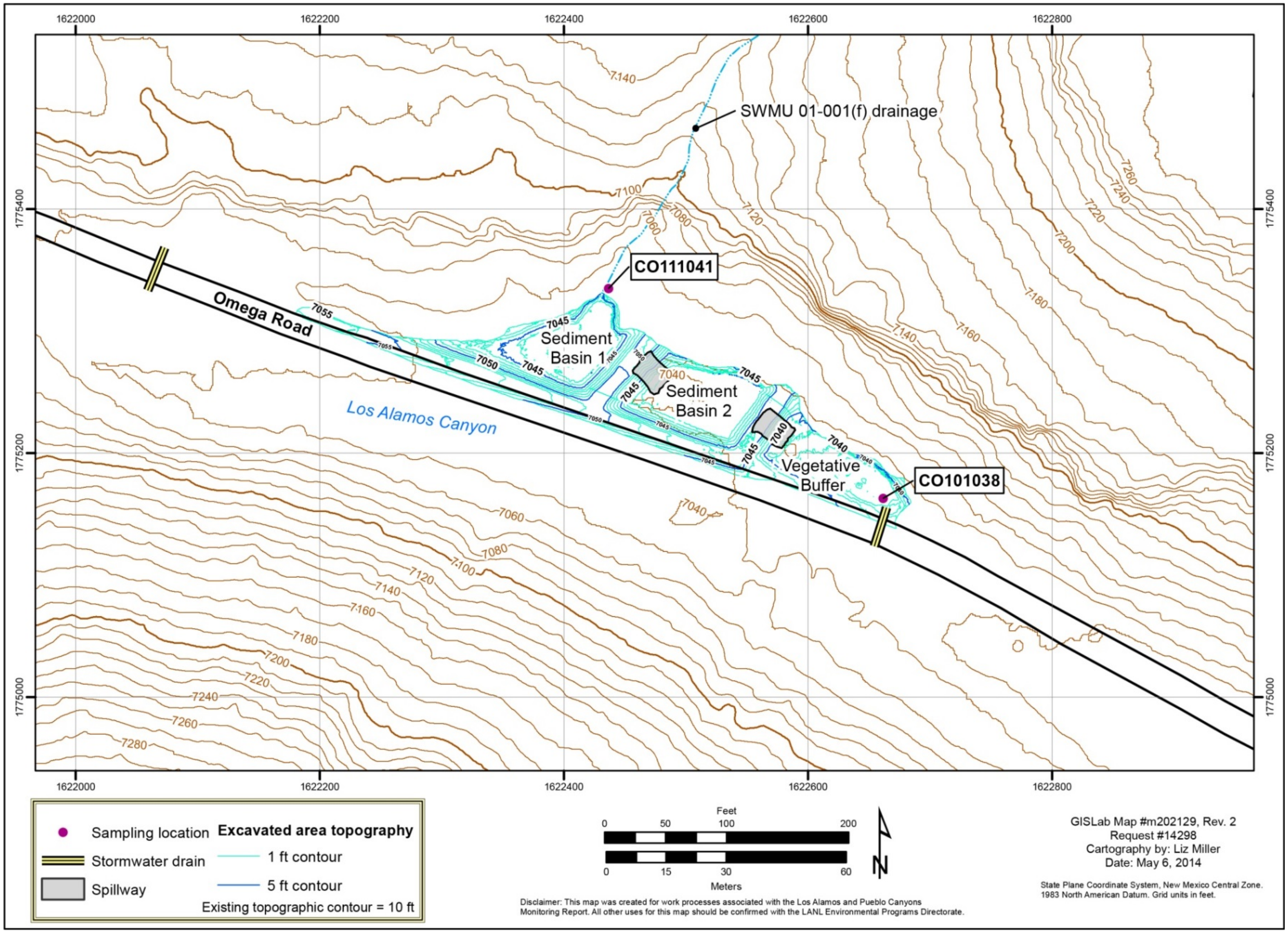



**Figure 2.2-1 Sediment detention basins and sampling locations below the SWMU 01-001(f) drainage**

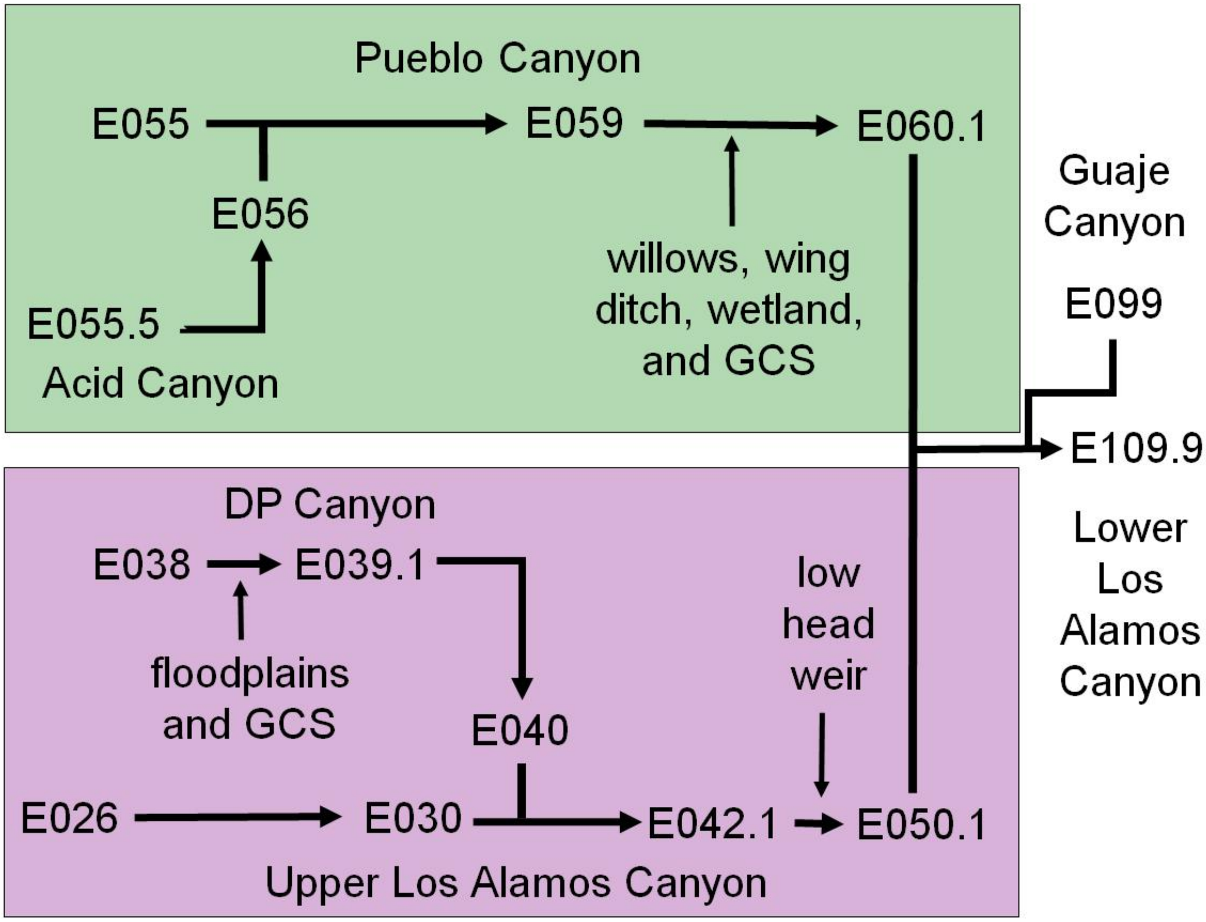



**Figure 3.2-1 Flow diagram of gage stations and sediment transport mitigation sites in the LA/P watershed**

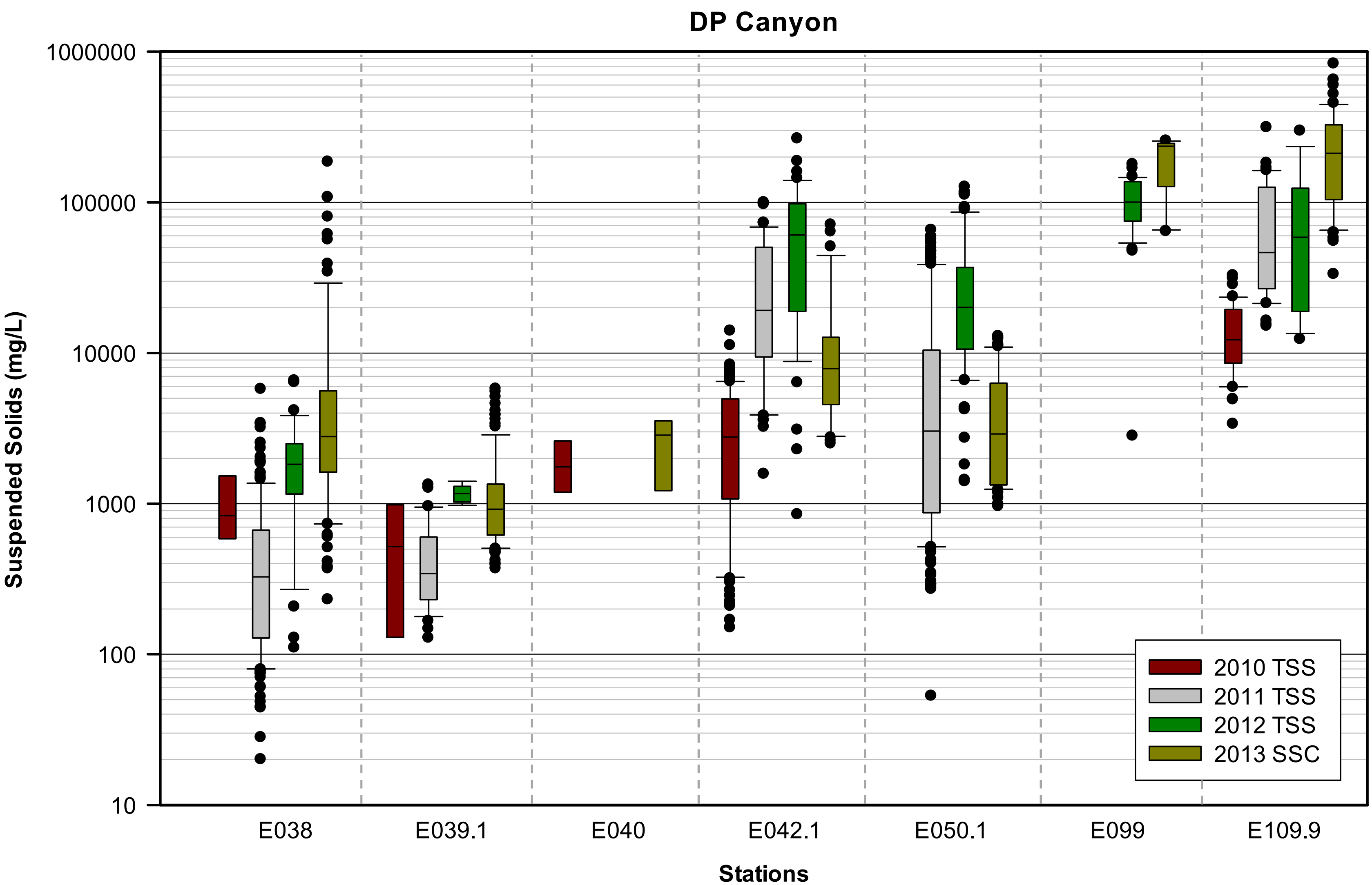



**Figure 3.2-2 Box and whisker plots of TSS and SSC for all stations in the Los Alamos and Pueblo watershed over the past 4 yr of monitoring**

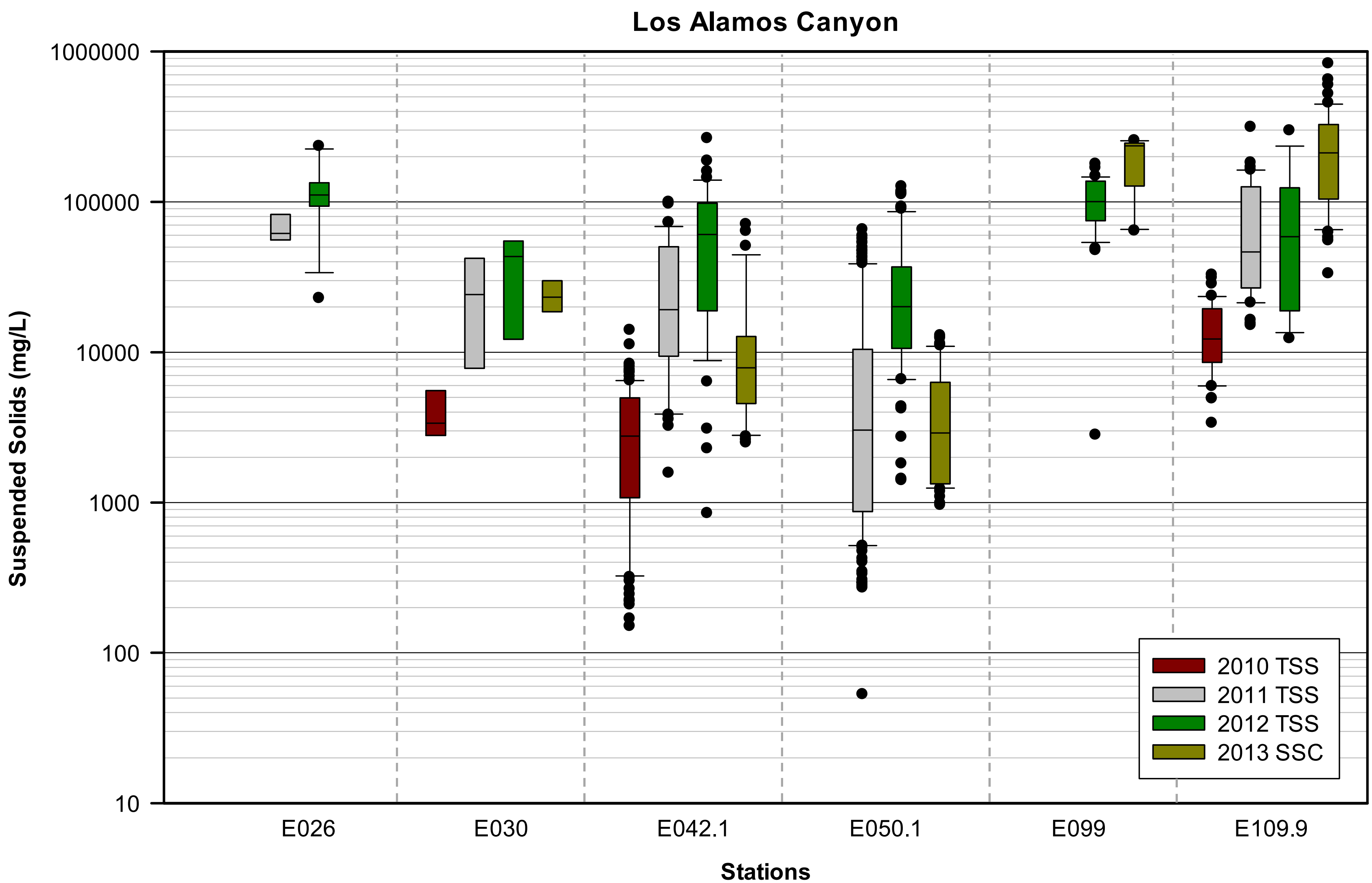



**Figure 3.2-2 (continued)** **Box and whisker plots of TSS and SSC for all stations in the Los Alamos and Pueblo watershed over the past 4 yr of monitoring**

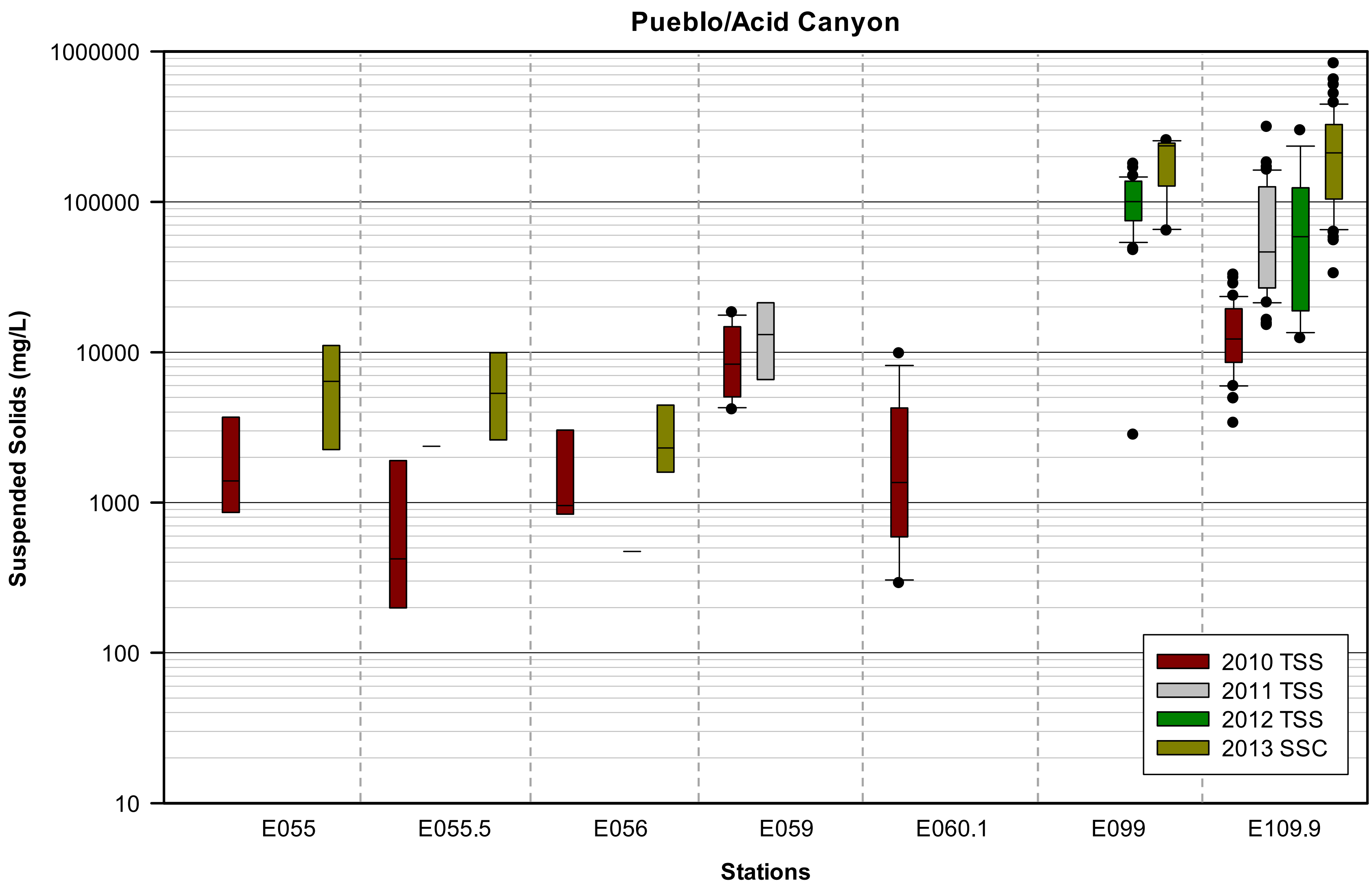



**Figure 3.2-2 (continued)** **Box and whisker plots of TSS and SSC for all stations in the Los Alamos and Pueblo watershed over the past 4 yr of monitoring**

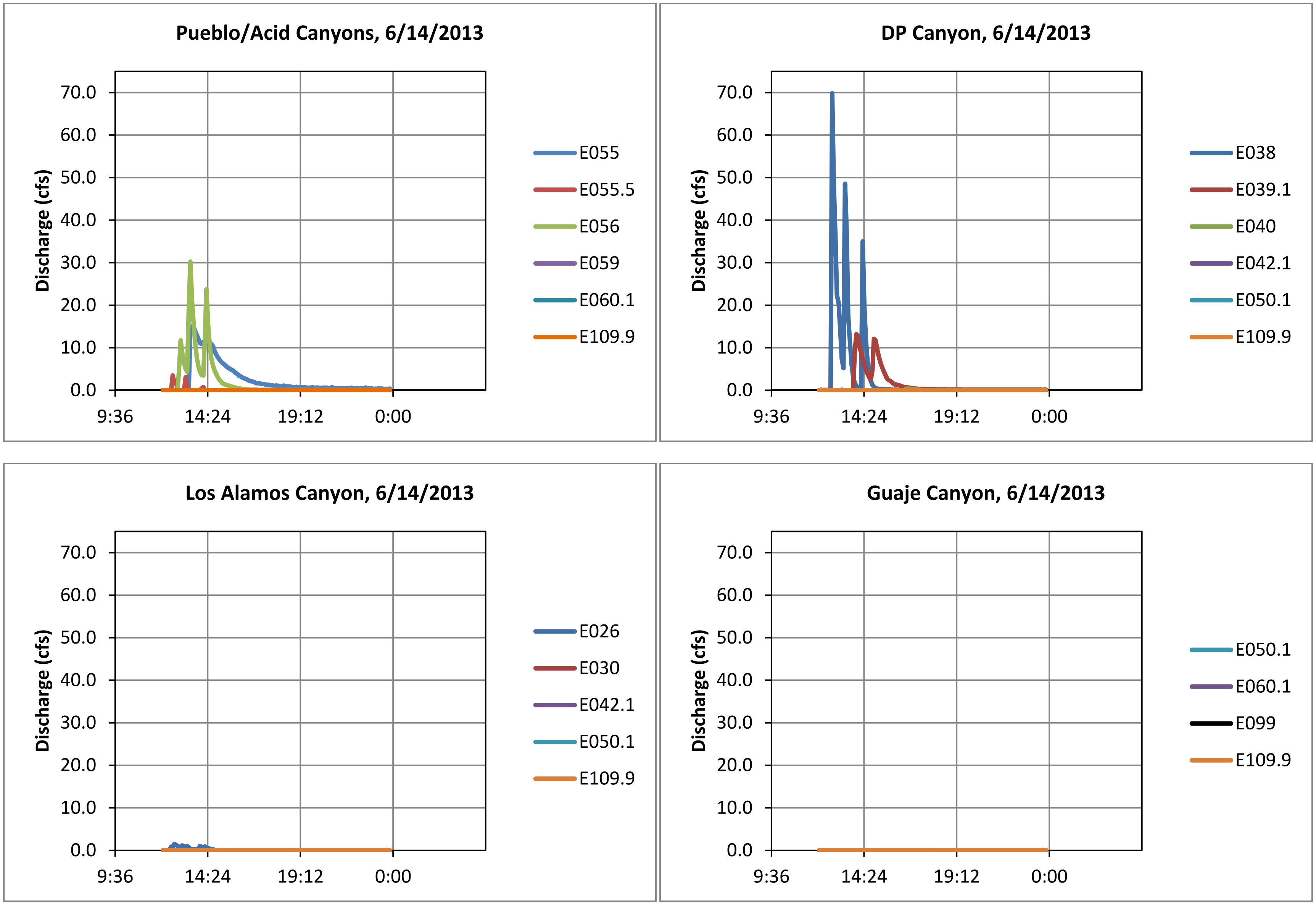



**Figure 3.2-3 Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

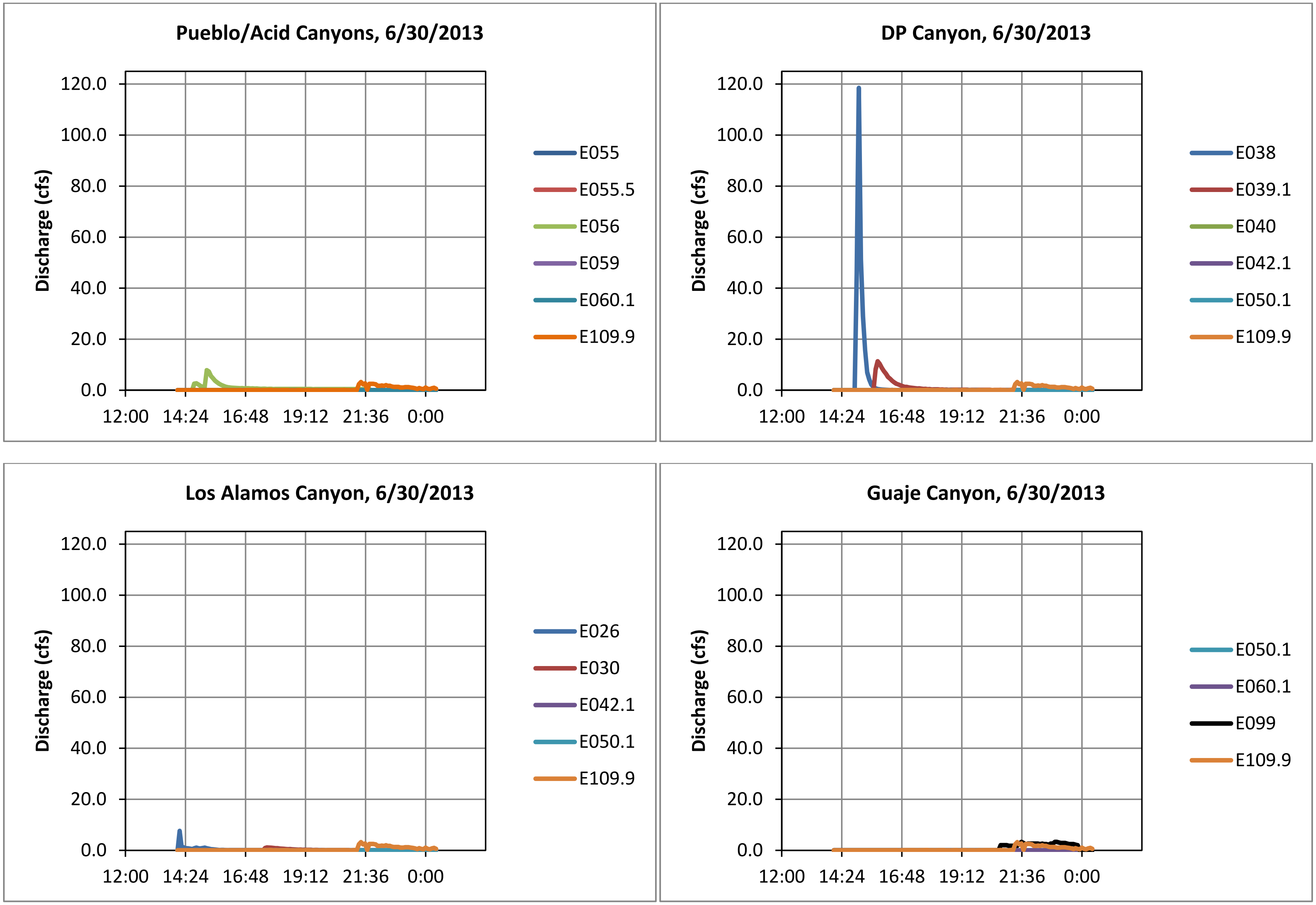



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

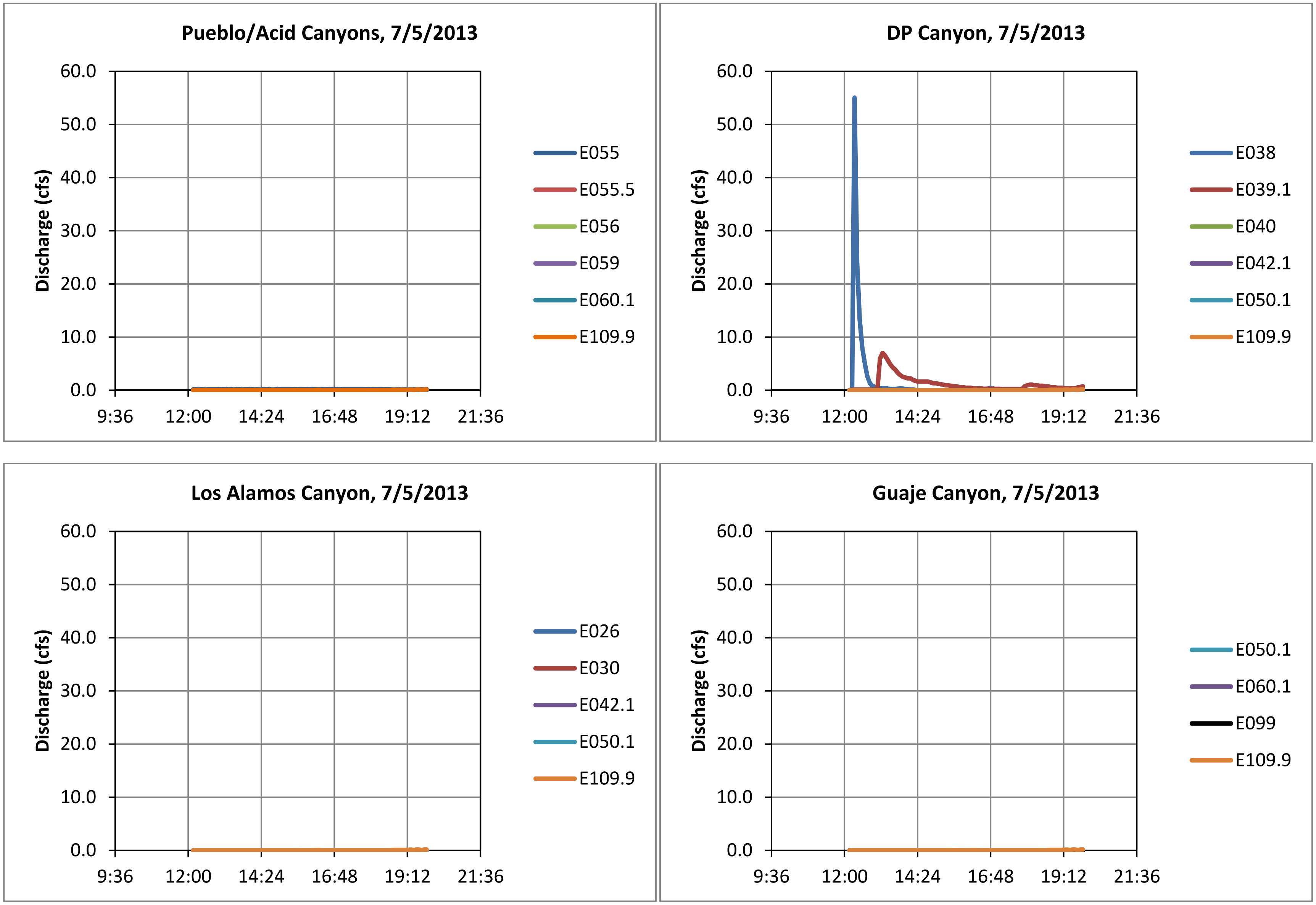



**Figure 3.2-3 (continued) Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

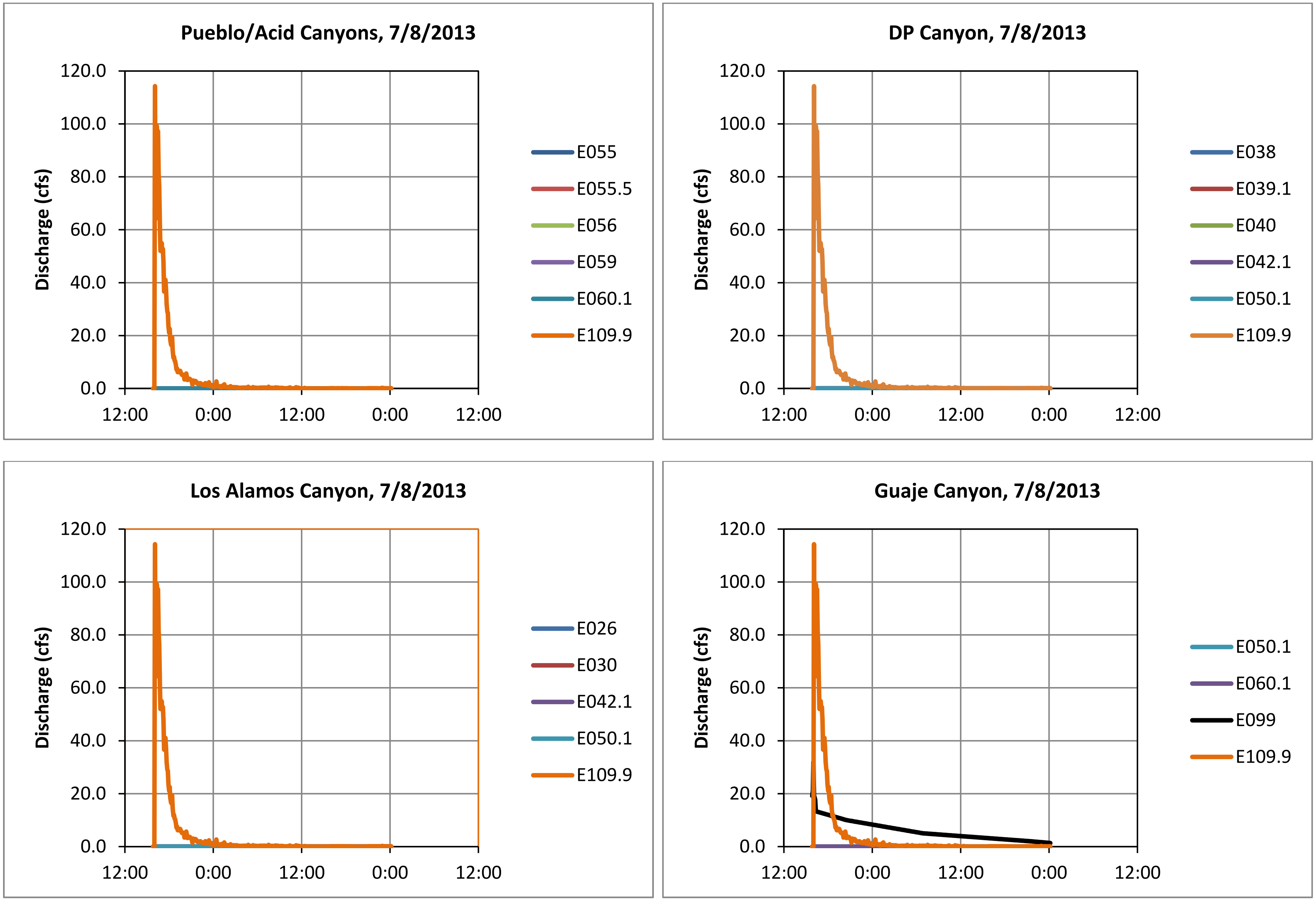



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

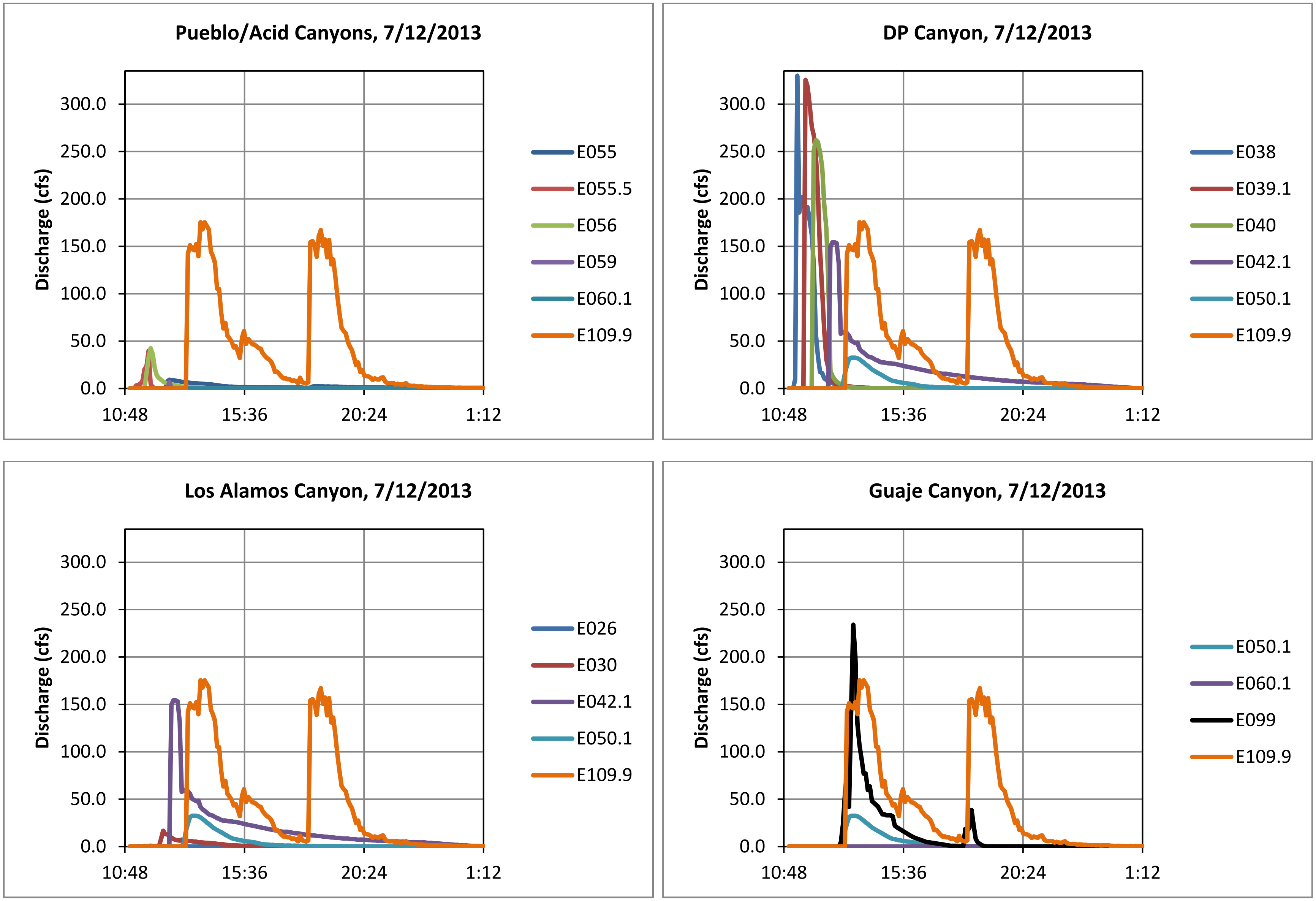



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

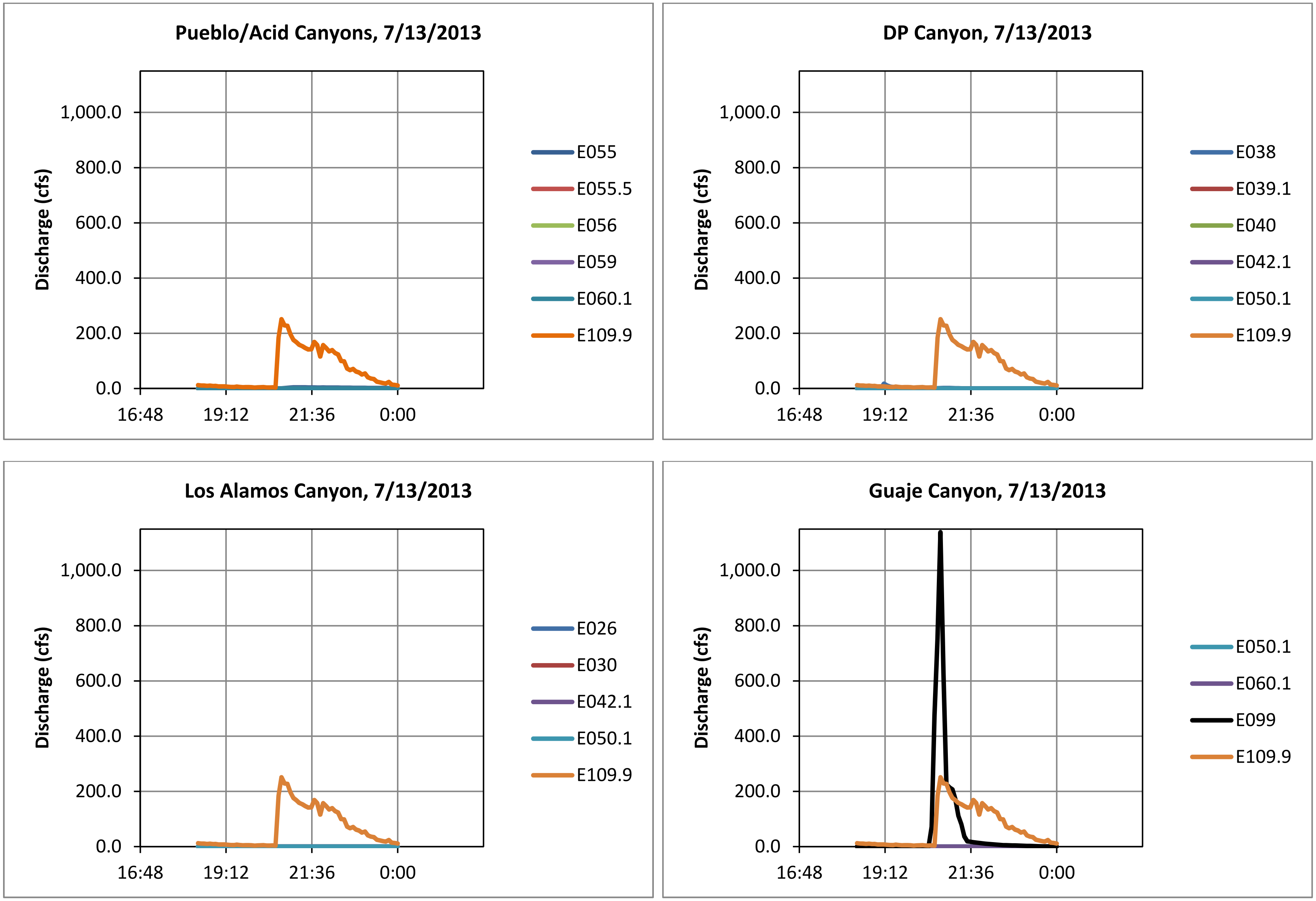



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

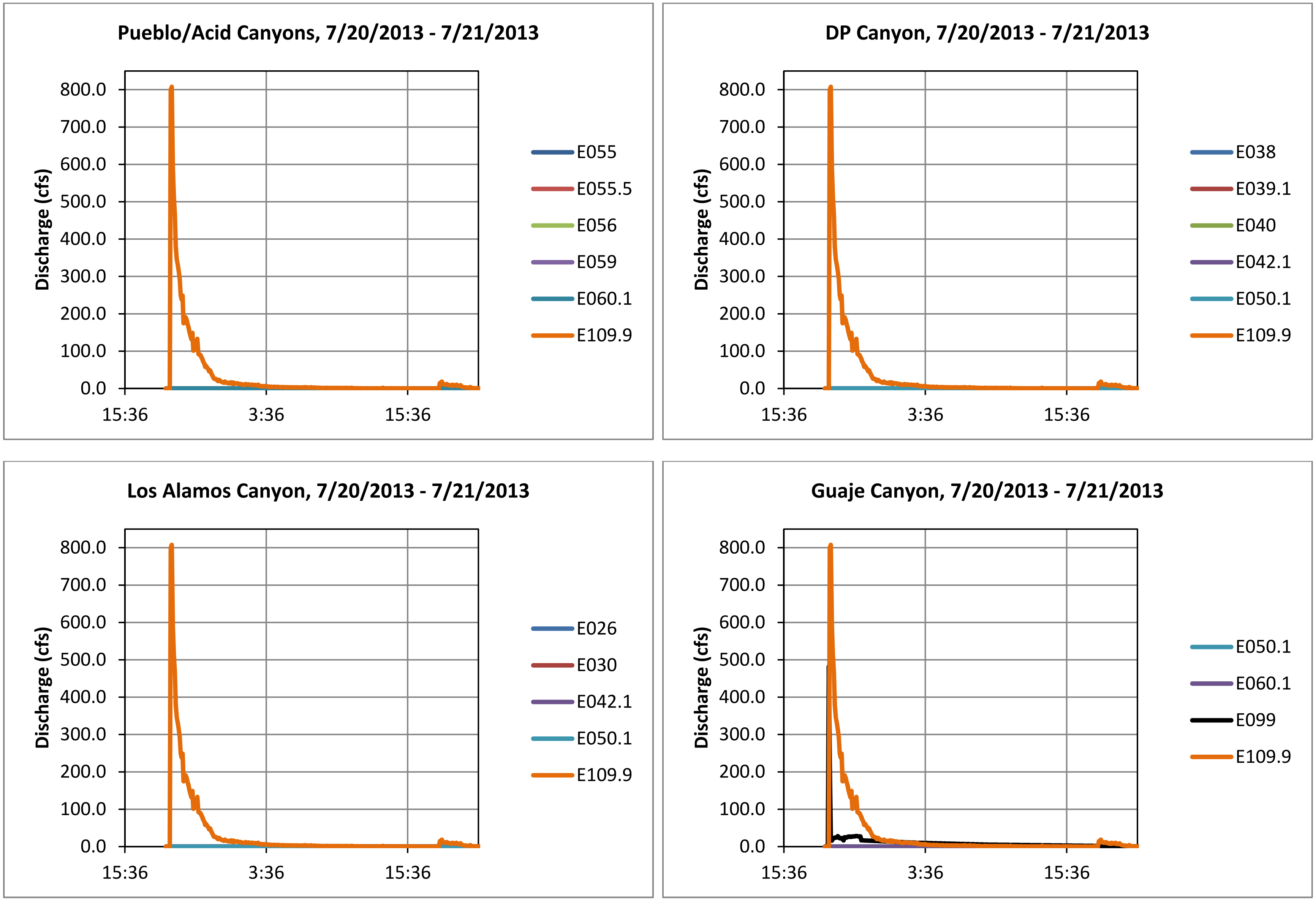



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

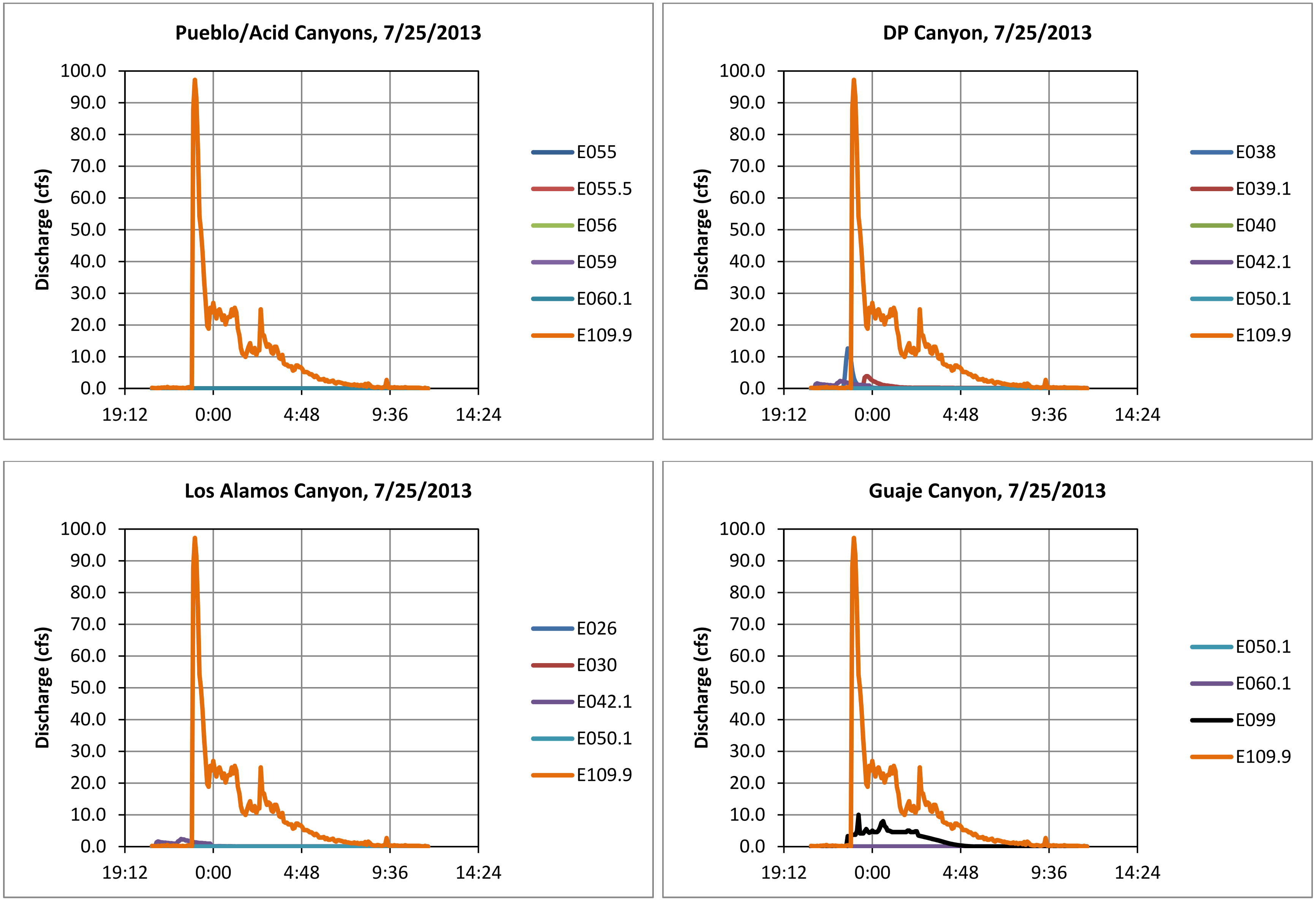



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

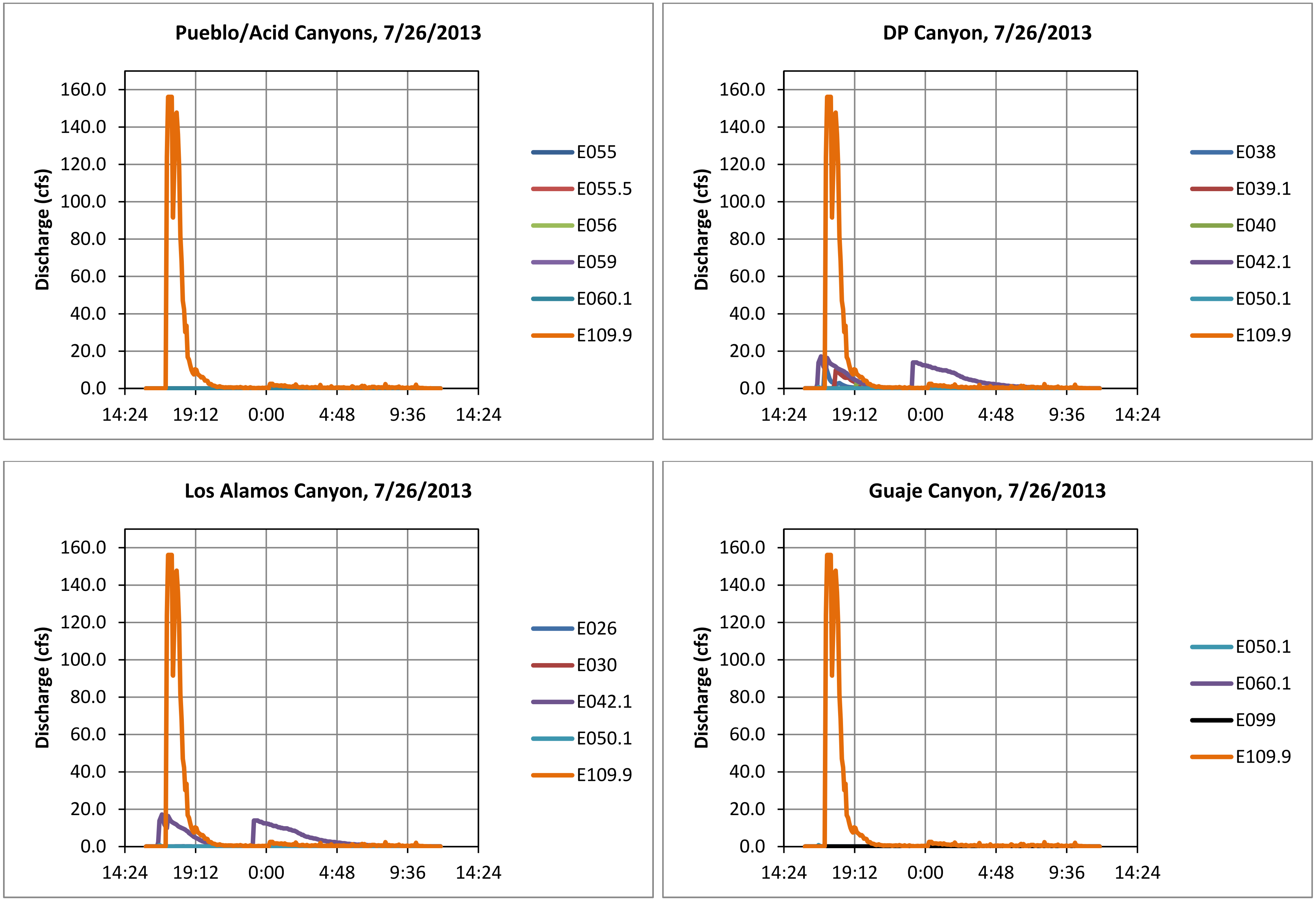



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

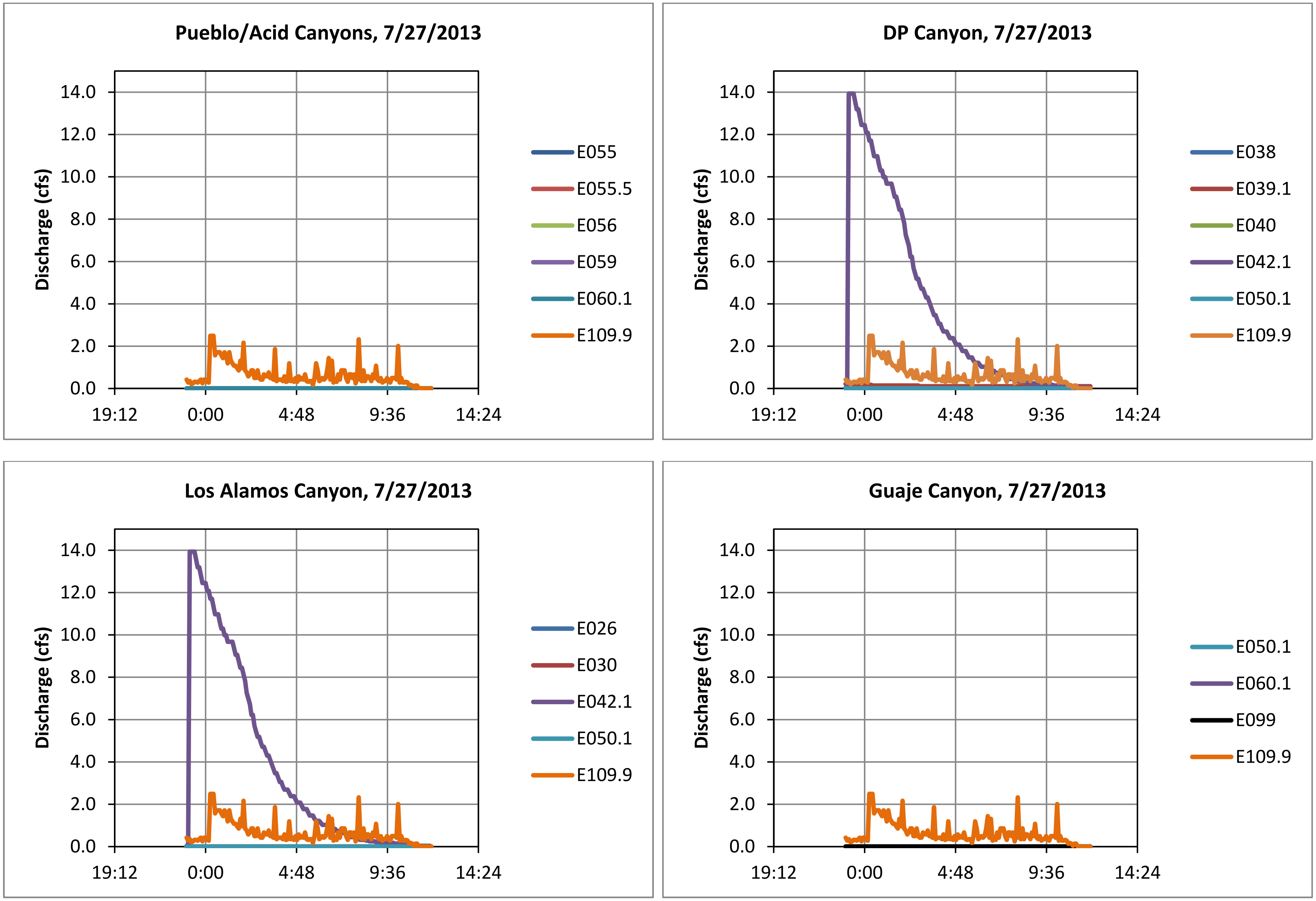



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

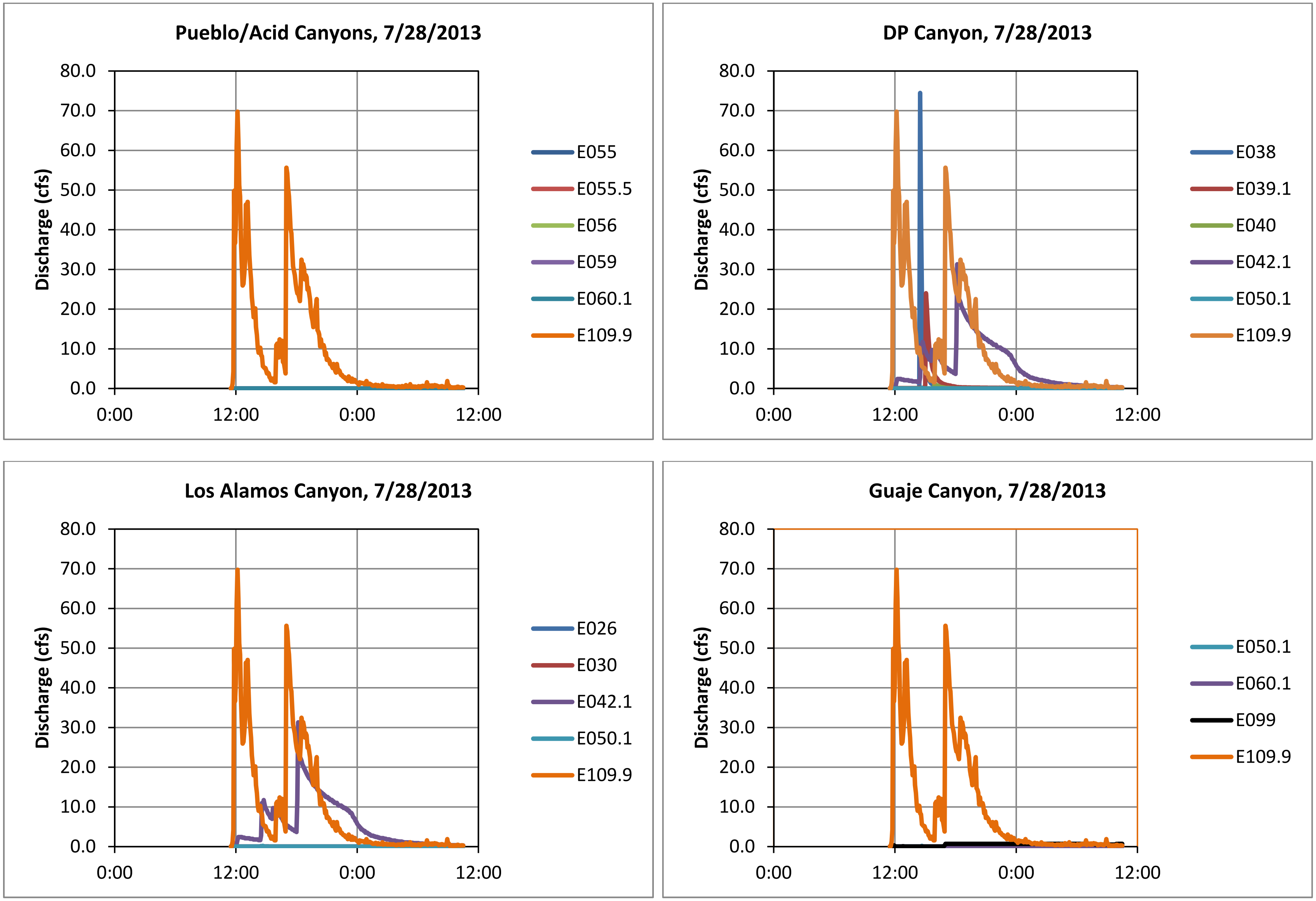



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

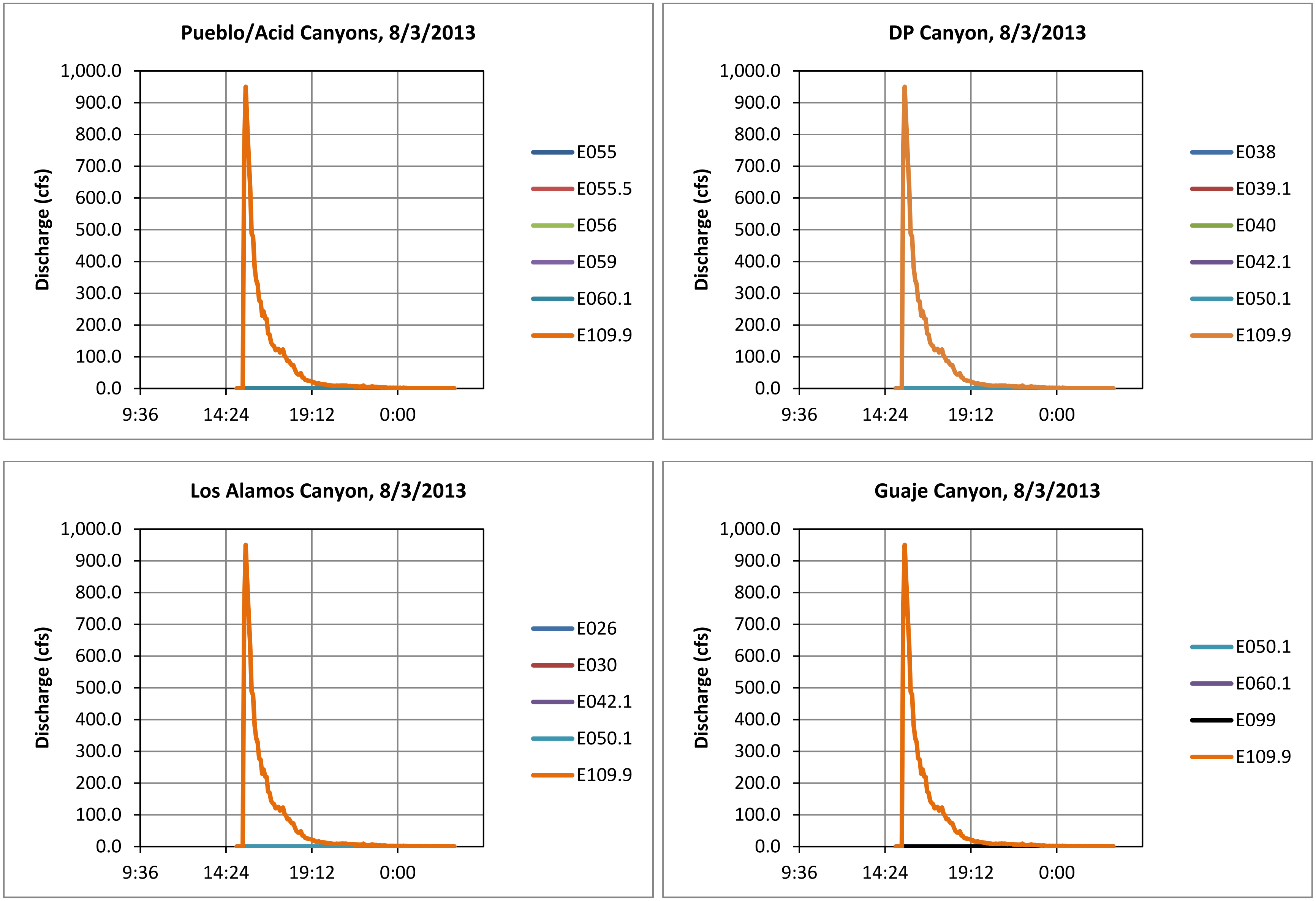



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

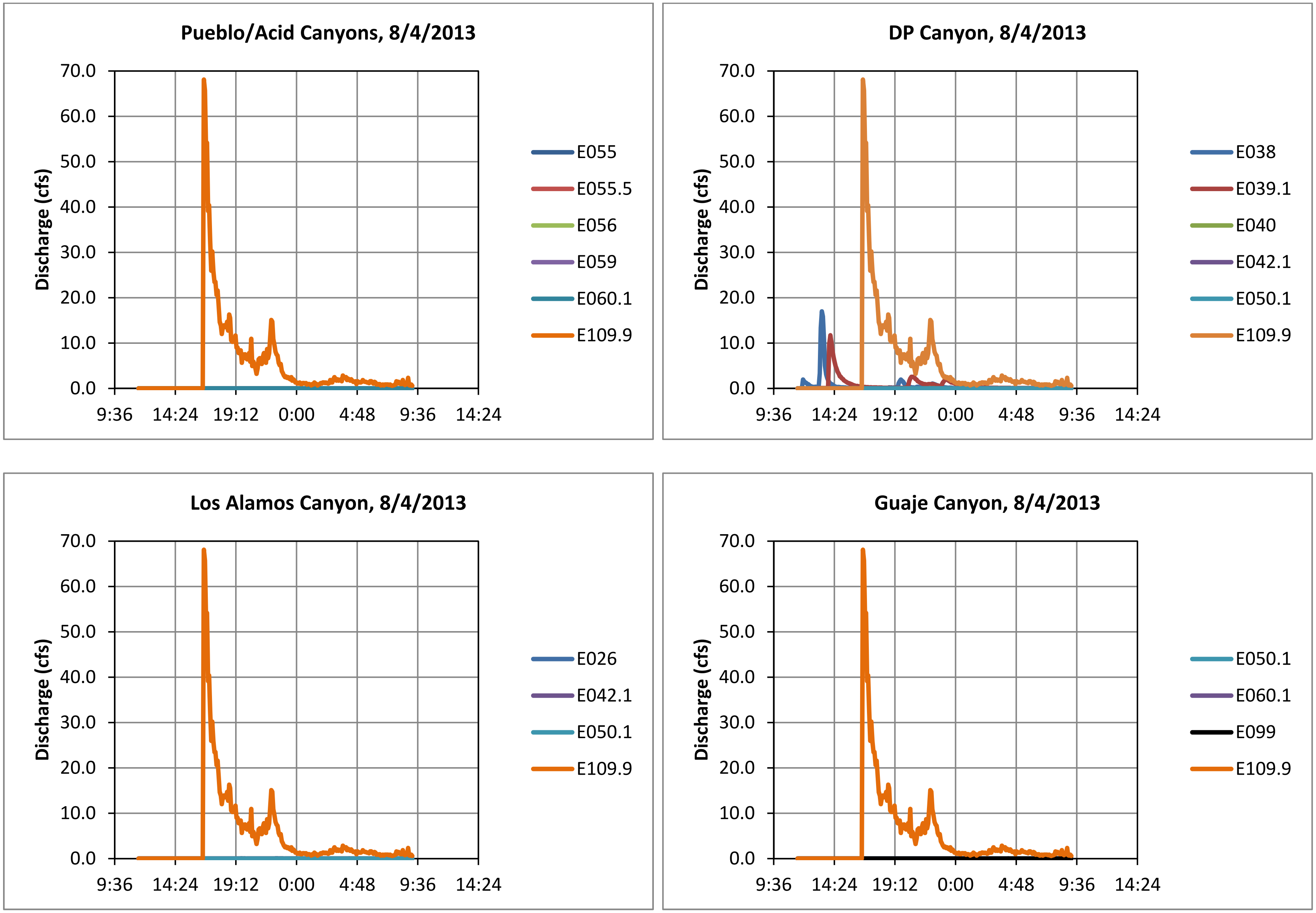



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

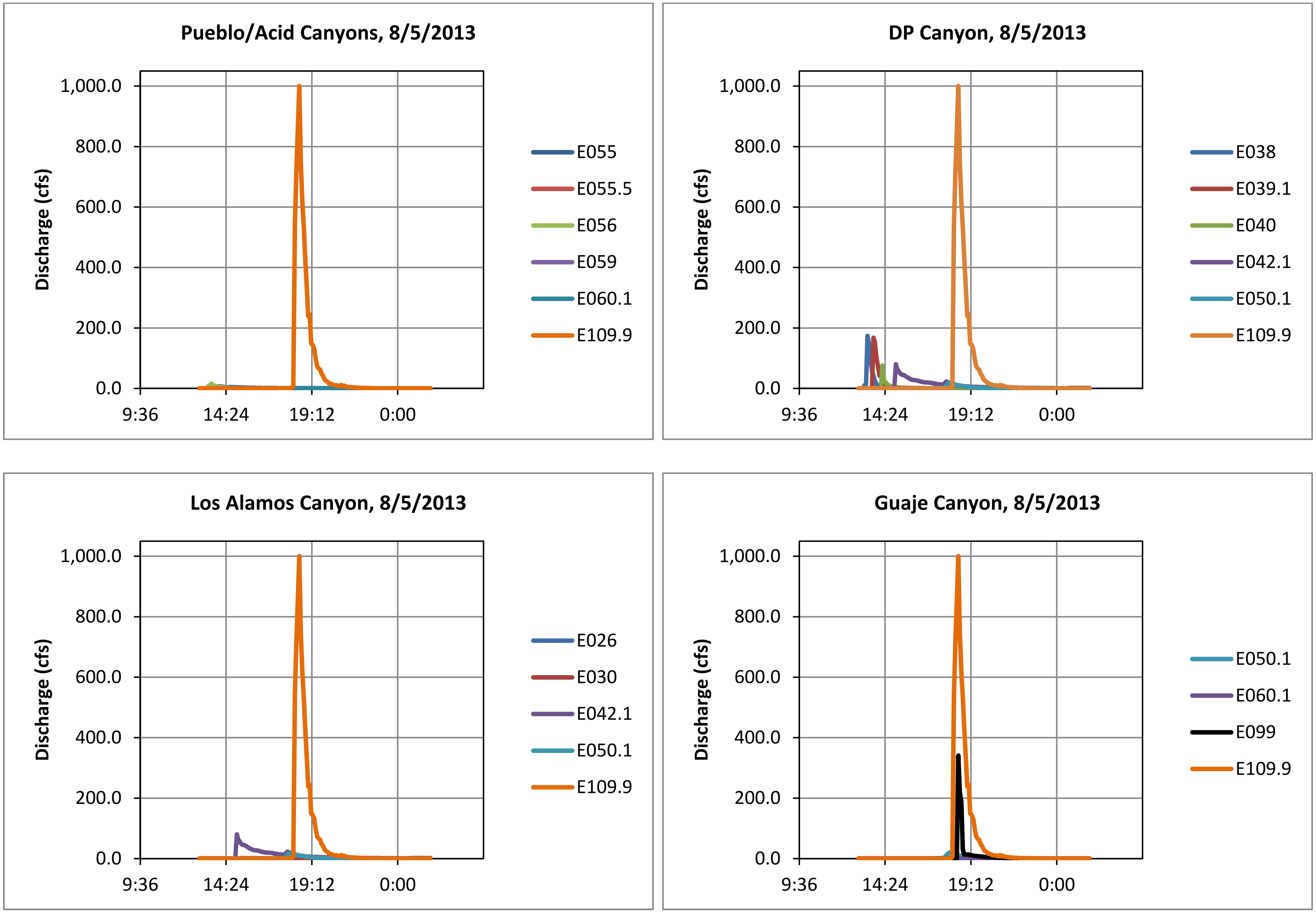



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

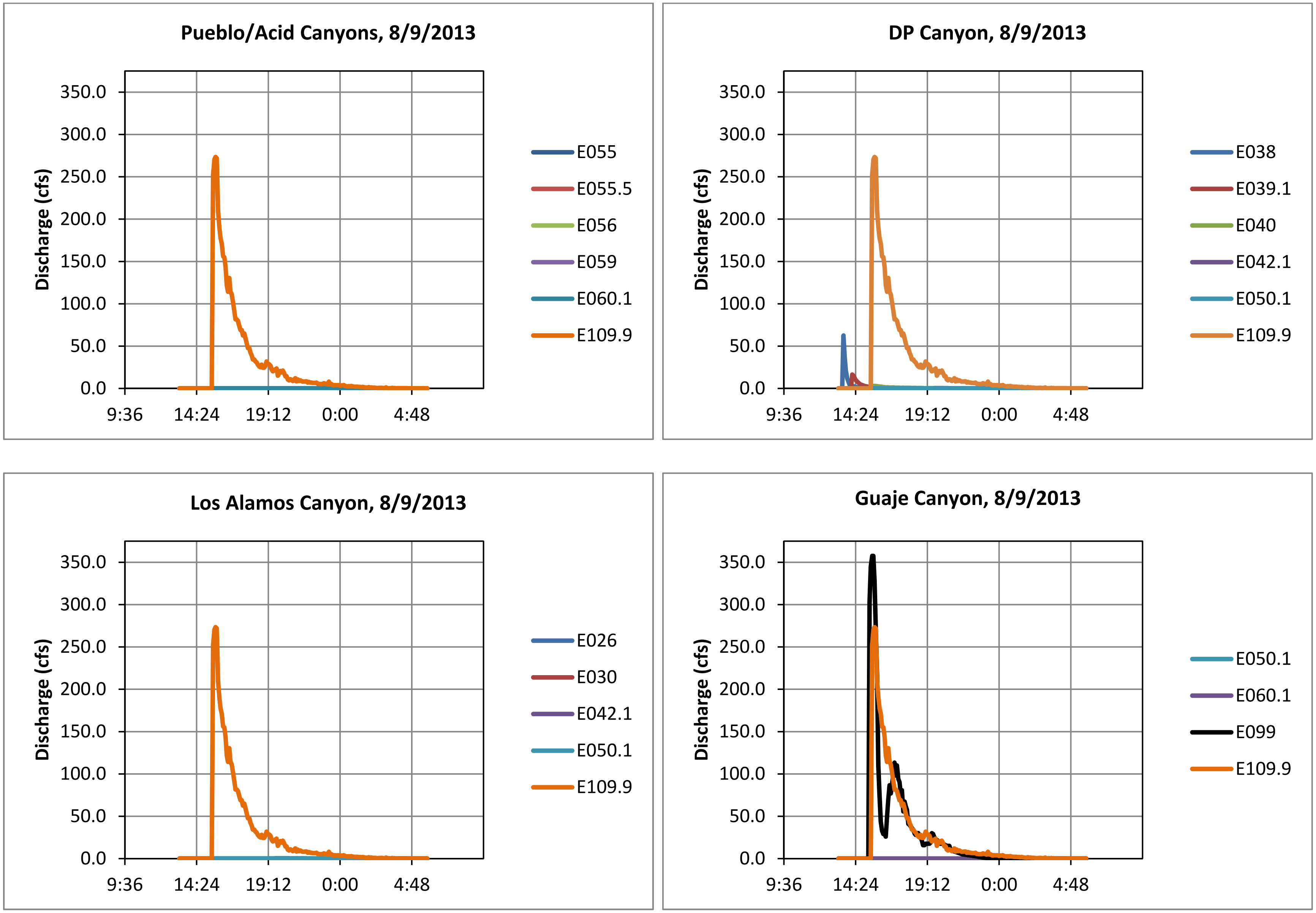



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

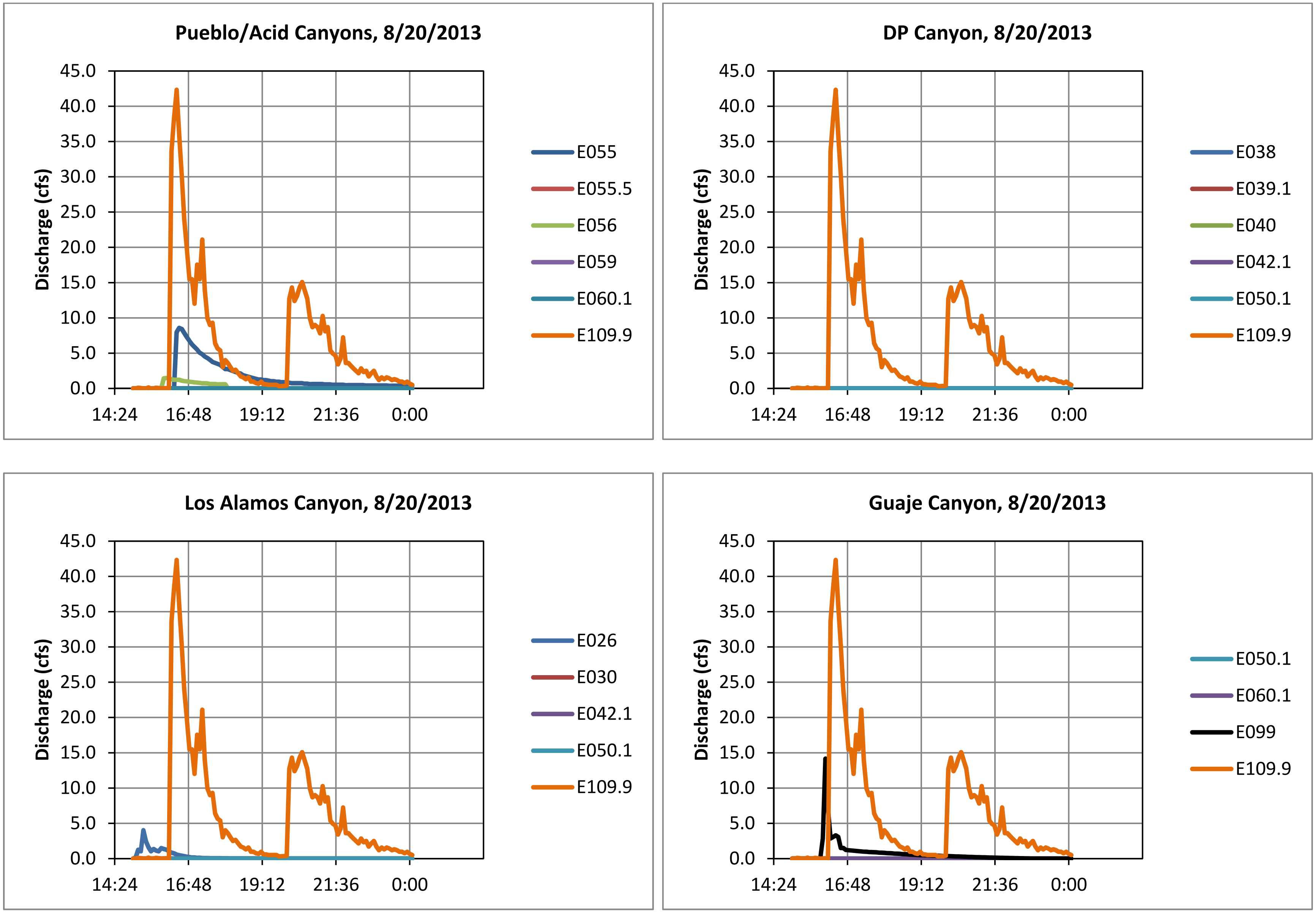



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

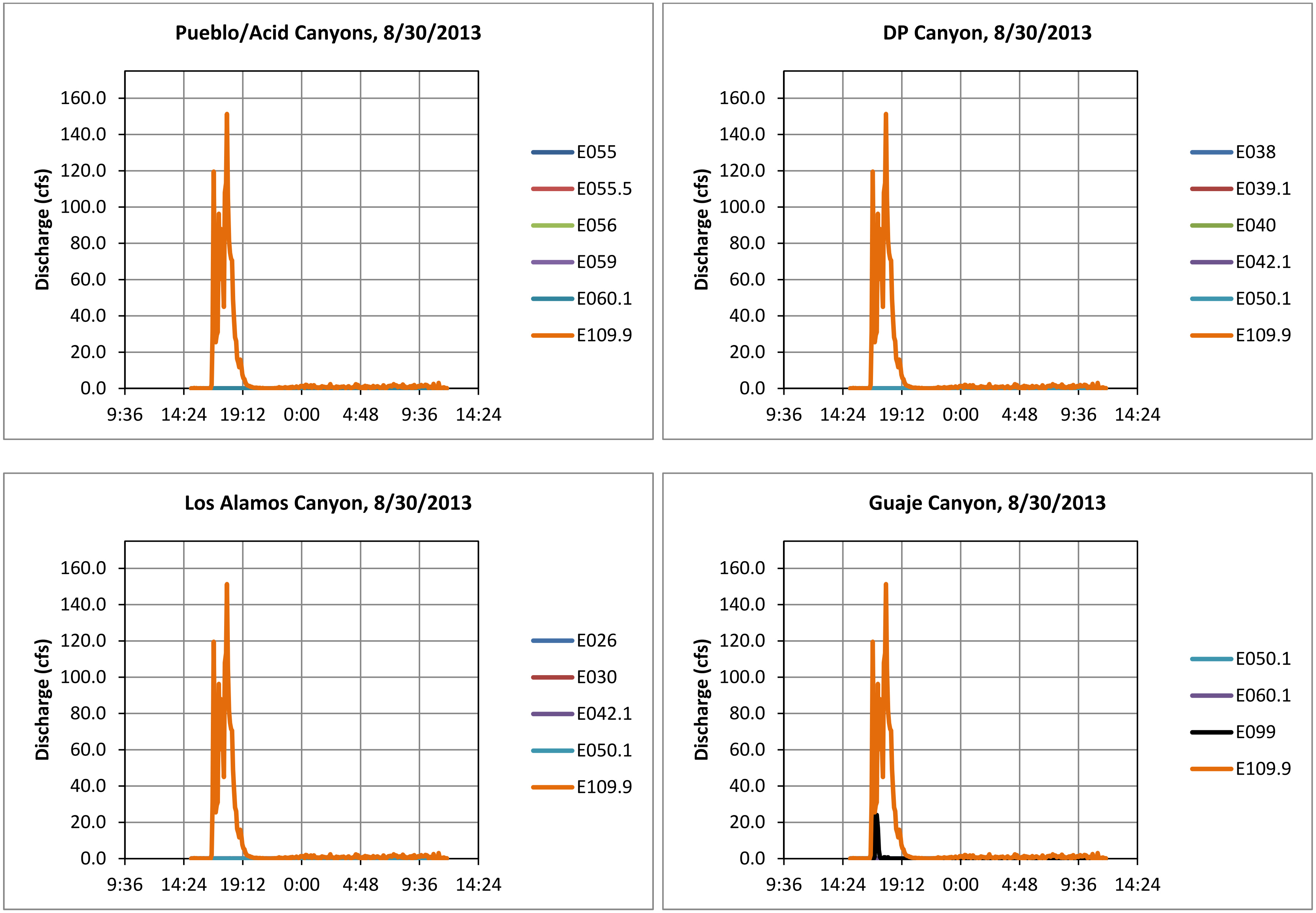



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

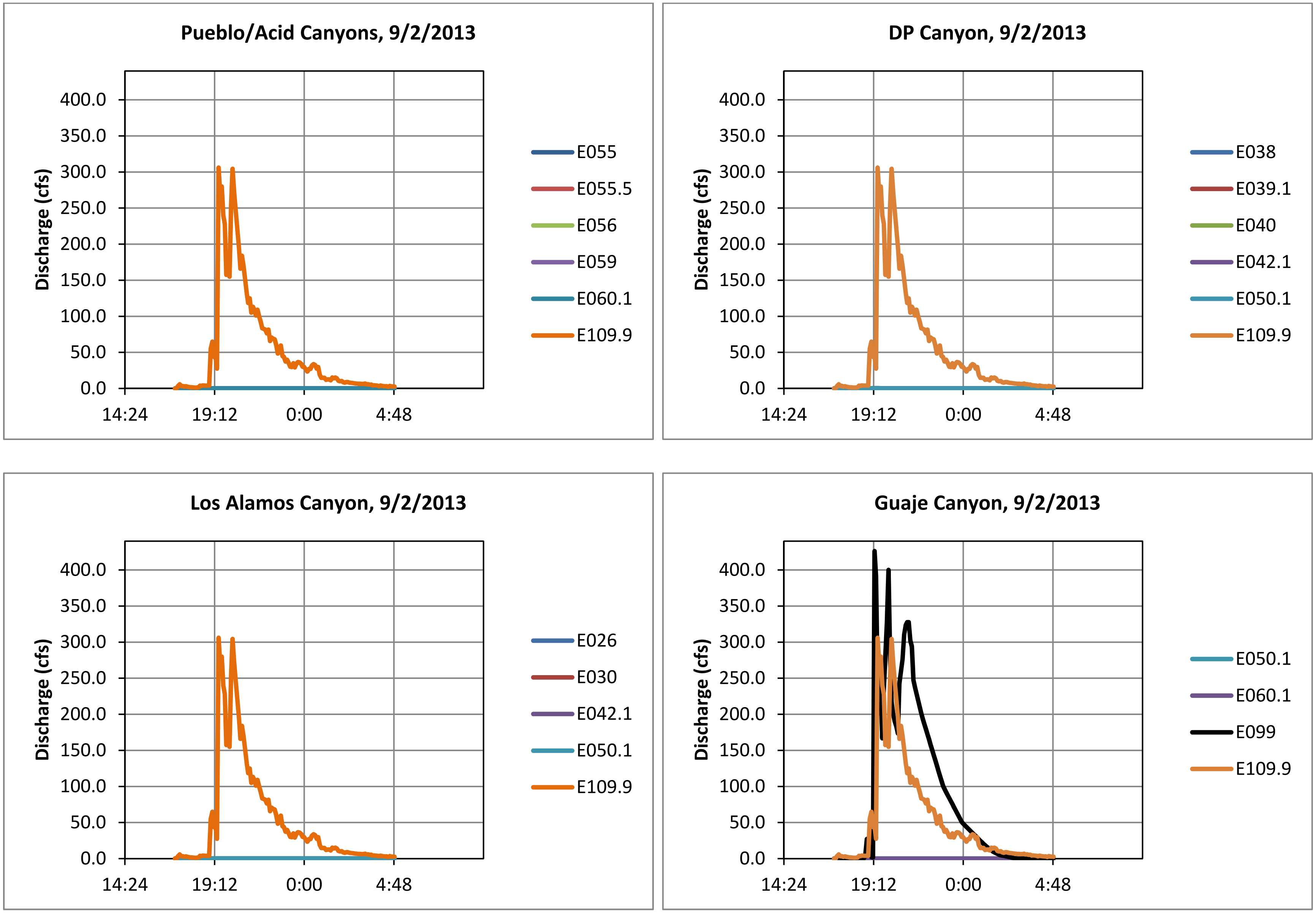



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

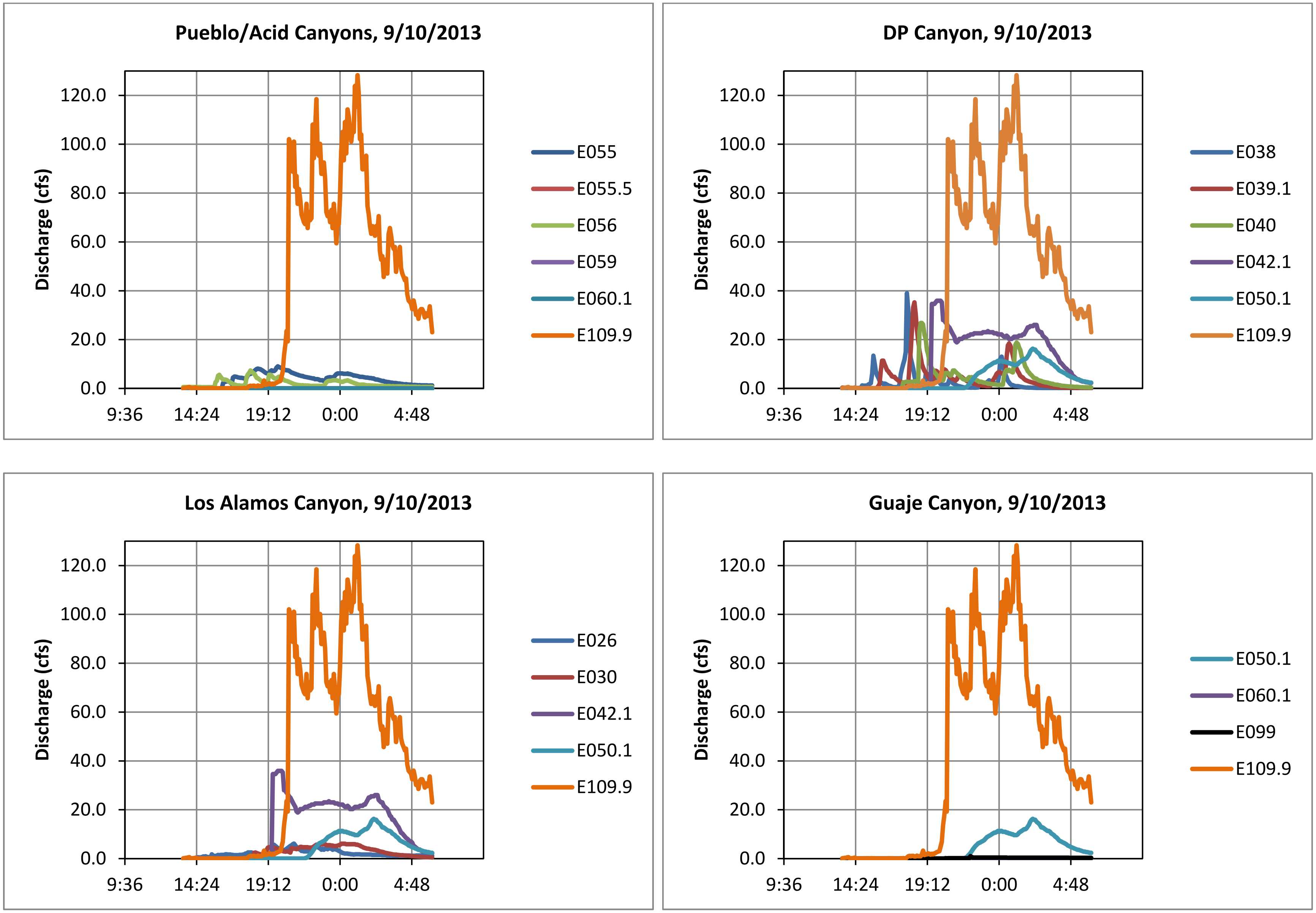



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

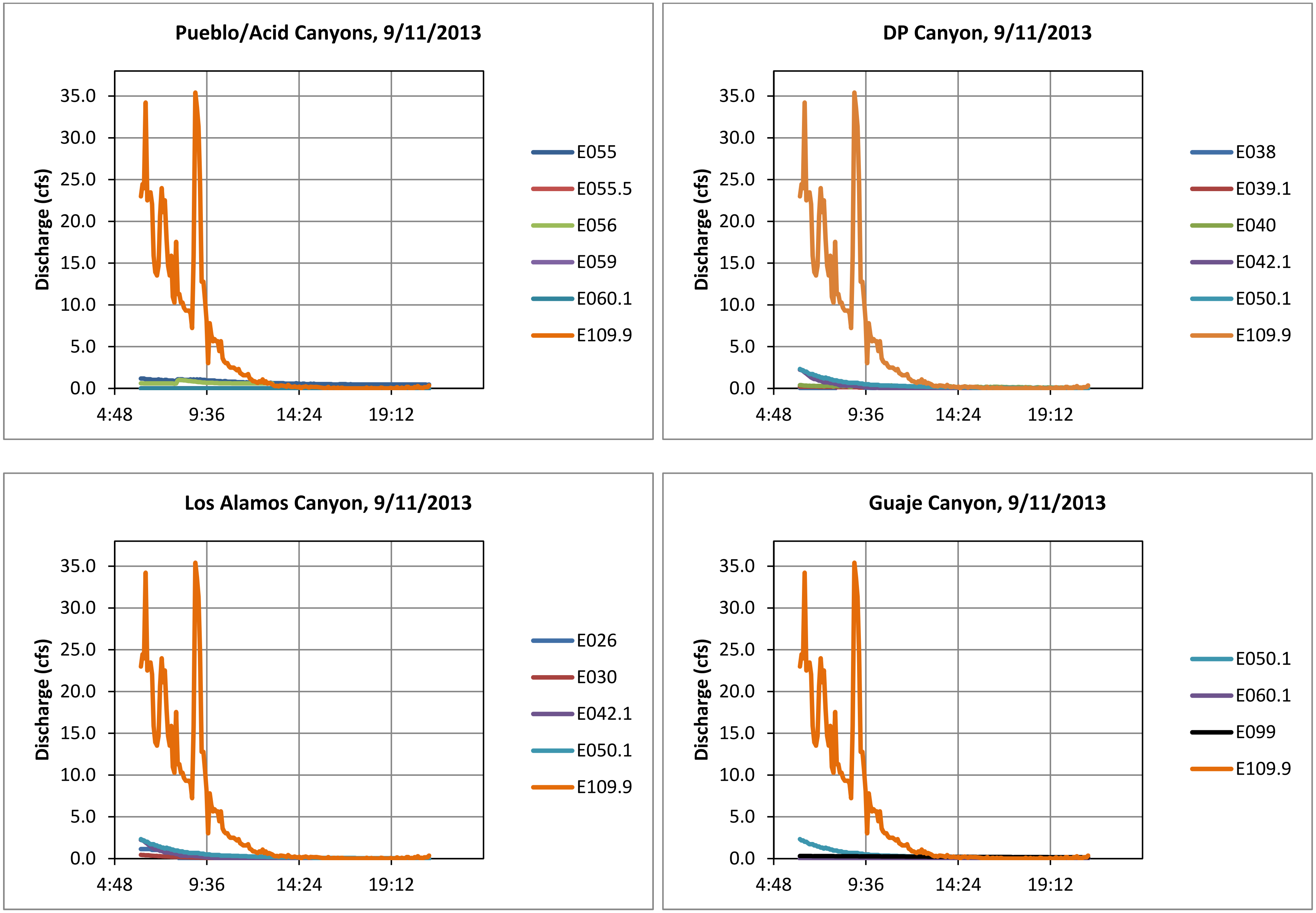



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

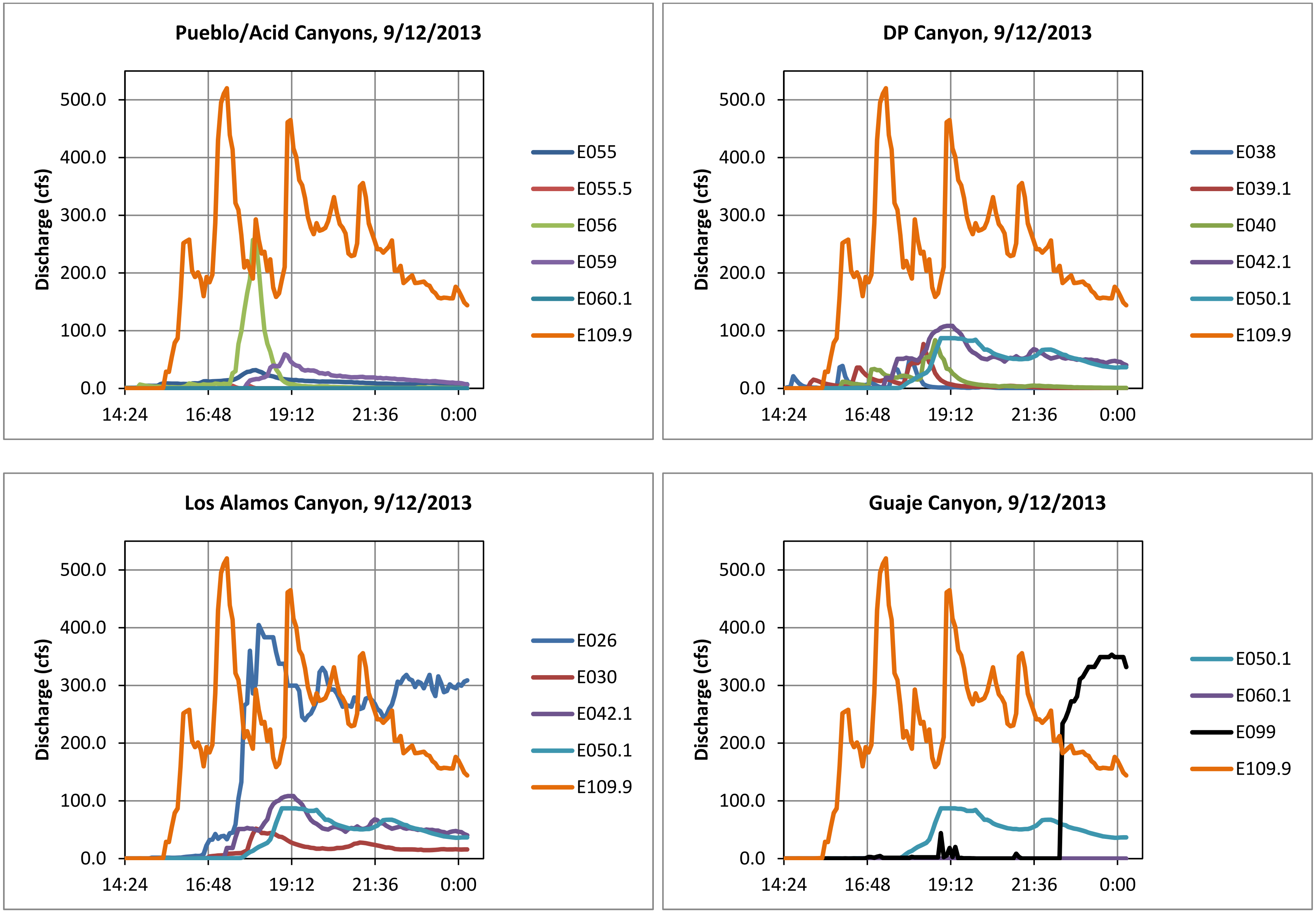
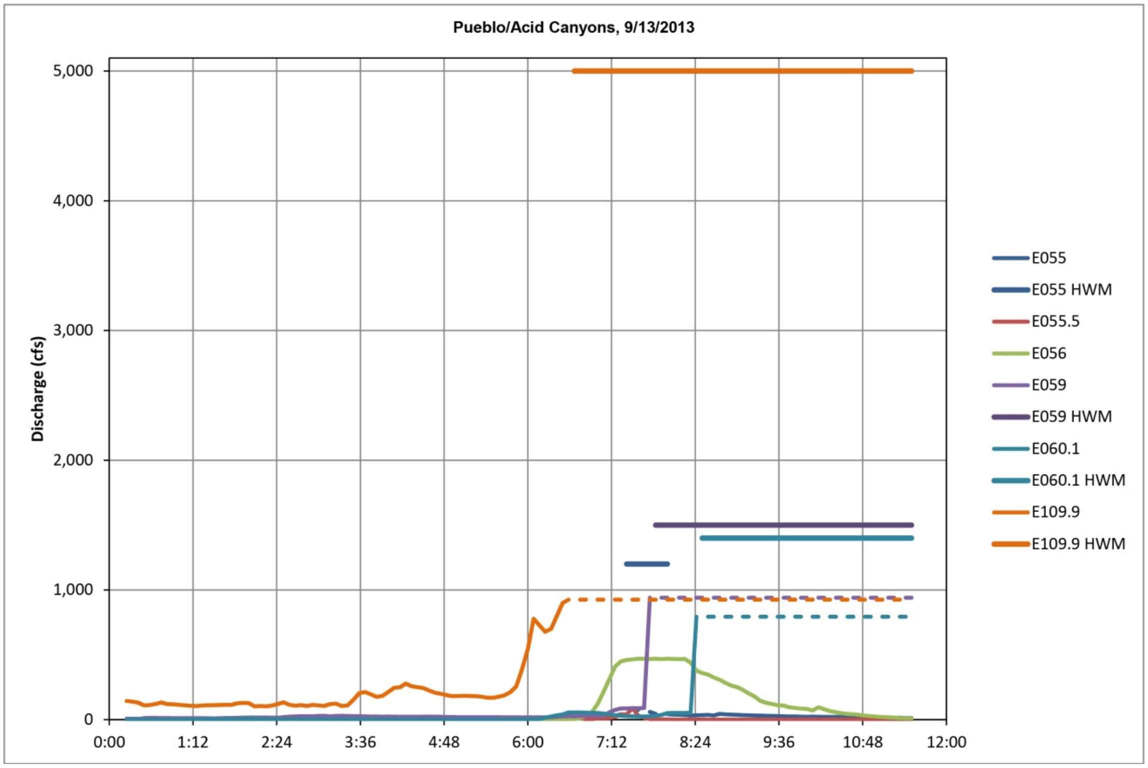



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**



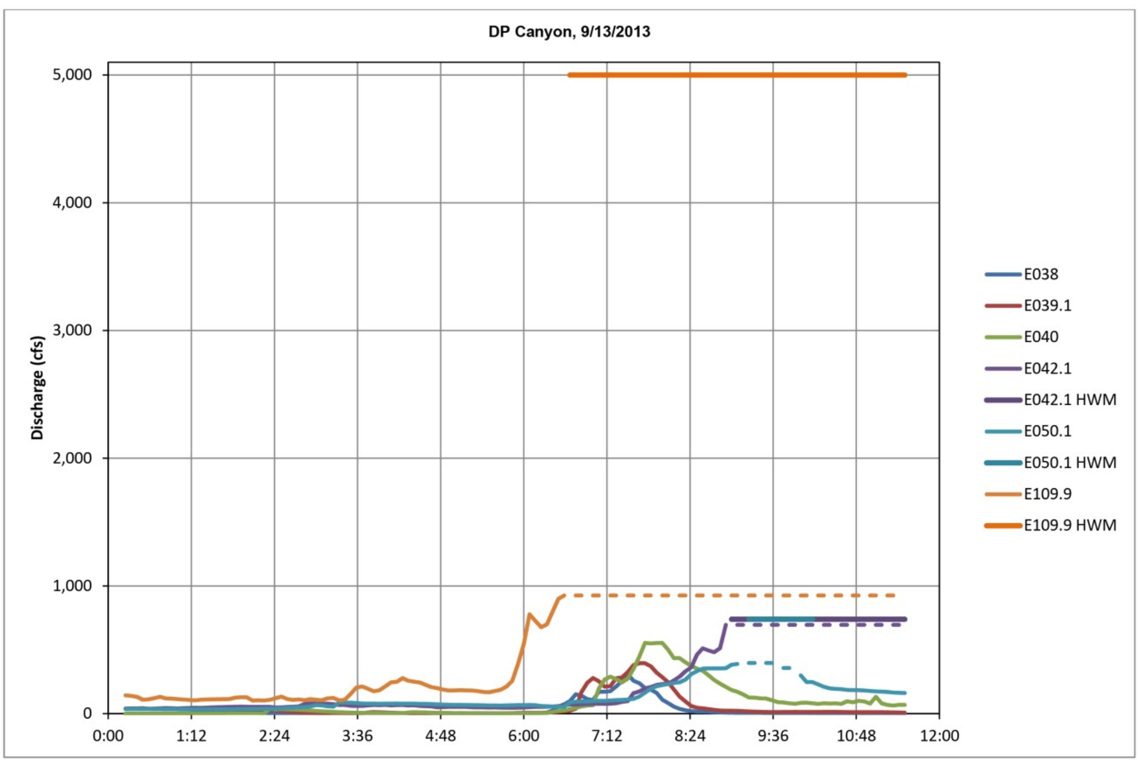
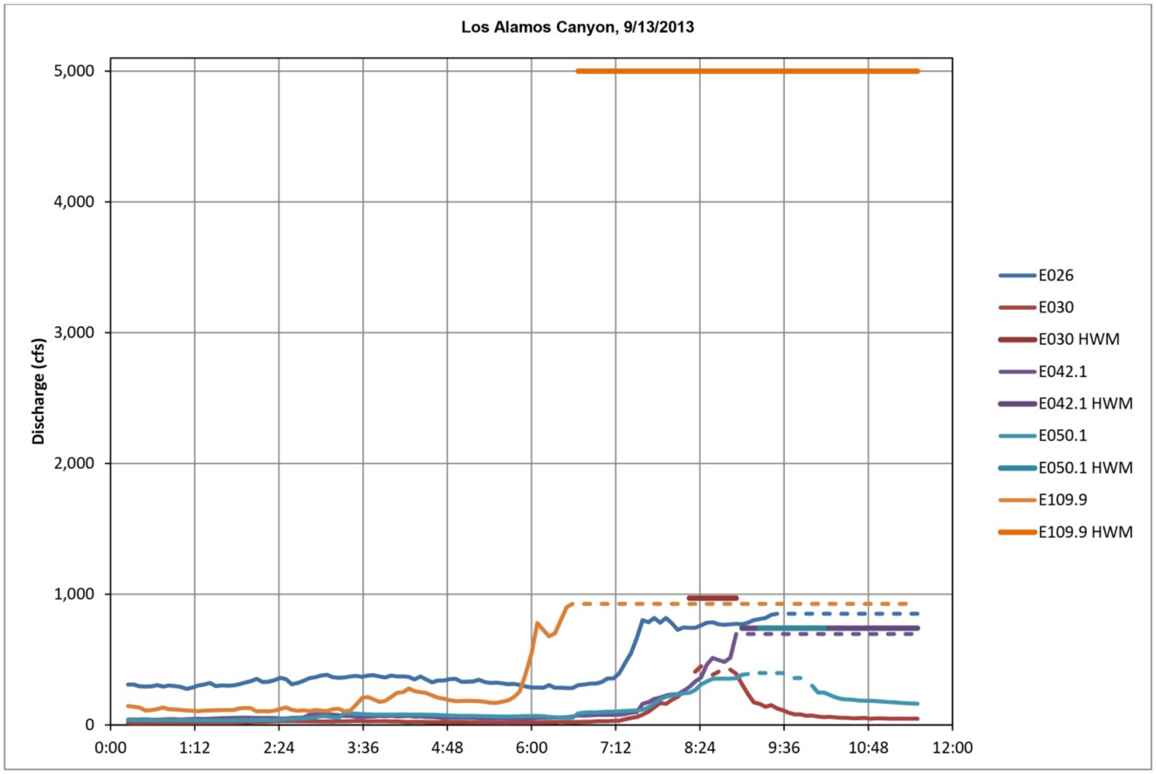




**Figure 3.2-3 (continued) Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**



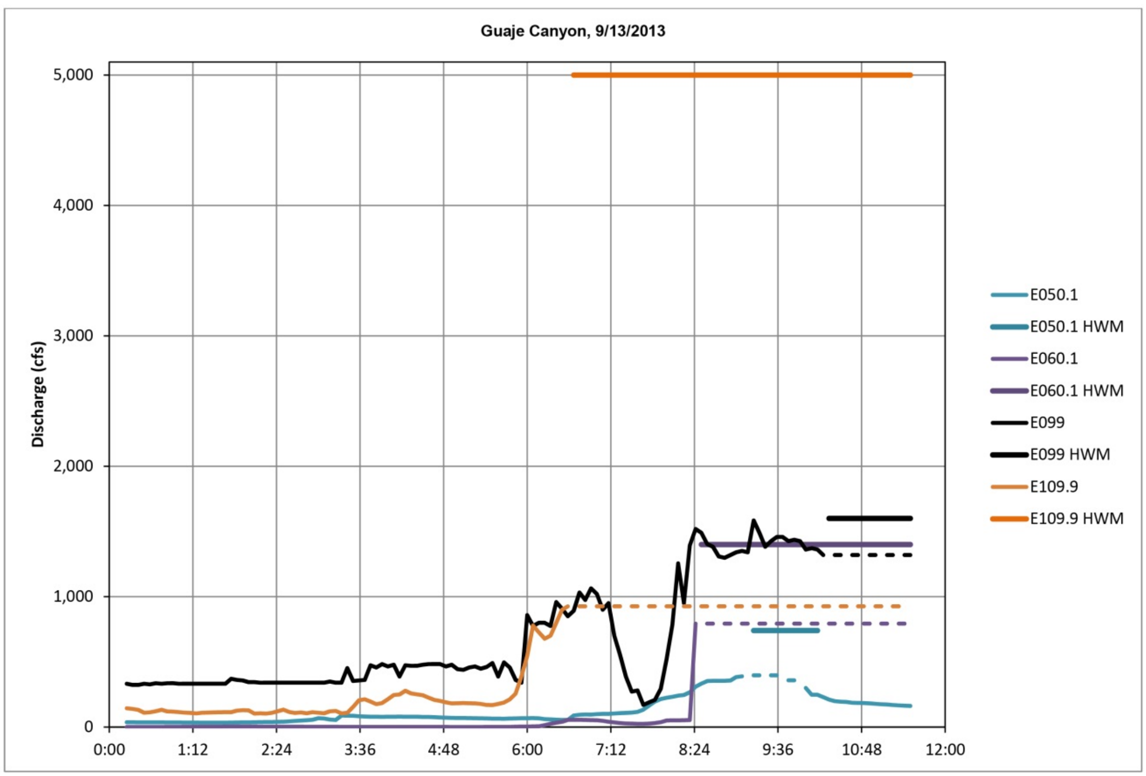




**Figure 3.2-3 (continued) Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

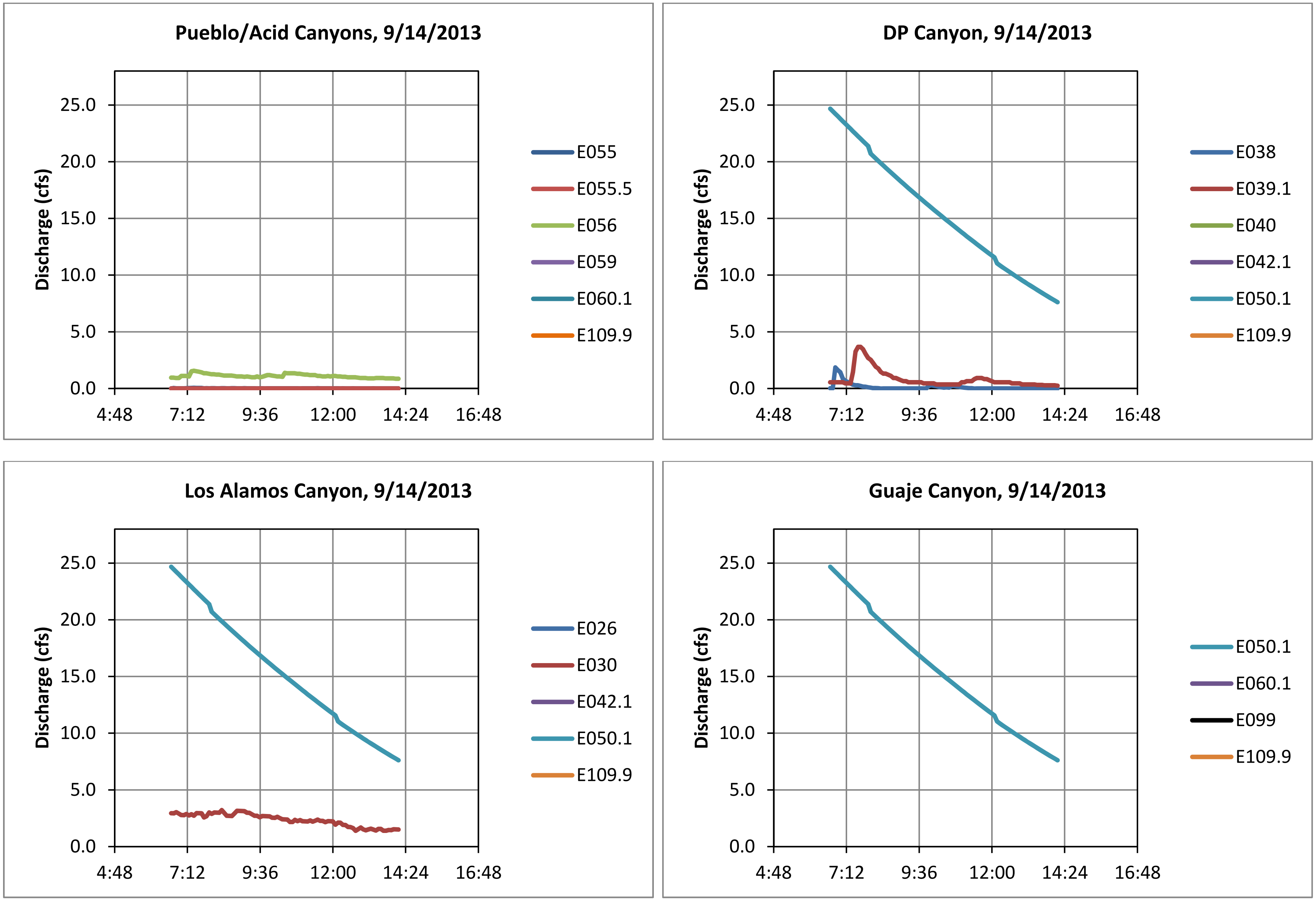



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

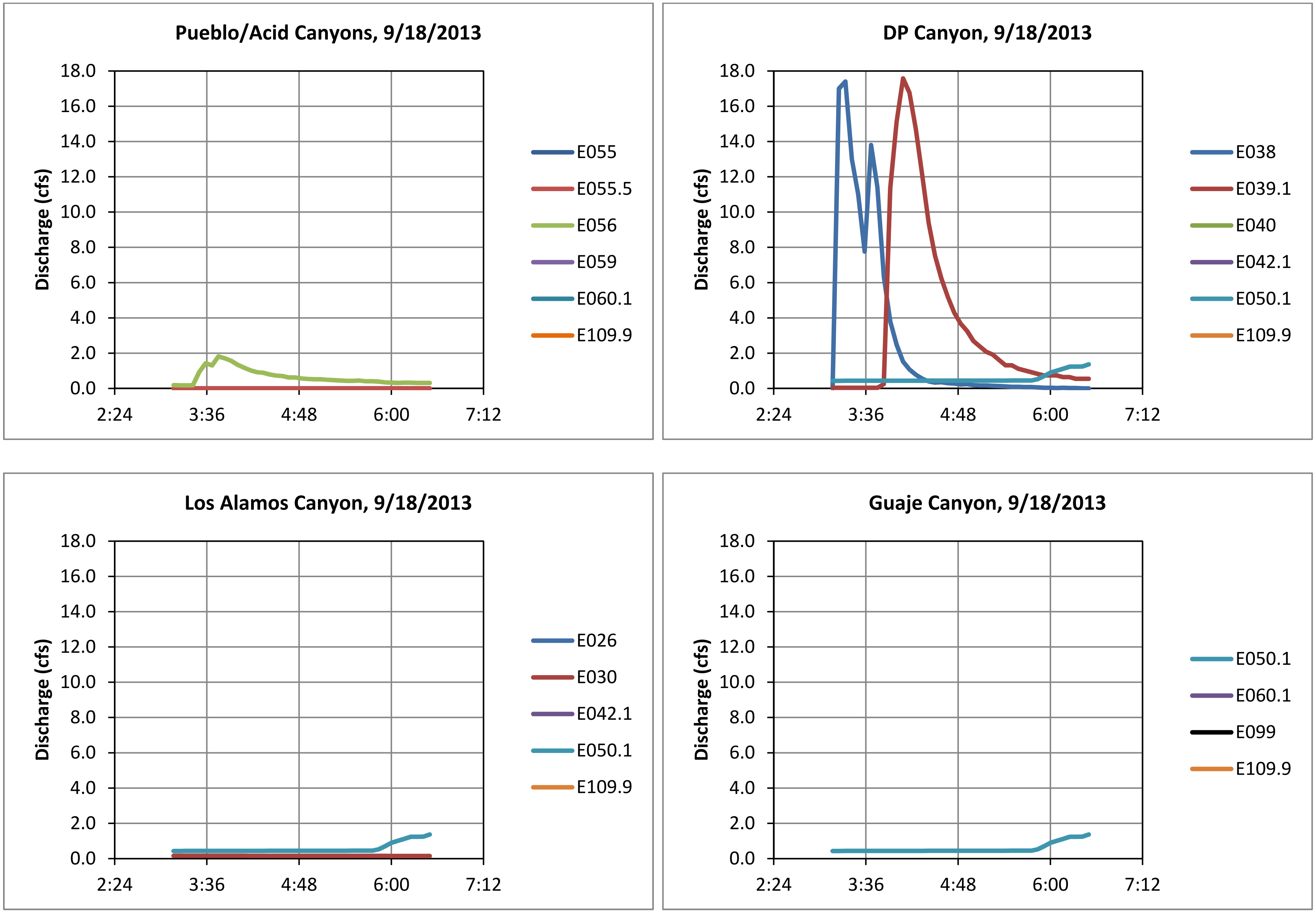



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

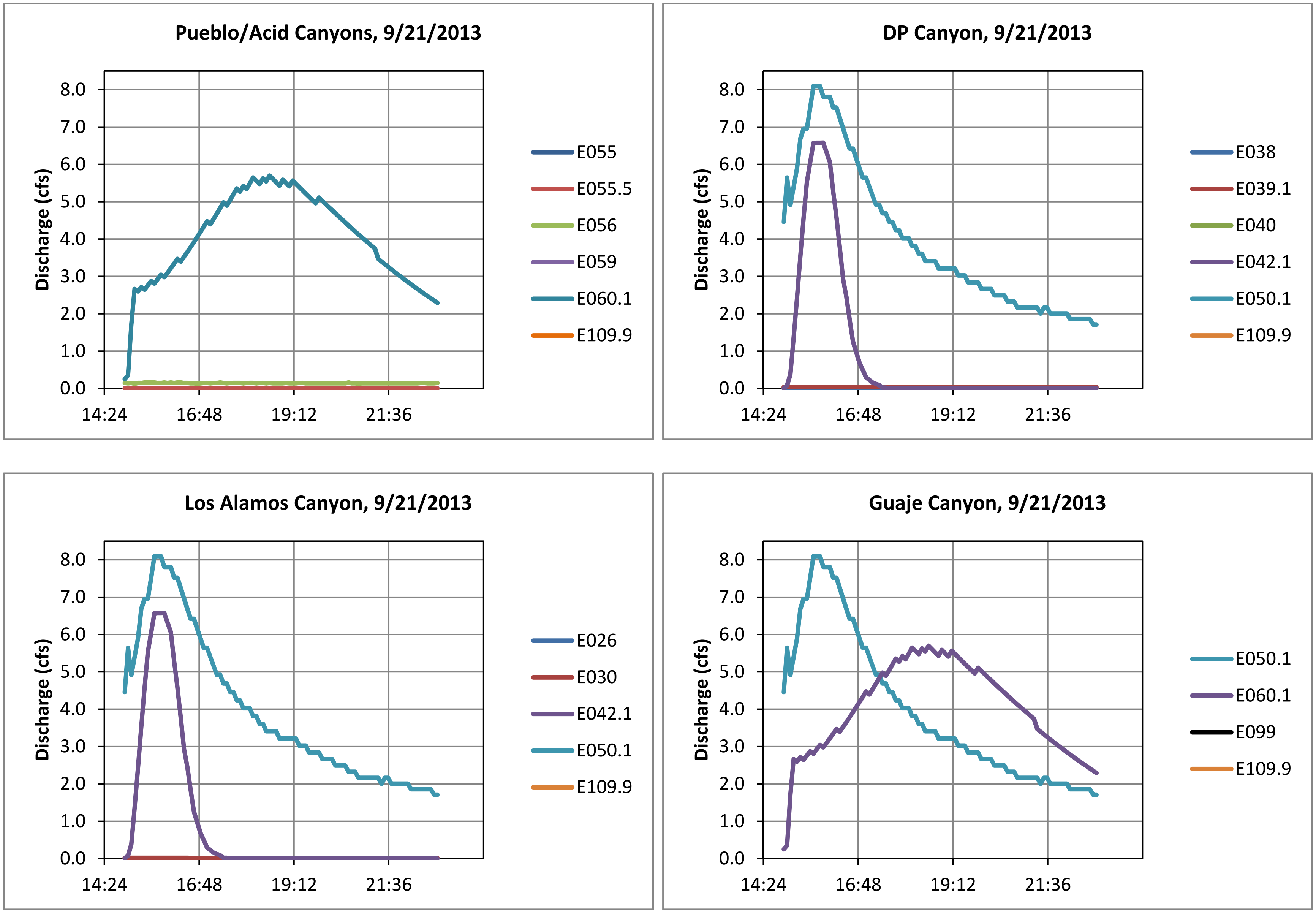



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

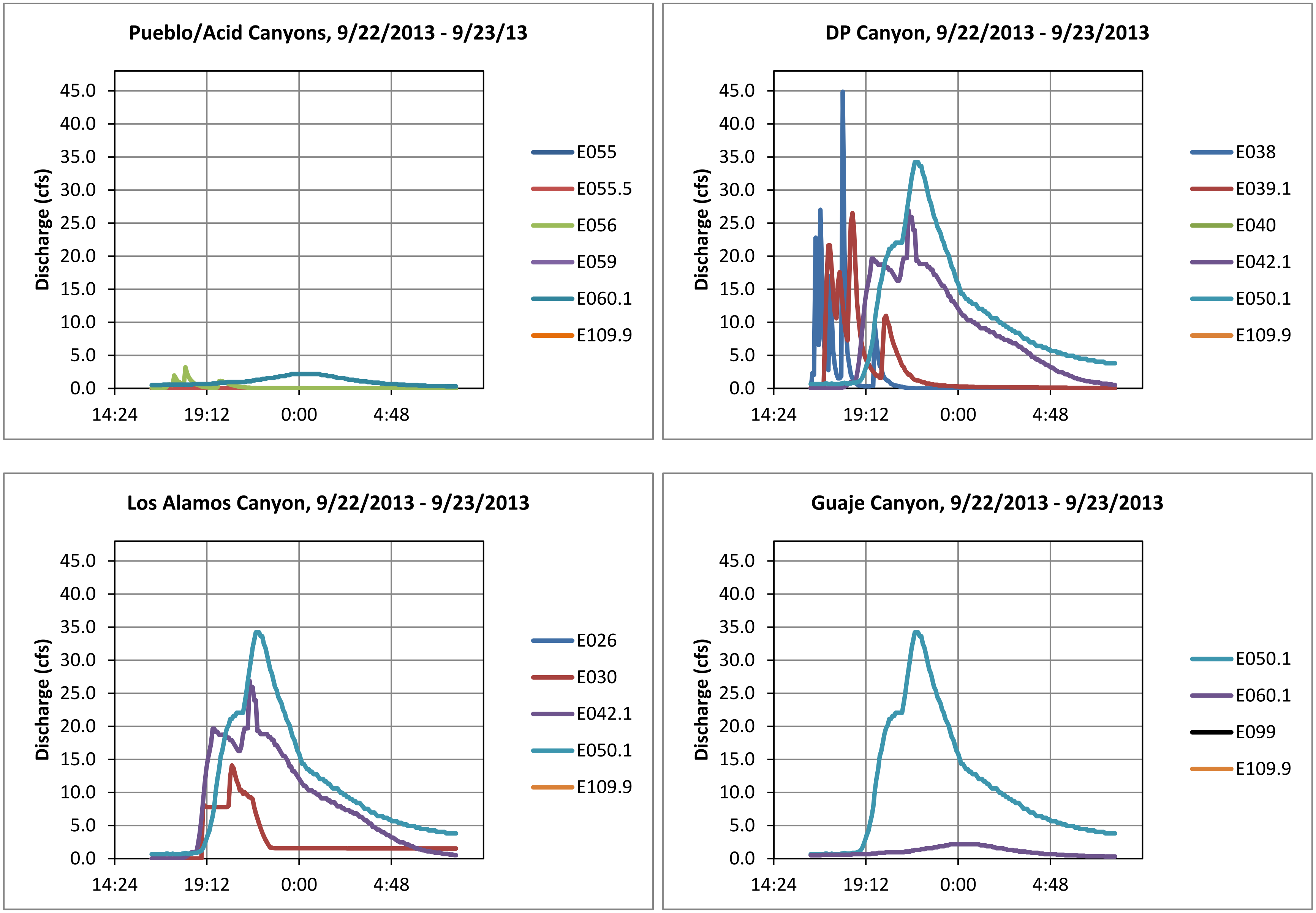



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

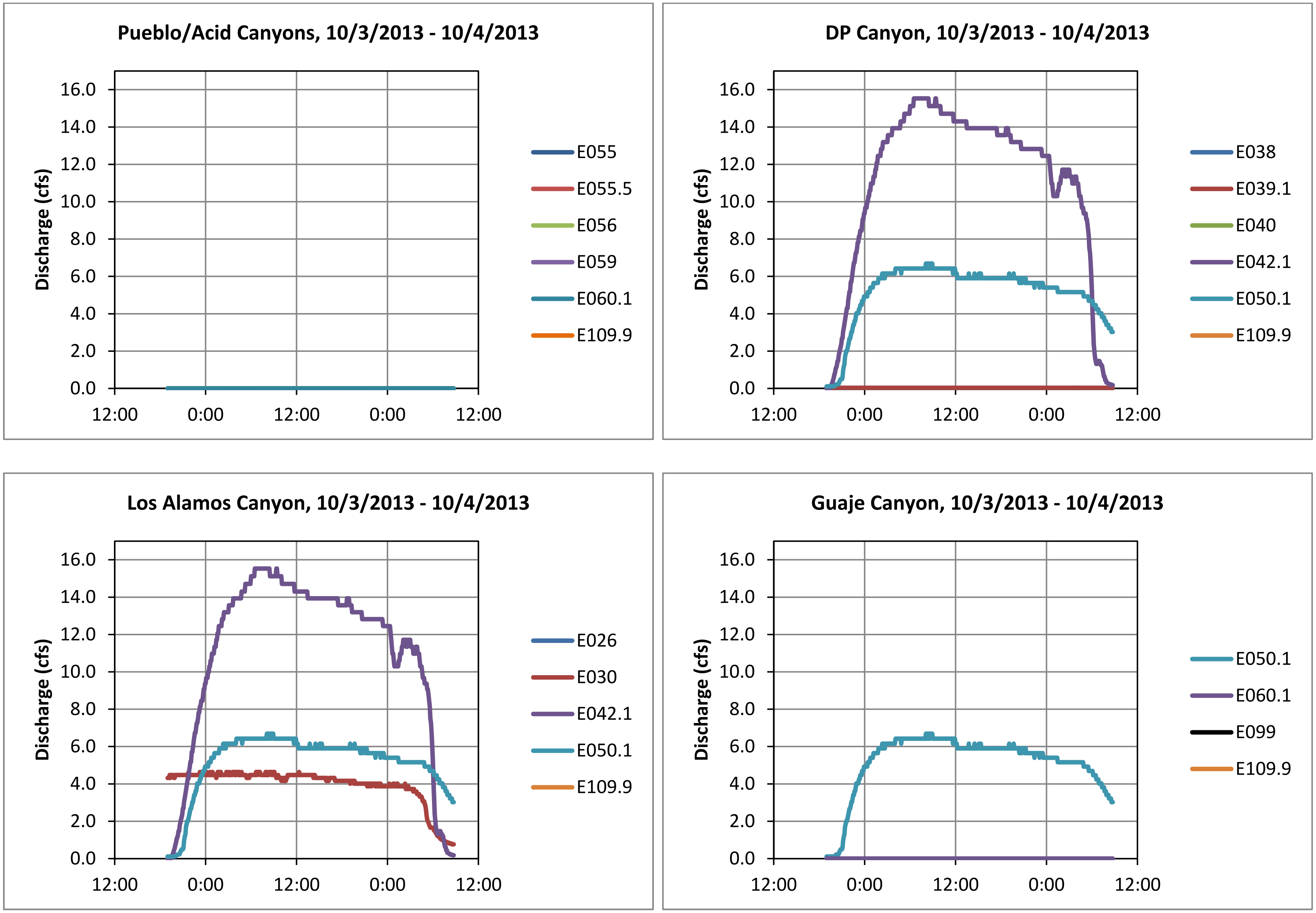



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**

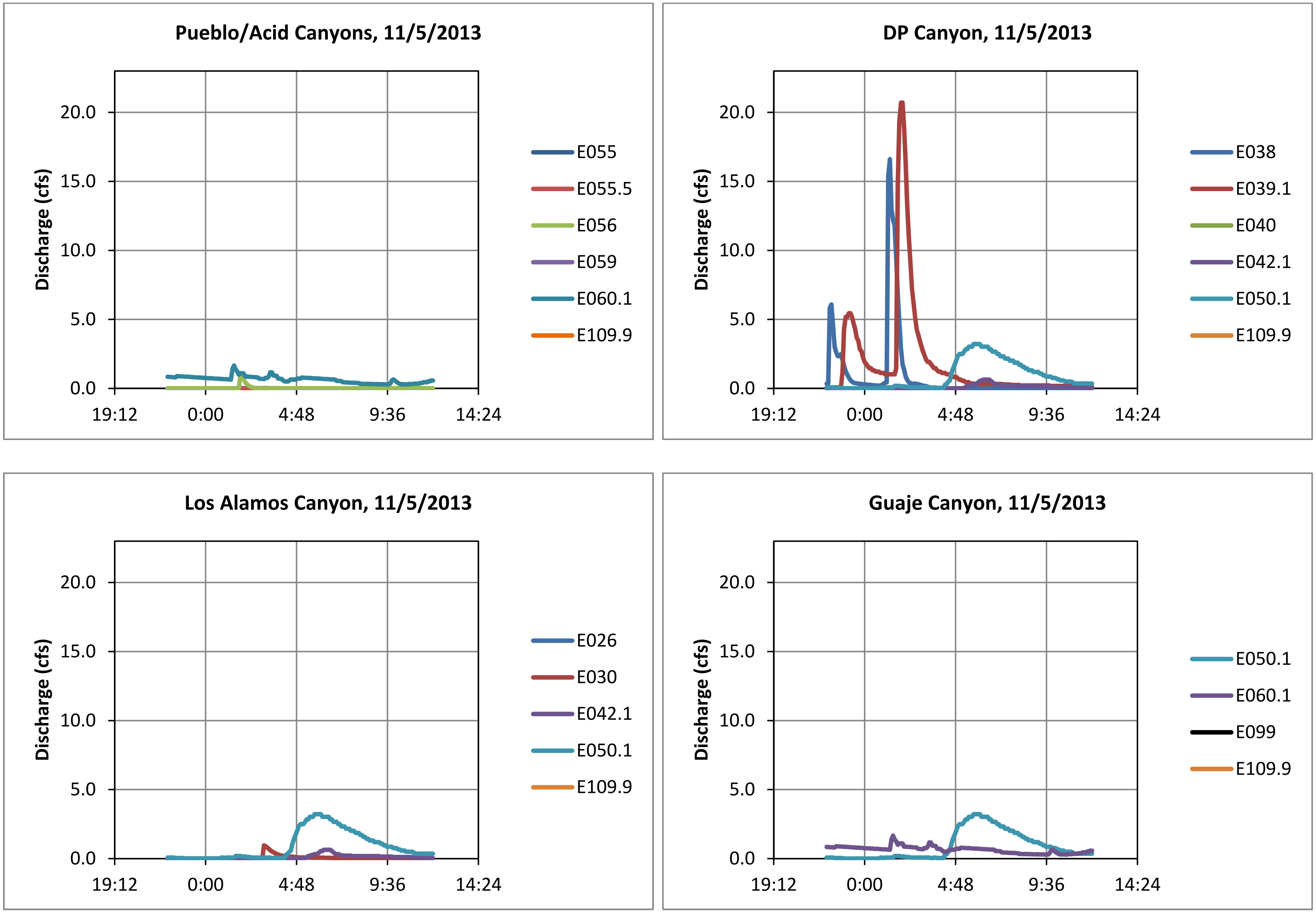
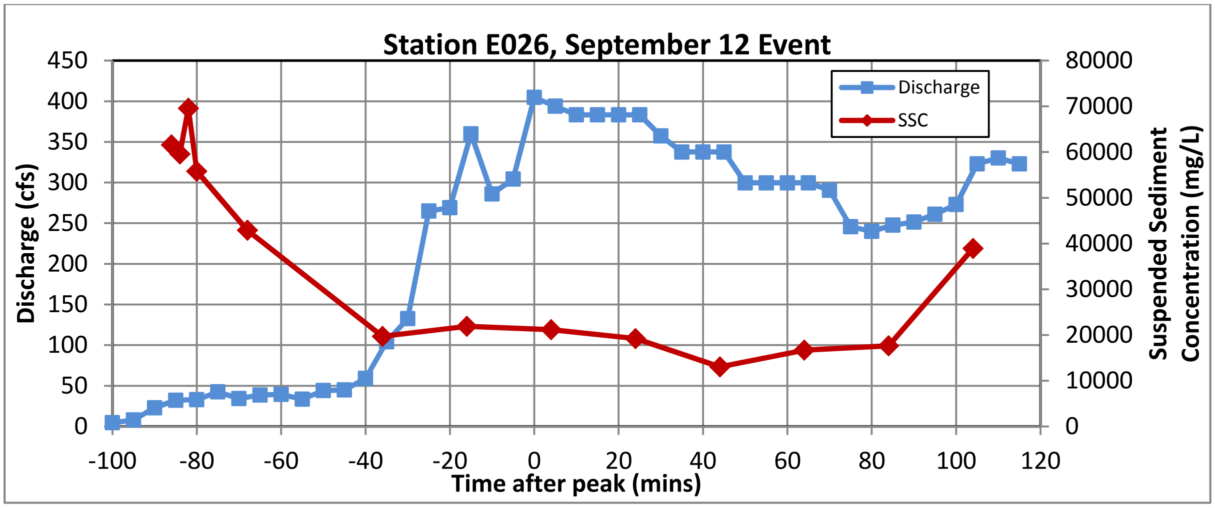
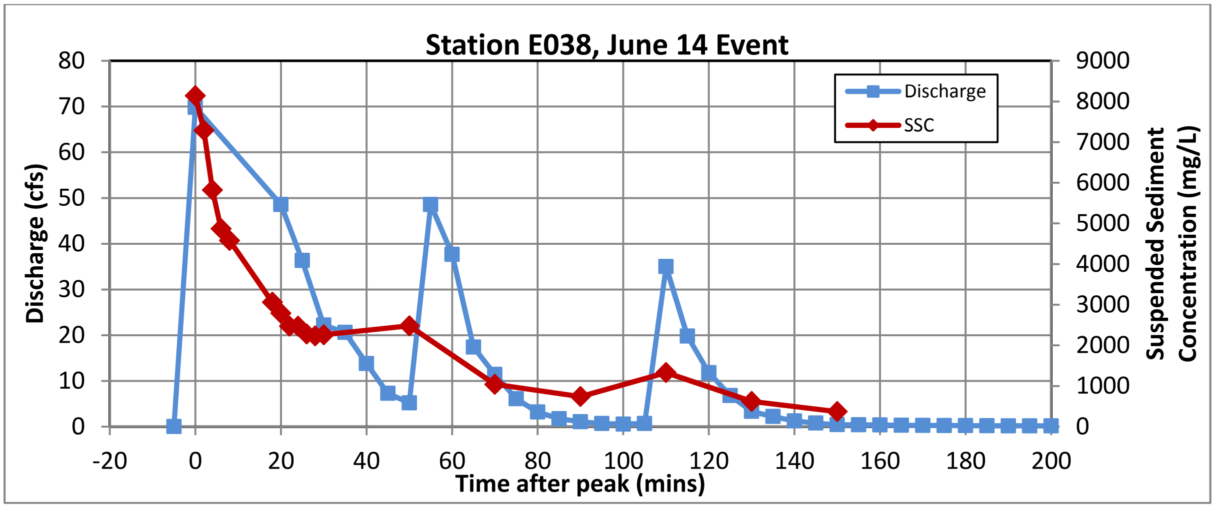



**Figure 3.2-3 (continued)** **Hydrographs during each sample-triggering runoff event for each canyon from up- to downstream reaches**



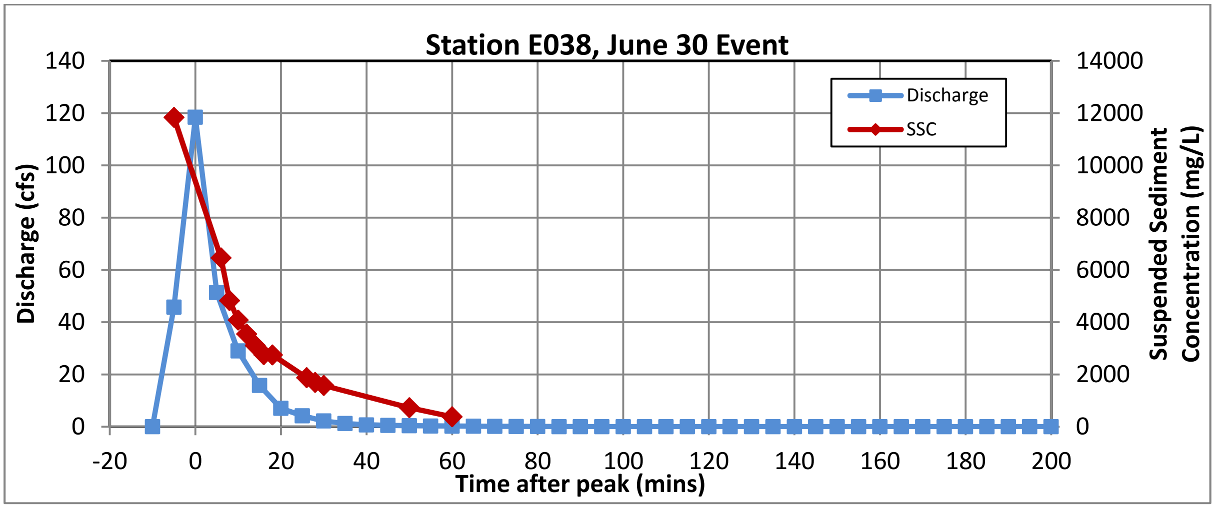
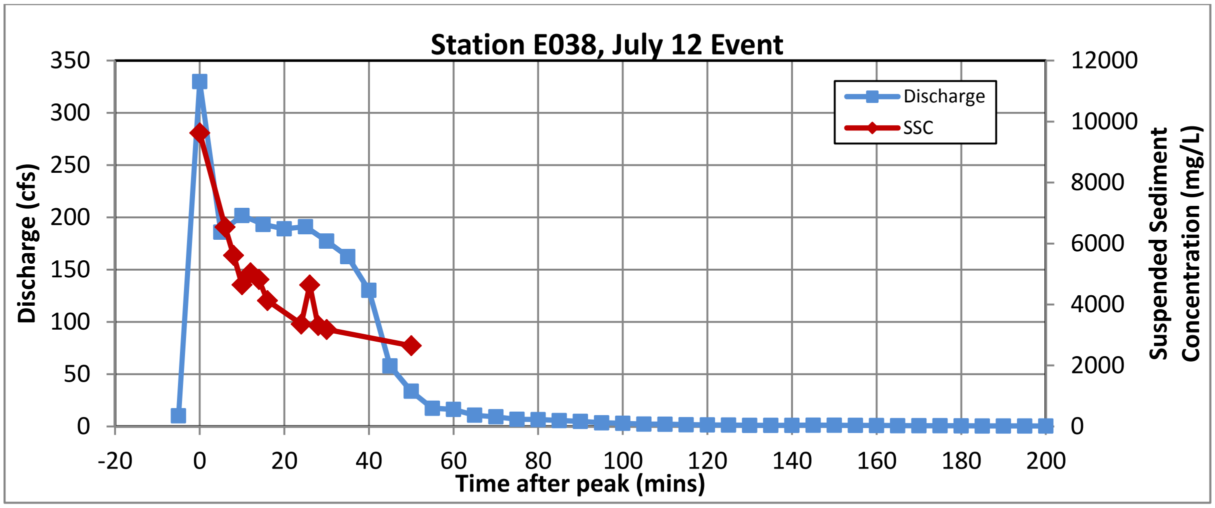
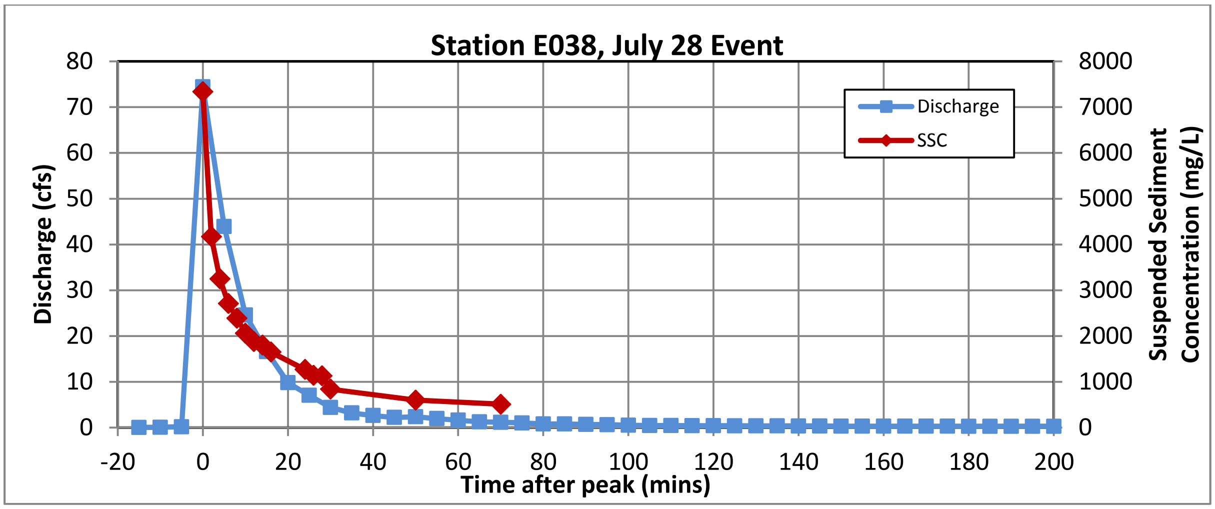




**Figure 3.2-4 Discharge and SSC for sampled events at E026, E038, E039.1, E042.1, E050.1, E099, and E109.9**



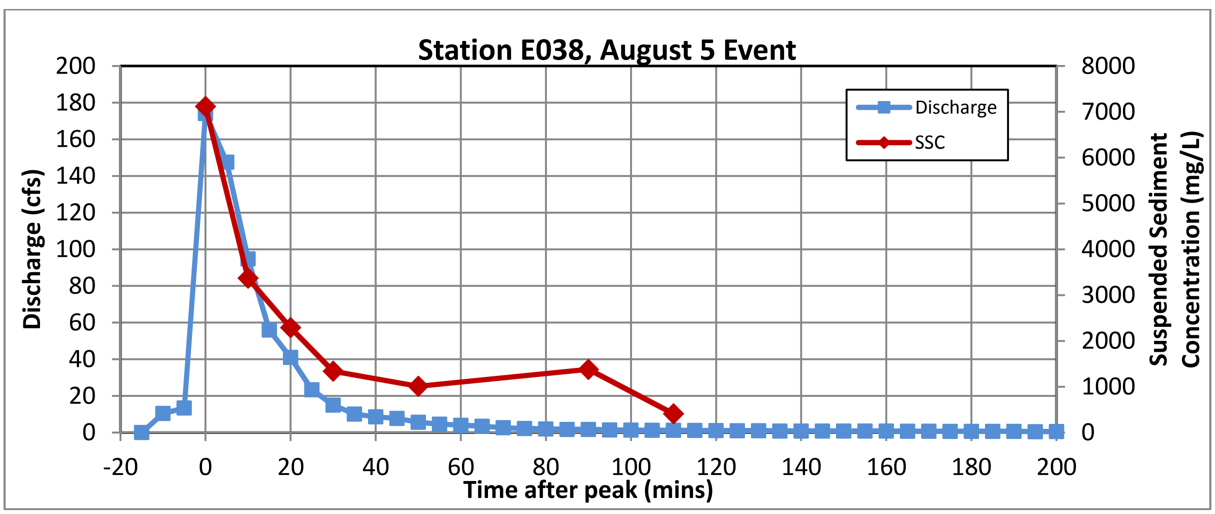
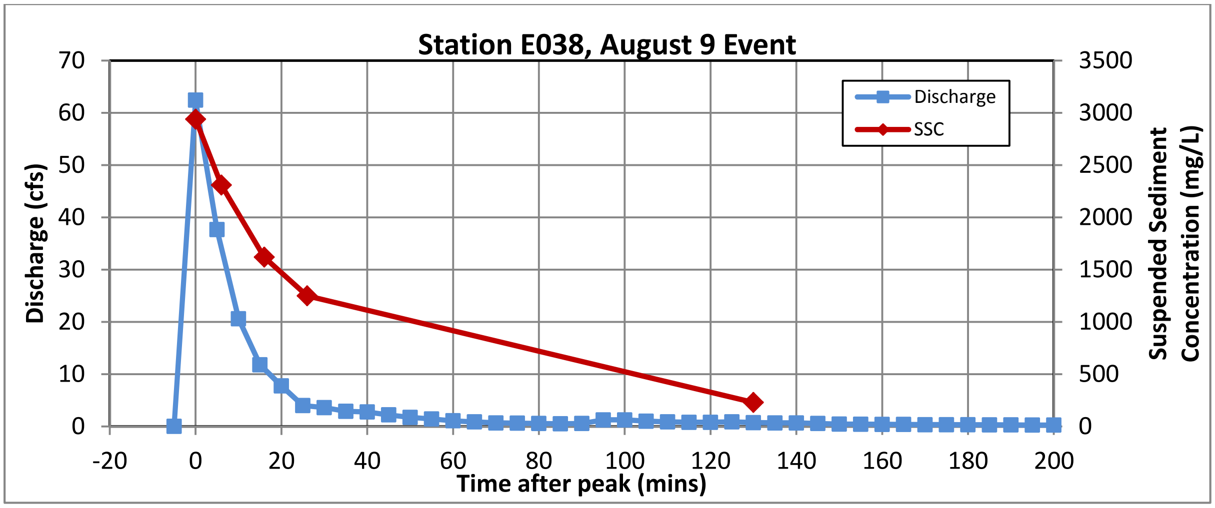
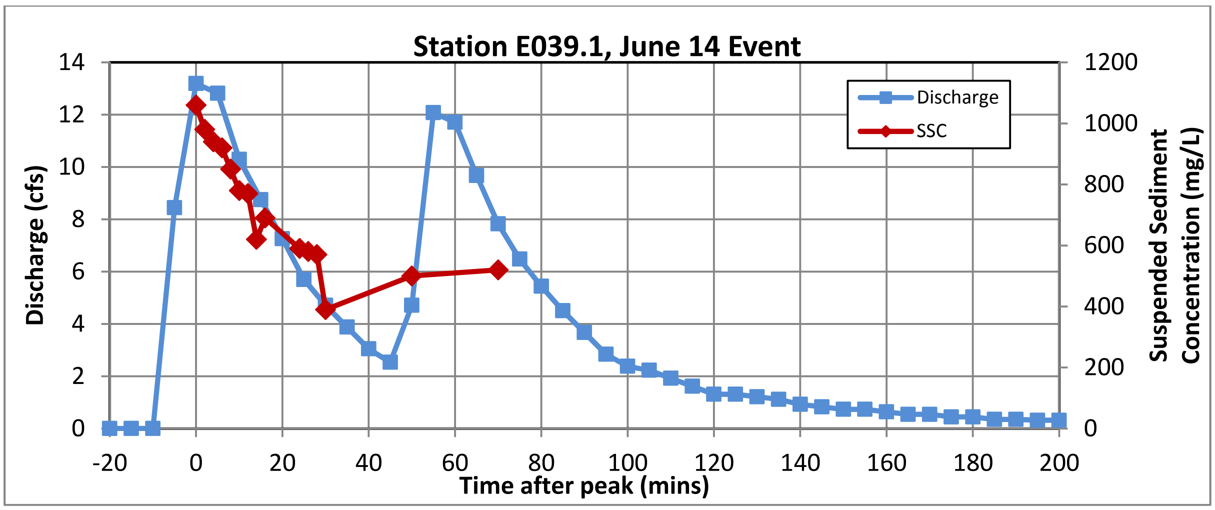




**Figure 3.2-4 (continued)** **Discharge and SSC for sampled events at E026, E038, E039.1, E042.1, E050.1, E099, and E109.9**



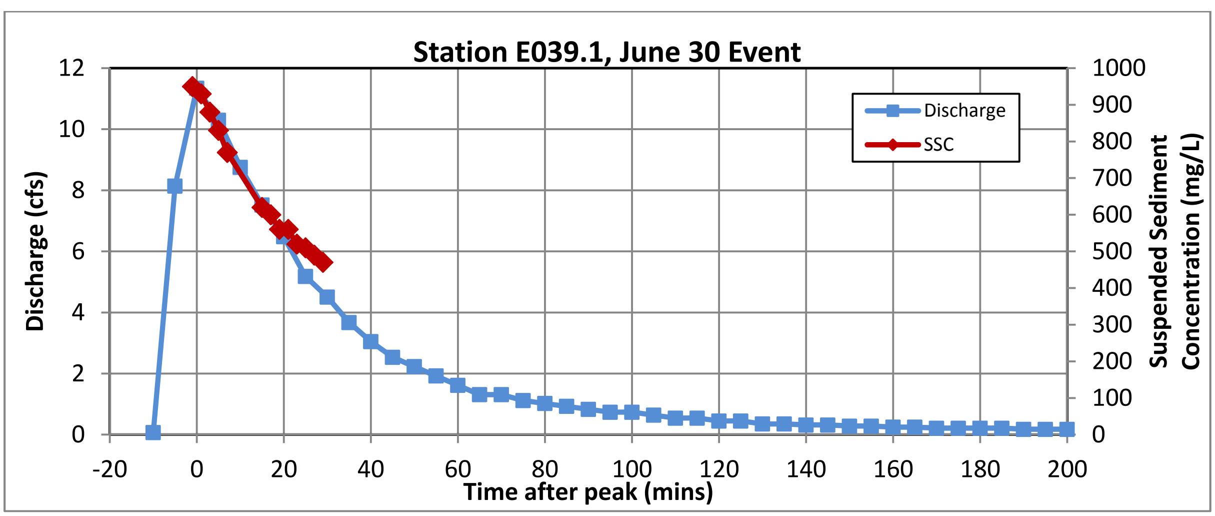
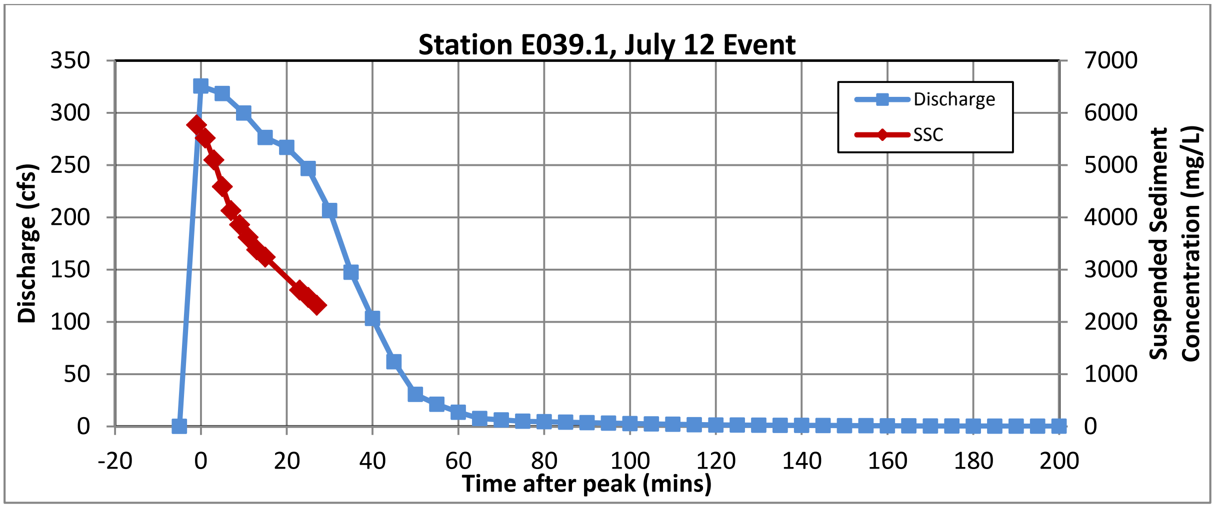
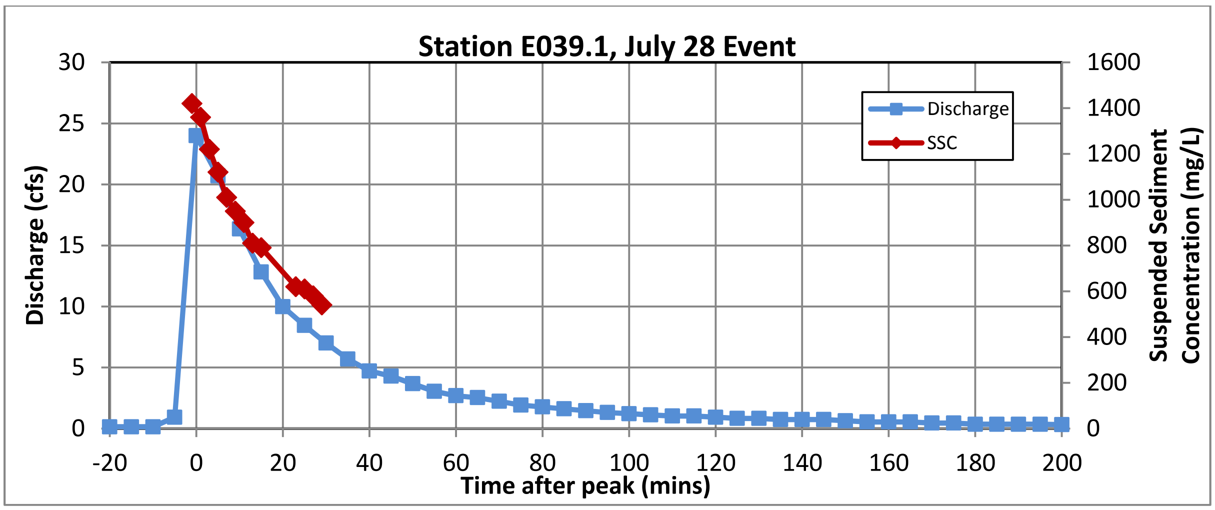




**Figure 3.2-4 (continued)** **Discharge and SSC for sampled events at E026, E038, E039.1, E042.1, E050.1, E099, and E109.9**



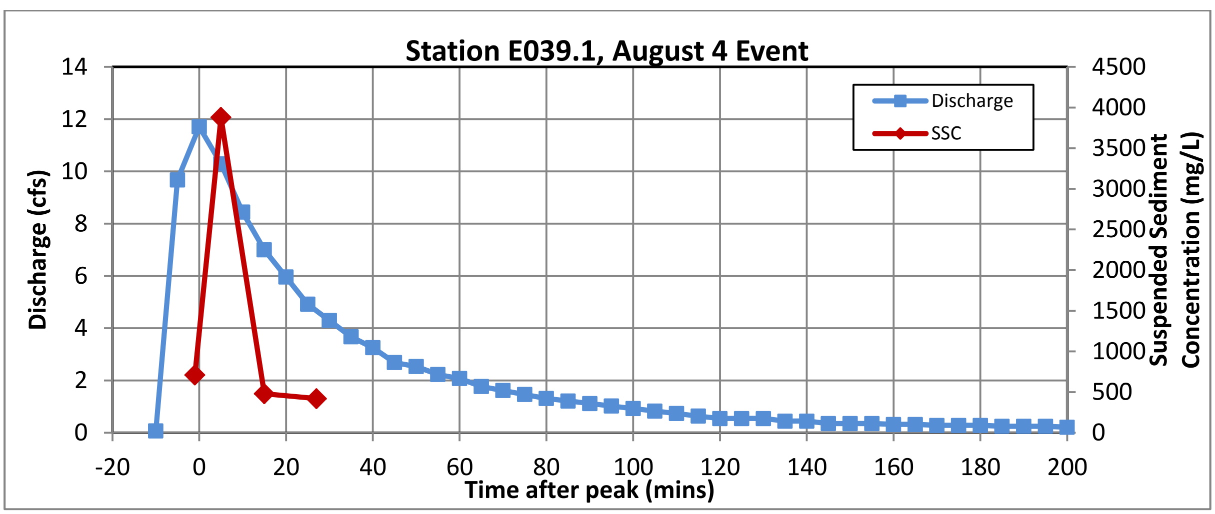
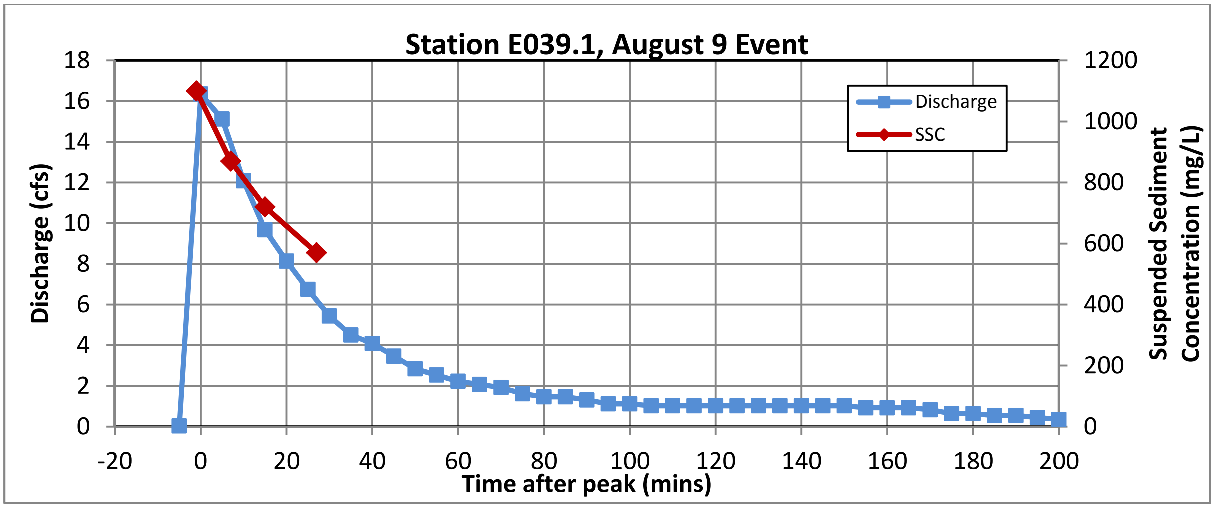
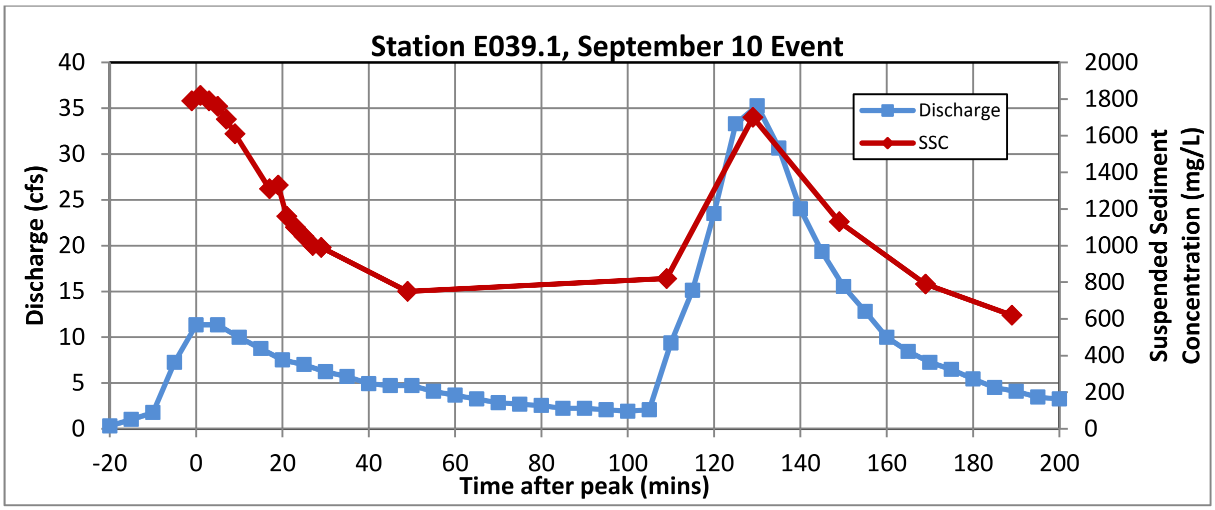




**Figure 3.2-4 (continued)** **Discharge and SSC for sampled events at E026, E038, E039.1, E042.1, E050.1, E099, and E109.9**



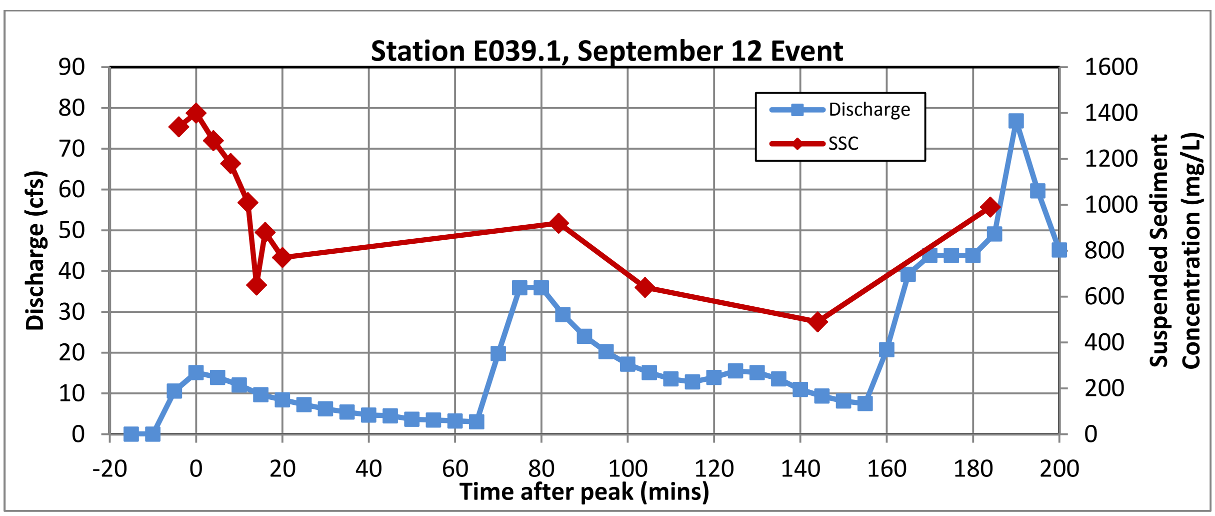
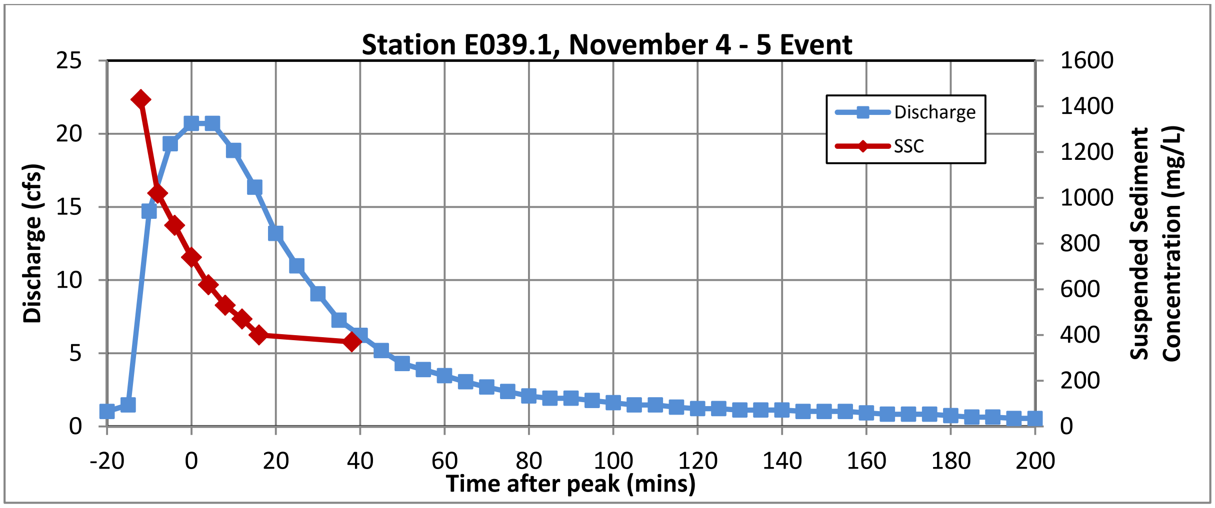
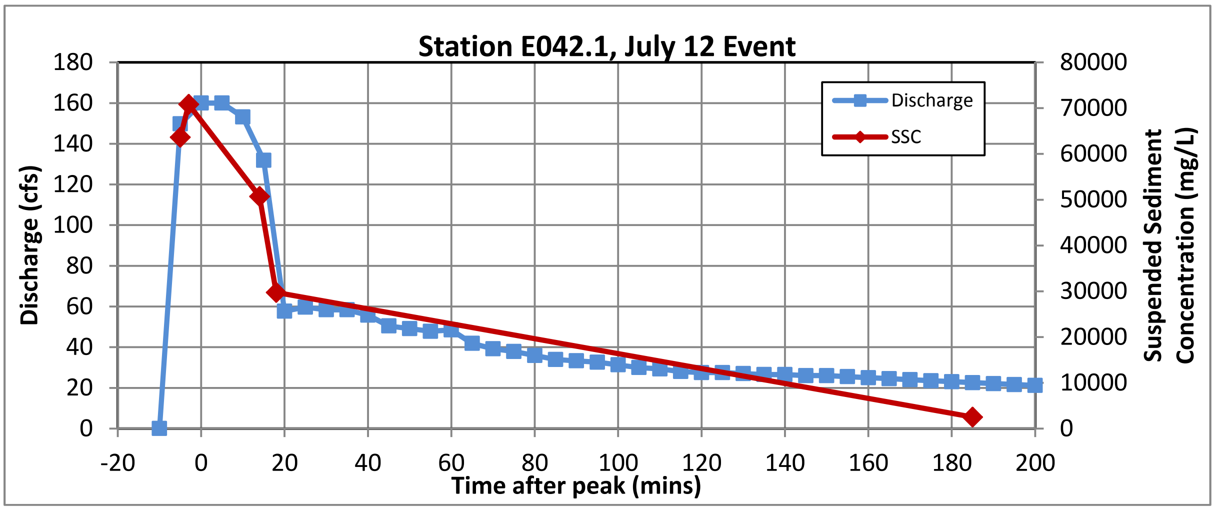




**Figure 3.2-4 (continued)** **Discharge and SSC for sampled events at E026, E038, E039.1, E042.1, E050.1, E099, and E109.9**



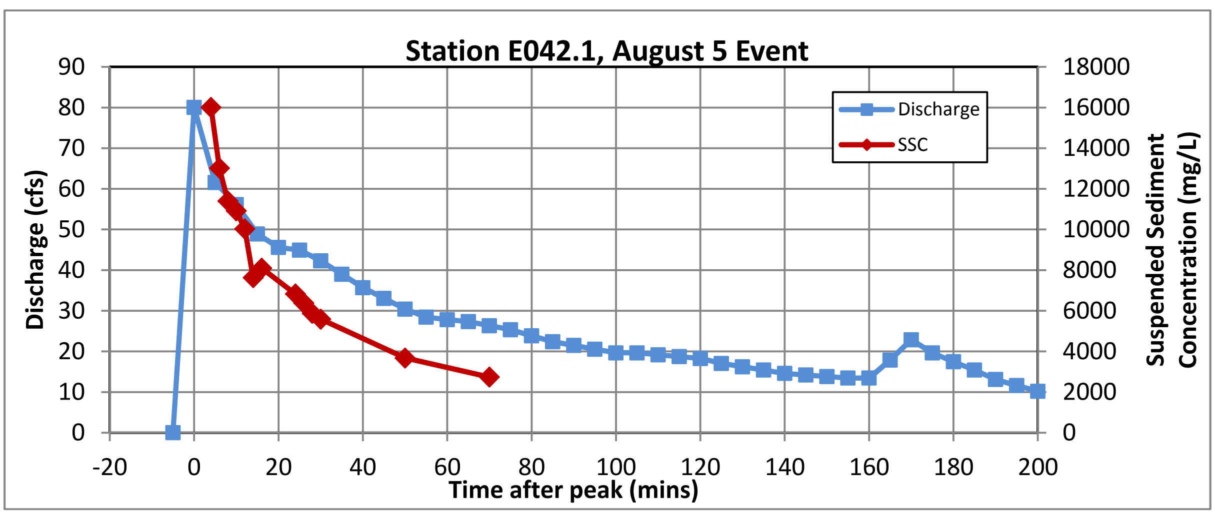
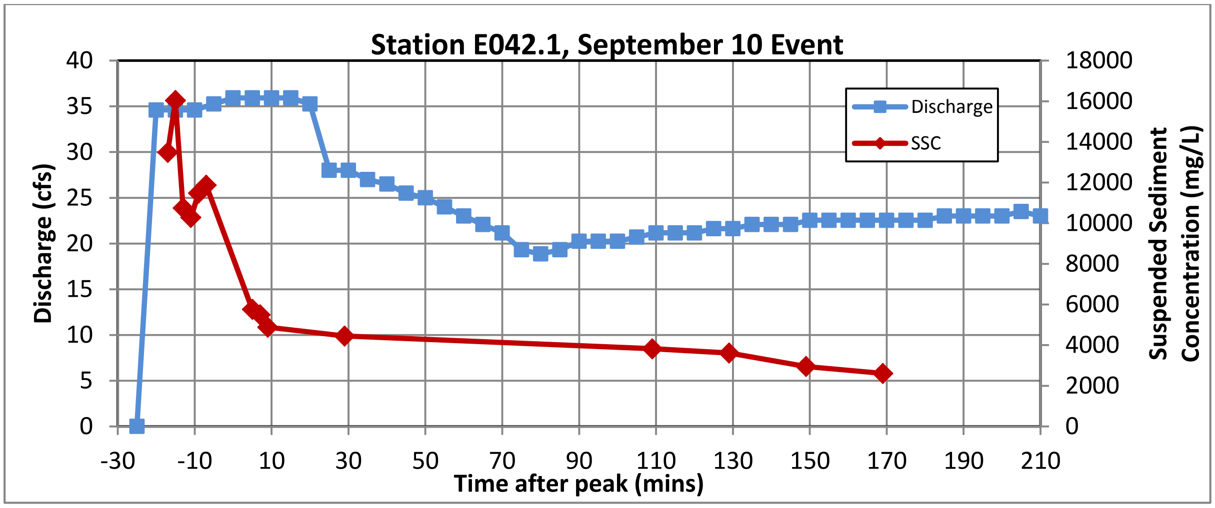
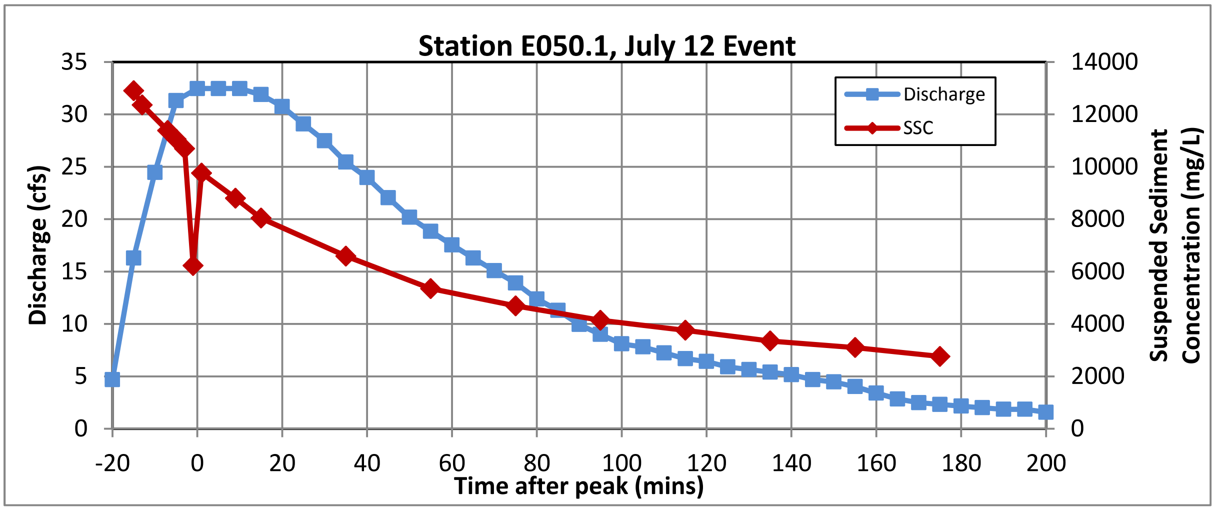




**Figure 3.2-4 (continued)** **Discharge and SSC for sampled events at E026, E038, E039.1, E042.1, E050.1, E099, and E109.9**



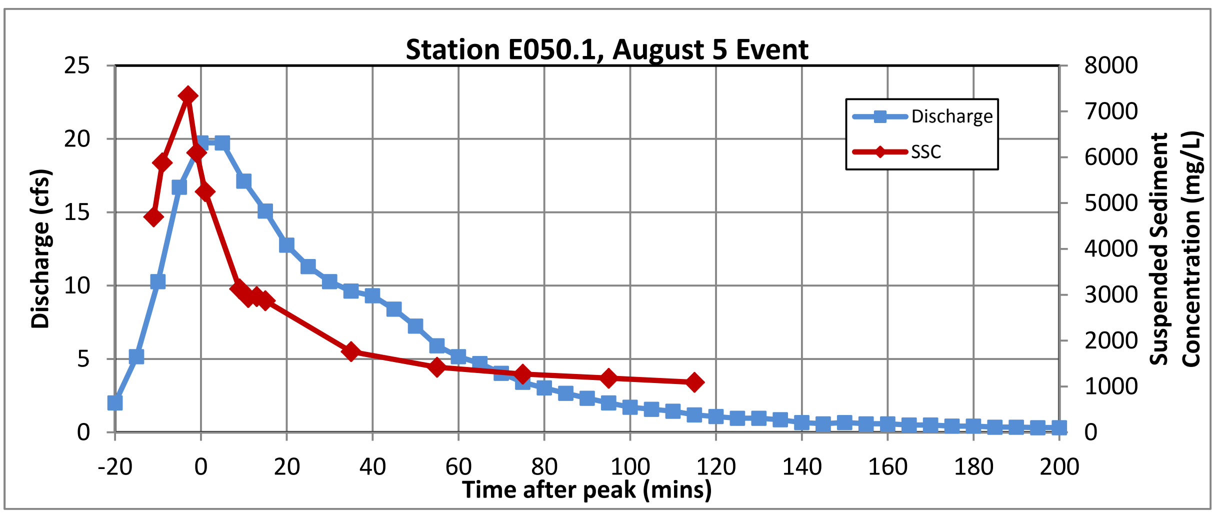
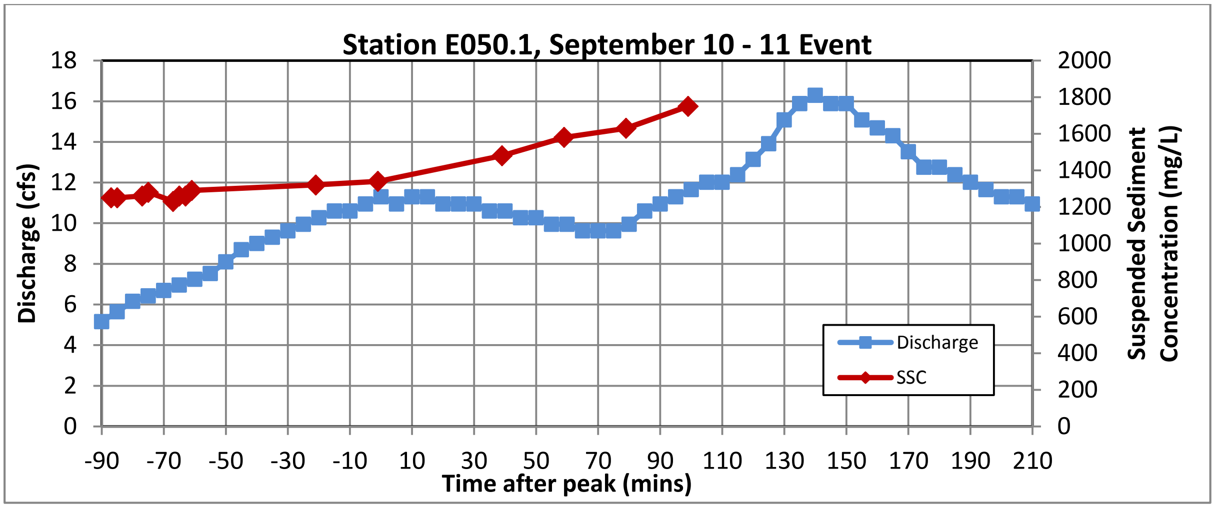
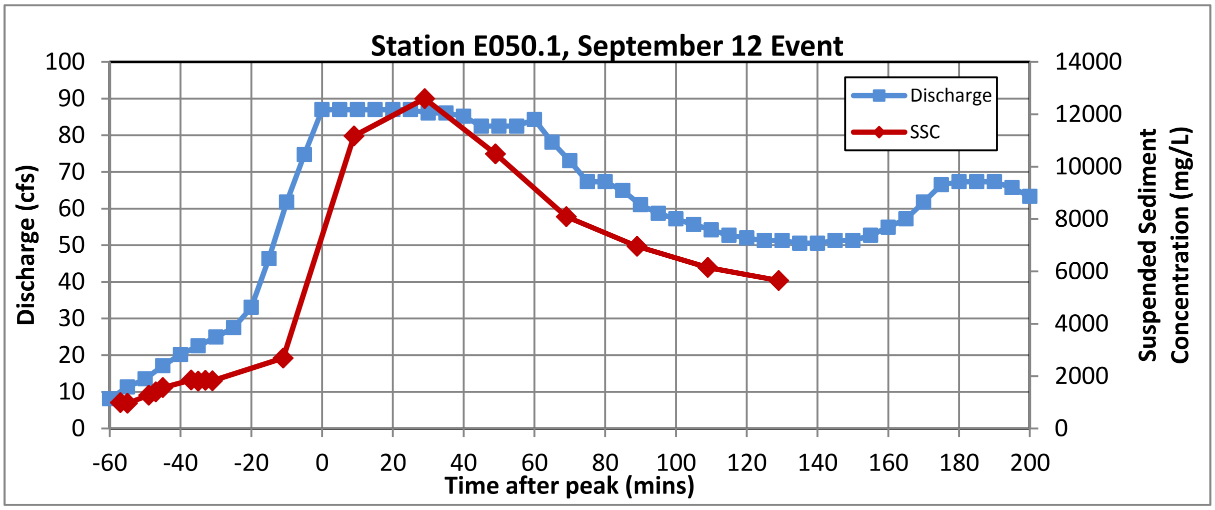




**Figure 3.2-4 (continued)** **Discharge and SSC for sampled events at E026, E038, E039.1, E042.1, E050.1, E099, and E109.9**



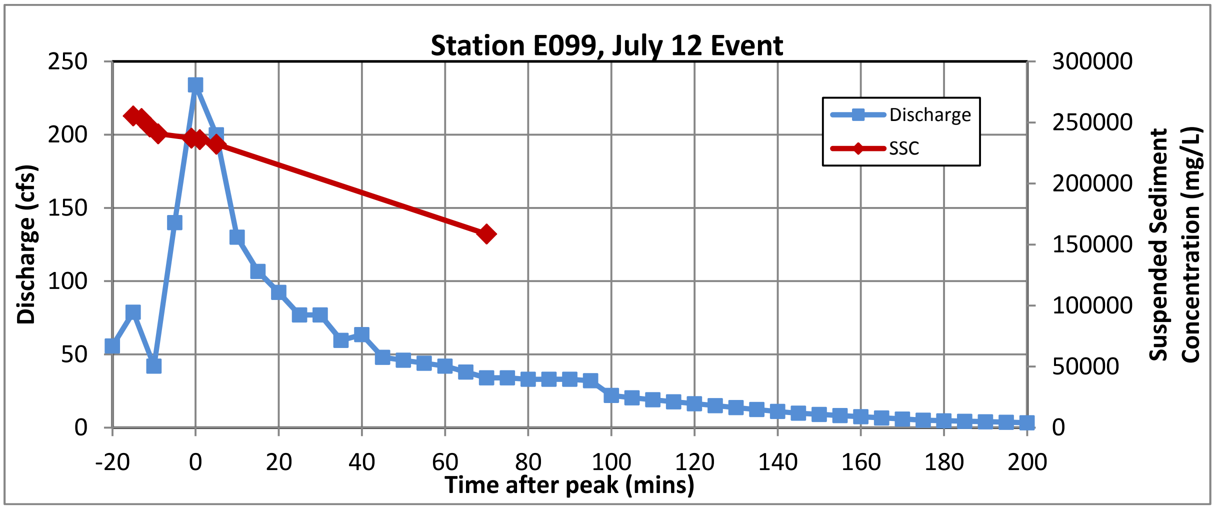
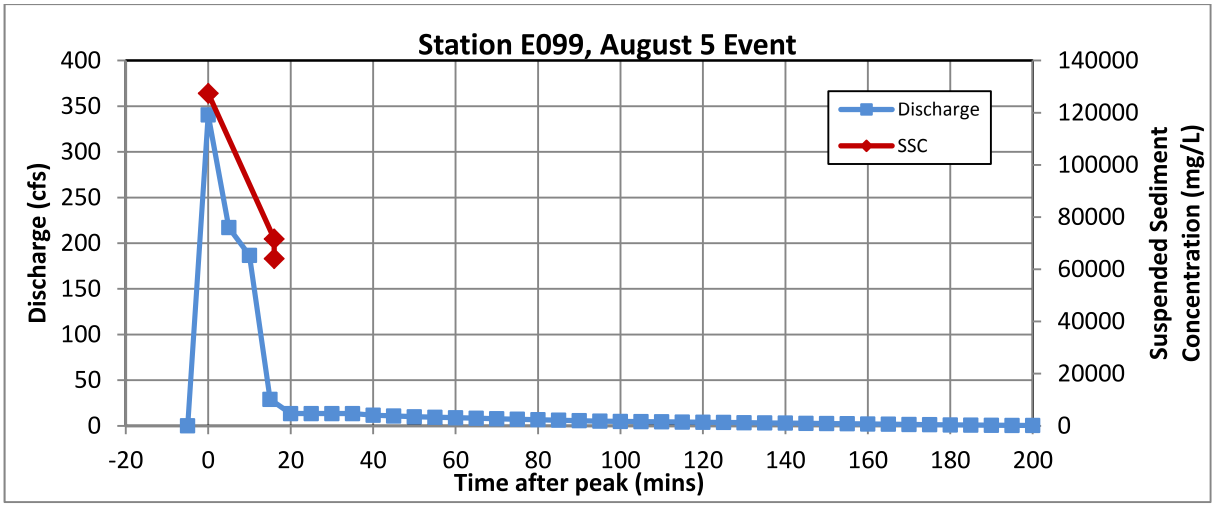
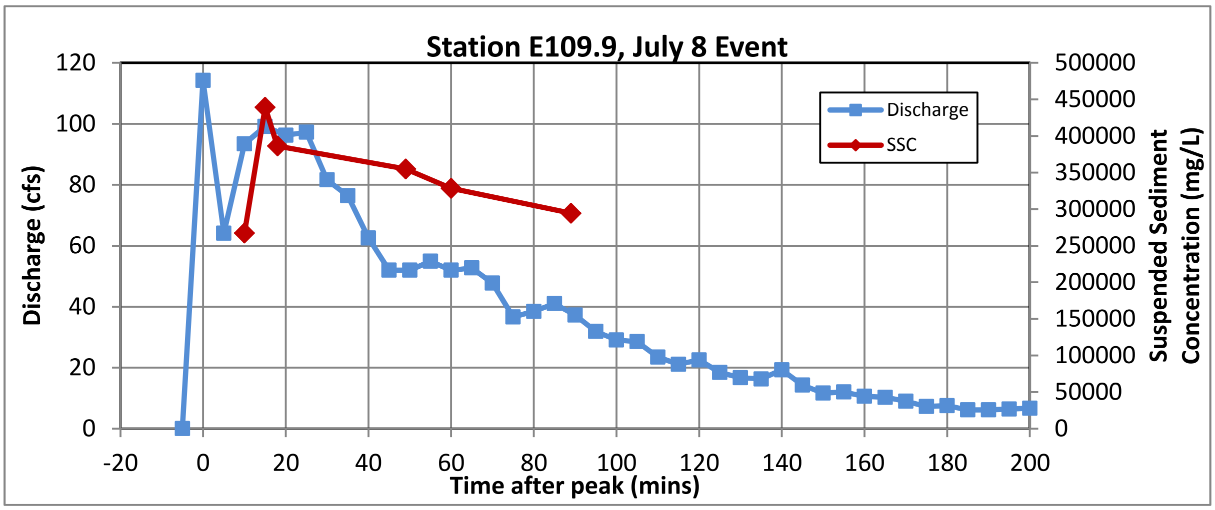




**Figure 3.2-4 (continued)** **Discharge and SSC for sampled events at E026, E038, E039.1, E042.1, E050.1, E099, and E109.9**



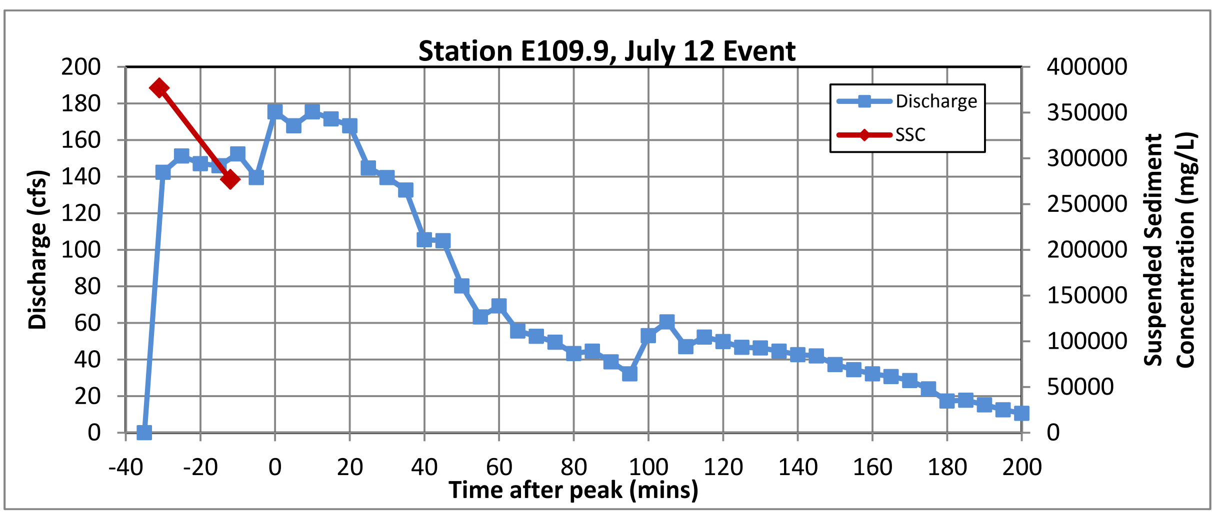
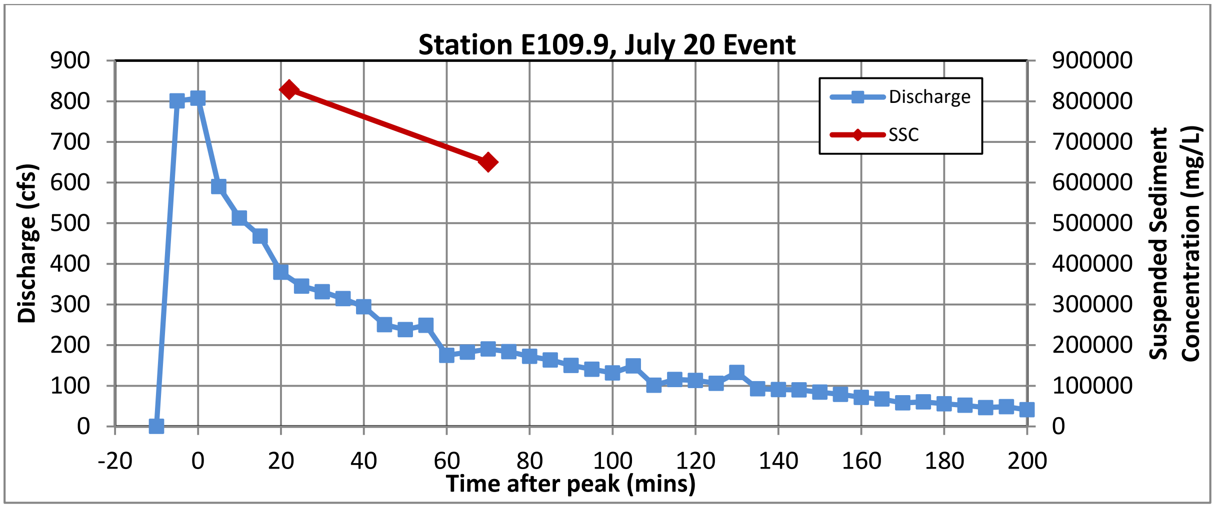
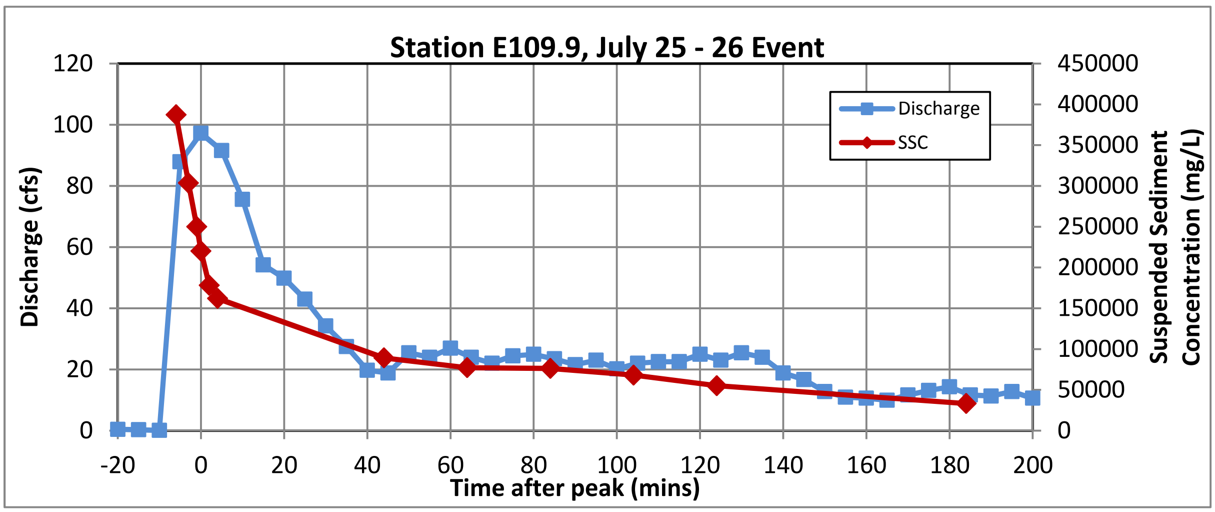




**Figure 3.2-4 (continued)** **Discharge and SSC for sampled events at E026, E038, E039.1, E042.1, E050.1, E099, and E109.9**



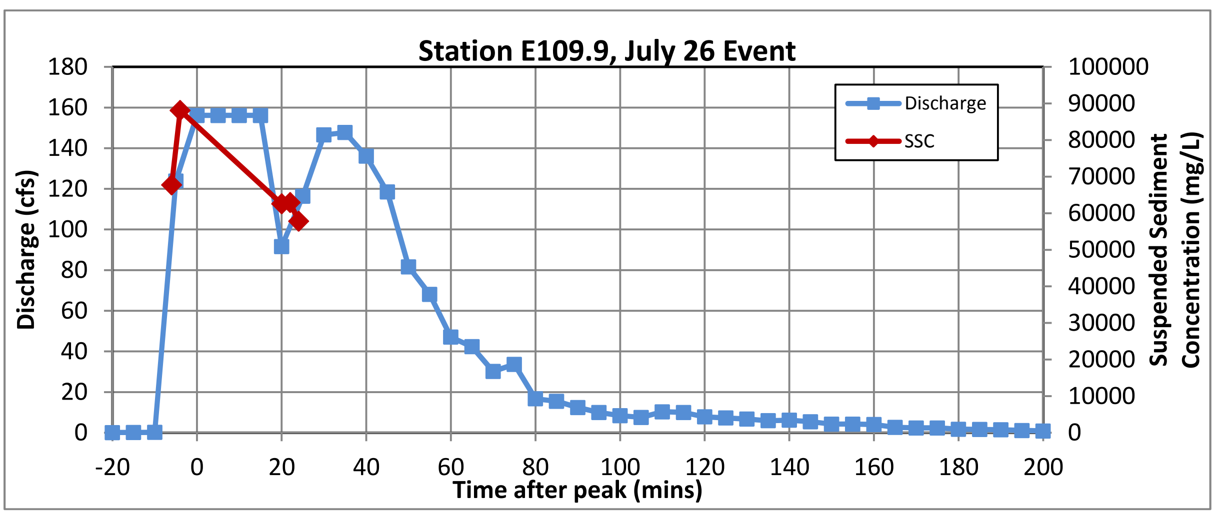
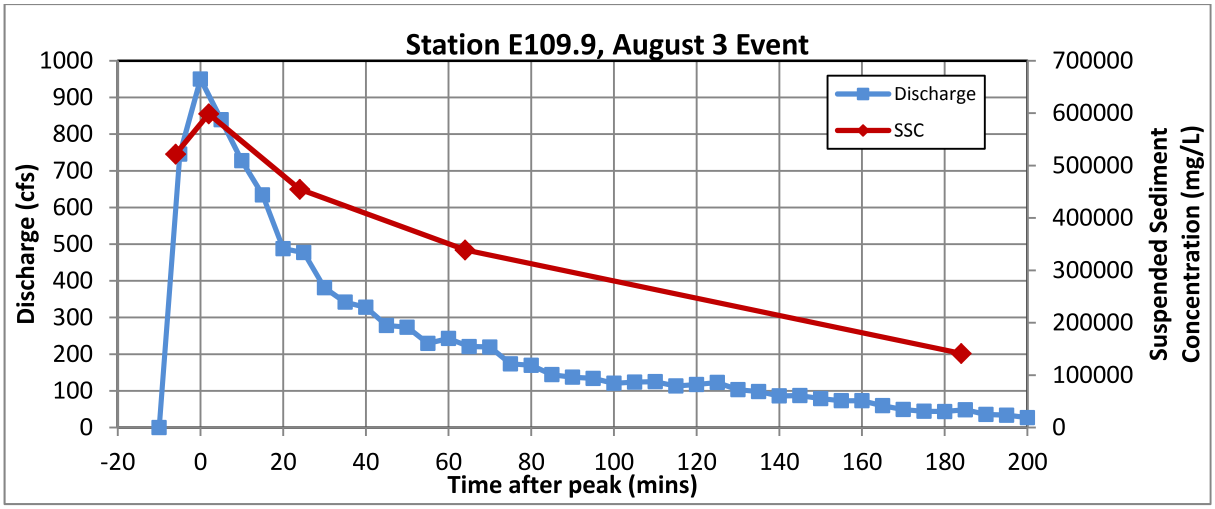
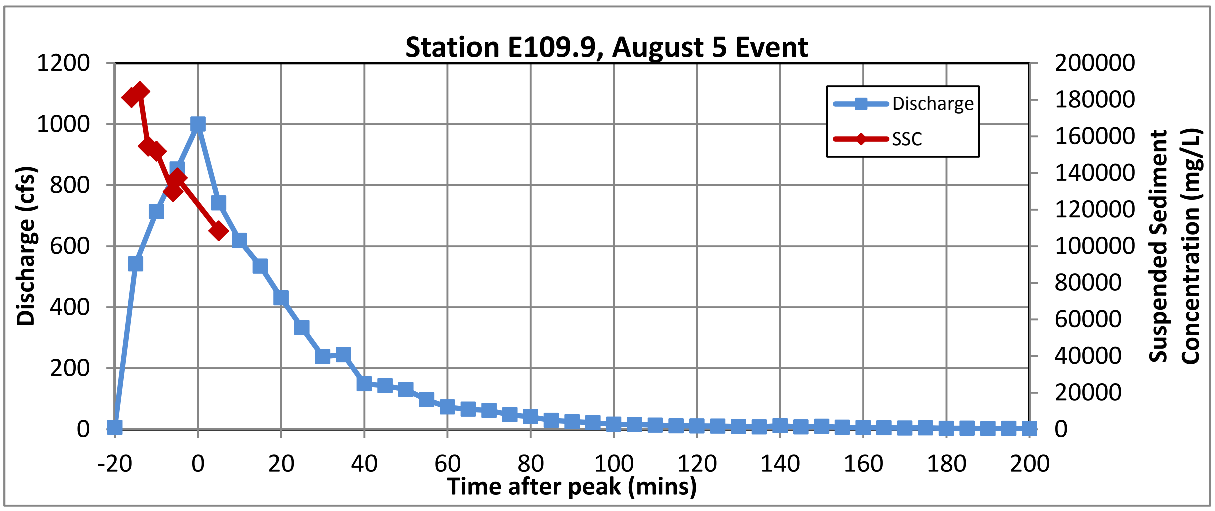




**Figure 3.2-4 (continued)** **Discharge and SSC for sampled events at E026, E038, E039.1, E042.1, E050.1, E099, and E109.9**



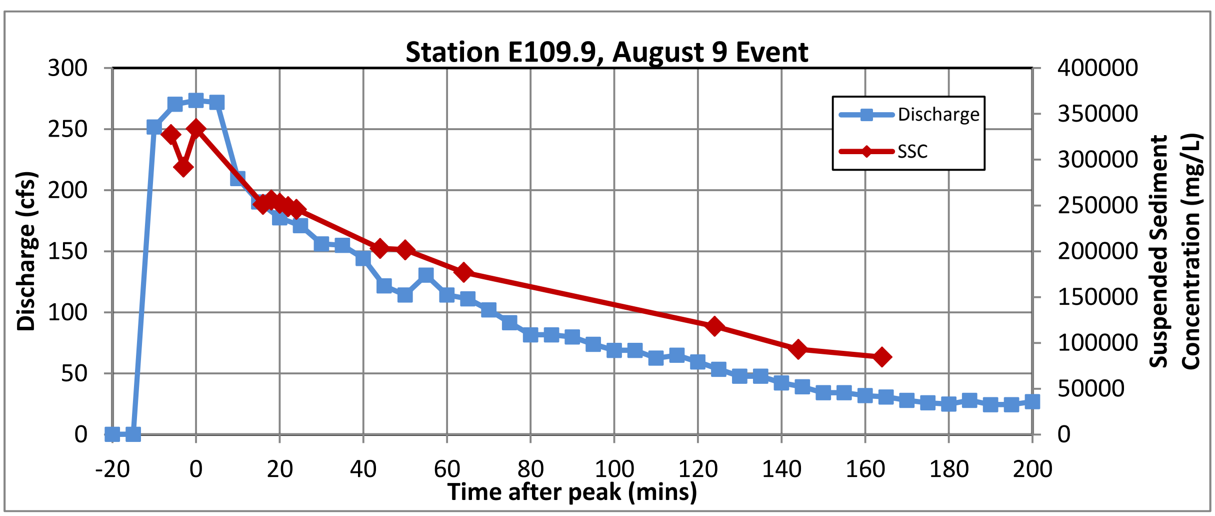




**Figure 3.2-4 (continued)** **Discharge and SSC for sampled events at E026, E038, E039.1, E042.1, E050.1, E099, and E109.9**

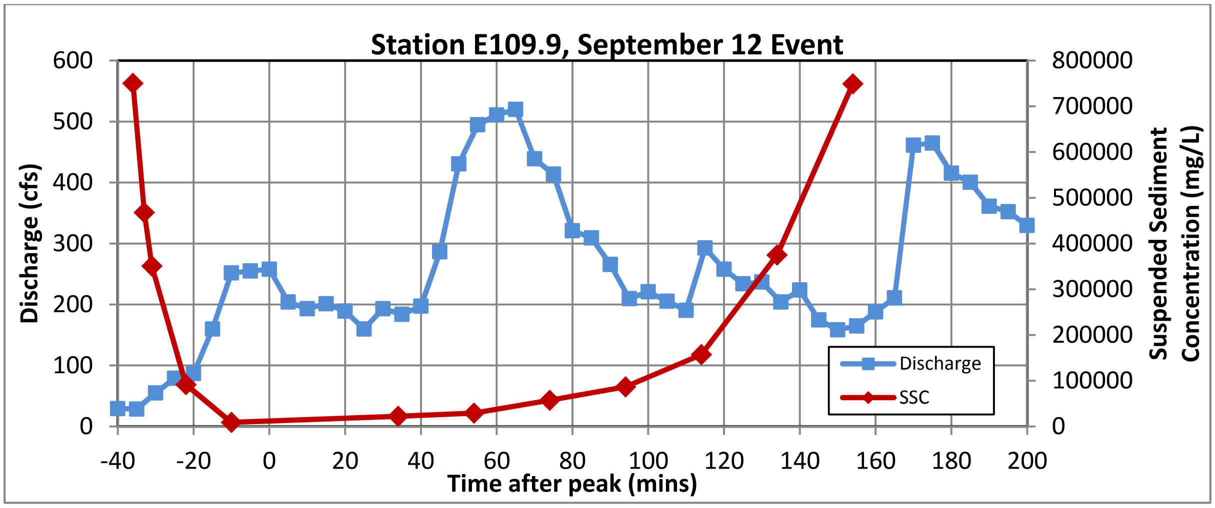



**Figure 3.2-4 (continued)** **Discharge and SSC for sampled events at E026, E038, E039.1, E042.1, E050.1, E099, and E109.9**

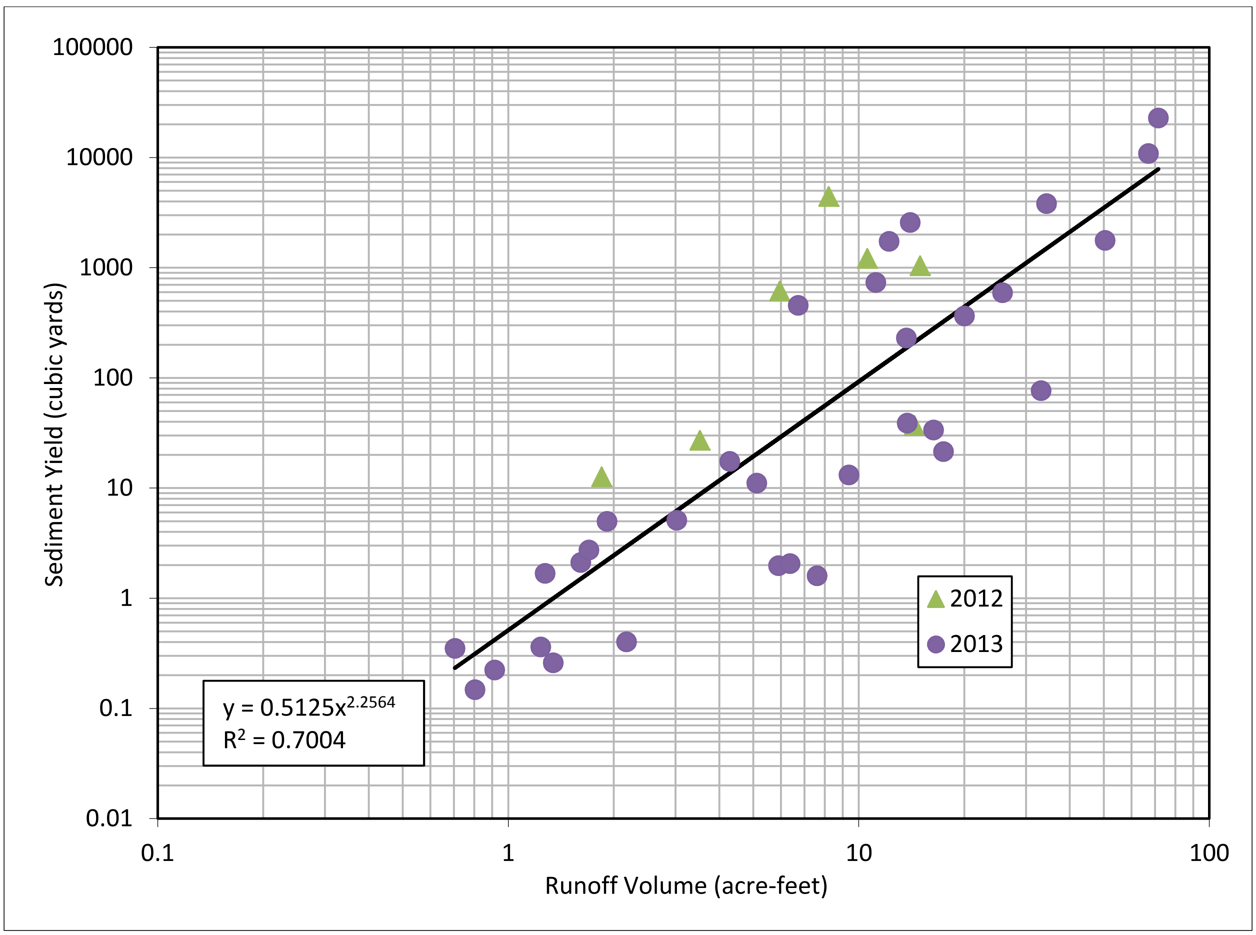



**Figure 3.2-5** **Relationship between SSC-based sediment yield and runoff volume over the past 2 yr of monitoring**

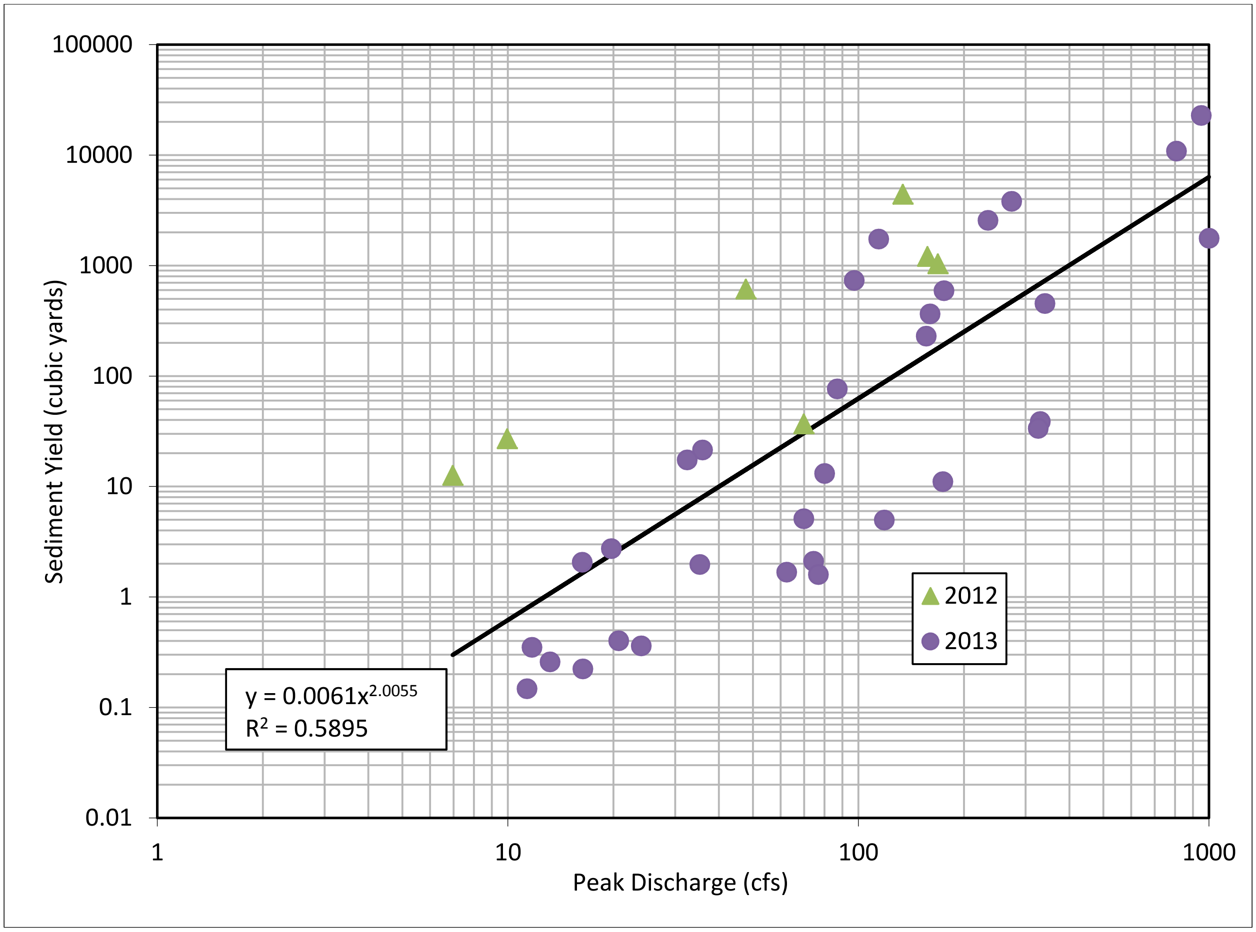
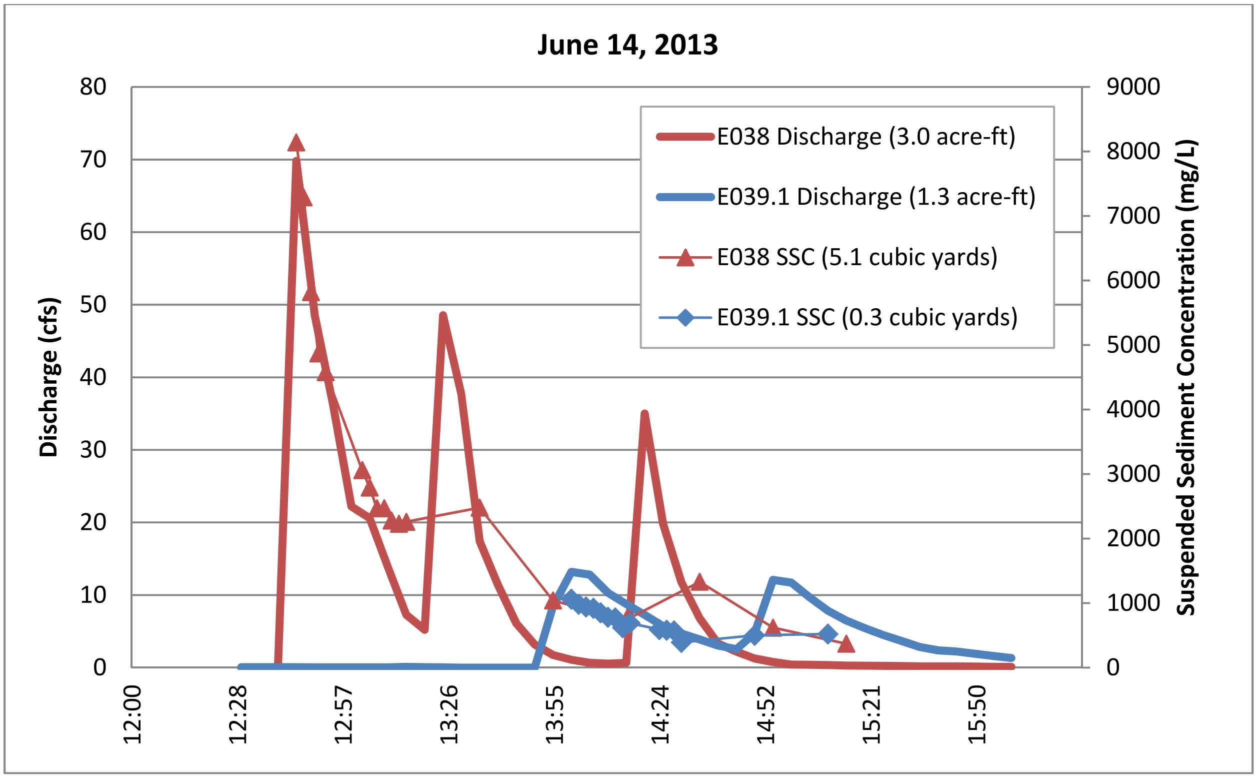



**Figure 3.2-6 Relationship between SSC-based sediment yield and peak discharge over the past 2 yr of monitoring**



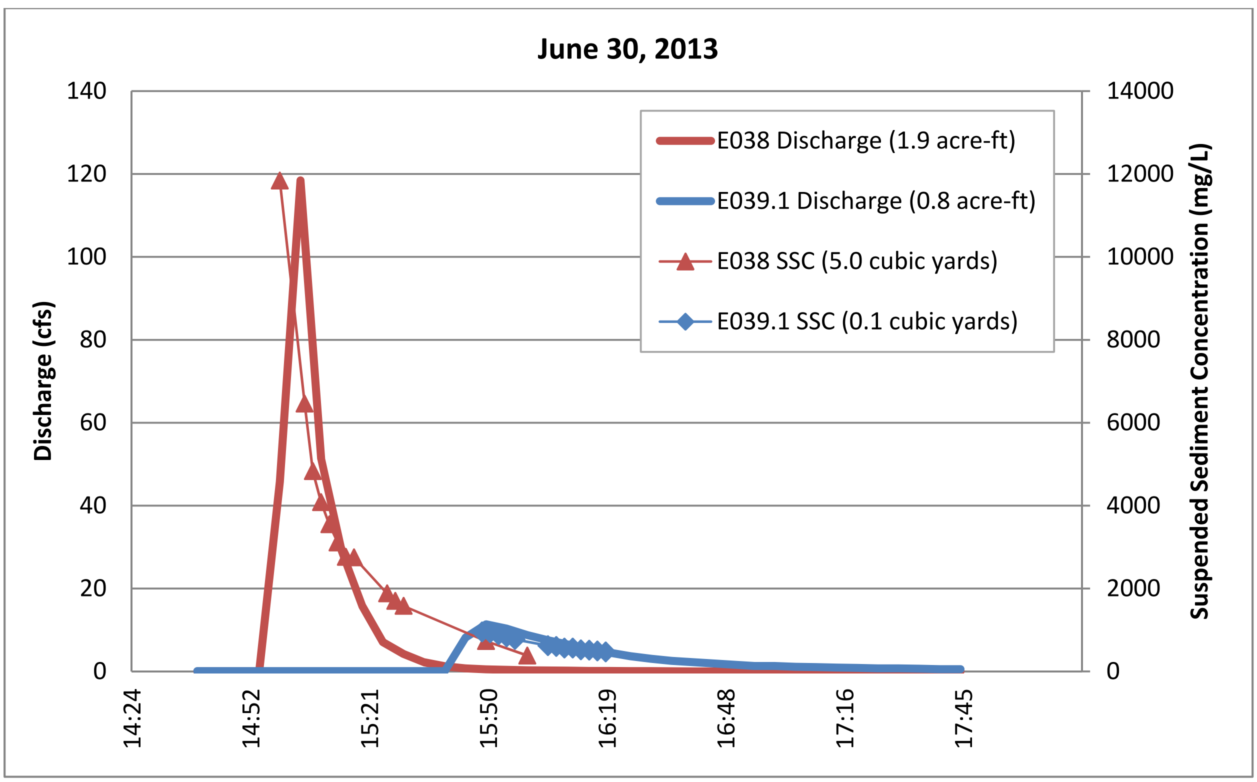
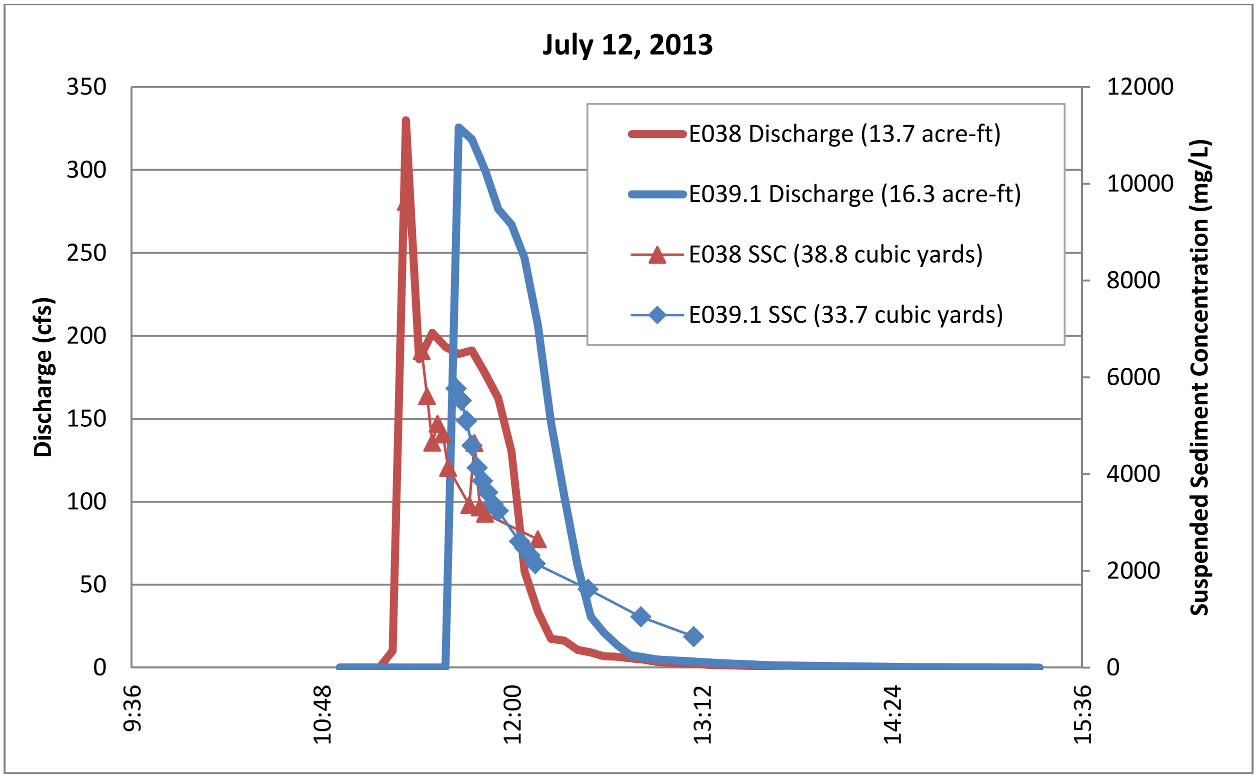




**Figure 3.4-1 Discharge and SSC at E038 and E039.1 in DP Canyon on days when sampling of the same runoff event occurred**



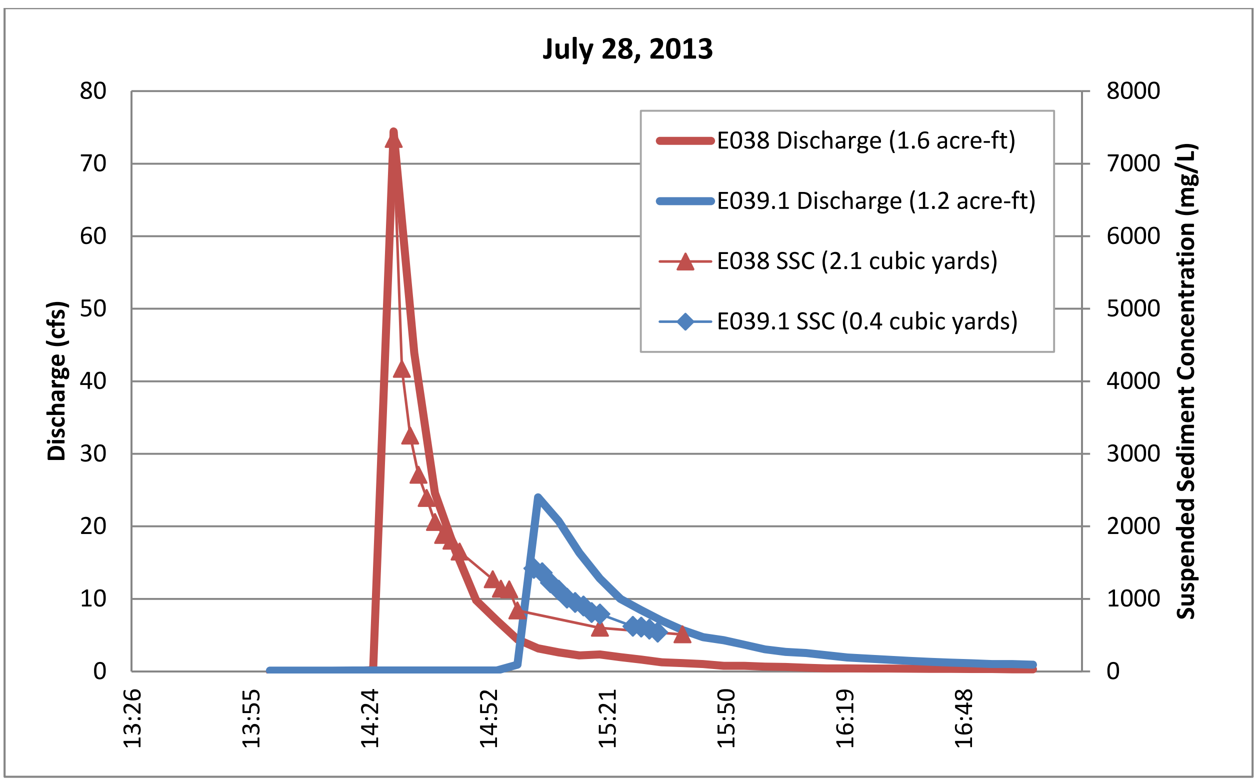




**Figure 3.4-1 (continued)** **Discharge and SSC at E038 and E039.1 in DP Canyon on days when sampling of the same runoff event occurred**

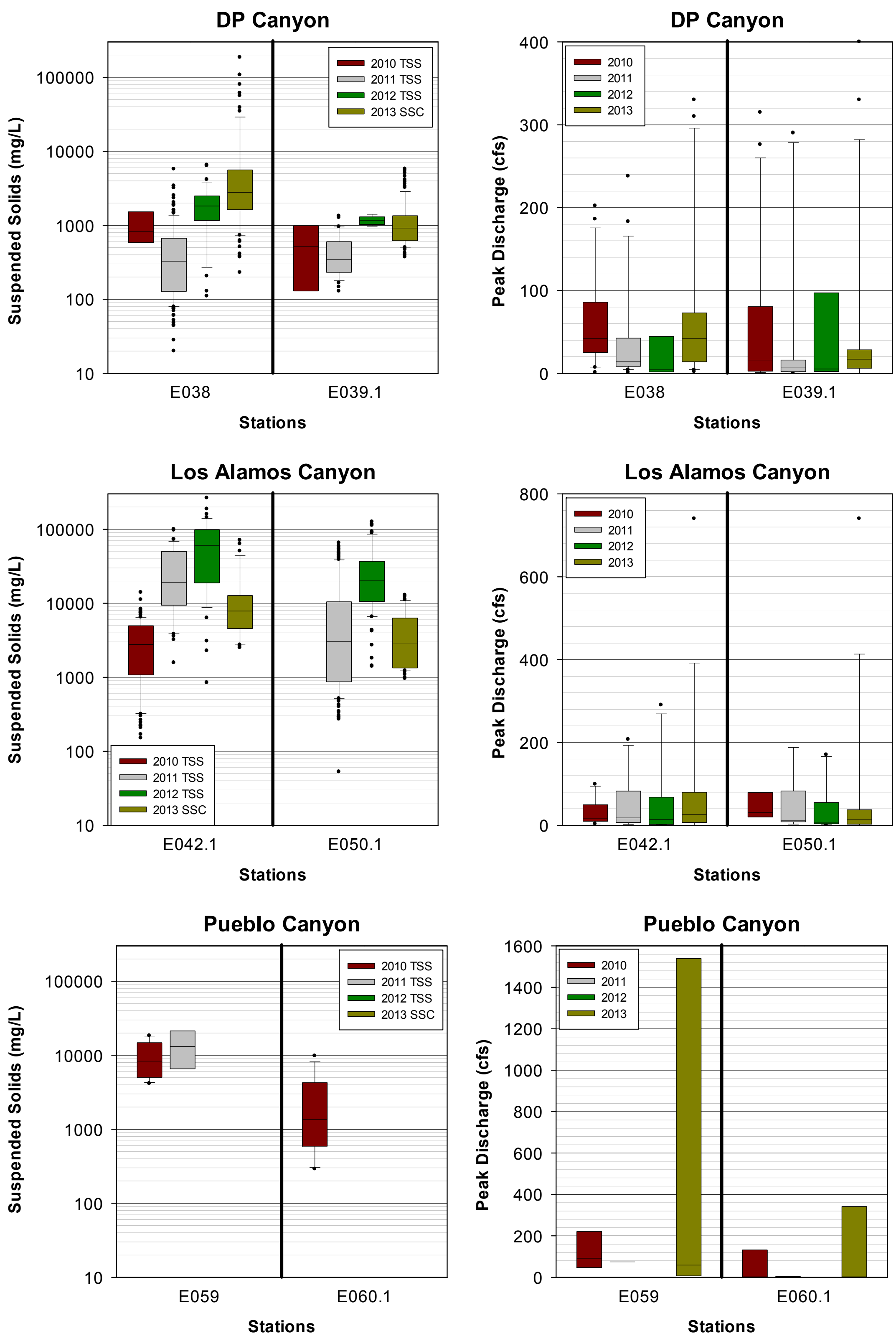
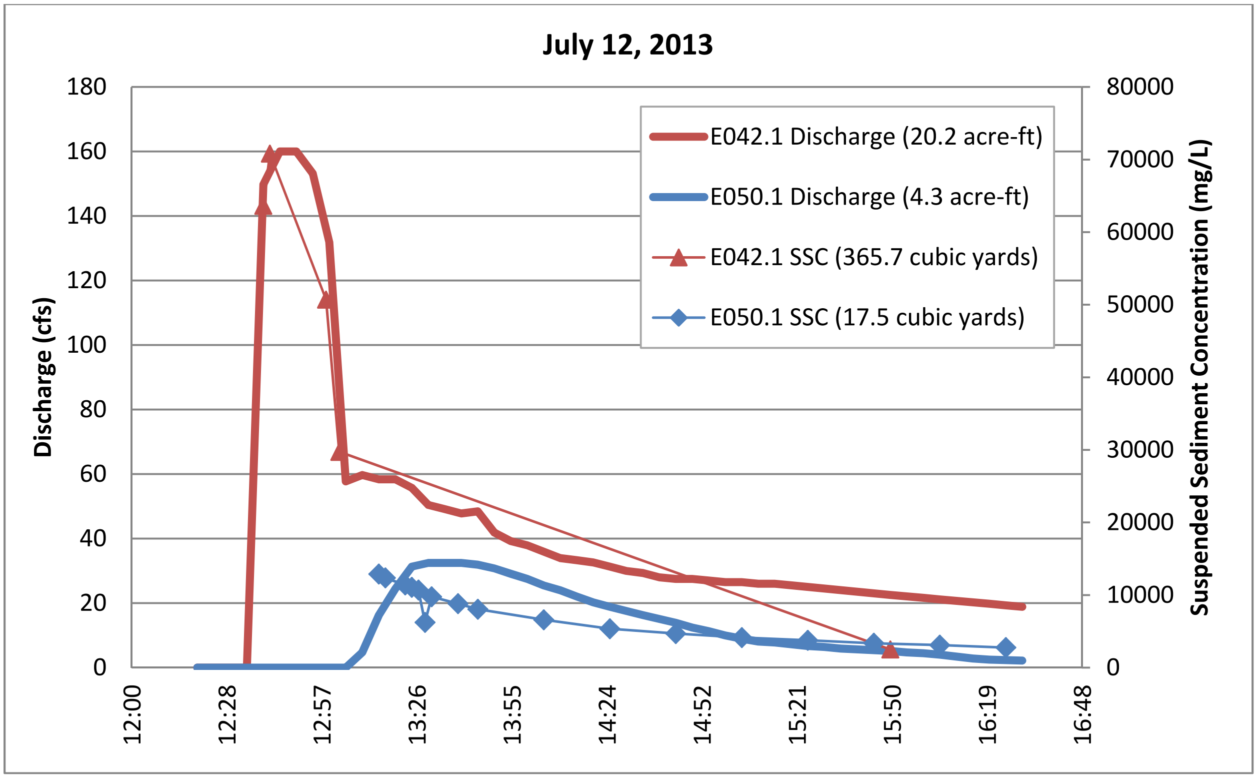



**Figure 3.4-2 Box and whisker plots of TSS and SSC (left) and peak discharge (right) upstream and downstream of the watershed mitigations in DP (top), Los Alamos (middle), and Pueblo (bottom) Canyons over the past 4 yr of monitoring**



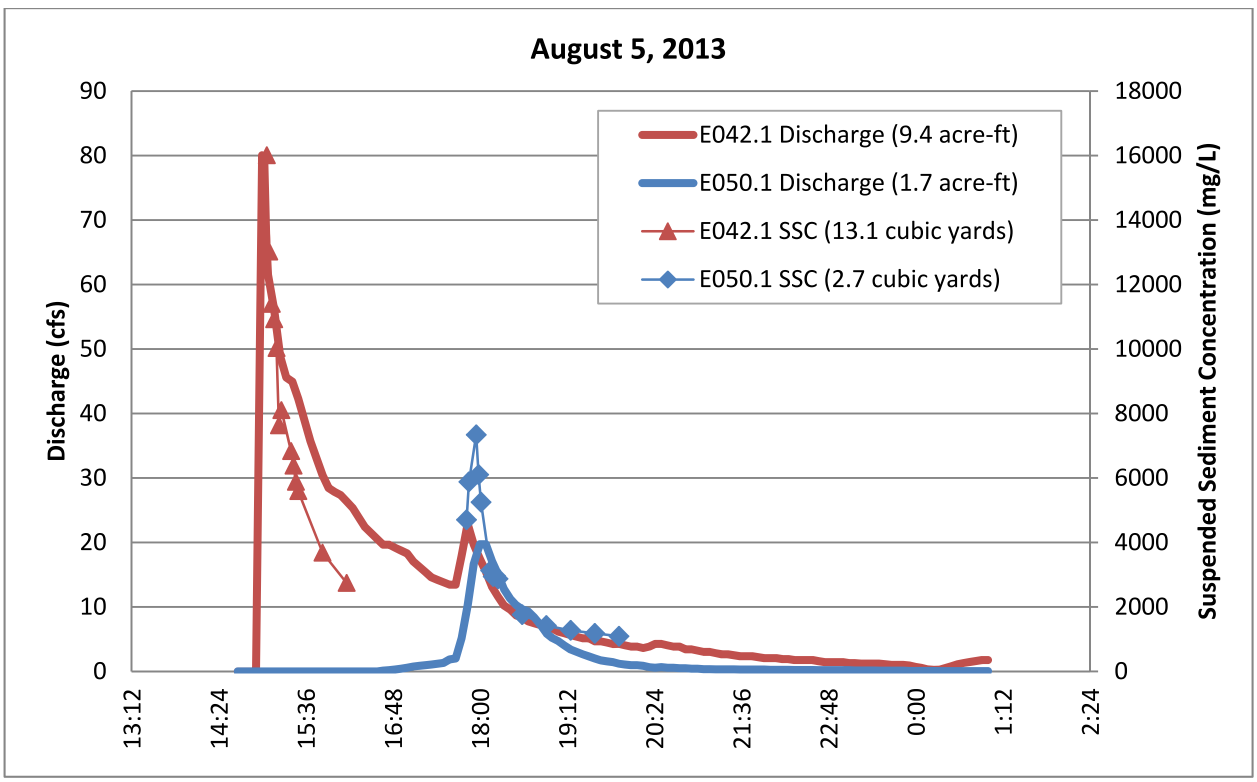




**Figure 3.4-3 Discharge and TSS at E042.1 and E050.1 in upper Los Alamos Canyon on days when sampling of the same runoff event occurred**

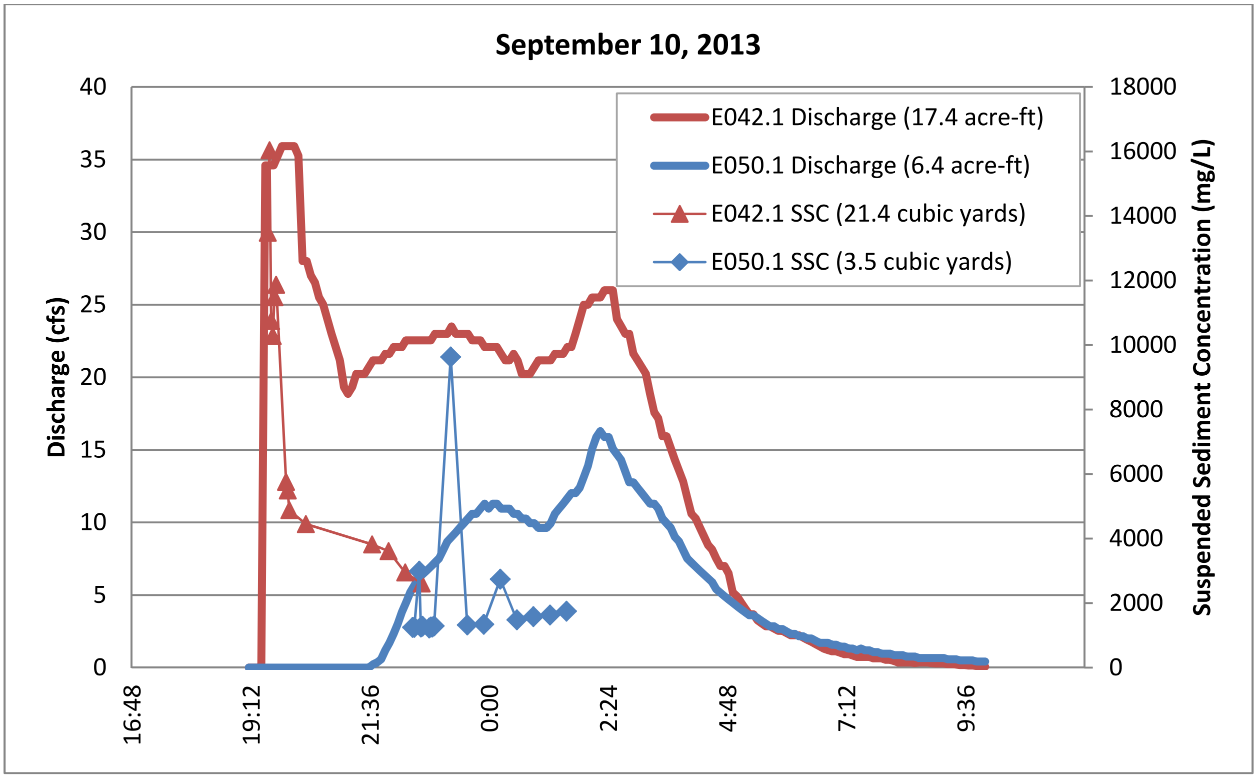



**Figure 3.4-3 (continued)** **Discharge and TSS at E042.1 and E050.1 in upper Los Alamos Canyon on days when sampling of the same event occurred**

**Figure 4.1-1** **Photograph of samples collected at E109.9 (bottle 1 on far left to bottle 24 on far right)**

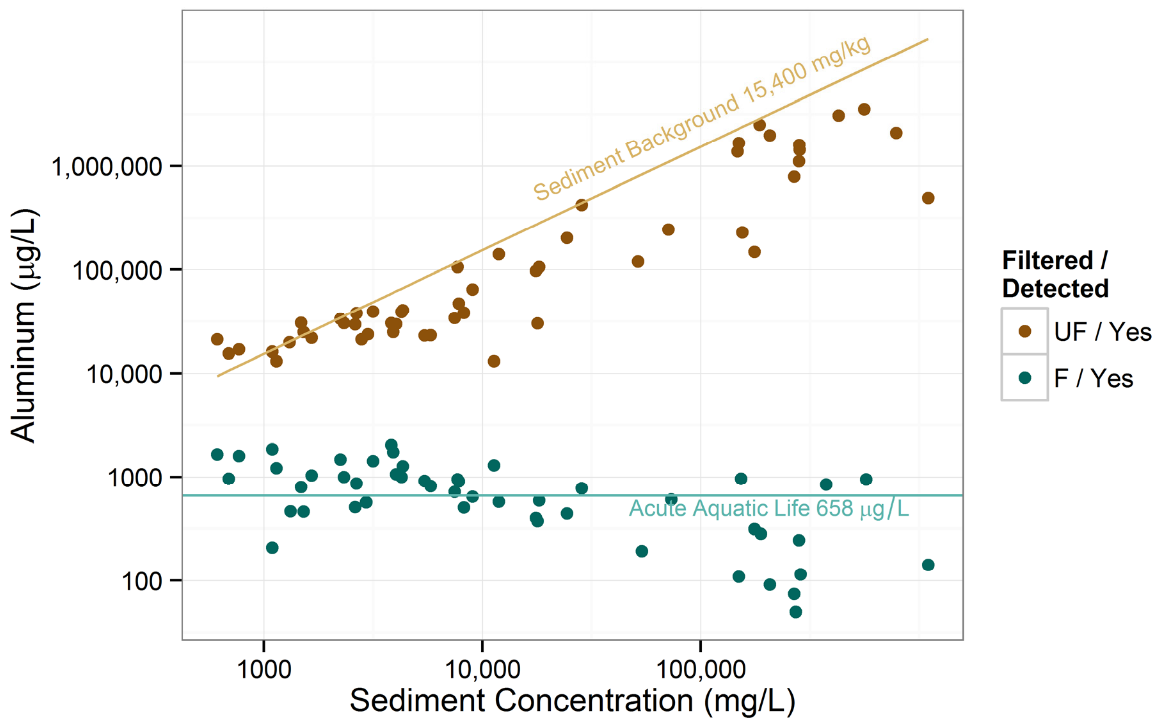



**Figure 4.3-1 SSC vs. aluminum for each gage station**

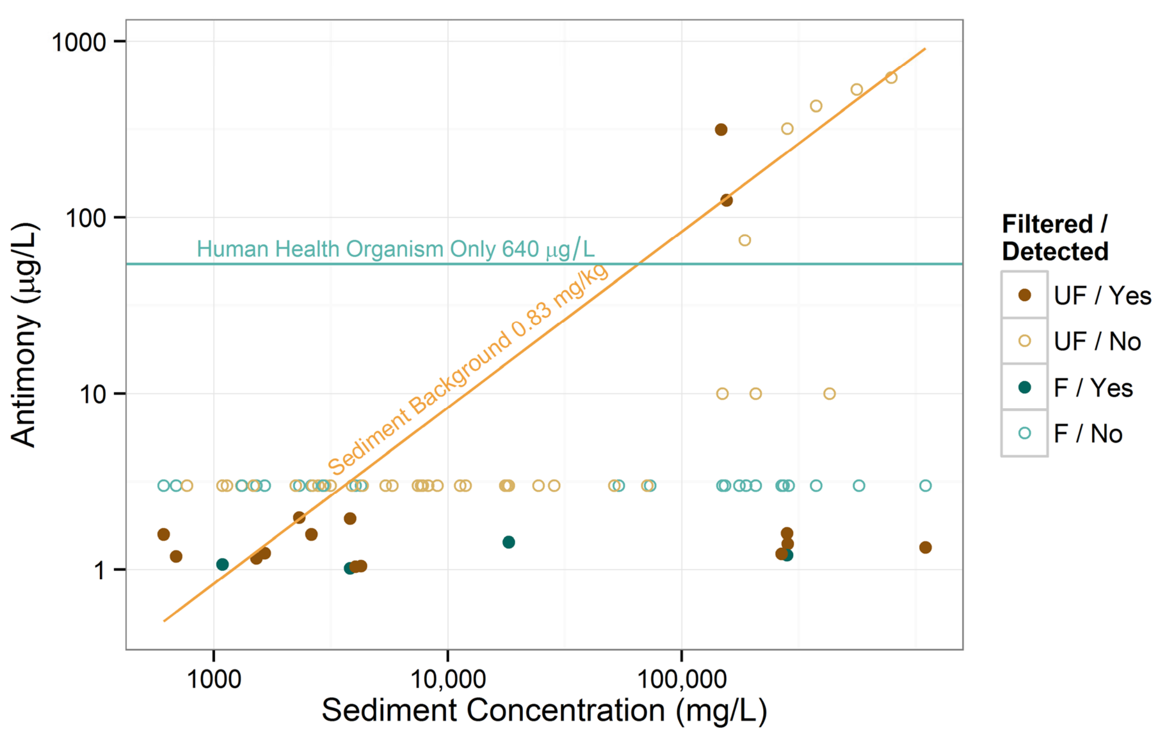



**Figure 4.3-2 SSC vs. antimony for each gage station**

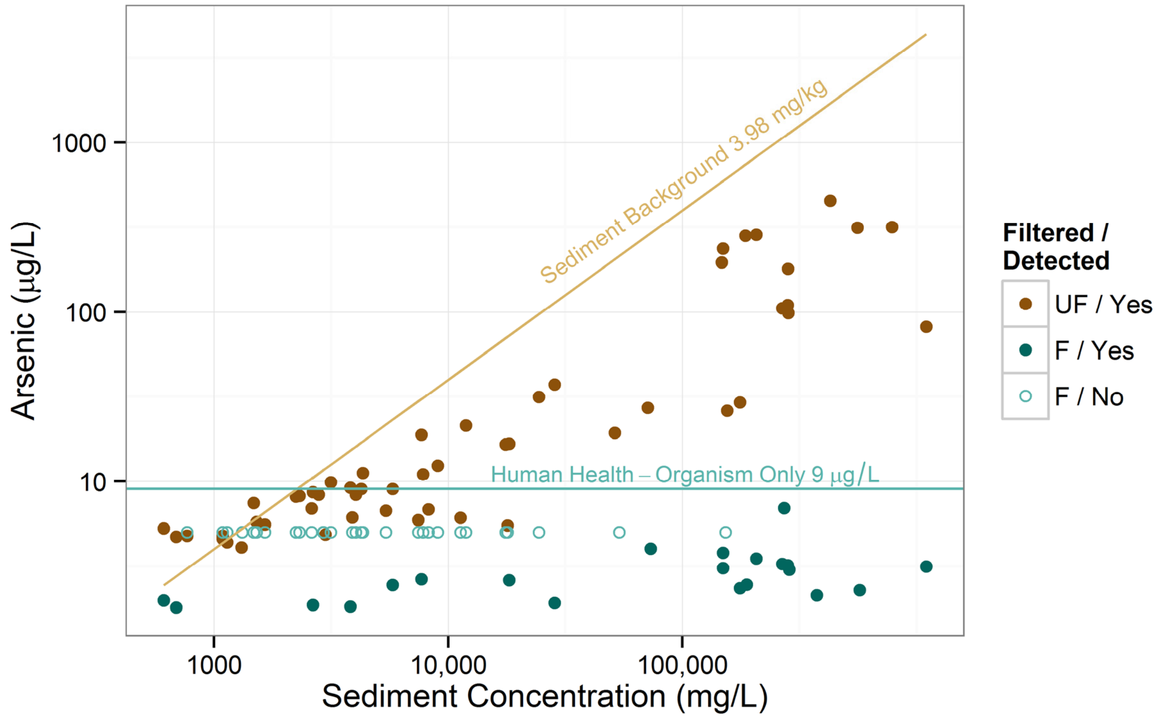



**Figure 4.3-3 SSC vs. arsenic for each gage station**

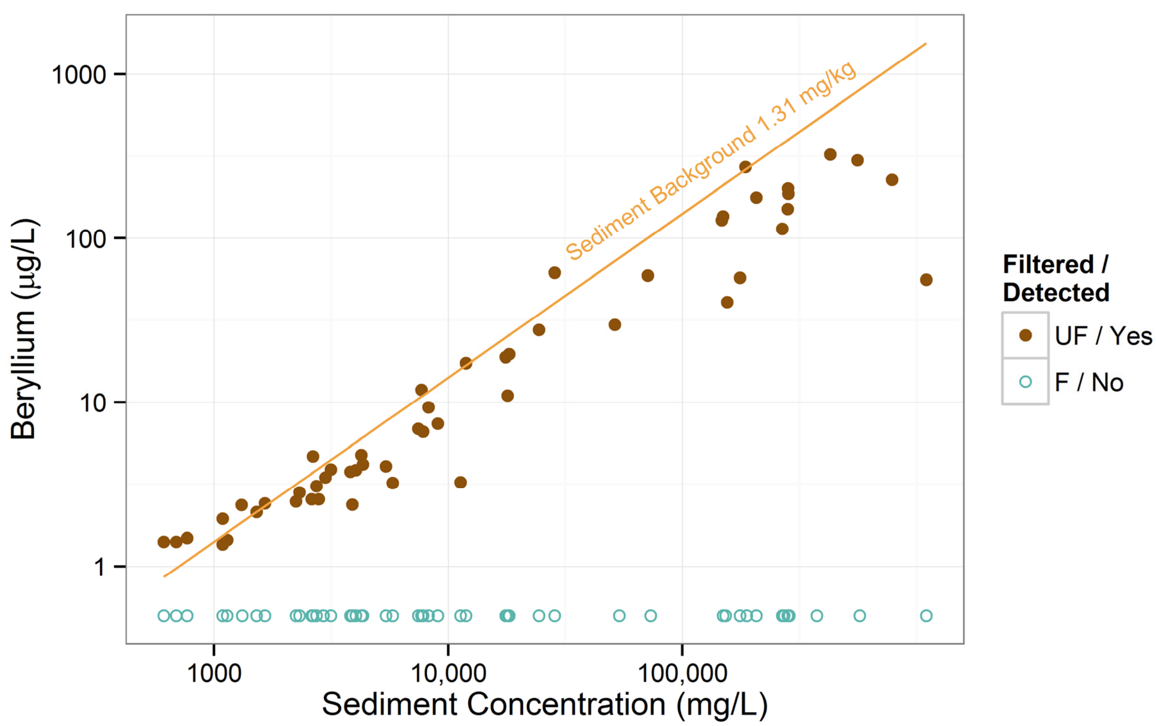



**Figure 4.3-4 SSC vs. beryllium for each gage station**

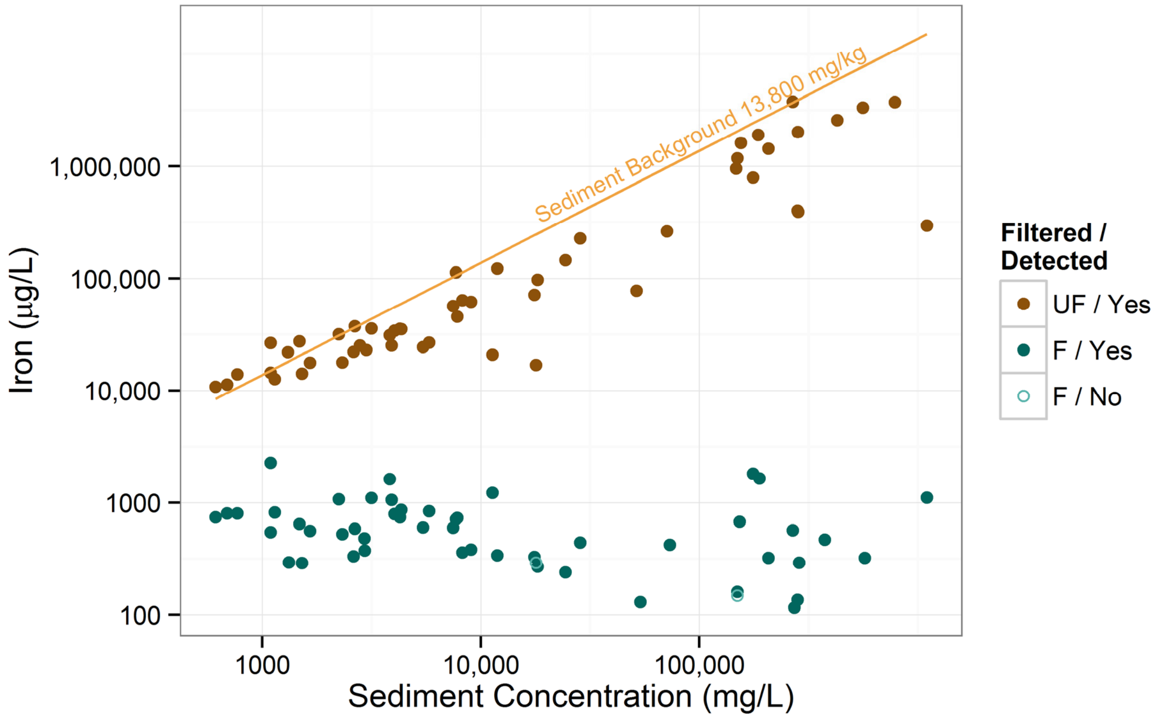



**Figure 4.3-5 SSC vs. iron for each gage station**

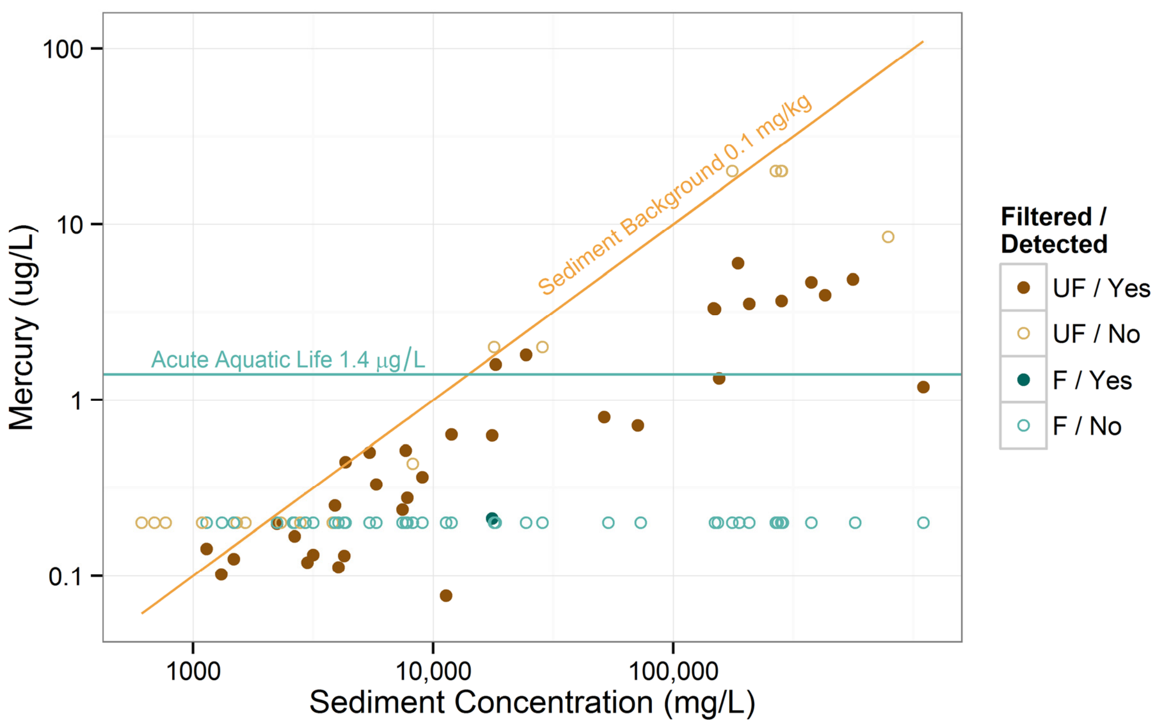



**Figure 4.3-6 SSC vs. mercury for each gage station**

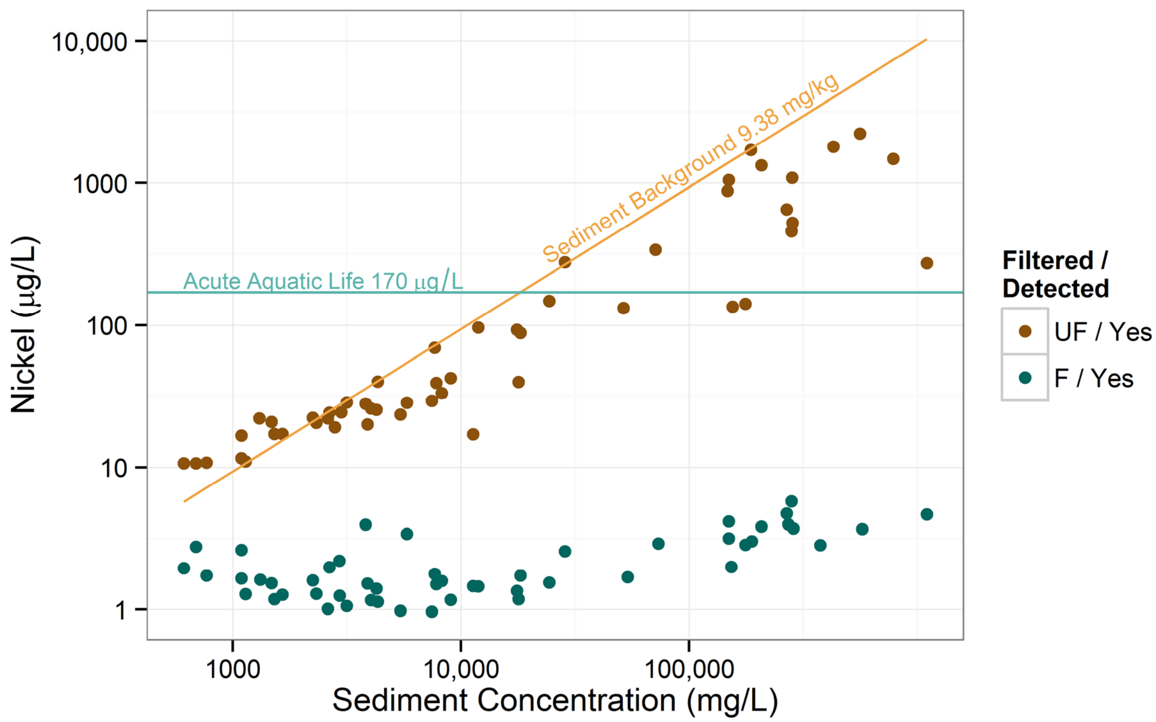



**Figure 4.3-7  SSC vs. nickel for each gage station**

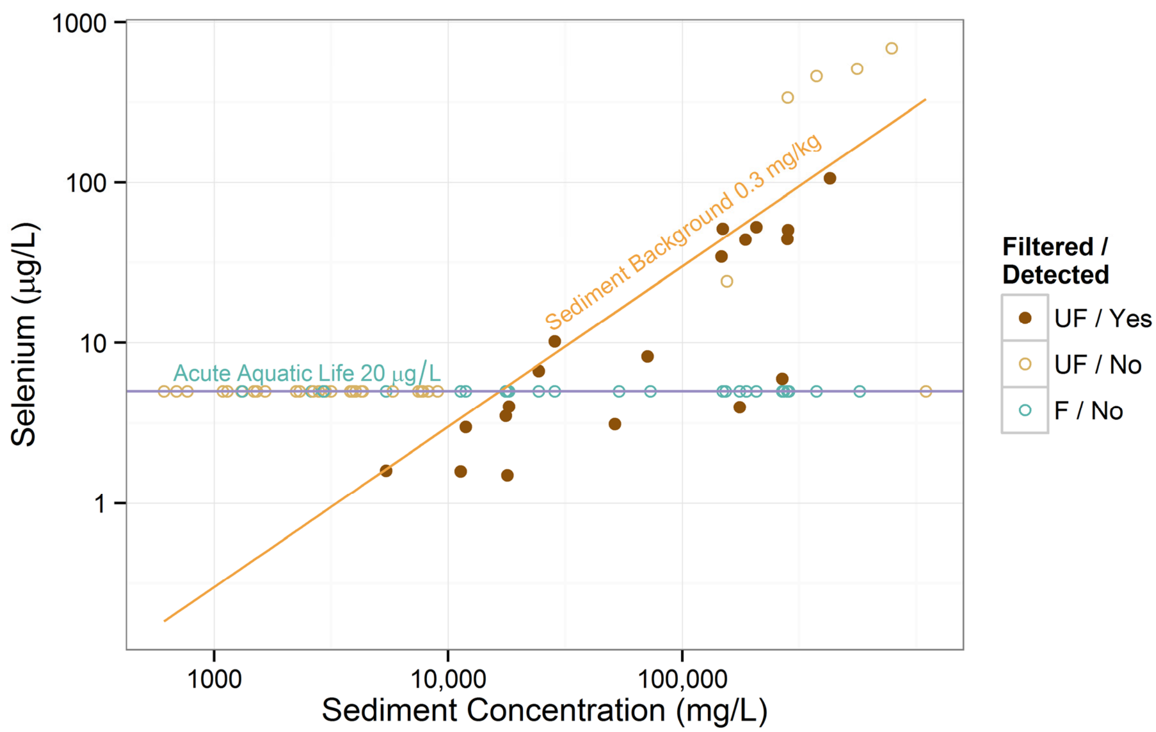



**Figure 4.3-8  SSC vs. selenium for each gage station**

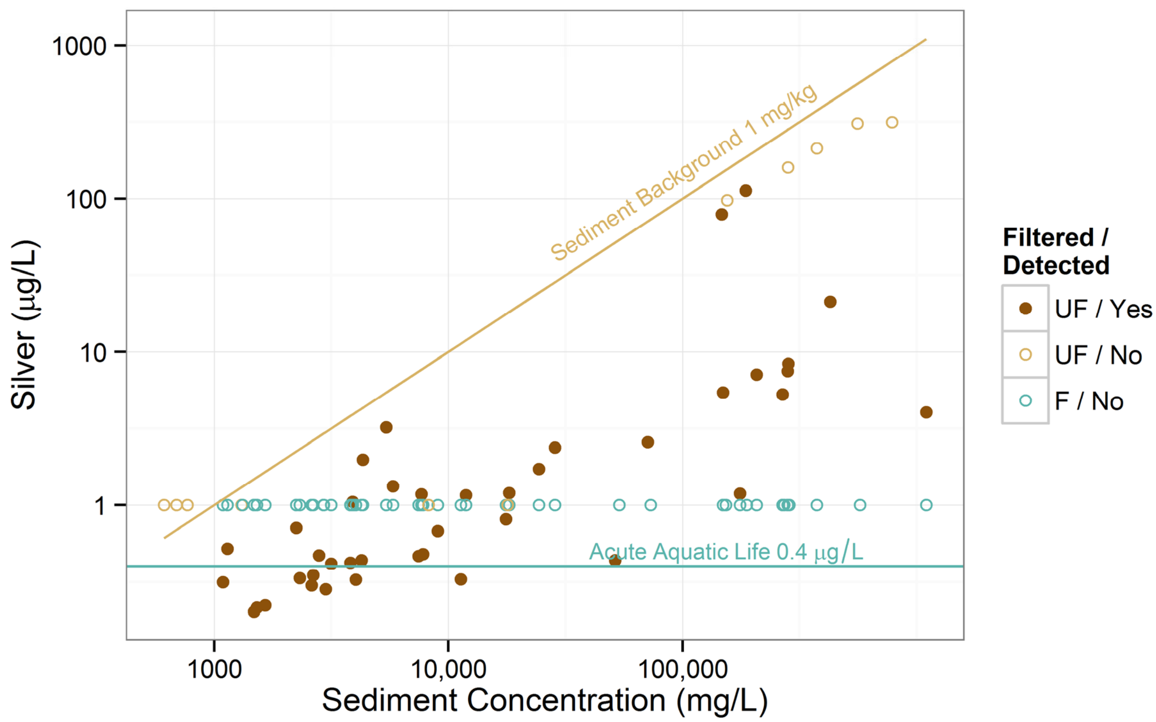



**Figure 4.3-9 SSC vs. silver for each gage station**

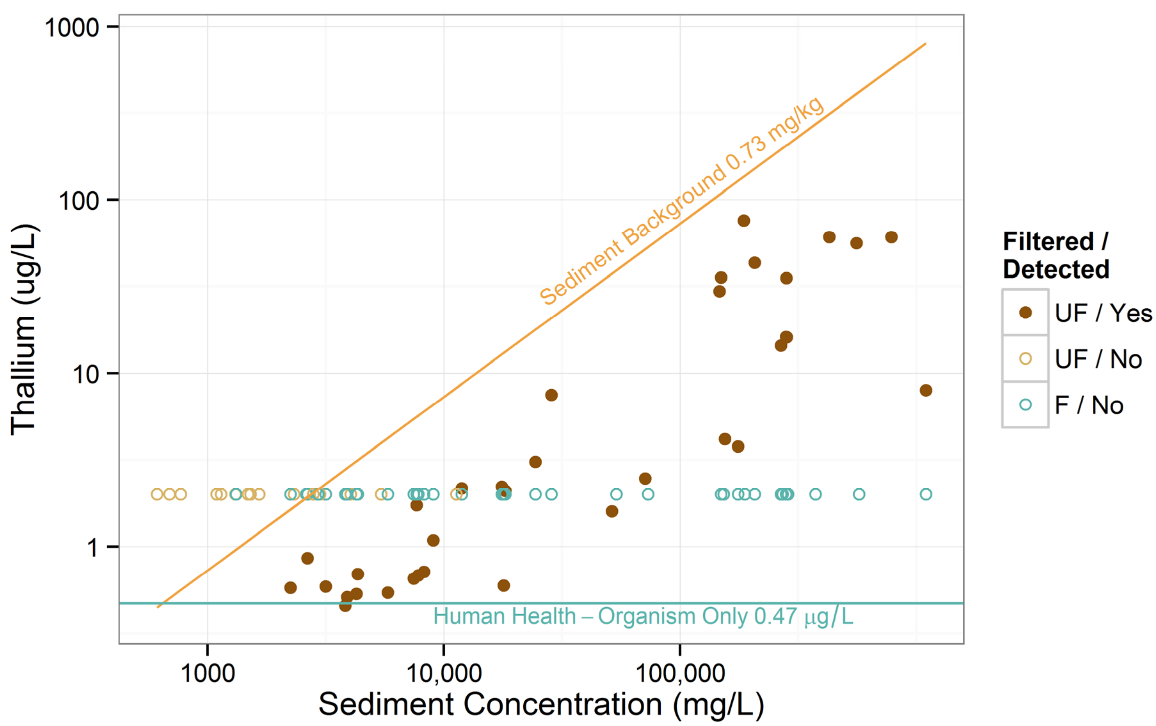



**Figure 4.3-10 SSC vs. thallium for each gage station**

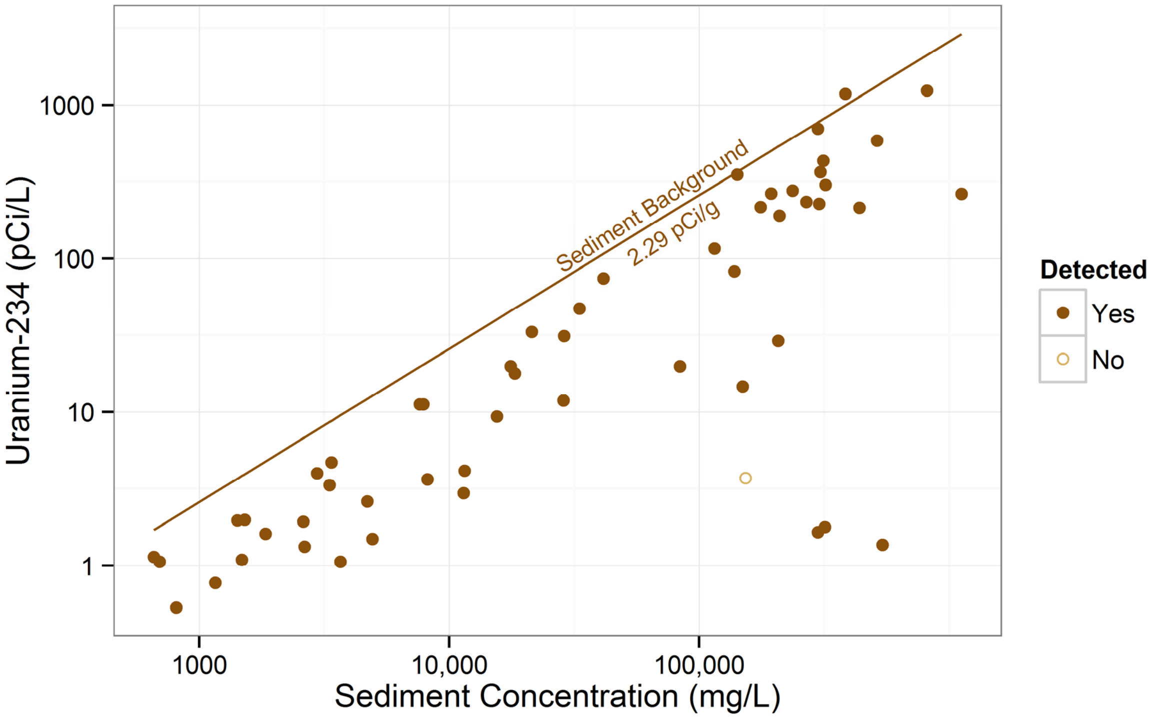



**Figure 4.3-11 SSC vs. uranium-234 for each gage station**

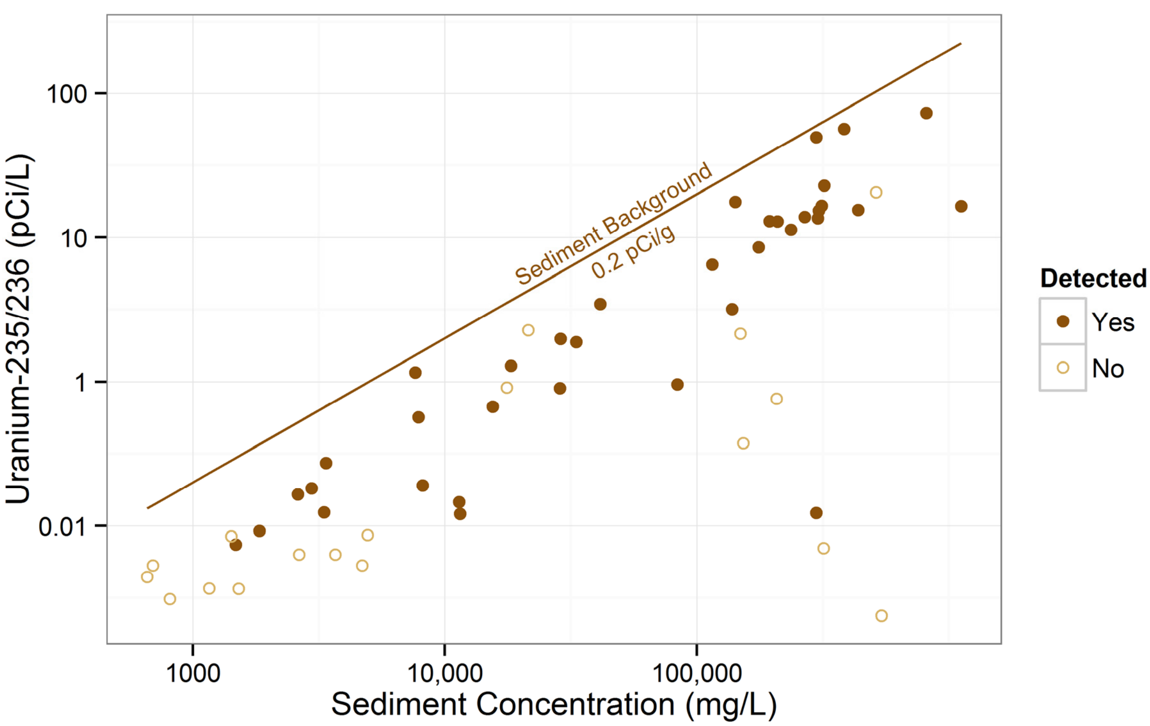



**Figure 4.3-12 SSC vs. uranium-235 for each gage station**

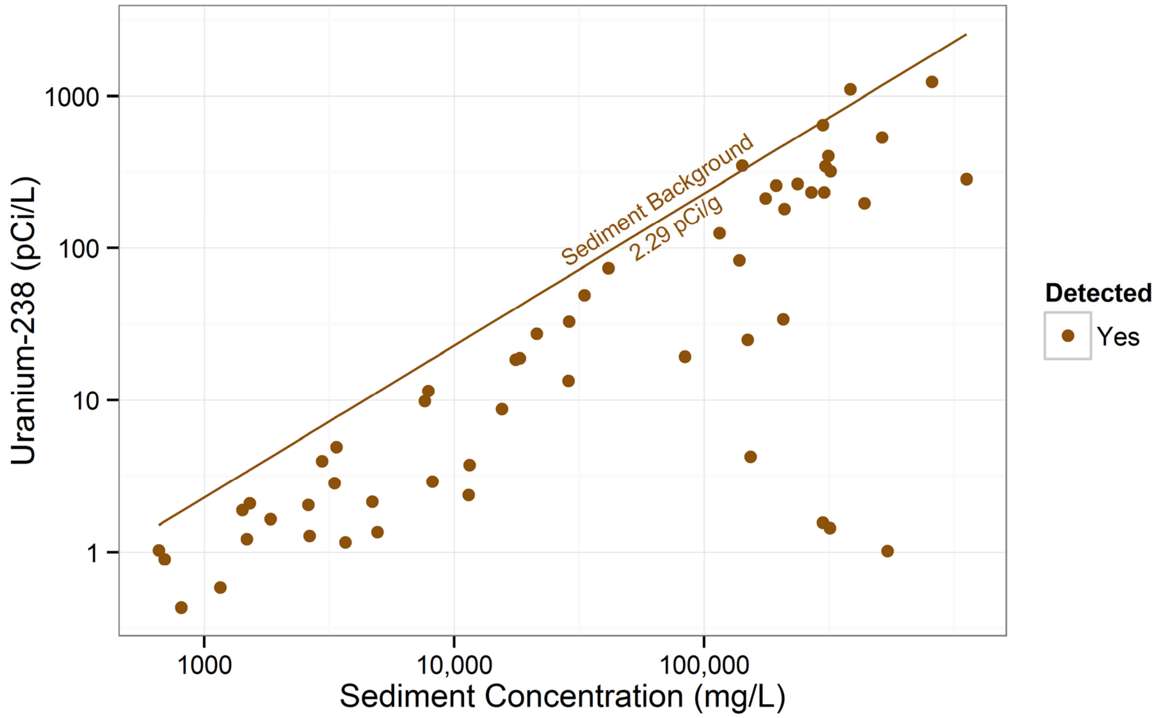



**Figure 4.3-13 SSC vs. uranium-238 for each gage station**

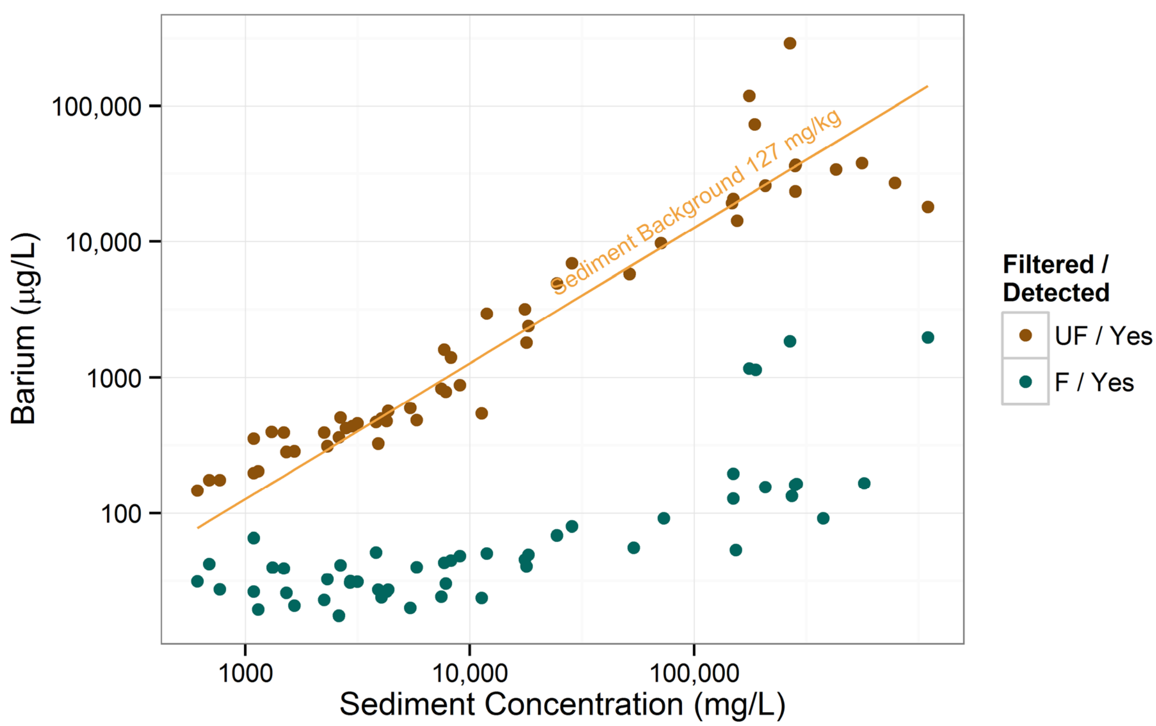



**Figure 4.3-14 SSC vs. barium for each gage station**

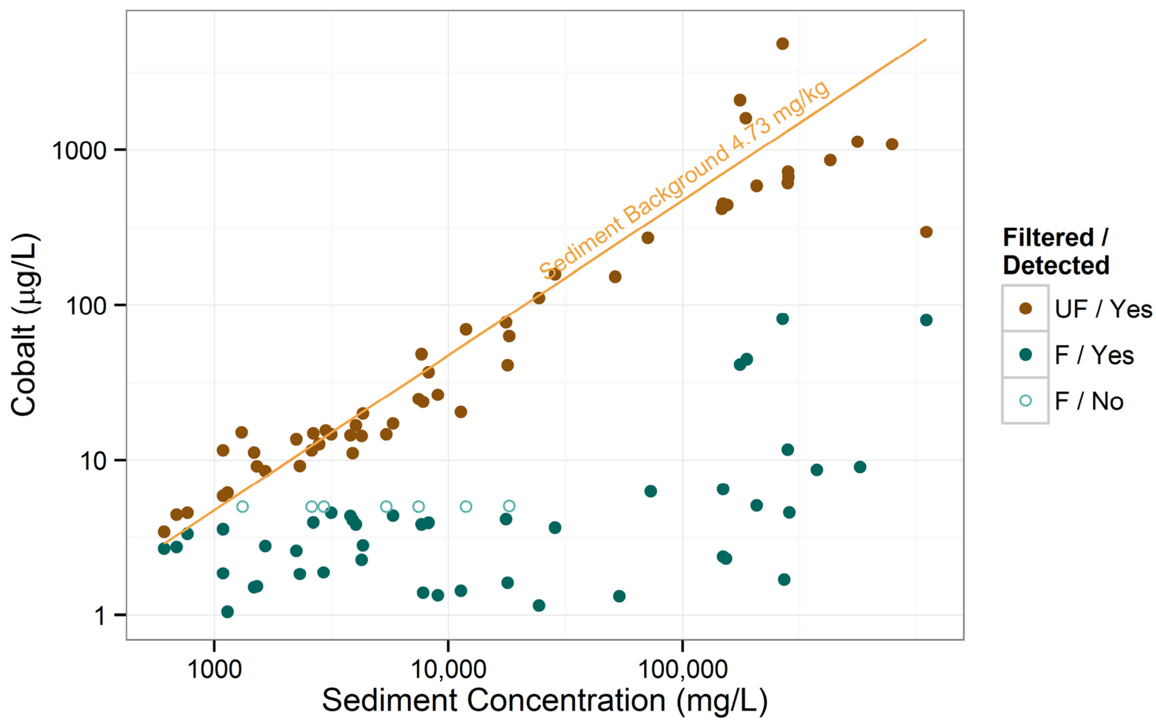



**Figure 4.3-15 SSC vs. cobalt for each gage station**

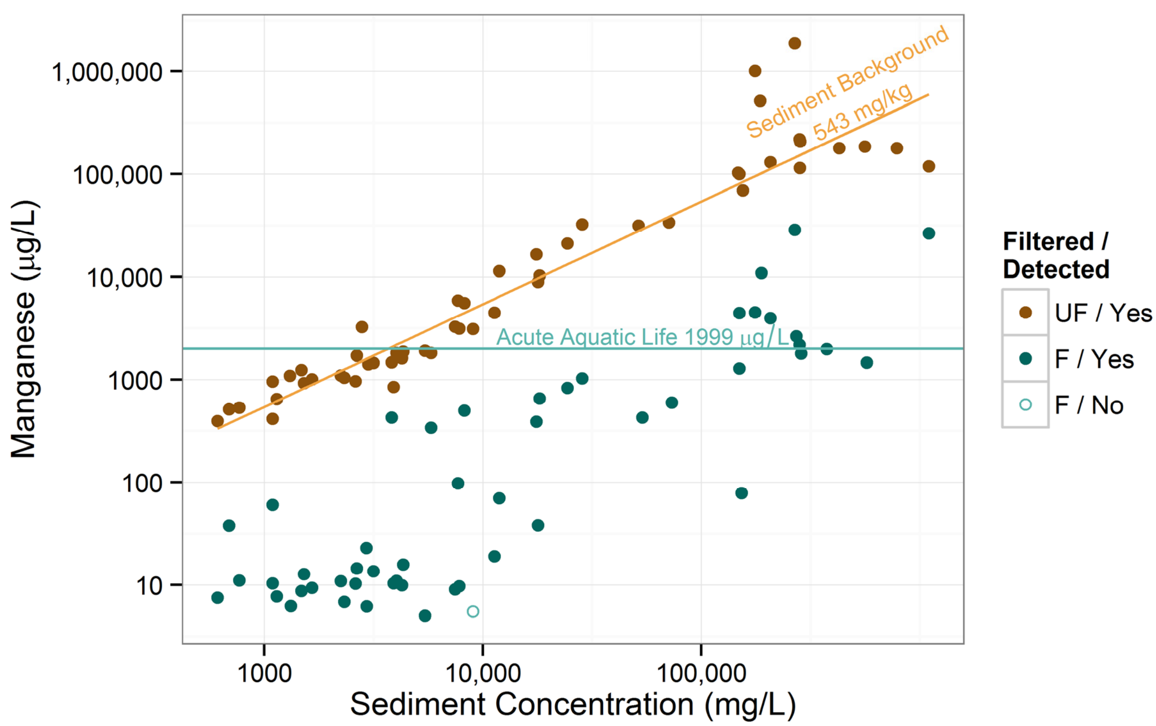



**Figure 4.3-16 SSC vs. manganese for each gage station**

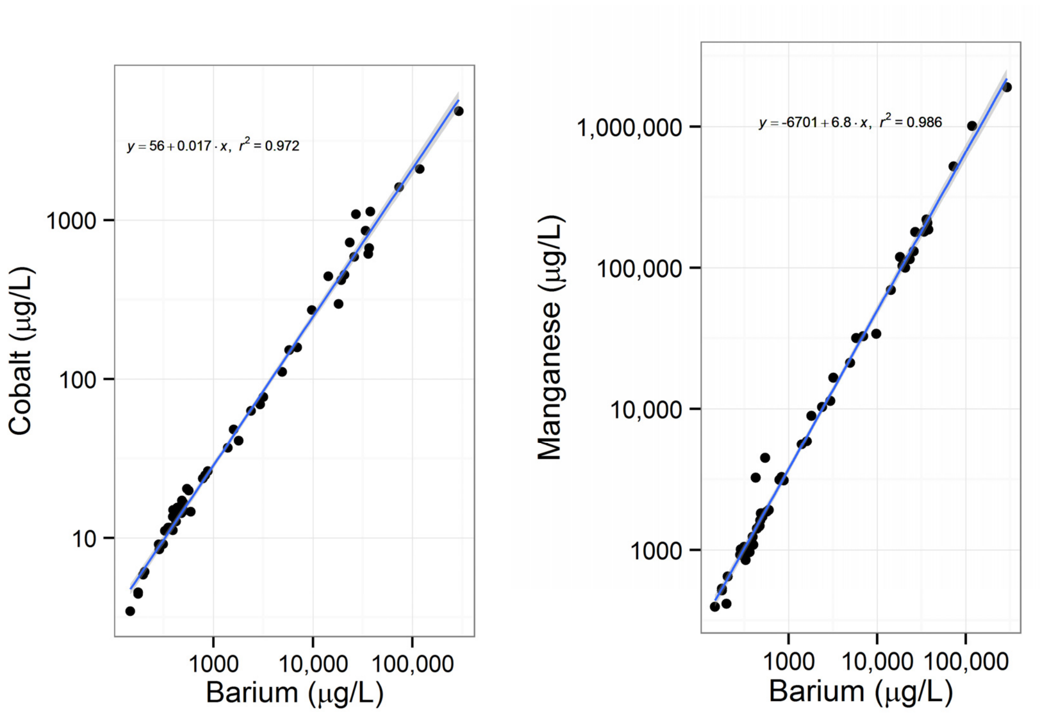



**Figure 4.3-17 Correlation of concentrations of barium, cobalt, and manganese for each gage station**

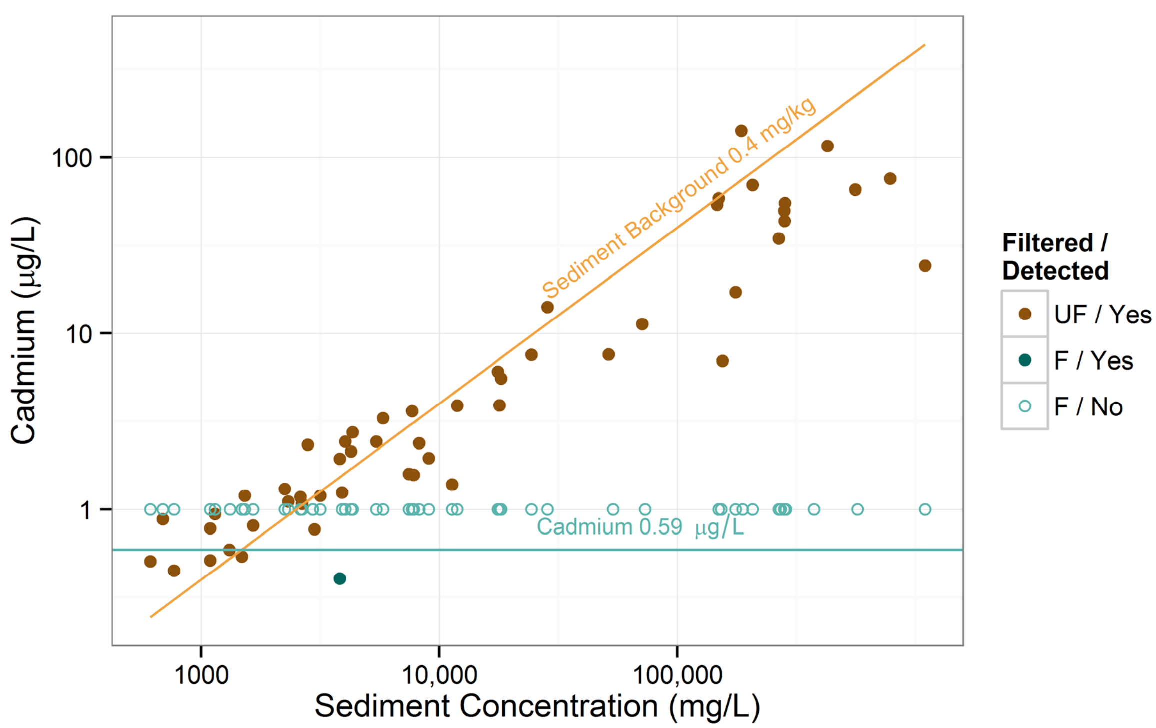



**Figure 4.3-18 SSC vs. cadmium for each gage station**

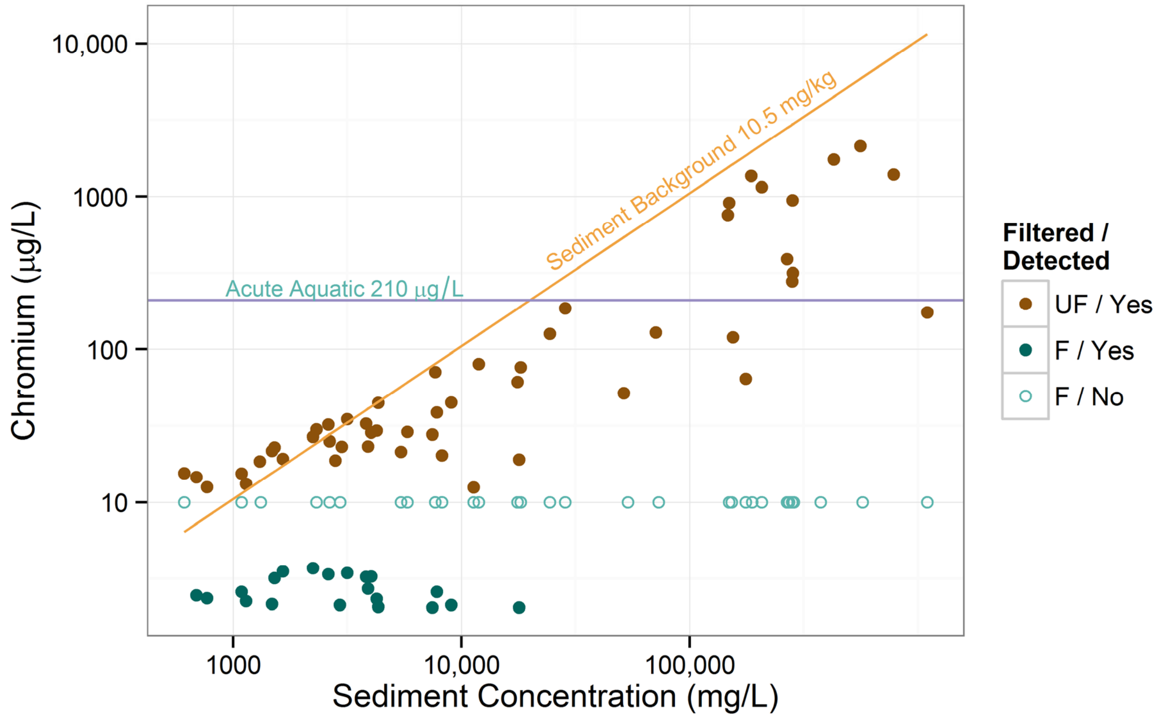



**Figure 4.3-19 SSC vs. chromium for each gage station**

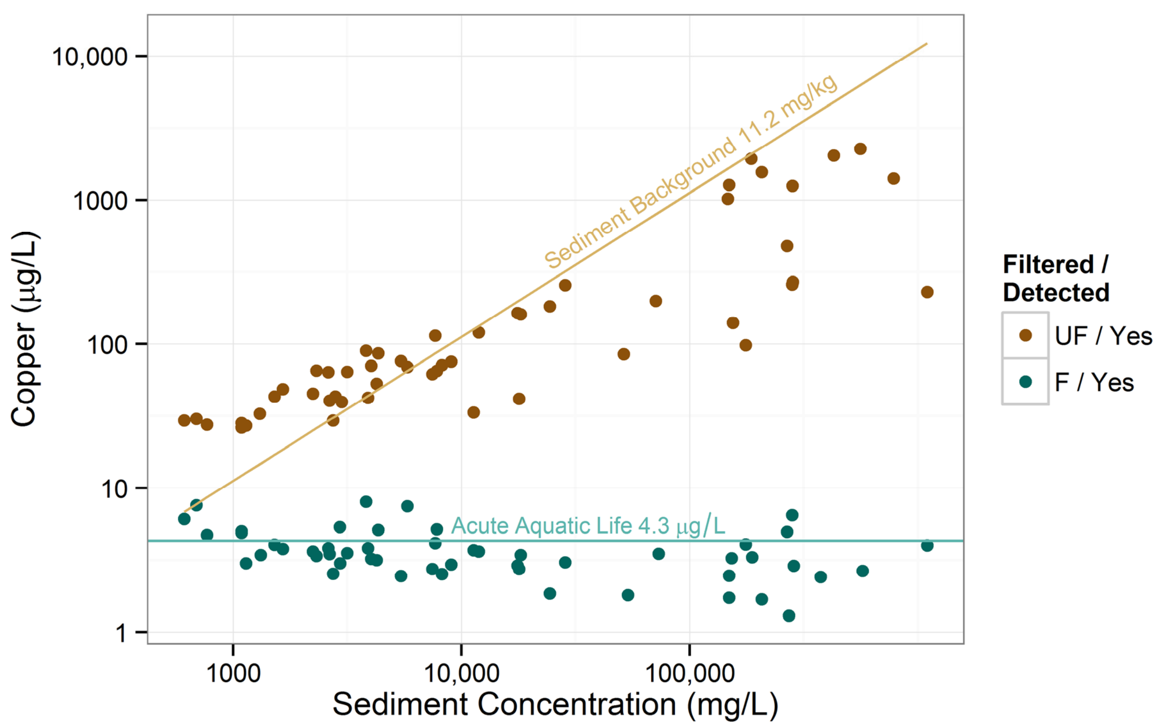



**Figure 4.3-20 SSC vs. copper for each gage station**

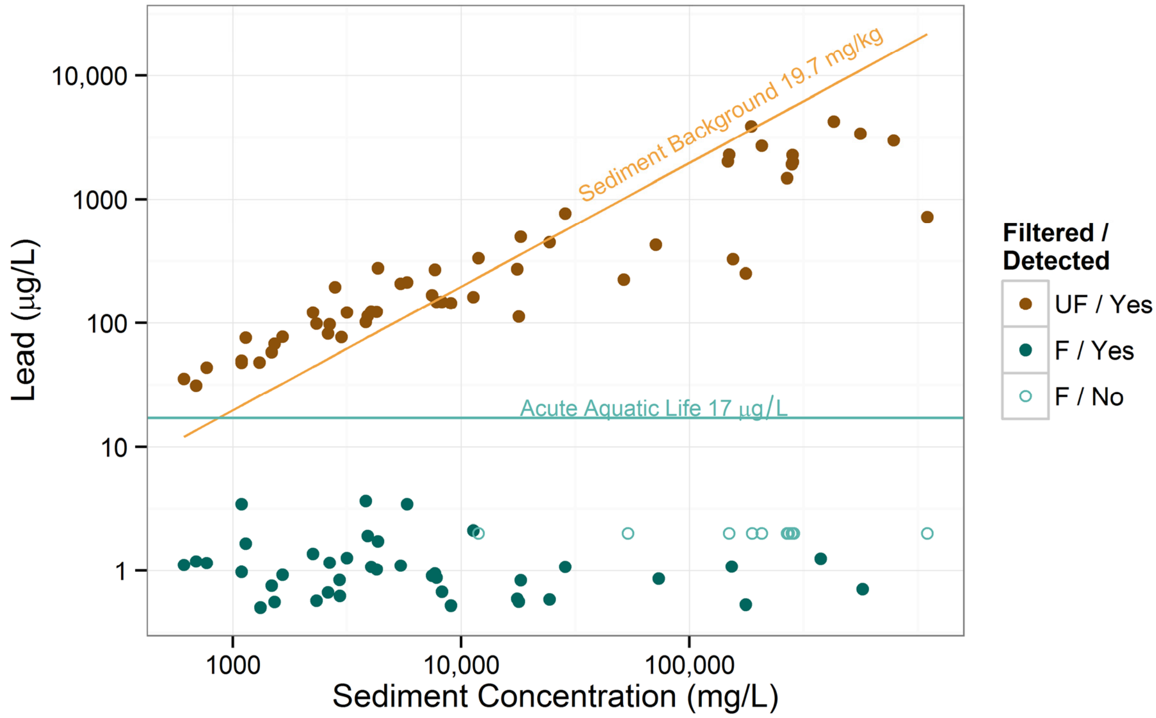



**Figure 4.3-21 SSC vs. lead for each gage station**

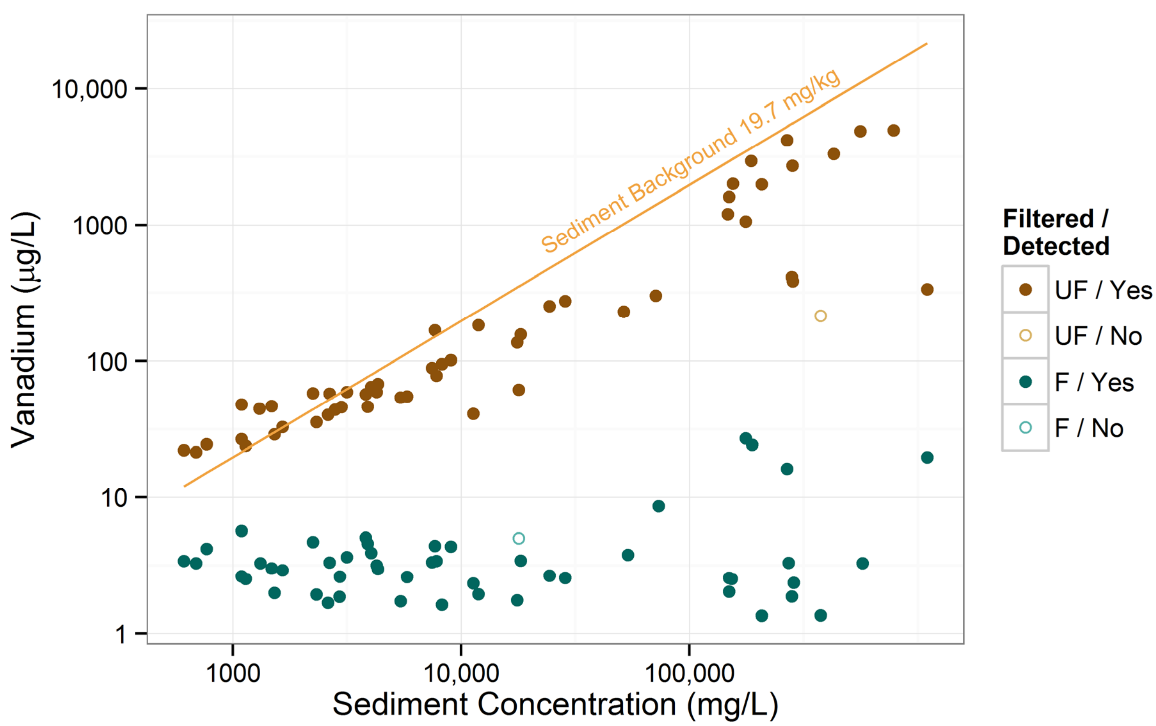



**Figure 4.3-22 SSC vs. vanadium for each gage station**

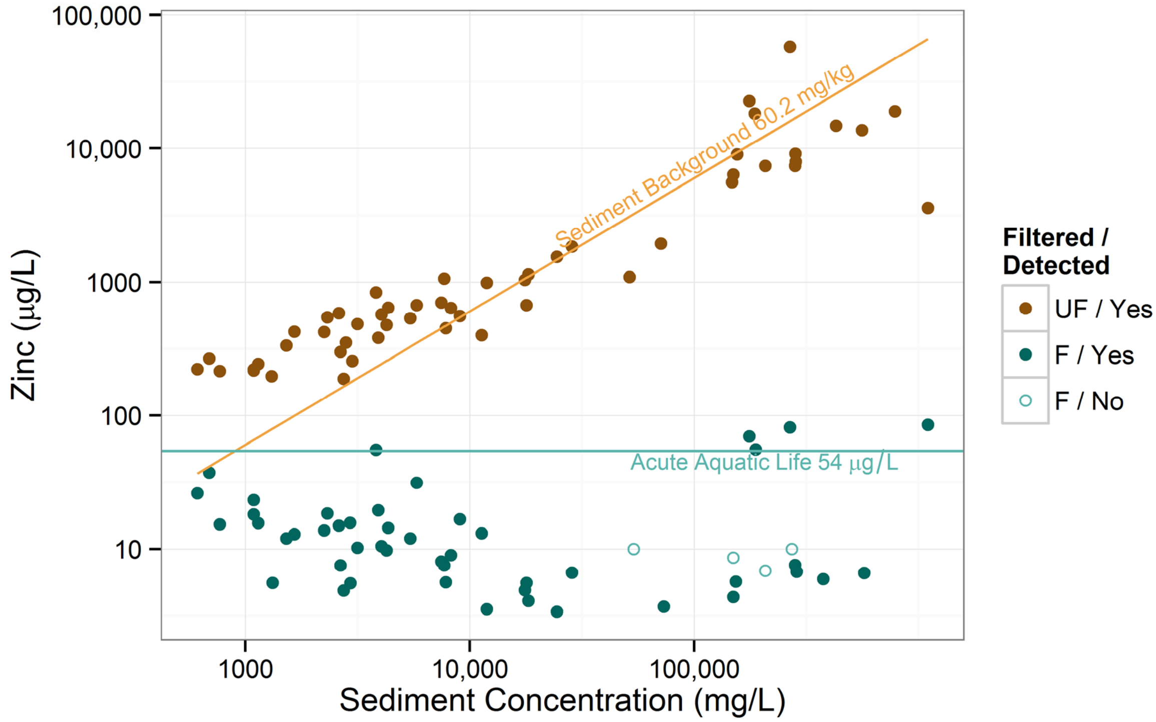



**Figure 4.3-23 SSC vs. zinc for each gage station**

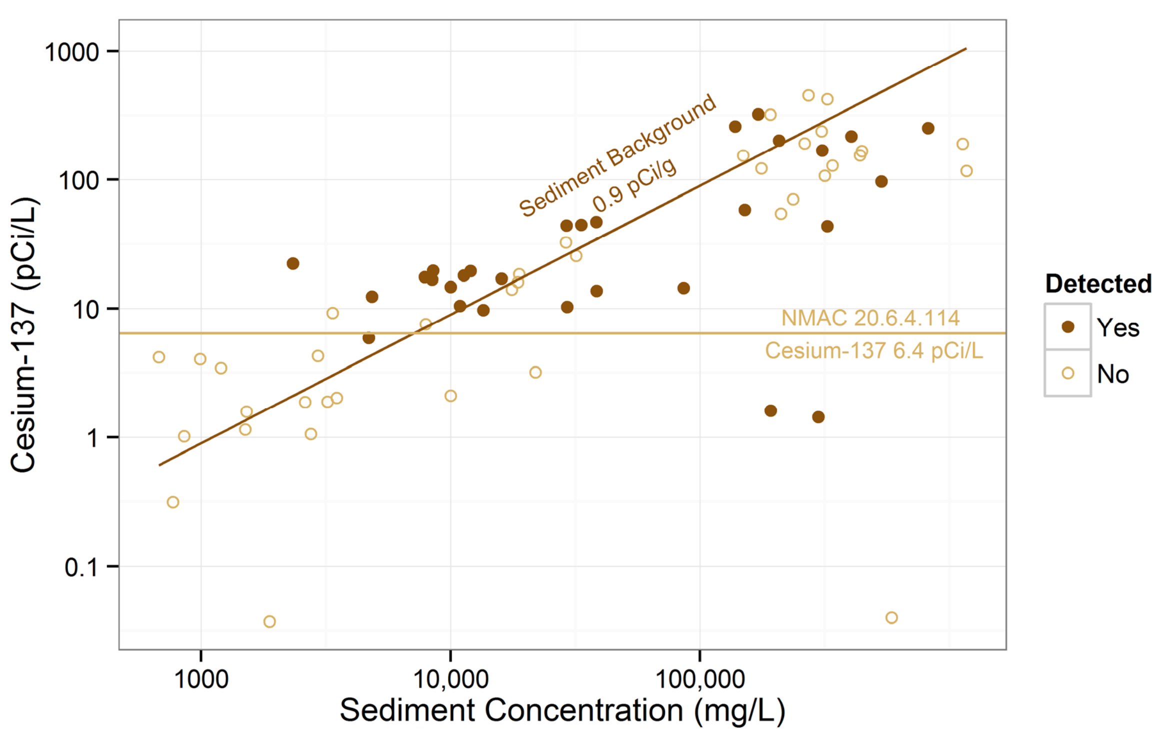



**Figure 4.3-24 SSC vs. cesium-137 for each gage station**

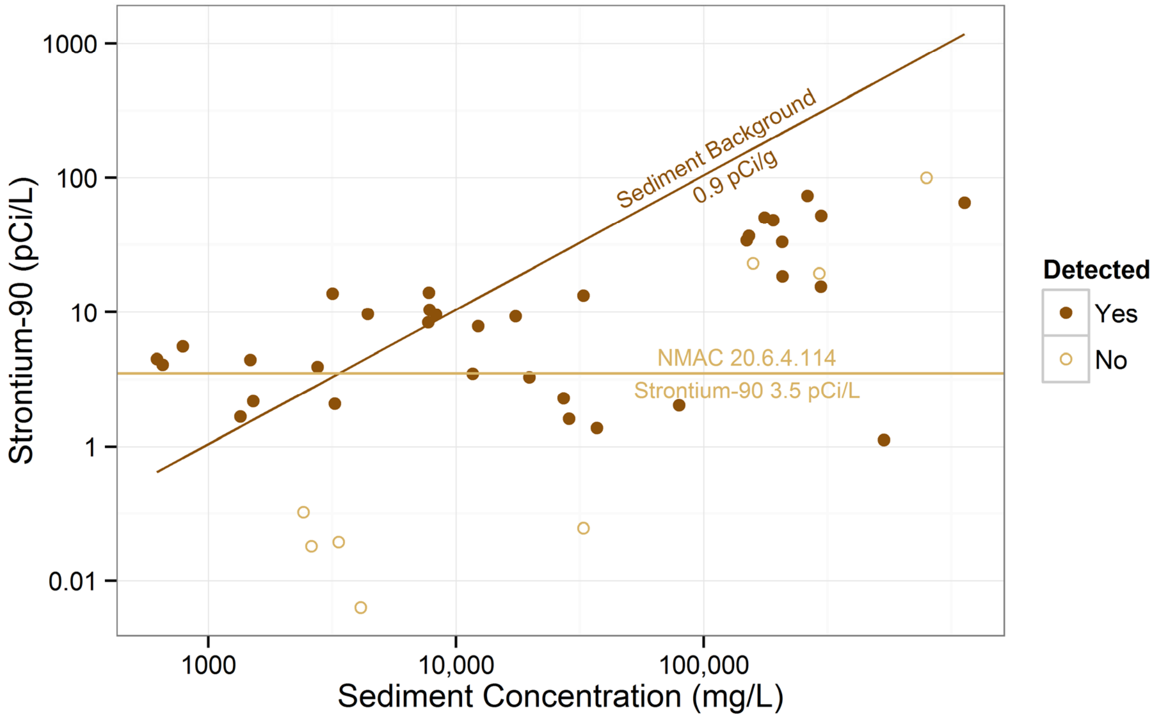



**Figure 4.3-25 SSC vs. strontium-90 for each gage station**

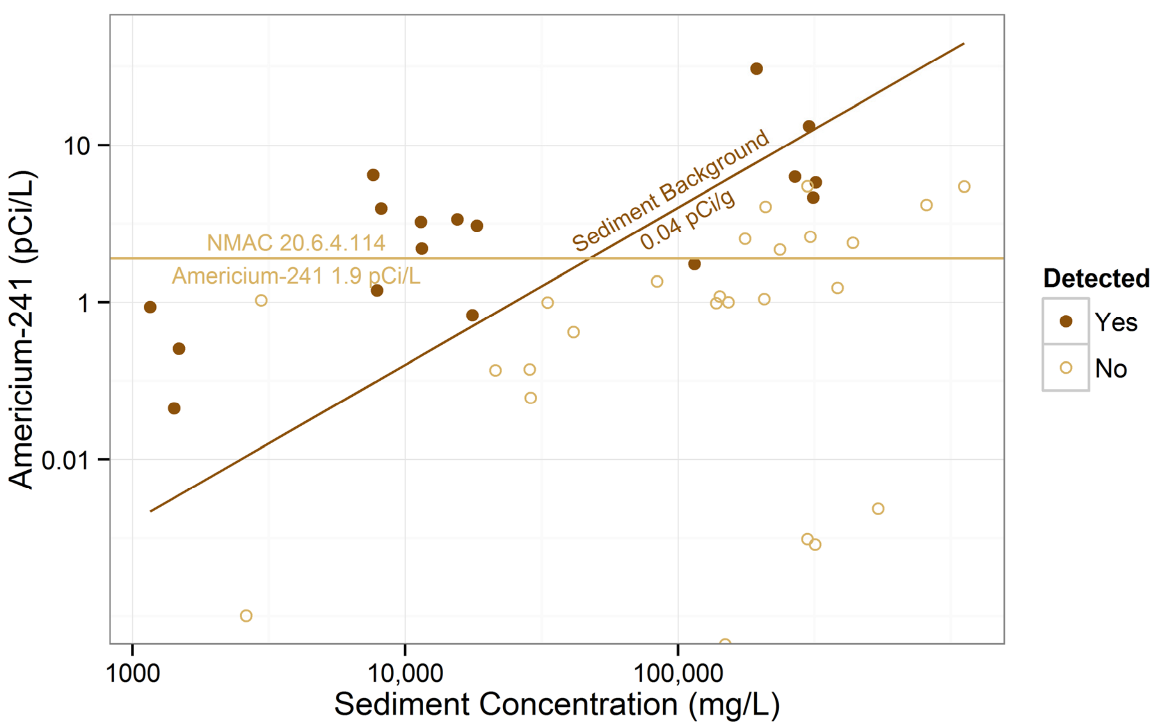



**Figure 4.3-26 SSC vs. americium-241 for each gage station**

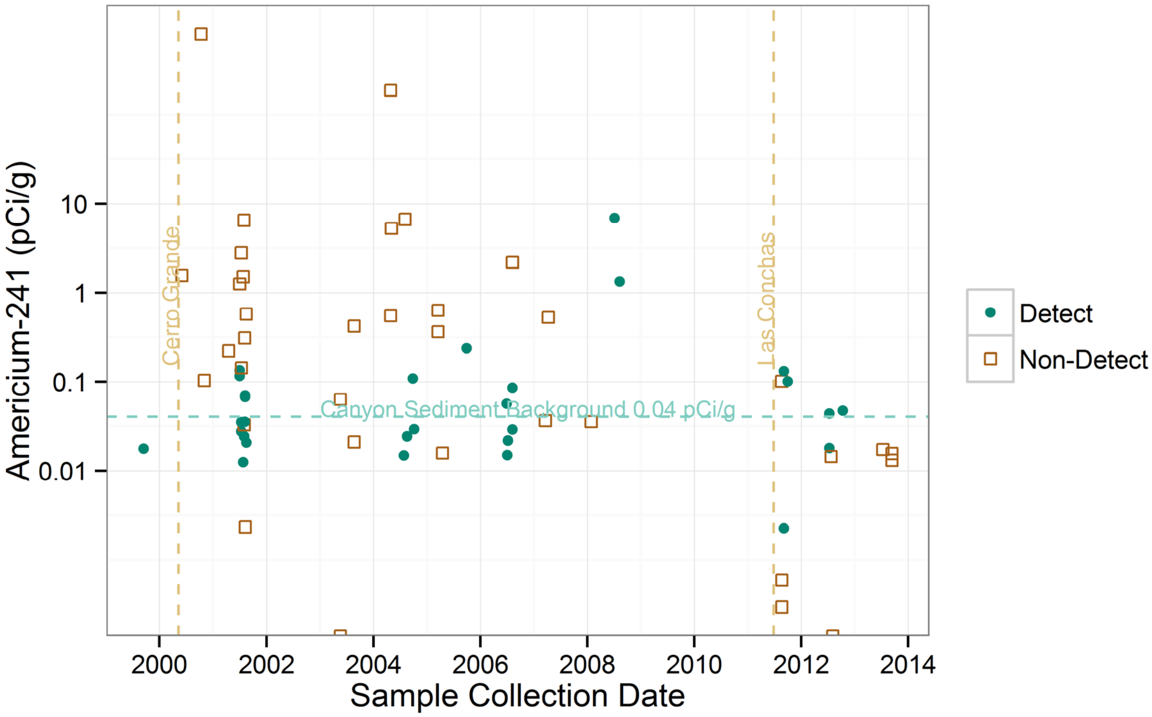



**Figure 4.3-27 Americium-241 in storm water normalized to suspended sediment since 2000**

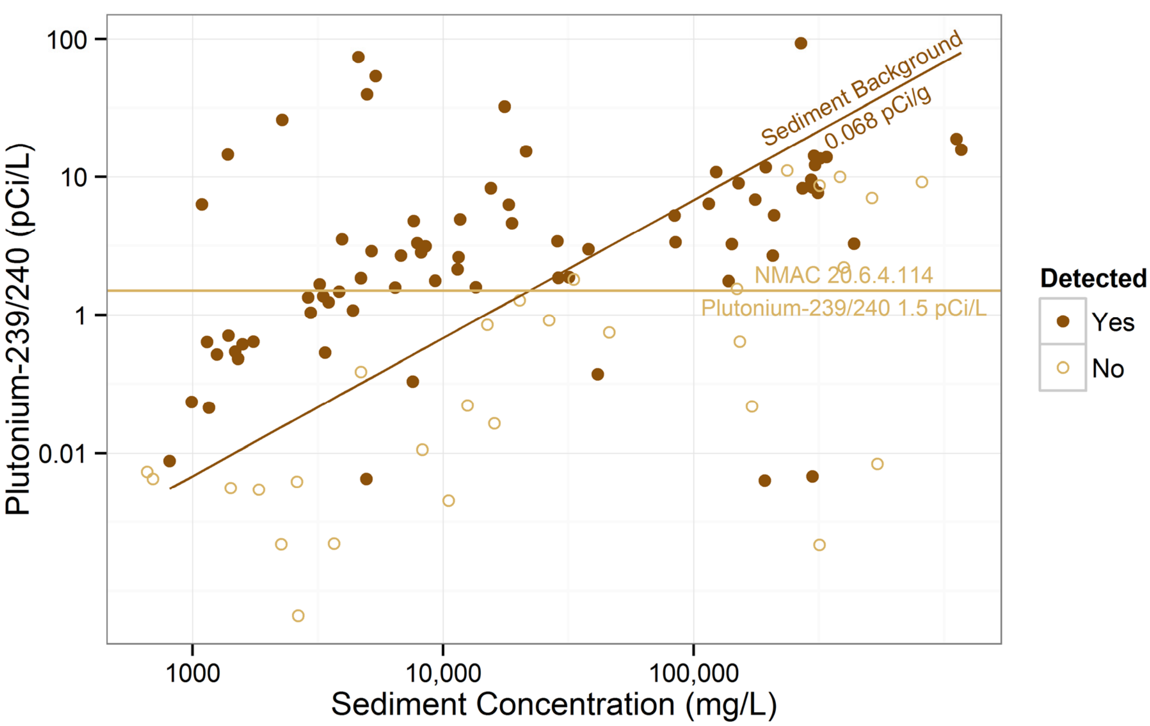



**Figure 4.3-28 SSC vs. plutonium-239/240 for each gage station**

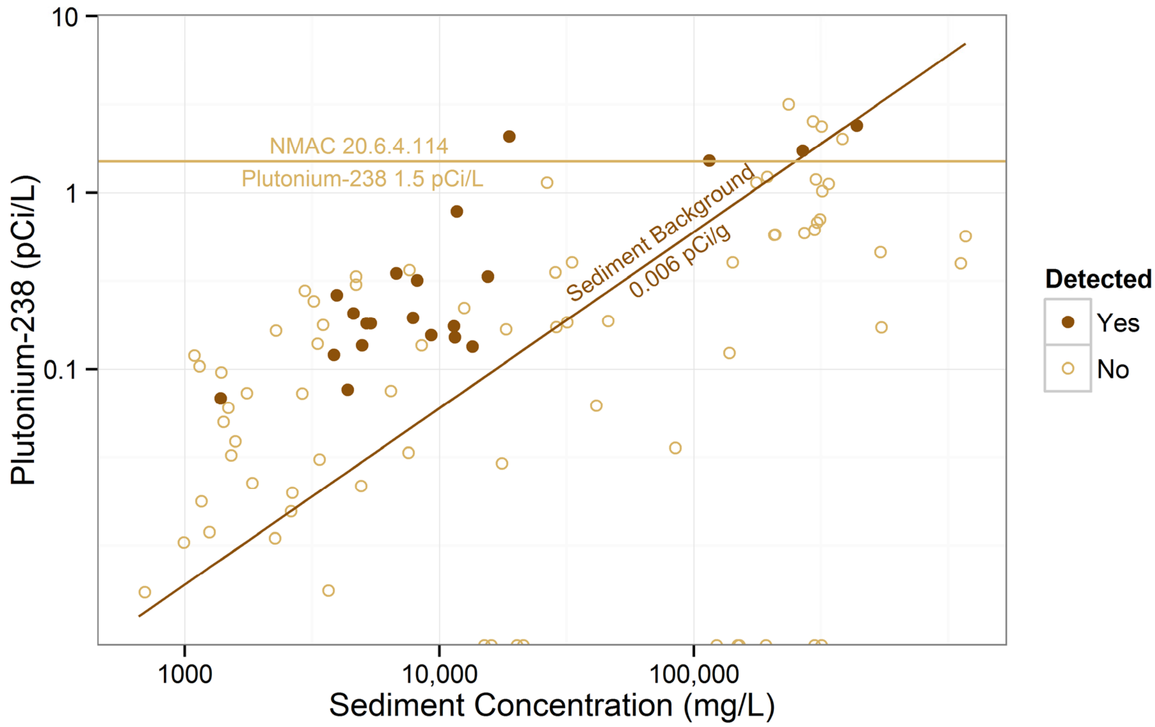



**Figure 4.3-29 SSC vs. plutonium-238 for each gage station**

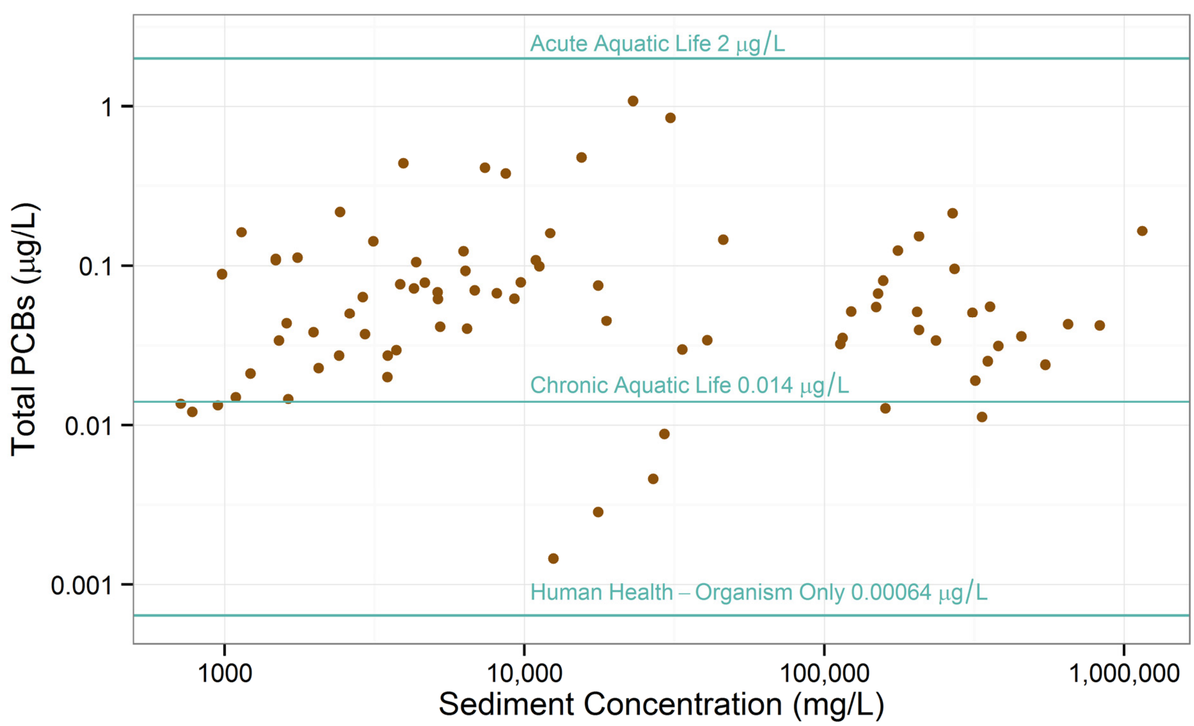



**Figure 4.3-30 SSC vs. total PCBs for each gage station**

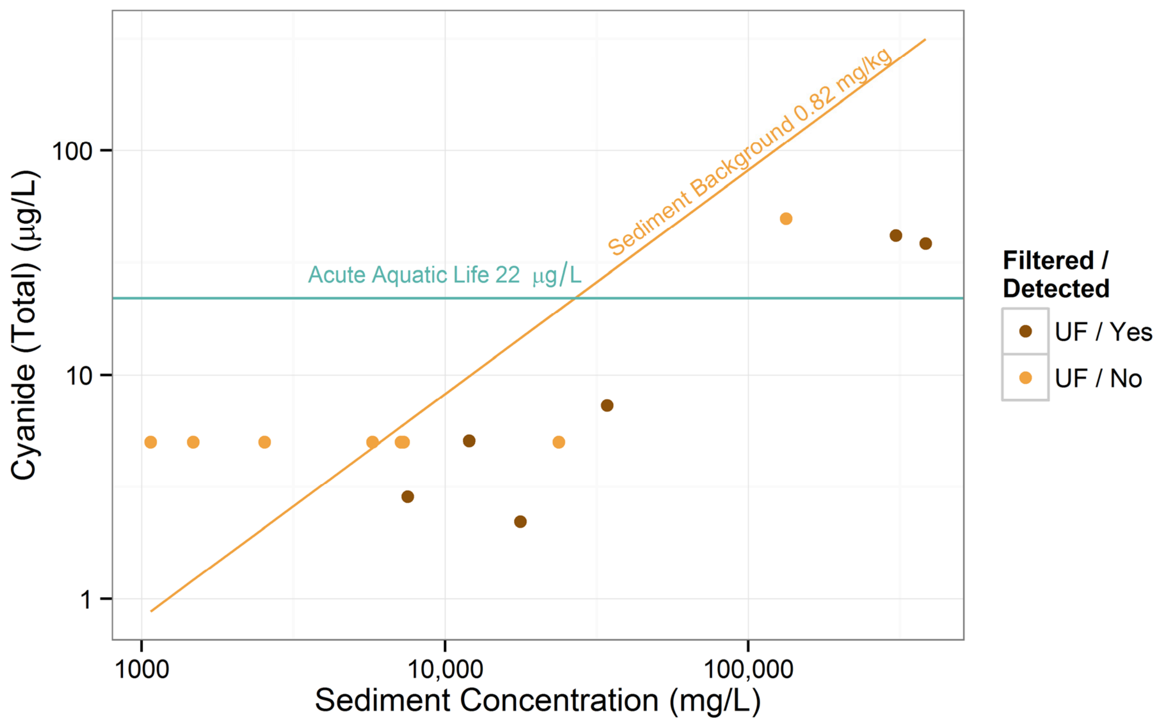



**Figure 4.3-31 SSC vs. total cyanide for each gage station**

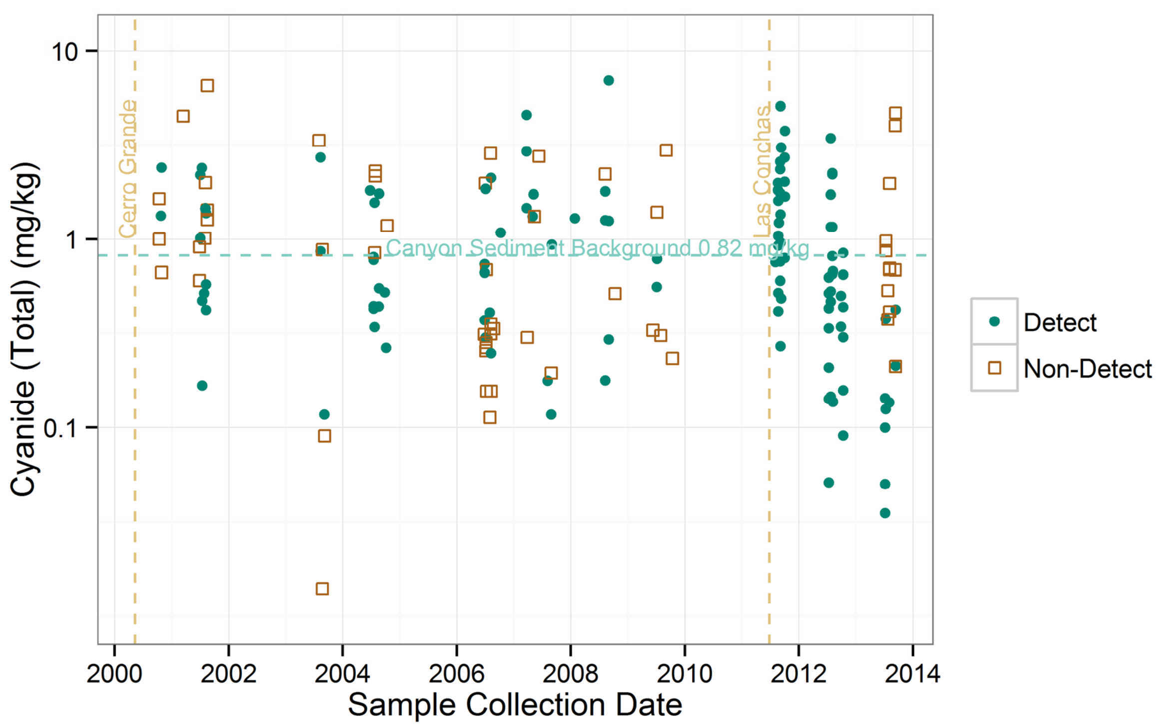



**Figure 4.3-32 Cyanide in storm water normalized to suspended sediment since 2000**

**Table 1.1-1**
**Total Precipitation at Each Laboratory Meteorological Tower and Return Period (24-h Storms) for 9/10/2013 to 9/15/2013**

| Met Tower | 9/10/2013 | | 9/11/2013 | | 9/12/2013 to 9/13/2013 | | 9/14/2013 to 9/15/2013 | |
|---|---|---|---|---|---|---|---|---|
| | Precip (in.) | Return Period (yr) | Precip (in.) | Return Period (yr) | Precip (in.) | Return Period (yr) | Precip (in.) | Return Period (yr) |
| TA-06 | 1.35 | 3 | 0.10 | <1 | 5.07 | >1000 | 0.36 | <1 |
| TA-49 | 1.40 | 2 | 0.08 | <1 | 3.94 | 200 | 1.85 | 5 |
| TA-53 | 1.21 | 3 | 0.05 | <1 | 3.70 | >1000 | 0.49 | <1 |
| TA-54 | 1.37 | 4 | 0.02 | <1 | 4.28 | >1000 | 1.02 | 1 |
| NCOMM | 1.40 | 2 | 0.09 | <1 | 4.49 | >1000 | 0.35 | <1 |
| LANL Average | 1.35 | 3 | 0.07 | <1 | 4.30 | >1000 | 0.81 | 1 |

**Table 2.1-1**
**Station Configuration at LA/P Gages**

| Gage | Stage Measurement Device | Communication Method with Gage Datalogger | Sampler Trip Level (Aboveground) | Sampler Intake Level (Aboveground) |
|---|---|---|---|---|
| E026 | Encoder | Radio telemetry | 1.3 ft | 4 in. |
| E030 | Encoder | Radio telemetry | 1.54 ft | 4 in. |
| E038 | Bubbler | Radio telemetry | 0.7 ft | 4 in. |
| E039.1 | Encoder | Radio telemetry | 0.58 ft | 4 in. |
| E040 | Probe | Radio telemetry | 2.73 ft | 4 in. |
| E042.1 | Encoder | Radio telemetry | 0.58 ft | 4 in. |
| E050.1 | Encoder/bubbler | Radio telemetry | 0.4 ft | 2.4 in. |
| E055 | Bubbler | Radio telemetry | 1.21 ft | 4 in. |
| E055.5 | Bubbler | Radio telemetry | 0.75 ft | 4 in. |
| E056 | Bubbler | Radio telemetry | 1.39 ft | 4 in. |
| E059 | Encoder | Radio telemetry | 0.58 ft | 4 in. |
| E060.1 | Encoder/bubbler | Radio telemetry | 0.4 ft | 2.4 in. |
| E099 | Encoder | Radio telemetry | 0.9 ft | 6 in. |
| E109.9 | Encoder/bubbler/probe | Radio telemetry | 0.4 ft | 2.4 in. |

**Table 2.3-1**
**Maximum Daily Discharge and Storm Water Sampling in the LA/P Watershed during 2013**

| Date | Los Alamos Canyon Discharge (cfs) | | | | | | | | | Pueblo and Acid Canyon Discharge (cfs) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DP Canyon | | | Los Alamos Canyon | | | | | | Acid Canyon | | Pueblo Canyon | | |
| | E038 | E039.1 | E040 | E026 | E030 | E042.1 | E050.1 | E099[a] | E109.9 | E055.5 | E056 | E055 | E059 | E060.1 |
| 14 June | 70 S[b] | 13 S | <1 N[c] | 1.5 N | 0 N[d] | 0 N | 0 N | 0 N | <1 N | 3.5 N | 30 S | 15 S | 0 N | 0 N |
| 30 June | 120 S | 11 S | 0 N | 7.6 N | 1.2 N | 0 N | 0 N | 3.3 N | 3.2 N | 0 N | 7.8 N | 0 N | 0 N | 0 N |
| 5 July | 55 N[e] | 7 N | 0 N | 0 N | 0 N | 0 N | 0 N | 0 N | <1 N | 0 N | 0 N | <1 N | 0 N | 0 N |
| 8 July | 0 N | <1 N | 0 N | 0 N | 0 N | 0 N | 0 N | 32 N | 110 S | 0 N | 0 N | 0 N | 0 N | 0 N |
| 12 July | 330 S | 330 S | 260 S | <1 N | 17 S | 160 S | 32 S | 230 S | 180 S | 40 S | 43 S | 9.2 N | 7 N | 0 N |
| 12 July | 18 N | 18 N | 0 N | <1 N | 0 N | 0 N | 0 N | 1100 N | | 0 N | <1 N | 4.1 N | 0 N | 0 N |
| 20-21 July | 0 N | <1 N | 0 N | 0 N | 0 N | 0 N | 0 N | 480 S | 810 S | 0 N | 0 N | 0 N | 0 N | 0 N |
| 25 July | 13 N | 3.9 N | 0 N | <1 N | 0 N | 2.4 N | 0 N | 10 N | 100 S | 0 N | 0 N | 0 N | 0 N | 0 N |
| 26 July | 12 N | 10 N | 3.3 N | <1 N | 0 N | 17 N | <1 N | 8 N | 160 S | 0 N | 0 N | 0 N | 0 N | 0 N |
| 26-27 July | 0 N | <1 N | 0 N | 0 N | 0 N | 14 N | 0 N | 0 N | 2.5 N | 0 N | 0 N | 0 N | 0 N | 0 N |
| 28 July | 74 S | 24 S | <1 N | <1 N | 0 N | 31 N | <1 N | <1 N | 70 N | 0 N | 0 N | 0 N | 0 N | 0 N |
| 3 Aug | 0 N | 0 N | 0 N | 0 N | 0 N | 0 N | 0 N | 0 N | 950 S | 0 N | 0 N | 0 N | 0 N | 0 N |
| 4 Aug | 17 N | 12 S | 0 N | 0 N | 0 N | 0 N | 0 N | 0 N | 68 N | 0 N | 0 N | 0 N | 0 N | 0 N |
| 5 Aug | 170 S | 170 N | 76 S | <1 N | 1.9 N | 80 S | 20 S | 340 S | 1000 S | 1.8 N | 16 S | 7.1 N | 0 N | 1.7 N |
| 9 Aug | 62 S | 16 S | 3.7 N | 0 N | 0 N | <1 N | 0 N | 360 N | 270 S | 0 N | 0 N | <1 N | 0 N | 0 N |
| 20 Aug | 0 N | 0 N | 0 N | 4 N | 0 N | 0 N | 0 N | 14 N | 42 N | 0 N | 1.5 N | 8.6 N | 0 N | 0 N |
| 30 Aug | 0 N | 0 N | 0 N | 0 N | 0 N | 0 N | 0 N | 24 N | 150 N | 0 N | 0 N | 0 N | 0 N | 0 N |
| 2 Sept | 3.8 N | 0 N | 0 N | 0 N | 0 N | 0 N | 0 N | 430 N | 310 N | 0 N | 0 N | 0 N | 0 N | 0 N |
| 10 Sept | 39 N | 35 S | 27 S | 6.1 N | 5.9 N | 36 S | 11 S | 1 N | 130 N | <1 N | 7.3 N | 9 N | 0 N | 0 N |
| 11 Sept | 13 N | 18 N | 19 N | 3 N | 6.1 N | 26 N | 16 S | <1 N | 65 N | 0 N | 3.3 N | 6.2 N | 0 N | 0 N |
| 12 Sept | 51 N | 77 S | 84 S | 400 S | 52 S | 110 N | 87 S | 350 N | 520 S | 4.4 N | 260 S | 32 S | 59 N | <1 N |

**Table 2.3-1 (continued)**

| Date | Los Alamos Canyon Discharge (cfs) | | | | | | | | | Pueblo and Acid Canyon Discharge (cfs) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DP Canyon | | | Los Alamos Canyon | | | | | | Acid Canyon | | Pueblo Canyon | | |
| | E038 | E039.1 | E040 | E026 | E030 | E042.1 | E050.1 | E099[a] | E109.9 | E055.5 | E056 | E055 | E059 | E060.1 |
| 13 Sept | 310 N | 400 N | 830 N | 850 N | 450 N | 740 N | 740 N | 1600 N | 5000 N EST | 47 S | 820 N | 80 N | 1500 N | 1400 N |
| 14 Sept | 1.9 N | 3.7 N | na[f] | na | 3.8 N | na | 48 N | na | na | 0 N | 2.3 N | 1.2 N | na | na |
| 18 Sept | 17 N | 18 N | na | na | <1 N | na | 1.4 N | na | na | 0 N | 1.8 N | 0 N | na | na |
| 21 Sept | 0 N | 0 N | na | na | 0 N | 6.6 N | 8.1 N | na | na | 0 N | <1 N | 0 N | na | 5.7 N |
| 22-23 Sept | 45 N | 26 N | na | na | 14 N | 27 N | 34 N | na | na | 0 N | 3.2 N | <1 N | na | 2.2 N |
| 3-4 Oct | 0 N | 0 N | na | na | 4.6 N | 16 N | 6.7 N | na | na | 0 N | 0 N | 0 N | na | 0 N |
| 5 Nov | 17 N | 21 S | na | na | <1 N | <1 N | 3.2 N | na | na | 0 N | <1 N | 0 N | na | 1.7 N |

[a] Maximum discharge values reported have an accuracy of ± 50 cfs.

[b] S = Sample was collected. Cell is highlighted in yellow.

[c] N = Sample was not collected.

[d] Blank in cell indicates no discharge occurred at this station.

[e] Blue highlight in cell indicates no sample was collected on a day with recorded discharge above the triggering threshold at that station.

[f] na = Not available. Gage station was damaged.

**Table 2.4-1**
**Locations and Analytical Suites for Storm Water Samples**

| Monitoring Group | Locations | Analytical Suites[a,b] |
|---|---|---|
| Upper Los Alamos Canyon | E026, E030 | PCBs (by Method 1668A), gamma spectroscopy radionuclides, isotopic plutonium, isotopic uranium, americium-241 (by alpha spectroscopy), dioxins and furans, strontium-90, TAL metals, hardness [c], cyanide, SSC, particle size |
| DP Canyon gages | E038, E039.1, E040 | PCBs (by Method 1668A), gamma spectroscopy radionuclides, isotopic plutonium, isotopic uranium, strontium-90, TAL metals, hardness, SSC, particle size |
| Upper Pueblo Canyon and Acid Canyon gages | E055, E055.5, E056 | PCBs (by Method 1668A), isotopic plutonium, TAL metals, hardness, SSC, particle size |
| Fire-affected lower watershed gages | E042.1, E050.1, E109.9 | PCBs (by Method 1668A), isotopic plutonium, gamma spectroscopy radionuclides, isotopic uranium, americium-241 (by alpha spectroscopy), dioxins and furans, strontium-90, TAL metals, hardness, cyanide, SSC, particle size |
| Lower Pueblo Canyon gages | E059, E060.1 | PCBs (by Method 1668A), isotopic plutonium, gamma spectroscopy radionuclides, isotopic uranium, americium-241 (by alpha spectroscopy), strontium-90, TAL metals, hardness, SSC, particle size |
| Detention basins and wetland below the SWMU 01-001(f) drainage | CO101038, CO111041 | PCBs (by Method 1668A), TAL metals, hardness, isotopic uranium, total organic carbon, SSC |
| BDD[d]-Required Monitoring | E050.1, E060.1, E109.9 | PCBs (by Method 1668A), gamma spectroscopy radionuclides, isotopic plutonium, isotopic uranium, americium-241 (by alpha spectroscopy), strontium-90, gross alpha, gross beta, radium-226/radium-228, TAL metals, mercury, hardness, SSC |

[a] Suites are listed in order of priority to guide analysis of limited water volume. SSC is independent of prioritization because it is derived from separate sample bottles.

[b] Radionuclides will be analyzed in filtered and unfiltered samples at E109.9.

[c] Hardness is calculated from calcium and magnesium, components of the TAL list.

[d] BDD = Buckman Direct Diversion. Analytes requested in addition to the analytical suites assigned to gage stations E050.1, E060.1, and E109.9.

**Table 2.4-2**
**Analytical Requirements for Storm Water Samples**

| Analytical Suite | Method | Detection Limit[a] | Upper Los Alamos Canyon | DP Canyon | Upper Pueblo Canyon and Acid Canyon | Fire Affected Lower Watershed | Lower Pueblo Canyon | BDD[b] Required Monitoring | Detention Basins below the SWMU 01-001(f) Drainage |
|---|---|---|---|---|---|---|---|---|---|
| PCBs[c] | EPA:1668A | 25 pg/L | √[d] | √ | √ | √ | √ | —[e] | √ |
| Isotopic plutonium | HASL-300 | 0.5 pCi/L | √ | √ | √ | √ | √ | — | — |
| Gamma spectroscopy | EPA:901.1 | 10 pCi/L (cesium-137) | √ | √ | — | √ | √ | — | — |
| Isotopic uranium | HASL-300 | 0.5 pCi/L | √ | √ | — | √ | √ | — | √ |
| Americium-241 | HASL-300 | 0.5 pCi/L | √ | — | — | √ | √ | — | — |
| Strontium-90 | EPA:905.0 | 0.5 pCi/L | √ | √ | — | √ | √ | — | — |
| TAL[f] metals | EPA:200.7/200.8/245.2 | Variable | √ | √ | √ | √ | √ | — | √ |
| Cyanide | EPA:335.4 | 1.5 µg/L | √ | — | — | √ | — | — | — |
| Dioxins and furans | EPA:1613B | 50 pg/L | √ | — | — | √ | — | — | — |
| Gross alpha | EPA:900 | 10 pCi/L | — | — | — | — | — | √ | — |
| Gross beta | EPA:900 | 10 pCi/L | — | — | — | — | — | √ | — |
| Radium-226/radium-228 | EPA:903.1/EPA:904 | 0.5/0.5 pCi/L | — | — | — | — | — | √ | — |
| SSC | EPA:160.2 | 10 mg/L | √ | √ | √ | √ | √ | — | √ |
| Total organic carbon | SW-846:9060 | 0.5 mg/L | — | — | — | — | — | — | √ |
| Particle size | ASTM:C1070 | 0.01% | √ | √ | √ | √ | √ | — | — |

[a] MDL or MDA for radionuclides.
[b] BDD = Buckman Direct Diversion.
[c] PCBs = Polychlorinated biphenyls.
[d] √ = Monitoring planned.
[e] — = Monitoring not planned.
[f] Hardness is calculated from calcium and magnesium, components of the TAL list.

**Table 2.4-3**
**Factors Contributing to Analytical Suite Prioritization**

| Upper Los Alamos Canyon Gages | Priority | Analytical Suite | Glass Bottle | Polyethylene Bottle | Minimum Volume Required (L) |
|---|---|---|---|---|---|
| E026, E030, E038, E039.1, E040 | 1 | PCBs | Yes | No | 1 |
| | 2 | Gamma spectroscopy, Iso Pu, Iso U, Am-241[a] | Yes | Yes | 1 |
| | 3 | Dioxins and furans | Yes | No | 1 |
| | 4 | Strontium-90 | Yes | Yes | 1 |
| | 5 | TAL Metals + B + U (F/UF[b]) | No | Yes | 0.25/0.25 |
| | 6 | Cyanide[a] | Yes | Yes | 0.25 |
| **Upper Pueblo Canyon Gages** | | | | | |
| E055, E055.5, E056 | 1 | PCBs | Yes | No | 1 |
| | 2 | Iso Pu | Yes | Yes | 1 |
| | 3 | TAL Metals + B + U (F/UF) | No | Yes | 0.25/0.25 |
| E042.1, E050.1, E059, E060.1, E109.9 | 1 | PCBs | Yes | No | 1 |
| | 2 | Gamma spectroscopy, Iso Pu, Iso U, Am-241 | Yes | Yes | 1 |
| | 3 | Dioxins and furans | Yes | No | 1 |
| | 4 | Strontium-90 | Yes | Yes | 1 |
| | 5 | TAL Metals + B + U (F/UF) | No | Yes | 0.25/0.25 |
| | 6 | Cyanide[a] | Yes | Yes | 0.25 |
| **Retention Basin and Vegetated Buffer below the SWMU 01-001(f) Drainage** | | | | | |
| CO111041, CO101038 | 1 | PCBs | Yes | No | 1 |
| | 2 | TAL Metals + B + U (F/UF) | No | Yes | 0.25/0.25 |
| | 3 | Iso U | Yes | Yes | 1 |
| | 4 | Total organic carbon | Yes | Yes | 0.04 |

[a] Americium-241 and cyanide were added to analytical suite in response to the Las Conchas fire.
[b] F/UF = Analyses of both filtered (F) and unfiltered (UF) splits.

**Table 2.4-4**
**Planned and Actual Analyses**

| CO111038 Sampler at the culvert at the terminus of the Vegetative Buffer below the lower basin, Sampled 7/12/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suite | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 11:33 | Trigger | SSC, Particle Size |
| 2 | Trigger + 1 | PCB (UF[a]) | 11:34 | Trigger + 1 | PCB Congener (UF) |
| 3 | Trigger + 2 | PCB (UF) | | | |
| 4 | Trigger + 3 | TAL metals (F[b]/UF) | 11:36 | Trigger + 3 | TAL metals (F) |
| | | | 11:37 | Trigger + 4 | TAL metals (UF) |
| 5 | Trigger + 4 | Isotopic uranium (UF) | 11:38 | Trigger + 5 | Isotopic uranium (UF) |
| 6 | Trigger + 5 | TOC[c] (UF) | 11:39 | Trigger + 6 | SSC |
| 7 | Trigger + 6 | Extra bottle | 11:40 | Trigger + 7 | SO4, $Cl^-$ (F) |
| 8 | Trigger + 7 | Extra bottle | 11:41 | Trigger + 8 | Alkalinity, pH (UF) |
| 9 | Trigger + 8 | Extra bottle | 11:42 | Trigger + 9 | DOC(F) |
| 10 | Trigger + 9 | Extra bottle | 11:43 | Trigger + 10 | SSC |
| 11 | Trigger + 10 | Extra bottle | 11:44 | Trigger + 11 | TOC (UF) |
| 12 | Trigger + 11 | Extra bottle | Remaining sample not retrieved for analysis. | | |

| CO111038 Sampler at the culvert at the terminus of the Vegetative Buffer below the lower basin, Sampled 9/18/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suite | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 13:30 | Trigger | SSC, Particle Size |
| 2 | Trigger + 1 | PCB (UF) | 13:31 | Trigger + 1 | PCB Congener (UF) |
| 3 | Trigger + 2 | PCB (UF) | | | |
| 4 | Trigger + 3 | TAL metals (F/UF) | 13:33 | Trigger + 3 | TAL metals (F) |
| | | | 13:34 | Trigger + 4 | TAL metals (UF) |
| 5 | Trigger + 4 | Isotopic uranium (UF) | 13:35 | Trigger + 5 | Isotopic uranium (UF) |
| 6 | Trigger + 5 | TOC (UF) | 13:38 | Trigger + 8 | TOC (UF) |
| 7 | Trigger + 6 | Extra bottle | 13:39 | Trigger + 9 | DOC (F) |
| 8 | Trigger + 7 | Extra bottle | 13:40 | Trigger + 10 | SO4, Cl- (F) |
| 9 | Trigger + 8 | Extra bottle | 13:41 | Trigger + 11 | Alkalinity, pH (UF) |
| 10 | Trigger + 9 | Extra bottle | Remaining samples not retrieved for analysis. | | |

**Table 2.4-4 (continued)**

| CO111041 Sampler at Inlet to Upper Detention Pond below LA-2, Sampled 6/14/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suite | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 12:40 | Trigger | SSC, Particle Size |
| 2 | Trigger + 1 | PCB (UF) | 12:41 | Trigger + 1 | TOC (UF) |
| 3 | Trigger + 2 | PCB (UF) | 12:43 | Trigger + 3 | TAL metals (F/UF) |
| 4 | Trigger + 3 | TAL metals (F/UF) | | | |
| 5 | Trigger + 4 | Isotopic uranium (UF) | 12:51 | Trigger + 11 | Isotopic uranium (UF) |
| 6 | Trigger + 5 | TOC (UF) | | | |
| 7 | Trigger + 6 | Extra bottle | 12:53 | Trigger + 13 | PCB Congener (UF) |
| 8 | Trigger + 7 | Extra bottle | | | |
| 9 | Trigger + 8 | Extra bottle | 13:15 | Trigger + 35 | Alkalinity, pH |
| 10 | Trigger + 9 | Extra bottle | | | |
| 11 | Trigger + 10 | Extra bottle | 13:24 | Trigger + 44 | $SO_4$, $Cl^-$ (F) |
| 12 | Trigger + 11 | Extra bottle | | | |

| CO111041 Sampler at Inlet to Upper Detention Pond below LA-2, Sampled 6/30/2013 and 7/5/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suite | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 6/30/2013 14:57 | Trigger | PCB Congener (UF) |
| 2 | Trigger + 1 | PCB (UF) | 6/30/2013 15:00 | Trigger + 3 | SSC, Particle Size |
| 3 | Trigger + 2 | PCB (UF) | | | |
| 4 | Trigger + 3 | TAL metals (F/UF) | 6/30/2013 15:01 | Trigger + 4 | TAL metals (F/UF) |
| 5 | Trigger + 4 | Isotopic uranium (UF) | 6/30/2013 15:02 | Trigger + 5 | Isotopic uranium (UF) |
| 6 | Trigger + 5 | TOC (UF) | 6/30/2013 15:03 | Trigger + 6 | TOC (UF) |
| 7 | Trigger + 6 | Extra bottle | 6/30/2013 15:04 | Trigger + 7 | SSC |
| 8 | Trigger + 7 | Extra bottle | 7/5/2013 00:14 | Trigger | PCB Congener (UF) |
| 9 | Trigger + 8 | Extra bottle | 7/5/2013 00:16 | Trigger + 2 | SSC, Particle Size |
| 10 | Trigger + 9 | Extra bottle | 7/5/2013 00:16 | Trigger + 2 | TAL metals (F/UF) |
| 11 | Trigger + 10 | Extra bottle | 7/5/2013 00:17 | Trigger + 3 | SSC |
| 12 | Trigger + 11 | Extra bottle | Storm water flow ended, no further samples collected. | | |

**Table 2.4-4 (continued)**

| CO111041 Sampler at Inlet to Upper Detention Pond below LA-2, Sampled 7/12/2013 and 7/13/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suite | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 7/12/2013 11:21 | Trigger | SSC, Particle Size |
| 2 | Trigger +1 | PCB (UF) | 7/12/2013 11:22 | Trigger + 1 | DOC (F), TOC (UF) |
| 3 | Trigger +2 | PCB (UF) | 7/12/2013 11:23 | Trigger + 2 | SSC |
| 4 | Trigger +3 | TAL metals (F/UF) | 7/12/2013 11:24 | Trigger + 3 | TAL metals (F/UF) |
| 5 | Trigger +4 | Isotopic uranium (UF) | 7/12/2013 11:25 | Trigger + 4 | Isotopic uranium (UF) |
| 6 | Trigger +5 | TOC (UF) | | | |
| 7 | Trigger + 6 | SSC | 7/12/2013 11:38 | Trigger + 17 | PCB Congener (UF) |
| 8 | Trigger + 7 | Extra bottle | | | |
| 9 | Trigger + 8 | Extra bottle | 7/12/2013 11:39 | Trigger + 18 | Alkalinity, pH, (UF) |
| 10 | Trigger + 9 | Extra bottle | 7/13/2013 13:32 | Trigger | SO4, $Cl^-$ (F) |
| 11 | Trigger + 10 | Extra bottle | 7/13/2013 13:33 | Trigger + 1 | SSC |
| 12 | Trigger + 11 | Extra bottle | 7/13/2013 13:34 | Trigger + 2 | SSC |

| CO111041 Sampler at Inlet to Upper Detention Pond below LA-2, Sampled 7/28/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suite | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 15:18 | Trigger | SSC, Particle Size PCB Congener (UF) Isotopic uranium (UF), TAL metals (F/UF) |
| 2 | Trigger +1 | PCB (UF) | | | |
| 3 | Trigger +2 | PCB (UF) | | | |
| 4 | Trigger +3 | TAL metals (F/UF) | | | |
| 5 | Trigger +4 | Isotopic uranium (UF) | | | |
| 6 | Trigger +5 | TOC (UF) | Storm water flow ended, no further samples collected. | | |

**Table 2.4-4 (continued)**

| CO111041 Sampler at Inlet to Upper Detention Pond below LA-2, Sampled 8/5/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suite | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 13:03 | Trigger | TSS |
| 2 | Trigger + 1 | PCB (UF) | 13:05 | Trigger + 2 | TSS |
| 3 | Trigger + 2 | PCB (UF) | 13:05 | Trigger + 2 | TSS |
| 4 | Trigger + 3 | TAL metals (F/UF) | 13:06 | Trigger + 3 | TSS |
| 5 | Trigger + 4 | Isotopic uranium (UF) | 13:07 | Trigger + 4 | TSS |
| 6 | Trigger + 5 | TOC (UF) | 13:13 | Trigger + 10 | TSS |
| 7 | Trigger + 6 | Extra bottle | 13:15 | Trigger + 12 | TSS |
| 8 | Trigger + 7 | Extra bottle | 13:33 | Trigger + 30 | TSS |
| 9 | Trigger + 8 | Extra bottle | 13:43 | Trigger + 40 | SSC |
| 10 | Trigger + 9 | Extra bottle | Remaining samples not retrieved for analysis. | | |
| **CO111041 Sampler at Inlet to Upper Detention Pond below LA-2, Sampled 8/9/2013** | | | | | |
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suite | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 13:34 | Trigger | SSC, |
| 2 | Trigger + 1 | PCB (UF) | 13:41 | Trigger + 7 | TSS |
| 3 | Trigger + 2 | PCB (UF) | 13:42 | Trigger + 8 | TSS |
| 4 | Trigger + 3 | TAL metals (F/UF) | 13:44 | Trigger + 10 | TSS |
| 5 | Trigger + 4 | Isotopic uranium (UF) | 13:45 | Trigger + 11 | TSS |
| 6 | Trigger + 5 | TOC (UF) | 13:46 | Trigger + 12 | TSS |
| 7 | Trigger + 6 | Extra bottle | Storm water flow ended, no further samples collected. | | |

**Table 2.4-4 (continued)**

| CO111041 Sampler at Inlet to Upper Detention Pond below LA-2, Sampled 9/10/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suite | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 10:34 | Trigger | SSC |
| 2 | Trigger + 1 | PCB (UF) | 10:35 | Trigger + 1 | TSS |
| 3 | Trigger + 2 | PCB (UF) | 10:36 | Trigger + 2 | TSS |
| 4 | Trigger + 3 | TAL metals (F/UF) | 10:37 | Trigger + 3 | TSS |
| 5 | Trigger + 4 | Isotopic uranium (UF) | 10:38 | Trigger + 4 | TSS |
| 6 | Trigger + 5 | TOC (UF) | 10:39 | Trigger + 5 | TSS |
| 7 | Trigger + 6 | Extra bottle | 10:40 | Trigger + 6 | TSS |
| 8 | Trigger + 7 | Extra bottle | 10:41 | Trigger + 7 | TSS |
| 9 | Trigger + 8 | Extra bottle | 10:57 | Trigger + 23 | TSS |
| 10 | Trigger + 9 | Extra bottle | Remaining samples not retrieved for analysis. | | |

| E026, Sampler at Los Alamos below Ice Rink, Sampled 9/12/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 17:10 | Max +10 | PCB Congener (UF) |
| 2 | Max+11 | PCB (UF) | | | |
| 3 | Max+12 | Gamma spectroscopy (UF) | 17:13 | Max + 13 | Gamma (UF) |
| 4 | Max+13 | Americium-241; isotopic plutonium; isotopic uranium (UF) | Sampling attempted but collection not successful. | | |
| 5 | Max+14 | Americium-241; isotopic plutonium; isotopic uranium (UF) | | | |
| 6 | Max+15 | Strontium-90 (UF) | | | |
| 7 | Max+16 | Dioxins and furans (UF) | 17:26 | Max + 26 | Dioxins and furans (UF) |
| 8 | Max+17 | Dioxins and furans (UF) | Sampling attempted but collection not successful. | | |
| 9 | Max+18 | TAL metals (F/UF) | | | |
| 10 | Max+19 | Cyanide (UF) | | | |
| 11 | Max+20 | Extra bottle | | | |
| 12 | Max+21 | Extra bottle | | | |

**Table 2.4-4 (continued)**

| E026, Sampler at Los Alamos below Ice Rink, Sampled 9/12/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 16:49 | Trigger + 0 | SSC |
| 2 | Trigger+2 | SSC | 16:51 | Trigger + 2 | SSC |
| 3 | Trigger+4 | SSC | 16:53 | Trigger + 4 | SSC |
| 4 | Trigger+6 | SSC | 16:55 | Trigger + 6 | SSC |
| 5 | Trigger+8 | SSC | 16:57 | Trigger + 8 | Metals (F) |
| 6 | Trigger+10 | SSC | 16:59 | Trigger + 10 | Metals (UF) |
| 7 | Trigger+12 | SSC | 17:01 | Trigger + 12 | DOC |
| 8 | Trigger+14 | SSC | 17:03 | Trigger + 14 | SO4, $Cl^-$ (F) |
| 9 | Trigger+16 | SSC | 17:05 | Trigger + 16 | Alkalinity, pH |
| 10 | Trigger+18 | SSC; particle size | 17:07 | Trigger + 18 | SSC, particle size |
| 11 | Trigger+20 | SSC | 17:09 | Trigger + 20 | Americium-241; isotopic plutonium; isotopic uranium (UF) |
| 12 | Trigger+22 | SSC | | | |
| 13 | Trigger+24 | SSC | 17:13 | Trigger + 24 | Gamma spectroscopy(UF) |
| 14 | Trigger+26 | SSC | 17:15 | Trigger + 26 | Strontium-90 (UF) |
| 15 | Trigger+28 | SSC | Sampling attempted but collection not successful. | | |
| 16 | Trigger+30 | SSC | 17:19 | Trigger + 30 | Cyanide (UF) |
| 17 | Trigger+50 | SSC | 17:39 | Trigger + 50 | SSC |
| 18 | Trigger+70 | SSC | 17:59 | Trigger + 70 | SSC |
| 19 | Trigger+90 | SSC | 18:19 | Trigger + 90 | SSC |
| 20 | Trigger+110 | SSC | 18:39 | Trigger + 110 | SSC |
| 21 | Trigger+130 | SSC | 18:59 | Trigger + 130 | SSC |
| 22 | Trigger+150 | SSC | 19:19 | Trigger + 150 | SSC |
| 23 | Trigger+170 | SSC | 19:39 | Trigger + 170 | SSC |
| 24 | Trigger+190 | SSC | 19:59 | Trigger + 190 | SSC |

**Table 2.4-4 (continued)**

| E030, Los Alamos above DP, Sampled 7/12/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | SSC, particle size | 12:30 | Max+10 | SSC, particle size |
| 2 | Max+11 | PCB (UF) | 12:31 | Max+11 | PCB (UF) |
| 3 | Max+12 | PCB (UF) | | | |
| 4 | Max+13 | Gamma spectroscopy (UF) | 12:33 | Max+13 | Gamma spectroscopy(UF) |
| 5 | Max+14 | Americium-241; isotopic plutonium; isotopic uranium (UF) | 12:34 | Max+14 | Americium-241; isotopic plutonium; isotopic uranium (UF) |
| 6 | Max+15 | Americium-241; isotopic plutonium; isotopic uranium (UF) | | | |
| 7 | Max+16 | Strontium-90 (UF) | 12:37 | Max+17 | Strontium-90 (UF) |
| 8 | Max+17 | Dioxins and furans (UF) | 12:38 | Max+18 | Dioxins and furans (UF) |
| 9 | Max+18 | Dioxins and furans (UF) | | | |
| 10 | Max+19 | TAL metals (F/UF) | 12:40 | Max+20 | TAL metals (F/UF) |
| 11 | Max+20 | Cyanide (UF) | 12:41 | Max+21 | Cyanide (UF) |
| 12 | Max+21 | SSC, particle size | 12:42 | Max+22 | SSC, particle size |

**Table 2.4-4 (continued)**

| E030, Los Alamos above DP, Sampled 9/12/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | SSC, particle size | 18:19 | Max+10 | SSC |
| 2 | Max+11 | PCB (UF) | 18:21 | Max+12 | PCB (UF) |
| 3 | Max+12 | PCB (UF) | | | |
| 4 | Max+13 | Gamma spectroscopy(UF) | 18:23 | Max+14 | Gamma spectroscopy(UF) |
| 5 | Max+14 | Americium-241; isotopic plutonium; isotopic uranium (UF) | 18:24 | Max+15 | Americium-241; isotopic plutonium; isotopic uranium (UF) |
| 6 | Max+15 | Americium-241; isotopic plutonium; isotopic uranium (UF) | | | |
| 7 | Max+16 | Strontium-90 (UF) | 18:26 | Max+17 | Strontium-90 (UF) |
| 8 | Max+17 | Dioxins and furans (UF) | 18:28 | Max+19 | Dioxins and furans (UF) |
| 9 | Max+18 | Dioxins and furans (UF) | | | |
| 10 | Max+19 | TAL metals (F/UF) | 18:30 | Max+21 | TAL metals (F/UF) |
| 11 | Max+20 | Cyanide (UF) | 18:31 | Max+22 | Cyanide (UF) |
| 12 | Max+21 | SSC, particle size | 18:32 | Max+23 | SSC |

**Table 2.4-4 (continued)**

| E040, DP above Los Alamos, Sampled 7/12/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | SSC, particle size | 12:15 | Max+10 | Gamma spectroscopy(UF) |
| 2 | Max+11 | PCB (UF) | 12:16 | Max+11 | SSC |
| 3 | Max+12 | PCB (UF) | Sampling attempted but collection not successful. | | |
| 4 | Max+13 | Gamma spectroscopy (UF) | | | |
| 5 | Max+14 | Isotopic plutonium; isotopic uranium (UF) | | | |
| 6 | Max+15 | Isotopic plutonium; isotopic uranium (UF) | | | |
| 7 | Max+16 | Strontium-90 (UF) | | | |
| 8 | Max+17 | TAL metals (F/UF) | | | |
| 9 | Max+18 | SSC, particle size | | | |
| 10 | Max+19 | Extra Bottle | | | |
| 11 | Max+20 | Extra Bottle | | | |
| 12 | Max+21 | Extra Bottle | | | |

| E040, DP above Los Alamos, Sampled 8/5/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | SSC, particle size | 14:24 | Max+10 | SSC, particle size |
| 2 | Max+11 | PCB (UF) | 14:26 | Max+12 | PCB UF |
| 3 | Max+12 | PCB (UF) | | | |
| 4 | Max+13 | Gamma spectroscopy (UF) | 14:28 | Max+14 | Gamma spectroscopy(UF) |
| 5 | Max+14 | Isotopic plutonium; isotopic uranium (UF) | 14:29 | Max+15 | Isotopic plutonium; isotopic uranium (UF) |
| 6 | Max+15 | Isotopic plutonium; isotopic uranium (UF) | | | |
| 7 | Max+16 | Strontium-90 (UF) | 14:31 | Max+17 | Strontium-90 (UF) |
| 8 | Max+17 | TAL metals (F/UF) | 14:32 | Max+18 | TAL metals (F/UF) |
| 9 | Max+18 | SSC, particle size | 14:33 | Max+19 | Alkalinity, pH (UF) |
| 10 | Max+19 | Extra Bottle | 14:34 | Max+20 | SO4, $Cl^-$ (F) |
| 11 | Max+20 | Extra Bottle | 14:36 | Max+22 | DOC (F) |
| 12 | Max+21 | Extra Bottle | 14:37 | Max+23 | SSC |

**Table 2.4-4 (continued)**

| E040, DP above Los Alamos, Sampled 9/10/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | SSC, particle size | 18:54 | Max+10 | SSC, particle size |
| 2 | Max+11 | PCB (UF) | 18:55 | Max+11 | PCB (UF) |
| 3 | Max+12 | PCB (UF) | | | |
| 4 | Max+13 | Gamma spectroscopy(UF) | 18:58 | Max+14 | Gamma spectroscopy (UF) |
| 5 | Max+14 | Isotopic plutonium; isotopic uranium (UF) | 18:59 | Max+15 | Isotopic plutonium; isotopic uranium (UF) |
| 6 | Max+15 | Isotopic plutonium; isotopic uranium (UF) | | | |
| 7 | Max+16 | Strontium-90 (UF) | 19:02 | Max+18 | Strontium-90 (UF) |
| 8 | Max+17 | TAL metals (F/UF) | 19:03 | Max+19 | Alkalinity, pH |
| 9 | Max+18 | SSC, particle size | 19:05 | Max+21 | SO4, $Cl^-$, DOC (F) |
| 10 | Max+19 | Extra Bottle | 19:06 | Max+22 | TAL metals (UF) |
| 11 | Max+20 | Extra Bottle | 19:07 | Max+23 | TAL metals (F) |
| 12 | Max+21 | Extra Bottle | 19:09 | Max+25 | SSC |

| E040, DP above Los Alamos, Sampled 9/12/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | SSC, particle size | 16:14 | Sampling attempted but collection not successful. | |
| 2 | Max+11 | PCB (UF) | 16:15 | Max+11 | PCB (UF) |
| 3 | Max+12 | PCB (UF) | | | |
| 4 | Max+13 | Gamma spectroscopy (UF) | 16:17 | Max+13 | SSC, particle size |
| 5 | Max+14 | Isotopic plutonium; isotopic uranium (UF) | 16:18 | Max+14 | Gamma spectroscopy(UF) |
| 6 | Max+15 | Isotopic plutonium; isotopic uranium (UF) | 16:20 | Max+16 | Isotopic plutonium; isotopic uranium (UF) |
| 7 | Max+16 | Strontium-90 (UF) | | | |
| 8 | Max+17 | TAL metals (F/UF) | 16:22 | Max+18 | Dioxins/Furans |
| 9 | Max+18 | SSC, particle size | | | |
| 10 | Max+19 | Extra Bottle | 16:24 | Max+20 | TAL metals (F/UF) |
| 11 | Max+20 | Extra Bottle | 16:25 | Max+21 | Cyanide (total) |
| 12 | Max+21 | Extra Bottle | 16:26 | Max+22 | SSC, particle size |

**Table 2.4-4 (continued)**

| E055, Pueblo above Acid, Sampled 6/14/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | SSC (UF); particle size | 13:45 | Max+10 | SSC (UF); particle size |
| 2 | Max+11 | PCB (UF) | 13:46 | Max+11 | PCB (UF) |
| 3 | Max+12 | PCB (UF) | | | |
| 4 | Max+13 | Isotopic plutonium (UF) | 13:48 | Max+13 | Isotopic plutonium (UF) |
| 5 | Max+14 | TAL metals (F/UF) | | | |
| 6 | Max+15 | SSC | | | |
| 7 | Max+16 | Extra bottle | 13:52 | Max+17 | TAL metals (UF) |
| 8 | Max+17 | Extra bottle | 13:53 | Max+18 | TAL metals (F) |
| 9 | Max+18 | Extra bottle | 13:54 | Max+19 | Alkalinity, pH (UF) |
| 10 | Max+19 | Extra bottle | 13:55 | Max+20 | SO4, $Cl^-$ (F) |
| 11 | Max+20 | Extra bottle | 13:56 | Max+21 | DOC (F) |
| 12 | Max+21 | Extra bottle | 13:57 | Max+22 | SSC |

| E055, Pueblo above Acid, Sampled 9/12/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | SSC (UF); particle size | 16:55 | Max+10 | SSC (UF); particle size |
| 2 | Max+11 | PCB (UF) | 16:56 | Max+11 | PCB (UF) |
| 3 | Max+12 | PCB (UF) | | | |
| 4 | Max+13 | Isotopic plutonium (UF) | 16:58 | Max+13 | Isotopic plutonium (UF) |
| 5 | Max+14 | TAL metals (F/UF) | 17:00 | Max+15 | TAL metals (F/UF) |
| 6 | Max+15 | SSC | 17:01 | Max+16 | SSC |
| 7 | Max+16 | Extra bottle | 17:02 | Max+17 | DOC (F) |
| 8 | Max+17 | Extra bottle | 17:03 | Max+18 | SO4, $Cl^-$ (F) |
| 9 | Max+18 | Extra bottle | 17:04 | Max+19 | Alkalinity, pH (UF) |
| 10 | Max+19 | Extra bottle | Remaining samples not retrieved for analysis. | | |
| 11 | Max+20 | Extra bottle | | | |
| 12 | Max+21 | Extra bottle | | | |

**Table 2.4-4 (continued)**

| E055.5, South Fork of Acid Canyon, Sampled 7/12/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | SSC (UF); particle size | 11:50 | Max+10 | SSC (UF); particle size |
| 2 | Max+11 | PCB (UF) | 11:52 | Max+12 | PCB (UF) |
| 3 | Max+12 | PCB (UF) | | | |
| 4 | Max+13 | Isotopic plutonium (UF) | 11:56 | Max+16 | Isotopic plutonium (UF) |
| 5 | Max+14 | TAL metals (F/UF) | 11:57 | Max+17 | TAL metals (F/UF) |
| 6 | Max+15 | SSC | 11:59 | Max+19 | SSC |
| 7 | Max+16 | Extra bottle | Sampling attempted but collection not successful. | | |
| 8 | Max+17 | Extra bottle | | | |
| 9 | Max+18 | Extra bottle | | | |
| 10 | Max+19 | Extra bottle | | | |
| 11 | Max+20 | Extra bottle | | | |
| 12 | Max+21 | Extra bottle | | | |

| E055.5, South Fork of Acid Canyon, Sampled 9/13/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | SSC (UF); particle size | 06:55 | Max+10 | SSC (UF); particle size |
| 2 | Max+11 | PCB (UF) | 06:57 | Max+12 | PCB (UF) |
| 3 | Max+12 | PCB (UF) | | | |
| 4 | Max+13 | Isotopic plutonium (UF) | 07:01 | Max+16 | Isotopic plutonium (UF) |
| 5 | Max+14 | TAL metals (F/UF) | 07:03 | Max+18 | TAL metals (F/UF) |
| 6 | Max+15 | SSC | 07:05 | Max+20 | SSC |
| 7 | Max+16 | Extra bottle | 07:06 | Max+21 | SO4, $Cl^-$, DOC (F) |
| 8 | Max+17 | Extra bottle | 07:08 | Max+23 | Alkalinity, pH (UF) |
| 9 | Max+18 | Extra bottle | Sampling attempted but collection not successful. | | |
| 10 | Max+19 | Extra bottle | | | |
| 11 | Max+20 | Extra bottle | | | |
| 12 | Max+21 | Extra bottle | | | |

**Table 2.4-4 (continued)**

| E056, Acid above Pueblo, Sampled 6/14/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | SSC (UF); particle size | 13:40 | Max+10 | SSC, particle size, TAL metals (F/UF) |
| 2 | Max+11 | PCB (UF) | Sampling attempted but collection not successful. | | |
| 3 | Max+12 | PCB (UF) | | | |
| 4 | Max+13 | Isotopic plutonium (UF) | | | |
| 5 | Max+14 | TAL metals (F/UF) | | | |
| 6 | Max+15 | SSC | | | |
| 7 | Max+16 | Extra bottle | | | |
| 8 | Max+17 | Extra bottle | | | |
| 9 | Max+18 | Extra bottle | | | |
| 10 | Max+19 | Extra bottle | | | |
| 11 | Max+20 | Extra bottle | | | |
| 12 | Max+21 | Extra bottle | | | |
| **E056, Acid above Pueblo, Sampled 7/12/2013** | | | | | |
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | SSC; particle size | 12:00 | Max+10 | SSC; particle size |
| 2 | Max+11 | PCB (UF) | 12:02 | Max+12 | PCB (UF) |
| 3 | Max+12 | PCB (UF) | | | |
| 4 | Max+13 | Isotopic plutonium (UF) | 12:04 | Max+14 | Isotopic plutonium (UF) |
| 5 | Max+14 | TAL metals (F/UF) | 12:05 | Max+15 | TAL metals (F/UF) |
| 6 | Max+15 | SSC | 12:06 | Max+16 | SSC |
| 7 | Max+16 | Extra bottle | 12:07 | Max+17 | DOC (F) |
| 8 | Max+17 | Extra bottle | 12:09 | Max+19 | SO4, $Cl^-$ (F) |
| 9 | Max+18 | Extra bottle | 12:10 | Max+20 | Alkalinity, pH (UF) |
| 10 | Max+19 | Extra bottle | Remaining samples not retrieved for analysis. | | |
| 11 | Max+20 | Extra bottle | | | |
| 12 | Max+21 | Extra bottle | | | |

**Table 2.4-4 (continued)**

| E056, Acid above Pueblo, Sampled 8/5/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | SSC; particle size | 13:45 | Max+10 | SSC; particle size |
| 2 | Max+11 | PCB (UF) | 13:46 | Max+11 | PCB (UF) |
| 3 | Max+12 | PCB (UF) | | | |
| 4 | Max+13 | Isotopic plutonium (UF) | 13:49 | Max+14 | Isotopic plutonium (UF) |
| 5 | Max+14 | TAL metals (F/UF) | 13:50 | Max+15 | TAL metals (F/UF) |
| 6 | Max+15 | SSC | 13:52 | Max+17 | SSC |
| 7 | Max+16 | Extra bottle | 13:53 | Max+18 | DOC (F) |
| 8 | Max+17 | Extra bottle | 13:54 | Max+19 | SO4, $Cl^-$ (F) |
| 9 | Max+18 | Extra bottle | 13:55 | Max+20 | Alkalinity, pH (UF) |
| 10 | Max+19 | Extra bottle | Remaining samples not retrieved for analysis. | | |
| 11 | Max+20 | Extra bottle | | | |
| 12 | Max+21 | Extra bottle | | | |
| **E056, Acid above Pueblo, Sampled 9/12/2013** | | | | | |
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | SSC; particle size | 16:25 | Max+10 | SSC; particle size |
| 2 | Max+11 | PCB (UF) | 16:27 | Max+12 | PCB (UF) |
| 3 | Max+12 | PCB (UF) | | | |
| 4 | Max+13 | Isotopic plutonium (UF) | 16:30 | Max+15 | Isotopic plutonium (UF) |
| 5 | Max+14 | TAL metals (F/UF) | 16:33 | Max+18 | TAL metals (F/UF) |
| 6 | Max+15 | SSC | 16:35 | Max+20 | SSC |
| 7 | Max+16 | Extra bottle | 16:37 | Max+22 | DOC (F) |
| 8 | Max+17 | Extra bottle | 16:38 | Max+23 | SO4, $Cl^-$ (F) |
| 9 | Max+18 | Extra bottle | 16:40 | Max+25 | Alkalinity, pH (UF) |
| 10 | Max+19 | Extra bottle | Remaining samples not retrieved for analysis. | | |
| 11 | Max+20 | Extra bottle | | | |
| 12 | Max+21 | Extra bottle | | | |

**Table 2.4-4 (continued)**

<table>
<tr><th colspan="6">E038, DP above TA-21, Sampled 6/14/2013</th></tr>
<tr><th rowspan="2">Sample Bottle (1 L)</th><th colspan="2">Planned</th><th colspan="3">Actual</th></tr>
<tr><th>12-Bottle ISCO Start Time (min)</th><th>Analytical Suites</th><th>Sample Collection Time</th><th>12-Bottle ISCO Start Time (min)</th><th>Analyses Requested</th></tr>
<tr><td>1</td><td>Max+10</td><td>PCB (UF)</td><td rowspan="2">12:55</td><td rowspan="2">Max+10</td><td rowspan="2">PCB (UF)</td></tr>
<tr><td>2</td><td>Max+11</td><td>PCB (UF)</td></tr>
<tr><td>3</td><td>Max+12</td><td>Gamma spectroscopy (UF)</td><td>12:58</td><td>Max+13</td><td>TAL metals (F/UF)</td></tr>
<tr><td>4</td><td>Max+13</td><td>Isotopic uranium; isotopic plutonium (UF)</td><td rowspan="2">12:59</td><td rowspan="2">Max+14</td><td rowspan="2">Isotopic uranium; isotopic plutonium (UF)</td></tr>
<tr><td>5</td><td>Max+14</td><td>Isotopic uranium; isotopic plutonium (UF)</td></tr>
<tr><td>6</td><td>Max+15</td><td>Strontium-90 (UF)</td><td>13:01</td><td>Max+16</td><td>Strontium-90 (UF)</td></tr>
<tr><td>7</td><td>Max+16</td><td>TAL metals (F/UF)</td><td>13:02</td><td>Max+17</td><td>Gamma spectroscopy (UF)</td></tr>
<tr><td>8</td><td>Max+17</td><td>Extra bottle</td><td colspan="3" rowspan="5">Remaining samples not retrieved for analysis.</td></tr>
<tr><td>9</td><td>Max+18</td><td>Extra Bottle</td></tr>
<tr><td>10</td><td>Max+19</td><td>Extra Bottle</td></tr>
<tr><td>11</td><td>Max+20</td><td>Extra Bottle</td></tr>
<tr><td>12</td><td>Max+21</td><td>Extra Bottle</td></tr>
<tr><th colspan="6">E038, DP above TA-21, Sampled 6/30/2013</th></tr>
<tr><th rowspan="2">Sample Bottle (1 L)</th><th colspan="2">Planned</th><th colspan="3">Actual</th></tr>
<tr><th>12-Bottle ISCO Start Time (min)</th><th>Analytical Suites</th><th>Sample Collection Time</th><th>12-Bottle ISCO Start Time (min)</th><th>Analyses Requested</th></tr>
<tr><td>1</td><td>Max+10</td><td>PCB (UF)</td><td rowspan="2">15:15</td><td rowspan="2">Max+10</td><td rowspan="2">PCB (UF)</td></tr>
<tr><td>2</td><td>Max+11</td><td>PCB (UF)</td></tr>
<tr><td>3</td><td>Max+12</td><td>Gamma spectroscopy (UF)</td><td>15:18</td><td>Max+13</td><td>Gamma spectroscopy (UF)</td></tr>
<tr><td>4</td><td>Max+13</td><td>Isotopic uranium; isotopic plutonium (UF)</td><td rowspan="2">15:19</td><td rowspan="2">Max+14</td><td rowspan="2">Isotopic uranium; isotopic plutonium (UF)</td></tr>
<tr><td>5</td><td>Max+14</td><td>Isotopic uranium; isotopic plutonium (UF)</td></tr>
<tr><td>6</td><td>Max+15</td><td>Strontium-90 (UF)</td><td>15:21</td><td>Max+16</td><td>Strontium-90 (UF)</td></tr>
<tr><td>7</td><td>Max+16</td><td>TAL metals (F/UF)</td><td>15:22</td><td>Max+17</td><td>TAL metals (F/UF)</td></tr>
<tr><td>8</td><td>Max+17</td><td>Extra bottle</td><td colspan="3" rowspan="5">Remaining samples not retrieved for analysis.</td></tr>
<tr><td>9</td><td>Max+18</td><td>Extra Bottle</td></tr>
<tr><td>10</td><td>Max+19</td><td>Extra Bottle</td></tr>
<tr><td>11</td><td>Max+20</td><td>Extra Bottle</td></tr>
<tr><td>12</td><td>Max+21</td><td>Extra Bottle</td></tr>
</table>

**Table 2.4-4 (continued)**

| E038, DP above TA-21, Sampled 6/14/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 12:45 | Trigger+0 | SSC |
| 2 | Trigger+2 | SSC | 12:47 | Trigger+2 | SSC |
| 3 | Trigger+4 | SSC | 12:49 | Trigger+4 | SSC |
| 4 | Trigger+6 | SSC | 12:51 | Trigger+6 | SSC |
| 5 | Trigger+8 | SSC | 12:53 | Trigger+8 | SSC; particle size |
| 6 | Trigger+10 | SSC | 12:55 | Trigger+10 | DOC (F) |
| 7 | Trigger+12 | SSC | 12:57 | Trigger+12 | SO4, $Cl^-$ (F) |
| 8 | Trigger+14 | SSC | 12:59 | Trigger+14 | Alk, pH (UF) |
| 9 | Trigger+16 | SSC | 13:01 | Trigger+16 | SSC |
| 10 | Trigger+18 | SSC; particle size | 13:03 | Trigger+18 | SSC |
| 11 | Trigger+20 | SSC | 13:05 | Trigger+20 | SSC |
| 12 | Trigger+22 | SSC | 13:07 | Trigger+22 | SSC |
| 13 | Trigger+24 | SSC | 13:09 | Trigger+24 | SSC |
| 14 | Trigger+26 | SSC | 13:11 | Trigger+26 | SSC |
| 15 | Trigger+28 | SSC | 13:13 | Trigger+28 | SSC |
| 16 | Trigger+30 | SSC | 13:15 | Trigger+30 | SSC |
| 17 | Trigger+50 | SSC | 13:35 | Trigger+50 | SSC |
| 18 | Trigger+70 | SSC | 13:55 | Trigger+70 | SSC |
| 19 | Trigger+90 | SSC | 14:15 | Trigger+90 | SSC |
| 20 | Trigger+110 | SSC | 14:35 | Trigger+110 | SSC |
| 21 | Trigger+130 | SSC | 14:55 | Trigger+130 | SSC |
| 22 | Trigger+150 | SSC | 15:15 | Trigger+150 | SSC |
| 23 | Trigger+170 | SSC | Sampling attempted but collection not successful. | | |
| 24 | Trigger+190 | SSC | | | |

**Table 2.4-4 (continued)**

| E038, DP above TA-21, Sampled 6/30/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 15:00 | Trigger+0 | SSC |
| 2 | Trigger+2 | SSC | 15:02 | Trigger+2 | Gamma spectroscopy (UF) |
| 3 | Trigger+4 | SSC | 15:04 | Trigger+4 | Isotopic plutonium (UF) |
| 4 | Trigger+6 | SSC | 15:06 | Trigger+6 | SSC |
| 5 | Trigger+8 | SSC | 15:08 | Trigger+8 | SSC |
| 6 | Trigger+10 | SSC | 15:10 | Trigger+10 | SSC |
| 7 | Trigger+12 | SSC | 15:12 | Trigger+12 | SSC |
| 8 | Trigger+14 | SSC | 15:14 | Trigger+14 | SSC |
| 9 | Trigger+16 | SSC | 15:16 | Trigger+16 | SSC; particle size |
| 10 | Trigger+18 | SSC; particle size | 15:18 | Trigger+18 | SSC |
| 11 | Trigger+20 | SSC | 15:20 | Trigger+20 | DOC (F) |
| 12 | Trigger+22 | SSC | 15:22 | Trigger+22 | SO4, $Cl^-$ (F) |
| 13 | Trigger+24 | SSC | 15:24 | Trigger+24 | Alk, pH (UF) |
| 14 | Trigger+26 | SSC | 15:26 | Trigger+26 | SSC |
| 15 | Trigger+28 | SSC | 15:28 | Trigger+28 | SSC |
| 16 | Trigger+30 | SSC | 15:30 | Trigger+30 | SSC |
| 17 | Trigger+50 | SSC | 15:50 | Trigger+50 | SSC |
| 18 | Trigger+70 | SSC | 16:10 | Trigger+70 | SSC |
| 19 | Trigger+90 | SSC | Sampling attempted but collection not successful. | | |
| 20 | Trigger+110 | SSC | | | |
| 21 | Trigger+130 | SSC | | | |
| 22 | Trigger+150 | SSC | | | |
| 23 | Trigger+170 | SSC | | | |
| 24 | Trigger+190 | SSC | | | |

**Table 2.4-4 (continued)**

| E038, DP above TA-21, Sampled 7/12/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 11:30 | Max+10 | PCB (UF) |
| 2 | Max+11 | PCB (UF) | | | |
| 3 | Max+12 | Gamma spectroscopy (UF) | 11:32 | Max+12 | Gamma spectroscopy (UF) |
| 4 | Max+13 | Isotopic uranium; isotopic plutonium (UF) | 11:33 | Max+13 | Isotopic uranium; isotopic plutonium (UF) |
| 5 | Max+14 | Isotopic uranium; isotopic plutonium (UF) | | | |
| 6 | Max+15 | Strontium-90 (UF) | 11:36 | Max+16 | Strontium-90 (UF) |
| 7 | Max+16 | TAL metals (F/UF) | 11:37 | Max+17 | TAL metals (F/UF) |
| 8 | Max+17 | Extra bottle | Remaining samples not retrieved for analysis. | | |
| 9 | Max+18 | Extra Bottle | | | |
| 10 | Max+19 | Extra Bottle | | | |
| 11 | Max+20 | Extra Bottle | | | |
| 12 | Max+21 | Extra Bottle | | | |
| **E038, DP above TA-21, Sampled 7/28/2013** | | | | | |
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 14:40 | Max+10 | PCB (UF) |
| 2 | Max+11 | PCB (UF) | | | |
| 3 | Max+12 | Gamma spectroscopy (UF) | 14:42 | Max+12 | Gamma spectroscopy (UF) |
| 4 | Max+13 | Isotopic uranium; isotopic plutonium (UF) | 14:43 | Max+13 | Isotopic uranium; isotopic plutonium (UF) |
| 5 | Max+14 | Isotopic uranium; isotopic plutonium (UF) | | | |
| 6 | Max+15 | Strontium-90 (UF) | 14:45 | Max+15 | Strontium-90 (UF) |
| 7 | Max+16 | TAL metals (F/UF) | 14:46 | Max+16 | TAL metals (F/UF) |
| 8 | Max+17 | Extra bottle | Remaining samples not retrieved for analysis. | | |
| 9 | Max+18 | Extra Bottle | | | |
| 10 | Max+19 | Extra Bottle | | | |
| 11 | Max+20 | Extra Bottle | | | |
| 12 | Max+21 | Extra Bottle | | | |

**Table 2.4-4 (continued)**

| E038, DP above TA-21, Sampled 7/12/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 11:20 | Trigger+0 | SSC |
| 2 | Trigger+2 | SSC | 11:22 | Trigger+2 | Gamma spectroscopy (UF) |
| 3 | Trigger+4 | SSC | 11:24 | Trigger+4 | Isotopic plutonium (UF) |
| 4 | Trigger+6 | SSC | 11:26 | Trigger+6 | SSC |
| 5 | Trigger+8 | SSC | 11:28 | Trigger+8 | SSC |
| 6 | Trigger+10 | SSC | 11:30 | Trigger+10 | SSC |
| 7 | Trigger+12 | SSC | 11:32 | Trigger+12 | SSC |
| 8 | Trigger+14 | SSC | 11:34 | Trigger+14 | SSC |
| 9 | Trigger+16 | SSC | 11:36 | Trigger+16 | SSC; particle size |
| 10 | Trigger+18 | SSC; particle size | 11:38 | Trigger+18 | DOC (F) |
| 11 | Trigger+20 | SSC | 11:40 | Trigger+20 | SO4, $Cl^-$ (F) |
| 12 | Trigger+22 | SSC | 11:42 | Trigger+22 | Alk, pH (UF) |
| 13 | Trigger+24 | SSC | 11:44 | Trigger+24 | SSC |
| 14 | Trigger+26 | SSC | 11:46 | Trigger+26 | SSC |
| 15 | Trigger+28 | SSC | 11:48 | Trigger+28 | SSC |
| 16 | Trigger+30 | SSC | 11:50 | Trigger+30 | SSC |
| 17 | Trigger+50 | SSC | 12:10 | Trigger+50 | SSC |
| 18 | Trigger+70 | SSC | 12:30 | Trigger+70 | SSC |
| 19 | Trigger+90 | SSC | 12:50 | Trigger+90 | SSC |
| 20 | Trigger+110 | SSC | 13:10 | Trigger+110 | SSC |
| 21 | Trigger+130 | SSC | 13:30 | Trigger+130 | SSC |
| 22 | Trigger+150 | SSC | 13:50 | Trigger+150 | SSC |
| 23 | Trigger+170 | SSC | 14:10 | Trigger+170 | SSC |
| 24 | Trigger+190 | SSC | 14:30 | Trigger+190 | SSC |

**Table 2.4-4 (continued)**

| E038, DP above TA-21, Sampled 7/28/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 14:30 | Trigger+0 | SSC |
| 2 | Trigger+2 | SSC | 14:32 | Trigger+2 | SSC |
| 3 | Trigger+4 | SSC | 14:34 | Trigger+4 | SSC |
| 4 | Trigger+6 | SSC | 14:36 | Trigger+6 | SSC |
| 5 | Trigger+8 | SSC | 14:38 | Trigger+8 | SSC |
| 6 | Trigger+10 | SSC | 14:40 | Trigger+10 | SSC |
| 7 | Trigger+12 | SSC | 14:42 | Trigger+12 | SSC |
| 8 | Trigger+14 | SSC | 14:44 | Trigger+14 | SSC |
| 9 | Trigger+16 | SSC | 14:46 | Trigger+16 | SSC; particle size |
| 10 | Trigger+18 | SSC; particle size | 14:48 | Trigger+18 | DOC (F) |
| 11 | Trigger+20 | SSC | 14:50 | Trigger+20 | SO4, $Cl^-$ (F) |
| 12 | Trigger+22 | SSC | 14:52 | Trigger+22 | Alk, pH (UF) |
| 13 | Trigger+24 | SSC | 14:54 | Trigger+24 | SSC |
| 14 | Trigger+26 | SSC | 14:56 | Trigger+26 | SSC |
| 15 | Trigger+28 | SSC | 14:58 | Trigger+28 | SSC |
| 16 | Trigger+30 | SSC | 15:00 | Trigger+30 | SSC |
| 17 | Trigger+50 | SSC | 15:20 | Trigger+50 | SSC |
| 18 | Trigger+70 | SSC | 15:40 | Trigger+70 | SSC |
| 19 | Trigger+90 | SSC | 16:00 | Trigger+90 | SSC |
| 20 | Trigger+110 | SSC | 16:20 | Trigger+110 | SSC |
| 21 | Trigger+130 | SSC | 16:40 | Trigger+130 | SSC |
| 22 | Trigger+150 | SSC | 17:00 | Trigger+150 | SSC |
| 23 | Trigger+170 | SSC | 17:20 | Trigger+170 | SSC |
| 24 | Trigger+190 | SSC | 17:40 | Trigger+190 | SSC |

**Table 2.4-4 (continued)**

<table>
<tr><th colspan="6">E038, DP above TA-21, Sampled 8/5/2013</th></tr>
<tr><th rowspan="2">Sample Bottle (1 L)</th><th colspan="2">Planned</th><th colspan="3">Actual</th></tr>
<tr><th>12-Bottle ISCO Start Time (min)</th><th>Analytical Suites</th><th>Sample Collection Time</th><th>12-Bottle ISCO Start Time (min)</th><th>Analyses Requested</th></tr>
<tr><td>1</td><td>Max+10</td><td>PCB (UF)</td><td>13:35</td><td>Max+10</td><td>TSS</td></tr>
<tr><td>2</td><td>Max+11</td><td>PCB (UF)</td><td>13:36</td><td>Max+11</td><td>TSS</td></tr>
<tr><td>3</td><td>Max+12</td><td>Gamma spectroscopy (UF)</td><td>13:37</td><td>Max+12</td><td>TSS</td></tr>
<tr><td>4</td><td>Max+13</td><td>Isotopic uranium; isotopic plutonium (UF)</td><td>13:38</td><td>Max+13</td><td>TSS</td></tr>
<tr><td>5</td><td>Max+14</td><td>Isotopic uranium; isotopic plutonium (UF)</td><td>13:39</td><td>Max+14</td><td>TSS</td></tr>
<tr><td>6</td><td>Max+15</td><td>Strontium-90 (UF)</td><td>13:41</td><td>Max+16</td><td>TSS</td></tr>
<tr><td>7</td><td>Max+16</td><td>TAL metals (F/UF)</td><td>13:42</td><td>Max+17</td><td>TSS</td></tr>
<tr><td>8</td><td>Max+17</td><td>Extra bottle</td><td rowspan="5" colspan="3">Remaining samples not retrieved for analysis.</td></tr>
<tr><td>9</td><td>Max+18</td><td>Extra Bottle</td></tr>
<tr><td>10</td><td>Max+19</td><td>Extra Bottle</td></tr>
<tr><td>11</td><td>Max+20</td><td>Extra Bottle</td></tr>
<tr><td>12</td><td>Max+21</td><td>Extra Bottle</td></tr>
<tr><th colspan="6">E039.1, DP below Grade-Control Structure, Sampled 6/14/2013</th></tr>
<tr><th rowspan="2">Sample Bottle (1 L)</th><th colspan="2">Planned</th><th colspan="3">Actual</th></tr>
<tr><th>12-Bottle ISCO Start Time (min)</th><th>Analytical Suites</th><th>Sample Collection Time</th><th>12-Bottle ISCO Start Time (min)</th><th>Analyses Requested</th></tr>
<tr><td>1</td><td>Max+10</td><td>PCB (UF)</td><td rowspan="2">14:10</td><td rowspan="2">Max+10</td><td rowspan="2">PCB (UF)</td></tr>
<tr><td>2</td><td>Max+11</td><td>PCB (UF)</td></tr>
<tr><td>3</td><td>Max+12</td><td>Gamma spectroscopy (UF)</td><td>14:12</td><td>Max+12</td><td>Gamma spectroscopy (UF)</td></tr>
<tr><td>4</td><td>Max+13</td><td>Isotopic uranium; isotopic plutonium (UF)</td><td rowspan="2">14:13</td><td rowspan="2">Max+13</td><td rowspan="2">Isotopic uranium; isotopic plutonium (UF)</td></tr>
<tr><td>5</td><td>Max+14</td><td>Isotopic uranium; isotopic plutonium (UF)</td></tr>
<tr><td>6</td><td>Max+15</td><td>Strontium-90 (UF)</td><td>14:15</td><td>Max+15</td><td>Strontium-90 (UF)</td></tr>
<tr><td>7</td><td>Max+16</td><td>TAL metals (F/UF)</td><td>14:16</td><td>Max+16</td><td>TAL metals (F/UF)</td></tr>
<tr><td>8</td><td>Max+17</td><td>Extra bottle</td><td rowspan="5" colspan="3">Remaining samples not retrieved for analysis.</td></tr>
<tr><td>9</td><td>Max+18</td><td>Extra Bottle</td></tr>
<tr><td>10</td><td>Max+19</td><td>Extra Bottle</td></tr>
<tr><td>11</td><td>Max+20</td><td>Extra Bottle</td></tr>
<tr><td>12</td><td>Max+21</td><td>Extra Bottle</td></tr>
</table>

**Table 2.4-4 (continued)**

| E038, DP above TA-21, Sampled 8/5/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 12-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 13:25 | Trigger+0 | SSC |
| 2 | Trigger+2 | SSC | 13:27 | Trigger+2 | TSS |
| 3 | Trigger+4 | SSC | 13:29 | Trigger+4 | TSS |
| 4 | Trigger+6 | SSC | 13:31 | Trigger+6 | TSS |
| 5 | Trigger+8 | SSC | 13:33 | Trigger+8 | TSS |
| 6 | Trigger+10 | SSC | 13:35 | Trigger+10 | SSC |
| 7 | Trigger+12 | SSC | 13:37 | Trigger+12 | TSS |
| 8 | Trigger+14 | SSC | 13:39 | Trigger+14 | TSS |
| 9 | Trigger+16 | SSC | 13:41 | Trigger+16 | TSS |
| 10 | Trigger+18 | SSC; particle size | 13:43 | Trigger+18 | TSS |
| 11 | Trigger+20 | SSC | 13:45 | Trigger+20 | SSC |
| 12 | Trigger+22 | SSC | 13:47 | Trigger+22 | TSS |
| 13 | Trigger+24 | SSC | 13:49 | Trigger+24 | TSS |
| 14 | Trigger+26 | SSC | 13:51 | Trigger+26 | TSS |
| 15 | Trigger+28 | SSC | 13:53 | Trigger+28 | TSS |
| 16 | Trigger+30 | SSC | 13:55 | Trigger+30 | SSC |
| 17 | Trigger+50 | SSC | 14:15 | Trigger+50 | SSC |
| 18 | Trigger+70 | SSC | 14:35 | Trigger+70 | TSS |
| 19 | Trigger+90 | SSC | 14:55 | Trigger+90 | SSC |
| 20 | Trigger+110 | SSC | 15:15 | Trigger+110 | SSC |
| 21 | Trigger+130 | SSC | Sampling attempted but collection not successful. | | |
| 22 | Trigger+150 | SSC | | | |
| 23 | Trigger+170 | SSC | | | |
| 24 | Trigger+190 | SSC | | | |

**Table 2.4-4 (continued)**

| E039.1, DP below Grade-Control Structure, Sampled 6/14/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 14:00 | Trigger+0 | SSC |
| 2 | Trigger+2 | SSC | 14:02 | Trigger+2 | SSC |
| 3 | Trigger+4 | SSC | 14:04 | Trigger+4 | SSC |
| 4 | Trigger+6 | SSC | 14:06 | Trigger+6 | SSC |
| 5 | Trigger+8 | SSC | 14:08 | Trigger+8 | SSC |
| 6 | Trigger+10 | SSC | 14:10 | Trigger+10 | SSC |
| 7 | Trigger+12 | SSC | 14:12 | Trigger+12 | SSC |
| 8 | Trigger+14 | SSC | 14:14 | Trigger+14 | SSC |
| 9 | Trigger+16 | SSC | 14:16 | Trigger+16 | SSC; particle size |
| 10 | Trigger+18 | SSC; particle size | 14:18 | Trigger+18 | DOC (F) |
| 11 | Trigger+20 | SSC | 14:20 | Trigger+20 | SO4, $Cl^-$ (F) |
| 12 | Trigger+22 | SSC | 14:22 | Trigger+22 | Alk, pH (UF) |
| 13 | Trigger+24 | SSC | 14:24 | Trigger+24 | SSC |
| 14 | Trigger+26 | SSC | 14:26 | Trigger+26 | SSC |
| 15 | Trigger+28 | SSC | 14:28 | Trigger+28 | SSC |
| 16 | Trigger+30 | SSC | 14:30 | Trigger+30 | SSC |
| 17 | Trigger+50 | SSC | 14:50 | Trigger+50 | SSC |
| 18 | Trigger+70 | SSC | 15:10 | Trigger+70 | SSC |
| 19 | Trigger+90 | SSC | Sampling attempted but collection not successful. | | |
| 20 | Trigger+110 | SSC | | | |
| 21 | Trigger+130 | SSC | | | |
| 22 | Trigger+150 | SSC | | | |
| 23 | Trigger+170 | SSC | | | |
| 24 | Trigger+190 | SSC | | | |

**Table 2.4-4 (continued)**

| E039.1, DP below Grade-Control Structure, Sampled 6/30/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 16:00 | Max+10 | PCB (UF) |
| 2 | Max+11 | PCB (UF) | | | |
| 3 | Max+12 | Gamma spectroscopy (UF) | 16:02 | Max+12 | Gamma spectroscopy (UF) |
| 4 | Max+13 | Isotopic uranium; isotopic plutonium (UF) | 16:03 | Max+13 | Isotopic uranium; isotopic plutonium (UF) |
| 5 | Max+14 | Isotopic uranium; isotopic plutonium (UF) | | | |
| 6 | Max+15 | Strontium-90 (UF) | 16:05 | Max+15 | Strontium-90 (UF) |
| 7 | Max+16 | TAL metals (F/UF) | 16:06 | Max+16 | TAL metals (F/UF) |
| 8 | Max+17 | Extra bottle | Remaining samples not retrieved for analysis. | | |
| 9 | Max+18 | Extra Bottle | | | |
| 10 | Max+19 | Extra Bottle | | | |
| 11 | Max+20 | Extra Bottle | | | |
| 12 | Max+21 | Extra Bottle | | | |
| **E039.1, DP below Grade-Control Structure, Sampled 7/12/2013** | | | | | |
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 11:50 | Max+10 | PCB (UF) |
| 2 | Max+11 | PCB (UF) | | | |
| 3 | Max+12 | Gamma spectroscopy (UF) | 11:52 | Max+12 | Gamma spectroscopy (UF) |
| 4 | Max+13 | Isotopic uranium; isotopic plutonium (UF) | 11:53 | Max+13 | Isotopic uranium; isotopic plutonium (UF) |
| 5 | Max+14 | Isotopic uranium; isotopic plutonium (UF) | | | |
| 6 | Max+15 | Strontium-90 (UF) | 11:55 | Max+15 | Strontium-90 (UF) |
| 7 | Max+16 | TAL metals (F/UF) | 11:56 | Max+16 | TAL metals (F/UF) |
| 8 | Max+17 | Extra bottle | Remaining samples not retrieved for analysis. | | |
| 9 | Max+18 | Extra Bottle | | | |
| 10 | Max+19 | Extra Bottle | | | |
| 11 | Max+20 | Extra Bottle | | | |
| 12 | Max+21 | Extra Bottle | | | |

**Table 2.4-4 (continued)**

| E039.1, DP below Grade-Control Structure, Sampled 6/30/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 12-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 15:49 | Trigger+0 | SSC |
| 2 | Trigger+2 | SSC | 15:51 | Trigger+2 | SSC |
| 3 | Trigger+4 | SSC | 15:53 | Trigger+4 | SSC |
| 4 | Trigger+6 | SSC | 15:55 | Trigger+6 | SSC |
| 5 | Trigger+8 | SSC | 15:57 | Trigger+8 | SSC |
| 6 | Trigger+10 | SSC | 15:59 | Trigger+10 | DOC (F) |
| 7 | Trigger+12 | SSC | 16:01 | Trigger+12 | SO4, $Cl^-$ (F) |
| 8 | Trigger+14 | SSC | 16:03 | Trigger+14 | Alk, pH (UF) |
| 9 | Trigger+16 | SSC | 16:05 | Trigger+16 | SSC; particle size |
| 10 | Trigger+18 | SSC; particle size | 16:07 | Trigger+18 | SSC |
| 11 | Trigger+20 | SSC | 16:09 | Trigger+20 | SSC |
| 12 | Trigger+22 | SSC | 16:11 | Trigger+22 | SSC |
| 13 | Trigger+24 | SSC | 16:13 | Trigger+24 | SSC |
| 14 | Trigger+26 | SSC | 16:15 | Trigger+26 | SSC |
| 15 | Trigger+28 | SSC | 16:17 | Trigger+28 | SSC |
| 16 | Trigger+30 | SSC | 16:19 | Trigger+30 | SSC |
| 17 | Trigger+50 | SSC | Sampling attempted but collection not successful. | | |
| 18 | Trigger+70 | SSC | | | |
| 19 | Trigger+90 | SSC | | | |
| 20 | Trigger+110 | SSC | | | |
| 21 | Trigger+130 | SSC | | | |
| 22 | Trigger+150 | SSC | | | |
| 23 | Trigger+170 | SSC | | | |
| 24 | Trigger+190 | SSC | | | |

**Table 2.4-4 (continued)**

| E039.1, DP below Grade-Control Structure, Sampled 7/12/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 11:39 | Trigger+0 | SSC |
| 2 | Trigger+2 | SSC | 11:41 | Trigger+2 | SSC |
| 3 | Trigger+4 | SSC | 11:43 | Trigger+4 | SSC |
| 4 | Trigger+6 | SSC | 11:45 | Trigger+6 | SSC |
| 5 | Trigger+8 | SSC | 11:47 | Trigger+8 | SSC |
| 6 | Trigger+10 | SSC | 11:49 | Trigger+10 | SSC |
| 7 | Trigger+12 | SSC | 11:51 | Trigger+12 | SSC |
| 8 | Trigger+14 | SSC | 11:53 | Trigger+14 | SSC |
| 9 | Trigger+16 | SSC | 11:55 | Trigger+16 | SSC; particle size |
| 10 | Trigger+18 | SSC; particle size | 11:57 | Trigger+18 | DOC (F) |
| 11 | Trigger+20 | SSC | 11:59 | Trigger+20 | SO4, $Cl^-$ (F) |
| 12 | Trigger+22 | SSC | 12:01 | Trigger+22 | Alk, pH (UF) |
| 13 | Trigger+24 | SSC | 12:03 | Trigger+24 | SSC |
| 14 | Trigger+26 | SSC | 12:05 | Trigger+26 | SSC |
| 15 | Trigger+28 | SSC | 12:07 | Trigger+28 | SSC |
| 16 | Trigger+30 | SSC | 12:09 | Trigger+30 | SSC |
| 17 | Trigger+50 | SSC | 12:29 | Trigger+50 | SSC |
| 18 | Trigger+70 | SSC | 12:49 | Trigger+70 | SSC |
| 19 | Trigger+90 | SSC | 13:09 | Trigger+90 | SSC |
| 20 | Trigger+110 | SSC | Sampling attempted but collection not successful. | | |
| 21 | Trigger+130 | SSC | | | |
| 22 | Trigger+150 | SSC | | | |
| 23 | Trigger+170 | SSC | | | |
| 24 | Trigger+190 | SSC | | | |

**Table 2.4-4 (continued)**

| E039.1, DP below Grade-Control Structure, Sampled 7/28/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 15:14 | Max+10 | PCB (UF) |
| 2 | Max+11 | PCB (UF) | | | |
| 3 | Max+12 | Gamma spectroscopy (UF) | 15:17 | Max+13 | Gamma spectroscopy (UF) |
| 4 | Max+13 | Isotopic uranium; isotopic plutonium (UF) | 15:18 | Max+14 | Isotopic uranium; isotopic plutonium (UF) |
| 5 | Max+14 | Isotopic uranium; isotopic plutonium (UF) | | | |
| 6 | Max+15 | Strontium-90 (UF) | 15:20 | Max+16 | Strontium-90 (UF) |
| 7 | Max+16 | TAL metals (F/UF) | 15:21 | Max+17 | TAL metals (F/UF) |
| 8 | Max+17 | Extra bottle | Remaining samples not retrieved for analysis. | | |
| 9 | Max+18 | Extra Bottle | | | |
| 10 | Max+19 | Extra Bottle | | | |
| 11 | Max+20 | Extra Bottle | | | |
| 12 | Max+21 | Extra Bottle | | | |

| E039.1, DP below Grade-Control Structure, Sampled 8/4/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 14:14 | Max+10 | TSS |
| 2 | Max+11 | PCB (UF) | 14:16 | Max+12 | TSS |
| 3 | Max+12 | Gamma spectroscopy (UF) | 14:17 | Max+13 | TSS |
| 4 | Max+13 | Isotopic uranium; isotopic plutonium (UF) | 14:18 | Max+14 | TSS |
| 5 | Max+14 | Isotopic uranium; isotopic plutonium (UF) | 14:19 | Max+15 | TSS |
| 6 | Max+15 | Strontium-90 (UF) | 14:20 | Max+16 | TSS |
| 7 | Max+16 | TAL metals (F/UF) | 14:21 | Max+17 | TSS |
| 8 | Max+17 | Extra bottle | Remaining samples not retrieved for analysis. | | |
| 9 | Max+18 | Extra Bottle | | | |
| 10 | Max+19 | Extra Bottle | | | |
| 11 | Max+20 | Extra Bottle | | | |
| 12 | Max+21 | Extra Bottle | | | |

**Table 2.4-4 (continued)**

| E039.1, DP below Grade-Control Structure, Sampled 7/28/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 15:04 | Trigger+0 | SSC |
| 2 | Trigger+2 | SSC | 15:06 | Trigger+2 | SSC |
| 3 | Trigger+4 | SSC | 15:08 | Trigger+4 | SSC |
| 4 | Trigger+6 | SSC | 15:10 | Trigger+6 | SSC |
| 5 | Trigger+8 | SSC | 15:12 | Trigger+8 | SSC |
| 6 | Trigger+10 | SSC | 15:14 | Trigger+10 | SSC |
| 7 | Trigger+12 | SSC | 15:16 | Trigger+12 | SSC |
| 8 | Trigger+14 | SSC | 15:18 | Trigger+14 | SSC |
| 9 | Trigger+16 | SSC | 15:20 | Trigger+16 | SSC; particle size |
| 10 | Trigger+18 | SSC; particle size | 15:22 | Trigger+18 | DOC (F) |
| 11 | Trigger+20 | SSC | 15:24 | Trigger+20 | SO4, $Cl^-$ (F) |
| 12 | Trigger+22 | SSC | 15:26 | Trigger+22 | Alk, pH (UF) |
| 13 | Trigger+24 | SSC | 15:28 | Trigger+24 | SSC |
| 14 | Trigger+26 | SSC | 15:30 | Trigger+26 | SSC |
| 15 | Trigger+28 | SSC | 15:32 | Trigger+28 | SSC |
| 16 | Trigger+30 | SSC | 15:34 | Trigger+30 | SSC |
| 17 | Trigger+50 | SSC | Sampling attempted but collection not successful. | | |
| 18 | Trigger+70 | SSC | | | |
| 19 | Trigger+90 | SSC | | | |
| 20 | Trigger+110 | SSC | | | |
| 21 | Trigger+130 | SSC | | | |
| 22 | Trigger+150 | SSC | | | |
| 23 | Trigger+170 | SSC | | | |
| 24 | Trigger+190 | SSC | | | |

**Table 2.4-4 (continued)**

| E039.1, DP below Grade-Control Structure, Sampled 8/4/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 14:04 | Trigger+0 | SSC |
| 2 | Trigger+2 | SSC | 14:06 | Trigger+2 | SSC |
| 3 | Trigger+4 | SSC | 14:08 | Trigger+4 | SSC |
| 4 | Trigger+6 | SSC | 14:10 | Trigger+6 | SSC |
| 5 | Trigger+8 | SSC | 14:12 | Trigger+8 | SSC |
| 6 | Trigger+10 | SSC | 14:14 | Trigger+10 | SSC |
| 7 | Trigger+12 | SSC | 14:16 | Trigger+12 | SSC |
| 8 | Trigger+14 | SSC | 14:18 | Trigger+14 | SSC |
| 9 | Trigger+16 | SSC | 14:20 | Trigger+16 | SSC; particle size |
| 10 | Trigger+18 | SSC; particle size | 14:22 | Trigger+18 | DOC (F) |
| 11 | Trigger+20 | SSC | 14:24 | Trigger+20 | SO4, $Cl^-$ (F) |
| 12 | Trigger+22 | SSC | 14:26 | Trigger+22 | Alk, pH (UF) |
| 13 | Trigger+24 | SSC | 14:28 | Trigger+24 | SSC |
| 14 | Trigger+26 | SSC | 14:30 | Trigger+26 | SSC |
| 15 | Trigger+28 | SSC | 14:32 | Trigger+28 | SSC |
| 16 | Trigger+30 | SSC | 14:34 | Trigger+30 | SSC |
| 17 | Trigger+50 | SSC | Sampling attempted but collection not successful. | | |
| 18 | Trigger+70 | SSC | | | |
| 19 | Trigger+90 | SSC | | | |
| 20 | Trigger+110 | SSC | | | |
| 21 | Trigger+130 | SSC | | | |
| 22 | Trigger+150 | SSC | | | |
| 23 | Trigger+170 | SSC | | | |
| 24 | Trigger+190 | SSC | | | |

**Table 2.4-4 (continued)**

<table>
<tr><th colspan="6">E039.1, DP below Grade-Control Structure, Sampled 8/9/2013</th></tr>
<tr><th rowspan="2">Sample Bottle (1 L)</th><th colspan="2">Planned</th><th colspan="3">Actual</th></tr>
<tr><th>12-Bottle ISCO Start Time (min)</th><th>Analytical Suites</th><th>Sample Collection Time</th><th>12-Bottle ISCO Start Time (min)</th><th>Analyses Requested</th></tr>
<tr><td>1</td><td>Max+10</td><td>PCB (UF)</td><td colspan="3" rowspan="12">Samples not retrieved for analysis.</td></tr>
<tr><td>2</td><td>Max+11</td><td>PCB (UF)</td></tr>
<tr><td>3</td><td>Max+12</td><td>Gamma spectroscopy (UF)</td></tr>
<tr><td>4</td><td>Max+13</td><td>Isotopic uranium; isotopic plutonium (UF)</td></tr>
<tr><td>5</td><td>Max+14</td><td>Isotopic uranium; isotopic plutonium (UF)</td></tr>
<tr><td>6</td><td>Max+15</td><td>Strontium-90 (UF)</td></tr>
<tr><td>7</td><td>Max+16</td><td>TAL metals (F/UF)</td></tr>
<tr><td>8</td><td>Max+17</td><td>Extra bottle</td></tr>
<tr><td>9</td><td>Max+18</td><td>Extra Bottle</td></tr>
<tr><td>10</td><td>Max+19</td><td>Extra Bottle</td></tr>
<tr><td>11</td><td>Max+20</td><td>Extra Bottle</td></tr>
<tr><td>12</td><td>Max+21</td><td>Extra Bottle</td></tr>
<tr><th colspan="6">E039.1, DP below Grade-Control Structure, Sampled 9/10/2013</th></tr>
<tr><th rowspan="2">Sample Bottle (1 L)</th><th colspan="2">Planned</th><th colspan="3">Actual</th></tr>
<tr><th>12-Bottle ISCO Start Time (min)</th><th>Analytical Suites</th><th>Sample Collection Time</th><th>12-Bottle ISCO Start Time (min)</th><th>Analyses Requested</th></tr>
<tr><td>1</td><td>Max+10</td><td>PCB (UF)</td><td rowspan="2">16:19</td><td rowspan="2">Max+10</td><td rowspan="2">PCB (UF)</td></tr>
<tr><td>2</td><td>Max+11</td><td>PCB (UF)</td></tr>
<tr><td>3</td><td>Max+12</td><td>Gamma spectroscopy (UF)</td><td rowspan="2">16:22</td><td rowspan="2">Max+13</td><td rowspan="2">Gamma spectroscopy (UF)</td></tr>
<tr><td>4</td><td>Max+13</td><td>Isotopic uranium; isotopic plutonium (UF)</td></tr>
<tr><td>5</td><td>Max+14</td><td>Isotopic uranium; isotopic plutonium (UF)</td><td rowspan="2">16:24</td><td rowspan="2">Max+15</td><td rowspan="2">Isotopic uranium; isotopic plutonium (UF)</td></tr>
<tr><td>6</td><td>Max+15</td><td>Strontium-90 (UF)</td></tr>
<tr><td>7</td><td>Max+16</td><td>TAL metals (F/UF)</td><td>16:26</td><td>Max+17</td><td>Strontium-90 (UF)</td></tr>
<tr><td>8</td><td>Max+17</td><td>Extra bottle</td><td>16:27</td><td>Max+18</td><td>TAL metals (UF)</td></tr>
<tr><td>9</td><td>Max+18</td><td>Extra Bottle</td><td>16:28</td><td>Max+19</td><td>TAL metals (F)</td></tr>
<tr><td>10</td><td>Max+19</td><td>Extra Bottle</td><td>16:29</td><td>Max+20</td><td>TSS</td></tr>
<tr><td>11</td><td>Max+20</td><td>Extra Bottle</td><td>16:30</td><td>Max+21</td><td>TSS</td></tr>
<tr><td>12</td><td>Max+21</td><td>Extra Bottle</td><td>16:31</td><td>Max+22</td><td>TSS</td></tr>
</table>

**Table 2.4-4 (continued)**

| E039.1, DP below Grade-Control structure, Sampled 8/9/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 12-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 14:09 | Trigger | SSC |
| 2 | Trigger+2 | SSC | Samples not retrieved for analysis. | | |
| 3 | Trigger+4 | SSC | | | |
| 4 | Trigger+6 | SSC | | | |
| 5 | Trigger+8 | SSC | 14:17 | Trigger+8 | SSC |
| 6 | Trigger+10 | SSC | Samples not retrieved for analysis. | | |
| 7 | Trigger+12 | SSC | | | |
| 8 | Trigger+14 | SSC | | | |
| 9 | Trigger+16 | SSC | 14:25 | Trigger+16 | SSC |
| 10 | Trigger+18 | SSC; particle size | Samples not retrieved for analysis. | | |
| 11 | Trigger+20 | SSC | | | |
| 12 | Trigger+22 | SSC | | | |
| 13 | Trigger+24 | SSC | | | |
| 14 | Trigger+26 | SSC | | | |
| 15 | Trigger+28 | SSC | 14:37 | Trigger+28 | SSC |
| 16 | Trigger+30 | SSC | Sampling attempted but collection not successful. | | |
| 17 | Trigger+50 | SSC | | | |
| 18 | Trigger+70 | SSC | | | |
| 19 | Trigger+90 | SSC | | | |
| 20 | Trigger+110 | SSC | | | |
| 21 | Trigger+130 | SSC | | | |
| 22 | Trigger+150 | SSC | | | |
| 23 | Trigger+170 | SSC | | | |
| 24 | Trigger+190 | SSC | | | |

**Table 2.4-4 (continued)**

| E039.1, DP below Grade-Control Structure, Sampled 9/10/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 16:09 | Trigger+0 | SSC |
| 2 | Trigger+2 | SSC | 16:11 | Trigger+2 | SSC |
| 3 | Trigger+4 | SSC | 16:13 | Trigger+4 | SSC |
| 4 | Trigger+6 | SSC | 16:15 | Trigger+6 | SSC |
| 5 | Trigger+8 | SSC | 16:17 | Trigger+8 | SSC |
| 6 | Trigger+10 | SSC | 16:19 | Trigger+10 | SSC; particle size |
| 7 | Trigger+12 | SSC | 16:21 | Trigger+12 | DOC (F) |
| 8 | Trigger+14 | SSC | 16:23 | Trigger+14 | SO4, $Cl^-$ (F) |
| 9 | Trigger+16 | SSC | 16:25 | Trigger+16 | Alk, pH (UF) |
| 10 | Trigger+18 | SSC; particle size | 16:27 | Trigger+18 | SSC |
| 11 | Trigger+20 | SSC | 16:29 | Trigger+20 | SSC |
| 12 | Trigger+22 | SSC | 16:31 | Trigger+22 | SSC |
| 13 | Trigger+24 | SSC | 16:33 | Trigger+24 | SSC |
| 14 | Trigger+26 | SSC | 16:35 | Trigger+26 | SSC |
| 15 | Trigger+28 | SSC | 16:37 | Trigger+28 | SSC |
| 16 | Trigger+30 | SSC | 16:39 | Trigger+30 | SSC |
| 17 | Trigger+50 | SSC | 16:59 | Trigger+50 | SSC |
| 18 | Trigger+70 | SSC | Sampling attempted but collection not successful. | | |
| 19 | Trigger+90 | SSC | | | |
| 20 | Trigger+110 | SSC | 17:59 | Trigger+110 | SSC |
| 21 | Trigger+130 | SSC | 18:19 | Trigger+130 | SSC |
| 22 | Trigger+150 | SSC | 18:39 | Trigger+150 | SSC |
| 23 | Trigger+170 | SSC | 18:59 | Trigger+170 | SSC |
| 24 | Trigger+190 | SSC | 19:19 | Trigger+190 | SSC |

**Table 2.4-4 (continued)**

| E039.1, DP below Grade-Control Structure, Sampled 9/12/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | Samples not retrieved for analysis. | | |
| 2 | Max+11 | PCB (UF) | | | |
| 3 | Max+12 | Gamma spectroscopy (UF) | | | |
| 4 | Max+13 | Isotopic uranium; isotopic plutonium (UF) | | | |
| 5 | Max+14 | Isotopic uranium; isotopic plutonium (UF) | | | |
| 6 | Max+15 | Strontium-90 (UF) | | | |
| 7 | Max+16 | TAL metals (F/UF) | | | |
| 8 | Max+17 | Extra bottle | | | |
| 9 | Max+18 | Extra Bottle | | | |
| 10 | Max+19 | Extra Bottle | | | |
| 11 | Max+20 | Extra Bottle | | | |
| 12 | Max+21 | Extra Bottle | | | |

| E039.1, DP below Grade-Control Structure, Sampled 9/12/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | Sample not retrieved for analysis. | | |
| 2 | Trigger+2 | SSC | 15:11 | Trigger+2 | SSC; particle size |
| 3 | Trigger+4 | SSC | Sample not retrieved for analysis. | | |
| 4 | Trigger+6 | SSC | 15:15 | Trigger+6 | SSC |
| 5 | Trigger+8 | SSC | Sample not retrieved for analysis. | | |
| 6 | Trigger+10 | SSC | 15:19 | Trigger+10 | SSC |
| 7 | Trigger+12 | SSC | Sample not retrieved for analysis. | | |
| 8 | Trigger+14 | SSC | 15:23 | Trigger+14 | SSC |
| 9 | Trigger+16 | SSC | Sample not retrieved for analysis. | | |
| 10 | Trigger+18 | SSC; particle size | 15:27 | Trigger+18 | SSC |
| 11 | Trigger+20 | SSC | Sample not retrieved for analysis. | | |
| 12 | Trigger+22 | SSC | 15:31 | Trigger+22 | SSC |
| 13 | Trigger+24 | SSC | Sample not retrieved for analysis. | | |
| 14 | Trigger+26 | SSC | 15:35 | Trigger+26 | SSC |
| 15 | Trigger+28 | SSC | Sample not retrieved for analysis. | | |
| 16 | Trigger+30 | SSC | Sample not retrieved for analysis. | | |
| 17 | Trigger+50 | SSC | Sampling attempted but collection not successful. | | |
| 18 | Trigger+70 | SSC | | | |
| 19 | Trigger+90 | SSC | 16:39 | Trigger+90 | SSC |
| 20 | Trigger+110 | SSC | 16:59 | Trigger+110 | SSC |
| 21 | Trigger+130 | SSC | Sample not retrieved for analysis. | | |
| 22 | Trigger+150 | SSC | 17:39 | Trigger+150 | SSC |
| 23 | Trigger+170 | SSC | Sample not retrieved for analysis. | | |
| 24 | Trigger+190 | SSC | 18:19 | Trigger+190 | SSC |

| E039.1, DP below Grade-Control Structure, Sampled 11/5/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 13:43 | Trigger+0 | SSC |
| 2 | Trigger+2 | SSC | Sample not retrieved for analysis. | | |
| 3 | Trigger+4 | SSC | 13:47 | Trigger+4 | SSC |
| 4 | Trigger+6 | SSC | Sample not retrieved for analysis. | | |
| 5 | Trigger+8 | SSC | 13:51 | Trigger+8 | SSC |
| 6 | Trigger+10 | SSC | Sample not retrieved for analysis. | | |
| 7 | Trigger+12 | SSC | 13:55 | Trigger+12 | SSC |
| 8 | Trigger+14 | SSC | Sample not retrieved for analysis. | | |
| 9 | Trigger+16 | SSC | 13:59 | Trigger+16 | SSC |
| 10 | Trigger+18 | SSC; particle size | Sample not retrieved for analysis. | | |
| 11 | Trigger+20 | SSC | 14:03 | Trigger+20 | SSC |
| 12 | Trigger+22 | SSC | Sample not retrieved for analysis. | | |
| 13 | Trigger+24 | SSC | 14:07 | Trigger+24 | SSC |
| 14 | Trigger+26 | SSC | Sample not retrieved for analysis. | | |
| 15 | Trigger+28 | SSC | 14:11 | Trigger+28 | SSC |
| 16 | Trigger+30 | SSC | Sample not retrieved for analysis. | | |
| 17 | Trigger+50 | SSC | 14:33 | Trigger+50 | SSC |
| 18 | Trigger+70 | SSC | Sampling attempted but collection not successful. | | |
| 19 | Trigger+90 | SSC | | | |
| 20 | Trigger+110 | SSC | | | |
| 21 | Trigger+130 | SSC | | | |
| 22 | Trigger+150 | SSC | | | |
| 23 | Trigger+170 | SSC | | | |
| 24 | Trigger+190 | SSC | | | |

**Table 2.4-4 (continued)**

| E042.1, Los Alamos above Low-head Weir, Sampled 7/12/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites 12-Bottle ISCO | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 12:55 | Sampling attempted but collection not successful. | |
| 2 | Max+11 | Gamma spectroscopy (UF) | | | |
| 3 | Max+12 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | 12:59 | 14 | SSC |
| 4 | Max+13 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | Sampling attempted but collection not successful. | | |
| 5 | Max+14 | Strontium-90 (UF) | 13:03 | 18 | SSC |
| 6 | Max+16 | TAL metals (F/UF) | Sampling attempted but collection not successful. | | |
| 7 | Max+17 | Cyanide (UF) | 13:07 | 22 | Gamma spectroscopy (UF) |
| 8 | Max+60 | PCB (UF) | 13:09 | 24 | PCB Congeners (UF) |
| 9 | Max+61 | Isotopic plutonium (UF) | 13:45 | 60 | DOC (F) |
| 10 | Max+105 | PCB (UF) | Sampling attempted but collection not successful. | | |
| 11 | Max+106 | Isotopic plutonium (UF) | 14:30 | 105 | PCB Congeners (UF) |
| 12 | n/a[e] | n/a | 14:30 | 105 | Isotopic plutonium, isotopic uranium, Americium-241 (UF) |

**Table 2.4-4 (continued)**

| E042.1, Los Alamos above Low-head Weir, Sampled 7/12/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 12:40 | Trigger+0 | SSC |
| 2 | Trigger+2 | SSC | 12:42 | Trigger+2 | SSC |
| 3 | Trigger+4 | SSC | Sampling attempted but collection not successful. | | |
| 4 | Trigger+6 | SSC | | | |
| 5 | Trigger+8 | SSC | | | |
| 6 | Trigger+12 | SSC | | | |
| 7 | Trigger+14 | SSC | | | |
| 8 | Trigger+16 | SSC | | | |
| 9 | Trigger+18 | SSC; particle size | | | |
| 10 | Trigger+20 | SSC | 12:58 | Trigger+18 | TSS |
| 11 | Trigger+22 | SSC | 13:00 | Trigger+20 | Alkalinity, pH (UF) |
| 12 | Trigger+24 | SSC | 13:02 | Trigger+22 | TSS |
| 13 | Trigger+26 | SSC | 13:04 | Trigger+24 | TSS |
| 14 | Trigger+28 | SSC | 13:06 | Trigger+26 | TSS |
| 15 | Trigger+30 | SSC | 13:08 | Trigger+28 | TSS |
| 16 | Trigger+50 | SSC | 13:10 | Trigger+30 | TSS |
| 17 | Trigger+70 | SSC; particle size | 13:30 | Trigger+50 | TSS |
| 18 | Trigger+90 | SSC | 13:50 | Trigger+70 | TSS |
| 19 | Trigger+110 | SSC; particle size | 14:10 | Trigger+90 | TSS |
| 20 | Trigger+130 | SSC | 14:30 | Trigger+110 | TSS |
| 21 | Trigger+150 | SSC | 14:50 | Trigger+130 | Sr-90 (UF) |
| 22 | Trigger+170 | SSC | 15:10 | Trigger+150 | Metals (F/UF) |
| 23 | Trigger+190 | SSC | 15:30 | Trigger+170 | Cyanide (UF) |
| 24 | Trigger+210 | SSC | 15:50 | Trigger+190 | SSC; particle size |

**Table 2.4-4 (continued)**

| E042.1, Los Alamos above Low-head Weir, Sampled 8/5/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites 12-Bottle ISCO | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 15:10 | Max+10 | PCB (UF) |
| 2 | Max+11 | Gamma spectroscopy (UF) | 15:12 | Max+12 | Gamma spectroscopy (UF) |
| 3 | Max+12 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | 15:14 | Max+14 | Isotopic plutonium, americium-241, and isotopic uranium (UF) |
| 4 | Max+13 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | | | |
| 5 | Max+14 | Strontium-90 (UF) | 15:18 | Max+18 | Strontium-90 (UF) |
| 6 | Max+16 | TAL metals (F/UF) | 15:20 | Max+20 | TAL metals (F/UF) |
| 7 | Max+17 | Cyanide (UF) | 15:22 | Max+22 | Alkalinity, pH,Cyanide (UF) |
| 8 | Max+60 | PCB (UF) | 15:24 | Max+24 | PCB (UF) |
| 9 | Max+61 | Isotopic plutonium (UF) | | | |
| 10 | Max+105 | PCB (UF) | 16:00 | Max+60 | Isotopic plutonium (UF) |
| 11 | Max+106 | Isotopic plutonium (UF) | Sampling attempted but collection not successful. | | |
| 12 | n/a[d] | n/a | | | |

| E042.1, Los Alamos above Low-head Weir, Sampled 9/10/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites 12-Bottle ISCO | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 19:40 | Sampling attempted but collection not successful. | |
| 2 | Max+11 | Gamma spectroscopy (UF) | 19:42 | Max+12 | Gamma spectroscopy (UF) |
| 3 | Max+12 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | 19:44 | Max+14 | Isotopic plutonium, americium-241, and isotopic uranium (UF) |
| 4 | Max+13 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | | | |
| 5 | Max+14 | Strontium-90 (UF) | | | |
| 6 | Max+16 | TAL metals (F/UF) | 19:50 | Max+20 | Strontium-90 (UF) |
| 7 | Max+17 | Cyanide (UF) | 19:52 | Max+22 | Cyanide (UF) |
| 8 | Max+60 | PCB (UF) | 19:54 | Max+24 | PCB (UF) |
| 9 | Max+61 | Isotopic plutonium (UF) | | | |
| 10 | Max+105 | PCB (UF) | 20:30 | Max+60 | Isotopic plutonium (UF) |
| 11 | Max+106 | Isotopic plutonium (UF) | Sampling attempted but collection not successful. | | |
| 12 | n/a | n/a | | | |

**Table 2.4-4 (continued)**

| E042.1, Los Alamos above Low-head Weir, Sampled 8/5/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 12-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 15:00 | Trigger+0 | Gamma spectroscopy (UF) |
| 2 | Trigger+2 | SSC | 15:02 | Trigger+2 | Isotopic plutonium (UF) |
| 3 | Trigger+4 | SSC | 15:04 | Trigger+4 | SSC |
| 4 | Trigger+6 | SSC | 15:06 | Trigger+6 | SSC |
| 5 | Trigger+8 | SSC | 15:08 | Trigger+8 | SSC |
| 6 | Trigger+12 | SSC | 15:10 | Trigger+10 | SSC |
| 7 | Trigger+14 | SSC | 15:12 | Trigger+12 | SSC |
| 8 | Trigger+16 | SSC | 15:14 | Trigger+14 | SSC |
| 9 | Trigger+18 | SSC; particle size | 15:16 | Trigger+16 | SSC; particle size |
| 10 | Trigger+20 | SSC | 15:18 | Trigger+18 | DOC (F) |
| 11 | Trigger+22 | SSC | 15:20 | Trigger+20 | SO4, $Cl^-$ (F) |
| 12 | Trigger+24 | SSC | 15:22 | Trigger+22 | Alk, pH |
| 13 | Trigger+26 | SSC | 15:24 | Trigger+24 | SSC |
| 14 | Trigger+28 | SSC | 15:26 | Trigger+26 | SSC |
| 15 | Trigger+30 | SSC | 15:28 | Trigger+28 | SSC |
| 16 | Trigger+50 | SSC | 15:30 | Trigger+30 | SSC |
| 17 | Trigger+70 | SSC; particle size | 15:50 | Trigger+50 | SSC |
| 18 | Trigger+90 | SSC | 16:10 | Trigger+70 | SSC; particle size |
| 19 | Trigger+110 | SSC; particle size | Sampling attempted but collection not successful. | | |
| 20 | Trigger+130 | SSC | | | |
| 21 | Trigger+150 | SSC | | | |
| 22 | Trigger+170 | SSC | | | |
| 23 | Trigger+190 | SSC | | | |
| 24 | Trigger+210 | SSC | | | |

**Table 2.4-4 (continued)**

| E042.1, Los Alamos above Low-head Weir, Sampled 9/10/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 19:29 | Trigger+0 | Gamma spectroscopy (UF) |
| 2 | Trigger+2 | SSC | 19:31 | Trigger+2 | Isotopic plutonium (UF) |
| 3 | Trigger+4 | SSC | 19:33 | Trigger+4 | SSC |
| 4 | Trigger+6 | SSC | 19:35 | Trigger+6 | SSC |
| 5 | Trigger+8 | SSC | 19:37 | Trigger+8 | SSC |
| 6 | Trigger+12 | SSC | 19:39 | Trigger+10 | SSC |
| 7 | Trigger+14 | SSC | 19:41 | Trigger+12 | SSC |
| 8 | Trigger+16 | SSC | 19:43 | Trigger+14 | SSC |
| 9 | Trigger+18 | SSC; particle size | 19:45 | Trigger+16 | DOC (F) |
| 10 | Trigger+20 | SSC | 19:47 | Trigger+18 | SO4, $Cl^-$ (F) |
| 11 | Trigger+22 | SSC | 19:49 | Trigger+20 | Alk, pH |
| 12 | Trigger+24 | SSC | 19:51 | Trigger+22 | TAL metals (F/UF) |
| 13 | Trigger+26 | SSC | 19:53 | Trigger+24 | Isotopic plutonium (UF) |
| 14 | Trigger+28 | SSC | 19:55 | Trigger+26 | SSC |
| 15 | Trigger+30 | SSC | 19:57 | Trigger+28 | SSC |
| 16 | Trigger+50 | SSC | 19:59 | Trigger+30 | SSC |
| 17 | Trigger+70 | SSC; particle size | 20:19 | Trigger+50 | SSC; particle size |
| 18 | Trigger+90 | SSC | Sampling attempted but collection not successful. | | |
| 19 | Trigger+110 | SSC; particle size | | | |
| 20 | Trigger+130 | SSC | | | |
| 21 | Trigger+150 | SSC | 21:39 | Trigger+130 | SSC; particle size |
| 22 | Trigger+170 | SSC | 21:59 | Trigger+150 | SSC |
| 23 | Trigger+190 | SSC | 22:19 | Trigger+170 | SSC |
| 24 | Trigger+210 | SSC | 22:39 | Trigger+190 | SSC; particle size |

**Table 2.4-4 (continued)**

| E050.1, Los Alamos below Low-head Weir, Sampled 7/12/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites 12-Bottle ISCO | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 13:40 | Max+10 | PCB (UF) |
| 2 | Max+11 | Gamma spectroscopy (UF) | 13:42 | Max+12 | Gamma spectroscopy (UF) |
| 3 | Max+12 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | 13:44 | Max+14 | Isotopic plutonium, americium-241, and isotopic uranium (UF) |
| 4 | Max+13 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | | | |
| 5 | Max+14 | Strontium-90 (UF) | 13:48 | Max+18 | Strontium-90 (UF) |
| 6 | Max+16 | TAL metals (F/UF) | 13:50 | Max+20 | TAL metals (F/UF) |
| 7 | Max+17 | Cyanide (UF)<br>Gross alpha/beta (UF) | 13:52 | Max+22 | Cyanide (UF); Gross Alpha/Beta |
| 8 | Max+60 | PCB (UF) | 13:54 | Max+24 | PCB (UF) |
| 9 | Max+61 | Isotopic plutonium (UF) | 14:30 | Max+60 | PCB (UF) |
| 10 | Max+105 | PCB (UF) | 14:30 | Max+60 | Isotopic plutonium (UF) |
| 11 | Max+106 | Isotopic plutonium (UF) | 15:15 | Max+105 | PCB (UF) |
| 12 | n/a | n/a | 15:15 | Max+105 | Isotopic plutonium (UF) |

**Table 2.4-4 (continued)**

| E050.1, Los Alamos below Low-head Weir, Sampled 7/12/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 13:15 | Trigger+0 | SSC |
| 2 | Trigger+2 | SSC | 13:17 | Trigger+2 | SSC |
| 3 | Trigger+4 | SSC | 13:19 | Trigger+4 | Gamma spectroscopy (UF) |
| 4 | Trigger+6 | SSC | 13:21 | Trigger+6 | Isotopic plutonium (UF) |
| 5 | Trigger+8 | Radium-226 (UF) | 13:23 | Trigger+8 | SSC |
| 6 | Trigger+10 | Radium-228 (UF) | 13:25 | Trigger+10 | SSC |
| 7 | Trigger+12 | SSC | 13:27 | Trigger+12 | SSC |
| 8 | Trigger+14 | SSC | 13:29 | Trigger+14 | SSC |
| 9 | Trigger+16 | SSC; particle size | 13:31 | Trigger+16 | SSC; particle size |
| 10 | Trigger+18 | SSC | 13:33 | Trigger+18 | DOC (F) |
| 11 | Trigger+20 | SSC | 13:35 | Trigger+20 | SO4, $Cl^-$ (F) |
| 12 | Trigger+22 | SSC | 13:37 | Trigger+22 | Alk, pH |
| 13 | Trigger+24 | SSC | 13:39 | Trigger+24 | SSC |
| 14 | Trigger+26 | SSC | 13:41 | Trigger+26 | Ra-226/Ra-228 |
| 15 | Trigger+28 | SSC | | | SSC |
| 16 | Trigger+30 | SSC | 13:45 | Trigger+30 | SSC |
| 17 | Trigger+50 | SSC; particle size | 14:05 | Trigger+50 | SSC |
| 18 | Trigger+70 | SSC | 14:25 | Trigger+70 | SSC; particle size SSC |
| 19 | Trigger+90 | SSC; particle size | 14:45 | Trigger+90 | SSC |
| 20 | Trigger+110 | SSC | 15:05 | Trigger+110 | SSC; particle size |
| 21 | Trigger+130 | SSC | 15:25 | Trigger+130 | SSC |
| 22 | Trigger+150 | SSC | 15:45 | Trigger+150 | SSC |
| 23 | Trigger+170 | SSC | 16:05 | Trigger+170 | SSC |
| 24 | Trigger+190 | SSC | 16:25 | Trigger+190 | SSC |

**Table 2.4-4 (continued)**

| E050.1, Los Alamos below Low-head Weir, Sampled 8/5/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites 12-Bottle ISCO | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 18:09 | Max+10 | PCB (UF) |
| 2 | Max+11 | Gamma spectroscopy (UF) | 18:11 | Max+12 | Gamma spectroscopy (UF) |
| 3 | Max+12 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | 18:13 | Max+14 | Isotopic plutonium, americium-241, and isotopic uranium (UF) |
| 4 | Max+13 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | | | |
| 5 | Max+14 | Strontium-90 (UF) | 18:17 | Max+18 | Strontium-90 (UF) |
| 6 | Max+16 | TAL metals (F/UF) | 18:19 | Max+20 | TAL metals (F/UF) |
| 7 | Max+17 | Cyanide (UF)<br>Gross alpha/beta (UF) | 18:21 | Max+22 | Cyanide (UF); Gross Alpha/Beta |
| 8 | Max+60 | PCB (UF) | 18:23 | Max+24 | PCB (UF) |
| 9 | Max+61 | Isotopic plutonium (UF) | 18:59 | Max+60 | PCB (UF) |
| 10 | Max+105 | PCB (UF) | 18:59 | Max+60 | Isotopic plutonium (UF) |
| 11 | Max+106 | Isotopic plutonium (UF) | 19:44 | Max+105 | PCB (UF) |
| 12 | n/a | n/a | 19:44 | Max+105 | Isotopic plutonium (UF) |

**Table 2.4-4 (continued)**

| E050.1, Los Alamos below low-head weir, Sampled 8/5/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 17:45 | Trigger+0 | Gamma spectroscopy (UF) |
| 2 | Trigger+2 | SSC | 17:47 | Trigger+2 | Isotopic plutonium (UF) |
| 3 | Trigger+4 | SSC | 17:49 | Trigger+4 | SSC |
| 4 | Trigger+6 | SSC | 17:51 | Trigger+6 | SSC |
| 5 | Trigger+8 | Radium-226 (UF) | 17:53 | Trigger+8 | Ra-226/Ra-228 |
| 6 | Trigger+10 | Radium-228 (UF) | | | |
| 7 | Trigger+12 | SSC | 17:57 | Trigger+12 | SSC |
| 8 | Trigger+14 | SSC | 17:59 | Trigger+14 | SSC |
| 9 | Trigger+16 | SSC; particle size | 18:01 | Trigger+16 | SSC; particle size |
| 10 | Trigger+18 | SSC | 18:03 | Trigger+18 | DOC (F) |
| 11 | Trigger+20 | SSC | 18:05 | Trigger+20 | SO4, $Cl^-$ (F) |
| 12 | Trigger+22 | SSC | 18:07 | Trigger+22 | Alk, pH |
| 13 | Trigger+24 | SSC | 18:09 | Trigger+24 | SSC |
| 14 | Trigger+26 | SSC | 18:11 | Trigger+26 | SSC |
| 15 | Trigger+28 | SSC | 18:13 | Trigger+28 | SSC |
| 16 | Trigger+30 | SSC | 18:15 | Trigger+30 | SSC |
| 17 | Trigger+50 | SSC | 18:35 | Trigger+50 | SSC |
| 18 | Trigger+70 | SSC; particle size | 18:55 | Trigger+70 | SSC; particle size SSC |
| 19 | Trigger+90 | SSC | 19:15 | Trigger+90 | SSC |
| 20 | Trigger+110 | SSC; particle size SSC | 19:35 | Trigger+110 | SSC; particle size |
| 21 | Trigger+130 | SSC | 19:55 | Trigger+130 | SSC |
| 22 | Trigger+150 | SSC | Sampling attempted but collection not successful. | | |
| 23 | Trigger+170 | SSC | | | |
| 24 | Trigger+190 | SSC | | | |

**Table 2.4-4 (continued)**

| E050.1, Los Alamos below Low-head weir, Sampled 9/10-11/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites 12-Bottle ISCO | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 0:04 | Max+10 | PCB (UF) |
| 2 | Max+11 | Gamma spectroscopy (UF) | 0:06 | Max+12 | Gamma spectroscopy (UF) |
| 3 | Max+12 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | 0:08 | Max+14 | Isotopic plutonium, americium-241, and isotopic uranium (UF) |
| 4 | Max+13 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | | | |
| 5 | Max+14 | Strontium-90 (UF) | 0:12 | Max+18 | Strontium-90 (UF) |
| 6 | Max+16 | TAL metals (F/UF) | 0:14 | Max+20 | TAL metals (F/UF) |
| 7 | Max+17 | Cyanide (UF)<br>Gross alpha/beta (UF) | 0:16 | Max+22 | Cyanide (UF); Gross Alpha/Beta |
| 8 | Max+60 | PCB (UF) | 0:18 | Max+24 | PCB (UF) |
| 9 | Max+61 | Isotopic plutonium (UF) | 0:54 | Max+60 | PCB (UF) |
| 10 | Max+105 | PCB (UF) | 0:54 | Max+60 | Isotopic plutonium (UF) |
| 11 | Max+106 | Isotopic plutonium (UF) | 01:39 | Max+105 | PCB (UF) |
| 12 | n/a | n/a | 01:39 | Max+105 | Isotopic plutonium (UF) |

**Table 2.4-4 (continued)**

| E050.1, Los Alamos below Low-head Weir, Sampled 9/10-11/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 22:24 | Trigger+0 | Gamma spectroscopy (UF) |
| 2 | Trigger+2 | SSC | 22:26 | Trigger+2 | Isotopic plutonium (UF) |
| 3 | Trigger+4 | SSC | 22:28 | Trigger+4 | SSC |
| 4 | Trigger+6 | SSC | 22:30 | Trigger+6 | SSC |
| 5 | Trigger+8 | Radium-226 (UF) | 22:32 | Trigger+8 | Ra-226/Ra-228 |
| 6 | Trigger+10 | Radium-228 (UF) | | | |
| 7 | Trigger+12 | SSC | 22:36 | Trigger+12 | SSC |
| 8 | Trigger+14 | SSC | 22:38 | Trigger+14 | SSC |
| 9 | Trigger+16 | SSC; particle size | 22:40 | Trigger+16 | SSC; particle size |
| 10 | Trigger+18 | SSC | 22:42 | Trigger+18 | DOC (F) |
| 11 | Trigger+20 | SSC | 22:44 | Trigger+20 | SO4, $Cl^-$ (F) |
| 12 | Trigger+22 | SSC | 22:46 | Trigger+22 | Alk, pH |
| 13 | Trigger+24 | SSC | 22:48 | Trigger+24 | SSC |
| 14 | Trigger+26 | SSC | 22:50 | Trigger+26 | SSC |
| 15 | Trigger+28 | SSC | 22:52 | Trigger+28 | SSC |
| 16 | Trigger+30 | SSC | 22:54 | Trigger+30 | SSC |
| 17 | Trigger+50 | SSC | 23:14 | Trigger+50 | SSC |
| 18 | Trigger+70 | SSC; particle size | 23:34 | Trigger+70 | SSC; particle size SSC |
| 19 | Trigger+90 | SSC | 23:54 | Trigger+90 | SSC |
| 20 | Trigger+110 | SSC; particle size | 0:14 | Trigger+110 | SSC; particle size |
| 21 | Trigger+130 | SSC | 0:34 | Trigger+130 | SSC |
| 22 | Trigger+150 | SSC | 0:54 | Trigger+150 | SSC |
| 23 | Trigger+170 | SSC | 1:14 | Trigger+170 | SSC |
| 24 | Trigger+190 | SSC | 1:34 | Trigger+190 | SSC |

**Table 2.4-4 (continued)**

| E050.1, Los Alamos below Low-head Weir, Sampled 9/12/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites 12-Bottle ISCO | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 19:04 | Max+10 | PCB (UF) |
| 2 | Max+11 | Gamma spectroscopy (UF) | 19:06 | Max+12 | Gamma spectroscopy (UF) |
| 3 | Max+12 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | 19:08 | Max+14 | Isotopic plutonium, americium-241, and isotopic uranium (UF) |
| 4 | Max+13 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | | | |
| 5 | Max+14 | Strontium-90 (UF) | 19:12 | Max+18 | Strontium-90 (UF) |
| 6 | Max+16 | TAL metals (F/UF) | 19:14 | Max+20 | TAL metals (F/UF) |
| 7 | Max+17 | Cyanide (UF) Gross alpha/beta (UF) | 19:16 | Max+22 | Cyanide (UF); Gross Alpha/Beta |
| 8 | Max+60 | PCB (UF) | 19:18 | Max+24 | PCB (UF) |
| 9 | Max+61 | Isotopic plutonium (UF) | 19:54 | Max+60 | PCB (UF) |
| 10 | Max+105 | PCB (UF) | 19:54 | Max+60 | Isotopic plutonium (UF) |
| 11 | Max+106 | Isotopic plutonium (UF) | 20:39 | Max+105 | PCB (UF) |
| 12 | n/a | n/a | Sample not retrieved. | | |

**Table 2.4-4 (continued)**

| E050.1, Los Alamos below Low-head Weir, Sampled 9/12/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 17:54 | Trigger+0 | Gamma spectroscopy (UF) |
| 2 | Trigger+2 | SSC | 17:56 | Trigger+2 | Isotopic plutonium (UF) |
| 3 | Trigger+4 | SSC | 17:58 | Trigger+4 | SSC |
| 4 | Trigger+6 | SSC | 18:00 | Trigger+6 | SSC |
| 5 | Trigger+8 | Radium-226 (UF) | 18:02 | Trigger+8 | Ra-226/Ra-228 |
| 6 | Trigger+10 | Radium-228 (UF) | | | |
| 7 | Trigger+12 | SSC | 18:06 | Trigger+12 | SSC |
| 8 | Trigger+14 | SSC | 18:08 | Trigger+14 | SSC |
| 9 | Trigger+16 | SSC; particle size | 18:10 | Trigger+16 | SSC; particle size |
| 10 | Trigger+18 | SSC | 18:12 | Trigger+18 | DOC (F) |
| 11 | Trigger+20 | SSC | 18:14 | Trigger+20 | SO4, $Cl^-$ (F) |
| 12 | Trigger+22 | SSC | 18:16 | Trigger+22 | Alk, pH |
| 13 | Trigger+24 | SSC | 18:18 | Trigger+24 | SSC |
| 14 | Trigger+26 | SSC | 18:20 | Trigger+26 | SSC |
| 15 | Trigger+28 | SSC | 18:22 | Trigger+28 | SSC |
| 16 | Trigger+30 | SSC | 18:24 | Trigger+30 | SSC |
| 17 | Trigger+50 | SSC | 18:44 | Trigger+50 | SSC |
| 18 | Trigger+70 | SSC; particle size | 19:04 | Trigger+70 | SSC; particle size SSC |
| 19 | Trigger+900 | SSC | 19:24 | Trigger+90 | SSC |
| 20 | Trigger+110 | SSC; particle size | 19:44 | Trigger+110 | SSC; particle size |
| 21 | Trigger+130 | SSC | 20:04 | Trigger+130 | SSC |
| 22 | Trigger+150 | SSC | 20:24 | Trigger+150 | SSC |
| 23 | Trigger+170 | SSC | 20:44 | Trigger+170 | SSC |
| 24 | Trigger+190 | SSC | 21:04 | Trigger+190 | SSC |

**Table 2.4-4 (continued)**

| E109.9, Los Alamos above Rio Grande, Sampled 7/8/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites 12-Bottle ISCO | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 16:15 | Max+10 | SSC |
| 2 | Max+11 | Gamma spectroscopy (UF) | Sampling attempted but collection not successful. | | |
| 3 | Max+12 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | 16:20 | Max+15 | SSC |
| 4 | Max+13 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | 16:23 | Max+18 | SSC |
| 5 | Max+14 | Strontium-90 (UF) | 16:25 | Max+20 | Cyanide |
| 6 | Max+15 | Dioxins and furans (UF) | 16:28 | Max+23 | PCB |
| 7 | Max+16 | TAL metals (F/UF) | Sampling attempted but collection not successful. | | |
| 8 | Max+17 | Gross alpha/beta (UF) cyanide (UF) | | | |
| 9 | Max+60 | PCB (UF) | 17:05 | Max+60 | SSC |
| 10 | Max+61 | Isotopic plutonium (UF) | Sampling attempted but collection not successful. | | |
| 11 | Max+105 | PCB (UF) | | | |
| 12 | Max+106 | Isotopic plutonium (UF) | | | |

**Table 2.4-4 (continued)**

| E109.9, Los Alamos above Rio Grande, Sampled 7/8/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | Start Time (min) 24-Bottle ISCO | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | Sampling attempted but collection not successful. | | |
| 2 | Trigger+2 | SSC | | | |
| 3 | Trigger+4 | SSC | | | |
| 4 | Trigger+6 | SSC | | | |
| 5 | Trigger+8 | SSC | | | |
| 6 | Trigger+10 | Gamma spectroscopy; isotopic plutonium, americium-241, and isotopic uranium (F) | | | |
| 7 | Trigger+12 | SSC; particle size | | | |
| 8 | Trigger+14 | Strontium-90 (F) | 16:22 | Trigger+18 | Gamma spectroscopy |
| 9 | Trigger+16 | SSC | 16:25 | Trigger+21 | Isotopic plutonium, americium-241, and isotopic uranium (UF) |
| 10 | Trigger+18 | Radium-226 (UF) | 16:27 | Trigger+23 | Isotopic plutonium, americium-241, and isotopic uranium (UF) |
| 11 | Trigger+20 | SSC | 16:30 | Trigger+26 | Strontium-90 |
| 12 | Trigger+22 | Radium-228 (UF) | 16:31 | Trigger+27 | Gross alpha/beta (UF) |
| 13 | Trigger+24 | SSC | Sampling attempted but collection not successful. | | |
| 14 | Trigger+26 | Radium-226 (F) | | | |
| 15 | Trigger+28 | SSC | | | |
| 16 | Trigger+30 | Radium-228 (F) | 16:34 | Trigger+30 | TAL metals (F/UF) |
| 17 | Trigger+50 | SSC | 16:54 | Trigger+50 | SSC |
| 18 | Trigger+70 | SSC; particle size | 17:14 | Trigger+70 | Isotopic plutonium |
| 19 | Trigger+90 | SSC | 17:34 | Trigger+90 | SSC |
| 20 | Trigger+110 | SSC; particle size | 17:54 | Trigger+110 | Isotopic plutonium |
| 21 | Trigger+130 | SSC | Sampling attempted but collection not successful. | | |
| 22 | Trigger+150 | SSC | | | |
| 23 | Trigger+170 | SSC | | | |
| 24 | Trigger+190 | SSC | | | |

**Table 2.4-4 (continued)**

| E109.9, Los Alamos above Rio Grande, Sampled 7/12/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | Start Time (min) 12-Bottle ISCO | Analytical Suites 12-Bottle ISCO | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 13:30 | Max+10 | PCB (UF) |
| 2 | Max+11 | Gamma spectroscopy (UF) | 13:32 | Max+12 | Gamma spectroscopy (UF) |
| 3 | Max+12 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | 13:34 | Max+14 | Isotopic plutonium, americium-241, and isotopic uranium (UF) |
| 4 | Max+13 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | 13:36 | Max+15 | Strontium-90 (UF) |
| 5 | Max+14 | Strontium-90 (UF) | 13:38 | Max+18 | SSC |
| 6 | Max+15 | Dioxins and furans (UF) | 13:40 | Max+20 | Dioxins and furans (UF) |
| 7 | Max+16 | TAL metals (F/UF) | Sampling attempted but collection not successful. | | |
| 8 | Max+17 | Gross alpha/beta (UF) cyanide (UF) | | | |
| 9 | Max+60 | PCB (UF) | | | |
| 10 | Max+61 | Isotopic plutonium (UF) | | | |
| 11 | Max+105 | PCB (UF) | | | |
| 12 | Max+106 | Isotopic plutonium (UF) | | | |

**Table 2.4-4 (continued)**

| E109.9, Los Alamos above Rio Grande, Sampled 7/12/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | Start Time (min) 24-Bottle ISCO | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | Sampling attempted but collection not successful. | | |
| 2 | Trigger+2 | SSC | 13:22 | Trigger+3 | SSC |
| 3 | Trigger+4 | SSC | Sampling attempted but collection not successful. | | |
| 4 | Trigger+6 | SSC | | | |
| 5 | Trigger+8 | SSC | | | |
| 6 | Trigger+10 | Gamma spectroscopy; isotopic plutonium, americium-241, and isotopic uranium (F) | | | |
| 7 | Trigger+12 | SSC; particle size | | | |
| 8 | Trigger+14 | Strontium-90 (F) | | | |
| 9 | Trigger+16 | SSC | | | |
| 10 | Trigger+18 | Radium-226 (UF) | | | |
| 11 | Trigger+20 | SSC | | | |
| 12 | Trigger+22 | Radium-228 (UF) | | | |
| 13 | Trigger+24 | SSC | | | |
| 14 | Trigger+26 | Radium-226 (F) | | | |
| 15 | Trigger+28 | SSC | | | |
| 16 | Trigger+30 | Radium-228 (F) | | | |
| 17 | Trigger+50 | SSC | | | |
| 18 | Trigger+70 | SSC; particle size | | | |
| 19 | Trigger+90 | SSC | | | |
| 20 | Trigger+110 | SSC; particle size | | | |
| 21 | Trigger+130 | SSC | | | |
| 22 | Trigger+150 | SSC | | | |
| 23 | Trigger+170 | SSC | | | |
| 24 | Trigger+190 | SSC | | | |

**Table 2.4-4 (continued)**

<table>
<tr><th colspan="6">E109.9, Los Alamos above Rio Grande, Sampled 7/20/2013</th></tr>
<tr><th rowspan="2">Sample Bottle (1 L)</th><th colspan="2">Planned</th><th colspan="3">Actual</th></tr>
<tr><th>Start Time (min) 12-Bottle ISCO</th><th>Analytical Suites 12-Bottle ISCO</th><th>Sample Collection Time</th><th>12-Bottle ISCO Start Time (min)</th><th>Analyses Requested</th></tr>
<tr><td>1</td><td>Max+10</td><td>PCB (UF)</td><td>19:55</td><td>Max+10</td><td>PCB (UF)</td></tr>
<tr><td>2</td><td>Max+11</td><td>Gamma spectroscopy (UF)</td><td>19:57</td><td>Max+12</td><td>Particle Size</td></tr>
<tr><td>3</td><td>Max+12</td><td>Isotopic plutonium, americium-241, and isotopic uranium (UF)</td><td>19:59</td><td>Max+14</td><td>Gamma spectroscopy (UF)</td></tr>
<tr><td>4</td><td>Max+13</td><td>Isotopic plutonium, americium-241, and isotopic uranium (UF)</td><td rowspan="2">20:01</td><td rowspan="2">Max+16</td><td rowspan="2">Isotopic plutonium, americium-241, and isotopic uranium (UF)</td></tr>
<tr><td>5</td><td>Max+14</td><td>Strontium-90 (UF)</td></tr>
<tr><td>6</td><td>Max+15</td><td>Dioxins and furans (UF)</td><td>20:05</td><td>Max+20</td><td>Dioxins and furans (UF)</td></tr>
<tr><td>7</td><td>Max+16</td><td>TAL metals (F/UF)</td><td>20:07</td><td>Max+22</td><td>Strontium-90 (UF)</td></tr>
<tr><td>8</td><td>Max+17</td><td>Gross alpha/beta (UF) cyanide (UF)</td><td>20:09</td><td>Max+24</td><td>TAL metals (F/UF)</td></tr>
<tr><td>9</td><td>Max+60</td><td>PCB (UF)</td><td>20:45</td><td>Max+60</td><td>PCB (UF)</td></tr>
<tr><td>10</td><td>Max+61</td><td>Isotopic plutonium (UF)</td><td>20:45</td><td>Max+60</td><td>SSC</td></tr>
<tr><td>11</td><td>Max+105</td><td>PCB (UF)</td><td colspan="3" rowspan="2">Sampling attempted but collection not successful.</td></tr>
<tr><td>12</td><td>Max+106</td><td>Isotopic plutonium (UF)</td></tr>
</table>

### Table 2.4-4 (continued)

| E109.9, Los Alamos above Rio Grande, Sampled 7/20/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | Start Time (min) 24-Bottle ISCO | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | Sampling attempted but collection not successful. | | |
| 2 | Trigger+2 | SSC | | | |
| 3 | Trigger+4 | SSC | | | |
| 4 | Trigger+6 | SSC | | | |
| 5 | Trigger+8 | SSC | | | |
| 6 | Trigger+10 | Gamma spectroscopy; isotopic plutonium, americium-241, and isotopic uranium (F) | | | |
| 7 | Trigger+12 | SSC; particle size | | | |
| 8 | Trigger+14 | Strontium-90 (F) | | | |
| 9 | Trigger+16 | SSC | | | |
| 10 | Trigger+18 | Radium-226 (UF) | | | |
| 11 | Trigger+20 | SSC | | | |
| 12 | Trigger+22 | Radium-228 (UF) | | | |
| 13 | Trigger+24 | SSC | | | |
| 14 | Trigger+26 | Radium-226 (F) | | | |
| 15 | Trigger+28 | SSC | | | |
| 16 | Trigger+30 | Radium-228 (F) | | | |
| 17 | Trigger+50 | SSC | | | |
| 18 | Trigger+70 | SSC; particle size | | | |
| 19 | Trigger+90 | SSC | | | |
| 20 | Trigger+110 | SSC; particle size | | | |
| 21 | Trigger+130 | SSC | | | |
| 22 | Trigger+150 | SSC | | | |
| 23 | Trigger+170 | SSC | | | |
| 24 | Trigger+190 | SSC | | | |

**Table 2.4-4 (continued)**

| E109.9, Los Alamos above Rio Grande, Sampled 7/25-26/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | Start Time (min) 12-Bottle ISCO | Analytical Suites 12-Bottle ISCO | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 23:05 | Max+10 | PCB (UF) |
| 2 | Max+11 | Gamma spectroscopy (UF) | 23:07 | Max+12 | Gross alpha/beta (UF) cyanide (UF) |
| 3 | Max+12 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | 23:09 | Max+14 | TAL metals (F) |
| 4 | Max+13 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | 23:11 | Max+16 | DOC(F) |
| 5 | Max+14 | Strontium-90 (UF) | 23:14 | Max+19 | SO4, $Cl^-$ (F) |
| 6 | Max+15 | Dioxins and furans (UF) | | | |
| 7 | Max+16 | TAL metals (F/UF) | Sampling attempted but collection not successful. | | |
| 8 | Max+17 | Gross alpha/beta (UF) cyanide (UF) | | | |
| 9 | Max+60 | PCB (UF) | | | |
| 10 | Max+61 | Isotopic plutonium (UF) | | | |
| 11 | Max+105 | PCB (UF) | | | |
| 12 | Max+106 | Isotopic plutonium (UF) | | | |

**Table 2.4-4 (continued)**

| E109.9, Los Alamos above Rio Grande, Sampled 7/25-26/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 22:54 | Trigger | SSC |
| 2 | Trigger+2 | SSC | 22:57 | Trigger+3 | SSC |
| 3 | Trigger+4 | SSC | 22:59 | Trigger+5 | SSC |
| 4 | Trigger+6 | SSC | 23:00 | Trigger+6 | SSC |
| 5 | Trigger+8 | SSC | 23:02 | Trigger+8 | SSC |
| 6 | Trigger+10 | Gamma spectroscopy; isotopic plutonium, americium-241, and isotopic uranium (F) | 23:04 | Trigger+10 | SSC; particle size |
| 7 | Trigger+12 | SSC; particle size | 23:06 | Trigger+12 | Strontium-90 (F) |
| 8 | Trigger+14 | Strontium-90 (F) | 23:08 | Trigger+14 | TAL (UF) |
| 9 | Trigger+16 | SSC | 23:10 | Trigger+16 | Gamma spectroscopy |
| 10 | Trigger+18 | Radium-226 (UF) | 23:13 | Trigger+19 | Gamma spectroscopy |
| 11 | Trigger+20 | SSC | 23:15 | Trigger+21 | Isotopic plutonium, americium-241, and isotopic uranium (UF) |
| 12 | Trigger+22 | Radium-228 (UF) | 23:17 | Trigger+23 | Isotopic plutonium, americium-241, and isotopic uranium (UF) |
| 13 | Trigger+24 | SSC | 23:20 | Trigger+26 | Cyanide |
| 14 | Trigger+26 | Radium-226 (F) | Sampling attempted but collection not successful. | | |
| 15 | Trigger+28 | SSC | | | |
| 16 | Trigger+30 | Radium-228 (F) | 23:24 | Trigger+30 | Alkalinity+pH |
| 17 | Trigger+50 | SSC | 23:44 | Trigger+50 | SSC |
| 18 | Trigger+70 | SSC; particle size | 00:04 | Trigger+70 | SSC |
| 19 | Trigger+90 | SSC | 00:24 | Trigger+90 | SSC |
| 20 | Trigger+110 | SSC; particle size | 00:44 | Trigger+110 | SSC |
| 21 | Trigger+130 | SSC | 01:04 | Trigger+130 | SSC |
| 22 | Trigger+150 | SSC | 02:04 | Trigger+150 | SSC |
| 23 | Trigger+170 | SSC | Sampling attempted but collection not successful. | | |
| 24 | Trigger+190 | SSC | | | |

**Table 2.4-4 (continued)**

| E109.9, Los Alamos above Rio Grande, Sampled 7/26/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites 12-Bottle ISCO | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | Sampling attempted but collection not successful. | | |
| 2 | Max+11 | Gamma spectroscopy (UF) | | | |
| 3 | Max+12 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | | | |
| 4 | Max+13 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | | | |
| 5 | Max+14 | Strontium-90 (UF) | | | |
| 6 | Max+15 | Dioxins and furans (UF) | | | |
| 7 | Max+16 | TAL metals (F/UF) | | | |
| 8 | Max+17 | Gross alpha/beta (UF) cyanide (UF) | | | |
| 9 | Max+60 | PCB (UF) | | | |
| 10 | Max+61 | Isotopic plutonium (UF) | | | |
| 11 | Max+105 | PCB (UF) | | | |
| 12 | Max+106 | Isotopic plutonium (UF) | | | |

**Table 2.4-4 (continued)**

| E109.9, Los Alamos above Rio Grande, Sampled 7/26/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 17:14 | Trigger | Particle Size |
| 2 | Trigger+2 | SSC | 17:16 | Trigger+2 | SSC |
| 3 | Trigger+4 | SSC | 17:18 | Trigger+4 | Gamma spectroscopy (UF) |
| 4 | Trigger+6 | SSC | 17:20 | Trigger+6 | isotopic plutonium, americium-241, and isotopic uranium (UF) |
| 5 | Trigger+8 | SSC | | | |
| 6 | Trigger+10 | Gamma spectroscopy; isotopic plutonium, americium-241, and isotopic uranium (F) | 17:24 | Trigger+10 | Strontium-90 (UF) |
| 7 | Trigger+12 | SSC; particle size | 17:26 | Trigger+12 | Gross alpha/beta (UF) cyanide (UF) |
| 8 | Trigger+14 | Strontium-90 (F) | 17:28 | Trigger+14 | Radium-226/Radium-228 (UF) |
| 9 | Trigger+16 | SSC | 17:30 | Trigger+16 | TAL metals (F) |
| 10 | Trigger+18 | Radium-226 (UF) | 17:32 | Trigger+18 | TAL metals (UF) |
| 11 | Trigger+20 | SSC | 17:34 | Trigger+20 | Alkalinity, pH (UF) |
| 12 | Trigger+22 | Radium-228 (UF) | 17:36 | Trigger+22 | SO4, CL- (F) |
| 13 | Trigger+24 | SSC | 17:38 | Trigger+24 | DOC (F) |
| 14 | Trigger+26 | Radium-226 (F) | 17:40 | Trigger+26 | SSC |
| 15 | Trigger+28 | SSC | 17:42 | Trigger+28 | Particle Size |
| 16 | Trigger+30 | Radium-228 (F) | 17:44 | Trigger+30 | SSC |
| 17 | Trigger+50 | SSC | Sampling attempted but collection not successful. | | |
| 18 | Trigger+70 | SSC; particle size | | | |
| 19 | Trigger+90 | SSC | | | |
| 20 | Trigger+110 | SSC; particle size | | | |
| 21 | Trigger+130 | SSC | | | |
| 22 | Trigger+150 | SSC | | | |
| 23 | Trigger+170 | SSC | | | |
| 24 | Trigger+190 | SSC | | | |

**Table 2.4-4 (continued)**

| E109.9, Los Alamos above Rio Grande, Sampled 8/3/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites 12-Bottle ISCO | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 15:40 | Max+10 | PCB (UF) |
| 2 | Max+11 | Gamma spectroscopy (UF) | 15:42 | Max+12 | Gross alpha/beta (UF) cyanide (UF) |
| 3 | Max+12 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | 15:45 | Max+15 | Isotopic plutonium, americium-241, and isotopic uranium (UF) |
| 4 | Max+13 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | | | |
| 5 | Max+14 | Strontium-90 (UF) | 15:50 | Max+20 | Strontium-90 (UF) |
| 6 | Max+15 | Dioxins and furans (UF) | 15:52 | Max+22 | Dioxins and furans (UF) |
| 7 | Max+16 | TAL metals (F/UF) | Sampling attempted but collection not successful. | | |
| 8 | Max+17 | Gross alpha/beta (UF) cyanide (UF) | | | |
| 9 | Max+60 | PCB (UF) | 16:30 | Max+60 | PCB (UF) |
| 10 | Max+61 | Isotopic plutonium (UF) | Sampling attempted but collection not successful. | | |
| 11 | Max+105 | PCB (UF) | | | |
| 12 | Max+106 | Isotopic plutonium (UF) | | | |

**Table 2.4-4 (continued)**

| E109.9, Los Alamos above Rio Grande, Sampled 8/3/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 15:24 | Trigger | SSC; Particle Size |
| 2 | Trigger+2 | SSC | 15:26 | Trigger+2 | Gamma spectroscopy; Isotopic plutonium, americium-241, and isotopic uranium (F) |
| 3 | Trigger+4 | SSC | | | |
| 4 | Trigger+6 | SSC | Sampling attempted but collection not successful. | | |
| 5 | Trigger+8 | SSC | 15:32 | Trigger+8 | SSC |
| 6 | Trigger+10 | Gamma spectroscopy; isotopic plutonium, americium-241, and isotopic uranium (F) | 15:34 | Trigger+10 | Gamma spectroscopy (F) |
| 7 | Trigger+12 | SSC; particle size | 15:36 | Trigger+12 | TAL (F) |
| 8 | Trigger+14 | Strontium-90 (F) | 15:38 | Trigger+14 | TAL (UF) |
| 9 | Trigger+16 | SSC | 15:40 | Trigger+16 | Isotopic plutonium(F) |
| 10 | Trigger+18 | Radium-226 (UF) | 15:42 | Trigger+18 | Strontium-90 (F) |
| 11 | Trigger+20 | SSC | 15:44 | Trigger+20 | Radium-226, Radium-228 (UF) |
| 12 | Trigger+22 | Radium-228 (UF) | | | |
| 13 | Trigger+24 | SSC | 15:48 | Trigger+24 | Radium-226, Radium-228 (F) |
| 14 | Trigger+26 | Radium-226 (F) | | | |
| 15 | Trigger+28 | SSC | 15:52 | Trigger+28 | Gross alpha/beta (UF) |
| 16 | Trigger+30 | Radium-228 (F) | 15:54 | Trigger+30 | SSC |
| 17 | Trigger+50 | SSC | 16:14 | Trigger+50 | Iso Pu (UF) |
| 18 | Trigger+70 | SSC; particle size | 16:34 | Trigger+70 | SSC |
| 19 | Trigger+90 | SSC | 16:54 | Trigger+90 | Cyanide (UF) |
| 20 | Trigger+110 | SSC; particle size | 17:14 | Trigger+110 | SO4, $Cl^-$ (F) |
| 21 | Trigger+130 | SSC | 17:34 | Trigger+130 | DOC (F) |
| 22 | Trigger+150 | SSC | 17:54 | Trigger+150 | Alkalinity, pH (UF) |
| 23 | Trigger+170 | SSC | Sampling attempted but collection not successful. | | |
| 24 | Trigger+190 | SSC | 18:34 | Trigger+190 | Particle Size |

**Table 2.4-4 (continued)**

| E109.9, Los Alamos above Rio Grande, Sampled 8/5/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites 12-Bottle ISCO | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 18:35 | Max+10 | SSC |
| 2 | Max+11 | Gamma spectroscopy (UF) | Sampling attempted but collection not successful. | | |
| 3 | Max+12 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | | | |
| 4 | Max+13 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | | | |
| 5 | Max+14 | Strontium-90 (UF) | | | |
| 6 | Max+15 | Dioxins and furans (UF) | | | |
| 7 | Max+16 | TAL metals (F/UF) | | | |
| 8 | Max+17 | Gross alpha/beta (UF) cyanide (UF) | | | |
| 9 | Max+60 | PCB (UF) | | | |
| 10 | Max+61 | Isotopic plutonium (UF) | | | |
| 11 | Max+105 | PCB (UF) | | | |
| 12 | Max+106 | Isotopic plutonium (UF) | | | |

**Table 2.4-4 (continued)**

| E109.9, Los Alamos above Rio Grande, Sampled 8/5/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 18:14 | Trigger | SSC; Particle Size |
| 2 | Trigger+2 | SSC | 18:16 | Trigger+2 | SSC |
| 3 | Trigger+4 | SSC | | | |
| 4 | Trigger+6 | SSC | 18:18 | Trigger+4 | SSC |
| 5 | Trigger+8 | SSC | 18:20 | Trigger+6 | SSC |
| 6 | Trigger+10 | Gamma spectroscopy; isotopic plutonium, americium-241, and isotopic uranium (F) | 18:22 | Trigger+8 | SSC |
| 7 | Trigger+12 | SSC; particle size | 18:24 | Trigger+10 | SSC |
| 8 | Trigger+14 | Strontium-90 (F) | Sampling attempted but collection not successful. | | |
| 9 | Trigger+16 | SSC | | | |
| 10 | Trigger+18 | Radium-226 (UF) | | | |
| 11 | Trigger+20 | SSC | | | |
| 12 | Trigger+22 | Radium-228 (UF) | | | |
| 13 | Trigger+24 | SSC | | | |
| 14 | Trigger+26 | Radium-226 (F) | | | |
| 15 | Trigger+28 | SSC | | | |
| 16 | Trigger+30 | Radium-228 (F) | | | |
| 17 | Trigger+50 | SSC | | | |
| 18 | Trigger+70 | SSC; particle size | | | |
| 19 | Trigger+90 | SSC | | | |
| 20 | Trigger+110 | SSC; particle size | | | |
| 21 | Trigger+130 | SSC | | | |
| 22 | Trigger+150 | SSC | | | |
| 23 | Trigger+170 | SSC | | | |
| 24 | Trigger+190 | SSC | | | |

**Table 2.4-4 (continued)**

| E109.9, Los Alamos above Rio Grande, Sampled 8/9/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites 12-Bottle ISCO | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 15:45 | Max+10 | PCB (UF) |
| 2 | Max+11 | Gamma spectroscopy (UF) | 15:47 | Max+12 | Gamma Spectroscopy (UF) |
| 3 | Max+12 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | 15:49 | Max+14 | Isotopic plutonium, americium-241, and isotopic uranium (UF) |
| 4 | Max+13 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | | | |
| 5 | Max+14 | Strontium-90 (UF) | 15:53 | Max+18 | Strontium-90 (UF) |
| 6 | Max+15 | Dioxins and furans (UF) | 15:55 | Max+20 | Dioxins and furans (UF) |
| 7 | Max+16 | TAL metals (F/UF) | 15:58 | Max+23 | TAL metals (F/UF) |
| 8 | Max+17 | Gross alpha/beta (UF) cyanide (UF) | 15:58 | Max+23 | Gross alpha/beta (UF) |
| 9 | Max+60 | PCB (UF) | 16:35 | Max+60 | PCB (UF) |
| 10 | Max+61 | Isotopic plutonium (UF) | 16:35 | Max+60 | Isotopic Plutonium (UF) |
| 11 | Max+105 | PCB (UF) | 17:20 | Max+105 | PCB (UF) |
| 12 | Max+106 | Isotopic plutonium (UF) | 17:20 | Max+105 | Isotopic Plutonium (UF) |

**Table 2.4-4 (continued)**

| E109.9, Los Alamos above Rio Grande, Sampled 8/9/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 24Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 15:34 | Trigger | SSC |
| 2 | Trigger+2 | SSC | 15:37 | Trigger+3 | SSC |
| 3 | Trigger+4 | SSC | 15:40 | Trigger+6 | SSC, Particle Size |
| 4 | Trigger+6 | SSC | 15:42 | Trigger+8 | Gamma spectroscopy (F) |
| 5 | Trigger+8 | SSC | 15:43 | Trigger+9 | Isotopic plutonium, americium-241, and isotopic uranium (F) |
| 6 | Trigger+10 | Gamma spectroscopy; isotopic plutonium, americium-241, and isotopic uranium (F) | | | |
| 7 | Trigger+12 | SSC; particle size | 15:46 | Trigger+13 | Strontium-90 (F) |
| 8 | Trigger+14 | Strontium-90 (F) | 15:49 | Trigger+15 | Radium-226, Radium-228 (UF) |
| 9 | Trigger+16 | SSC | | | |
| 10 | Trigger+18 | Radium-226 (UF) | 15:52 | Trigger+18 | Radium-226, Radium-228 (F) |
| 11 | Trigger+20 | SSC | | | |
| 12 | Trigger+22 | Radium-228 (UF) | 15:56 | Trigger+22 | SSC, Particle Size |
| 13 | Trigger+24 | SSC | 15:58 | Trigger+24 | SSC |
| 14 | Trigger+26 | Radium-226 (F) | 16:00 | Trigger+26 | SSC |
| 15 | Trigger+28 | SSC | 16:02 | Trigger+28 | SSC |
| 16 | Trigger+30 | Radium-228 (F) | 16:04 | Trigger+30 | SSC |
| 17 | Trigger+50 | SSC | 16:24 | Trigger+50 | SSC |
| 18 | Trigger+70 | SSC; particle size | 16:44 | Trigger+70 | SSC |
| 19 | Trigger+90 | SSC | Sampling attempted but collection not successful. | | |
| 20 | Trigger+110 | SSC; particle size | | | |
| 21 | Trigger+130 | SSC | 17:44 | Trigger+130 | SSC |
| 22 | Trigger+150 | SSC | 18:04 | Trigger+150 | SSC |
| 23 | Trigger+170 | SSC | 18:24 | Trigger+170 | SSC |
| 24 | Trigger+190 | SSC | Sampling attempted but collection not successful. | | |

**Table 2.4-4 (continued)**

| E109.9, Los Alamos above Rio Grande, Sampled 9/12/2013 | | | | | |
|---|---|---|---|---|---|
| Sample Bottle (1 L) | Planned | | Actual | | |
| | 12-Bottle ISCO Start Time (min) | Analytical Suites 12-Bottle ISCO | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Max+10 | PCB (UF) | 15:40 | Max+10 | SSC |
| 2 | Max+11 | Gamma spectroscopy (UF) | 15:42 | Max+12 | Gamma Spectroscopy (UF) |
| 3 | Max+12 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | 15:44 | Max+14 | Isotopic plutonium, americium-241, and isotopic uranium (UF) |
| 4 | Max+13 | Isotopic plutonium, americium-241, and isotopic uranium (UF) | 15:44 | Max+14 | Isotopic plutonium, americium-241, and isotopic uranium (UF) |
| 5 | Max+14 | Strontium-90 (UF) | 15:48 | Max+18 | Strontium-90 (UF) |
| 6 | Max+15 | Dioxins and furans (UF) | 15:50 | Max+20 | TAL (UF) |
| 7 | Max+16 | TAL metals (F/UF) | 15:52 | Max+22 | TAL (F) |
| 8 | Max+17 | Gross alpha/beta (UF) cyanide (UF) | 15:54 | Max+24 | Gross alpha/ gross beta (UF) |
| 9 | Max+60 | PCB (UF) | 16:30 | Max+60 | SSC |
| 10 | Max+61 | Isotopic plutonium (UF) | Sampling attempted but collection not successful. | | |
| 11 | Max+105 | PCB (UF) | Sampling attempted but collection not successful. | | |
| 12 | Max+106 | Isotopic plutonium (UF) | Sampling attempted but collection not successful. | | |

**Table 2.4-4 (continued)**

| E109.9, Los Alamos above Rio Grande, Sampled 9/12/2013 | | | | | |
|---|---|---|---|---|---|
| | Planned | | Actual | | |
| Sample Bottle (1 L) | 24-Bottle ISCO Start Time (min) | Analytical Suites 24-Bottle ISCO 1-L Poly Wedge[a] | Sample Collection Time | 12-Bottle ISCO Start Time (min) | Analyses Requested |
| 1 | Trigger | SSC | 15:39 | Trigger | SSC |
| 2 | Trigger+2 | SSC | 15:42 | Trigger+3 | SSC |
| 3 | Trigger+4 | SSC | 15:44 | Trigger+5 | SSC |
| 4 | Trigger+6 | SSC | 15:46 | Trigger+7 | Gamma spectroscopy (UF) |
| 5 | Trigger+8 | SSC | 15:48 | Trigger+9 | Gamma spectroscopy; isotopic plutonium, americium-241, and isotopic uranium (UF) |
| 6 | Trigger+10 | Gamma spectroscopy; isotopic plutonium, americium-241, and isotopic uranium (F) | | | |
| 7 | Trigger+12 | SSC; particle size | 15:53 | Trigger+14 | SSC; particle size |
| 8 | Trigger+14 | Strontium-90 (F) | 15:55 | Trigger+16 | Strontium-90 (UF) |
| 9 | Trigger+16 | SSC | 15:57 | Trigger+18 | TAL Metals (F) |
| 10 | Trigger+18 | Radium-226 (UF) | 15:59 | Trigger+20 | DOC (F) |
| 11 | Trigger+20 | SSC | 16:01 | Trigger+22 | SO4, $Cl^-$ |
| 12 | Trigger+22 | Radium-228 (UF) | 16:03 | Trigger+24 | Alkalinity, pH (UF) |
| 13 | Trigger+24 | SSC | 16:05 | Trigger+26 | SSC |
| 14 | Trigger+26 | Radium-226 (F) | 16:05 | Trigger+26 | Radium-226; Radium-228 (UF) |
| 15 | Trigger+28 | SSC | | | |
| 16 | Trigger+30 | Radium-228 (F) | 16:09 | Trigger+30 | Radium-226; Radium-228 (UF) |
| 17 | Trigger+50 | SSC | | | |
| 18 | Trigger+70 | SSC; particle size | 16:49 | Trigger+70 | SSC; particle size |
| 19 | Trigger+90 | SSC | 17:09 | Trigger+90 | SSC |
| 20 | Trigger+110 | SSC; particle size | 17:29 | Trigger+110 | SSC; particle size |
| 21 | Trigger+130 | SSC | 17:49 | Trigger+130 | SSC |
| 22 | Trigger+150 | SSC | 18:09 | Trigger+150 | SSC |
| 23 | Trigger+170 | SSC | 18:29 | Trigger+170 | SSC |
| 24 | Trigger+190 | SSC | 18:49 | Trigger+190 | SSC |

[a] UF = Unfiltered.

[b] F = Filtered.

[c] TOC = Total organic carbon.

[d] n/a = Not applicable.

**Table 2.6-1**
**Sample Collection and Sample Retrieval Working Day Intervals**

| Location | Count of Sampled Storm Events | Count Retrieved on First Working Day | Count Retrieved after First Working Day | Comment |
|---|---|---|---|---|
| CO101038 | 2 | 1 | 1 | 1 working day between sample collection on Fri 7/12 sample retrieval on Mon 7/15.<br>34 working days between sample collection on Wed 9/18 sample retrieval on Tue 11/05. |
| CO111041 | 9 | 3 | 6 | 1 working day between sample collection on Fri 6/14 sample retrieval on Mon 6/17.<br>6 working days between sample collection on Sun 6/30 sample retrieval on Tue 7/09.<br>1 working day between sample collection on Fri 7/12 sample retrieval on Mon 7/15.<br>1 working day between sample collection on Sat 7/13 sample retrieval on Mon 7/15.<br>2 working days between sample collection on Sun 7/28 sample retrieval on Tue 7/30.<br>2 working days between sample collection on Fri 7/05 sample retrieval on Tue 7/09.<br>2 working days between sample collection on Mon 8/05 sample retrieval on Wed 8/07.<br>4 working days between sample collection on Fri 8/09 sample retrieval on Thu 8/15.<br>2 working days between sample collection on Tue 9/10 sample retrieval on Thu 9/12. |
| E026 | 1 | 0 | 1 | 3 working days between sample collection on Thu 9/12 sample retrieval on Tue 9/17. |
| E030 | 2 | 1 | 1 | 1 working day between sample collection on Fri 7/12 sample retrieval on Mon 7/15.<br>11 working days between sample collection on Thu 9/12 sample retrieval on Fri 9/27. |
| E038 | 5 | 1 | 4 | 1 working day between sample collection on Fri 6/14 sample retrieval on Mon 6/17.<br>7 working days between sample collection on Sun 6/30 sample retrieval on Tue 7/09.<br>3 working days between sample collection on Fri 7/12 sample retrieval on Wed 7/17.<br>3 working days between sample collection on Sun 7/28 sample retrieval on Wed 7/31.<br>4 working days between sample collection on Mon 8/05 sample retrieval on Fri 8/09. |

**Table 2.6-1 (continued)**

| Location | Count of Sampled Storm Events | Count Retrieved on First Working Day | Count Retrieved after First Working Day | Comment |
|---|---|---|---|---|
| E039.1 | 9 | 2 | 7 | 1 working day between sample collection on Fri 6/14 sample retrieval on Mon 6/17.<br>7 working days between sample collection on Sun 6/30 sample retrieval on Tue 7/09.<br>3 working days between sample collection on Fri 7/12 sample retrieval on Wed 7/17.<br>3 working days between sample collection on Sun 7/28 sample retrieval on Wed 7/31.<br>5 working days between sample collection on Sun 8/04 sample retrieval on Fri 8/09.<br>1 working day between sample collection on Fri 8/09 sample retrieval on Mon 8/12.<br>2 working days between sample collection on Tue 9/10 sample retrieval on Thu 9/12.<br>11 working days between sample collection on Thu 9/12 sample retrieval on Fri 9/27.<br>2 working days between sample collection on Tue 11/05 sample retrieval on Thu 11/07. |
| E040 | 4 | 0 | 4 | 3 working days between sample collection on Fri 7/12 sample retrieval on Wed 7/17.<br>2 working days between sample collection on Mon 8/05 sample retrieval on Wed 8/07.<br>2 working days between sample collection on Tue 9/10 sample retrieval on Thu 9/12.<br>11 working days between sample collection on Thu 9/12 sample retrieval on Fri 9/27. |
| E042.1 | 3 | 3 | 0 | 1 working day between sample collection on Fri 7/12 sample retrieval on Mon 7/15.<br>1 working day between sample collection on Mon 8/05 sample retrieval on Tue 8/06.<br>1 working day between sample collection on Tue 9/10 sample retrieval on Wed 9/11. |
| E050.1 | 5 | 4 | 1 | 1 working day between sample collection on Fri 7/12 sample retrieval on Mon 7/15.<br>1 working day between sample collection on Mon 8/05 sample retrieval on Tue 8/06.<br>1 working day between sample collection on Tue 9/10 sample retrieval on Wed 9/11.<br>0 working day between sample collection on Wed 9/11 sample retrieval on Wed 9/11.<br>3 working days between sample collection on Thu 9/12 sample retrieval on Tue 9/17. |

**Table 2.6-1 (continued)**

| Location | Count of Sampled Storm Events | Count Retrieved on First Working Day | Count Retrieved after First Working Day | Comment |
|---|---|---|---|---|
| E055 | 2 | 1 | 1 | 1 working day between sample collection on Fri 6/14 sample retrieval on Mon 6/17.<br>4 working days between sample collection on Thu 9/12 sample retrieval on Wed 9/18. |
| E055.5 | 2 | 0 | 2 | 2 working days between sample collection on Fri 7/12 sample retrieval on Tue 7/16.<br>3 working days between sample collection on Fri 9/13 sample retrieval on Wed 9/18. |
| E056 | 4 | 1 | 3 | 1 working day between sample collection on Fri 6/14 sample retrieval on Mon 6/17.<br>2 working days between sample collection on Fri 7/12 sample retrieval on Tue 7/16.<br>2 working days between sample collection on Mon 8/05 sample retrieval on Wed 8/07.<br>4 working days between sample collection on Thu 9/12 sample retrieval on Wed 9/18. |
| E109.9 | 10 | 8 | 2 | 1 working day between sample collection on Mon 7/08 sample retrieval on Tue 7/09.<br>1 working day between sample collection on Fri 7/12 sample retrieval on Mon 7/15.<br>1 working day between sample collection on Sat 7/20 sample retrieval on Mon 7/22.<br>1 working day between sample collection on Thu 7/25 sample retrieval on Fri 7/26.<br>0 working days between sample collection on Fri 7/26 sample retrieval on Fri 7/26.<br>1 working day between sample collection on Fri 7/26 sample retrieval on Mon 7/29.<br>1 working day between sample collection on Sat 8/03 sample retrieval on Mon 8/05.<br>1 working day between sample collection on Mon 8/05 sample retrieval on Tue 8/06.<br>23 working days between sample collection on Fri 8/09 sample retrieval on Wed 9/11.<br>8 working days between sample collection on Thu 9/12 sample retrieval on Tue 9/24. |

**Table 2.6-2**
**Gage Station Operational Issues during the 2012 Monitoring Year**

| Station | Operational Issue | Issue Date | Repair Date | Working Days from Issue to Repair | Potential Discharge above Trigger |
|---|---|---|---|---|---|
| E026 | Silting in stilling well. | 9/3/2013 | 1/23/2014 | 74 | 9/22/2013 |
| E030 | Silting in stilling well. | 9/11/2013 | 9/27/2013 | 12 | 9/22/2013 |
| E038 | None | | | | None |
| E039.1 | Encoder tape dislodged from wheel during high flow event. | 7/12/2013 | 7/17/2013 | 3 | None |
| E040 | Silting in channel. | 7/12/2013 | 7/17/2013 | 3 | None |
| | Silting in channel. | 7/26/2013 | 8/7/2013 | 8 | 8/5/2013 |
| | Silting in channel. | 8/9/2013 | 8/15/2013 | 4 | None |
| | Silting in channel. | 9/11/2013 | 9/12/2013 | 1 | 9/11/2013 |
| | Large boulders and rock under probe. | 9/13/2013 | 2/20/2014 | 88 | 9/18/2013, 9/22/2013 |
| E042.1 | Sutron malfunction | 7/8/2013 | 7/8/2013 | 0 | None |
| | Silting | 7/12/2013 | 7/15/2013 | 1 | None |
| | Silting | 7/25/2013 | 8/7/2013 | 8 | 7/26/2013, 7/27/2013, 7/28/2013 |
| | Sutron power failure | 8/19/2013 | 8/19/2013 | 0 | None |
| | Major station damage from high-flow event. | 9/13/2013 | 9/20/2013 | 5 | 9/14/2013 |
| E050.1 | Encoder shifted. | 8/6/2013 | 8/6/2013 | 0 | none |
| | Silting | 9/13/2013 | 9/20/2013 | 5 | 9/14/2013 |
| E055 | None | | | | None |
| E055.5 | None | | | | None |
| E056 | Silting | None | 6/17/2013 | 1 | none |
| | Silting, Sutron malfunction | None | 9/18/2013 | 3 | none |
| E059 | Major station damage from high-flow event. Greenlee, ISCOs, and batteries are washed 1 mile downstream. | None | 11/13/2013 | 27 | none |

**Table 2.6-2 (continued**

| Station | Operational Issue | Issue Date | Repair Date | Working Days from Issue to Repair | Potential Discharge above Trigger |
|---|---|---|---|---|---|
| E060.1 | Major station damage from high-flow event. | 9/13/2013 | 9/19/2013 | 4 | none |
| E109.9 | Sutron malfunction | 6/25/2013 | 6/26/2013 | 1 | none |
| | Silting. | 7/8/2013 | 7/9/2013 | 1 | none |
| | Encoder tape dislodged during MSS maintenance. | 7/10/2013 | 7/10/2013 | 0 | none |
| | Encoder tape dislodged during MSS maintenance. | 7/12/2013 | 7/15/2013 | 1 | none |
| | Sutron malfunction. | 7/21/2013 | 7/22/2013 | 1 | none |
| | Silting. | 7/26/2013 | 7/29/2013 | 1 | none |
| | Silting. | 8/3/2013 | 8/5/2013 | 1 | none |
| | Silting. | 8/5/2013 | 8/6/2013 | 1 | none |
| | Major station damage from high-flow event. | 9/13/2013 | No repair | Not applicable | Unknown |

**Table 2.6-3**
**Gaging Station and Sampler Inspection Intervals**

| Gage Station | Inspection Date | Days from Previous Inspection |
|---|---|---|
| CO101038 | 06-Nov-12 | Initial |
| CO101038 | 13-Nov-12 | 7 |
| CO101038 | 21-Nov-12 | 8 |
| CO101038 | 28-Nov-12 | 7 |
| CO101038 | 12-Dec-12 | 14 |
| CO101038 | 28-May-13 | 167 |
| CO101038 | 12-Jun-13 | 15 |
| CO101038 | 17-Jun-13 | 5 |
| CO101038 | 09-Jul-13 | 22 |
| CO101038 | 15-Jul-13 | 6 |
| CO101038 | 30-Jul-13 | 15 |
| CO101038 | 07-Aug-13 | 8 |
| CO101038 | 15-Aug-13 | 8 |
| CO101038 | 21-Aug-13 | 0 |
| CO101038 | 05-Sep-13 | 15 |
| CO101038 | 12-Sep-13 | 7 |
| CO101038 | 17-Sep-13 | 5 |
| CO101038 | 05-Nov-13 | 49 |
| CO111041 | 06-Nov-12 | Initial |
| CO111041 | 13-Nov-12 | 7 |
| CO111041 | 21-Nov-12 | 8 |
| CO111041 | 28-Nov-12 | 7 |
| CO111041 | 12-Dec-12 | 14 |
| CO111041 | 28-May-13 | 167 |
| CO111041 | 12-Jun-13 | 15 |
| CO111041 | 17-Jun-13 | 5 |
| CO111041 | 09-Jul-13 | 22 |
| CO111041 | 15-Jul-13 | 6 |
| CO111041 | 30-Jul-13 | 15 |
| CO111041 | 07-Aug-13 | 8 |
| CO111041 | 15-Aug-13 | 8 |
| CO111041 | 21-Aug-13 | 6 |
| CO111041 | 05-Sep-13 | 15 |
| CO111041 | 12-Sep-13 | 7 |
| CO111041 | 17-Sep-13 | 5 |
| CO111041 | 05-Nov-13 | 49 |
| E026 | 08-Nov-12 | Initial |
| E026 | 15-Nov-12 | 7 |

**Table 2.6-3 (continued)**

| Gage Station | Inspection Date | Days from Previous Inspection |
|---|---|---|
| E026 | 19-Nov-12 | 4 |
| E026 | 19-Nov-12 | 0 |
| E026 | 29-Nov-12 | 10 |
| E026 | 12-Dec-12 | 13 |
| E026 | 23-Jan-13 | 42 |
| E026 | 05-Feb-13 | 13 |
| E026 | 13-Mar-13 | 36 |
| E026 | 09-Apr-13 | 27 |
| E026 | 28-May-13 | 49 |
| E026 | 31-May-13 | 3 |
| E026 | 10-Jun-13 | 10 |
| E026 | 28-Jun-13 | 18 |
| E026 | 08-Jul-13 | 10 |
| E026 | 26-Jul-13 | 18 |
| E026 | 31-Jul-13 | 5 |
| E026 | 09-Aug-13 | 9 |
| E026 | 15-Aug-13 | 6 |
| E026 | 04-Sep-13 | 20 |
| E026 | 05-Sep-13 | 1 |
| E026 | 17-Sep-13 | 12 |
| E026 | 30-Sep-13 | 13 |
| E026 | 01-Oct-13 | 1 |
| E026 | 05-Nov-13 | 35 |
| E026 | 02-Dec-13 | 27 |
| E026 | 23-Dec-13 | 21 |
| E030 | 05-Nov-12 | Initial |
| E030 | 13-Nov-12 | 8 |
| E030 | 19-Nov-12 | 6 |
| E030 | 19-Nov-12 | 0 |
| E030 | 27-Nov-12 | 8 |
| E030 | 05-Dec-12 | 8 |
| E030 | 22-Jan-13 | 48 |
| E030 | 28-Jan-13 | 6 |
| E030 | 05-Feb-13 | 8 |
| E030 | 13-Mar-13 | 36 |
| E030 | 03-Apr-13 | 21 |
| E030 | 28-May-13 | 55 |
| E030 | 31-May-13 | 3 |

**Table 2.6-3 (continued)**

| Gage Station | Inspection Date | Days from Previous Inspection |
|---|---|---|
| E030 | 10-Jun-13 | 10 |
| E030 | 28-Jun-13 | 18 |
| E030 | 08-Jul-13 | 10 |
| E030 | 08-Jul-13 | 0 |
| E030 | 15-Jul-13 | 7 |
| E030 | 31-Jul-13 | 16 |
| E030 | 07-Aug-13 | 7 |
| E030 | 15-Aug-13 | 8 |
| E030 | 04-Sep-13 | 20 |
| E030 | 05-Sep-13 | 1 |
| E030 | 20-Sep-13 | 15 |
| E030 | 27-Sep-13 | 7 |
| E030 | 30-Sep-13 | 3 |
| E030 | 01-Oct-13 | 1 |
| E030 | 07-Nov-13 | 37 |
| E030 | 02-Dec-13 | 25 |
| E030 | 11-Dec-13 | 9 |
| E038 | 06-Nov-12 | Initial |
| E038 | 15-Nov-12 | 9 |
| E038 | 21-Nov-12 | 6 |
| E038 | 21-Nov-12 | 0 |
| E038 | 27-Nov-12 | 6 |
| E038 | 28-Nov-12 | 1 |
| E038 | 12-Dec-12 | 14 |
| E038 | 30-Jan-13 | 49 |
| E038 | 19-Feb-13 | 20 |
| E038 | 11-Mar-13 | 20 |
| E038 | 11-Apr-13 | 31 |
| E038 | 30-May-13 | 49 |
| E038 | 31-May-13 | 1 |
| E038 | 12-Jun-13 | 12 |
| E038 | 17-Jun-13 | 5 |
| E038 | 28-Jun-13 | 11 |
| E038 | 09-Jul-13 | 11 |
| E038 | 17-Jul-13 | 8 |
| E038 | 31-Jul-13 | 14 |
| E038 | 31-Jul-13 | 0 |
| E038 | 09-Aug-13 | 9 |

**Table 2.6-3 (continued)**

| Gage Station | Inspection Date | Days from Previous Inspection |
|---|---|---|
| E038 | 12-Aug-13 | 3 |
| E038 | 04-Sep-13 | 23 |
| E038 | 06-Sep-13 | 2 |
| E038 | 20-Sep-13 | 14 |
| E038 | 27-Sep-13 | 7 |
| E038 | 30-Sep-13 | 3 |
| E038 | 01-Oct-13 | 1 |
| E038 | 07-Nov-13 | 37 |
| E038 | 02-Dec-13 | 25 |
| E038 | 24-Dec-13 | 22 |
| E039.1 | 06-Nov-12 | Initial |
| E039.1 | 13-Nov-12 | 7 |
| E039.1 | 21-Nov-12 | 8 |
| E039.1 | 21-Nov-12 | 0 |
| E039.1 | 27-Nov-12 | 6 |
| E039.1 | 12-Dec-12 | 15 |
| E039.1 | 30-Jan-13 | 49 |
| E039.1 | 19-Feb-13 | 20 |
| E039.1 | 11-Mar-13 | 20 |
| E039.1 | 11-Apr-13 | 31 |
| E039.1 | 29-May-13 | 48 |
| E039.1 | 31-May-13 | 2 |
| E039.1 | 12-Jun-13 | 12 |
| E039.1 | 17-Jun-13 | 5 |
| E039.1 | 28-Jun-13 | 11 |
| E039.1 | 09-Jul-13 | 11 |
| E039.1 | 17-Jul-13 | 8 |
| E039.1 | 31-Jul-13 | 14 |
| E039.1 | 31-Jul-13 | 0 |
| E039.1 | 09-Aug-13 | 9 |
| E039.1 | 12-Aug-13 | 3 |
| E039.1 | 04-Sep-13 | 23 |
| E039.1 | 06-Sep-13 | 2 |
| E039.1 | 12-Sep-13 | 6 |
| E039.1 | 27-Sep-13 | 15 |
| E039.1 | 30-Sep-13 | 3 |
| E039.1 | 01-Oct-13 | 1 |
| E039.1 | 06-Nov-13 | 36 |

**Table 2.6-3 (continued)**

| Gage Station | Inspection Date | Days from Previous Inspection |
|---|---|---|
| E039.1 | 02-Dec-13 | 26 |
| E039.1 | 04-Dec-13 | 2 |
| E039.1 | 24-Dec-13 | 20 |
| E040 | 05-Nov-12 | Initial |
| E040 | 13-Nov-12 | 8 |
| E040 | 19-Nov-12 | 6 |
| E040 | 19-Nov-12 | 0 |
| E040 | 27-Nov-12 | 8 |
| E040 | 03-Dec-12 | 6 |
| E040 | 18-Dec-12 | 15 |
| E040 | 03-Jan-13 | 16 |
| E040 | 22-Jan-13 | 19 |
| E040 | 05-Feb-13 | 14 |
| E040 | 13-Mar-13 | 36 |
| E040 | 09-Apr-13 | 27 |
| E040 | 08-May-13 | 29 |
| E040 | 31-May-13 | 23 |
| E040 | 10-Jun-13 | 10 |
| E040 | 28-Jun-13 | 18 |
| E040 | 08-Jul-13 | 10 |
| E040 | 17-Jul-13 | 9 |
| E040 | 31-Jul-13 | 14 |
| E040 | 07-Aug-13 | 7 |
| E040 | 15-Aug-13 | 8 |
| E040 | 04-Sep-13 | 20 |
| E040 | 05-Sep-13 | 1 |
| E040 | 12-Sep-13 | 7 |
| E040 | 27-Sep-13 | 15 |
| E040 | 30-Sep-13 | 3 |
| E040 | 01-Oct-13 | 1 |
| E040 | 07-Nov-13 | 37 |
| E040 | 02-Dec-13 | 25 |
| E040 | 11-Dec-13 | 9 |
| E042.1 | 05-Nov-12 | Initial |
| E042.1 | 13-Nov-12 | 8 |
| E042.1 | 19-Nov-12 | 6 |
| E042.1 | 19-Nov-12 | 0 |
| E042.1 | 27-Nov-12 | 8 |

**Table 2.6-3 (continued)**

| Gage Station | Inspection Date | Days from Previous Inspection |
|---|---|---|
| E042.1 | 28-Nov-12 | 1 |
| E042.1 | 05-Dec-12 | 7 |
| E042.1 | 22-Jan-13 | 48 |
| E042.1 | 24-Jan-13 | 2 |
| E042.1 | 05-Feb-13 | 12 |
| E042.1 | 06-Mar-13 | 29 |
| E042.1 | 09-Apr-13 | 34 |
| E042.1 | 23-May-13 | 44 |
| E042.1 | 31-May-13 | 8 |
| E042.1 | 06-Jun-13 | 6 |
| E042.1 | 28-Jun-13 | 22 |
| E042.1 | 08-Jul-13 | 10 |
| E042.1 | 15-Jul-13 | 7 |
| E042.1 | 30-Jul-13 | 15 |
| E042.1 | 31-Jul-13 | 1 |
| E042.1 | 07-Aug-13 | 7 |
| E042.1 | 15-Aug-13 | 8 |
| E042.1 | 19-Aug-13 | 4 |
| E042.1 | 04-Sep-13 | 16 |
| E042.1 | 05-Sep-13 | 1 |
| E042.1 | 11-Sep-13 | 6 |
| E042.1 | 20-Sep-13 | 9 |
| E042.1 | 27-Sep-13 | 7 |
| E042.1 | 30-Sep-13 | 3 |
| E042.1 | 01-Oct-13 | 1 |
| E042.1 | 06-Nov-13 | 36 |
| E042.1 | 02-Dec-13 | 26 |
| E042.1 | 04-Dec-13 | 2 |
| E042.1 | 11-Dec-13 | 7 |
| E050.1 | 05-Nov-12 | Initial |
| E050.1 | 13-Nov-12 | 8 |
| E050.1 | 20-Nov-12 | 7 |
| E050.1 | 28-Nov-12 | 8 |
| E050.1 | 28-Nov-12 | 0 |
| E050.1 | 05-Dec-12 | 7 |
| E050.1 | 12-Dec-12 | 7 |
| E050.1 | 18-Dec-12 | 6 |
| E050.1 | 03-Jan-13 | 16 |

**Table 2.6-3 (continued)**

| Gage Station | Inspection Date | Days from Previous Inspection |
|---|---|---|
| E050.1 | 09-Jan-13 | 6 |
| E050.1 | 17-Jan-13 | 8 |
| E050.1 | 22-Jan-13 | 5 |
| E050.1 | 28-Jan-13 | 6 |
| E050.1 | 05-Feb-13 | 8 |
| E050.1 | 12-Feb-13 | 7 |
| E050.1 | 21-Feb-13 | 9 |
| E050.1 | 27-Feb-13 | 6 |
| E050.1 | 06-Mar-13 | 7 |
| E050.1 | 13-Mar-13 | 7 |
| E050.1 | 19-Mar-13 | 6 |
| E050.1 | 26-Mar-13 | 7 |
| E050.1 | 03-Apr-13 | 8 |
| E050.1 | 09-Apr-13 | 6 |
| E050.1 | 16-Apr-13 | 7 |
| E050.1 | 17-Apr-13 | 1 |
| E050.1 | 22-Apr-13 | 5 |
| E050.1 | 29-Apr-13 | 7 |
| E050.1 | 07-May-13 | 8 |
| E050.1 | 13-May-13 | 6 |
| E050.1 | 17-May-13 | 4 |
| E050.1 | 22-May-13 | 5 |
| E050.1 | 28-May-13 | 6 |
| E050.1 | 04-Jun-13 | 7 |
| E050.1 | 06-Jun-13 | 2 |
| E050.1 | 13-Jun-13 | 7 |
| E050.1 | 20-Jun-13 | 7 |
| E050.1 | 26-Jun-13 | 6 |
| E050.1 | 28-Jun-13 | 2 |
| E050.1 | 01-Jul-13 | 3 |
| E050.1 | 08-Jul-13 | 7 |
| E050.1 | 15-Jul-13 | 7 |
| E050.1 | 25-Jul-13 | 10 |
| E050.1 | 29-Jul-13 | 4 |
| E050.1 | 31-Jul-13 | 2 |
| E050.1 | 06-Aug-13 | 6 |
| E050.1 | 15-Aug-13 | 9 |
| E050.1 | 23-Aug-13 | 8 |

**Table 2.6-3 (continued)**

| Gage Station | Inspection Date | Days from Previous Inspection |
|---|---|---|
| E050.1 | 28-Aug-13 | 5 |
| E050.1 | 04-Sep-13 | 7 |
| E050.1 | 06-Sep-13 | 2 |
| E050.1 | 11-Sep-13 | 5 |
| E050.1 | 17-Sep-13 | 6 |
| E050.1 | 20-Sep-13 | 3 |
| E050.1 | 27-Sep-13 | 7 |
| E050.1 | 30-Sep-13 | 3 |
| E050.1 | 01-Oct-13 | 1 |
| E050.1 | 04-Oct-13 | 3 |
| E050.1 | 11-Oct-13 | 7 |
| E050.1 | 15-Oct-13 | 4 |
| E050.1 | 24-Oct-13 | 9 |
| E050.1 | 05-Nov-13 | 12 |
| E050.1 | 15-Nov-13 | 10 |
| E050.1 | 20-Nov-13 | 5 |
| E050.1 | 26-Nov-13 | 6 |
| E050.1 | 02-Dec-13 | 6 |
| E050.1 | 06-Dec-13 | 4 |
| E050.1 | 09-Dec-13 | 3 |
| E050.1 | 19-Dec-13 | 10 |
| E050.1 | 20-Dec-13 | 1 |
| E050.1 | 23-Dec-13 | 3 |
| E055 | 02-Nov-12 | Initial |
| E055 | 07-Nov-12 | 5 |
| E055 | 15-Nov-12 | 8 |
| E055 | 21-Nov-12 | 6 |
| E055 | 21-Nov-12 | 0 |
| E055 | 29-Nov-12 | 8 |
| E055 | 13-Dec-12 | 14 |
| E055 | 23-Jan-13 | 41 |
| E055 | 13-Feb-13 | 21 |
| E055 | 18-Mar-13 | 33 |
| E055 | 01-Apr-13 | 14 |
| E055 | 29-May-13 | 58 |
| E055 | 31-May-13 | 2 |
| E055 | 13-Jun-13 | 13 |
| E055 | 17-Jun-13 | 4 |

**Table 2.6-3 (continued)**

| Gage Station | Inspection Date | Days from Previous Inspection |
|---|---|---|
| E055 | 28-Jun-13 | 11 |
| E055 | 11-Jul-13 | 13 |
| E055 | 16-Jul-13 | 5 |
| E055 | 31-Jul-13 | 15 |
| E055 | 07-Aug-13 | 7 |
| E055 | 15-Aug-13 | 8 |
| E055 | 04-Sep-13 | 20 |
| E055 | 06-Sep-13 | 2 |
| E055 | 16-Sep-13 | 10 |
| E055 | 18-Sep-13 | 2 |
| E055 | 30-Sep-13 | 12 |
| E055 | 01-Oct-13 | 1 |
| E055 | 06-Nov-13 | 36 |
| E055 | 02-Dec-13 | 26 |
| E055 | 20-Dec-13 | 18 |
| E055.5 | 02-Nov-12 | Initial |
| E055.5 | 06-Nov-12 | 4 |
| E055.5 | 16-Nov-12 | 10 |
| E055.5 | 16-Nov-12 | 0 |
| E055.5 | 21-Nov-12 | 5 |
| E055.5 | 28-Nov-12 | 7 |
| E055.5 | 13-Dec-12 | 15 |
| E055.5 | 04-Jan-13 | 22 |
| E055.5 | 07-Jan-13 | 3 |
| E055.5 | 14-Jan-13 | 7 |
| E055.5 | 23-Jan-13 | 9 |
| E055.5 | 20-Feb-13 | 28 |
| E055.5 | 18-Mar-13 | 26 |
| E055.5 | 01-Apr-13 | 14 |
| E055.5 | 25-Apr-13 | 24 |
| E055.5 | 30-May-13 | 35 |
| E055.5 | 31-May-13 | 1 |
| E055.5 | 13-Jun-13 | 13 |
| E055.5 | 20-Jun-13 | 7 |
| E055.5 | 28-Jun-13 | 8 |
| E055.5 | 11-Jul-13 | 13 |
| E055.5 | 16-Jul-13 | 5 |
| E055.5 | 31-Jul-13 | 15 |

**Table 2.6-3 (continued)**

| Gage Station | Inspection Date | Days from Previous Inspection |
|---|---|---|
| E055.5 | 09-Aug-13 | 9 |
| E055.5 | 15-Aug-13 | 6 |
| E055.5 | 04-Sep-13 | 20 |
| E055.5 | 06-Sep-13 | 2 |
| E055.5 | 18-Sep-13 | 12 |
| E055.5 | 30-Sep-13 | 12 |
| E055.5 | 30-Sep-13 | 0 |
| E055.5 | 01-Oct-13 | 1 |
| E055.5 | 06-Nov-13 | 36 |
| E055.5 | 02-Dec-13 | 26 |
| E055.5 | 10-Dec-13 | 8 |
| E056 | 02-Nov-12 | Initial |
| E056 | 07-Nov-12 | 5 |
| E056 | 15-Nov-12 | 8 |
| E056 | 21-Nov-12 | 6 |
| E056 | 21-Nov-12 | 0 |
| E056 | 28-Nov-12 | 7 |
| E056 | 29-Nov-12 | 1 |
| E056 | 13-Dec-12 | 14 |
| E056 | 23-Jan-13 | 41 |
| E056 | 13-Feb-13 | 21 |
| E056 | 18-Mar-13 | 33 |
| E056 | 01-Apr-13 | 14 |
| E056 | 29-May-13 | 58 |
| E056 | 31-May-13 | 2 |
| E056 | 13-Jun-13 | 13 |
| E056 | 17-Jun-13 | 4 |
| E056 | 28-Jun-13 | 11 |
| E056 | 11-Jul-13 | 13 |
| E056 | 16-Jul-13 | 5 |
| E056 | 31-Jul-13 | 15 |
| E056 | 07-Aug-13 | 7 |
| E056 | 15-Aug-13 | 8 |
| E056 | 04-Sep-13 | 20 |
| E056 | 06-Sep-13 | 2 |
| E056 | 18-Sep-13 | 12 |
| E056 | 30-Sep-13 | 12 |
| E056 | 01-Oct-13 | 1 |

**Table 2.6-3 (continued)**

| Gage Station | Inspection Date | Days from Previous Inspection |
|---|---|---|
| E056 | 06-Nov-13 | 36 |
| E056 | 02-Dec-13 | 26 |
| E056 | 20-Dec-13 | 18 |
| E059 | 06-Nov-12 | Initial |
| E059 | 15-Nov-12 | 9 |
| E059 | 19-Nov-12 | 4 |
| E059 | 19-Nov-12 | 0 |
| E059 | 28-Nov-12 | 9 |
| E059 | 05-Dec-12 | 7 |
| E059 | 28-Jan-13 | 54 |
| E059 | 13-Feb-13 | 16 |
| E059 | 18-Mar-13 | 33 |
| E059 | 01-Apr-13 | 14 |
| E059 | 13-May-13 | 42 |
| E059 | 31-May-13 | 18 |
| E059 | 06-Jun-13 | 6 |
| E059 | 28-Jun-13 | 22 |
| E059 | 11-Jul-13 | 13 |
| E059 | 26-Jul-13 | 15 |
| E059 | 31-Jul-13 | 5 |
| E059 | 09-Aug-13 | 9 |
| E059 | 15-Aug-13 | 6 |
| E059 | 04-Sep-13 | 20 |
| E059 | 06-Sep-13 | 2 |
| E059 | 20-Sep-13 | 14 |
| E059 | 26-Sep-13 | 6 |
| E059 | 30-Sep-13 | 4 |
| E059 | 01-Oct-13 | 1 |
| E059 | 13-Nov-13 | 43 |
| E059 | 02-Dec-13 | 19 |
| E059 | 13-Dec-13 | 11 |
| E059 | 23-Dec-13 | 10 |
| E060.1 | 02-Nov-12 | Initial |
| E060.1 | 05-Nov-12 | 3 |
| E060.1 | 13-Nov-12 | 8 |
| E060.1 | 20-Nov-12 | 7 |
| E060.1 | 28-Nov-12 | 8 |
| E060.1 | 05-Dec-12 | 7 |

**Table 2.6-3 (continued)**

| Gage Station | Inspection Date | Days from Previous Inspection |
|---|---|---|
| E060.1 | 12-Dec-12 | 7 |
| E060.1 | 18-Dec-12 | 6 |
| E060.1 | 04-Jan-13 | 17 |
| E060.1 | 09-Jan-13 | 5 |
| E060.1 | 17-Jan-13 | 8 |
| E060.1 | 24-Jan-13 | 7 |
| E060.1 | 28-Jan-13 | 4 |
| E060.1 | 06-Feb-13 | 9 |
| E060.1 | 12-Feb-13 | 6 |
| E060.1 | 21-Feb-13 | 9 |
| E060.1 | 25-Feb-13 | 4 |
| E060.1 | 06-Mar-13 | 9 |
| E060.1 | 13-Mar-13 | 7 |
| E060.1 | 19-Mar-13 | 6 |
| E060.1 | 26-Mar-13 | 7 |
| E060.1 | 03-Apr-13 | 8 |
| E060.1 | 09-Apr-13 | 6 |
| E060.1 | 17-Apr-13 | 8 |
| E060.1 | 17-Apr-13 | 0 |
| E060.1 | 22-Apr-13 | 5 |
| E060.1 | 29-Apr-13 | 7 |
| E060.1 | 07-May-13 | 8 |
| E060.1 | 13-May-13 | 6 |
| E060.1 | 22-May-13 | 9 |
| E060.1 | 28-May-13 | 6 |
| E060.1 | 31-May-13 | 3 |
| E060.1 | 06-Jun-13 | 6 |
| E060.1 | 13-Jun-13 | 7 |
| E060.1 | 20-Jun-13 | 7 |
| E060.1 | 26-Jun-13 | 6 |
| E060.1 | 28-Jun-13 | 2 |
| E060.1 | 01-Jul-13 | 3 |
| E060.1 | 10-Jul-13 | 9 |
| E060.1 | 17-Jul-13 | 7 |
| E060.1 | 25-Jul-13 | 8 |
| E060.1 | 29-Jul-13 | 4 |
| E060.1 | 31-Jul-13 | 2 |
| E060.1 | 09-Aug-13 | 9 |

**Table 2.6-3 (continued)**

| Gage Station | Inspection Date | Days from Previous Inspection |
|---|---|---|
| E060.1 | 15-Aug-13 | 6 |
| E060.1 | 23-Aug-13 | 8 |
| E060.1 | 28-Aug-13 | 5 |
| E060.1 | 04-Sep-13 | 7 |
| E060.1 | 06-Sep-13 | 2 |
| E060.1 | 11-Sep-13 | 5 |
| E060.1 | 20-Sep-13 | 9 |
| E060.1 | 27-Sep-13 | 7 |
| E060.1 | 30-Sep-13 | 3 |
| E060.1 | 01-Oct-13 | 1 |
| E060.1 | 04-Oct-13 | 3 |
| E060.1 | 11-Oct-13 | 7 |
| E060.1 | 15-Oct-13 | 4 |
| E060.1 | 24-Oct-13 | 9 |
| E060.1 | 05-Nov-13 | 12 |
| E060.1 | 15-Nov-13 | 10 |
| E060.1 | 22-Nov-13 | 7 |
| E060.1 | 26-Nov-13 | 4 |
| E060.1 | 02-Dec-13 | 6 |
| E060.1 | 06-Dec-13 | 4 |
| E060.1 | 12-Dec-13 | 6 |
| E060.1 | 18-Dec-13 | 6 |
| E060.1 | 20-Dec-13 | 2 |
| E060.1 | 24-Dec-13 | 4 |
| E109.9 | 06-Nov-12 | Initial |
| E109.9 | 07-Nov-12 | 1 |
| E109.9 | 13-Nov-12 | 6 |
| E109.9 | 20-Nov-12 | 7 |
| E109.9 | 28-Nov-12 | 8 |
| E109.9 | 28-Nov-12 | 0 |
| E109.9 | 05-Dec-12 | 7 |
| E109.9 | 12-Dec-12 | 7 |
| E109.9 | 18-Dec-12 | 6 |
| E109.9 | 04-Jan-13 | 17 |
| E109.9 | 04-Jan-13 | 0 |
| E109.9 | 09-Jan-13 | 5 |
| E109.9 | 17-Jan-13 | 8 |
| E109.9 | 24-Jan-13 | 7 |

**Table 2.6-3 (continued)**

| Gage Station | Inspection Date | Days from Previous Inspection |
|---|---|---|
| E109.9 | 28-Jan-13 | 4 |
| E109.9 | 05-Feb-13 | 8 |
| E109.9 | 12-Feb-13 | 7 |
| E109.9 | 21-Feb-13 | 9 |
| E109.9 | 27-Feb-13 | 6 |
| E109.9 | 06-Mar-13 | 7 |
| E109.9 | 13-Mar-13 | 7 |
| E109.9 | 19-Mar-13 | 6 |
| E109.9 | 25-Mar-13 | 6 |
| E109.9 | 03-Apr-13 | 9 |
| E109.9 | 09-Apr-13 | 6 |
| E109.9 | 16-Apr-13 | 7 |
| E109.9 | 22-Apr-13 | 6 |
| E109.9 | 29-Apr-13 | 7 |
| E109.9 | 02-May-13 | 3 |
| E109.9 | 09-May-13 | 7 |
| E109.9 | 15-May-13 | 6 |
| E109.9 | 17-May-13 | 2 |
| E109.9 | 22-May-13 | 5 |
| E109.9 | 29-May-13 | 7 |
| E109.9 | 31-May-13 | 2 |
| E109.9 | 05-Jun-13 | 5 |
| E109.9 | 13-Jun-13 | 8 |
| E109.9 | 20-Jun-13 | 7 |
| E109.9 | 21-Jun-13 | 1 |
| E109.9 | 26-Jun-13 | 5 |
| E109.9 | 28-Jun-13 | 2 |
| E109.9 | 01-Jul-13 | 3 |
| E109.9 | 08-Jul-13 | 7 |
| E109.9 | 09-Jul-13 | 1 |
| E109.9 | 10-Jul-13 | 1 |
| E109.9 | 15-Jul-13 | 5 |
| E109.9 | 19-Jul-13 | 4 |
| E109.9 | 23-Jul-13 | 4 |
| E109.9 | 26-Jul-13 | 3 |
| E109.9 | 30-Jul-13 | 4 |
| E109.9 | 31-Jul-13 | 1 |
| E109.9 | 01-Aug-13 | 1 |

**Table 2.6-3 (continued)**

| Gage Station | Inspection Date | Days from Previous Inspection |
|---|---|---|
| E109.9 | 05-Aug-13 | 4 |
| E109.9 | 06-Aug-13 | 1 |
| E109.9 | 15-Aug-13 | 9 |
| E109.9 | 04-Sep-13 | 20 |
| E109.9 | 11-Sep-13 | 7 |
| E109.9 | 20-Sep-13 | 9 |
| E109.9 | 24-Sep-13 | 4 |

**Table 3.1-1**
**Drainage Areas, Impermeable Surface Percentages, and Las Conchas Fire Burn Areas in the Los Alamos Canyon Watershed**

| Canyon | Gage | Drainage to Gage (acres) | Impermeable Surface (%)[a] | Las Conchas Fire, High- and Moderate- Burn Severity (%) |
|---|---|---|---|---|
| Acid | E055.5 | 53 | 81 | 0 |
| Acid[b] | E056 | 237 | 70 | 0 |
| Acid | Acid Canyon above E056 | 290 | 72 | 0 |
| Pueblo | E055 | 2191 | 25 | 0 |
| Pueblo[b] | E059 | 1827 | 39 | 0 |
| Pueblo[b] | E060.1 | 1006 | 8 | 0 |
| Pueblo | Pueblo Canyon above E060.1 | 5310 | 29 | 0 |
| DP | E038 | 144 | 88 | 0 |
| DP[b] | E039.1 | 112 | 29 | 0 |
| DP[b] | E040 | 133 | 24 | 0 |
| DP | DP Canyon above E039.1 | 256 | 62 | 0 |
| DP | DP Canyon above E040 | 388 | 49 | 0 |
| LA | E026 | 4534 | 2 | 42 |
| LA[b] | E030 | 960 | 30 | 0 |
| LA[b] | E042.1 | 601 | 12 | 0 |
| LA[b] | E050.1 | 195 | 11 | 0 |
| LA[b] | E109.9 (including Guaje Canyon) | 25,800 | 8 | 12 |
| LA | Los Alamos Canyon above E050.1 | 6680 | 10 | 29 |
| LA | Los Alamos, Pueblo, and Guaje Canyons above E109.9 | 37,800 | 11 | 13 |
| LA[b] | Los Alamos Canyon between E050.1, E060.1, and E109.9 | 4761 | 19 | 0 |
| Guaje | E099 | 21,000 | 5 | 15 |

[a] Percent of impermeable surface does not account for hydrophobic soils in the Las Conchas burn area.

[b] Drainage area shown in this row does not extend to head of watershed above gage, excluding areas of subwatersheds that are also shown in this table.

## Table 3.2-1
## Travel Time of Flood Bore, Peak Discharge, Increase or Decrease in Peak Discharge, and Percent Change in Peak Discharge from Upstream to Downstream Stations for Sampled 2013 Runoff Events in Lower LA/P Watershed

| Date | Travel Time from E050.1 to E109.9 (min) | Peak Discharge[a] (cfs) | | +/–[b] | %[b] | Travel Time from E060.1 to E109.9 (min) | Peak Discharge (cfs) | | +/– | % | Travel Time from E099 to E109.9 (min) | Peak Discharge (cfs) | | +/– | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | E050.1 | E109.9 | | | | E060.1 | E109.9 | | | | E099 | E109.9 | | |
| 6/14 | —[c] | 0 | 0.1 | N | N | — | 0 | 0.1 | N | N | — | 0 | 0.1 | N | N |
| 6/30 | — | 0 | 3.2 | + | 100 | — | 0 | 3.2 | + | 100 | -10 | 3.2 | 3.2 | G | G |
| 7/5 | — | 0 | 0.1 | N | N | — | 0 | 0.1 | N | N | — | 0 | 0.1 | N | N |
| 7/8 | — | 0 | 110 | + | 100 | — | 0 | 110 | + | 100 | 5 | 32 | 110 | + | 72 |
| 7/12 | 30 | 32 | 180 | + | 82 | — | 0 | 180 | + | 100 | -15 | 230 | 180 | G | G |
| | — | 0.1 | 170 | + | 100 | — | 0 | 170 | + | 100 | -20 | 38 | 170 | G | G |
| 7/13 | — | 0 | 120 | + | 100 | — | 0 | 120 | + | 100 | — | 0 | 120 | + | 100 |
| | — | 0 | 250 | + | 100 | — | 0 | 250 | + | 100 | 0 | 1100 | 250 | — | 77 |
| 7/20-7/21 | — | 0 | 810 | + | 100 | — | 0 | 810 | + | 100 | 10 | 480 | 810 | + | 40 |
| 7/25 | — | 0 | 100 | + | 100 | — | 0 | 100 | + | 100 | -15 | 10 | 100 | G | G |
| 7/26 | — | 0.1 | 160 | + | 100 | — | 0 | 160 | + | 100 | — | 0 | 160 | + | 100 |
| 7/27 | — | 0 | 0.1 | N | N | — | 0 | 0.1 | N | N | — | 0 | 0.1 | N | N |
| 7/28 | — | 0 | 70 | + | 100 | — | 0 | 70 | + | 100 | — | 0.1 | 70 | + | 100 |
| 8/3 | — | 0 | 950 | + | 100 | — | 0 | 950 | + | 100 | — | 0 | 950 | + | 100 |
| 8/4 | — | 0 | 68 | N | N | — | 0 | 68 | N | N | — | 0 | 68 | + | 100 |
| 8/5 | 25 | 20 | 1000 | + | 98 | — | 1.7 | 1000 | + | 100 | 0 | 340 | 1000 | + | 66 |
| 8/9 | — | 0 | 270 | + | 100 | — | 0 | 270 | + | 100 | 10 | 360 | 270 | — | 25 |
| 8/20 | — | 0 | 42 | + | 100 | — | 0 | 42 | + | 100 | 20 | 14 | 42 | + | 67 |
| 8/30 | — | 0 | 150 | + | 100 | — | 0 | 150 | + | 100 | 35 | 24 | 150 | + | 84 |
| 9/2 | — | 0 | 310 | + | 100 | — | 0 | 310 | + | 100 | 10 | 430 | 310 | - | 28 |
| 9/10 | — | 0 | 100 | + | 100 | — | 0 | 100 | + | 100 | — | 0 | 100 | + | 100 |
| | — | 0 | 120 | + | 100 | — | 0 | 120 | + | 100 | 20 | 1.0 | 120 | + | 99 |
| | 70 | 11 | 130 | + | 92 | — | 0 | 130 | + | 100 | — | 0.1 | 130 | + | 100 |
| 9/11 | 65 | 16 | 65 | + | 75 | — | 0 | 65 | + | 100 | — | 0.1 | 65 | + | 100 |

## Table 3.2-1 (continued)

| Date | Travel Time from E050.1 to E109.9 (min) | Peak Discharge[a] (cfs) | | +/–[b] | %[b] | Travel Time from E060.1 to E109.9 (min) | Peak Discharge (cfs) | | +/– | % | Travel Time from E099 to E109.9 (min) | Peak Discharge (cfs) | | +/– | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | E050.1 | E109.9 | | | | E060.1 | E109.9 | | | | E099 | E109.9 | | |
| 9/12 | — | 0.1 | 520 | + | 100 | — | 0.1 | 520 | + | 100 | 10 | 4.0 | 520 | + | 99 |
| | -15 | 87 | 470 | G | 81 | — | 0 | 470 | + | 100 | 15 | 44 | 470 | + | 91 |
| | 40 | 67 | 350 | G | G | — | 0 | 350 | + | 100 | -135 | 350 | 350 | G | G |
| 9/13 | 15 | 740 | 5000 | + | 85 | 60 | 1400 | 5000 | + | 73 | 10 | 1600 | 5000 | + | 68 |
| 9/14 | — | 48 | n/a[d] | n/a | n/a | — | — | n/a | n/a | n/a | — | — | n/a | n/a | n/a |
| 9/18 | — | 1.4 | n/a | n/a | n/a | — | — | n/a | n/a | n/a | — | — | n/a | n/a | n/a |
| 9/21 | — | 8.1 | n/a | n/a | n/a | — | 5.7 | n/a | n/a | n/a | — | — | n/a | n/a | n/a |
| 9/22–9/23 | — | 34 | n/a | n/a | n/a | — | 2.2 | n/a | n/a | n/a | — | — | n/a | n/a | n/a |
| 10/3-10/4 | — | 6.7 | n/a | n/a | n/a | — | 0 | n/a | n/a | n/a | — | — | n/a | n/a | n/a |
| 11/5 | — | 3.2 | n/a | n/a | n/a | — | 1.6 | n/a | n/a | n/a | — | — | n/a | n/a | n/a |
| Min | -15 | 0 | 0 | — | 75 | — | 0 | 0 | — | 72 | -135 | 0 | 0 | — | 25 |
| Mean | 33 | 32 | 411 | — | 96 | — | 44 | 411 | — | 99 | -3 | 181 | 411 | — | 81 |
| Max | 70 | 740 | 5000 | — | 100 | — | 1400 | 5000 | — | 100 | 35 | 1600 | 5000 | — | 100 |

[a] Peak discharge is not the peak of the entire storm (see Table 2.3-1 for the storm peak), but is the peak discharge estimated to align with the transmission of water from the upstream to downstream station.

[b] + = Increase; – = decrease; % = percent change in peak discharge; N = little to no change in peak discharge; G = negative travel time (i.e., peak of downstream station occurred before peak of upstream station).

[c] — = Result not applicable.

[d] n/a = Not available due to maintenance issues.

**Table 3.2-2**
**Summary of Peak Discharge Increases/Decreases in Lower LA/P Watershed**

| Year | Summary | E050.1 to E109.9 | E060.1 to E109.9 | E099 to E109.9 |
|---|---|---|---|---|
| 2013 | Number of Increases | 23 | 24 | 17 |
| | Number of Decreases | 0 | 0 | 3 |
| | Mean Increase | 96% | 99% | 87% |
| | Mean Decrease | 0% | 0% | 43% |
| 2012 | Number of Increases | 10 | 14 | 13 |
| | Number of Decreases | 1 | 0 | 3 |
| | Mean Increase | 74% | 100% | 75% |
| | Mean Decrease | 16% | 0% | 22% |
| 2011 | Number of Increases | 19 | 22 | n/a |
| | Number of Decreases | 4 | 0 | n/a |
| | Mean Increase | 90% | 100% | n/a |
| | Mean Decrease | 78% | 0% | n/a |
| 2010 | Number of Increases | 2 | 3 | n/a |
| | Number of Decreases | 2 | 1 | n/a |
| | Mean Increase | 59% | 100% | n/a |
| | Mean Decrease | 84% | 28% | n/a |

**Table 3.2-3**
**Pearson's Correlation Coefficients between Post-Flood-Bore Discharge (Q) and SSC for Each Station Sampled during 2013**

| Time Lag | E038 | | | | | | E039.1 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6/14 | 6/30 | 7/12 | 7/28 | 8/5 | 8/9 | 6/14 | 6/30 | 7/12 | 7/28 | 8/4 |
| $Q_t$, $TSS_t$ | 0.99 | 0.64 | 0.79 | 0.95 | 0.98 | 0.93 | 0.95 | 0.98 | 0.82 | 0.94 | 0.50 |
| $Q_t$, $TSS_{t-5}$ | 0.96 | 0.96 | 0.36 | 0.95 | 1.00 | 0.94 | 0.91 | 0.98 | 0.84 | 0.98 | n/a* |
| $Q_t$, $TSS_{t-10}$ | 0.95 | 0.95 | 0.42 | 0.94 | 1.00 | 0.97 | 0.85 | 0.96 | 0.83 | 0.98 | n/a |
| $Q_t$, $TSS_{t-15}$ | 0.94 | 0.90 | 0.27 | 0.93 | 0.99 | n/a | 0.90 | 0.94 | 0.84 | 0.97 | n/a |
| $Q_t$, $TSS_{t-20}$ | 0.89 | 0.90 | 0.53 | 0.92 | 0.99 | n/a | 0.85 | 0.92 | 0.87 | 0.98 | n/a |
| $Q_t$, $TSS_{t-25}$ | 0.82 | 0.90 | 0.45 | 0.89 | n/a | n/a | 0.75 | 0.98 | 0.86 | 0.98 | n/a |
| $Q_t$, $TSS_{t-30}$ | 0.82 | 0.93 | 0.38 | 0.90 | n/a | n/a | 0.71 | 0.95 | 0.86 | 0.98 | n/a |

**Table 3.2-3 (continued)**

| Time Lag | E039.1 (continued) | | | | E042.1 | | | E050.1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 8/9 | 9/10 | 9/12 | 11/4 to 5 | 7/12 | 8/5 | 9/10 | 7/12 | 8/5 | 9/10 to 11 | 9/12 |
| $Q_t$, $TSS_t$ | 0.86 | 0.50 | 0.10 | -0.15 | 0.99 | 0.73 | 0.67 | 0.69 | 0.71 | 0.77 | 0.95 |
| $Q_t$, $TSS_{t-5}$ | n/a | 0.03 | -0.45 | 0.39 | 0.96 | 0.88 | 0.73 | 0.80 | 0.85 | 0.70 | 0.80 |
| $Q_t$, $TSS_{t-10}$ | n/a | -0.29 | -0.45 | 0.62 | 0.69 | 0.81 | 0.80 | 0.88 | 0.88 | 0.65 | 0.59 |
| $Q_t$, $TSS_{t-15}$ | n/a | -0.25 | -0.45 | 0.73 | n/a | 0.83 | 0.89 | 0.87 | 0.86 | 0.60 | 0.37 |
| $Q_t$, $TSS_{t-20}$ | n/a | -0.16 | -0.52 | 0.79 | n/a | 0.85 | 0.85 | 0.87 | 0.87 | 0.40 | 0.18 |
| $Q_t$, $TSS_{t-25}$ | n/a | -0.22 | -0.32 | 0.80 | n/a | 0.71 | 0.69 | 0.88 | 0.86 | 0.40 | 0.06 |
| $Q_t$, $TSS_{t-30}$ | n/a | -0.35 | -0.73 | 0.81 | n/a | 0.45 | 0.62 | 0.87 | 0.78 | 0.51 | 0.02 |

| Time Lag | E099 | | E109.9 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 7/12 | 8/5 | 7/8 | 7/12 | 7/20 | 7/25 to 26 | 7/26 | 8/3 | 8/5 | 8/9 |
| $Q_t$, $TSS_t$ | 0.20 | 0.99 | 0.47 | n/a | n/a | 0.77 | 0.76 | 0.96 | -0.79 | 0.98 |
| $Q_t$, $TSS_{t-5}$ | -0.45 | n/a | 0.10 | n/a | n/a | 0.84 | -0.54 | 0.69 | -0.86 | 0.91 |
| $Q_t$, $TSS_{t-10}$ | -0.37 | n/a | -0.46 | n/a | n/a | 0.87 | -0.19 | 0.37 | -0.54 | 0.90 |
| $Q_t$, $TSS_{t-15}$ | 0.15 | n/a | -0.22 | n/a | n/a | 0.85 | n/a | n/a | -0.15 | 0.89 |
| $Q_t$, $TSS_{t-20}$ | 0.87 | n/a | n/a | n/a | n/a | 0.83 | n/a | n/a | n/a | 0.85 |
| $Q_t$, $TSS_{t-25}$ | n/a | n/a | n/a | n/a | n/a | 0.77 | n/a | n/a | n/a | 0.87 |
| $Q_t$, $TSS_{t-30}$ | n/a | n/a | n/a | n/a | n/a | 0.26 | n/a | n/a | n/a | 0.74 |

Note: Maximum correlations are highlighted.

* n/a = Not applicable because data points are limited (i.e., less than 3).

**Table 3.2-4**
**SSC-Based Sediment Yield and Runoff Volume for Sampled 2012 and 2013 Runoff Events**

| Station | Date | Sediment Yield (tons) | Sediment Yield ($yd^3$)[a] | Runoff Volume (acre-feet) | Peak Discharge (cfs) |
|---|---|---|---|---|---|
| **2012 Runoff Events** | | | | | |
| E042.1 | 10/12/2012 | 82 | 37 | 14 | 70 |
| E050.1 | 7/11/2012 | 9883 | 4425 | 8.2 | 130 |
| E050.1 | 7/24/2012 | 60 | 27 | 3.5 | 9.9 |
| E050.1 | 8/3/2012 | 2320 | 1039 | 15 | 170 |
| E050.1 | 9/28/2012 | 28 | 13 | 1.8 | 7.0 |
| E109.9 | 7/5/2012 | 1369 | 613 | 5.9 | 48 |
| E109.9 | 8/24/2012 | 2706 | 1211 | 11 | 160 |
| **2013 Runoff Events** | | | | | |
| E038 | 6/14/2013 | 11 | 5.1 | 3.0 | 70 |
| E038 | 6/30/2013 | 11 | 5.0 | 1.9 | 120 |
| E038 | 7/12/2013 | 87 | 39 | 14 | 330 |
| E038 | 7/28/2013 | 4.7 | 2.1 | 1.6 | 74 |
| E038 | 8/5/2013 | 25 | 11 | 5.1 | 170 |
| E038 | 8/9/2013 | 3.8 | 1.7 | 1.3 | 62 |
| E039.1 | 6/14/2013 | 0.6 | 0.3 | 1.3 | 13 |
| E039.1 | 6/30/2013 | 0.3 | 0.1 | 0.8 | 11 |
| E039.1 | 7/12/2013 | 75 | 34 | 16 | 330 |
| E039.1 | 7/28/2013 | 0.8 | 0.4 | 1.2 | 24 |
| E039.1 | 8/4/2013 | 0.8 | 0.4 | 0.7 | 12 |
| E039.1 | 8/9/2013 | 0.5 | 0.2 | 0.9 | 16 |
| E039.1 | 9/10/2013 | 4.4 | 2.0 | 5.9 | 35 |
| E039.1 | 9/12/2013 | 3.6 | 1.6 | 7.6 | 77 |
| E039.1 | 11/5/2013 | 0.9 | 0.4 | 2.2 | 21 |
| E042.1 | 7/12/2013 | 817 | 366 | 20 | 160 |
| E042.1 | 8/5/2013 | 29 | 13 | 9.4 | 80 |
| E042.1 | 9/10/2013 | 48 | 21 | 17 | 36 |
| E050.1 | 7/12/2013 | 39 | 17 | 4.3 | 32 |
| E050.1 | 8/5/2013 | 6.1 | 2.7 | 1.7 | 20 |
| E050.1 | 9/10/2013 | 4.6 | 2.1 | 6.4 | 11 |
| E050.1 | 9/12/2013 | 171 | 77 | 33 | 87 |
| E099 | 7/12/2013 | 5748 | 2574 | 14 | 230 |
| E099 | 8/5/2013 | 1015 | 455 | 6.7 | 340 |
| E109.9 | 7/8/2013 | 3880 | 1737 | 12 | 110 |
| E109.9 | 7/12/2013[b] | 1326 | 594 | 26 | 180 |
| E109.9 | 7/20/2013[b] | 24305 | 10883 | 67 | 810 |

**Table 3.2-4 (continued)**

| Station | Date | Sediment Yield | Sediment Yield | Runoff Volume | Peak Discharge |
|---|---|---|---|---|---|
| E109.9 | 7/25/2013 | 1639 | 734 | 11 | 100 |
| E109.9 | 7/26/2013[b] | 515 | 230 | 14 | 160 |
| E109.9 | 8/3/2013 | 51060 | 22862 | 72 | 950 |
| E109.9 | 8/5/2013[b] | 3955 | 1771 | 50 | 1000 |
| E109.9 | 8/9/2013 | 8524 | 3816 | 34 | 270 |

Note: Sediment yield and runoff volume were calculated only from sampled events with reliable hydrographs and sedigraphs. Thus, the September 12, 2013 sampling at E026 and E109.9 were excluded.

[a] Volumetric sediment yield was computed using a soil bulk density of 2650 kg/m$^3$ and volume = mass/density.

[b] Samples were not collected throughout the entire hydrograph (see Figure 3.2-3); thus, sediment yields may be underestimated.

**Table 3.4-1**
**Travel Time of Flood Bore, Peak Discharge, Increase or Decrease in Peak Discharge, and Percent Change in Peak Discharge from Upstream to Downstream Stations for 2012 Runoff Events Exceeding Sampling Triggers across the Watershed Mitigations**

| Date | Travel Time from E038 to E039.1 (min) | Peak Discharge (cfs) | | +/–[a] | %[a] | Travel Time from E042.1 to E050.1 (min) | Peak Discharge (cfs) | | +/– | % | Travel Time from E059 to E060.1 (min) | Peak Discharge (cfs) | | +/– | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | E038 | E039.1 | | | | E042.1 | E050.1 | | | | E059 | E060.1 | | |
| 6/14 | 75 | 70 | 13 | — | 81 | —[b] | — | — | — | — | — | — | — | — | — |
| 6/30 | 45 | 120 | 11 | — | 91 | — | — | — | — | — | — | — | — | — | — |
| 7/5 | 55 | 55 | 7.0 | — | 87 | — | — | — | — | — | — | — | — | — | — |
| 7/8 | — | 0 | 0.1 | N | N | — | — | — | — | — | — | — | — | — | — |
| 7/12 | 20 | 330 | 330 | N | N | 45 | 160 | 32 | — | 80 | — | 7.0 | 0 | — | 10 |
| | — | — | — | N | N | — | 0.1 | 0.1 | N | N | — | — | — | — | — |
| 7/13 | — | 18 | 0 | — | 99 | — | — | — | — | — | — | — | — | — | — |
| | — | — | — | N | N | — | — | — | — | — | — | — | — | — | — |
| 7/20-7/21 | — | 0 | 0.1 | N | N | — | — | — | — | — | — | — | — | — | — |
| 7/25 | 60 | 13 | 3.9 | — | 70 | — | 2.0 | 0 | - | 100 | — | — | — | — | — |
| 7/26 | 50 | 12 | 10 | — | 17 | — | 17 | 0.1 | - | 100 | — | — | — | — | — |
| 7/26-7/27 | — | 0.1 | 0.1 | N | N | — | 14 | 0 | - | 100 | — | — | — | — | — |
| 7/28 | 35 | 74 | 24 | — | 68 | — | 31 | 0.1 | - | 100 | — | — | — | — | — |
| 8/3 | — | 0 | 0.1 | N | N | — | — | — | — | — | — | — | — | — | — |
| 8/4 | 40 | 17 | 12 | — | 29 | — | — | — | — | — | — | — | — | — | — |
| 8/5 | 20 | 170 | 170 | N | N | 180 | 80 | 20 | — | 75 | — | 0 | 1.7 | + | 10 |
| 8/9 | 35 | 62 | 16 | — | 74 | — | 0.1 | 0 | N | N | — | — | — | — | — |
| 8/20 | — | — | — | N | N | — | — | — | — | — | — | — | — | — | — |
| 8/30 | — | — | — | N | N | — | — | — | — | — | — | — | — | — | — |
| 9/2 | — | 3.8 | 0 | — | 100 | — | — | — | — | — | — | — | — | — | — |
| 9/10 | 30 | 39 | 35 | + | 10 | — | 36 | 0 | — | 100 | — | — | — | — | — |
| | 35 | 6.0 | 7.0 | + | 14 | — | 25 | 0 | — | — | — | — | — | — | — |
| | 35 | 13 | 18 | + | 28 | 40 | 24 | 11 | — | 54 | — | — | — | — | — |

**Table 3.4-1 (continued)**

| Date | Travel Time from E038 to E039.1 (min) | Peak Discharge (cfs) | | +/–[a] | %[a] | Travel Time from E042.1 to E050.1 (min) | Peak Discharge (cfs) | | +/– | % | Travel Time from E059 to E060.1 (min) | Peak Discharge (cfs) | | +/– | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | E038 | E039.1 | | | | E042.1 | E050.1 | | | | E059 | E060.1 | | |
| 9/11 | 10 | 13 | 18 | + | 28 | -5 | 26 | 16 | G | G | — | — | — | — | — |
| 9/12 | — | — | — | — | — | — | 0.1 | 0.1 | N | N | — | 0 | 0.1 | N | N |
| | -10 | 39 | 35 | G | G | -10 | 110 | 87 | G | G | — | 59 | 0 | — | 10 |
| | 20 | 51 | 77 | — | 34 | 20 | 68 | 67 | — | 1 | — | 13 | 0 | — | 10 |
| 9/13 | 20 | 310 | 400 | + | 23 | 15 | 740 | 740 | N | N | 40 | 1500 | 1400 | — | 7 |
| 9/14 | 45 | 1.9 | 3.7 | + | 49 | — | 0 | 48 | — | 100 | — | — | — | — | — |
| 9/18 | 50 | 17 | 18 | + | 6 | — | 0 | 1.4 | — | 100 | — | — | — | — | — |
| 9/21 | — | 0 | 0.1 | N | N | -10 | 7.0 | 8.1 | + | 14 | — | 0 | 5.7 | — | 10 |
| 9/22-9/23 | 20 | 45 | 26 | — | 42 | 20 | 27 | 34 | + | 21 | — | 0 | 2.2 | — | 10 |
| 10/3-10/4 | — | 0 | 0.1 | N | N | 105 | 16 | 7.0 | — | 56 | — | — | — | — | — |
| 11/5 | 35 | 17 | 21 | + | 19 | — | 0.1 | 3.0 | + | 97 | — | 0 | 1.6 | — | 10 |
| Min | -10 | 0 | 0 | — | 17 | 45 | 0 | 0 | — | 1 | — | 0 | 0 | — | 7 |
| Mean | 35 | 52 | 43 | — | 69 | 113 | 83 | 49 | — | 73 | — | 175 | 1 | — | 88 |
| Max | 75 | 330 | 400 | — | 99 | 180 | 740 | 740 | — | 100 | — | 1500 | 2 | — | 10 |

[a] + = Increase; – = decrease; % = percent change in peak discharge; N = little to no change in peak discharge; G = negative travel time (i.e., peak of downstream station occurred before peak of upstream station).

[b] — = Result not applicable.

**Table 4.2-1**
**NMWQCC Surface Water Standards**

| Analytical Suite[a] | Analyte Code | Analyte Name | Field Prep | Acute Aquatic[b] | Human Health Persistent | Livestock Watering | Wildlife Habitat |
|---|---|---|---|---|---|---|---|
| DIOX/FUR | n/a[c] | Dioxin (TEQ) | UF[d] | n/a | 0.000000051 | n/a | n/a |
| METALS | Al | Aluminum | F[e] | 658 | n/a | n/a | n/a |
| METALS | Sb | Antimony | F | n/a | 640 | n/a | n/a |
| METALS | As | Arsenic | F | 340 | 9 | 200 | n/a |
| METALS | B | Boron | F | n/a | n/a | 5000 | n/a |
| METALS | Cd | Cadmium | F | 0.59 | n/a | 50 | n/a |
| METALS | Cr | Chromium | F | n/a | n/a | 1000 | n/a |
| METALS | Cr(III) | Chromium(III) | F | 213 | n/a | n/a | n/a |
| METALS | Co | Cobalt | F | n/a | n/a | 1000 | n/a |
| METALS | Cu | Copper | F | 4.3 | n/a | 500 | n/a |
| METALS | Pb | Lead | F | 17 | n/a | 100 | n/a |
| METALS | Mn | Manganese | F | 2000 | n/a | n/a | n/a |
| METALS | Hg | Mercury | F | 1.4 | n/a | n/a | n/a |
| METALS | Hg | Mercury | UF | n/a | n/a | 10 | 0.77 |
| METALS | Ni | Nickel | F | 170 | 4600 | n/a | n/a |
| METALS | Se | Selenium | F | n/a | 4200 | 50 | n/a |
| METALS | Se | Selenium | UF | 20 | n/a | n/a | 5 |
| METALS | Ag | Silver | F | 0.41 | n/a | n/a | n/a |
| METALS | Tl | Thallium | F | n/a | 0.47 | n/a | n/a |
| METALS | V | Vanadium | F | n/a | n/a | 100 | n/a |
| METALS | Zn | Zinc | F | 54 | 26,000 | 25,000 | n/a |
| WET_CHEM | CN(TOTAL) | Cyanide (Total) | UF | 22 | 140 | n/a | 5.2 |
| PCB_CONG | 1336-36-3 | Total PCB | UF | n/a | 0.00064 | n/a | 0.014 |
| RAD | GROSSA | Gross alpha | UF | n/a | n/a | 15 | n/a |
| RAD | Ra-226+228 | Radium-226 and Radium-228 | UF | n/a | n/a | 30 | n/a |

[a] All units are µg/L except for RAD, which are pCi/L.

[b] Hardness-dependent values are calculated using a water hardness value of 30 mg $CaCO_3$/L.

[c] n/a = Not applicable.

[d] UF = Unfiltered.

[e] F = Filtered.

**Table 4.2-2**
**Maximum Detected Results By Station and Event above Comparison Values in LA/P Storm Water Samples in 2012**

| Station | Collection Date | Total PCBs | 2,3,7,8-TCDD TEQ | Silver | Aluminum | Arsenic | Cadmium | Cobalt | Chromium | Copper | Gross Alpha | Mercury | Nickel | Lead | Radium-226 and Radium-228 | Selenium | Thallium | Vanadium | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Comparison Value[a]** | | **0.0006** | **0.000000051** | **0.4** | **658** | **9** | **0.6** | **1000** | **210** | **4.3** | **15** | **0.77** | **170** | **17** | **30** | **5** | **6.3** | **100** | **54** |
| **Field Preparation** | | **UF[b]** | **UF** | **F[c]** | **F** | **F** | **F** | **F** | **F** | **F** | **UF** | **UF** | **F** | **F** | **UF** | **UF** | **F** | **F** | **F** |
| CO101038 | 12-Jul-13 | 0.398 | NA[d] | —[a] | — | — | 1 ND | — | — | — | NA | — | — | — | NA | — | — | — | — |
| CO101038 | 18-Sep-13 | 0.108 | NA | — | — | — | 1 NDf[a] | — | — | — | NA | — | — | — | NA | — | — | — | — |
| CO111041 | 14-Jun-13 | 7.12 | NA | — | — | — | 1 ND | — | — | 7.63 | NA | — | — | — | NA | — | — | — | 94.6 |
| CO111041 | 30-Jun-13 | 21.8 | NA | — | — | — | 1 ND | — | — | — | NA | — | — | — | NA | — | — | — | — |
| CO111041 | 05-Jul-13 | 10.4 | NA | — | — | — | 1 ND | — | — | 5.04 | NA | — | — | — | NA | — | — | — | — |
| CO111041 | 12-Jul-13 | 16.8 | NA | — | — | — | 1 ND | — | — | — | NA | — | — | — | NA | — | — | — | — |
| CO111041 | 13-Jul-13 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CO111041 | 28-Jul-13 | 5.3 | NA | — | 753 | — | 1 ND | — | — | 5.39 | NA | — | — | — | NA | — | — | — | — |
| CO111041 | 05-Aug-13 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CO111041 | 09-Aug-13 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CO111041 | 10-Sep-13 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E026 | 12-Sep-13 | 0.034 | 0.0000242 ND | — | — | — | 1 ND | — | — | — | NA | 0.798 | — | — | NA | — | — | — | — |
| E030 | 12-Jul-13 | 1.08 | NA | — | — | — | 1 ND | — | — | — | NA | 1.59 | — | — | NA | — | — | — | — |
| E030 | 12-Sep-13 | 0.847 | 0.000011 ND | — | — | — | 1 ND | — | — | — | NA | 1.81 | — | — | NA | 6.69 | — | — | — |
| E038 | 14-Jun-13 | 0.0724 | NA | — | 2030 | — | 1 ND | — | — | 8.01 | NA | — | — | — | NA | — | — | — | 55.2 |
| E038 | 30-Jun-13 | 0.0371 | NA | — | 997 | — | 1 ND | — | — | — | NA | — | — | — | NA | — | — | — | — |
| E038 | 12-Jul-13 | 0.0784 | NA | — | 1060 | — | 1 ND | — | — | — | NA | — | — | — | NA | — | — | — | — |

**Table 4.2-2 (continued)**

| Station | Collection Date | Total PCBs | 2,3,7,8-TCDD TEQ | Silver | Aluminum | Arsenic | Cadmium | Cobalt | Chromium | Copper | Gross Alpha | Mercury | Nickel | Lead | Radium-226 and Radium-228 | Selenium | Thallium | Vanadium | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Comparison Value[a]** | | **0.0006** | **0.000000051** | **0.4** | **658** | **9** | **0.6** | **1000** | **210** | **4.3** | **15** | **0.77** | **170** | **17** | **30** | **5** | **6.3** | **100** | **54** |
| **Field Preparation** | | **UF[b]** | **UF** | **F[c]** | **F** | **F** | **F** | **F** | **F** | **F** | **UF** | **UF** | **F** | **F** | **UF** | **UF** | **F** | **F** | **F** |
| E038 | 28-Jul-13 | 0.0229 | NA | — | 1030 | — | 1 ND | — | — | — | NA | — | — | — | NA | — | — | — | — |
| E038 | 05-Aug-13 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E038 | 09-Aug-13 | NA | NA | NA | — | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E039.1 | 14-Jun-13 | 0.0121 | NA | — | 960 | — | 1 ND | — | — | 7.6 | NA | — | — | — | NA | — | — | — | — |
| E039.1 | 30-Jun-13 | 0.0136 | NA | — | 1650 | — | 1 ND | — | — | 6.1 | NA | — | — | — | NA | — | — | — | — |
| E039.1 | 12-Jul-13 | 0.0295 | NA | — | 1420 | — | 1 ND | — | — | — | NA | — | — | — | NA | — | — | — | — |
| E039.1 | 28-Jul-13 | 0.0133 | NA | — | 1600 | — | 1 ND | — | — | 4.72 | NA | — | — | — | NA | — | — | — | — |
| E039.1 | 04-Aug-13 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E039.1 | 09-Aug-13 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E039.1 | 10-Sep-13 | 0.0435 | NA | — | — | — | 1 ND | — | — | — | NA | — | — | — | NA | — | — | — | — |
| E039.1 | 12-Sep-13 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E039.1 | 05-Nov-13 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E040 | 12-Jul-13 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E040 | 05-Aug-13 | 0.0685 | NA | — | 1000 | — | 1 ND | — | — | — | NA | — | — | — | NA | — | — | — | — |
| E040 | 10-Sep-13 | 0.0273 | NA | — | — | — | 1 ND | — | — | — | NA | — | — | — | NA | — | — | — | — |
| E040 | 12-Sep-13 | 0.0211 | 0.0000107 ND | — | 1850 | — | 1 ND | — | — | 5.01 | NA | — | — | — | NA | — | — | — | — |
| E042.1 | 12-Jul-13 | 0.477 | NA | — | — | — | 1 ND | — | — | — | NA | — | — | — | NA | — | — | — | — |

## Table 4.2-2 (continued)

| Station | Collection Date | Total PCBs | 2,3,7,8-TCDD TEQ | Silver | Aluminum | Arsenic | Cadmium | Cobalt | Chromium | Copper | Gross Alpha | Mercury | Nickel | Lead | Radium-226 and Radium-228 | Selenium | Thallium | Vanadium | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Comparison Value[a]** | | **0.0006** | **0.000000051** | **0.4** | **658** | **9** | **0.6** | **1000** | **210** | **4.3** | **15** | **0.77** | **170** | **17** | **30** | **5** | **6.3** | **100** | **54** |
| **Field Preparation** | | **UF[b]** | **UF** | **F[c]** | **F** | **F** | **F** | **F** | **F** | **F** | **UF** | **UF** | **F** | **F** | **UF** | **UF** | **F** | **F** | **F** |
| E042.1 | 05-Aug-13 | 0.108 | NA | — | — | — | 1 ND | — | — | — | NA | — | — | — | NA | — | — | — | — |
| E042.1 | 10-Sep-13 | 0.123 | NA | — | 911 | — | 1 ND | — | — | 5.16 | NA | — | — | — | NA | — | — | — | — |
| E050.1 | 12-Jul-13 | 0.437 | NA | — | 952 | — | 1 ND | — | — | — | 83.7 | — | — | — | — | — | — | — | — |
| E050.1 | 05-Aug-13 | 0.218 | NA | — | 864 | — | 1 ND | — | — | — | 34.9 | — | — | — | — | — | — | — | — |
| E050.1 | 10-Sep-13 | NA | NA | — | 801 | — | 1 ND | — | — | — | 26.1 | — | — | — | — | — | — | — | — |
| E050.1 | 11-Sep-13 | 0.112 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E055 | 14-Jun-13 | 0.0382 | NA | — | — | — | 1 ND | — | — | 5.36 | NA | — | — | — | NA | — | — | — | — |
| E055 | 12-Sep-13 | 0.0789 | NA | — | 1300 | — | 1 ND | — | — | — | NA | — | — | — | NA | — | — | — | — |
| E055.5 | 12-Jul-13 | 0.0624 | NA | — | 1740 | — | 1 ND | — | — | — | NA | — | — | — | NA | — | — | — | — |
| E055.5 | 13-Sep-13 | 0.0413 | NA | — | 918 | — | 1 ND | — | — | — | NA | — | — | — | NA | — | — | — | — |
| E056 | 14-Jun-13 | NA | NA | — | 817 | — | 1 ND | — | — | 7.47 | NA | — | — | — | NA | — | — | — | — |
| E056 | 12-Jul-13 | 0.062 | NA | — | 1270 | — | 1 ND | — | — | 5.11 | NA | — | — | — | NA | — | — | — | — |
| E056 | 05-Aug-13 | 0.0272 | NA | — | 1470 | — | 1 ND | — | — | — | NA | — | — | — | NA | — | — | — | — |
| E056 | 12-Sep-13 | 0.0146 | NA | — | 1220 | — | 1 ND | — | — | — | NA | — | — | — | NA | — | — | — | — |
| E109.9 | 08-Jul-13 | 0.0313 | NA | — | 847 | — | 1 ND | — | — | — | 8730 | 4.67 | — | — | NA | 460 ND | — | — | — |
| E109.9 | 12-Jul-13 | 0.0191 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E109.9 | 20-Jul-13 | 0.0429 | 0.000216 ND | NA | NA | NA | NA | NA | NA | NA | NA | 8.45 ND | NA | NA | NA | 690 ND | NA | NA | NA |
| E109.9 | 25-Jul-13 | 0.0127 | NA | — | 965 | — | 1 ND | — | — | — | 7640 | 1.33 | — | — | NA | 24.2 ND | — | — | — |
| E109.9 | 26-Jul-13 | NA | NA | — | — | — | 1 ND | — | — | — | 67.1 | — | — | — | 35.8 | 8.21 | — | — | — |

**Table 4.2-2 (continued)**

| Station | Collection Date | Total PCBs | 2,3,7,8-TCDD TEQ | Silver | Aluminum | Arsenic | Cadmium | Cobalt | Chromium | Copper | Gross Alpha | Mercury | Nickel | Lead | Radium-226 and Radium-228 | Selenium | Thallium | Vanadium | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Comparison Value[a]** | | **0.0006** | **0.000000051** | **0.4** | **658** | **9** | **0.6** | **1000** | **210** | **4.3** | **15** | **0.77** | **170** | **17** | **30** | **5** | **6.3** | **100** | **54** |
| **Field Preparation** | | **UF[b]** | **UF** | **F[c]** | **F** | **F** | **F** | **F** | **F** | **F** | **UF** | **UF** | **F** | **F** | **UF** | **UF** | **F** | **F** | **F** |
| E109.9 | 03-Aug-13 | 0.0252 | 0.000156 ND | — | 947 | — | 1 ND | — | — | — | — | 4.85 | — | — | 885 | 511 ND | — | — | — |
| E109.9 | 05-Aug-13 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E109.9 | 09-Aug-13 | NA | NA | — | — | — | 1 ND | — | — | — | 7090 | 3.66 | — | — | 804 | 338 ND | — | — | — |
| E109.9 | 12-Sep-13 | 0.899 | 0.0000208 ND | — | — | — | 1 ND | — | — | 7.25 | 2070 | 3.7 | — | — | 153 | 142 ND | — | — | — |
| E050.1 | 12-Sep-13 | 0.16 | NA | — | — | — | 1 ND | — | — | — | 479 | — | — | — | — | — | — | — | — |

Note: All units are µg/L, except gross alpha, radium-226, and radium-228, are in pCi/L.

[a] Hardness-dependent comparison values based on 30 mg $CaCO_3$/L hardness.

[b] UF = Unfiltered.

[c] F = Filtered.

[d] NA = Not analyzed.

[e] — = Analyte was not detected above comparison value.

[f] ND = Nondetect.

**Table 4.2-3**
**Dioxin and Furan TEFs for the Dibenzodioxins and Dibenzofurans**

| Analyte Code | Analyte | TEF |
|---|---|---|
| 35822-46-9 | Heptachlorodibenzodioxin[1,2,3,4,6,7,8-] | 0.01 |
| 67562-39-4 | Heptachlorodibenzofuran[1,2,3,4,6,7,8-] | 0.01 |
| 55673-89-7 | Heptachlorodibenzofuran[1,2,3,4,7,8,9-] | 0.01 |
| 39227-28-6 | Hexachlorodibenzodioxin[1,2,3,4,7,8-] | 0.1 |
| 57653-85-7 | Hexachlorodibenzodioxin[1,2,3,6,7,8-] | 0.1 |
| 19408-74-3 | Hexachlorodibenzodioxin[1,2,3,7,8,9-] | 0.1 |
| 70648-26-9 | Hexachlorodibenzofuran[1,2,3,4,7,8-] | 0.1 |
| 57117-44-9 | Hexachlorodibenzofuran[1,2,3,6,7,8-] | 0.1 |
| 72918-21-9 | Hexachlorodibenzofuran[1,2,3,7,8,9-] | 0.1 |
| 60851-34-5 | Hexachlorodibenzofuran[2,3,4,6,7,8-] | 0.1 |
| 3268-87-9 | Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-] | 0.0003 |
| 39001-02-0 | Octachlorodibenzofuran[1,2,3,4,6,7,8,9-] | 0.0003 |
| 40321-76-4 | Pentachlorodibenzodioxin[1,2,3,7,8-] | 1 |
| 57117-41-6 | Pentachlorodibenzofuran[1,2,3,7,8-] | 0.03 |
| 57117-31-4 | Pentachlorodibenzofuran[2,3,4,7,8-] | 0.3 |
| 1746-01-6 | Tetrachlorodibenzodioxin[2,3,7,8-] | 1 |
| 51207-31-9 | Tetrachlorodibenzofuran[2,3,7,8-] | 0.1 |

**Table 4.2-4**
**TCDD TEQs in 2013 Storm Water Samples**

| Station | Collection Date | Sample ID | 2,3,7,8-TCDD TEQ (µg/L) |
|---|---|---|---|
| CO101038 | 7/12/2013 | WTLAP-13-39028 | 0.00001043169 |
| CO101038 | 9/18/2013 | WTLAP-13-30639 | 0.000000453542 |
| CO111041 | 6/14/2013 | WTLAP-13-30638 | 0.0001659902 |
| CO111041 | 6/30/2013 | WTLAP-13-30640 | 0.0000889952 |
| CO111041 | 7/5/2013 | WTLAP-13-30642 | 0.0000433991 |
| CO111041 | 7/12/2013 | WTLAP-13-39022 | 0.0004087444 |
| CO111041 | 7/28/2013 | WTLAP-13-39428 | 0.0001102095 |
| E026 | 9/12/2013 | WTLAP-13-31155 | 0.000002348 |
| E026 | 9/12/2013 | WTLAP-13-31163 | 0.000000043069 |
| E030 | 7/12/2013 | WTLAP-13-39042 | 0.00003488553 |
| E030 | 9/12/2013 | WTLAP-13-39043 | 0.00000960516 |
| E030 | 9/12/2013 | WTLAP-13-39059 | 0.0000007496 |
| E038 | 6/14/2013 | WTLAP-13-31103 | 0.000004322102 |
| E038 | 6/30/2013 | WTLAP-13-31106 | 0.000002056319 |
| E038 | 7/12/2013 | WTLAP-13-31107 | 0.000003467393 |
| E038 | 7/28/2013 | WTLAP-13-31110 | 0.000001139484 |
| E039.1 | 6/14/2013 | WTLAP-13-31104 | 0.000000028857 |
| E039.1 | 6/30/2013 | WTLAP-13-31105 | 0.000000943035 |
| E039.1 | 7/12/2013 | WTLAP-13-31108 | 0.000001055907 |
| E039.1 | 7/28/2013 | WTLAP-13-31109 | 0.0000000234495 |

**Table 4.2-4 (continued)**

| Station | Collection Date | Sample ID | 2,3,7,8-TCDD TEQ (µg/L) |
|---|---|---|---|
| E039.1 | 9/10/2013 | WTLAP-13-41782 | 0.00000170705 |
| E040 | 8/5/2013 | WTLAP-13-40573 | 0.000003119424 |
| E040 | 9/10/2013 | WTLAP-13-41755 | 0.00000106701 |
| E040 | 9/12/2013 | WTLAP-13-42294 | 0.000000025756 |
| E040 | 9/12/2013 | WTLAP-13-42297 | 0.0000000831 |
| E042.1 | 7/12/2013 | WTLAP-13-39151 | 0.000014199993 |
| E042.1 | 8/5/2013 | WTLAP-13-30750 | 0.000004924344 |
| E042.1 | 8/5/2013 | WTLAP-13-30754 | 0.000002660045 |
| E042.1 | 9/10/2013 | WTLAP-13-30751 | 0.000002359876 |
| E042.1 | 9/10/2013 | WTLAP-13-30755 | 0.000003085143 |
| E050.1 | 7/12/2013 | WTLAP-13-30837 | 0.00001133383 |
| E050.1 | 7/12/2013 | WTLAP-13-30841 | 0.000015166499 |
| E050.1 | 7/12/2013 | WTLAP-13-30865 | 0.000010629613 |
| E050.1 | 8/5/2013 | WTLAP-13-30838 | 0.000000181457 |
| E050.1 | 8/5/2013 | WTLAP-13-30842 | 0.00000013482 |
| E050.1 | 8/5/2013 | WTLAP-13-30867 | 0.000001414822 |
| E050.1 | 9/11/2013 | WTLAP-13-30839 | 0.000002503637 |
| E050.1 | 9/11/2013 | WTLAP-13-30843 | 0.000002543177 |
| E050.1 | 9/11/2013 | WTLAP-13-30869 | 0.000003089068 |
| E050.1 | 9/12/2013 | WTLAP-13-30840 | 0.000003275059 |
| E050.1 | 9/12/2013 | WTLAP-13-30844 | 0.000001420583 |
| E050.1 | 9/12/2013 | WTLAP-13-30871 | 0.000001759689 |
| E055 | 6/14/2013 | WTLAP-13-30694 | 0.000000935764 |
| E055 | 9/12/2013 | WTLAP-13-30697 | 0.000001026135 |
| E055.5 | 7/12/2013 | WTLAP-13-30695 | 0.000001094876 |
| E055.5 | 9/13/2013 | WTLAP-13-30698 | 0.0000000724811 |
| E056 | 7/12/2013 | WTLAP-13-36901 | 0.000001285666 |
| E056 | 8/5/2013 | WTLAP-13-36902 | 0.000000045932 |
| E056 | 9/12/2013 | WTLAP-13-36903 | 0.00000001875 |
| E099 | 7/12/2013 | WTESR-13-33858 | 0.000000023079 |
| E109.9 | 7/8/2013 | WTLAP-13-38797 | 0.00000006309 |
| E109.9 | 7/12/2013 | WTLAP-13-39008 | 0.000000033194 |
| E109.9 | 7/20/2013 | WTLAP-13-39326 | 0.00000007927 |
| E109.9 | 7/20/2013 | WTLAP-13-39334 | 0.00000008183 |
| E109.9 | 7/25/2013 | WTLAP-13-39377 | 0.000000015498 |
| E109.9 | 8/3/2013 | WTLAP-13-39441 | 0.00000004336 |
| E109.9 | 8/3/2013 | WTLAP-13-39446 | 0.00000004668 |
| E109.9 | 9/12/2013 | WTLAP-13-42176 | 0.00000097216 |
| E109.9 | 9/12/2013 | WTLAP-13-42180 | 0.0000088889 |
| E109.9 | 9/12/2013 | WTLAP-13-42183 | 0.000002934403 |
| E109.9 | 9/12/2013 | WTLAP-13-42185 | 0.000004952188 |

**Table 4.3-1**
**Calculated Suspended Solids and Instantaneous Discharge Determined for Each Sample Collected during 2013 in the LA/P Watershed**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| CO101038 | 07/12/2013 11:33 | UF[a] | WTLAP-13-39027 | 4110 | na[b] | na |
| CO101038 | 07/12/2013 11:34 | UF | WTLAP-13-39028 | 3780 | na | na |
| CO101038 | 07/12/2013 11:36 | F[c] | WTLAP-13-39029 | 3130 | na | na |
| CO101038 | 07/12/2013 11:37 | UF | WTLAP-13-39030 | 2800 | na | na |
| CO101038 | 07/12/2013 11:38 | UF | WTLAP-13-39031 | 2480 | na | na |
| CO101038 | 07/12/2013 11:39 | UF | WTLAP-13-39032 | 2150 | na | na |
| CO101038 | 07/12/2013 11:40 | F | WTLAP-13-39033 | 2040 | na | na |
| CO101038 | 07/12/2013 11:41 | UF | WTLAP-13-39034 | 1920 | na | na |
| CO101038 | 07/12/2013 11:42 | F | WTLAP-13-39035 | 1800 | na | na |
| CO101038 | 07/12/2013 11:43 | UF | WTLAP-13-39036 | 1690 | na | na |
| CO101038 | 07/12/2013 11:44 | UF | WTLAP-13-39037 | 1690 | na | na |
| CO101038 | 09/18/2013 13:30 | UF | WTLAP-13-30647 | 350 | na | na |
| CO101038 | 09/18/2013 13:31 | UF | WTLAP-13-30639 | 350 | na | na |
| CO101038 | 09/18/2013 13:33 | F | WTLAP-13-30623 | 350 | na | na |
| CO101038 | 09/18/2013 13:34 | UF | WTLAP-13-30631 | 350 | na | na |
| CO101038 | 09/18/2013 13:35 | UF | WTLAP-13-30655 | 350 | na | na |
| CO101038 | 09/18/2013 13:38 | UF | WTLAP-13-30663 | 350 | na | na |
| CO101038 | 09/18/2013 13:39 | F | WTLAP-13-32564 | 350 | na | na |
| CO101038 | 09/18/2013 13:40 | F | WTLAP-13-32560 | 350 | na | na |
| CO101038 | 09/18/2013 13:41 | UF | WTLAP-13-32556 | 350 | na | na |
| CO111041 | 06/14/2013 12:40 | UF | WTLAP-13-30646 | 2870 | na | na |
| CO111041 | 06/14/2013 12:41 | UF | WTLAP-13-36961 | 2870 | na | na |
| CO111041 | 06/14/2013 12:43 | F | WTLAP-13-30622 | 2870 | na | na |
| CO111041 | 06/14/2013 12:43 | UF | WTLAP-13-30630 | 2870 | na | na |
| CO111041 | 06/14/2013 12:51 | UF | WTLAP-13-30654 | 2870 | na | na |
| CO111041 | 06/14/2013 12:53 | F | WTLAP-13-32575 | 2870 | na | na |
| CO111041 | 06/14/2013 12:53 | UF | WTLAP-13-30638 | 2870 | na | na |
| CO111041 | 06/14/2013 13:15 | UF | WTLAP-13-32567 | 2870 | na | na |
| CO111041 | 06/14/2013 13:24 | F | WTLAP-13-32571 | 2870 | na | na |
| CO111041 | 06/30/2013 02:57 | UF | WTLAP-13-30640 | 1750 | na | na |
| CO111041 | 06/30/2013 03:00 | UF | WTLAP-13-30648 | 1750 | na | na |
| CO111041 | 06/30/2013 03:01 | F | WTLAP-13-30624 | 1580 | na | na |
| CO111041 | 06/30/2013 03:01 | UF | WTLAP-13-30632 | 1580 | na | na |
| CO111041 | 06/30/2013 03:02 | UF | WTLAP-13-30656 | 1420 | na | na |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| CO111041 | 06/30/2013 03:03 | UF | WTLAP-13-30664 | 1260 | na | na |
| CO111041 | 06/30/2013 03:04 | UF | WTLAP-13-32568 | 1090 | na | na |
| CO111041 | 07/05/2013 00:14 | UF | WTLAP-13-30642 | 1500 | na | na |
| CO111041 | 07/05/2013 00:16 | F | WTLAP-13-30626 | 1500 | na | na |
| CO111041 | 07/05/2013 00:16 | UF | WTLAP-13-30634 | 1500 | na | na |
| CO111041 | 07/05/2013 00:16 | UF | WTLAP-13-30650 | 1500 | na | na |
| CO111041 | 07/05/2013 00:17 | UF | WTLAP-13-32569 | 880 | na | na |
| CO111041 | 07/12/2013 11:21 | UF | WTLAP-13-39015 | 4350 | 1200 | na |
| CO111041 | 07/12/2013 11:22 | F | WTLAP-13-39016 | 4350 | 1200 | na |
| CO111041 | 07/12/2013 11:22 | UF | WTLAP-13-39017 | 4350 | 1200 | na |
| CO111041 | 07/12/2013 11:23 | UF | WTLAP-13-39018 | 4350 | 1200 | na |
| CO111041 | 07/12/2013 11:24 | F | WTLAP-13-39020 | 4350 | 1200 | na |
| CO111041 | 07/12/2013 11:24 | UF | WTLAP-13-39019 | 4350 | 1200 | na |
| CO111041 | 07/12/2013 11:25 | UF | WTLAP-13-39021 | 4350 | 1200 | na |
| CO111041 | 07/12/2013 11:38 | UF | WTLAP-13-39022 | 4350 | 1200 | na |
| CO111041 | 07/12/2013 11:39 | UF | WTLAP-13-39023 | 4350 | 1200 | na |
| CO111041 | 07/13/2013 13:32 | F | WTLAP-13-39024 | 4130 | na | na |
| CO111041 | 07/13/2013 13:33 | UF | WTLAP-13-39025 | 4130 | na | na |
| CO111041 | 07/13/2013 13:34 | UF | WTLAP-13-39026 | 4160 | na | na |
| CO111041 | 07/28/2013 05:18 | F | WTLAP-13-39429 | 180 | na | na |
| CO111041 | 07/28/2013 05:18 | UF | WTLAP-13-39428 | 180 | na | na |
| CO111041 | 08/05/2013 13:03 | UF | WTLAP-13-40532 | 260 | 901 | na |
| CO111041 | 08/05/2013 13:05 | UF | WTLAP-13-40533 | 260 | 651 | na |
| CO111041 | 08/05/2013 13:05 | UF | WTLAP-13-40533 | 260 | 721 | na |
| CO111041 | 08/05/2013 13:05 | UF | WTLAP-13-40534 | 260 | 651 | na |
| CO111041 | 08/05/2013 13:05 | UF | WTLAP-13-40534 | 260 | 721 | na |
| CO111041 | 08/05/2013 13:06 | UF | WTLAP-13-40535 | 260 | 545 | na |
| CO111041 | 08/05/2013 13:07 | UF | WTLAP-13-40536 | 260 | 458 | na |
| CO111041 | 08/05/2013 13:13 | UF | WTLAP-13-40537 | 260 | 288 | na |
| CO111041 | 08/05/2013 13:15 | UF | WTLAP-13-40538 | 260 | 304 | na |
| CO111041 | 08/05/2013 13:33 | UF | WTLAP-13-40539 | 260 | 367 | na |
| CO111041 | 08/05/2013 13:43 | UF | WTLAP-13-40540 | 260 | 367 | na |
| CO111041 | 08/09/2013 13:34 | UF | WTLAP-13-41057 | na | 104 | na |
| CO111041 | 08/09/2013 13:41 | UF | WTLAP-13-41058 | na | 265 | na |
| CO111041 | 08/09/2013 13:42 | UF | WTLAP-13-41059 | na | 288 | na |
| CO111041 | 08/09/2013 13:44 | UF | WTLAP-13-41060 | na | 288 | na |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| CO111041 | 08/09/2013 13:45 | UF | WTLAP-13-41061 | na | 254 | na |
| CO111041 | 08/09/2013 13:46 | UF | WTLAP-13-41062 | na | 217 | na |
| CO111041 | 09/10/2013 10:34 | UF | WTLAP-13-41772 | 1000 | 360 | na |
| CO111041 | 09/10/2013 10:35 | UF | WTLAP-13-41773 | 1000 | 432 | na |
| CO111041 | 09/10/2013 10:36 | UF | WTLAP-13-41774 | 1000 | 504 | na |
| CO111041 | 09/10/2013 10:37 | UF | WTLAP-13-41775 | 1000 | 478 | na |
| CO111041 | 09/10/2013 10:38 | UF | WTLAP-13-41776 | 1000 | 356 | na |
| CO111041 | 09/10/2013 10:39 | UF | WTLAP-13-41777 | 1000 | 339 | na |
| CO111041 | 09/10/2013 10:40 | UF | WTLAP-13-41778 | 1000 | 292 | na |
| CO111041 | 09/10/2013 10:41 | UF | WTLAP-13-41779 | 1000 | 329 | na |
| CO111041 | 09/10/2013 10:57 | UF | WTLAP-13-41780 | 1000 | 132 | na |
| E026 | 09/12/2013 16:49 | UF | WTLAP-13-31179 | 61600 | na | 30 |
| E026 | 09/12/2013 16:51 | UF | WTLAP-13-31183 | 59600 | na | 32 |
| E026 | 09/12/2013 16:53 | UF | WTLAP-13-31187 | 69600 | na | 33 |
| E026 | 09/12/2013 16:55 | UF | WTLAP-13-31191 | 55800 | na | 33 |
| E026 | 09/12/2013 16:57 | F | WTLAP-13-31135 | 53700 | na | 20 |
| E026 | 09/12/2013 16:59 | UF | WTLAP-13-31139 | 51500 | na | 8 |
| E026 | 09/12/2013 17:01 | F | WTLAP-13-32623 | 49400 | na | 41 |
| E026 | 09/12/2013 17:03 | F | WTLAP-13-32619 | 47200 | na | 38 |
| E026 | 09/12/2013 17:05 | UF | WTLAP-13-32615 | 45000 | na | 34 |
| E026 | 09/12/2013 17:07 | UF | WTLAP-13-31207 | 42900 | na | 36 |
| E026 | 09/12/2013 17:09 | UF | WTLAP-13-31167 | 41400 | na | 38 |
| E026 | 09/12/2013 17:10 | UF | WTLAP-13-31163 | 40700 | na | 39 |
| E026 | 09/12/2013 17:13 | UF | WTLAP-13-31143 | 38500 | na | 39 |
| E026 | 09/12/2013 17:15 | UF | WTLAP-13-31151 | 37100 | na | 39 |
| E026 | 09/12/2013 17:19 | UF | WTLAP-13-31159 | 34200 | na | 35 |
| E026 | 09/12/2013 17:26 | UF | WTLAP-13-31155 | 29100 | na | 44 |
| E026 | 09/12/2013 17:39 | UF | WTLAP-13-31219 | 19700 | na | 95 |
| E026 | 09/12/2013 17:59 | UF | WTLAP-13-31223 | 21900 | na | 88 |
| E026 | 09/12/2013 18:19 | UF | WTLAP-13-31227 | 21200 | na | 400 |
| E026 | 09/12/2013 18:39 | UF | WTLAP-13-31231 | 19200 | na | 380 |
| E026 | 09/12/2013 18:59 | UF | WTLAP-13-31235 | 13000 | na | 360 |
| E026 | 09/12/2013 19:19 | UF | WTLAP-13-31239 | 16700 | na | 300 |
| E026 | 09/12/2013 19:39 | UF | WTLAP-13-31243 | 17600 | na | 250 |
| E026 | 09/12/2013 19:59 | UF | WTLAP-13-31247 | 38900 | na | 320 |
| E030 | 07/12/2013 12:30 | UF | WTLAP-13-39038 | 23500 | na | 13 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E030 | 07/12/2013 12:31 | UF | WTLAP-13-39042 | 23000 | na | 13 |
| E030 | 07/12/2013 12:33 | UF | WTLAP-13-39046 | 21900 | na | 12 |
| E030 | 07/12/2013 12:34 | UF | WTLAP-13-39050 | 21400 | na | 11 |
| E030 | 07/12/2013 12:37 | UF | WTLAP-13-39054 | 19800 | na | 10 |
| E030 | 07/12/2013 12:40 | F | WTLAP-13-39062 | 18200 | na | 9.5 |
| E030 | 07/12/2013 12:40 | UF | WTLAP-13-39063 | 18200 | na | 9.5 |
| E030 | 07/12/2013 12:41 | UF | WTLAP-13-39070 | 17700 | na | 9.2 |
| E030 | 07/12/2013 12:42 | UF | WTLAP-13-39074 | 17100 | na | 8.9 |
| E030 | 09/12/2013 18:19 | UF | WTLAP-13-39039 | 32100 | na | 45 |
| E030 | 09/12/2013 18:21 | UF | WTLAP-13-39043 | 30700 | na | 44 |
| E030 | 09/12/2013 18:23 | UF | WTLAP-13-39047 | 29300 | na | 44 |
| E030 | 09/12/2013 18:24 | UF | WTLAP-13-39051 | 28600 | na | 44 |
| E030 | 09/12/2013 18:26 | UF | WTLAP-13-39055 | 27200 | na | 44 |
| E030 | 09/12/2013 18:28 | UF | WTLAP-13-39059 | 25800 | na | 44 |
| E030 | 09/12/2013 18:30 | F | WTLAP-13-39065 | 24400 | na | 43 |
| E030 | 09/12/2013 18:30 | UF | WTLAP-13-39064 | 24400 | na | 43 |
| E030 | 09/12/2013 18:31 | UF | WTLAP-13-39071 | 23700 | na | 44 |
| E030 | 09/12/2013 18:32 | UF | WTLAP-13-39075 | 23000 | na | 44 |
| E038 | 06/14/2013 12:45 | UF | WTLAP-13-31649 | 8140 | na | 70 |
| E038 | 06/14/2013 12:47 | UF | WTLAP-13-31657 | 7290 | na | 61 |
| E038 | 06/14/2013 12:49 | UF | WTLAP-13-31665 | 5820 | na | 53 |
| E038 | 06/14/2013 12:51 | UF | WTLAP-13-31673 | 4870 | na | 46 |
| E038 | 06/14/2013 12:53 | UF | WTLAP-13-31721 | 4580 | na | 41 |
| E038 | 06/14/2013 12:55 | F | WTLAP-13-32587 | 4280 | na | 36 |
| E038 | 06/14/2013 12:55 | UF | WTLAP-13-31103 | 4280 | na | 36 |
| E038 | 06/14/2013 12:57 | F | WTLAP-13-32583 | 3970 | na | 22 |
| E038 | 06/14/2013 12:58 | F | WTLAP-13-31087 | 3820 | na | 15 |
| E038 | 06/14/2013 12:58 | UF | WTLAP-13-31095 | 3820 | na | 15 |
| E038 | 06/14/2013 12:59 | UF | WTLAP-13-31119 | 3670 | na | 7.3 |
| E038 | 06/14/2013 12:59 | UF | WTLAP-13-32579 | 3670 | na | 7.3 |
| E038 | 06/14/2013 13:01 | UF | WTLAP-13-31127 | 3360 | na | 22 |
| E038 | 06/14/2013 13:02 | UF | WTLAP-13-31111 | 3210 | na | 22 |
| E038 | 06/14/2013 13:03 | UF | WTLAP-13-31697 | 3060 | na | 21 |
| E038 | 06/14/2013 13:05 | UF | WTLAP-13-31705 | 2790 | na | 21 |
| E038 | 06/14/2013 13:07 | UF | WTLAP-13-31681 | 2470 | na | 18 |
| E038 | 06/14/2013 13:09 | UF | WTLAP-13-31745 | 2470 | na | 15 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E038 | 06/14/2013 13:11 | UF | WTLAP-13-31753 | 2280 | na | 12 |
| E038 | 06/14/2013 13:13 | UF | WTLAP-13-31761 | 2230 | na | 9.9 |
| E038 | 06/14/2013 13:15 | UF | WTLAP-13-31769 | 2260 | na | 7.3 |
| E038 | 06/14/2013 13:35 | UF | WTLAP-13-31777 | 2480 | na | 17 |
| E038 | 06/14/2013 13:55 | UF | WTLAP-13-31785 | 1040 | na | 1.7 |
| E038 | 06/14/2013 14:15 | UF | WTLAP-13-31793 | 740 | na | 0.7 |
| E038 | 06/14/2013 14:35 | UF | WTLAP-13-31801 | 1330 | na | 6.8 |
| E038 | 06/14/2013 14:55 | UF | WTLAP-13-31809 | 620 | na | 0.8 |
| E038 | 06/14/2013 15:15 | UF | WTLAP-13-31817 | 370 | na | 0.3 |
| E038 | 06/30/2013 15:00 | UF | WTLAP-13-31652 | 11800 | na | 46 |
| E038 | 06/30/2013 15:02 | UF | WTLAP-13-31660 | 10000 | na | 75 |
| E038 | 06/30/2013 15:04 | UF | WTLAP-13-31668 | 8250 | na | 100 |
| E038 | 06/30/2013 15:06 | UF | WTLAP-13-31676 | 6460 | na | 110 |
| E038 | 06/30/2013 15:08 | UF | WTLAP-13-31684 | 4830 | na | 78 |
| E038 | 06/30/2013 15:10 | UF | WTLAP-13-31692 | 4080 | na | 51 |
| E038 | 06/30/2013 15:12 | UF | WTLAP-13-31700 | 3550 | na | 42 |
| E038 | 06/30/2013 15:14 | UF | WTLAP-13-31708 | 3110 | na | 33 |
| E038 | 06/30/2013 15:15 | UF | WTLAP-13-31106 | 2940 | na | 29 |
| E038 | 06/30/2013 15:16 | UF | WTLAP-13-31724 | 2760 | na | 26 |
| E038 | 06/30/2013 15:18 | F | WTLAP-13-32588 | 2750 | na | 21 |
| E038 | 06/30/2013 15:18 | UF | WTLAP-13-31114 | 2750 | na | 21 |
| E038 | 06/30/2013 15:19 | UF | WTLAP-13-31122 | 2640 | na | 18 |
| E038 | 06/30/2013 15:20 | F | WTLAP-13-32584 | 2530 | na | 16 |
| E038 | 06/30/2013 15:21 | UF | WTLAP-13-31130 | 2420 | na | 14 |
| E038 | 06/30/2013 15:22 | F | WTLAP-13-31090 | 2320 | na | 12 |
| E038 | 06/30/2013 15:22 | F | WTLAP-13-32580 | 2320 | na | 12 |
| E038 | 06/30/2013 15:22 | UF | WTLAP-13-31098 | 2320 | na | 12 |
| E038 | 06/30/2013 15:24 | UF | WTLAP-13-31748 | 2100 | na | 8.8 |
| E038 | 06/30/2013 15:26 | UF | WTLAP-13-31756 | 1880 | na | 6.5 |
| E038 | 06/30/2013 15:28 | UF | WTLAP-13-31764 | 1700 | na | 5.3 |
| E038 | 06/30/2013 15:30 | UF | WTLAP-13-31772 | 1580 | na | 4.2 |
| E038 | 06/30/2013 15:50 | UF | WTLAP-13-31780 | 730 | na | 0.5 |
| E038 | 06/30/2013 16:00 | UF | WTLAP-13-31788 | 380 | na | 0.3 |
| E038 | 07/12/2013 11:20 | UF | WTLAP-13-31653 | 9630 | na | 330 |
| E038 | 07/12/2013 11:22 | UF | WTLAP-13-39226 | 8600 | na | 270 |
| E038 | 07/12/2013 11:24 | UF | WTLAP-13-39227 | 7570 | na | 210 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E038 | 07/12/2013 11:26 | UF | WTLAP-13-31677 | 6540 | na | 190 |
| E038 | 07/12/2013 11:28 | UF | WTLAP-13-31685 | 5610 | na | 200 |
| E038 | 07/12/2013 11:30 | UF | WTLAP-13-31107 | 4650 | na | 200 |
| E038 | 07/12/2013 11:30 | UF | WTLAP-13-31693 | 4650 | na | 200 |
| E038 | 07/12/2013 11:32 | UF | WTLAP-13-31115 | 5040 | na | 200 |
| E038 | 07/12/2013 11:32 | UF | WTLAP-13-31701 | 5040 | na | 200 |
| E038 | 07/12/2013 11:33 | UF | WTLAP-13-31123 | 4930 | na | 200 |
| E038 | 07/12/2013 11:34 | UF | WTLAP-13-31709 | 4820 | na | 190 |
| E038 | 07/12/2013 11:36 | UF | WTLAP-13-31131 | 4130 | na | 190 |
| E038 | 07/12/2013 11:36 | UF | WTLAP-13-31725 | 4130 | na | 190 |
| E038 | 07/12/2013 11:37 | F | WTLAP-13-31091 | 4030 | na | 190 |
| E038 | 07/12/2013 11:37 | UF | WTLAP-13-31099 | 4030 | na | 190 |
| E038 | 07/12/2013 11:38 | F | WTLAP-13-32589 | 3940 | na | 190 |
| E038 | 07/12/2013 11:40 | F | WTLAP-13-32585 | 3740 | na | 190 |
| E038 | 07/12/2013 11:42 | UF | WTLAP-13-32581 | 3550 | na | 190 |
| E038 | 07/12/2013 11:44 | UF | WTLAP-13-31749 | 3360 | na | 190 |
| E038 | 07/12/2013 11:46 | UF | WTLAP-13-31757 | 4640 | na | 190 |
| E038 | 07/12/2013 11:48 | UF | WTLAP-13-31765 | 3310 | na | 180 |
| E038 | 07/12/2013 11:50 | UF | WTLAP-13-31773 | 3180 | na | 180 |
| E038 | 07/12/2013 12:10 | UF | WTLAP-13-31781 | 2650 | na | 34 |
| E038 | 07/12/2013 12:30 | UF | WTLAP-13-31789 | 13300 | na | 9.2 |
| E038 | 07/12/2013 12:50 | UF | WTLAP-13-31797 | 4870 | na | 4.8 |
| E038 | 07/12/2013 13:10 | UF | WTLAP-13-31805 | 34600 | na | 2.1 |
| E038 | 07/12/2013 13:30 | UF | WTLAP-13-31813 | 79800 | na | 1 |
| E038 | 07/12/2013 13:50 | UF | WTLAP-13-31821 | 185000 | na | 1.1 |
| E038 | 07/12/2013 14:10 | UF | WTLAP-13-31829 | 38900 | na | 0.7 |
| E038 | 07/12/2013 14:30 | UF | WTLAP-13-31837 | 108000 | na | 0.4 |
| E038 | 07/28/2013 14:30 | UF | WTLAP-13-31656 | 7340 | na | 74 |
| E038 | 07/28/2013 14:32 | UF | WTLAP-13-31664 | 4170 | na | 62 |
| E038 | 07/28/2013 14:34 | UF | WTLAP-13-31672 | 3250 | na | 50 |
| E038 | 07/28/2013 14:36 | UF | WTLAP-13-31680 | 2710 | na | 40 |
| E038 | 07/28/2013 14:38 | UF | WTLAP-13-31688 | 2390 | na | 32 |
| E038 | 07/28/2013 14:40 | UF | WTLAP-13-31110 | 2060 | na | 25 |
| E038 | 07/28/2013 14:40 | UF | WTLAP-13-31696 | 2060 | na | 25 |
| E038 | 07/28/2013 14:42 | UF | WTLAP-13-31118 | 1880 | na | 21 |
| E038 | 07/28/2013 14:42 | UF | WTLAP-13-31704 | 1880 | na | 21 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E038 | 07/28/2013 14:43 | UF | WTLAP-13-31126 | 1840 | na | 20 |
| E038 | 07/28/2013 14:44 | UF | WTLAP-13-31712 | 1800 | na | 18 |
| E038 | 07/28/2013 14:45 | UF | WTLAP-13-31134 | 1720 | na | 17 |
| E038 | 07/28/2013 14:46 | F | WTLAP-13-31094 | 1650 | na | 15 |
| E038 | 07/28/2013 14:46 | UF | WTLAP-13-31102 | 1650 | na | 15 |
| E038 | 07/28/2013 14:46 | UF | WTLAP-13-31728 | 1650 | na | 15 |
| E038 | 07/28/2013 14:48 | F | WTLAP-13-32590 | 1560 | na | 13 |
| E038 | 07/28/2013 14:50 | F | WTLAP-13-32586 | 1460 | na | 9.8 |
| E038 | 07/28/2013 14:52 | UF | WTLAP-13-32582 | 1360 | na | 8.7 |
| E038 | 07/28/2013 14:54 | UF | WTLAP-13-31752 | 1270 | na | 7.6 |
| E038 | 07/28/2013 14:56 | UF | WTLAP-13-31760 | 1140 | na | 5.6 |
| E038 | 07/28/2013 14:58 | UF | WTLAP-13-31768 | 1130 | na | 2.8 |
| E038 | 07/28/2013 15:00 | UF | WTLAP-13-31776 | 840 | na | 4.4 |
| E038 | 07/28/2013 15:20 | UF | WTLAP-13-31784 | 600 | na | 2.3 |
| E038 | 07/28/2013 15:40 | UF | WTLAP-13-31792 | 510 | na | 1.2 |
| E038 | 07/28/2013 16:00 | UF | WTLAP-13-31800 | 1990 | na | 0.7 |
| E038 | 07/28/2013 16:20 | UF | WTLAP-13-31808 | 20900 | na | 0.4 |
| E038 | 07/28/2013 16:40 | UF | WTLAP-13-31816 | 108000 | na | 0.4 |
| E038 | 07/28/2013 17:00 | UF | WTLAP-13-31824 | 56300 | na | 0.3 |
| E038 | 07/28/2013 17:20 | UF | WTLAP-13-31832 | 9590 | na | 0.3 |
| E038 | 07/28/2013 17:40 | UF | WTLAP-13-31840 | 61200 | na | 0.3 |
| E038 | 08/05/2013 13:25 | UF | WTLAP-13-40658 | 7120 | 1410 | 170 |
| E038 | 08/05/2013 13:27 | UF | WTLAP-13-40645 | 6370 | 1700 | 160 |
| E038 | 08/05/2013 13:29 | UF | WTLAP-13-40646 | 5620 | 1990 | 150 |
| E038 | 08/05/2013 13:31 | UF | WTLAP-13-40647 | 4870 | 1830 | 140 |
| E038 | 08/05/2013 13:33 | UF | WTLAP-13-40648 | 4120 | 1630 | 120 |
| E038 | 08/05/2013 13:35 | UF | WTLAP-13-40638 | 3370 | 1290 | 95 |
| E038 | 08/05/2013 13:35 | UF | WTLAP-13-40659 | 3370 | 1290 | 95 |
| E038 | 08/05/2013 13:36 | UF | WTLAP-13-40639 | 3260 | 1170 | 87 |
| E038 | 08/05/2013 13:37 | UF | WTLAP-13-40640 | 3150 | 1420 | 79 |
| E038 | 08/05/2013 13:37 | UF | WTLAP-13-40640 | 3150 | 1460 | 79 |
| E038 | 08/05/2013 13:37 | UF | WTLAP-13-40649 | 3150 | 1420 | 79 |
| E038 | 08/05/2013 13:37 | UF | WTLAP-13-40649 | 3150 | 1460 | 79 |
| E038 | 08/05/2013 13:38 | UF | WTLAP-13-40641 | 3050 | 1380 | 71 |
| E038 | 08/05/2013 13:39 | UF | WTLAP-13-40642 | 2940 | 1310 | 64 |
| E038 | 08/05/2013 13:39 | UF | WTLAP-13-40642 | 2940 | 1400 | 64 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E038 | 08/05/2013 13:39 | UF | WTLAP-13-40650 | 2940 | 1310 | 64 |
| E038 | 08/05/2013 13:39 | UF | WTLAP-13-40650 | 2940 | 1400 | 64 |
| E038 | 08/05/2013 13:41 | UF | WTLAP-13-40643 | 2720 | 1160 | 53 |
| E038 | 08/05/2013 13:41 | UF | WTLAP-13-40643 | 2720 | 1250 | 53 |
| E038 | 08/05/2013 13:41 | UF | WTLAP-13-40651 | 2720 | 1160 | 53 |
| E038 | 08/05/2013 13:41 | UF | WTLAP-13-40651 | 2720 | 1250 | 53 |
| E038 | 08/05/2013 13:42 | UF | WTLAP-13-40644 | 2610 | 1080 | 50 |
| E038 | 08/05/2013 13:43 | UF | WTLAP-13-40652 | 2510 | 1550 | 47 |
| E038 | 08/05/2013 13:45 | UF | WTLAP-13-40660 | 2290 | 1320 | 41 |
| E038 | 08/05/2013 13:47 | UF | WTLAP-13-40653 | 2100 | 1100 | 34 |
| E038 | 08/05/2013 13:49 | UF | WTLAP-13-40654 | 1910 | 1090 | 27 |
| E038 | 08/05/2013 13:51 | UF | WTLAP-13-40655 | 1720 | 767 | 22 |
| E038 | 08/05/2013 13:53 | UF | WTLAP-13-40656 | 1530 | 811 | 18 |
| E038 | 08/05/2013 13:55 | UF | WTLAP-13-40661 | 1340 | 786 | 15 |
| E038 | 08/05/2013 14:15 | UF | WTLAP-13-40662 | 1010 | 537 | 5.6 |
| E038 | 08/05/2013 14:35 | UF | WTLAP-13-40657 | 1200 | 288 | 2.6 |
| E038 | 08/05/2013 14:55 | UF | WTLAP-13-40663 | 1380 | 288 | 1.7 |
| E038 | 08/05/2013 15:15 | UF | WTLAP-13-40664 | 410 | 288 | 1.2 |
| E038 | 08/09/2013 13:34 | F[d] | WTLAP-13-41067 | na | na | 50 |
| E038 | 08/09/2013 13:34 | UF | WTLAP-13-40850 | na | na | 50 |
| E038 | 08/09/2013 13:34 | UF | WTLAP-13-41053 | na | na | 50 |
| E038 | 08/09/2013 13:36 | F | WTLAP-13-40856 | na | na | 57 |
| E038 | 08/09/2013 13:36 | F | WTLAP-13-40899 | na | na | 57 |
| E038 | 08/09/2013 13:36 | F | WTLAP-13-40901 | na | na | 57 |
| E038 | 08/09/2013 13:36 | F[d] | WTLAP-13-40855 | na | na | 57 |
| E038 | 08/09/2013 13:36 | F[d] | WTLAP-13-40889 | na | na | 57 |
| E038 | 08/09/2013 13:36 | F[d] | WTLAP-13-40877 | na | na | 57 |
| E038 | 08/09/2013 13:36 | F[d] | WTLAP-13-40888 | na | na | 57 |
| E038 | 08/09/2013 13:36 | UF | WTLAP-13-40898 | na | na | 57 |
| E038 | 08/09/2013 13:36 | UF | WTLAP-13-40900 | na | na | 57 |
| E038 | 08/09/2013 13:40 | UF | WTLAP-13-40851 | na | na | 38 |
| E038 | 08/09/2013 13:50 | UF | WTLAP-13-40852 | na | na | 12 |
| E038 | 08/09/2013 14:00 | UF | WTLAP-13-40853 | na | na | 4 |
| E038 | 08/09/2013 15:44 | UF | WTLAP-13-40854 | na | na | 0.8 |
| E039.1 | 06/14/2013 14:00 | UF | WTLAP-13-31650 | 1060 | na | 13 |
| E039.1 | 06/14/2013 14:02 | UF | WTLAP-13-31658 | 980 | na | 13 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E039.1 | 06/14/2013 14:04 | UF | WTLAP-13-31666 | 940 | na | 13 |
| E039.1 | 06/14/2013 14:06 | UF | WTLAP-13-31674 | 920 | na | 12 |
| E039.1 | 06/14/2013 14:08 | UF | WTLAP-13-31682 | 850 | na | 11 |
| E039.1 | 06/14/2013 14:10 | UF | WTLAP-13-31104 | 780 | na | 10 |
| E039.1 | 06/14/2013 14:10 | UF | WTLAP-13-31690 | 780 | na | 10 |
| E039.1 | 06/14/2013 14:12 | UF | WTLAP-13-31112 | 770 | na | 9.7 |
| E039.1 | 06/14/2013 14:12 | UF | WTLAP-13-31698 | 770 | na | 9.7 |
| E039.1 | 06/14/2013 14:13 | UF | WTLAP-13-31120 | 695 | na | 9.4 |
| E039.1 | 06/14/2013 14:14 | UF | WTLAP-13-31706 | 620 | na | 9.1 |
| E039.1 | 06/14/2013 14:15 | UF | WTLAP-13-31128 | 655 | na | 8.8 |
| E039.1 | 06/14/2013 14:16 | F | WTLAP-13-31088 | 690 | na | 8.5 |
| E039.1 | 06/14/2013 14:16 | UF | WTLAP-13-31096 | 690 | na | 8.5 |
| E039.1 | 06/14/2013 14:16 | UF | WTLAP-13-31722 | 690 | na | 8.5 |
| E039.1 | 06/14/2013 14:18 | F | WTLAP-13-32599 | 665 | na | 7.9 |
| E039.1 | 06/14/2013 14:20 | F | WTLAP-13-32595 | 640 | na | 7.3 |
| E039.1 | 06/14/2013 14:22 | UF | WTLAP-13-32591 | 615 | na | 6.6 |
| E039.1 | 06/14/2013 14:24 | UF | WTLAP-13-31746 | 590 | na | 6 |
| E039.1 | 06/14/2013 14:26 | UF | WTLAP-13-31754 | 580 | na | 5.5 |
| E039.1 | 06/14/2013 14:28 | UF | WTLAP-13-31762 | 570 | na | 5.1 |
| E039.1 | 06/14/2013 14:30 | UF | WTLAP-13-31770 | 390 | na | 4.7 |
| E039.1 | 06/14/2013 14:50 | UF | WTLAP-13-31778 | 500 | na | 4.7 |
| E039.1 | 06/14/2013 15:10 | UF | WTLAP-13-31786 | 520 | na | 7.8 |
| E039.1 | 06/30/2013 15:49 | UF | WTLAP-13-31651 | 950 | na | 11 |
| E039.1 | 06/30/2013 15:51 | UF | WTLAP-13-31659 | 930 | na | 11 |
| E039.1 | 06/30/2013 15:53 | UF | WTLAP-13-31667 | 880 | na | 11 |
| E039.1 | 06/30/2013 15:55 | UF | WTLAP-13-31675 | 830 | na | 10 |
| E039.1 | 06/30/2013 15:57 | UF | WTLAP-13-31683 | 770 | na | 6.2 |
| E039.1 | 06/30/2013 15:59 | F | WTLAP-13-32600 | 732 | na | 2.1 |
| E039.1 | 06/30/2013 16:00 | UF | WTLAP-13-31105 | 714 | na | 8.8 |
| E039.1 | 06/30/2013 16:01 | F | WTLAP-13-32596 | 695 | na | 8.5 |
| E039.1 | 06/30/2013 16:02 | UF | WTLAP-13-31113 | 676 | na | 8.3 |
| E039.1 | 06/30/2013 16:03 | UF | WTLAP-13-31121 | 658 | na | 8 |
| E039.1 | 06/30/2013 16:03 | UF | WTLAP-13-32592 | 658 | na | 8 |
| E039.1 | 06/30/2013 16:05 | UF | WTLAP-13-31129 | 620 | na | 7.5 |
| E039.1 | 06/30/2013 16:05 | UF | WTLAP-13-31723 | 620 | na | 7.5 |
| E039.1 | 06/30/2013 16:06 | F | WTLAP-13-31089 | 610 | na | 7.3 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E039.1 | 06/30/2013 16:06 | UF | WTLAP-13-31097 | 610 | na | 7.3 |
| E039.1 | 06/30/2013 16:07 | UF | WTLAP-13-31691 | 600 | na | 7.1 |
| E039.1 | 06/30/2013 16:09 | UF | WTLAP-13-31699 | 560 | na | 6.7 |
| E039.1 | 06/30/2013 16:11 | UF | WTLAP-13-31707 | 560 | na | 6.2 |
| E039.1 | 06/30/2013 16:13 | UF | WTLAP-13-31747 | 520 | na | 5.7 |
| E039.1 | 06/30/2013 16:15 | UF | WTLAP-13-31755 | 510 | na | 5.2 |
| E039.1 | 06/30/2013 16:17 | UF | WTLAP-13-31763 | 490 | na | 4.9 |
| E039.1 | 06/30/2013 16:19 | UF | WTLAP-13-31771 | 470 | na | 4.6 |
| E039.1 | 07/12/2013 11:39 | UF | WTLAP-13-31654 | 5770 | na | 260 |
| E039.1 | 07/12/2013 11:41 | UF | WTLAP-13-31662 | 5520 | na | 320 |
| E039.1 | 07/12/2013 11:43 | UF | WTLAP-13-31670 | 5100 | na | 320 |
| E039.1 | 07/12/2013 11:45 | UF | WTLAP-13-31678 | 4590 | na | 320 |
| E039.1 | 07/12/2013 11:47 | UF | WTLAP-13-31686 | 4130 | na | 310 |
| E039.1 | 07/12/2013 11:49 | UF | WTLAP-13-31694 | 3860 | na | 300 |
| E039.1 | 07/12/2013 11:50 | UF | WTLAP-13-31108 | 3740 | na | 300 |
| E039.1 | 07/12/2013 11:51 | UF | WTLAP-13-31702 | 3620 | na | 300 |
| E039.1 | 07/12/2013 11:52 | UF | WTLAP-13-31116 | 3500 | na | 290 |
| E039.1 | 07/12/2013 11:53 | UF | WTLAP-13-31124 | 3380 | na | 290 |
| E039.1 | 07/12/2013 11:53 | UF | WTLAP-13-31710 | 3380 | na | 290 |
| E039.1 | 07/12/2013 11:55 | UF | WTLAP-13-31132 | 3240 | na | 280 |
| E039.1 | 07/12/2013 11:55 | UF | WTLAP-13-31726 | 3240 | na | 280 |
| E039.1 | 07/12/2013 11:56 | F | WTLAP-13-31092 | 3160 | na | 220 |
| E039.1 | 07/12/2013 11:56 | UF | WTLAP-13-31100 | 3160 | na | 220 |
| E039.1 | 07/12/2013 11:57 | F | WTLAP-13-32601 | 3080 | na | 170 |
| E039.1 | 07/12/2013 11:59 | F | WTLAP-13-32597 | 2920 | na | 55 |
| E039.1 | 07/12/2013 12:01 | UF | WTLAP-13-32593 | 2770 | na | 260 |
| E039.1 | 07/12/2013 12:03 | UF | WTLAP-13-31750 | 2610 | na | 250 |
| E039.1 | 07/12/2013 12:05 | UF | WTLAP-13-31758 | 2470 | na | 250 |
| E039.1 | 07/12/2013 12:07 | UF | WTLAP-13-31766 | 2320 | na | 230 |
| E039.1 | 07/12/2013 12:09 | UF | WTLAP-13-31774 | 2150 | na | 210 |
| E039.1 | 07/12/2013 12:29 | UF | WTLAP-13-31782 | 1620 | na | 37 |
| E039.1 | 07/12/2013 12:49 | UF | WTLAP-13-31790 | 1050 | na | 6.5 |
| E039.1 | 07/12/2013 13:09 | UF | WTLAP-13-31798 | 640 | na | 3.6 |
| E039.1 | 07/28/2013 15:04 | UF | WTLAP-13-31655 | 1420 | na | 19 |
| E039.1 | 07/28/2013 15:06 | UF | WTLAP-13-31663 | 1360 | na | 23 |
| E039.1 | 07/28/2013 15:08 | UF | WTLAP-13-31671 | 1220 | na | 22 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E039.1 | 07/28/2013 15:10 | UF | WTLAP-13-31679 | 1120 | na | 21 |
| E039.1 | 07/28/2013 15:12 | UF | WTLAP-13-31687 | 1010 | na | 19 |
| E039.1 | 07/28/2013 15:14 | UF | WTLAP-13-31109 | 950 | na | 17 |
| E039.1 | 07/28/2013 15:14 | UF | WTLAP-13-31695 | 950 | na | 17 |
| E039.1 | 07/28/2013 15:16 | UF | WTLAP-13-31703 | 900 | na | 16 |
| E039.1 | 07/28/2013 15:17 | UF | WTLAP-13-31117 | 855 | na | 15 |
| E039.1 | 07/28/2013 15:18 | UF | WTLAP-13-31125 | 810 | na | 14 |
| E039.1 | 07/28/2013 15:18 | UF | WTLAP-13-31711 | 810 | na | 14 |
| E039.1 | 07/28/2013 15:20 | UF | WTLAP-13-31133 | 790 | na | 13 |
| E039.1 | 07/28/2013 15:20 | UF | WTLAP-13-31727 | 790 | na | 13 |
| E039.1 | 07/28/2013 15:21 | F | WTLAP-13-31093 | 769 | na | 12 |
| E039.1 | 07/28/2013 15:21 | UF | WTLAP-13-31101 | 769 | na | 12 |
| E039.1 | 07/28/2013 15:22 | F | WTLAP-13-32602 | 748 | na | 12 |
| E039.1 | 07/28/2013 15:24 | F | WTLAP-13-32598 | 705 | na | 11 |
| E039.1 | 07/28/2013 15:26 | UF | WTLAP-13-32594 | 662 | na | 9.7 |
| E039.1 | 07/28/2013 15:28 | UF | WTLAP-13-31751 | 620 | na | 9.1 |
| E039.1 | 07/28/2013 15:30 | UF | WTLAP-13-31759 | 610 | na | 8.4 |
| E039.1 | 07/28/2013 15:32 | UF | WTLAP-13-31767 | 580 | na | 7.9 |
| E039.1 | 07/28/2013 15:34 | UF | WTLAP-13-31775 | 540 | na | 7.3 |
| E039.1 | 08/04/2013 14:04 | UF | WTLAP-13-40614 | 710 | 530 | 11 |
| E039.1 | 08/04/2013 14:06 | UF | WTLAP-13-40625 | 1770 | 502 | 11 |
| E039.1 | 08/04/2013 14:08 | UF | WTLAP-13-40626 | 2820 | 474 | 11 |
| E039.1 | 08/04/2013 14:10 | UF | WTLAP-13-40615 | 3880 | 450 | 10 |
| E039.1 | 08/04/2013 14:12 | UF | WTLAP-13-40627 | 3200 | 425 | 9.6 |
| E039.1 | 08/04/2013 14:14 | UF | WTLAP-13-40618 | 2520 | 376 | 8.8 |
| E039.1 | 08/04/2013 14:14 | UF | WTLAP-13-40618 | 2520 | 392 | 8.8 |
| E039.1 | 08/04/2013 14:14 | UF | WTLAP-13-40628 | 2520 | 376 | 8.8 |
| E039.1 | 08/04/2013 14:14 | UF | WTLAP-13-40628 | 2520 | 392 | 8.8 |
| E039.1 | 08/04/2013 14:16 | UF | WTLAP-13-40619 | 1840 | 281 | 8.2 |
| E039.1 | 08/04/2013 14:16 | UF | WTLAP-13-40619 | 1840 | 367 | 8.2 |
| E039.1 | 08/04/2013 14:16 | UF | WTLAP-13-40629 | 1840 | 281 | 8.2 |
| E039.1 | 08/04/2013 14:16 | UF | WTLAP-13-40629 | 1840 | 367 | 8.2 |
| E039.1 | 08/04/2013 14:17 | UF | WTLAP-13-40620 | 1500 | 362 | 7.9 |
| E039.1 | 08/04/2013 14:18 | UF | WTLAP-13-40621 | 1160 | 329 | 7.6 |
| E039.1 | 08/04/2013 14:18 | UF | WTLAP-13-40621 | 1160 | 348 | 7.6 |
| E039.1 | 08/04/2013 14:18 | UF | WTLAP-13-40630 | 1160 | 329 | 7.6 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E039.1 | 08/04/2013 14:18 | UF | WTLAP-13-40630 | 1160 | 348 | 7.6 |
| E039.1 | 08/04/2013 14:19 | UF | WTLAP-13-40622 | 820 | 230 | 7.3 |
| E039.1 | 08/04/2013 14:20 | UF | WTLAP-13-40616 | 480 | 303 | 7 |
| E039.1 | 08/04/2013 14:20 | UF | WTLAP-13-40623 | 480 | 303 | 7 |
| E039.1 | 08/04/2013 14:21 | UF | WTLAP-13-40624 | 475 | 264 | 6.8 |
| E039.1 | 08/04/2013 14:22 | UF | WTLAP-13-40631 | 470 | 319 | 6.6 |
| E039.1 | 08/04/2013 14:24 | UF | WTLAP-13-40632 | 460 | 342 | 6.2 |
| E039.1 | 08/04/2013 14:26 | UF | WTLAP-13-40633 | 450 | 287 | 5.8 |
| E039.1 | 08/04/2013 14:28 | UF | WTLAP-13-40634 | 440 | 267 | 5.3 |
| E039.1 | 08/04/2013 14:30 | UF | WTLAP-13-40635 | 430 | 252 | 4.9 |
| E039.1 | 08/04/2013 14:32 | UF | WTLAP-13-40617 | 420 | 248 | 4.7 |
| E039.1 | 08/04/2013 14:34 | UF | WTLAP-13-40636 | 420 | 243 | 4.4 |
| E039.1 | 08/09/2013 14:09 | UF | WTLAP-13-40903 | 1100 | na | 13 |
| E039.1 | 08/09/2013 14:17 | UF | WTLAP-13-40904 | 870 | na | 14 |
| E039.1 | 08/09/2013 14:25 | UF | WTLAP-13-40905 | 720 | na | 9.7 |
| E039.1 | 08/09/2013 14:37 | UF | WTLAP-13-40906 | 570 | na | 6.2 |
| E039.1 | 09/10/2013 16:09 | UF | WTLAP-13-41791 | 1790 | 1780 | 11 |
| E039.1 | 09/10/2013 16:11 | UF | WTLAP-13-41792 | 1820 | 1680 | 11 |
| E039.1 | 09/10/2013 16:13 | UF | WTLAP-13-41793 | 1790 | 1580 | 11 |
| E039.1 | 09/10/2013 16:15 | UF | WTLAP-13-41794 | 1760 | 1480 | 11 |
| E039.1 | 09/10/2013 16:17 | UF | WTLAP-13-41795 | 1690 | 1380 | 11 |
| E039.1 | 09/10/2013 16:19 | UF | WTLAP-13-41782 | 1610 | 1280 | 10 |
| E039.1 | 09/10/2013 16:19 | UF | WTLAP-13-41796 | 1610 | 1280 | 10 |
| E039.1 | 09/10/2013 16:21 | F | WTLAP-13-41797 | 1540 | 1180 | 9.7 |
| E039.1 | 09/10/2013 16:22 | UF | WTLAP-13-41783 | 1500 | 1130 | 9.5 |
| E039.1 | 09/10/2013 16:23 | F | WTLAP-13-41798 | 1460 | 1080 | 9.2 |
| E039.1 | 09/10/2013 16:24 | UF | WTLAP-13-41784 | 1420 | 1030 | 9 |
| E039.1 | 09/10/2013 16:25 | UF | WTLAP-13-41799 | 1380 | 982 | 8.8 |
| E039.1 | 09/10/2013 16:26 | UF | WTLAP-13-41785 | 1350 | 932 | 8.5 |
| E039.1 | 09/10/2013 16:27 | UF | WTLAP-13-41786 | 1310 | 882 | 8.3 |
| E039.1 | 09/10/2013 16:27 | UF | WTLAP-13-41800 | 1310 | 882 | 8.3 |
| E039.1 | 09/10/2013 16:28 | F | WTLAP-13-41787 | 1320 | 832 | 8 |
| E039.1 | 09/10/2013 16:29 | UF | WTLAP-13-41788 | 1330 | 782 | 7.8 |
| E039.1 | 09/10/2013 16:29 | UF | WTLAP-13-41801 | 1330 | 782 | 7.8 |
| E039.1 | 09/10/2013 16:30 | UF | WTLAP-13-41789 | 1240 | 732 | 7.5 |
| E039.1 | 09/10/2013 16:31 | UF | WTLAP-13-41790 | 1160 | 616 | 7.4 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E039.1 | 09/10/2013 16:31 | UF | WTLAP-13-41802 | 1160 | 616 | 7.4 |
| E039.1 | 09/10/2013 16:33 | UF | WTLAP-13-41803 | 1100 | 616 | 7.2 |
| E039.1 | 09/10/2013 16:35 | UF | WTLAP-13-41804 | 1050 | 616 | 7 |
| E039.1 | 09/10/2013 16:37 | UF | WTLAP-13-41805 | 1000 | 616 | 6.7 |
| E039.1 | 09/10/2013 16:39 | UF | WTLAP-13-41806 | 990 | 616 | 6.4 |
| E039.1 | 09/10/2013 16:59 | UF | WTLAP-13-41807 | 750 | 616 | 2.4 |
| E039.1 | 09/10/2013 17:59 | UF | WTLAP-13-41808 | 820 | 616 | 4.2 |
| E039.1 | 09/10/2013 18:19 | UF | WTLAP-13-41809 | 1700 | 616 | 35 |
| E039.1 | 09/10/2013 18:39 | UF | WTLAP-13-41810 | 1130 | 616 | 16 |
| E039.1 | 09/10/2013 18:59 | UF | WTLAP-13-41811 | 790 | 616 | 9.2 |
| E039.1 | 09/10/2013 19:19 | UF | WTLAP-13-41812 | 620 | 616 | 4.2 |
| E039.1 | 09/12/2013 15:11 | UF | WTLAP-13-42314 | 1340 | na | 12 |
| E039.1 | 09/12/2013 15:15 | UF | WTLAP-13-42302 | 1400 | na | 15 |
| E039.1 | 09/12/2013 15:19 | UF | WTLAP-13-42303 | 1280 | na | 14 |
| E039.1 | 09/12/2013 15:23 | UF | WTLAP-13-42304 | 1180 | na | 13 |
| E039.1 | 09/12/2013 15:27 | UF | WTLAP-13-42305 | 1010 | na | 11 |
| E039.1 | 09/12/2013 15:29 | UF | WTLAP-13-42308 | 650 | na | 10 |
| E039.1 | 09/12/2013 15:31 | UF | WTLAP-13-42306 | 880 | na | 9.4 |
| E039.1 | 09/12/2013 15:35 | UF | WTLAP-13-42307 | 770 | na | 8.4 |
| E039.1 | 09/12/2013 16:39 | UF | WTLAP-13-42309 | 920 | na | 31 |
| E039.1 | 09/12/2013 16:59 | UF | WTLAP-13-42310 | 640 | na | 7 |
| E039.1 | 09/12/2013 17:39 | UF | WTLAP-13-42311 | 490 | na | 9.7 |
| E039.1 | 09/12/2013 18:19 | UF | WTLAP-13-42312 | 990 | na | 48 |
| E039.1 | 11/05/2013 01:43 | UF | WTLAP-13-46044 | 1430 | na | 9.4 |
| E039.1 | 11/05/2013 01:47 | UF | WTLAP-13-46045 | 1020 | na | 17 |
| E039.1 | 11/05/2013 01:51 | UF | WTLAP-13-46046 | 880 | na | 20 |
| E039.1 | 11/05/2013 01:55 | UF | WTLAP-13-46047 | 740 | na | 21 |
| E039.1 | 11/05/2013 01:59 | UF | WTLAP-13-46048 | 620 | na | 5 |
| E039.1 | 11/05/2013 02:03 | UF | WTLAP-13-46049 | 530 | na | 20 |
| E039.1 | 11/05/2013 02:07 | UF | WTLAP-13-46050 | 470 | na | 18 |
| E039.1 | 11/05/2013 02:11 | UF | WTLAP-13-46051 | 400 | na | 16 |
| E039.1 | 11/05/2013 02:33 | UF | WTLAP-13-46052 | 370 | na | 6.6 |
| E040 | 07/12/2013 12:15 | UF | WTLAP-13-39228 | 2330 | na | 250 |
| E040 | 07/12/2013 12:16 | UF | WTLAP-13-39229 | 2330 | na | 250 |
| E040 | 08/05/2013 14:24 | UF | WTLAP-13-40572 | 5420 | na | 22 |
| E040 | 08/05/2013 14:26 | UF | WTLAP-13-40573 | 5130 | na | 20 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E040 | 08/05/2013 14:28 | UF | WTLAP-13-40574 | 4840 | na | 18 |
| E040 | 08/05/2013 14:29 | UF | WTLAP-13-40575 | 4700 | na | 17 |
| E040 | 08/05/2013 14:31 | UF | WTLAP-13-40576 | 4410 | na | 14 |
| E040 | 08/05/2013 14:32 | F | WTLAP-13-40577 | 4260 | na | 14 |
| E040 | 08/05/2013 14:32 | UF | WTLAP-13-40578 | 4260 | na | 14 |
| E040 | 08/05/2013 14:33 | UF | WTLAP-13-40579 | 4120 | na | 13 |
| E040 | 08/05/2013 14:34 | F | WTLAP-13-40580 | 3970 | na | 12 |
| E040 | 08/05/2013 14:36 | F | WTLAP-13-40581 | 3680 | na | 10 |
| E040 | 08/05/2013 14:37 | UF | WTLAP-13-40582 | 3540 | na | 10 |
| E040 | 09/10/2013 18:54 | UF | WTLAP-13-41754 | 3550 | na | 26 |
| E040 | 09/10/2013 18:55 | UF | WTLAP-13-41755 | 3500 | na | 26 |
| E040 | 09/10/2013 18:58 | UF | WTLAP-13-41758 | 3360 | na | 12 |
| E040 | 09/10/2013 18:59 | UF | WTLAP-13-41764 | 3320 | na | 7.3 |
| E040 | 09/10/2013 19:02 | UF | WTLAP-13-41765 | 3180 | na | 21 |
| E040 | 09/10/2013 19:03 | UF | WTLAP-13-41766 | 3130 | na | 21 |
| E040 | 09/10/2013 19:05 | F | WTLAP-13-41767 | 3040 | na | 20 |
| E040 | 09/10/2013 19:05 | F | WTLAP-13-41768 | 3040 | na | 20 |
| E040 | 09/10/2013 19:06 | UF | WTLAP-13-41769 | 2990 | na | 19 |
| E040 | 09/10/2013 19:07 | F | WTLAP-13-41770 | 2940 | na | 19 |
| E040 | 09/10/2013 19:09 | UF | WTLAP-13-41771 | 2850 | na | 17 |
| E040 | 09/12/2013 16:15 | UF | WTLAP-13-42294 | 1220 | na | 10 |
| E040 | 09/12/2013 16:17 | UF | WTLAP-13-42292 | 1220 | na | 9.7 |
| E040 | 09/12/2013 16:18 | UF | WTLAP-13-42295 | 1200 | na | 9.4 |
| E040 | 09/12/2013 16:20 | UF | WTLAP-13-42301 | 1160 | na | 8.7 |
| E040 | 09/12/2013 16:22 | UF | WTLAP-13-42297 | 1130 | na | 8.4 |
| E040 | 09/12/2013 16:24 | F | WTLAP-13-42299 | 1090 | na | 8 |
| E040 | 09/12/2013 16:24 | UF | WTLAP-13-42298 | 1090 | na | 8 |
| E040 | 09/12/2013 16:25 | UF | WTLAP-13-42300 | 1070 | na | 7.9 |
| E040 | 09/12/2013 16:26 | UF | WTLAP-13-42293 | 1050 | na | 7.8 |
| E042.1 | 07/12/2013 12:40 | UF | WTLAP-13-39153 | 63600 | 94000 | 150 |
| E042.1 | 07/12/2013 12:42 | UF | WTLAP-13-39154 | 70800 | 87300 | 150 |
| E042.1 | 07/12/2013 12:58 | UF | WTLAP-13-39156 | 51900 | 34100 | 61 |
| E042.1 | 07/12/2013 12:59 | UF | WTLAP-13-39147 | 50700 | 30800 | 31 |
| E042.1 | 07/12/2013 13:00 | UF | WTLAP-13-39157 | 45500 | 27400 | 130 |
| E042.1 | 07/12/2013 13:02 | UF | WTLAP-13-39158 | 35000 | 20800 | 100 |
| E042.1 | 07/12/2013 13:03 | UF | WTLAP-13-39148 | 29700 | 19400 | 87 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E042.1 | 07/12/2013 13:04 | UF | WTLAP-13-39159 | 29600 | 18000 | 73 |
| E042.1 | 07/12/2013 13:06 | UF | WTLAP-13-39160 | 29200 | 15900 | 58 |
| E042.1 | 07/12/2013 13:07 | UF | WTLAP-13-39149 | 29100 | 16200 | 58 |
| E042.1 | 07/12/2013 13:08 | UF | WTLAP-13-39161 | 28900 | 16400 | 59 |
| E042.1 | 07/12/2013 13:10 | UF | WTLAP-13-39162 | 28600 | 15000 | 60 |
| E042.1 | 07/12/2013 13:30 | UF | WTLAP-13-39163 | 25300 | 12300 | 50 |
| E042.1 | 07/12/2013 13:45 | F | WTLAP-13-39150 | 22900 | 8680 | 48 |
| E042.1 | 07/12/2013 13:50 | UF | WTLAP-13-39164 | 22100 | 7480 | 42 |
| E042.1 | 07/12/2013 14:10 | UF | WTLAP-13-39165 | 18800 | 5740 | 34 |
| E042.1 | 07/12/2013 14:30 | UF | WTLAP-13-39151 | 15500 | 5120 | 30 |
| E042.1 | 07/12/2013 14:30 | UF | WTLAP-13-39152 | 15500 | 5120 | 30 |
| E042.1 | 07/12/2013 14:30 | UF | WTLAP-13-39166 | 15500 | 5120 | 30 |
| E042.1 | 07/12/2013 14:50 | UF | WTLAP-13-39167 | 12300 | 5120 | 28 |
| E042.1 | 07/12/2013 15:10 | F | WTLAP-13-39168 | 9020 | 5120 | 26 |
| E042.1 | 07/12/2013 15:10 | UF | WTLAP-13-39169 | 9020 | 5120 | 26 |
| E042.1 | 07/12/2013 15:30 | UF | WTLAP-13-39170 | 5760 | 5120 | 24 |
| E042.1 | 07/12/2013 15:50 | UF | WTLAP-13-39171 | 2500 | 5120 | 23 |
| E042.1 | 08/05/2013 15:00 | UF | WTLAP-13-31270 | 16000 | na | 80 |
| E042.1 | 08/05/2013 15:02 | UF | WTLAP-13-31278 | 16000 | na | 73 |
| E042.1 | 08/05/2013 15:04 | UF | WTLAP-13-31284 | 16000 | na | 65 |
| E042.1 | 08/05/2013 15:06 | UF | WTLAP-13-31298 | 13000 | na | 60 |
| E042.1 | 08/05/2013 15:08 | UF | WTLAP-13-31306 | 11400 | na | 58 |
| E042.1 | 08/05/2013 15:10 | UF | WTLAP-13-30750 | 10900 | na | 56 |
| E042.1 | 08/05/2013 15:10 | UF | WTLAP-13-31314 | 10900 | na | 56 |
| E042.1 | 08/05/2013 15:12 | UF | WTLAP-13-30758 | 10000 | na | 53 |
| E042.1 | 08/05/2013 15:12 | UF | WTLAP-13-31322 | 10000 | na | 53 |
| E042.1 | 08/05/2013 15:14 | UF | WTLAP-13-30770 | 7630 | na | 50 |
| E042.1 | 08/05/2013 15:14 | UF | WTLAP-13-31330 | 7630 | na | 50 |
| E042.1 | 08/05/2013 15:16 | UF | WTLAP-13-31338 | 8100 | na | 48 |
| E042.1 | 08/05/2013 15:18 | F | WTLAP-13-32612 | 7780 | na | 47 |
| E042.1 | 08/05/2013 15:18 | UF | WTLAP-13-30782 | 7780 | na | 47 |
| E042.1 | 08/05/2013 15:20 | F | WTLAP-13-30742 | 7460 | na | 46 |
| E042.1 | 08/05/2013 15:20 | F | WTLAP-13-32608 | 7460 | na | 46 |
| E042.1 | 08/05/2013 15:20 | UF | WTLAP-13-30746 | 7460 | na | 46 |
| E042.1 | 08/05/2013 15:22 | UF | WTLAP-13-30786 | 7150 | na | 45 |
| E042.1 | 08/05/2013 15:22 | UF | WTLAP-13-32604 | 7150 | na | 45 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E042.1 | 08/05/2013 15:24 | UF | WTLAP-13-30754 | 6830 | na | 45 |
| E042.1 | 08/05/2013 15:24 | UF | WTLAP-13-31362 | 6830 | na | 45 |
| E042.1 | 08/05/2013 15:26 | UF | WTLAP-13-31370 | 6380 | na | 44 |
| E042.1 | 08/05/2013 15:28 | UF | WTLAP-13-31378 | 5880 | na | 43 |
| E042.1 | 08/05/2013 15:30 | UF | WTLAP-13-31386 | 5590 | na | 42 |
| E042.1 | 08/05/2013 15:50 | UF | WTLAP-13-31394 | 3680 | na | 30 |
| E042.1 | 08/05/2013 16:00 | UF | WTLAP-13-30762 | 3210 | na | 28 |
| E042.1 | 08/05/2013 16:10 | UF | WTLAP-13-40589 | 2740 | na | 26 |
| E042.1 | 09/10/2013 19:29 | UF | WTLAP-13-31271 | 13500 | na | 28 |
| E042.1 | 09/10/2013 19:31 | UF | WTLAP-13-30767 | 13500 | na | 35 |
| E042.1 | 09/10/2013 19:33 | UF | WTLAP-13-31285 | 13500 | na | 35 |
| E042.1 | 09/10/2013 19:35 | UF | WTLAP-13-31291 | 16000 | na | 35 |
| E042.1 | 09/10/2013 19:37 | UF | WTLAP-13-31299 | 10800 | na | 35 |
| E042.1 | 09/10/2013 19:39 | UF | WTLAP-13-31307 | 10300 | na | 35 |
| E042.1 | 09/10/2013 19:40 | UF | WTLAP-13-30759 | 10900 | na | 35 |
| E042.1 | 09/10/2013 19:41 | UF | WTLAP-13-31315 | 11500 | na | 35 |
| E042.1 | 09/10/2013 19:43 | UF | WTLAP-13-31323 | 11900 | na | 35 |
| E042.1 | 09/10/2013 19:44 | UF | WTLAP-13-30771 | 11400 | na | 35 |
| E042.1 | 09/10/2013 19:45 | F | WTLAP-13-32613 | 10900 | na | 35 |
| E042.1 | 09/10/2013 19:47 | F | WTLAP-13-32609 | 9830 | na | 36 |
| E042.1 | 09/10/2013 19:49 | UF | WTLAP-13-32605 | 8820 | na | 36 |
| E042.1 | 09/10/2013 19:50 | UF | WTLAP-13-30783 | 8310 | na | 36 |
| E042.1 | 09/10/2013 19:51 | F | WTLAP-13-30743 | 7800 | na | 36 |
| E042.1 | 09/10/2013 19:51 | UF | WTLAP-13-30747 | 7800 | na | 36 |
| E042.1 | 09/10/2013 19:52 | UF | WTLAP-13-30787 | 7290 | na | 36 |
| E042.1 | 09/10/2013 19:53 | UF | WTLAP-13-31279 | 6780 | na | 36 |
| E042.1 | 09/10/2013 19:54 | UF | WTLAP-13-30751 | 6270 | na | 36 |
| E042.1 | 09/10/2013 19:55 | UF | WTLAP-13-31331 | 5760 | na | 36 |
| E042.1 | 09/10/2013 19:57 | UF | WTLAP-13-31363 | 5490 | na | 22 |
| E042.1 | 09/10/2013 19:59 | UF | WTLAP-13-31371 | 4880 | na | 7.2 |
| E042.1 | 09/10/2013 20:19 | UF | WTLAP-13-31339 | 4450 | na | 28 |
| E042.1 | 09/10/2013 20:30 | UF | WTLAP-13-30755 | 4360 | na | 26 |
| E042.1 | 09/10/2013 20:30 | UF | WTLAP-13-30763 | 4360 | na | 26 |
| E042.1 | 09/10/2013 21:39 | UF | WTLAP-13-31403 | 3820 | na | 21 |
| E042.1 | 09/10/2013 21:59 | UF | WTLAP-13-31379 | 3610 | na | 21 |
| E042.1 | 09/10/2013 22:19 | UF | WTLAP-13-31387 | 2950 | na | 22 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E042.1 | 09/10/2013 22:39 | UF | WTLAP-13-31419 | 2610 | na | 23 |
| E050.1 | 07/12/2013 13:15 | UF | WTLAP-13-39116 | 12900 | na | 16 |
| E050.1 | 07/12/2013 13:17 | UF | WTLAP-13-39122 | 12400 | na | 20 |
| E050.1 | 07/12/2013 13:19 | UF | WTLAP-13-39118 | 12000 | na | 23 |
| E050.1 | 07/12/2013 13:21 | UF | WTLAP-13-39120 | 11700 | na | 26 |
| E050.1 | 07/12/2013 13:23 | UF | WTLAP-13-39124 | 11400 | na | 29 |
| E050.1 | 07/12/2013 13:25 | UF | WTLAP-13-39131 | 11000 | na | 31 |
| E050.1 | 07/12/2013 13:27 | UF | WTLAP-13-31495 | 10700 | na | 32 |
| E050.1 | 07/12/2013 13:29 | UF | WTLAP-13-31503 | 6230 | na | 32 |
| E050.1 | 07/12/2013 13:31 | UF | WTLAP-13-31519 | 9760 | na | 32 |
| E050.1 | 07/12/2013 13:33 | F | WTLAP-13-32635 | 9520 | na | 32 |
| E050.1 | 07/12/2013 13:35 | F | WTLAP-13-32631 | 9280 | na | 32 |
| E050.1 | 07/12/2013 13:37 | UF | WTLAP-13-32627 | 9040 | na | 32 |
| E050.1 | 07/12/2013 13:39 | UF | WTLAP-13-31543 | 8800 | na | 32 |
| E050.1 | 07/12/2013 13:40 | UF | WTLAP-13-30865 | 8670 | na | 32 |
| E050.1 | 07/12/2013 13:41 | UF | WTLAP-13-39126 | 8550 | na | 32 |
| E050.1 | 07/12/2013 13:42 | UF | WTLAP-13-30845 | 8420 | na | 32 |
| E050.1 | 07/12/2013 13:44 | UF | WTLAP-13-31079 | 8170 | na | 32 |
| E050.1 | 07/12/2013 13:45 | UF | WTLAP-13-31567 | 8040 | na | 32 |
| E050.1 | 07/12/2013 13:48 | UF | WTLAP-13-30853 | 7820 | na | 31 |
| E050.1 | 07/12/2013 13:50 | F | WTLAP-13-30829 | 7680 | na | 31 |
| E050.1 | 07/12/2013 13:50 | UF | WTLAP-13-30833 | 7680 | na | 31 |
| E050.1 | 07/12/2013 13:52 | UF | WTLAP-13-30857 | 7530 | na | 30 |
| E050.1 | 07/12/2013 13:52 | UF | WTLAP-13-30861 | 7530 | na | 30 |
| E050.1 | 07/12/2013 13:54 | UF | WTLAP-13-30837 | 7390 | na | 29 |
| E050.1 | 07/12/2013 14:05 | UF | WTLAP-13-31575 | 6590 | na | 25 |
| E050.1 | 07/12/2013 14:25 | UF | WTLAP-13-31591 | 5350 | na | 19 |
| E050.1 | 07/12/2013 14:30 | UF | WTLAP-13-31952 | 5180 | na | 18 |
| E050.1 | 07/12/2013 14:45 | UF | WTLAP-13-31599 | 4690 | na | 14 |
| E050.1 | 07/12/2013 15:05 | UF | WTLAP-13-31607 | 4140 | na | 9 |
| E050.1 | 07/12/2013 15:15 | UF | WTLAP-13-30841 | 3950 | na | 7.8 |
| E050.1 | 07/12/2013 15:15 | UF | WTLAP-13-31964 | 3950 | na | 7.8 |
| E050.1 | 07/12/2013 15:25 | UF | WTLAP-13-31615 | 3760 | na | 6.7 |
| E050.1 | 07/12/2013 15:45 | UF | WTLAP-13-31623 | 3350 | na | 5.4 |
| E050.1 | 07/12/2013 16:05 | UF | WTLAP-13-31631 | 3100 | na | 4 |
| E050.1 | 07/12/2013 16:25 | UF | WTLAP-13-31640 | 2760 | na | 2.3 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E050.1 | 08/05/2013 17:45 | UF | WTLAP-13-31458 | 4700 | na | 5.2 |
| E050.1 | 08/05/2013 17:47 | UF | WTLAP-13-31466 | 4700 | na | 7.2 |
| E050.1 | 08/05/2013 17:49 | UF | WTLAP-13-31474 | 4700 | na | 9.2 |
| E050.1 | 08/05/2013 17:51 | UF | WTLAP-13-31482 | 5880 | na | 12 |
| E050.1 | 08/05/2013 17:53 | UF | WTLAP-13-31490 | 6370 | na | 14 |
| E050.1 | 08/05/2013 17:57 | UF | WTLAP-13-31498 | 7340 | na | 10 |
| E050.1 | 08/05/2013 17:59 | UF | WTLAP-13-31506 | 6100 | na | 3.8 |
| E050.1 | 08/05/2013 18:01 | UF | WTLAP-13-31522 | 5250 | na | 20 |
| E050.1 | 08/05/2013 18:03 | F | WTLAP-13-32636 | 4720 | na | 20 |
| E050.1 | 08/05/2013 18:05 | F | WTLAP-13-32632 | 4190 | na | 20 |
| E050.1 | 08/05/2013 18:07 | UF | WTLAP-13-32628 | 3660 | na | 19 |
| E050.1 | 08/05/2013 18:09 | UF | WTLAP-13-30867 | 3130 | na | 18 |
| E050.1 | 08/05/2013 18:09 | UF | WTLAP-13-31546 | 3130 | na | 18 |
| E050.1 | 08/05/2013 18:11 | UF | WTLAP-13-30846 | 2940 | na | 17 |
| E050.1 | 08/05/2013 18:11 | UF | WTLAP-13-31554 | 2940 | na | 17 |
| E050.1 | 08/05/2013 18:13 | UF | WTLAP-13-31082 | 2960 | na | 16 |
| E050.1 | 08/05/2013 18:13 | UF | WTLAP-13-31562 | 2960 | na | 16 |
| E050.1 | 08/05/2013 18:15 | UF | WTLAP-13-31570 | 2870 | na | 15 |
| E050.1 | 08/05/2013 18:17 | UF | WTLAP-13-30854 | 2760 | na | 14 |
| E050.1 | 08/05/2013 18:19 | F | WTLAP-13-30830 | 2650 | na | 13 |
| E050.1 | 08/05/2013 18:19 | UF | WTLAP-13-30834 | 2650 | na | 13 |
| E050.1 | 08/05/2013 18:21 | UF | WTLAP-13-30858 | 2540 | na | 12 |
| E050.1 | 08/05/2013 18:21 | UF | WTLAP-13-30862 | 2540 | na | 12 |
| E050.1 | 08/05/2013 18:23 | UF | WTLAP-13-30838 | 2430 | na | 12 |
| E050.1 | 08/05/2013 18:35 | UF | WTLAP-13-31578 | 1760 | na | 9.6 |
| E050.1 | 08/05/2013 18:55 | UF | WTLAP-13-31594 | 1420 | na | 5.9 |
| E050.1 | 08/05/2013 18:59 | UF | WTLAP-13-31955 | 1390 | na | 17 |
| E050.1 | 08/05/2013 19:15 | UF | WTLAP-13-31602 | 1270 | na | 3.4 |
| E050.1 | 08/05/2013 19:35 | UF | WTLAP-13-31610 | 1180 | na | 2 |
| E050.1 | 08/05/2013 19:44 | UF | WTLAP-13-30842 | 1140 | na | 1.6 |
| E050.1 | 08/05/2013 19:44 | UF | WTLAP-13-31967 | 1140 | na | 1.6 |
| E050.1 | 08/05/2013 19:55 | UF | WTLAP-13-31618 | 1090 | na | 1.2 |
| E050.1 | 09/10/2013 22:24 | UF | WTLAP-13-31459 | 1250 | na | 5 |
| E050.1 | 09/10/2013 22:26 | UF | WTLAP-13-31467 | 1250 | na | 5.3 |
| E050.1 | 09/10/2013 22:28 | UF | WTLAP-13-31475 | 1250 | na | 5.4 |
| E050.1 | 09/10/2013 22:30 | UF | WTLAP-13-31483 | 1250 | na | 5.6 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E050.1 | 09/10/2013 22:32 | UF | WTLAP-13-31491 | 1250 | na | 5.8 |
| E050.1 | 09/10/2013 22:36 | UF | WTLAP-13-31499 | 1260 | na | 6.2 |
| E050.1 | 09/10/2013 22:38 | UF | WTLAP-13-31507 | 1260 | na | 6.3 |
| E050.1 | 09/10/2013 22:40 | UF | WTLAP-13-31523 | 1280 | na | 6.4 |
| E050.1 | 09/10/2013 22:42 | F | WTLAP-13-32637 | 1270 | na | 6.5 |
| E050.1 | 09/10/2013 22:44 | F | WTLAP-13-32633 | 1260 | na | 6.6 |
| E050.1 | 09/10/2013 22:46 | UF | WTLAP-13-32629 | 1240 | na | 6.7 |
| E050.1 | 09/10/2013 22:48 | UF | WTLAP-13-31547 | 1230 | na | 6.8 |
| E050.1 | 09/10/2013 22:50 | UF | WTLAP-13-31555 | 1260 | na | 7 |
| E050.1 | 09/10/2013 22:52 | UF | WTLAP-13-31563 | 1260 | na | 7.1 |
| E050.1 | 09/10/2013 22:54 | UF | WTLAP-13-31571 | 1290 | na | 7.2 |
| E050.1 | 09/10/2013 23:14 | UF | WTLAP-13-31579 | 1300 | na | 8.9 |
| E050.1 | 09/10/2013 23:34 | UF | WTLAP-13-31595 | 1320 | na | 10 |
| E050.1 | 09/10/2013 23:54 | UF | WTLAP-13-31603 | 1340 | na | 11 |
| E050.1 | 09/11/2013 00:04 | UF | WTLAP-13-30869 | 1480 | na | 11 |
| E050.1 | 09/11/2013 00:06 | UF | WTLAP-13-30847 | 1480 | na | 11 |
| E050.1 | 09/11/2013 00:08 | UF | WTLAP-13-31083 | 1480 | na | 11 |
| E050.1 | 09/11/2013 00:12 | UF | WTLAP-13-30855 | 1480 | na | 11 |
| E050.1 | 09/11/2013 00:14 | F | WTLAP-13-30831 | 1480 | na | 11 |
| E050.1 | 09/11/2013 00:14 | UF | WTLAP-13-30835 | 1480 | na | 11 |
| E050.1 | 09/11/2013 00:14 | UF | WTLAP-13-31611 | 1480 | na | 11 |
| E050.1 | 09/11/2013 00:16 | UF | WTLAP-13-30859 | 1480 | na | 11 |
| E050.1 | 09/11/2013 00:16 | UF | WTLAP-13-30863 | 1480 | na | 11 |
| E050.1 | 09/11/2013 00:18 | UF | WTLAP-13-30839 | 1480 | na | 11 |
| E050.1 | 09/11/2013 00:34 | UF | WTLAP-13-31619 | 1480 | na | 11 |
| E050.1 | 09/11/2013 00:54 | UF | WTLAP-13-31627 | 1580 | na | 9.9 |
| E050.1 | 09/11/2013 00:54 | UF | WTLAP-13-31958 | 1580 | na | 9.9 |
| E050.1 | 09/11/2013 01:14 | UF | WTLAP-13-31635 | 1630 | na | 9.9 |
| E050.1 | 09/11/2013 01:34 | UF | WTLAP-13-31644 | 1750 | na | 12 |
| E050.1 | 09/11/2013 01:39 | UF | WTLAP-13-30843 | 1750 | na | 12 |
| E050.1 | 09/11/2013 01:39 | UF | WTLAP-13-31970 | 1750 | na | 12 |
| E050.1 | 09/12/2013 17:54 | UF | WTLAP-13-31462 | 990 | na | 7.3 |
| E050.1 | 09/12/2013 17:56 | UF | WTLAP-13-31470 | 990 | na | 6.5 |
| E050.1 | 09/12/2013 17:58 | UF | WTLAP-13-31478 | 990 | na | 3.4 |
| E050.1 | 09/12/2013 18:00 | UF | WTLAP-13-31486 | 960 | na | 11 |
| E050.1 | 09/12/2013 18:02 | UF | WTLAP-13-31494 | 1060 | na | 12 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E050.1 | 09/12/2013 18:06 | UF | WTLAP-13-31502 | 1270 | na | 14 |
| E050.1 | 09/12/2013 18:08 | UF | WTLAP-13-31510 | 1400 | na | 16 |
| E050.1 | 09/12/2013 18:10 | UF | WTLAP-13-31526 | 1560 | na | 17 |
| E050.1 | 09/12/2013 18:12 | F | WTLAP-13-32638 | 1630 | na | 18 |
| E050.1 | 09/12/2013 18:14 | F | WTLAP-13-32634 | 1700 | na | 20 |
| E050.1 | 09/12/2013 18:16 | UF | WTLAP-13-32630 | 1780 | na | 21 |
| E050.1 | 09/12/2013 18:18 | UF | WTLAP-13-31550 | 1850 | na | 22 |
| E050.1 | 09/12/2013 18:20 | UF | WTLAP-13-31558 | 1810 | na | 23 |
| E050.1 | 09/12/2013 18:22 | UF | WTLAP-13-31566 | 1840 | na | 23 |
| E050.1 | 09/12/2013 18:24 | UF | WTLAP-13-31574 | 1820 | na | 24 |
| E050.1 | 09/12/2013 18:44 | UF | WTLAP-13-31582 | 2690 | na | 59 |
| E050.1 | 09/12/2013 19:04 | UF | WTLAP-13-30871 | 11200 | na | 87 |
| E050.1 | 09/12/2013 19:04 | UF | WTLAP-13-31598 | 11200 | na | 87 |
| E050.1 | 09/12/2013 19:06 | UF | WTLAP-13-30848 | 11300 | na | 87 |
| E050.1 | 09/12/2013 19:08 | UF | WTLAP-13-31086 | 11500 | na | 87 |
| E050.1 | 09/12/2013 19:12 | UF | WTLAP-13-30856 | 11700 | na | 87 |
| E050.1 | 09/12/2013 19:14 | F | WTLAP-13-30832 | 11900 | na | 87 |
| E050.1 | 09/12/2013 19:14 | UF | WTLAP-13-30836 | 11900 | na | 87 |
| E050.1 | 09/12/2013 19:16 | UF | WTLAP-13-30860 | 12000 | na | 87 |
| E050.1 | 09/12/2013 19:16 | UF | WTLAP-13-30864 | 12000 | na | 87 |
| E050.1 | 09/12/2013 19:18 | UF | WTLAP-13-30840 | 12200 | na | 87 |
| E050.1 | 09/12/2013 19:24 | UF | WTLAP-13-31606 | 12600 | na | 86 |
| E050.1 | 09/12/2013 19:44 | UF | WTLAP-13-31614 | 10500 | na | 82 |
| E050.1 | 09/12/2013 19:54 | UF | WTLAP-13-31961 | 9290 | na | 84 |
| E050.1 | 09/12/2013 20:04 | UF | WTLAP-13-31622 | 8090 | na | 74 |
| E050.1 | 09/12/2013 20:24 | UF | WTLAP-13-31630 | 6960 | na | 62 |
| E050.1 | 09/12/2013 20:39 | UF | WTLAP-13-30844 | 6350 | na | 56 |
| E050.1 | 09/12/2013 20:44 | UF | WTLAP-13-31638 | 6150 | na | 54 |
| E050.1 | 09/12/2013 21:04 | UF | WTLAP-13-31647 | 5650 | na | 51 |
| E055 | 06/14/2013 13:45 | UF | WTLAP-13-30706 | 1850 | na | 14 |
| E055 | 06/14/2013 13:46 | UF | WTLAP-13-30694 | 1980 | na | 14 |
| E055 | 06/14/2013 13:48 | UF | WTLAP-13-30718 | 2260 | na | 13 |
| E055 | 06/14/2013 13:52 | UF | WTLAP-13-30682 | 2800 | na | 13 |
| E055 | 06/14/2013 13:53 | F | WTLAP-13-30670 | 2930 | na | 12 |
| E055 | 06/14/2013 13:54 | UF | WTLAP-13-32639 | 3060 | na | 12 |
| E055 | 06/14/2013 13:55 | F | WTLAP-13-32643 | 3200 | na | 12 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E055 | 06/14/2013 13:56 | F | WTLAP-13-32647 | 3340 | na | 9.6 |
| E055 | 06/14/2013 13:57 | UF | WTLAP-13-30730 | 3470 | na | 7.2 |
| E055 | 09/12/2013 16:55 | UF | WTLAP-13-30709 | 9330 | na | 12 |
| E055 | 09/12/2013 16:56 | UF | WTLAP-13-30697 | 9720 | na | 11 |
| E055 | 09/12/2013 16:58 | UF | WTLAP-13-30721 | 10500 | na | 9.6 |
| E055 | 09/12/2013 17:00 | F | WTLAP-13-30673 | 11300 | na | 12 |
| E055 | 09/12/2013 17:00 | UF | WTLAP-13-30685 | 11300 | na | 12 |
| E055 | 09/12/2013 17:01 | UF | WTLAP-13-30733 | 11700 | na | 12 |
| E055 | 09/12/2013 17:02 | F | WTLAP-13-32648 | 11700 | na | 13 |
| E055 | 09/12/2013 17:03 | F | WTLAP-13-32644 | 11700 | na | 13 |
| E055 | 09/12/2013 17:04 | UF | WTLAP-13-32640 | 11700 | na | 13 |
| E055.5 | 07/12/2013 11:50 | UF | WTLAP-13-30707 | 11400 | na | 4.8 |
| E055.5 | 07/12/2013 11:52 | UF | WTLAP-13-30695 | 9250 | na | 3.5 |
| E055.5 | 07/12/2013 11:56 | UF | WTLAP-13-30719 | 4970 | na | 1.2 |
| E055.5 | 07/12/2013 11:57 | F | WTLAP-13-30671 | 3900 | na | 0.9 |
| E055.5 | 07/12/2013 11:57 | UF | WTLAP-13-30683 | 3900 | na | 0.9 |
| E055.5 | 07/12/2013 11:59 | UF | WTLAP-13-30731 | 1760 | na | 0.3 |
| E055.5 | 09/13/2013 06:55 | UF | WTLAP-13-30710 | 5180 | na | 3.5 |
| E055.5 | 09/13/2013 06:57 | UF | WTLAP-13-30698 | 5240 | na | 2.1 |
| E055.5 | 09/13/2013 07:01 | UF | WTLAP-13-30722 | 5370 | na | 11 |
| E055.5 | 09/13/2013 07:03 | F | WTLAP-13-30674 | 5430 | na | 11 |
| E055.5 | 09/13/2013 07:03 | UF | WTLAP-13-30686 | 5430 | na | 11 |
| E055.5 | 09/13/2013 07:05 | UF | WTLAP-13-30734 | 5490 | na | 11 |
| E055.5 | 09/13/2013 07:06 | F | WTLAP-13-32680 | 5490 | na | 11 |
| E055.5 | 09/13/2013 07:06 | F | WTLAP-13-32684 | 5490 | na | 11 |
| E055.5 | 09/13/2013 07:08 | UF | WTLAP-13-32676 | 5490 | na | 12 |
| E056 | 06/14/2013 13:40 | F | WTLAP-13-36892 | 5800 | na | 16 |
| E056 | 06/14/2013 13:40 | UF | WTLAP-13-36893 | 5800 | na | 16 |
| E056 | 06/14/2013 13:40 | UF | WTLAP-13-36912 | 5800 | na | 16 |
| E056 | 07/12/2013 12:00 | UF | WTLAP-13-36905 | 5700 | na | 21 |
| E056 | 07/12/2013 12:02 | UF | WTLAP-13-36901 | 5150 | na | 18 |
| E056 | 07/12/2013 12:04 | UF | WTLAP-13-36909 | 4590 | na | 15 |
| E056 | 07/12/2013 12:05 | F | WTLAP-13-36895 | 4320 | na | 14 |
| E056 | 07/12/2013 12:05 | UF | WTLAP-13-36894 | 4320 | na | 14 |
| E056 | 07/12/2013 12:06 | UF | WTLAP-13-36913 | 4040 | na | 13 |
| E056 | 07/12/2013 12:07 | F | WTLAP-13-36925 | 4040 | na | 13 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E056 | 07/12/2013 12:09 | F | WTLAP-13-36921 | 4040 | na | 12 |
| E056 | 07/12/2013 12:10 | UF | WTLAP-13-36917 | 4040 | na | 11 |
| E056 | 08/05/2013 13:45 | UF | WTLAP-13-36906 | 2450 | na | 9.2 |
| E056 | 08/05/2013 13:46 | UF | WTLAP-13-36902 | 2410 | na | 8.9 |
| E056 | 08/05/2013 13:49 | UF | WTLAP-13-36910 | 2280 | na | 7.9 |
| E056 | 08/05/2013 13:50 | F | WTLAP-13-36896 | 2240 | na | 7.6 |
| E056 | 08/05/2013 13:50 | UF | WTLAP-13-36897 | 2240 | na | 7.6 |
| E056 | 08/05/2013 13:52 | UF | WTLAP-13-36914 | 2160 | na | 7 |
| E056 | 08/05/2013 13:53 | F | WTLAP-13-36926 | 2160 | na | 6.6 |
| E056 | 08/05/2013 13:54 | F | WTLAP-13-36922 | 2160 | na | 6.3 |
| E056 | 08/05/2013 13:55 | UF | WTLAP-13-36918 | 2160 | na | 6 |
| E056 | 09/12/2013 16:25 | UF | WTLAP-13-36907 | 1800 | na | 6.8 |
| E056 | 09/12/2013 16:27 | UF | WTLAP-13-36903 | 1630 | na | 6.3 |
| E056 | 09/12/2013 16:30 | UF | WTLAP-13-36911 | 1380 | na | 5.5 |
| E056 | 09/12/2013 16:33 | F | WTLAP-13-36899 | 1140 | na | 5.6 |
| E056 | 09/12/2013 16:33 | UF | WTLAP-13-36898 | 1140 | na | 5.6 |
| E056 | 09/12/2013 16:35 | UF | WTLAP-13-36915 | 970 | na | 5.7 |
| E056 | 09/12/2013 16:37 | F | WTLAP-13-36927 | 970 | na | 6.2 |
| E056 | 09/12/2013 16:38 | F | WTLAP-13-36923 | 970 | na | 6.5 |
| E056 | 09/12/2013 16:40 | UF | WTLAP-13-36919 | 970 | na | 7.1 |
| E109.9 | 07/08/2013 16:15 | UF | WTLAP-13-38793 | 267000 | -254000 | 93 |
| E109.9 | 07/08/2013 16:20 | UF | WTLAP-13-38794 | 439000 | 7330 | 99 |
| E109.9 | 07/08/2013 16:22 | UF | WTLAP-13-38799 | 404000 | 112000 | 98 |
| E109.9 | 07/08/2013 16:23 | UF | WTLAP-13-38795 | 386000 | 164000 | 97 |
| E109.9 | 07/08/2013 16:25 | UF | WTLAP-13-38796 | 384000 | 269000 | 96 |
| E109.9 | 07/08/2013 16:25 | UF | WTLAP-13-38800 | 384000 | 269000 | 96 |
| E109.9 | 07/08/2013 16:28 | UF | WTLAP-13-38797 | 381000 | 262000 | 97 |
| E109.9 | 07/08/2013 16:30 | UF | WTLAP-13-38802 | 379000 | 257000 | 97 |
| E109.9 | 07/08/2013 16:31 | UF | WTLAP-13-38803 | 378000 | 236000 | 94 |
| E109.9 | 07/08/2013 16:34 | F | WTLAP-13-38805 | 375000 | 225000 | 85 |
| E109.9 | 07/08/2013 16:34 | UF | WTLAP-13-38804 | 375000 | 225000 | 85 |
| E109.9 | 07/08/2013 16:54 | UF | WTLAP-13-38806 | 355000 | 150000 | 52 |
| E109.9 | 07/08/2013 17:05 | UF | WTLAP-13-38798 | 329000 | 109000 | 52 |
| E109.9 | 07/08/2013 17:14 | UF | WTLAP-13-38807 | 318000 | 75900 | 49 |
| E109.9 | 07/08/2013 17:34 | UF | WTLAP-13-38808 | 294000 | 69800 | 38 |
| E109.9 | 07/08/2013 17:54 | UF | WTLAP-13-38809 | 294000 | 63600 | 24 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E109.9 | 07/12/2013 13:19 | UF | WTLAP-13-39014 | 377000 | 188000 | 110 |
| E109.9 | 07/12/2013 13:30 | UF | WTLAP-13-39008 | 319000 | 160000 | 150 |
| E109.9 | 07/12/2013 13:32 | UF | WTLAP-13-39009 | 309000 | 155000 | 150 |
| E109.9 | 07/12/2013 13:34 | UF | WTLAP-13-39010 | 298000 | 150000 | 150 |
| E109.9 | 07/12/2013 13:36 | UF | WTLAP-13-39011 | 288000 | 133000 | 150 |
| E109.9 | 07/12/2013 13:38 | UF | WTLAP-13-39012 | 277000 | 133000 | 150 |
| E109.9 | 07/20/2013 19:55 | UF | WTLAP-13-39326 | 829000 | 402000 | 380 |
| E109.9 | 07/20/2013 19:57 | UF | WTLAP-13-39327 | 829000 | 395000 | 230 |
| E109.9 | 07/20/2013 19:59 | UF | WTLAP-13-39328 | 821000 | 388000 | 76 |
| E109.9 | 07/20/2013 20:01 | UF | WTLAP-13-39329 | 814000 | 381000 | 340 |
| E109.9 | 07/20/2013 20:05 | UF | WTLAP-13-39330 | 799000 | 436000 | 330 |
| E109.9 | 07/20/2013 20:07 | UF | WTLAP-13-39331 | 792000 | 464000 | 320 |
| E109.9 | 07/20/2013 20:09 | UF | WTLAP-13-39333 | 784000 | 464000 | 320 |
| E109.9 | 07/20/2013 20:45 | UF | WTLAP-13-39334 | 650000 | 464000 | 190 |
| E109.9 | 07/20/2013 20:45 | UF | WTLAP-13-39335 | 650000 | 464000 | 190 |
| E109.9 | 07/25/2013 22:54 | UF | WTLAP-13-39381 | 387000 | 310000 | 70 |
| E109.9 | 07/25/2013 22:57 | UF | WTLAP-13-39382 | 304000 | 259000 | 53 |
| E109.9 | 07/25/2013 22:59 | UF | WTLAP-13-39383 | 250000 | 225000 | 18 |
| E109.9 | 07/25/2013 23:00 | UF | WTLAP-13-39384 | 220000 | 208000 | 97 |
| E109.9 | 07/25/2013 23:02 | UF | WTLAP-13-39385 | 178000 | 175000 | 95 |
| E109.9 | 07/25/2013 23:04 | UF | WTLAP-13-39386 | 162000 | 141000 | 93 |
| E109.9 | 07/25/2013 23:05 | UF | WTLAP-13-39377 | 160000 | 124000 | 92 |
| E109.9 | 07/25/2013 23:06 | UF | WTLAP-13-39387 | 158000 | 107000 | 88 |
| E109.9 | 07/25/2013 23:07 | UF | WTLAP-13-39378 | 157000 | 90100 | 85 |
| E109.9 | 07/25/2013 23:08 | UF | WTLAP-13-39388 | 155000 | 95700 | 82 |
| E109.9 | 07/25/2013 23:09 | F | WTLAP-13-39379 | 153000 | 101000 | 79 |
| E109.9 | 07/25/2013 23:10 | UF | WTLAP-13-39389 | 151000 | 107000 | 76 |
| E109.9 | 07/25/2013 23:11 | F | WTLAP-13-39380 | 149000 | 104000 | 71 |
| E109.9 | 07/25/2013 23:15 | UF | WTLAP-13-39390 | 142000 | 93200 | 54 |
| E109.9 | 07/25/2013 23:20 | UF | WTLAP-13-39391 | 133000 | 93200 | 50 |
| E109.9 | 07/25/2013 23:24 | UF | WTLAP-13-39392 | 126000 | 93200 | 44 |
| E109.9 | 07/25/2013 23:44 | UF | WTLAP-13-39393 | 89200 | 93200 | 19 |
| E109.9 | 07/26/2013 00:04 | UF | WTLAP-13-39394 | 77200 | na | 25 |
| E109.9 | 07/26/2013 00:24 | UF | WTLAP-13-39395 | 76200 | na | 24 |
| E109.9 | 07/26/2013 00:44 | UF | WTLAP-13-39396 | 68100 | na | 22 |
| E109.9 | 07/26/2013 01:04 | UF | WTLAP-13-39397 | 55200 | na | 23 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E109.9 | 07/26/2013 02:04 | UF | WTLAP-13-39398 | 33200 | na | 12 |
| E109.9 | 07/26/2013 17:14 | UF | WTLAP-13-39404 | 67800 | na | 99 |
| E109.9 | 07/26/2013 17:16 | UF | WTLAP-13-39405 | 88100 | na | 130 |
| E109.9 | 07/26/2013 17:18 | UF | WTLAP-13-39406 | 86000 | na | 140 |
| E109.9 | 07/26/2013 17:20 | UF | WTLAP-13-39411 | 83800 | na | 160 |
| E109.9 | 07/26/2013 17:24 | UF | WTLAP-13-39412 | 79600 | na | 160 |
| E109.9 | 07/26/2013 17:26 | UF | WTLAP-13-39413 | 77500 | na | 160 |
| E109.9 | 07/26/2013 17:28 | UF | WTLAP-13-39414 | 75300 | na | 160 |
| E109.9 | 07/26/2013 17:30 | F | WTLAP-13-39415 | 73200 | na | 160 |
| E109.9 | 07/26/2013 17:32 | UF | WTLAP-13-39416 | 71100 | na | 160 |
| E109.9 | 07/26/2013 17:34 | UF | WTLAP-13-39417 | 69000 | na | 160 |
| E109.9 | 07/26/2013 17:36 | F | WTLAP-13-39418 | 66800 | na | 140 |
| E109.9 | 07/26/2013 17:38 | F | WTLAP-13-39419 | 64700 | na | 120 |
| E109.9 | 07/26/2013 17:40 | UF | WTLAP-13-39420 | 62600 | na | 92 |
| E109.9 | 07/26/2013 17:42 | UF | WTLAP-13-39421 | 62900 | na | 100 |
| E109.9 | 07/26/2013 17:44 | UF | WTLAP-13-39422 | 57800 | na | 110 |
| E109.9 | 08/03/2013 15:24 | UF | WTLAP-13-39447 | 522000 | na | 600 |
| E109.9 | 08/03/2013 15:26 | F | WTLAP-13-39448 | 541000 | na | 790 |
| E109.9 | 08/03/2013 15:32 | UF | WTLAP-13-39449 | 599000 | na | 910 |
| E109.9 | 08/03/2013 15:34 | F | WTLAP-13-39450 | 586000 | na | 860 |
| E109.9 | 08/03/2013 15:36 | F | WTLAP-13-39451 | 572000 | na | 820 |
| E109.9 | 08/03/2013 15:38 | UF | WTLAP-13-39452 | 559000 | na | 770 |
| E109.9 | 08/03/2013 15:40 | F | WTLAP-13-39453 | 546000 | na | 730 |
| E109.9 | 08/03/2013 15:40 | UF | WTLAP-13-39441 | 546000 | na | 730 |
| E109.9 | 08/03/2013 15:42 | F | WTLAP-13-39454 | 533000 | na | 690 |
| E109.9 | 08/03/2013 15:42 | UF | WTLAP-13-39442 | 533000 | na | 690 |
| E109.9 | 08/03/2013 15:44 | UF | WTLAP-13-39455 | 520000 | na | 650 |
| E109.9 | 08/03/2013 15:45 | UF | WTLAP-13-39443 | 514000 | na | 630 |
| E109.9 | 08/03/2013 15:48 | F | WTLAP-13-39456 | 494000 | na | 550 |
| E109.9 | 08/03/2013 15:50 | UF | WTLAP-13-39444 | 481000 | na | 490 |
| E109.9 | 08/03/2013 15:52 | UF | WTLAP-13-39445 | 468000 | na | 480 |
| E109.9 | 08/03/2013 15:52 | UF | WTLAP-13-39457 | 468000 | na | 480 |
| E109.9 | 08/03/2013 15:54 | UF | WTLAP-13-39458 | 455000 | na | 480 |
| E109.9 | 08/03/2013 16:14 | UF | WTLAP-13-39459 | 397000 | na | 290 |
| E109.9 | 08/03/2013 16:30 | UF | WTLAP-13-39446 | 351000 | na | 240 |
| E109.9 | 08/03/2013 16:34 | UF | WTLAP-13-39460 | 339000 | na | 230 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E109.9 | 08/03/2013 16:54 | UF | WTLAP-13-39461 | 306000 | na | 150 |
| E109.9 | 08/03/2013 17:14 | UF | WTLAP-13-39462 | 273000 | na | 120 |
| E109.9 | 08/03/2013 17:34 | F | WTLAP-13-39463 | 240000 | na | 120 |
| E109.9 | 08/03/2013 17:54 | UF | WTLAP-13-39464 | 207000 | na | 87 |
| E109.9 | 08/03/2013 18:34 | UF | WTLAP-13-39465 | 141000 | na | 47 |
| E109.9 | 08/05/2013 18:14 | UF | WTLAP-13-40571 | 181000 | na | 430 |
| E109.9 | 08/05/2013 18:16 | UF | WTLAP-13-40566 | 184000 | na | 580 |
| E109.9 | 08/05/2013 18:18 | UF | WTLAP-13-40567 | 155000 | na | 640 |
| E109.9 | 08/05/2013 18:20 | UF | WTLAP-13-40568 | 152000 | na | 710 |
| E109.9 | 08/05/2013 18:24 | UF | WTLAP-13-40570 | 130000 | na | 820 |
| E109.9 | 08/05/2013 18:25 | UF | WTLAP-13-40569 | 137000 | na | 850 |
| E109.9 | 08/05/2013 18:35 | UF | WTLAP-13-40565 | 108000 | na | 740 |
| E109.9 | 08/09/2013 15:34 | UF | WTLAP-13-41689 | 327000 | na | 270 |
| E109.9 | 08/09/2013 15:37 | UF | WTLAP-13-41690 | 292000 | na | 270 |
| E109.9 | 08/09/2013 15:40 | UF | WTLAP-13-41681 | 290000 | na | 270 |
| E109.9 | 08/09/2013 15:40 | UF | WTLAP-13-41681 | 334000 | na | 270 |
| E109.9 | 08/09/2013 15:40 | UF | WTLAP-13-41691 | 290000 | na | 270 |
| E109.9 | 08/09/2013 15:40 | UF | WTLAP-13-41691 | 334000 | na | 270 |
| E109.9 | 08/09/2013 15:42 | F | WTLAP-13-41692 | 324000 | na | 270 |
| E109.9 | 08/09/2013 15:42 | UF | WTLAP-13-41682 | 324000 | na | 270 |
| E109.9 | 08/09/2013 15:43 | F | WTLAP-13-41693 | 318000 | na | 270 |
| E109.9 | 08/09/2013 15:44 | UF | WTLAP-13-41683 | 313000 | na | 270 |
| E109.9 | 08/09/2013 15:46 | F | WTLAP-13-41694 | 303000 | na | 260 |
| E109.9 | 08/09/2013 15:48 | UF | WTLAP-13-41684 | 293000 | na | 230 |
| E109.9 | 08/09/2013 15:49 | UF | WTLAP-13-41695 | 287000 | na | 220 |
| E109.9 | 08/09/2013 15:50 | UF | WTLAP-13-41685 | 282000 | na | 210 |
| E109.9 | 08/09/2013 15:52 | F | WTLAP-13-41686 | 272000 | na | 200 |
| E109.9 | 08/09/2013 15:52 | F | WTLAP-13-41696 | 272000 | na | 200 |
| E109.9 | 08/09/2013 15:54 | UF | WTLAP-13-41687 | 261000 | na | 190 |
| E109.9 | 08/09/2013 15:56 | UF | WTLAP-13-41697 | 251000 | na | 150 |
| E109.9 | 08/09/2013 15:58 | UF | WTLAP-13-41698 | 256000 | na | 76 |
| E109.9 | 08/09/2013 16:00 | UF | WTLAP-13-41699 | 252000 | na | 180 |
| E109.9 | 08/09/2013 16:02 | UF | WTLAP-13-41700 | 249000 | na | 170 |
| E109.9 | 08/09/2013 16:04 | UF | WTLAP-13-41701 | 246000 | na | 170 |
| E109.9 | 08/09/2013 16:24 | UF | WTLAP-13-41702 | 203000 | na | 130 |
| E109.9 | 08/09/2013 16:30 | UF | WTLAP-13-41688 | 202000 | na | 110 |
| E109.9 | 08/09/2013 16:44 | UF | WTLAP-13-41703 | 177000 | na | 110 |

**Table 4.3-1 (continued)**

| Station | Sample Collection Date and Time | Field Prep | Sample ID | Calculated SSC (mg/L) | Calculated TSS (mg/L) | Calculated Instantaneous Discharge (cfs) |
|---|---|---|---|---|---|---|
| E109.9 | 08/09/2013 17:44 | UF | WTLAP-13-41704 | 118000 | na | 55 |
| E109.9 | 08/09/2013 18:04 | UF | WTLAP-13-41705 | 93100 | na | 40 |
| E109.9 | 08/09/2013 18:24 | UF | WTLAP-13-41706 | 84600 | na | 31 |
| E109.9 | 09/12/2013 15:39 | UF | WTLAP-13-42187 | 750000 | na | 29 |
| E109.9 | 09/12/2013 15:42 | UF | WTLAP-13-42188 | 468000 | na | 39 |
| E109.9 | 09/12/2013 15:44 | UF | WTLAP-13-42189 | 351000 | na | 50 |
| E109.9 | 09/12/2013 15:45 | UF | WTLAP-13-42176 | 322000 | na | 55 |
| E109.9 | 09/12/2013 15:46 | UF | WTLAP-13-42190 | 293000 | na | 60 |
| E109.9 | 09/12/2013 15:47 | UF | WTLAP-13-42177 | 264000 | na | 65 |
| E109.9 | 09/12/2013 15:48 | UF | WTLAP-13-42191 | 236000 | na | 69 |
| E109.9 | 09/12/2013 15:49 | UF | WTLAP-13-42178 | 207000 | na | 74 |
| E109.9 | 09/12/2013 15:53 | UF | WTLAP-13-42179 | 91600 | na | 84 |
| E109.9 | 09/12/2013 15:53 | UF | WTLAP-13-42192 | 91600 | na | 84 |
| E109.9 | 09/12/2013 15:55 | UF | WTLAP-13-42180 | 77800 | na | 87 |
| E109.9 | 09/12/2013 15:55 | UF | WTLAP-13-42193 | 77800 | na | 87 |
| E109.9 | 09/12/2013 15:57 | F | WTLAP-13-42194 | 64000 | na | 52 |
| E109.9 | 09/12/2013 15:58 | UF | WTLAP-13-42181 | 57100 | na | 35 |
| E109.9 | 09/12/2013 15:58 | UF | WTLAP-13-42182 | 57100 | na | 35 |
| E109.9 | 09/12/2013 15:59 | F | WTLAP-13-42195 | 50200 | na | 17 |
| E109.9 | 09/12/2013 16:01 | F | WTLAP-13-42196 | 36400 | na | 180 |
| E109.9 | 09/12/2013 16:03 | UF | WTLAP-13-42197 | 22600 | na | 210 |
| E109.9 | 09/12/2013 16:05 | UF | WTLAP-13-42198 | 8760 | na | 250 |
| E109.9 | 09/12/2013 16:05 | UF | WTLAP-13-42199 | 8760 | na | 250 |
| E109.9 | 09/12/2013 16:09 | UF | WTLAP-13-42200 | 9970 | na | 250 |
| E109.9 | 09/12/2013 16:35 | UF | WTLAP-13-42183 | 17800 | na | 190 |
| E109.9 | 09/12/2013 16:35 | UF | WTLAP-13-42184 | 17800 | na | 190 |
| E109.9 | 09/12/2013 16:49 | UF | WTLAP-13-42201 | 22000 | na | 190 |
| E109.9 | 09/12/2013 17:09 | UF | WTLAP-13-42202 | 29100 | na | 480 |
| E109.9 | 09/12/2013 17:20 | UF | WTLAP-13-42185 | 44600 | na | 520 |
| E109.9 | 09/12/2013 17:20 | UF | WTLAP-13-42186 | 44600 | na | 520 |
| E109.9 | 09/12/2013 17:29 | UF | WTLAP-13-42203 | 57300 | na | 420 |
| E109.9 | 09/12/2013 17:49 | UF | WTLAP-13-42204 | 86600 | na | 220 |
| E109.9 | 09/12/2013 18:09 | UF | WTLAP-13-42205 | 157000 | na | 270 |
| E109.9 | 09/12/2013 18:29 | UF | WTLAP-13-42206 | 375000 | na | 210 |
| E109.9 | 09/12/2013 18:49 | UF | WTLAP-13-42207 | 749000 | na | 160 |

[a] UF = Unfiltered.

[b] na = Not available.

[c] F = Filtered.

[d] Filtered pore size of 0.2 µm, 1 µm, 5 µm, and 10 µm used for additional analysis.

**Table 4.4-1**
**Analytical Results Obtained below the SWMU 01-001(f) Drainage**

| Sample Location | Analyte | Sample ID | Field Prep | Collection Date Time | Result | Unit |
|---|---|---|---|---|---|---|
| CO101038 | Acidity or Alkalinity of a solution | WTLAP-13-39034 | UF[a] | 7/12/13 11:41 | 8.4 | SU |
| CO101038 | Acidity or Alkalinity of a solution | WTLAP-13-32556 | UF | 9/18/13 13:41 | 8.26 | SU |
| CO101038 | Alkalinity-CO3 | WTLAP-13-39034 | UF | 7/12/13 11:41 | 2.08 | mg/L |
| CO101038 | Alkalinity-CO3 | WTLAP-13-32556 | UF | 9/18/13 13:41 | < 1[b] | mg/L |
| CO101038 | Alkalinity-CO3+HCO3 | WTLAP-13-39034 | UF | 7/12/13 11:41 | 57.7 | mg/L |
| CO101038 | Alkalinity-CO3+HCO3 | WTLAP-13-32556 | UF | 9/18/13 13:41 | 104 | mg/L |
| CO101038 | Alkalinity-HCO3 | WTLAP-13-39034 | UF | 7/12/13 11:41 | 55.6 | mg/L |
| CO101038 | Alkalinity-HCO3 | WTLAP-13-32556 | UF | 9/18/13 13:41 | 104 | mg/L |
| CO101038 | Aluminum | WTLAP-13-39029 | F[c] | 7/12/13 11:36 | 350 | ug/L |
| CO101038 | Aluminum | WTLAP-13-39030 | UF | 7/12/13 11:37 | 46200 | ug/L |
| CO101038 | Aluminum | WTLAP-13-30623 | F | 9/18/13 13:33 | 440 | ug/L |
| CO101038 | Aluminum | WTLAP-13-30631 | UF | 9/18/13 13:34 | 1610 | ug/L |
| CO101038 | Antimony | WTLAP-13-39029 | F | 7/12/13 11:36 | < 3 | ug/L |
| CO101038 | Antimony | WTLAP-13-39030 | UF | 7/12/13 11:37 | < 3 | ug/L |
| CO101038 | Antimony | WTLAP-13-30623 | F | 9/18/13 13:33 | < 3 | ug/L |
| CO101038 | Antimony | WTLAP-13-30631 | UF | 9/18/13 13:34 | < 3 | ug/L |
| CO101038 | Arsenic | WTLAP-13-39029 | F | 7/12/13 11:36 | 2.2 | ug/L |
| CO101038 | Arsenic | WTLAP-13-39030 | UF | 7/12/13 11:37 | 13.2 | ug/L |
| CO101038 | Arsenic | WTLAP-13-30623 | F | 9/18/13 13:33 | < 5 | ug/L |
| CO101038 | Arsenic | WTLAP-13-30631 | UF | 9/18/13 13:34 | < 5 | ug/L |
| CO101038 | Barium | WTLAP-13-39029 | F | 7/12/13 11:36 | 24.7 | ug/L |
| CO101038 | Barium | WTLAP-13-39030 | UF | 7/12/13 11:37 | 628 | ug/L |
| CO101038 | Barium | WTLAP-13-30623 | F | 9/18/13 13:33 | 49.2 | ug/L |
| CO101038 | Barium | WTLAP-13-30631 | UF | 9/18/13 13:34 | 65.3 | ug/L |
| CO101038 | Beryllium | WTLAP-13-39029 | F | 7/12/13 11:36 | < 0.5 | ug/L |
| CO101038 | Beryllium | WTLAP-13-39030 | UF | 7/12/13 11:37 | 3.76 | ug/L |
| CO101038 | Beryllium | WTLAP-13-30623 | F | 9/18/13 13:33 | < 0.5 | ug/L |
| CO101038 | Beryllium | WTLAP-13-30631 | UF | 9/18/13 13:34 | < 0.5 | ug/L |
| CO101038 | Boron | WTLAP-13-39029 | F | 7/12/13 11:36 | < 50 | ug/L |
| CO101038 | Boron | WTLAP-13-39030 | UF | 7/12/13 11:37 | 28.8 | ug/L |
| CO101038 | Boron | WTLAP-13-30623 | F | 9/18/13 13:33 | 22.6 | ug/L |
| CO101038 | Boron | WTLAP-13-30631 | UF | 9/18/13 13:34 | 24.8 | ug/L |
| CO101038 | Cadmium | WTLAP-13-39029 | F | 7/12/13 11:36 | < 1 | ug/L |
| CO101038 | Cadmium | WTLAP-13-39030 | UF | 7/12/13 11:37 | 1.31 | ug/L |
| CO101038 | Cadmium | WTLAP-13-30623 | F | 9/18/13 13:33 | < 1 | ug/L |
| CO101038 | Cadmium | WTLAP-13-30631 | UF | 9/18/13 13:34 | < 1 | ug/L |
| CO101038 | Calcium | WTLAP-13-39029 | F | 7/12/13 11:36 | 10.2 | mg/L |
| CO101038 | Calcium | WTLAP-13-39030 | UF | 7/12/13 11:37 | 88.3 | mg/L |

**Table 4.4-1 (continued)**

| Sample Location | Analyte | Sample ID | Field Prep | Collection Date Time | Result | Unit |
|---|---|---|---|---|---|---|
| CO101038 | Calcium | WTLAP-13-30623 | F | 9/18/13 13:33 | 25.5 | mg/L |
| CO101038 | Calcium | WTLAP-13-30631 | UF | 9/18/13 13:34 | 26.8 | mg/L |
| CO101038 | Chloride | WTLAP-13-39033 | F | 7/12/13 11:40 | 10.6 | mg/L |
| CO101038 | Chloride | WTLAP-13-32560 | F | 9/18/13 13:40 | 39.8 | mg/L |
| CO101038 | Chromium | WTLAP-13-39029 | F | 7/12/13 11:36 | < 10 | ug/L |
| CO101038 | Chromium | WTLAP-13-39030 | UF | 7/12/13 11:37 | 54 | ug/L |
| CO101038 | Chromium | WTLAP-13-30623 | F | 9/18/13 13:33 | < 10 | ug/L |
| CO101038 | Chromium | WTLAP-13-30631 | UF | 9/18/13 13:34 | < 10 | ug/L |
| CO101038 | Clay | WTLAP-13-39027 | UF | 7/12/13 11:33 | 26.9 | % |
| CO101038 | Clay | WTLAP-13-30647 | UF | 9/18/13 13:30 | 9.2 | % |
| CO101038 | Cobalt | WTLAP-13-39029 | F | 7/12/13 11:36 | < 3.33 | ug/L |
| CO101038 | Cobalt | WTLAP-13-39030 | UF | 7/12/13 11:37 | 28.5 | ug/L |
| CO101038 | Cobalt | WTLAP-13-30623 | F | 9/18/13 13:33 | < 5 | ug/L |
| CO101038 | Cobalt | WTLAP-13-30631 | UF | 9/18/13 13:34 | < 5 | ug/L |
| CO101038 | Copper | WTLAP-13-39029 | F | 7/12/13 11:36 | 2.43 | ug/L |
| CO101038 | Copper | WTLAP-13-39030 | UF | 7/12/13 11:37 | 124 | ug/L |
| CO101038 | Copper | WTLAP-13-30623 | F | 9/18/13 13:33 | 2.43 | ug/L |
| CO101038 | Copper | WTLAP-13-30631 | UF | 9/18/13 13:34 | 3.73 | ug/L |
| CO101038 | Dissolved Organic Carbon | WTLAP-13-39035 | F | 7/12/13 11:42 | 31.1 | mg/L |
| CO101038 | Dissolved Organic Carbon | WTLAP-13-32564 | F | 9/18/13 13:39 | 9.14 | mg/L |
| CO101038 | Hardness | WTLAP-13-39029 | F | 7/12/13 11:36 | 30.4 | mg/L |
| CO101038 | Hardness | WTLAP-13-39030 | UF | 7/12/13 11:37 | 316 | mg/L |
| CO101038 | Hardness | WTLAP-13-30623 | F | 9/18/13 13:33 | 79.3 | mg/L |
| CO101038 | Hardness | WTLAP-13-30631 | UF | 9/18/13 13:34 | 83.9 | mg/L |
| CO101038 | Iron | WTLAP-13-39029 | F | 7/12/13 11:36 | 191 | ug/L |
| CO101038 | Iron | WTLAP-13-39030 | UF | 7/12/13 11:37 | 50800 | ug/L |
| CO101038 | Iron | WTLAP-13-30623 | F | 9/18/13 13:33 | 280 | ug/L |
| CO101038 | Iron | WTLAP-13-30631 | UF | 9/18/13 13:34 | 1130 | ug/L |
| CO101038 | Lead | WTLAP-13-39029 | F | 7/12/13 11:36 | < 2 | ug/L |
| CO101038 | Lead | WTLAP-13-39030 | UF | 7/12/13 11:37 | 99 | ug/L |
| CO101038 | Lead | WTLAP-13-30623 | F | 9/18/13 13:33 | < 2 | ug/L |
| CO101038 | Lead | WTLAP-13-30631 | UF | 9/18/13 13:34 | 2.07 | ug/L |
| CO101038 | Magnesium | WTLAP-13-39029 | F | 7/12/13 11:36 | 1.21 | mg/L |
| CO101038 | Magnesium | WTLAP-13-39030 | UF | 7/12/13 11:37 | 23.3 | mg/L |
| CO101038 | Magnesium | WTLAP-13-30623 | F | 9/18/13 13:33 | 3.79 | mg/L |
| CO101038 | Magnesium | WTLAP-13-30631 | UF | 9/18/13 13:34 | 4.11 | mg/L |
| CO101038 | Manganese | WTLAP-13-39029 | F | 7/12/13 11:36 | 6.36 | ug/L |
| CO101038 | Manganese | WTLAP-13-39030 | UF | 7/12/13 11:37 | 2500 | ug/L |

**Table 4.4-1 (continued)**

| Sample Location | Analyte | Sample ID | Field Prep | Collection Date Time | Result | Unit |
|---|---|---|---|---|---|---|
| CO101038 | Manganese | WTLAP-13-30623 | F | 9/18/13 13:33 | 4.03 | ug/L |
| CO101038 | Manganese | WTLAP-13-30631 | UF | 9/18/13 13:34 | 154 | ug/L |
| CO101038 | Mercury | WTLAP-13-39029 | F | 7/12/13 11:36 | < 0.2 | ug/L |
| CO101038 | Mercury | WTLAP-13-39030 | UF | 7/12/13 11:37 | < 0.2 | ug/L |
| CO101038 | Mercury | WTLAP-13-30623 | F | 9/18/13 13:33 | < 0.2 | ug/L |
| CO101038 | Mercury | WTLAP-13-30631 | UF | 9/18/13 13:34 | < 0.2 | ug/L |
| CO101038 | Nickel | WTLAP-13-39029 | F | 7/12/13 11:36 | 0.89 | ug/L |
| CO101038 | Nickel | WTLAP-13-39030 | UF | 7/12/13 11:37 | 53.7 | ug/L |
| CO101038 | Nickel | WTLAP-13-30623 | F | 9/18/13 13:33 | 1.25 | ug/L |
| CO101038 | Nickel | WTLAP-13-30631 | UF | 9/18/13 13:34 | 2.01 | ug/L |
| CO101038 | Potassium | WTLAP-13-39029 | F | 7/12/13 11:36 | 4.93 | mg/L |
| CO101038 | Potassium | WTLAP-13-39030 | UF | 7/12/13 11:37 | 15.6 | mg/L |
| CO101038 | Potassium | WTLAP-13-30623 | F | 9/18/13 13:33 | 4.77 | mg/L |
| CO101038 | Potassium | WTLAP-13-30631 | UF | 9/18/13 13:34 | 5.11 | mg/L |
| CO101038 | Sand | WTLAP-13-39027 | UF | 7/12/13 11:33 | 0.4 | % |
| CO101038 | Sand | WTLAP-13-30647 | UF | 9/18/13 13:30 | 25.7 | % |
| CO101038 | Selenium | WTLAP-13-39029 | F | 7/12/13 11:36 | < 5 | ug/L |
| CO101038 | Selenium | WTLAP-13-39030 | UF | 7/12/13 11:37 | < 5 | ug/L |
| CO101038 | Selenium | WTLAP-13-30623 | F | 9/18/13 13:33 | < 5 | ug/L |
| CO101038 | Selenium | WTLAP-13-30631 | UF | 9/18/13 13:34 | < 5 | ug/L |
| CO101038 | Silt | WTLAP-13-39027 | UF | 7/12/13 11:33 | 72.7 | % |
| CO101038 | Silt | WTLAP-13-30647 | UF | 9/18/13 13:30 | 65 | % |
| CO101038 | Silver | WTLAP-13-39029 | F | 7/12/13 11:36 | < 1 | ug/L |
| CO101038 | Silver | WTLAP-13-39030 | UF | 7/12/13 11:37 | 0.31 | ug/L |
| CO101038 | Silver | WTLAP-13-30623 | F | 9/18/13 13:33 | < 1 | ug/L |
| CO101038 | Silver | WTLAP-13-30631 | UF | 9/18/13 13:34 | < 1 | ug/L |
| CO101038 | Sodium | WTLAP-13-39029 | F | 7/12/13 11:36 | 13.1 | mg/L |
| CO101038 | Sodium | WTLAP-13-39030 | UF | 7/12/13 11:37 | 16.2 | mg/L |
| CO101038 | Sodium | WTLAP-13-30623 | F | 9/18/13 13:33 | 40.7 | mg/L |
| CO101038 | Sodium | WTLAP-13-30631 | UF | 9/18/13 13:34 | 42 | mg/L |
| CO101038 | Sulfate | WTLAP-13-39033 | F | 7/12/13 11:40 | 7.35 | mg/L |
| CO101038 | Sulfate | WTLAP-13-32560 | F | 9/18/13 13:40 | 21.2 | mg/L |
| CO101038 | SSC | WTLAP-13-39027 | UF | 7/12/13 11:33 | 4110 | mg/L |
| CO101038 | SSC | WTLAP-13-39032 | UF | 7/12/13 11:39 | 2150 | mg/L |
| CO101038 | SSC | WTLAP-13-39036 | UF | 7/12/13 11:43 | 1690 | mg/L |
| CO101038 | SSC | WTLAP-13-30647 | UF | 9/18/13 13:30 | 350 | mg/L |
| CO101038 | Thallium | WTLAP-13-39029 | F | 7/12/13 11:36 | < 2 | ug/L |
| CO101038 | Thallium | WTLAP-13-39030 | UF | 7/12/13 11:37 | 0.65 | ug/L |
| CO101038 | Thallium | WTLAP-13-30623 | F | 9/18/13 13:33 | < 2 | ug/L |
| CO101038 | Thallium | WTLAP-13-30631 | UF | 9/18/13 13:34 | < 2 | ug/L |

**Table 4.4-1 (continued)**

| Sample Location | Analyte | Sample ID | Field Prep | Collection Date Time | Result | Unit |
|---|---|---|---|---|---|---|
| CO101038 | Total Organic Carbon | WTLAP-13-39037 | UF | 7/12/13 11:44 | 5.23 | mg/L |
| CO101038 | Total Organic Carbon | WTLAP-13-30663 | UF | 9/18/13 13:38 | 9.06 | mg/L |
| CO101038 | Uranium | WTLAP-13-39029 | F | 7/12/13 11:36 | 2.24 | ug/L |
| CO101038 | Uranium | WTLAP-13-39030 | UF | 7/12/13 11:37 | 8.81 | ug/L |
| CO101038 | Uranium | WTLAP-13-30623 | F | 9/18/13 13:33 | 9.8 | ug/L |
| CO101038 | Uranium | WTLAP-13-30631 | UF | 9/18/13 13:34 | 9.71 | ug/L |
| CO101038 | Uranium-234 | WTLAP-13-39031 | UF | 7/12/13 11:38 | 5.12 | pCi/L |
| CO101038 | Uranium-234 | WTLAP-13-30655 | UF | 9/18/13 13:35 | 3.11 | pCi/L |
| CO101038 | Uranium-235/236 | WTLAP-13-39031 | UF | 7/12/13 11:38 | < 0.253 | pCi/L |
| CO101038 | Uranium-235/236 | WTLAP-13-30655 | UF | 9/18/13 13:35 | 0.165 | pCi/L |
| CO101038 | Uranium-238 | WTLAP-13-39031 | UF | 7/12/13 11:38 | 5.2 | pCi/L |
| CO101038 | Uranium-238 | WTLAP-13-30655 | UF | 9/18/13 13:35 | 2.98 | pCi/L |
| CO101038 | Vanadium | WTLAP-13-39029 | F | 7/12/13 11:36 | 7.16 | ug/L |
| CO101038 | Vanadium | WTLAP-13-39030 | UF | 7/12/13 11:37 | 78.7 | ug/L |
| CO101038 | Vanadium | WTLAP-13-30623 | F | 9/18/13 13:33 | 3.73 | ug/L |
| CO101038 | Vanadium | WTLAP-13-30631 | UF | 9/18/13 13:34 | 5.58 | ug/L |
| CO101038 | Zinc | WTLAP-13-39029 | F | 7/12/13 11:36 | < 10 | ug/L |
| CO101038 | Zinc | WTLAP-13-39030 | UF | 7/12/13 11:37 | 293 | ug/L |
| CO101038 | Zinc | WTLAP-13-30623 | F | 9/18/13 13:33 | 4.58 | ug/L |
| CO101038 | Zinc | WTLAP-13-30631 | UF | 9/18/13 13:34 | 16.7 | ug/L |
| CO111041 | Acidity or Alkalinity of a solution | WTLAP-13-32567 | UF | 6/14/13 13:15 | 6.67 | SU |
| CO111041 | Acidity or Alkalinity of a solution | WTLAP-13-39023 | UF | 7/12/13 11:39 | 7.23 | SU |
| CO111041 | Alkalinity-CO3 | WTLAP-13-32567 | UF | 6/14/13 13:15 | < 1 | mg/L |
| CO111041 | Alkalinity-CO3 | WTLAP-13-39023 | UF | 7/12/13 11:39 | < 1 | mg/L |
| CO111041 | Alkalinity-CO3+HCO3 | WTLAP-13-32567 | UF | 6/14/13 13:15 | 29.9 | mg/L |
| CO111041 | Alkalinity-CO3+HCO3 | WTLAP-13-39023 | UF | 7/12/13 11:39 | 26 | mg/L |
| CO111041 | Alkalinity-HCO3 | WTLAP-13-32567 | UF | 6/14/13 13:15 | 29.9 | mg/L |
| CO111041 | Alkalinity-HCO3 | WTLAP-13-39023 | UF | 7/12/13 11:39 | 26 | mg/L |
| CO111041 | Aluminum | WTLAP-13-30622 | F | 6/14/13 12:43 | 152 | ug/L |
| CO111041 | Aluminum | WTLAP-13-30630 | UF | 6/14/13 12:43 | 18200 | ug/L |
| CO111041 | Aluminum | WTLAP-13-30624 | F | 6/30/13 3:01 | 34.9 | ug/L |
| CO111041 | Aluminum | WTLAP-13-30632 | UF | 6/30/13 3:01 | 9960 | ug/L |
| CO111041 | Aluminum | WTLAP-13-30626 | F | 7/5/13 0:16 | 92.4 | ug/L |
| CO111041 | Aluminum | WTLAP-13-30634 | UF | 7/5/13 0:16 | 10700 | ug/L |
| CO111041 | Aluminum | WTLAP-13-39020 | F | 7/12/13 11:24 | 92.4 | ug/L |
| CO111041 | Aluminum | WTLAP-13-39019 | UF | 7/12/13 11:24 | 18400 | ug/L |
| CO111041 | Aluminum | WTLAP-13-39429 | F | 7/28/13 5:18 | 753 | ug/L |
| CO111041 | Aluminum | WTLAP-13-39428 | UF | 7/28/13 5:18 | 6260 | ug/L |
| CO111041 | Antimony | WTLAP-13-30622 | F | 6/14/13 12:43 | 2.5 | ug/L |
| CO111041 | Antimony | WTLAP-13-30630 | UF | 6/14/13 12:43 | 4.64 | ug/L |

**Table 4.4-1 (continued)**

| Sample Location | Analyte | Sample ID | Field Prep | Collection Date Time | Result | Unit |
|---|---|---|---|---|---|---|
| CO111041 | Antimony | WTLAP-13-30624 | F | 6/30/13 3:01 | 1.34 | ug/L |
| CO111041 | Antimony | WTLAP-13-30632 | UF | 6/30/13 3:01 | 2.34 | ug/L |
| CO111041 | Antimony | WTLAP-13-30626 | F | 7/5/13 0:16 | 4.06 | ug/L |
| CO111041 | Antimony | WTLAP-13-30634 | UF | 7/5/13 0:16 | 5 | ug/L |
| CO111041 | Antimony | WTLAP-13-39020 | F | 7/12/13 11:24 | 4.17 | ug/L |
| CO111041 | Antimony | WTLAP-13-39019 | UF | 7/12/13 11:24 | 4.17 | ug/L |
| CO111041 | Antimony | WTLAP-13-39429 | F | 7/28/13 5:18 | 4.45 | ug/L |
| CO111041 | Antimony | WTLAP-13-39428 | UF | 7/28/13 5:18 | 4.35 | ug/L |
| CO111041 | Arsenic | WTLAP-13-30622 | F | 6/14/13 12:43 | 2.12 | ug/L |
| CO111041 | Arsenic | WTLAP-13-30630 | UF | 6/14/13 12:43 | 6.23 | ug/L |
| CO111041 | Arsenic | WTLAP-13-30624 | F | 6/30/13 3:01 | < 5 | ug/L |
| CO111041 | Arsenic | WTLAP-13-30632 | UF | 6/30/13 3:01 | 3.62 | ug/L |
| CO111041 | Arsenic | WTLAP-13-30626 | F | 7/5/13 0:16 | < 5 | ug/L |
| CO111041 | Arsenic | WTLAP-13-30634 | UF | 7/5/13 0:16 | 3.61 | ug/L |
| CO111041 | Arsenic | WTLAP-13-39020 | F | 7/12/13 11:24 | < 5 | ug/L |
| CO111041 | Arsenic | WTLAP-13-39019 | UF | 7/12/13 11:24 | 6.36 | ug/L |
| CO111041 | Arsenic | WTLAP-13-39429 | F | 7/28/13 5:18 | < 5 | ug/L |
| CO111041 | Arsenic | WTLAP-13-39428 | UF | 7/28/13 5:18 | 2.57 | ug/L |
| CO111041 | Barium | WTLAP-13-30622 | F | 6/14/13 12:43 | 47.2 | ug/L |
| CO111041 | Barium | WTLAP-13-30630 | UF | 6/14/13 12:43 | 293 | ug/L |
| CO111041 | Barium | WTLAP-13-30624 | F | 6/30/13 3:01 | 31.8 | ug/L |
| CO111041 | Barium | WTLAP-13-30632 | UF | 6/30/13 3:01 | 202 | ug/L |
| CO111041 | Barium | WTLAP-13-30626 | F | 7/5/13 0:16 | 25.1 | ug/L |
| CO111041 | Barium | WTLAP-13-30634 | UF | 7/5/13 0:16 | 152 | ug/L |
| CO111041 | Barium | WTLAP-13-39020 | F | 7/12/13 11:24 | 20.1 | ug/L |
| CO111041 | Barium | WTLAP-13-39019 | UF | 7/12/13 11:24 | 313 | ug/L |
| CO111041 | Barium | WTLAP-13-39429 | F | 7/28/13 5:18 | 25.5 | ug/L |
| CO111041 | Barium | WTLAP-13-39428 | UF | 7/28/13 5:18 | 81.8 | ug/L |
| CO111041 | Beryllium | WTLAP-13-30622 | F | 6/14/13 12:43 | < 0.5 | ug/L |
| CO111041 | Beryllium | WTLAP-13-30630 | UF | 6/14/13 12:43 | 1.57 | ug/L |
| CO111041 | Beryllium | WTLAP-13-30624 | F | 6/30/13 3:01 | < 0.5 | ug/L |
| CO111041 | Beryllium | WTLAP-13-30632 | UF | 6/30/13 3:01 | 0.937 | ug/L |
| CO111041 | Beryllium | WTLAP-13-30626 | F | 7/5/13 0:16 | < 0.5 | ug/L |
| CO111041 | Beryllium | WTLAP-13-30634 | UF | 7/5/13 0:16 | 0.837 | ug/L |
| CO111041 | Beryllium | WTLAP-13-39020 | F | 7/12/13 11:24 | < 0.5 | ug/L |
| CO111041 | Beryllium | WTLAP-13-39019 | UF | 7/12/13 11:24 | 2.88 | ug/L |
| CO111041 | Beryllium | WTLAP-13-39429 | F | 7/28/13 5:18 | < 0.5 | ug/L |
| CO111041 | Beryllium | WTLAP-13-39428 | UF | 7/28/13 5:18 | 0.431 | ug/L |
| CO111041 | Boron | WTLAP-13-30622 | F | 6/14/13 12:43 | 16.7 | ug/L |
| CO111041 | Boron | WTLAP-13-30630 | UF | 6/14/13 12:43 | 27.2 | ug/L |

**Table 4.4-1 (continued)**

| Sample Location | Analyte | Sample ID | Field Prep | Collection Date Time | Result | Unit |
|---|---|---|---|---|---|---|
| CO111041 | Boron | WTLAP-13-30624 | F | 6/30/13 3:01 | 19.4 | ug/L |
| CO111041 | Boron | WTLAP-13-30632 | UF | 6/30/13 3:01 | 25 | ug/L |
| CO111041 | Boron | WTLAP-13-30626 | F | 7/5/13 0:16 | 17.4 | ug/L |
| CO111041 | Boron | WTLAP-13-30634 | UF | 7/5/13 0:16 | 22.3 | ug/L |
| CO111041 | Boron | WTLAP-13-39020 | F | 7/12/13 11:24 | < 50 | ug/L |
| CO111041 | Boron | WTLAP-13-39019 | UF | 7/12/13 11:24 | 16.2 | ug/L |
| CO111041 | Boron | WTLAP-13-39429 | F | 7/28/13 5:18 | < 50 | ug/L |
| CO111041 | Boron | WTLAP-13-39428 | UF | 7/28/13 5:18 | < 50 | ug/L |
| CO111041 | Cadmium | WTLAP-13-30622 | F | 6/14/13 12:43 | < 1 | ug/L |
| CO111041 | Cadmium | WTLAP-13-30630 | UF | 6/14/13 12:43 | 1.12 | ug/L |
| CO111041 | Cadmium | WTLAP-13-30624 | F | 6/30/13 3:01 | < 1 | ug/L |
| CO111041 | Cadmium | WTLAP-13-30632 | UF | 6/30/13 3:01 | 0.711 | ug/L |
| CO111041 | Cadmium | WTLAP-13-30626 | F | 7/5/13 0:16 | < 1 | ug/L |
| CO111041 | Cadmium | WTLAP-13-30634 | UF | 7/5/13 0:16 | 0.578 | ug/L |
| CO111041 | Cadmium | WTLAP-13-39020 | F | 7/12/13 11:24 | < 1 | ug/L |
| CO111041 | Cadmium | WTLAP-13-39019 | UF | 7/12/13 11:24 | 1.6 | ug/L |
| CO111041 | Cadmium | WTLAP-13-39429 | F | 7/28/13 5:18 | < 1 | ug/L |
| CO111041 | Cadmium | WTLAP-13-39428 | UF | 7/28/13 5:18 | 0.205 | ug/L |
| CO111041 | Calcium | WTLAP-13-30622 | F | 6/14/13 12:43 | 17.6 | mg/L |
| CO111041 | Calcium | WTLAP-13-30630 | UF | 6/14/13 12:43 | 25.8 | mg/L |
| CO111041 | Calcium | WTLAP-13-30624 | F | 6/30/13 3:01 | 12.4 | mg/L |
| CO111041 | Calcium | WTLAP-13-30632 | UF | 6/30/13 3:01 | 19.3 | mg/L |
| CO111041 | Calcium | WTLAP-13-30626 | F | 7/5/13 0:16 | 9.13 | mg/L |
| CO111041 | Calcium | WTLAP-13-30634 | UF | 7/5/13 0:16 | 14.5 | mg/L |
| CO111041 | Calcium | WTLAP-13-39020 | F | 7/12/13 11:24 | 7.04 | mg/L |
| CO111041 | Calcium | WTLAP-13-39019 | UF | 7/12/13 11:24 | 24.1 | mg/L |
| CO111041 | Calcium | WTLAP-13-39429 | F | 7/28/13 5:18 | 8.25 | mg/L |
| CO111041 | Calcium | WTLAP-13-39428 | UF | 7/28/13 5:18 | 10.3 | mg/L |
| CO111041 | Chloride | WTLAP-13-32571 | F | 6/14/13 13:14 | 5.82 | mg/L |
| CO111041 | Chloride | WTLAP-13-39024 | F | 7/13/13 13:32 | 9.57 | mg/L |
| CO111041 | Chromium | WTLAP-13-30622 | F | 6/14/13 12:43 | 2.03 | ug/L |
| CO111041 | Chromium | WTLAP-13-30630 | UF | 6/14/13 12:43 | 25.8 | ug/L |
| CO111041 | Chromium | WTLAP-13-30624 | F | 6/30/13 3:01 | < 10 | ug/L |
| CO111041 | Chromium | WTLAP-13-30632 | UF | 6/30/13 3:01 | 12.8 | ug/L |
| CO111041 | Chromium | WTLAP-13-30626 | F | 7/5/13 0:16 | < 10 | ug/L |
| CO111041 | Chromium | WTLAP-13-30634 | UF | 7/5/13 0:16 | 12.7 | ug/L |
| CO111041 | Chromium | WTLAP-13-39020 | F | 7/12/13 11:24 | < 10 | ug/L |
| CO111041 | Chromium | WTLAP-13-39019 | UF | 7/12/13 11:24 | 22.6 | ug/L |
| CO111041 | Chromium | WTLAP-13-39429 | F | 7/28/13 5:18 | 2.12 | ug/L |
| CO111041 | Chromium | WTLAP-13-39428 | UF | 7/28/13 5:18 | 6.92 | ug/L |

**Table 4.4-1 (continued)**

| Sample Location | Analyte | Sample ID | Field Prep | Collection Date Time | Result | Unit |
|---|---|---|---|---|---|---|
| CO111041 | Clay | WTLAP-13-30646 | UF | 6/14/13 12:40 | 5.85 | % |
| CO111041 | Clay | WTLAP-13-30648 | UF | 6/30/13 3:00 | 4.8 | % |
| CO111041 | Clay | WTLAP-13-30650 | UF | 7/5/13 0:16 | 6 | % |
| CO111041 | Clay | WTLAP-13-39015 | UF | 7/12/13 11:21 | 5.2 | % |
| CO111041 | Clay | WTLAP-13-39428 | UF | 7/28/13 5:18 | 14.1 | % |
| CO111041 | Cobalt | WTLAP-13-30622 | F | 6/14/13 12:43 | 3.56 | ug/L |
| CO111041 | Cobalt | WTLAP-13-30630 | UF | 6/14/13 12:43 | 8.12 | ug/L |
| CO111041 | Cobalt | WTLAP-13-30624 | F | 6/30/13 3:01 | < 3.49 | ug/L |
| CO111041 | Cobalt | WTLAP-13-30632 | UF | 6/30/13 3:01 | 6.02 | ug/L |
| CO111041 | Cobalt | WTLAP-13-30626 | F | 7/5/13 0:16 | < 3.85 | ug/L |
| CO111041 | Cobalt | WTLAP-13-30634 | UF | 7/5/13 0:16 | < 4.75 | ug/L |
| CO111041 | Cobalt | WTLAP-13-39020 | F | 7/12/13 11:24 | < 4.38 | ug/L |
| CO111041 | Cobalt | WTLAP-13-39019 | UF | 7/12/13 11:24 | 10.2 | ug/L |
| CO111041 | Cobalt | WTLAP-13-39429 | F | 7/28/13 5:18 | 3.08 | ug/L |
| CO111041 | Cobalt | WTLAP-13-39428 | UF | 7/28/13 5:18 | 1.75 | ug/L |
| CO111041 | Copper | WTLAP-13-30622 | F | 6/14/13 12:43 | 7.63 | ug/L |
| CO111041 | Copper | WTLAP-13-30630 | UF | 6/14/13 12:43 | 60.1 | ug/L |
| CO111041 | Copper | WTLAP-13-30624 | F | 6/30/13 3:01 | 3.61 | ug/L |
| CO111041 | Copper | WTLAP-13-30632 | UF | 6/30/13 3:01 | 38.4 | ug/L |
| CO111041 | Copper | WTLAP-13-30626 | F | 7/5/13 0:16 | 5.04 | ug/L |
| CO111041 | Copper | WTLAP-13-30634 | UF | 7/5/13 0:16 | 34 | ug/L |
| CO111041 | Copper | WTLAP-13-39020 | F | 7/12/13 11:24 | 3.37 | ug/L |
| CO111041 | Copper | WTLAP-13-39019 | UF | 7/12/13 11:24 | 64.8 | ug/L |
| CO111041 | Copper | WTLAP-13-39429 | F | 7/28/13 5:18 | 5.39 | ug/L |
| CO111041 | Copper | WTLAP-13-39428 | UF | 7/28/13 5:18 | 15.9 | ug/L |
| CO111041 | Dissolved Organic Carbon | WTLAP-13-32575 | F | 6/14/13 12:53 | 175 | mg/L |
| CO111041 | Dissolved Organic Carbon | WTLAP-13-39016 | F | 7/12/13 11:22 | 4.19 | mg/L |
| CO111041 | Hardness | WTLAP-13-30622 | F | 6/14/13 12:43 | 51.2 | mg/L |
| CO111041 | Hardness | WTLAP-13-30630 | UF | 6/14/13 12:43 | 91.8 | mg/L |
| CO111041 | Hardness | WTLAP-13-30624 | F | 6/30/13 3:01 | 35.6 | mg/L |
| CO111041 | Hardness | WTLAP-13-30632 | UF | 6/30/13 3:01 | 67.5 | mg/L |
| CO111041 | Hardness | WTLAP-13-30626 | F | 7/5/13 0:16 | 26.9 | mg/L |
| CO111041 | Hardness | WTLAP-13-30634 | UF | 7/5/13 0:16 | 50.9 | mg/L |
| CO111041 | Hardness | WTLAP-13-39020 | F | 7/12/13 11:24 | 21 | mg/L |
| CO111041 | Hardness | WTLAP-13-39019 | UF | 7/12/13 11:24 | 81.8 | mg/L |
| CO111041 | Hardness | WTLAP-13-39429 | F | 7/28/13 5:18 | 24.6 | mg/L |
| CO111041 | Hardness | WTLAP-13-39428 | UF | 7/28/13 5:18 | 34.6 | mg/L |
| CO111041 | Iron | WTLAP-13-30622 | F | 6/14/13 12:43 | 462 | ug/L |
| CO111041 | Iron | WTLAP-13-30630 | UF | 6/14/13 12:43 | 15700 | ug/L |
| CO111041 | Iron | WTLAP-13-30624 | F | 6/30/13 3:01 | 99.2 | ug/L |

**Table 4.4-1 (continued)**

| Sample Location | Analyte | Sample ID | Field Prep | Collection Date Time | Result | Unit |
|---|---|---|---|---|---|---|
| CO111041 | Iron | WTLAP-13-30632 | UF | 6/30/13 3:01 | 10600 | ug/L |
| CO111041 | Iron | WTLAP-13-30626 | F | 7/5/13 0:16 | 101 | ug/L |
| CO111041 | Iron | WTLAP-13-30634 | UF | 7/5/13 0:16 | 8000 | ug/L |
| CO111041 | Iron | WTLAP-13-39020 | F | 7/12/13 11:24 | 95.3 | ug/L |
| CO111041 | Iron | WTLAP-13-39019 | UF | 7/12/13 11:24 | 12400 | ug/L |
| CO111041 | Iron | WTLAP-13-39429 | F | 7/28/13 5:18 | 375 | ug/L |
| CO111041 | Iron | WTLAP-13-39428 | UF | 7/28/13 5:18 | 5140 | ug/L |
| CO111041 | Lead | WTLAP-13-30622 | F | 6/14/13 12:43 | 0.934 | ug/L |
| CO111041 | Lead | WTLAP-13-30630 | UF | 6/14/13 12:43 | 67.5 | ug/L |
| CO111041 | Lead | WTLAP-13-30624 | F | 6/30/13 3:01 | < 2 | ug/L |
| CO111041 | Lead | WTLAP-13-30632 | UF | 6/30/13 3:01 | 42.5 | ug/L |
| CO111041 | Lead | WTLAP-13-30626 | F | 7/5/13 0:16 | < 2 | ug/L |
| CO111041 | Lead | WTLAP-13-30634 | UF | 7/5/13 0:16 | 36.5 | ug/L |
| CO111041 | Lead | WTLAP-13-39020 | F | 7/12/13 11:24 | < 2 | ug/L |
| CO111041 | Lead | WTLAP-13-39019 | UF | 7/12/13 11:24 | 96.7 | ug/L |
| CO111041 | Lead | WTLAP-13-39429 | F | 7/28/13 5:18 | 0.578 | ug/L |
| CO111041 | Lead | WTLAP-13-39428 | UF | 7/28/13 5:18 | 14.2 | ug/L |
| CO111041 | Magnesium | WTLAP-13-30622 | F | 6/14/13 12:43 | 1.75 | mg/L |
| CO111041 | Magnesium | WTLAP-13-30630 | UF | 6/14/13 12:43 | 6.66 | mg/L |
| CO111041 | Magnesium | WTLAP-13-30624 | F | 6/30/13 3:01 | 1.16 | mg/L |
| CO111041 | Magnesium | WTLAP-13-30632 | UF | 6/30/13 3:01 | 4.7 | mg/L |
| CO111041 | Magnesium | WTLAP-13-30626 | F | 7/5/13 0:16 | 0.996 | mg/L |
| CO111041 | Magnesium | WTLAP-13-30634 | UF | 7/5/13 0:16 | 3.56 | mg/L |
| CO111041 | Magnesium | WTLAP-13-39020 | F | 7/12/13 11:24 | 0.828 | mg/L |
| CO111041 | Magnesium | WTLAP-13-39019 | UF | 7/12/13 11:24 | 5.25 | mg/L |
| CO111041 | Magnesium | WTLAP-13-39429 | F | 7/28/13 5:18 | 0.979 | mg/L |
| CO111041 | Magnesium | WTLAP-13-39428 | UF | 7/28/13 5:18 | 2.17 | mg/L |
| CO111041 | Manganese | WTLAP-13-30622 | F | 6/14/13 12:43 | 371 | ug/L |
| CO111041 | Manganese | WTLAP-13-30630 | UF | 6/14/13 12:43 | 818 | ug/L |
| CO111041 | Manganese | WTLAP-13-30624 | F | 6/30/13 3:01 | 19.5 | ug/L |
| CO111041 | Manganese | WTLAP-13-30632 | UF | 6/30/13 3:01 | 558 | ug/L |
| CO111041 | Manganese | WTLAP-13-30626 | F | 7/5/13 0:16 | 27.7 | ug/L |
| CO111041 | Manganese | WTLAP-13-30634 | UF | 7/5/13 0:16 | 433 | ug/L |
| CO111041 | Manganese | WTLAP-13-39020 | F | 7/12/13 11:24 | 91.4 | ug/L |
| CO111041 | Manganese | WTLAP-13-39019 | UF | 7/12/13 11:24 | 1120 | ug/L |
| CO111041 | Manganese | WTLAP-13-39429 | F | 7/28/13 5:18 | 6.96 | ug/L |
| CO111041 | Manganese | WTLAP-13-39428 | UF | 7/28/13 5:18 | 160 | ug/L |
| CO111041 | Mercury | WTLAP-13-30622 | F | 6/14/13 12:43 | < 0.2 | ug/L |
| CO111041 | Mercury | WTLAP-13-30630 | UF | 6/14/13 12:43 | < 0.2 | ug/L |
| CO111041 | Mercury | WTLAP-13-30624 | F | 6/30/13 3:01 | < 0.2 | ug/L |

**Table 4.4-1 (continued)**

| Sample Location | Analyte | Sample ID | Field Prep | Collection Date Time | Result | Unit |
|---|---|---|---|---|---|---|
| CO111041 | Mercury | WTLAP-13-30632 | UF | 6/30/13 3:01 | < 0.2 | ug/L |
| CO111041 | Mercury | WTLAP-13-30626 | F | 7/5/13 0:16 | < 0.2 | ug/L |
| CO111041 | Mercury | WTLAP-13-30634 | UF | 7/5/13 0:16 | < 0.2 | ug/L |
| CO111041 | Mercury | WTLAP-13-39020 | F | 7/12/13 11:24 | < 0.2 | ug/L |
| CO111041 | Mercury | WTLAP-13-39019 | UF | 7/12/13 11:24 | < 0.2 | ug/L |
| CO111041 | Mercury | WTLAP-13-39429 | F | 7/28/13 5:18 | < 0.2 | ug/L |
| CO111041 | Mercury | WTLAP-13-39428 | UF | 7/28/13 5:18 | < 0.2 | ug/L |
| CO111041 | Nickel | WTLAP-13-30622 | F | 6/14/13 12:43 | 3.69 | ug/L |
| CO111041 | Nickel | WTLAP-13-30630 | UF | 6/14/13 12:43 | 18.6 | ug/L |
| CO111041 | Nickel | WTLAP-13-30624 | F | 6/30/13 3:01 | 1.82 | ug/L |
| CO111041 | Nickel | WTLAP-13-30632 | UF | 6/30/13 3:01 | 11.3 | ug/L |
| CO111041 | Nickel | WTLAP-13-30626 | F | 7/5/13 0:16 | 1.53 | ug/L |
| CO111041 | Nickel | WTLAP-13-30634 | UF | 7/5/13 0:16 | 10.3 | ug/L |
| CO111041 | Nickel | WTLAP-13-39020 | F | 7/12/13 11:24 | 1.14 | ug/L |
| CO111041 | Nickel | WTLAP-13-39019 | UF | 7/12/13 11:24 | 20.6 | ug/L |
| CO111041 | Nickel | WTLAP-13-39429 | F | 7/28/13 5:18 | 1.53 | ug/L |
| CO111041 | Nickel | WTLAP-13-39428 | UF | 7/28/13 5:18 | 4.76 | ug/L |
| CO111041 | Potassium | WTLAP-13-30622 | F | 6/14/13 12:43 | 7.61 | mg/L |
| CO111041 | Potassium | WTLAP-13-30630 | UF | 6/14/13 12:43 | 12.1 | mg/L |
| CO111041 | Potassium | WTLAP-13-30624 | F | 6/30/13 3:01 | 4.69 | mg/L |
| CO111041 | Potassium | WTLAP-13-30632 | UF | 6/30/13 3:01 | 8.14 | mg/L |
| CO111041 | Potassium | WTLAP-13-30626 | F | 7/5/13 0:16 | 3.81 | mg/L |
| CO111041 | Potassium | WTLAP-13-30634 | UF | 7/5/13 0:16 | 6.57 | mg/L |
| CO111041 | Potassium | WTLAP-13-39020 | F | 7/12/13 11:24 | 2.78 | mg/L |
| CO111041 | Potassium | WTLAP-13-39019 | UF | 7/12/13 11:24 | 6.53 | mg/L |
| CO111041 | Potassium | WTLAP-13-39429 | F | 7/28/13 5:18 | 2.87 | mg/L |
| CO111041 | Potassium | WTLAP-13-39428 | UF | 7/28/13 5:18 | 4.36 | mg/L |
| CO111041 | Sand | WTLAP-13-30646 | UF | 6/14/13 12:40 | 18.63 | % |
| CO111041 | Sand | WTLAP-13-30648 | UF | 6/30/13 3:00 | 24.3 | % |
| CO111041 | Sand | WTLAP-13-30650 | UF | 7/5/13 0:16 | 21 | % |
| CO111041 | Sand | WTLAP-13-39015 | UF | 7/12/13 11:21 | 27.2 | % |
| CO111041 | Sand | WTLAP-13-39428 | UF | 7/28/13 5:18 | 3.7 | % |
| CO111041 | Selenium | WTLAP-13-30622 | F | 6/14/13 12:43 | < 5 | ug/L |
| CO111041 | Selenium | WTLAP-13-30630 | UF | 6/14/13 12:43 | < 5 | ug/L |
| CO111041 | Selenium | WTLAP-13-30624 | F | 6/30/13 3:01 | < 5 | ug/L |
| CO111041 | Selenium | WTLAP-13-30632 | UF | 6/30/13 3:01 | < 5 | ug/L |
| CO111041 | Selenium | WTLAP-13-30626 | F | 7/5/13 0:16 | < 5 | ug/L |
| CO111041 | Selenium | WTLAP-13-30634 | UF | 7/5/13 0:16 | < 5 | ug/L |
| CO111041 | Selenium | WTLAP-13-39020 | F | 7/12/13 11:24 | < 5 | ug/L |
| CO111041 | Selenium | WTLAP-13-39019 | UF | 7/12/13 11:24 | < 5 | ug/L |

**Table 4.4-1 (continued)**

| Sample Location | Analyte | Sample ID | Field Prep | Collection Date Time | Result | Unit |
|---|---|---|---|---|---|---|
| CO111041 | Selenium | WTLAP-13-39429 | F | 7/28/13 5:18 | < 5 | ug/L |
| CO111041 | Selenium | WTLAP-13-39428 | UF | 7/28/13 5:18 | < 5 | ug/L |
| CO111041 | Silt | WTLAP-13-30646 | UF | 6/14/13 12:40 | 75.51 | % |
| CO111041 | Silt | WTLAP-13-30648 | UF | 6/30/13 3:00 | 71 | % |
| CO111041 | Silt | WTLAP-13-30650 | UF | 7/5/13 0:16 | 73.1 | % |
| CO111041 | Silt | WTLAP-13-39015 | UF | 7/12/13 11:21 | 67.6 | % |
| CO111041 | Silt | WTLAP-13-39428 | UF | 7/28/13 5:18 | 82.2 | % |
| CO111041 | Silver | WTLAP-13-30622 | F | 6/14/13 12:43 | < 1 | ug/L |
| CO111041 | Silver | WTLAP-13-30630 | UF | 6/14/13 12:43 | 0.244 | ug/L |
| CO111041 | Silver | WTLAP-13-30624 | F | 6/30/13 3:01 | < 1 | ug/L |
| CO111041 | Silver | WTLAP-13-30632 | UF | 6/30/13 3:01 | < 1 | ug/L |
| CO111041 | Silver | WTLAP-13-30626 | F | 7/5/13 0:16 | < 1 | ug/L |
| CO111041 | Silver | WTLAP-13-30634 | UF | 7/5/13 0:16 | < 1 | ug/L |
| CO111041 | Silver | WTLAP-13-39020 | F | 7/12/13 11:24 | < 1 | ug/L |
| CO111041 | Silver | WTLAP-13-39019 | UF | 7/12/13 11:24 | < 1 | ug/L |
| CO111041 | Silver | WTLAP-13-39429 | F | 7/28/13 5:18 | < 1 | ug/L |
| CO111041 | Silver | WTLAP-13-39428 | UF | 7/28/13 5:18 | < 1 | ug/L |
| CO111041 | Sodium | WTLAP-13-30622 | F | 6/14/13 12:43 | 12.6 | mg/L |
| CO111041 | Sodium | WTLAP-13-30630 | UF | 6/14/13 12:43 | 13.5 | mg/L |
| CO111041 | Sodium | WTLAP-13-30624 | F | 6/30/13 3:01 | 6.35 | mg/L |
| CO111041 | Sodium | WTLAP-13-30632 | UF | 6/30/13 3:01 | 7.54 | mg/L |
| CO111041 | Sodium | WTLAP-13-30626 | F | 7/5/13 0:16 | 6.44 | mg/L |
| CO111041 | Sodium | WTLAP-13-30634 | UF | 7/5/13 0:16 | 7.37 | mg/L |
| CO111041 | Sodium | WTLAP-13-39020 | F | 7/12/13 11:24 | 4.23 | mg/L |
| CO111041 | Sodium | WTLAP-13-39019 | UF | 7/12/13 11:24 | 5.48 | mg/L |
| CO111041 | Sodium | WTLAP-13-39429 | F | 7/28/13 5:18 | 7.99 | mg/L |
| CO111041 | Sodium | WTLAP-13-39428 | UF | 7/28/13 5:18 | 8.71 | mg/L |
| CO111041 | Sulfate | WTLAP-13-32571 | F | 6/14/13 13:14 | 3.6 | mg/L |
| CO111041 | Sulfate | WTLAP-13-39024 | F | 7/13/13 13:32 | 6.3 | mg/L |
| CO111041 | SSC | WTLAP-13-30646 | UF | 6/14/13 12:40 | 2870 | mg/L |
| CO111041 | SSC | WTLAP-13-30648 | UF | 6/30/13 3:00 | 1750 | mg/L |
| CO111041 | SSC | WTLAP-13-32568 | UF | 6/30/13 3:04 | 1090 | mg/L |
| CO111041 | SSC | WTLAP-13-30650 | UF | 7/5/13 0:16 | 1500 | mg/L |
| CO111041 | SSC | WTLAP-13-32569 | UF | 7/5/13 0:17 | 880 | mg/L |
| CO111041 | SSC | WTLAP-13-39015 | UF | 7/12/13 11:21 | 4350 | mg/L |
| CO111041 | SSC | WTLAP-13-39025 | UF | 7/13/13 13:33 | 4130 | mg/L |
| CO111041 | SSC | WTLAP-13-39026 | UF | 7/13/13 13:34 | 4160 | mg/L |
| CO111041 | SSC | WTLAP-13-39428 | UF | 7/28/13 5:18 | 180 | mg/L |
| CO111041 | SSC | WTLAP-13-40540 | UF | 8/5/13 13:43 | 260 | mg/L |
| CO111041 | SSC | WTLAP-13-41772 | UF | 9/10/13 10:34 | 1000 | mg/L |

**Table 4.4-1 (continued)**

| Sample Location | Analyte | Sample ID | Field Prep | Collection Date Time | Result | Unit |
|---|---|---|---|---|---|---|
| CO111041 | Thallium | WTLAP-13-30622 | F | 6/14/13 12:43 | < 2 | ug/L |
| CO111041 | Thallium | WTLAP-13-30630 | UF | 6/14/13 12:43 | < 2 | ug/L |
| CO111041 | Thallium | WTLAP-13-30624 | F | 6/30/13 3:01 | < 2 | ug/L |
| CO111041 | Thallium | WTLAP-13-30632 | UF | 6/30/13 3:01 | < 2 | ug/L |
| CO111041 | Thallium | WTLAP-13-30626 | F | 7/5/13 0:16 | < 2 | ug/L |
| CO111041 | Thallium | WTLAP-13-30634 | UF | 7/5/13 0:16 | < 2 | ug/L |
| CO111041 | Thallium | WTLAP-13-39020 | F | 7/12/13 11:24 | < 2 | ug/L |
| CO111041 | Thallium | WTLAP-13-39019 | UF | 7/12/13 11:24 | < 2 | ug/L |
| CO111041 | Thallium | WTLAP-13-39429 | F | 7/28/13 5:18 | < 2 | ug/L |
| CO111041 | Thallium | WTLAP-13-39428 | UF | 7/28/13 5:18 | < 2 | ug/L |
| CO111041 | Total Organic Carbon | WTLAP-13-36961 | UF | 6/14/13 12:41 | 106 | mg/L |
| CO111041 | Total Organic Carbon | WTLAP-13-30664 | UF | 6/30/13 3:03 | 16.5 | mg/L |
| CO111041 | Total Organic Carbon | WTLAP-13-39017 | UF | 7/12/13 11:22 | 20.5 | mg/L |
| CO111041 | TSS | WTLAP-13-39018 | UF | 7/12/13 11:23 | 1200 | mg/L |
| CO111041 | TSS | WTLAP-13-40532 | UF | 8/5/13 13:03 | 901 | mg/L |
| CO111041 | TSS | WTLAP-13-40534 | UF | 8/5/13 13:05 | 651 | mg/L |
| CO111041 | TSS | WTLAP-13-40533 | UF | 8/5/13 13:05 | 721 | mg/L |
| CO111041 | TSS | WTLAP-13-40535 | UF | 8/5/13 13:06 | 545 | mg/L |
| CO111041 | TSS | WTLAP-13-40536 | UF | 8/5/13 13:07 | 458 | mg/L |
| CO111041 | TSS | WTLAP-13-40537 | UF | 8/5/13 13:13 | 288 | mg/L |
| CO111041 | TSS | WTLAP-13-40538 | UF | 8/5/13 13:15 | 304 | mg/L |
| CO111041 | TSS | WTLAP-13-40539 | UF | 8/5/13 13:33 | 367 | mg/L |
| CO111041 | TSS | WTLAP-13-41058 | UF | 8/9/13 13:41 | 265 | mg/L |
| CO111041 | TSS | WTLAP-13-41059 | UF | 8/9/13 13:42 | 288 | mg/L |
| CO111041 | TSS | WTLAP-13-41060 | UF | 8/9/13 13:44 | 288 | mg/L |
| CO111041 | TSS | WTLAP-13-41061 | UF | 8/9/13 13:45 | 254 | mg/L |
| CO111041 | TSS | WTLAP-13-41062 | UF | 8/9/13 13:46 | 217 | mg/L |
| CO111041 | TSS | WTLAP-13-41773 | UF | 9/10/13 10:35 | 432 | mg/L |
| CO111041 | TSS | WTLAP-13-41774 | UF | 9/10/13 10:36 | 504 | mg/L |
| CO111041 | TSS | WTLAP-13-41775 | UF | 9/10/13 10:37 | 478 | mg/L |
| CO111041 | TSS | WTLAP-13-41776 | UF | 9/10/13 10:38 | 356 | mg/L |
| CO111041 | TSS | WTLAP-13-41777 | UF | 9/10/13 10:39 | 339 | mg/L |
| CO111041 | TSS | WTLAP-13-41778 | UF | 9/10/13 10:40 | 292 | mg/L |
| CO111041 | TSS | WTLAP-13-41779 | UF | 9/10/13 10:41 | 329 | mg/L |
| CO111041 | TSS | WTLAP-13-41780 | UF | 9/10/13 10:57 | 132 | mg/L |
| CO111041 | Uranium | WTLAP-13-30622 | F | 6/14/13 12:43 | 2.09 | ug/L |
| CO111041 | Uranium | WTLAP-13-30630 | UF | 6/14/13 12:43 | 64.2 | ug/L |
| CO111041 | Uranium | WTLAP-13-30624 | F | 6/30/13 3:01 | 0.994 | ug/L |
| CO111041 | Uranium | WTLAP-13-30632 | UF | 6/30/13 3:01 | 35.4 | ug/L |
| CO111041 | Uranium | WTLAP-13-30626 | F | 7/5/13 0:16 | 1.04 | ug/L |

**Table 4.4-1 (continued)**

| Sample Location | Analyte | Sample ID | Field Prep | Collection Date Time | Result | Unit |
|---|---|---|---|---|---|---|
| CO111041 | Uranium | WTLAP-13-30634 | UF | 7/5/13 0:16 | 34.5 | ug/L |
| CO111041 | Uranium | WTLAP-13-39020 | F | 7/12/13 11:24 | 0.984 | ug/L |
| CO111041 | Uranium | WTLAP-13-39019 | UF | 7/12/13 11:24 | 108 | ug/L |
| CO111041 | Uranium | WTLAP-13-39429 | F | 7/28/13 5:18 | 1.33 | ug/L |
| CO111041 | Uranium | WTLAP-13-39428 | UF | 7/28/13 5:18 | 9.27 | ug/L |
| CO111041 | Uranium-234 | WTLAP-13-30654 | UF | 6/14/13 12:51 | 8.96 | pCi/L |
| CO111041 | Uranium-234 | WTLAP-13-30656 | UF | 6/30/13 3:02 | 18.6 | pCi/L |
| CO111041 | Uranium-234 | WTLAP-13-39021 | UF | 7/12/13 11:25 | 41.7 | pCi/L |
| CO111041 | Uranium-234 | WTLAP-13-39428 | UF | 7/28/13 5:18 | 1.03 | pCi/L |
| CO111041 | Uranium-235/236 | WTLAP-13-30654 | UF | 6/14/13 12:51 | 0.356 | pCi/L |
| CO111041 | Uranium-235/236 | WTLAP-13-30656 | UF | 6/30/13 3:02 | 1.26 | pCi/L |
| CO111041 | Uranium-235/236 | WTLAP-13-39021 | UF | 7/12/13 11:25 | 2.09 | pCi/L |
| CO111041 | Uranium-235/236 | WTLAP-13-39428 | UF | 7/28/13 5:18 | < 0.0564 | pCi/L |
| CO111041 | Uranium-238 | WTLAP-13-30654 | UF | 6/14/13 12:51 | 9.66 | pCi/L |
| CO111041 | Uranium-238 | WTLAP-13-30656 | UF | 6/30/13 3:02 | 16.3 | pCi/L |
| CO111041 | Uranium-238 | WTLAP-13-39021 | UF | 7/12/13 11:25 | 45.1 | pCi/L |
| CO111041 | Uranium-238 | WTLAP-13-39428 | UF | 7/28/13 5:18 | 0.974 | pCi/L |
| CO111041 | Vanadium | WTLAP-13-30622 | F | 6/14/13 12:43 | 2.66 | ug/L |
| CO111041 | Vanadium | WTLAP-13-30630 | UF | 6/14/13 12:43 | 31.9 | ug/L |
| CO111041 | Vanadium | WTLAP-13-30624 | F | 6/30/13 3:01 | 1.62 | ug/L |
| CO111041 | Vanadium | WTLAP-13-30632 | UF | 6/30/13 3:01 | 22.6 | ug/L |
| CO111041 | Vanadium | WTLAP-13-30626 | F | 7/5/13 0:16 | 2.17 | ug/L |
| CO111041 | Vanadium | WTLAP-13-30634 | UF | 7/5/13 0:16 | 18.3 | ug/L |
| CO111041 | Vanadium | WTLAP-13-39020 | F | 7/12/13 11:24 | 1.26 | ug/L |
| CO111041 | Vanadium | WTLAP-13-39019 | UF | 7/12/13 11:24 | 30.8 | ug/L |
| CO111041 | Vanadium | WTLAP-13-39429 | F | 7/28/13 5:18 | 3.05 | ug/L |
| CO111041 | Vanadium | WTLAP-13-39428 | UF | 7/28/13 5:18 | 11.7 | ug/L |
| CO111041 | Zinc | WTLAP-13-30622 | F | 6/14/13 12:43 | 94.6 | ug/L |
| CO111041 | Zinc | WTLAP-13-30630 | UF | 6/14/13 12:43 | 759 | ug/L |
| CO111041 | Zinc | WTLAP-13-30624 | F | 6/30/13 3:01 | 22 | ug/L |
| CO111041 | Zinc | WTLAP-13-30632 | UF | 6/30/13 3:01 | 508 | ug/L |
| CO111041 | Zinc | WTLAP-13-30626 | F | 7/5/13 0:16 | 38.9 | ug/L |
| CO111041 | Zinc | WTLAP-13-30634 | UF | 7/5/13 0:16 | 403 | ug/L |
| CO111041 | Zinc | WTLAP-13-39020 | F | 7/12/13 11:24 | 20.2 | ug/L |
| CO111041 | Zinc | WTLAP-13-39019 | UF | 7/12/13 11:24 | 817 | ug/L |
| CO111041 | Zinc | WTLAP-13-39429 | F | 7/28/13 5:18 | 24.8 | ug/L |
| CO111041 | Zinc | WTLAP-13-39428 | UF | 7/28/13 5:18 | 146 | ug/L |

[a] UF = Unfiltered.

[b] < = Nondetected result.

[c] F = Filtered.

# Appendix A

*2013 Geomorphic Changes at Sediment Transport Mitigation Sites in the Los Alamos and Pueblo Canyons Watershed*

## CONTENTS



### Figures

**Tables**

**Attachments**

## A-1.0 INTRODUCTION

This report evaluates geomorphic changes that occurred in 2013 at sediment transport mitigation sites in the Los Alamos and Pueblo Canyon watersheds within and near Los Alamos National Laboratory (LANL or the Laboratory). Survey data reported previously (LANL 2011, 200902; LANL 2012, 218411) are compared with subsequent survey data obtained in fall 2013 and winter 2014, following the summer 2013 monsoon season, as specified in the "Los Alamos National Laboratory Environmental Surveillance Program Sampling and Analysis Plan for Sediment, 2012" (LANL 2012, 213568). These surveys will be repeated after the 2014 monsoon season, and results will be presented in a report to the New Mexico Environment Department (NMED) by March 31, 2015. NMED has specified that results of inspections of stream bank armoring in the south fork of Acid Canyon be included in the annual report on geomorphic changes in the Los Alamos and Pueblo Canyon watersheds (NMED 2010, 109693), and these results are included herein. NMED has also specified that monitoring reports include information on the health and success of willow plantings and photographic documentation of willow plantings, grade-control structures (GCSs), and examples of erosion and deposition at surveyed cross-sections (NMED 2011, 204349), and these are also included herein. Figure A-1.0-1 shows the locations of sites discussed in this report, and Attachment A-1 presents photographs of the sediment transport mitigation sites.

## A-2.0 HYDROLOGIC EVENTS DURING 2013 MONSOON SEASON

The largest runoff events in 2013 at the sediment transport mitigation sites in the Los Alamos and Pueblo Canyon watersheds occurred following heavy rains that fell on the Pajarito Plateau, the Los Alamos townsite and the Sierra de los Valles from September 10 through 15, 2013. Total rainfall measured by rain gages that recorded throughout this entire event ranged from 5.5 to 6.5 in. (Pueblo Canyon gages), 5.5 in. (LA Canyon gage), and 4.8 to 5.5 in. (DP Canyon gages).The maximum measured discharge at these sites occurred in Pueblo Canyon on September 13, 2013, at the E059 gaging station above the Los Alamos County wastewater treatment plant (WWTP). The peak discharge at E059 was 1540 cubic feet per second (cfs). No flow was recorded at this gaging station in 2012. Most gages in Pueblo, DP and Los Alamos Canyons were rendered inoperable due to this high-discharge event, and no data are available on September 14 and 15. Maximum discharges in Los Alamos and DP Canyons were also measured on September 13, as described below.

- Peak discharge was between 310 and 550 cfs below the DP Canyon GCS (310 cfs at E038 in upper DP Canyon and 550 cfs at E040 in lower DP Canyon. This discharge is an order of magnitude greater than the 2012 peak discharge, which was 79 cfs at E038, recorded on October 12, 2012, and 46 cfs at E040, recorded on October 12, 2012.
- Peak discharge in Los Alamos Canyon was 970 cfs at E030 in upper LA Canyon above the confluence with DP Canyon. This discharge is about 7.5 times greater than the 2012 peak discharge, which was 130 cfs at E030, recorded on July 11, 2012.

In some areas of Pueblo Canyon, the large September 2013 floods extended beyond the limits of the originally established cross-sections. These areas include the upper Pueblo willow sections, the lower Pueblo willow sections, and the Pueblo Canyon GCS sections. In each area some sections had to be extended whereas others were of sufficient length that 2013 floods did not extend beyond the existing section. In cases were cross-sections had to be extended, a series of potholes was dug to measure the thickness of 2013 sediment deposits within the newly established segments of the cross-sections. At each point, 2013 sediment thickness was subtracted from the elevation of the 2013 data point to determine the elevation of the pre-2013 profile at that location. These new points are referenced as "Pre-2013 sediment data point" in the legend for figures that include extended cross-sections.

## A-3.0 SURVEYS AT SEDIMENT TRANSPORT MITIGATION SITES

Surveys were conducted at all sediment transport mitigation sites specified in the 2012 monitoring plan (LANL 2012, 213568). Surveys were conducted using a combination of a differentially-corrected global positioning system (GPS) and a total station tied to GPS control points, depending on tree cover. Surveys were supplemented with sediment thickness measurements obtained from hand-dug or hand-augered holes at some locations. The general locations of all survey areas are shown in Figure A-1.0-1, and these surveys are discussed below. Surveyed cross-sections are shown in figures with a vertical exaggeration (VE) of 2.5 times, and channel thalweg profiles are shown with a VE of 5 times, 15 times, or 20 times. Raw survey data (x and y coordinates using the New Mexico State Plane coordinate system and elevations of all survey points) for surveyed cross-sections are included electronically as Attachment A-2 (on CD included with this document). Distances along each cross-section and along each thalweg profile that are used for the figures in this report were calculated using basic geometry (Pythagorean theorem) and are also included in Attachment A-2.

Cross-section and thalweg figures include the latest resurvey data and previous survey data that the current data points were compared with, indicating where erosion and deposition have occurred along each section over the last year. Each surveyed cross-section was field checked to confirm elevational differences between surveys and verify that erosion or deposition indicated by the plotted data were not artifacts of the surveys (such as can result from different survey point spacing or slight differences in survey location) or topographic changes not related to flooding (e.g., gopher mounds, road blading outside the floodplain, or slope wash from side hills/drainages). The net changes in cross-sectional area caused by 2013 flooding along each section were calculated and used to estimate total deposition or erosion over the surveyed area, normalized as $m^3$ per 100 m of channel for comparison with previous studies, and are presented as summary tables in this report. The net deposition or erosion that occurred in each area in 2013 is compared with changes that occurred in previous years. At each cross-section, the changes in thalweg elevation from 2009 to 2013 are compiled in tables and are used to indicate whether, on average, the channel elevation has been stable, aggrading, or incising. In the figures showing channel thalwegs, the distance along the survey can vary between the original survey and the resurvey because of changes in thalweg sinuosity, resulting in changes in thalweg gradient. These changes in thalweg gradient are also summarized in this report.

### A-3.1 Pueblo Canyon Cross-Vane Structures

Two cross-sections were originally surveyed in the vicinity of each of the three Pueblo Canyon cross-vane structures (CVSs) in April 2010, one 50 ft upcanyon and one 50 ft downcanyon of the apex rock of each structure. Channel thalweg profiles were also surveyed over these 100-ft distances. These cross-sections and thalweg profiles were resurveyed in December 2010, October 2011, November 2012, and February–March 2014. Cross-section and thalweg profile locations for all CVSs are shown on an orthophotograph in Figure A-3.1-1, and the cross-sections and thalweg profile for the upper CVS (CVS #1) are also shown on a geomorphic map in Figure A-3.1-2 (geomorphic mapping from 1997; LANL 2004, 087390). The cross-sections and thalweg profiles for CVS #1, CVS #2, and CVS #3 are shown in Figures A-3.1-3, A-3.1-4, and A-3.1-5, respectively, and in Photos A1-1, A1-2, and A1-3 in Attachment A-1. Net sediment deposition occurred at two of the six CVS cross-sections, and net sediment erosion occurred at the other four cross-sections during the summer 2013 monsoon season, as summarized in Table A-3.1-1.

Maximum aggradation (net sediment deposition) was 1.7 ft at CVS #3 +50 ft (Photo A1-1, Attachment A-1), and the maximum incision (net erosion) was 2.4 ft, at CVS #1 -50 ft (Photo A1-2, Attachment A-1). Normalized net erosion at the CVSs averaged −162 $m^3$/100 m. An estimated 1768 $m^3$/100 m of post-1942 sediment exists in reach P-2W, which contains CVS #1, as measured in 1997 (LANL 2004, 087390). Net erosion in 2013, therefore, removed approximately 9% of the estimated 1942–1997 sediment total. This net erosion represents a moderate to large decrease in sediment volume. Net deposition occurred at these sites in 2010 and 2011, and net erosion occurred in 2012, resulting in a net deposition of 163 $m^3$/100 m from 2010–2012 (Table A-3.1-1). Therefore, the net 2010–2012 sediment deposition was eroded in 2013 (Table A-3.1-1). Repeat photographs taken in March 2012 and May 2014 show the change from aggradation in 2011 to channel incision and lateral migration during the 2013 monsoon seasons, respectively (Photo A1-3, Attachment A-1). On average, the channel thalweg at the CVS cross-sections incised by 0.3 ft in 2013, compared with 0.1 ft of incision in 2012 (Table A-3.1-1). Figures A-3.1-3 through A-3.1-5 also indicate changes to the channel thalweg (net incision) that occurred during the summer 2013 monsoon season.

These data contrast with conclusions from previous assessments, which indicated this part of Pueblo Canyon had been relatively stable with net sediment deposition since 1998 (LANL 2012, 218411). The net erosion which occurred in 2013 transported an amount of this sediment equivalent to the total net deposition from 2010-2012 an unknown distance downstream, to be redeposited within Pueblo Canyon, deposited in lower LA Canyon, or transported out of the LA/Pueblo watershed.

### A-3.2 Upper Pueblo Canyon Willow-Planting Area

A total of 18 cross-sections were surveyed in November 2009 in the part of Pueblo Canyon downstream from the new Los Alamos WWTP outfall and upstream from the access road to the WWTP where willows were planted in spring 2008 and spring 2009. These cross-sections were divided into groups of six within the upper, middle, and lower thirds of the willow-planting area (UW, MW, and LW, respectively). Within each group the cross-sections were spaced at 100-ft intervals. Longitudinal channel thalweg profiles were also surveyed over 500-ft intervals through each of these three areas. These cross-sections and thalweg profiles were resurveyed in April 2010, October 2011, November 2012–January 2013, and January–February 2014. Stream banks in this area were surveyed in January–February 2014. Cross-section locations, thalweg profile locations, and stream banks are shown on an orthophotograph in Figure A-3.2-1, and the cross-sections, thalweg profile, and stream banks for the middle and lower thirds of the area are also shown on a geomorphic map in Figure A-3.2-2 (geomorphic mapping from 1997; LANL 2004, 087390). The cross-sections and thalweg profiles in the upper, middle, and lower thirds of the willow-planting area are shown in Figures A-3.2-3, A-3.2-4, and A-3.2-5, respectively. Geomorphic changes that occurred at these cross-sections during 2013 are summarized in Table A-3.2-1.

Maximum deposition of new sediment was 4.4 ft at cross-section MW-1 in the middle third of the upper Pueblo Canyon willow-planting area (also referred to as the upper willow-planting area), and the maximum erosion was 6.6 ft at cross-section LW-6 in the lower third of this area. The new sediment at cross-section MW-1 was associated with deposition of a sand lobe in the previous channel location in an area where the channel migrated to the north (Photo A1-4, Attachment A-1). The erosion at section LW-6 was associated with channel widening and lateral migration of the stream bank (Photo A1-5, Attachment A-1). Channel widening and/or bank migration was recorded at all of the LW cross-sections and at the majority of the MW cross-sections. Eight of the cross-sections had net sediment deposition during 2013, and all were at the most upstream cross-sections (UW-1 to MW-2). The 10 downstream cross-sections had net erosion. Normalized net sediment erosion in the upper Pueblo Canyon willow-planting area averaged -369 $m^3$/100 m (Table A-3.2-1). Post-1942 sediment deposition in reach P-3W, which includes part of the surveyed area, was estimated to be 3357 $m^3$/100 m as measured in 1997 (LANL 2004, 087390). Net erosion in 2013, therefore, removed approximately 11% of the estimated 1942–1997 sediment. This net erosion represents a moderate to large decrease in sediment volume.

Net deposition occurred at these sites in 2010, 2011, and 2012, resulting in 161 $m^3$/100 m sediment deposition from 2010–2012 (LANL 2011, 200902). The 2013 net erosion is approximately 2.3 times the total 2010–2012 net deposition, mainly from erosion that occurred in the lower half of the upper

Pueblo Canyon willow-planting area in 2013 (Table A-3.2-1). Over most of its lengh, the channel thalweg in the upper third of the upper Pueblo willow-planting area aggraded by 0.6 to 2 ft in 2013 (average aggradation of 1.3 ft), whereas the channel thalweg incised 0.1 to 2.5 ft (average incision of 0.9 ft) over most of its length in the lower two-thirds of the upper Pueblo willow-planting area (Table A-3.2-1). This is greater in magnitude but broadly similar to a general pattern of upstream aggradation and downstream incision that occurred in 2012, 2011, and 2010 (LANL 2011, 200902). Figures A-3.2-3 through A-3.2-5 also indicate changes to the channel thalweg gradient that occurred in 2013. In the upper third of the willow-planting area, the thalweg gradient decreased since the previous survey; in the middle third, the thalweg gradient increased, and in the lower third the thalweg gradient decreased. Gradient changes in the upper Pueblo Canyon willow-planting area are associated with changes in sinuosity and bed elevation.

These data contrast with conclusions from previous assessments that indicated that net sediment deposition/eroision in this part of Pueblo Canyon has been relatively stable since 1998 (LANL 2011, 200902). The net erosion observed in 2013 has removed approximately 2.3 times the sediment deposited in 2010 through 2012. Sediment eroded from the upper Pueblo Canyon willow-planting area has been transported an unknown distance downstream, to be redeposited wihin Pueblo Canyon, deposited in lower Los Alamos Canyon, or transported out of the Los Alamos/Pueblo watershed.

### A-3.3 Pueblo Canyon Wing Ditch

Five cross-sections were surveyed at 100-ft intervals downcanyon from the Pueblo Canyon wing ditch in November 2009. Longitudinal thalweg profiles of the active channel and a formerly abandoned channel to the south where the wing ditch directs water were also surveyed over this distance. These cross-sections and thalweg profiles were resurveyed in May 2011, October 2011, January 2013, and December 2013 (LANL 2011, 200902). The wing ditch is a short distance downstream from where the road to the Los Alamos County WWTP crosses the Pueblo Canyon stream channel, and the culverts at this crossing were plugged during a runoff event on August 16, 2010. In 2011, the County of Los Alamos rebuilt the road crossing to better withstand large runoff events and to pass flow more effectively (LANL 2011, 200902). The formerly abandoned channel to the south now receives flow during periods of high effluent discharge and stormwater runoff, helping to effectively distribute water across this part of the wetland (a function that the wing ditch was designed to perform; it is no longer needed for this purpose). September 2013 floods overtopped the road adjacent to the wing ditch, and the County of Los Alamos conducted some additional regrading and road construction subsequent to this flood event that extended onto the southern end of all of the cross-sections (Figure A-3.3-1). Cross-section and thalweg profile locations are shown on an orthophotograph in Figure A-3.3-1, and the cross-sections and thalweg profile locations are also shown on a geomorphic map in Figure A-3.3-2 (geomorphic mapping from 1996–1997; LANL 2004, 087390). The cross-sections are shown in Figure A-3.3-3, and the thalweg profiles are shown in Figure A-3.3-4. Geomorphic changes that occurred at these cross-sections during 2013 are summarized in Table A-3.3-1.

Maximum sediment deposition was 2.9 ft in an area in the southern part of cross-section WD-3 that was regraded after the September 2013 floods (Photo A1-6, Attachment A-1). It is possible that the regrading resulted in a thicker deposit than was actually deposited by the flood, but field examination of the sediments suggests that this was an area of significant sedimentation during flooding. The maximum incision (net erosion) was 1.4 ft in a side channel adjacent to the road at cross-section WD-4 (Photo A1-7, Attachment A-1). All five of the cross-sections had net deposition during 2013 (Table A-3.3-1). Normalized net deposition over the surveyed area below the wing ditch averaged 2120 $m^3$/100 m (Table A-3.3-1) compared with an estimated 6991 $m^3$/100 m of post-1942 sediment in reach P-3E, a short distance east of the surveyed area, as measured in 1997 (LANL 2004, 087390). This calculated net deposition, 30% of the estimated 1942–1997 total, represents a large increase in total sediment volume. The 2013 net deposition is approximately 24 times the 2010–2012 net deposition of 87 $m^3$/100 m. The wing ditch appears to be an area where sediment eroded from upstream areas by 2013 floods was redoposited a short distance downcanyon. Repeat photographs taken in January 2013 and May 2014 show the change from channel incision to deposition of sand lobes in the wing ditch area during the 2012 and 2013 monsoon seasons, respectively (Photo A1-8, Attachment A-1). On average, the main channel thalweg near the wing ditch aggraded by 0.5 ft in 2013 compared with 0.5 ft of incision in 2012 (Table A-3.3-1). As presented in Figure A-3.3-4, the average thalweg gradient of the active channel increased slightly in 2013. This decrease was from greater deposition in the upper end of the wing ditch area relative to the lower end.

### A-3.4 Lower Pueblo Canyon Willow-Planting Area

A total of 23 cross-sections were surveyed in September 2009 at 100-ft intervals within reaches P-3FE and P-4W in an area where willows were planted in spring 2009 (Figure A-1.0-1). The surveys extended for 1100 ft above and below a transition area separating a broad upcanyon wetland (P-3FE) from a narrower downcanyon wetland within incised geomorphic surfaces (P-4W). A longitudinal channel thalweg profile was also surveyed over this 2200-ft interval (Figure A-3.4-1). These cross-sections and thalweg profiles were resurveyed in April and May 2011, and in October and November 2011 (LANL 2011, 200902). Cross sections were resurveyed in November and December 2012, but the thalweg was not resurveyed at this time (LANL 2013, 239233, Appendix C). Cross-sections and thalweg profiles were resurveyed in December 2013 to February 2014. Stream banks in this area were surveyed in January and March 2012 and resurveyed in January and February 2014. Cross-section and thalweg profile locations and stream banks are shown on an orthophotograph in Figure A-3.4-1 and on a geomorphic map in Figure A-3.4-2 (geomorphic mapping from 1996–1997; LANL 2004, 087390). The cross-sections are shown in Figure A-3.4-3, and the channel thalweg profiles are shown in Figure A-3.4-4. Geomorphic changes that occurred at these cross-sections during 2013 from monsoonal flooding are summarized in Table A-3.4-1.

In the upper half of the lower Pueblo Canyon willow-planting area (also referred to as the lower willow-planting area, which is reach P-3FE), maximum deposition of new sediment was 2.0 ft at cross-section PU −700 ft (700 ft upstream from the transition zone), and the maximum erosion was 6.4 ft at cross-section PU −800 ft (Figure A-3.4-3 and Table A-3.4-1). The deposition at PU −700 ft was associated with aggradation at the former main channel location, (Photo A1-9, Attachment A-1) , and the erosion at PU −800 ft was associated with channel incision, which created a new, much deeper and wider channel on the north side of the valley floor (Photo A1-10, Attachment A-1). The three cross-sections farthest upstream above the approximate transition point (PU 0-ft section) had net sediment deposition and the remaining eight had net erosion (Table A-3.4-1). Repeat photographs taken in March 2012 and May 2014 show the channel incision and widening that occurred in this area (Photo A1-11, Attachment A-1). Normalized net erosion in the upper half of the lower willow-planting area averaged –861 $m^3$/100 m (Table A-3.4-1) compared with an estimated 5117 $m^3$/100 m of post-1942 sediment in reach P-3FE, which includes the surveyed area, as measured in 1997 (LANL 2004, 087390). This net erosion, 16.8% of the estimated 1942–1997 total, represents a large change. Net deposition occurred in this area in 2010 and 2011, and net erosion occurred in 2012, resulting in 141 $m^3$/100 m net deposition from 2010–2012 (LANL 2011, 200902). Therefore, 2013 net erosion is approximately 6 times the 2010–2012 net sediment deposition.

In the lower half of the lower Pueblo Canyon willow-planting area (reach P-4W), maximum deposition of new sediment was 4.6 ft at cross-section PU +600 ft, and the maximum erosion was 6.5 ft, at section PU +500 ft (Figure A-3.4-3 and Table A-3.4-1). The erosion was associated with lateral bank migration (Photo A1-12, Attachment A-1), and the deposition was associated with channel aggradation adjacent to an area of lateral bank migration. Cross-section PU +600 ft had the highest measured erosion and deposition in 2010, indicating the channel is continuing to adjust in this downstream area (Figure A-3.4-3 and Table A-3.4-1). Six of the 11 cross-sections below the approximate transition point had net sediment deposition, and five had net erosion (Table A-3.4-1). Net erosion also occurred at cross-section PU 0 ft, where the emergence of alluvial groundwater perched on Puye Formation bedrock resulted in seepage erosion in previous years (Figure A-3.4-3 and Table A-3.4-1). During and following the September 2013 flood event, the headcut formerly located at PU 0 ft migrated nearly 1000 ft upstream (between PU-900 and PU −1000 ft), and Puye Formation bedrock is now exposed as isolated outcrops in the channel floor for a distance of approximately 400 to 500 ft upstream of PU 0 (Figures A-3.4-3 and A-3.4-4). Repeat photographs taken in March 2012 and May 2014 show the channel incision and widening that occurred in this area. (Photo A1-13, Attachment A-1). Net sediment erosion occurred in the lower half of the lower Pueblo Canyon willow-planting area, averaging −365 $m^3$/100 m (Table A-3.4-1) compared with an estimated 9871 $m^3$/100 m of post-1942 sediment in reach P-4W, which includes the surveyed area, as measured in 1997 (LANL 2004, 087390). This calculated net erosion, 3.7% of the estimated 1942–1997 total, represents a modest decrease in post-1942 sediment volume. Net erosion occurred in this area in 2010 and 2011, and net deposition occurred in 2012, resulting in 12.5 $m^3$/100 m net deposition from 2010–2012 (LANL 2011, 200902). Therefore, 2013 net erosion is approximately 29 times the 2010–2012 net sediment deposition.

On average, the thalweg incised by 2.5 ft above the former transition point (PU 0) and aggraded by 1.2 ft below PU 0 in 2013 compared with no change above the transition and 0.2 ft of aggradation below the transition point in 2012 (Table A-3.4-1). As presented Figure A-3.4-4, the average thalweg gradient increased above the transition point and decreased below the transition point between 2011 and 2013. The increase in gradient above the transition point is due to channel aggradation at the upper end and channel incision in the lower end of the area above the transition point. The decrease in gradient below the transition point is primarily from channel incision at the upper end, along with minor channel aggradation in the lower part of the area below the transition point.

### A-3.5 Pueblo Canyon GCS

A total of 15 cross-sections were surveyed in April 2010 at 100-ft intervals upstream of the Pueblo Canyon GCS, and 3 cross-sections were surveyed at 100-ft intervals downstream from the GCS (Figure A-3.5-1). A longitudinal channel thalweg profile was also surveyed over this 1800-ft interval. Because some ground disturbance associated with site restoration occurred after the April 2010 surveys were completed, the area of disturbance was resurveyed in June 2010 (LANL 2011, 206488). These surveys were repeated in April and October 2011 (LANL 2011, 200902) and most recently in February 2014. Because of the lack of monsoonal flows through this area in 2012, downstream attenuation of WWTP effluent discharge and the absence of significant net deposition or incision in the lower Pueblo willow-planting area upstream of the Pueblo Canyon GCS survey area; this area was not resurveyed following the summer 2012 monsoon season. Stream banks in this area were surveyed in January 2012 and were resurveyed in February 2014. Cross-section and thalweg profile locations and stream banks are shown on an orthophotograph in Figure A-3.5-1 and on a geomorphic map in Figure A-3.5-2 (geomorphic mapping from 1996–1997; LANL 2004, 087390). The cross-sections and the channel thalweg profile are shown in Figure A-5.5-3. Geomorphic changes that occurred at these cross-sections during 2013 from monsoonal flooding are summarized in Tables A-3.5-1 and A-3.5-2. In May 2014, the Pueblo Canyon GCS was revisted to document the condition of the structure. Photographs of the GCS are included in Attachment A-1, Photo A1-14.

Above the Pueblo Canyon GCS (PUGCS) maximum sediment deposition was 3.3 ft at cross-section PUGCS −100 (100 ft above the GCS), and a maximum erosion of 4.1 ft occurred at PUGCS −1400 (Table A-3.5-1). The erosion at PUGCS −1400 was associated with incision and lateral bank migration (Photo A1-15, Attachment A-1), and deposition at PUGCS −100 was associated with channel aggradation in the area immediately upstream of the PUGCS (Photo A1-16, Attachment A-1). Repeat photographs taken in March 2012 and May 2014 show the channel incision, widening, and deposition of 2013 sediment deposits that occurred in the upper part of the GCS area, at PUGCS-1100 ft. (Photo A1-17, Attachment A-1). Eight of the 15 cross-sections above the GCS had net erosion and seven had net deposition. Normalized net erosion above the GCS averaged −256 $m^3$/100 m (Table A-3.5-1). For comparison, there was an estimated 7021 $m^3$/100 m of post-1942 sediment in reach P-4E, which includes the GCS, as measured in 1997 (LANL 2004, 087390). This net erosion, 3.6% of the estimated 1942–1997 total, represents a modest decrease in post-1942 sediment volume. Cross-sections with the greatest net erosion were at the upstream end of the GCS area, and cross-sections with the greatest net deposition were within the lower GCS area, 200 ft above the structure (Table A-3.5-1). Deposition within the lower GCS area was enhanced by the presence of the GCS. Net deposition occurred in this area in 2010 and 2011, and minimal change occurred in 2012, resulting in 286 $m^3$/100 m net deposition from 2010–2012 (LANL 2011, 200902). Therefore, 2013 net erosion is slightly less than 2010–2012 net sediment deposition.

Below the Pueblo Canyon GCS, maximum sediment deposition was 2.5 ft at cross-section PUGCS +300 (300 ft below the GCS), and a maximum erosion of 6.7 ft occurred at PUGCS +200 (Figure A-3.5-3 and Table A-3.5-2). The erosion at PUGCS +200 was associated with incision and lateral bank migration, and deposition at PUGCS +300 was associated with channel migration and aggradation in the former channel location. Net sediment erosion occurred below the GCS, averaging −1395 $m^3$/100 m (Table A-3.5-1).

On average, the main channel thalweg above the PUGCS aggraded by 0.9 ft in 2013 compared with 0.2 ft of aggradation in 2011 (Table A-3.5-1). As presented in Figure A-3.5-3, the average thalweg gradient of the active channel remained unchanged between 2011 and 2013. This was from channel aggradation in both the upper and lower PUGCS area. On average, the channel thalweg below the PUGCS incised by 0.3 ft, and the channel gradient decreased between 2011 and 2013 (Table A-3.5-1; Figure A-3.5-3). The decrease in gradient is from channel aggradation above the gaging station (Figure A-3.5-3).

### A-3.6 Upper Los Alamos Canyon Sediment Detention Basins

The upper Los Alamos Canyon sediment detention basins, constructed at the base of the drainage below Solid Waste Management Unit (SWMU) 01-001(f) (LA-SMA-2 or Hillside 140), were excavated on July 8 to July 11, 2011, after the Las Conchas fire (LANL 2011, 206488). The basins were resurveyed in July 2011, and Basin 1 was resurveyed in October 2011 (LANL 2011, 200902). Following the excavation of 2011 monsoon season sedimentation, Basin 1 was resurveyed in January 2013 (LANL 2013, 239233, Appendix C). No appreciable sediment was deposited in Basin 2 between July 2011 and January 2013 (LANL 2011, 200902). In April, 2014, Basin 1 was resurveyed folowing the excavation of the accumulated 2012 moonsoon season sediment, and the topography at that time is presented in Figure A-3.6-1. Figure A-3.6-1 also shows variations in total sediment thickness determined by subtracting the January 2013 topographic surface from the April 2014 surface. Maximum sediment thickness resulting from the 2013 monsoon season is 40 cm (1.3 ft) in the northern part of the small delta where the drainage enters the northeast part of the basin (Figure A-3.6-1). Sediment in the delta proximal to the drainage is mostly coarse-grained, whereas fine-grained sediment was observed in hand-dug holes in the center of the basin. Based on field observations, 2013 sediment in the central part of the basin is 6–7 cm thick. This is consistent with sediment thickness determined from the survey data (Figure A-3.6-1). An estimated 71 $m^3$ of sediment accumulated in Basin 1 during the summer 2013 monsoon season compared with approximately 30 $m^3$ of sediment that was deposited in Basin 1 during the 2012 monsoon season (LANL 2013, 239233, Appendix C). Based on the area and 2013 sediment thickness in the delta and the remainder of Basin 1, it is estimated that 25% of the 2013 sediment in upper Los Alamos Canyon sediment detention Basin 1 is coarse-grained, and 75% of the sediment is fine-grained. Although floodwater clearly spilled into Basin 2, sediment deposition in Basin 2 was minimal (maximum sediment thickness in Basin 2 is less than 0.5 cm). Based on the deposition of sediment observed in Basin 1, and the absence of any appreciable sediment deposition in Basin 2, nearly all of the sediment transported by the small drainage below SWMU 01-001(f) is being contained in the upper Los Alamos Canyon sediment detention basin. Photographs of the sediment detention basins are shown in Photo A1-18, Attachment A-1.

### A-3.7 DP Canyon GCS

A total of 11 cross-sections were surveyed in April and May 2010 at 100-ft intervals upstream of the DP Canyon GCS, and 2 cross-sections were surveyed at 125 ft and 225 ft downstream from the GCS, below the E039.1 gaging station (LANL 2012, 218411). A longitudinal channel thalweg profile was also surveyed over this 1325-ft interval. The area above the GCS was first resurveyed in November and December 2010, and the area below the GCS was resurveyed in March 2011 after ice melted from the channel bed (LANL 2011, 200902). The area above and below the GCS was resurveyed in October 2011 and in November–December 2012 (LANL 2013, 239233, Appendix C). In February 2013, an additional cross-section was surveyed 20 ft above the GCS (DPGCS –20 ft). All DPGCS cross-sections were resurveyed in March and April 2014. Cross-section and thalweg profile locations are shown on an orthophotograph in Figure A-3.7-1 and on a geomorphic map in Figure A-3.7-2 (geomorphic mapping from 1998; LANL 2004, 087390). The cross-sections and thalweg profile are shown in Figure A-3.7-3. Geomorphic changes that occurred at these cross-sections during 2013 from monsoonal flooding are summarized in Tables A-3.7-1 and 3.7-2. Photographs of the GCS are shown in Photo A1-19 Attachment A-1.

Net sediment deposition occurred at 11 of the 12 cross-sections above the GCS during the summer 2013 monsoon season and net sediment erosion occurred at one cross-section (Table A-3.7-1). Maximum sediment depositional thickness was 1.5 ft at the cross-section 600 ft above the GCS, and the maximum erosion was 2.5 ft, at the cross-section 200 ft above the GCS (Figure A-3.7-1 and Table A-3.7-1). Maximum sediment deposition was associated with aggradation of the main channel at −600 ft (Photo A1-20, Attachment A-1) and maximum incision was associated with progressive channel incision at −200 ft (Photo A1-21, Attachment A-1 and Figure A-3.7-3). Normalized net sediment deposition above the GCS averaged 120 $m^3$/100 m (Table A-3.7-1) compared with an estimated 749 $m^3$/100 m of post-1942 sediment in reach DP-2, which contains the GCS, as measured in 1999 (LANL 2004, 087390). This net deposition, 16% of the estimated 1942–1999 total, represents a large yearly increase. The 2013 net sediment deposition is 2.6 times the 2012 net deposition and is slightly less than the combined 2010–2012 net deposition (Table A-3.7-1). Most of the 2013 sediment occurred between DPGCS-200 ft and DPGSC-800 ft, with the greatest sediment volume deposited at DPGSC-600 ft (Figure A-3.7-1). This sediment deposition includes both channel aggradation and overbank deposition and is similar to sediment deposition observed in this area during previous monitoring efforts (LANL 2011, 200902). It appears that the locus of sediment deposition is prograding downstream and migrating laterally.

In the area below the GCS net sediment erosion occurred at both cross-sections (Figure A-3.7-3 and Table A-3.7-2). Maximum sediment deposition was 0.2 ft, within the channel at the cross-section 225 ft below the GCS and maximum sediment erosion was 1.4 ft at the cross-section 125 ft below the GCS (Figure A-3.7-1).

On average, the stream channel upstream of the GCS aggraded by 0.4 ft in 2013 compared with 0.2 ft of aggradation in 2012 (Table A-3.7-1). Downstream of the GCS, the channel incised by an average of 0.7 ft in 2013, compared with 0.1 ft of aggradation in 2012 (Table A-3.7-2). As shown in Figure A-3.7-3, the channel thalweg gradient increased slightly both above and below the GCS in 2012.

### A-3.8 Los Alamos Canyon Low-Head Weir

The sediment retention basins above the Los Alamos Canyon low-head weir (LA weir) were excavated from July 8 to July 11, 2011, following the Las Conchas fire (LANL 2011, 206488). The upper two basins (Basins 1 and 2) were resurveyed in October 2011 after the 2011 monsoon season, and the lower basin (Basin 3) was resurveyed in March 2012 after ponded water had evaporated (LANL 2012, 218411). Basins 1 and 3 were resurveyed in November 2012; Basin 2 had standing water and was not resurveyed in November 2012 (LANL 2013, 239233, Appendix C). All three basins were resurvey in May 2013 following excavation in March–April 2013. Basins 1 and 2 were resurveyed in December 2013, and Basin 3 was resurveyed in February 2014. Figure A-3.8-1 shows variations in total sediment thicknesses in LA weir sediment basins, determined by subtracting the May 2013 surface from the December 2013-February 2014 surface (sediment deposition between December 2013 and February 2014 is inferred to be neglible because of the absence of runoff or minimal runoff that occurred during this time interval). Maximum sediment thickness in Basin 3 resulting from the 2013 monsoon season is 2.16 m (7.1 ft). This maximum sediment thickness is in an area where a delta prograded from Basin 2 into the western end of Basin 3. An estimated 2694 $m^3$ of sediment accumulated in Basin 3 during the summer 2013 monsoon season. Maximum sediment thickness in Basin 2 resulting from the 2013 monsoon season is 2.1 m (6.9 ft), and is in the central part of the basin (Figure A-3.8-1). An estimated 1932 $m^3$ of sediment accumulated in Basin 2 during the summer 2013 monsoon season. Maximum sediment thickness in Basin 1 resulting from the 2013 monsoon season is 1.4 m (4.6 ft), and is in the central part of the basin (Figure A-3.8-1). An estimated 540 $m^3$ of sediment accumulated in Basin 1 during the summer 2013 monsoon season. Table A-3.8-1 summarizes volume changes in each of the three sediment retention basins during this period. The weir is shown in Photo A1-22, Attachment A-1; the delta in the lower retention basin is shown in Photo A1-23, Attachment A-1.

Field observations indicate that approximately 100% of the 2013 sediment deposited in Basins 1 and 2 was coarse-grained sediment transported as bed load. This is in contrast to 2012 sediment deposits in Basin 1, which were approximately 20% coarse-grained sediment that was transported as bed load and 80% fine-grained sediment transported as suspended load, and Basin 2, which was 100% fine-grained sediment transported as suspended load (LANL 2013, 239233, Appendix C). In Basin 3, 2013 deposits comprised approximately 40% coarse-grained sediment and 60% fine-grained sediment, compared with 100% fine-grained sediment in 2011 and 2012. The total sediment accumulation rate in the basins above the weir during the 2013 monsoon season was greater than measured in previous years, as shown in Table A-3.8-2. Annual sediment deposition at the LA weir in 2011, 2012, and 2013 was approximately an order of magnitude greater than the annual sediment deposition recorded in 2010, the year before the Las Conchas fire (Table A-3.8-2). The high sedimentation rate after the Las Conchas fire is probably related to operation of the Los Alamos Reservoir. After the Cerro Grande fire, the reservoir was maintained to impound floodwaters, which let most of the sediment from the burn area settle out (Lavine et al. 2006, 213454; Reneau et al. 2007, 102886). In contrast, after the Las Conchas fire, floodwaters were allowed to bypass the dam because it was being rebuilt when the fire occurred and was not considered able to withstand large floods. The predominance of coarse sediment accumulated above the weir in 2013 differs from observations after the Las Conchas and Cerro Grande fires when the transport of fine-grained sediment was much higher than that of coarse-grained sediment in the first two to three years, and the transport distance greater for fine-grained sediment (Lavine et al. 2006, 213454; Reneau et al. 2007, 102886). The predominance of coarse sediment at the weir in 2013 is likely from the large runoff events that occurred in September 2013, during which small tributary drainages appear to have contributed significant volumes of coarse sediment. The large increase in sediment in Basins 1 and 2 in 2013 compared with 2012 is attributable to the higher volume of coarse sediment bedload in the flood waters, which was deposited in the upper basins where the floodwaters spread and the gradient decreased. This resulted in the basins filling to a higher level than in previous years. The decrease in sediment volume in Basin 3, field observations showing that the flood overtopped the weir, and the large increase in coarse sediment compared with fine-grained sediment indicate that fine sediment was transported downstream past the LA weir during the Septermber 2013 flood event.

## A-4.0 OBSERVATIONS OF WILLOWS IN PUEBLO CANYON

From 2008 to 2010, willows were planted in three areas in Pueblo Canyon downstream from the new Los Alamos WWTP, with the goal of enhancing riparian habitat, stabilizing surfaces, and slowing floodwaters. These areas are referred to as the upper Pueblo Canyon willow-planting area (section A-3.2), the lower Pueblo Canyon willow-planting area (section A-3.4), and the Pueblo Canyon GCS (section A-3.5). Observations were made of willows in these areas during fall 2011, winter 2013, and spring 2014. Willow success was variable in these areas and appears to be related to substrate conditions and preexisting vegetation as well as to the occurrence and persistence of water and substrate stability, as discussed below. Willow success was also affected by the large September 2013, flood event, which laid down and/or uprooted many willows, resulting in substantial willow mortality.

In 2014, the upper Pueblo Canyon willow-planting area had the tallest willows and the thickest stands of willows in the surveyed areas. In the upper third of the upper willow planting area the monsoon floods of summer 2013 either completely uprooted or laid down existing willows (Photo A1-24, Attachment A-1). Because of the unobstructed impact of flood waters at the upstream segment of the upper planting area, more willows were uprooted at the upstream end of the planting. Willows that were laid down but were not uprooted appear to have a good survival rate, and many laid-down willows were observed to be resprouting during a May 2014 site visit (Photo A1-25, Attachment A-1). The greatest number of laid-down and resprouting willows were observed at the center and downstream end of an island in the channel at the UW-5 cross-section (Figure A-3.2-1). Few laid-down survivors are present upstream of the island. The middle third of the upper Pueblo Canyon willow planting area fared better with numerous survivors present between cross-sections MW-1 and MW-4 (Figure A-3.2-1 and Photo A1-26, Attachment A-1). Downstream of MW-4, the channel was completely scoured and few if any willows survived (Figure A-3.2-1). At the lower third of the upper Pueblo Canyon willow planting area, willows were completely scoured from the channel and only a few willows survived on the banks of the current incised channel (Figure A-3.2-1 and Photo A1-27, Attachment A-1). This is similar to previous findings: In the lower third of the upper Pueblo Canyon willow-planting area, willows were less continuous, and generally gaps were observed between the foliage from nearby stems. No willows were observed in 2014 (following 2013 monsoon floods) in most of the area between the LW-3 and LW-5 cross-sections, and they were sparse or nonexistent between the LW-5 and LW-6 cross-sections (Figure A-3.2-1), which is similar to the extent of willows observed in 2012 (LANL 2013, 239233, Appendix C). This corresponds to an area of unstable conditions from 2010 through 2012, with eroding banks and an incising channel (Figure A-3.2-5 and Photo A1-5, Attachment A-1).

It appears that willow flood survival was greatest in areas where the channel has bends or contains islands, whereas very few willows withstood the force of the flood waters in straight reaches. Overall, the upper two-thirds of the upper Pueblo Canyon willow-planting area has continuous surface-water flow and a sandy or gravelly, aggrading substrate, and the willows were planted in generally bare ground with little competition from other vegetation. These conditions appear to be ideal for the success of willow plantings, barring major flood events. Many willows that were laid down have resprouted and will likely revegetate areas that were damaged by 2013 floods. In the lower third of the upper Pueblo willow planting area willow success has been poor. The poor willow success in this area appears to be directly related to the unstable substrate conditions.

In the upper half of the lower Pueblo Canyon willow-planting area (Figures A-1.0-1 and A-3.4-1), above the transition zone, willows were planted in a thin strip along the main channel and locally along a side channel. This was an area with thick preexisting vegetation dominated by reed canary grass (*Phalaris arundinacea*), and much of the area has a fine-grained substrate. Most planted willow stalks did not survive, with willow success estimated to be less than 1% in this area in 2014 (compared with willow success ranging from 0% to about 30% in 2012 and 0% to about 50% observed in 2011). Poor success in this area was related to the thick preexisting vegetation, which would compete with the willows. The commonly fine-grained substrate and damage to willow stalks by animals observed during the previous willow surveys may also have contributed to the poor success rate in this area.

In the lower half of the lower Pueblo Canyon willow-planting area (Figures A-1.0-1 and A-3.4-1), below the transition zone, willows were also planted with a typical spacing of 1 m to 10 m in a thin strip along the main channel, and the success rate here was also generally low based on May 2014 observations. As noted in the 2011 and 2012 surveys, willow success was best near the lower end of the planting area, where the area between incised banks widens and coarse sediment was deposited (LANL 2011, 200902). However, September 2013 floods eroded the willows from this area (Photo 1-28, Attachment A-1). Willows also had been successfully established in an area of seepage in the transition zone near PU 0, but these were also eroded during the September 2013 floods.

One dense native willow patch is located on a post-1942 geomorphic surface near the PU +100 ft cross-section. This patch was partially eroded during September 2013 floods, with remaining willows up to 3 m tall. These willows were established before the recent planting and indicate locally favorable conditions on higher surfaces, at least at the time they were established.

During the 2014 surveys, areas with sufficient thickness of saturated coarse sediments were identified and willow cuttings were subsequently planted between the PU −200 ft and PU+1100 ft cross-sections (Photo A1-28b and A1-29, Attachment A-1). Several of these willow plantings were showing signs of basal sprouting/leafing out during an early-May 2014 site visit. Survival success of these plantings will be assessed in the next report.

Upstream from the Pueblo Canyon GCS, willows were planted in the disturbed area along the channel for a distance of approximately 250 ft. Approximately 10% to 20% of these willows were surviving in 2013, often consisting of short sprouts from the base of the stems or the roots. The 2013 flood event further reduced the number of surviving plants; very few surviving willows remain in this entire reach. Stream incision and an associated lowering of the water table may further reduce survival rates of both willows and reed canary grass. It appears that reed canary grass will reestablish on the newly eroded surfaces since several healthy clumps were observed in this reach in spring 2014.

## A-5.0 SOUTH FORK OF ACID CANYON INSPECTION

The stream bank armoring that was emplaced in the south fork of Acid Canyon in April 2010 (LANL 2010, 109280) was inspected after the 2011 monsoon season (LANL 2012, 218411), after the 2012 monsoon season (LANL 2011, 200902, Appendix C; LANL 2013, 239233)LANL 2013, 239233, Appendix C), and again after the 2013 monsoon season. The rock armoring remained intact, as shown in Photo A1-30, Attachment A-1.

## A-6.0 SUMMARY

Net erosion occurred in most surveyed areas in the Pueblo Canyon watershed during monsoonal flood events in 2013. This is in contrast to net deposition measured in most surveyed areas in 2010, 2011, and 2012. The CVS,upper Pueblo willow, lower Pueblo willow, and Pueblo Canyon GCS sediment mitigation areas all experience net erosion, whereas the wing ditch area experienced net deposition. The relatively large magnitude of the September 2013 flood event resulted in significant channel widdening and incision in the areas that experienced net erosion. Many previously established willows were uprooted and washed downstream, reducing the density of willows in all willow planting areas. However, in areas with previously established thick willow patches (the upper two-thirds of the upper Pueblo willow planting area), willows that were laid down by monsoonal floods have resprouted and should effectively recolonize the area. Willows have also been replanted in the lower Pueblo willow-planting area. The Pueblo Canyon GCS was effective in causing sediment deposition in the lower part of the Pueblo Canyon GCS monitoring area. The survival of thick willow patches and sedimentation above the Pueblo Canyon GCS and in the wing ditch area is consistent with the goal of the sediment transport mitigation work plans (LANL 2008, 101714; LANL 2008, 105716). Field observations indicate that much of the eroded sediment in Pueblo Canyon was originally deposited in the floods that occurred after the Cerro Grande fire, which contains relatively low contaminant concentrations. In addition, some of the bank erosion includes uncontaminated pre-1943 sediment, and erosion of these areas does not contribute to the contaminant load in storm water. However, some areas of post-1942, pre-Cerro Grande sediment deposits were also eroded, adding to the contaminant load in storm water.

Net sediment deposition occurred in most surveyed areas in the Los Alamos Canyon watershed in 2013, which is consistent with the goal of the sediment transport mitigation work plans (LANL 2008, 101714; LANL 2008, 105716). Net sediment deposition in DP Canyon, the upper Los Alamos Canyon sediment detention basins, and the LA weir in 2013 is greater than recorded in 2012 (or in previous years). It appears that sediment deposition behind the engineered structures in the Los Alamos Canyon watershed has been enhanced by the construction of these structures, although how far this effect propagates upstream behind the DP Canyon GCS is uncertain.

Although the September 2013 flood event resulted in significant erosion in most surveyed areas in Pueblo Canyon, the magnitude of the erosion was likely reduced by the sediment mitigation structures and willow plantings. The engineered structures in Los Alamos and DP Canyons appear to have enhanced sediment deposition in these areas. No actions are recommended at this time except for continued annual resurveys.

## A-7.0 REFERENCES AND MAP DATA SOURCES

### A-7.1 References

*The following list includes all documents cited in this appendix. Parenthetical information following each reference provides the author(s), publication date, and ER ID. This information is also included in text citations. ER IDs are assigned by the Environmental Programs Directorate's Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the master reference set.*

*Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau and the Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority. Documents previously submitted to the administrative authority are not included.*

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LANL (Los Alamos National Laboratory), May 2012. "2011 Geomorphic Changes at Sediment Transport Mitigation Sites in the Los Alamos and Pueblo Canyon Watersheds," Los Alamos National Laboratory document LA-UR-12-21330, Los Alamos, New Mexico. (LANL 2012, 218411)

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Reneau, S.L., D. Katzman, G.A. Kuyumjian, A. Lavine, and D.V. Malmon, February 2007. “Sediment Delivery After a Wildfire,” *Geology,* Vol. 35, No. 2, pp. 151–154. (Reneau et al. 2007, 102886)

### A-7.2 Map Data Sources

*The following list provides data sources for maps included in the main body of this report.*

2000 LIDAR Hypsography; Los Alamos National Laboratory, Earth and Environmental Sciences GIS Lab; 1:1,200; Work in progress.

Drainage; Los Alamos National Laboratory, Environment and Remediation Support Services; 1:24,000; May 15, 2006.

Gaging stations; Los Alamos National Laboratory, Waste and Environmental Services Division; 1:2,500; March 19, 2011.

Grade control structures; Los Alamos National Laboratory, Environment and Remediation Support Services; Unknown; May 17, 2011.

LANL boundary; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; Unknown; August 16, 2010.

LANL area orthophoto; Los Alamos National Laboratory, Earth and Environmental Sciences GIS Lab; 1'=200'; February 25, 2009.

Location IDs; Los Alamos National Laboratory, ESH&Q Waste and Environmental Services Division; 1:2,500; May 19, 2011.

Other property boundary; Los Alamos National Laboratory, Earth and Environmental Sciences GIS Lab; Unknown; August 16, 2010.

Pueblo and DP Canyon cross sections and thalwegs; Los Alamos National Laboratories, Earth and Environmental Sciences GIS Lab; Unknown; May 2011.

Roads, surfaced; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; Unknown; November 30, 2010.

Technical area boundary; Los Alamos National Laboratory, Site Planning and Project Initiation Group, Infrastructure Planning Office; Unknown; August 16, 2010.

Watershed; Los Alamos National Laboratory, Environment and Remediation Support Services; 1:2,500; November 2, 2006.

Wells; Los Alamos National Laboratory, ESH&Q Waste and Environmental Services Division; 1:2,500; May 19, 2011.

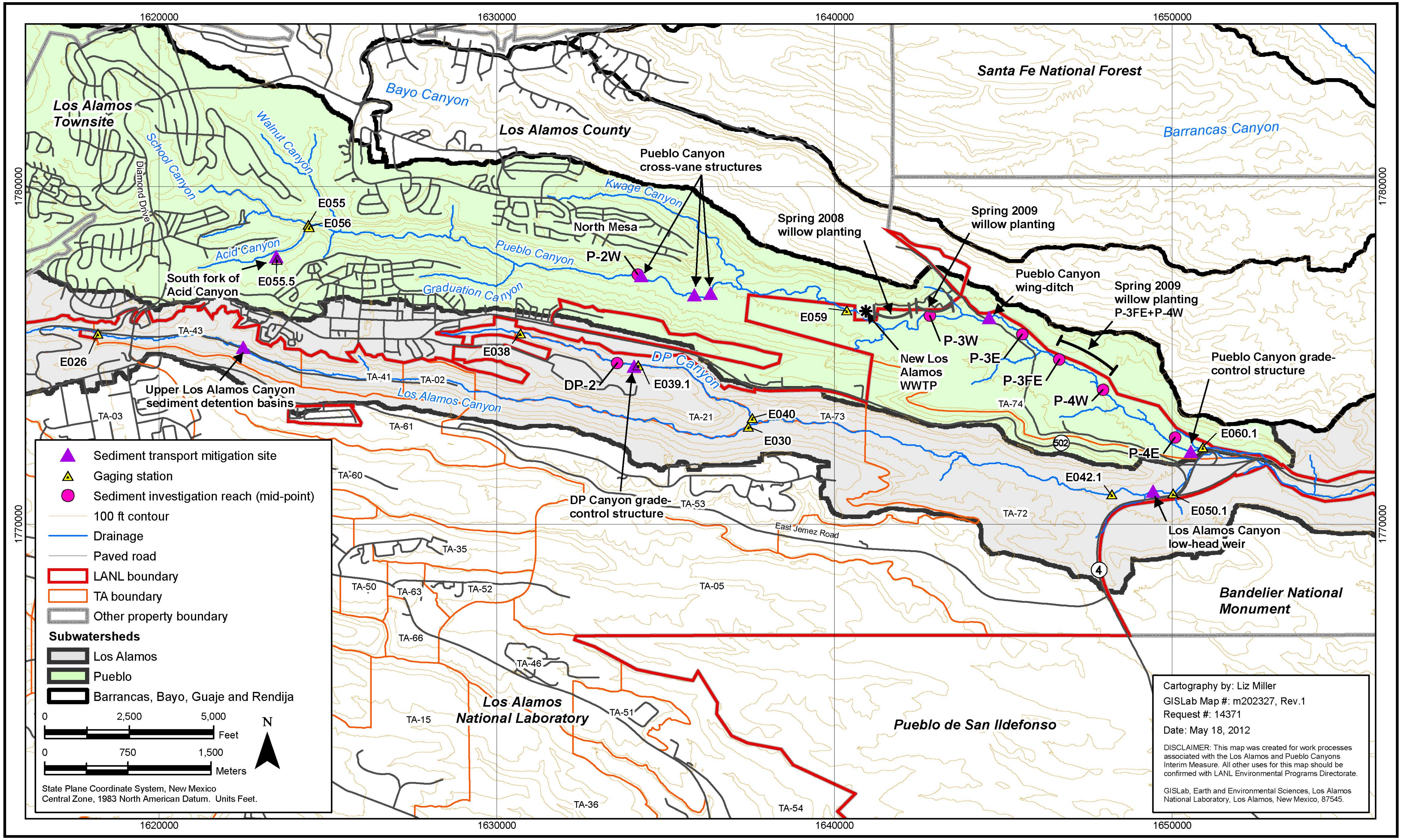



**Figure A-1.0-1 Los Alamos and Pueblo Canyon watersheds, showing sediment transport mitigation sites and stream gages**


**Figure A-3.1-1 Orthophoto showing the locations of surveyed cross-sections and thalweg profiles at the Pueblo Canyon CVSs**

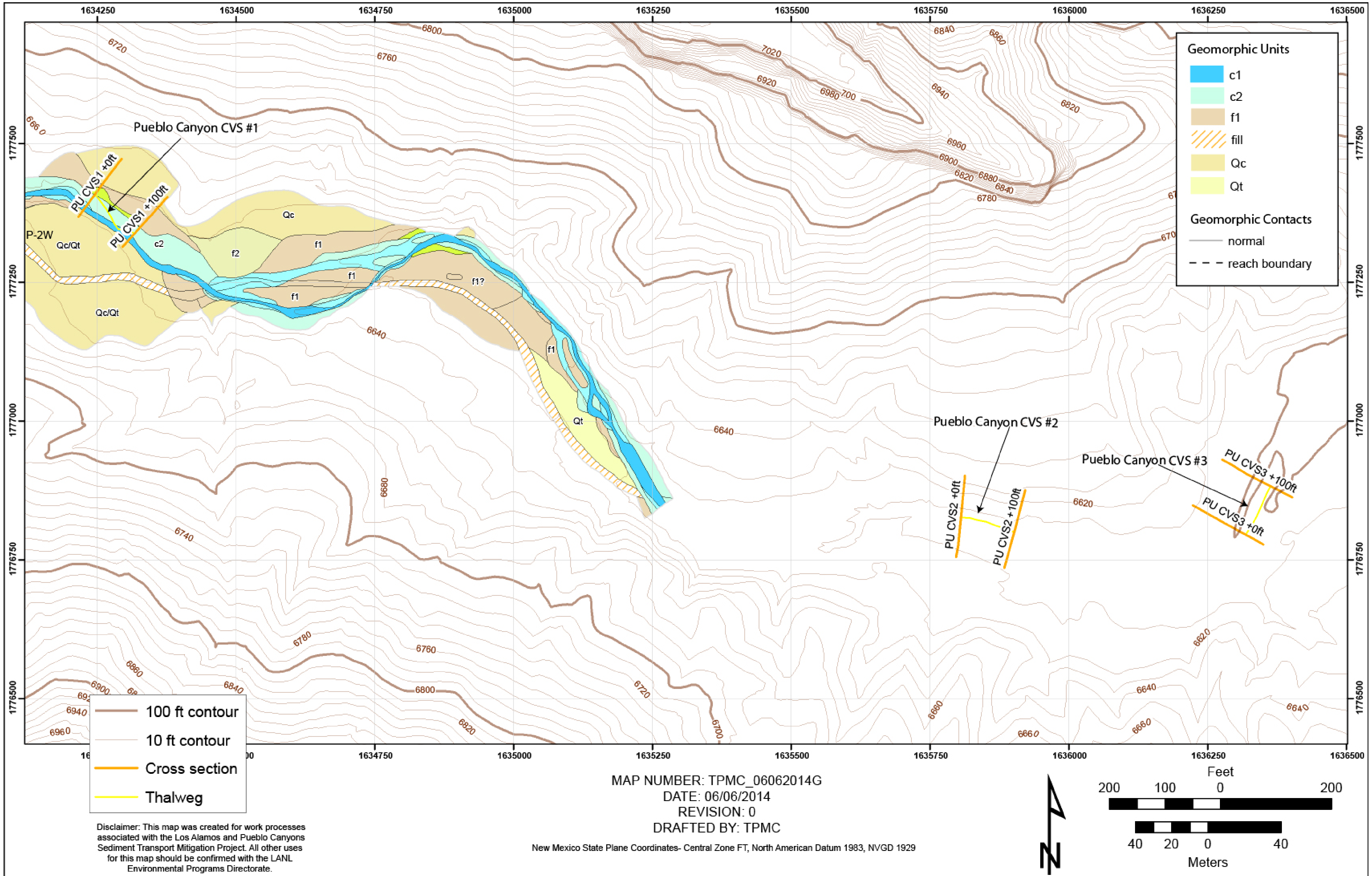



**Figure A-3.1-2** Geomorphic map showing the locations of surveyed cross-sections and thalweg profile at Pueblo Canyon CVS #1; geomorphic mapping from 1997

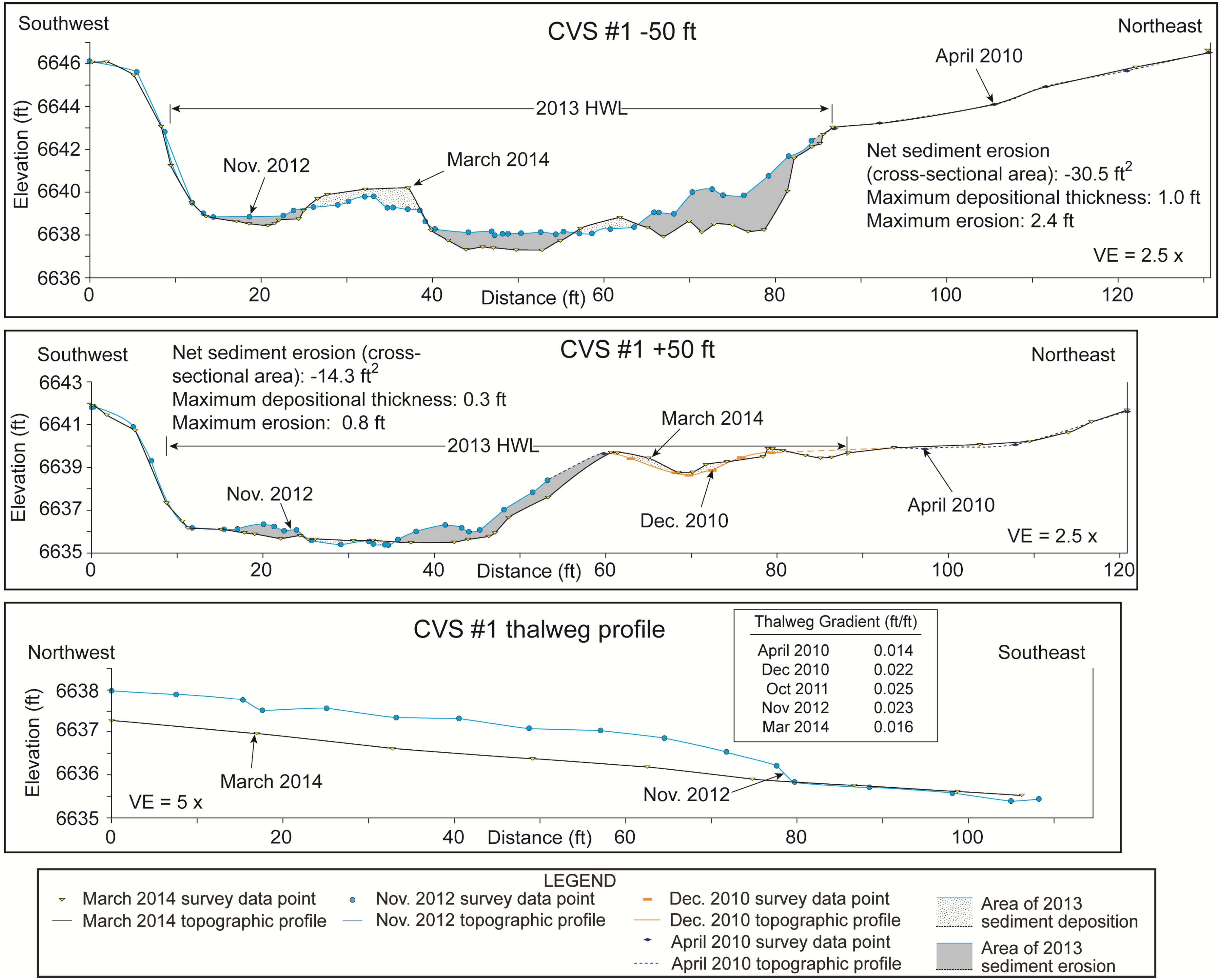



**Figure A-3.1-3 Cross-sections and thalweg profile at Pueblo Canyon CVS #1**

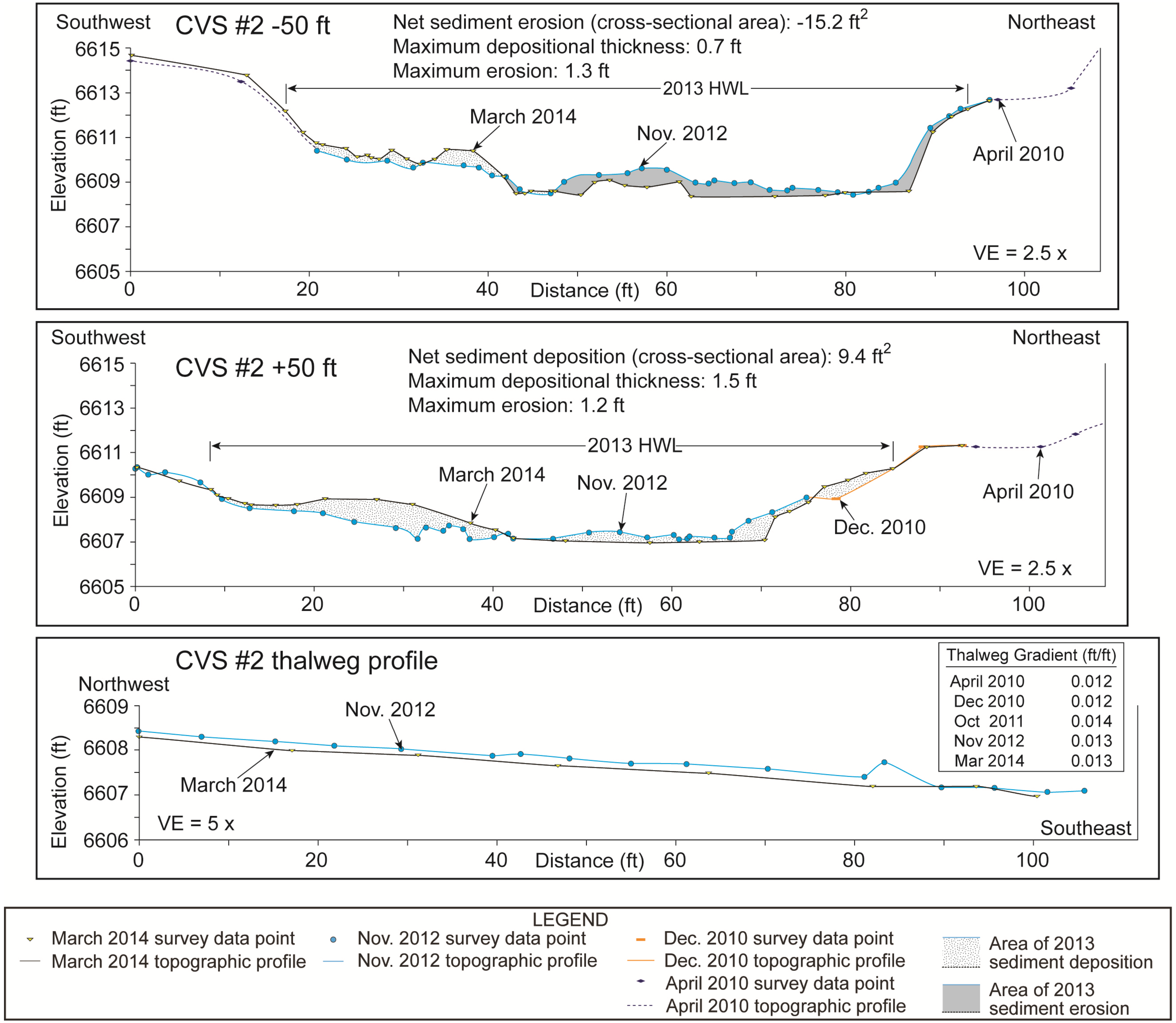
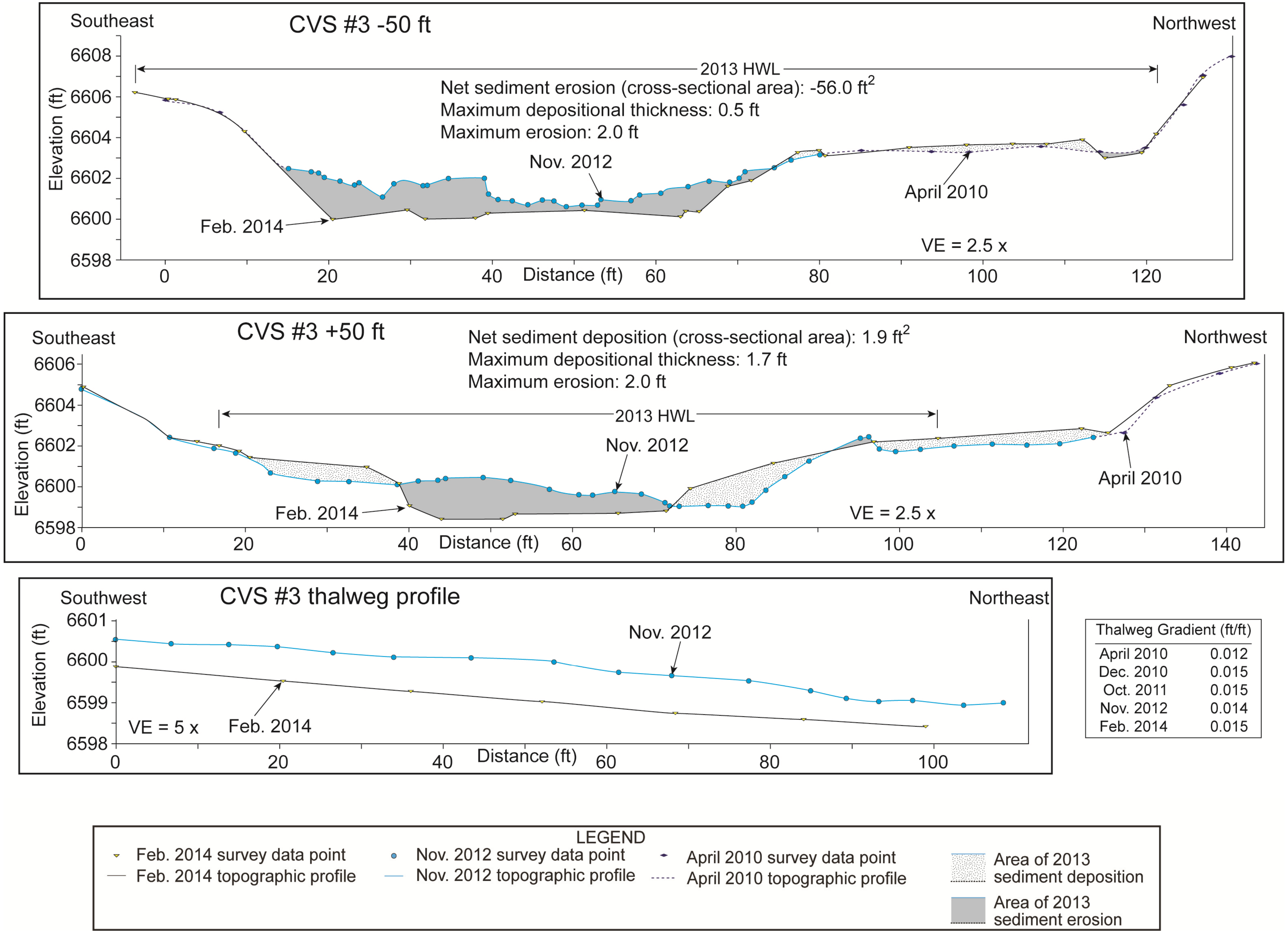



**Figure A-3.1-4 Cross-sections and thalweg profile at Pueblo Canyon CVS #2**




| Thalweg Gradient (ft/ft) | |
|---|---|
| April 2010 | 0.012 |
| Dec. 2010 | 0.015 |
| Oct. 2011 | 0.015 |
| Nov. 2012 | 0.014 |
| Feb. 2014 | 0.015 |

**Figure A-3.1-5 Cross-sections and thalweg profile at Pueblo Canyon CVS #3**

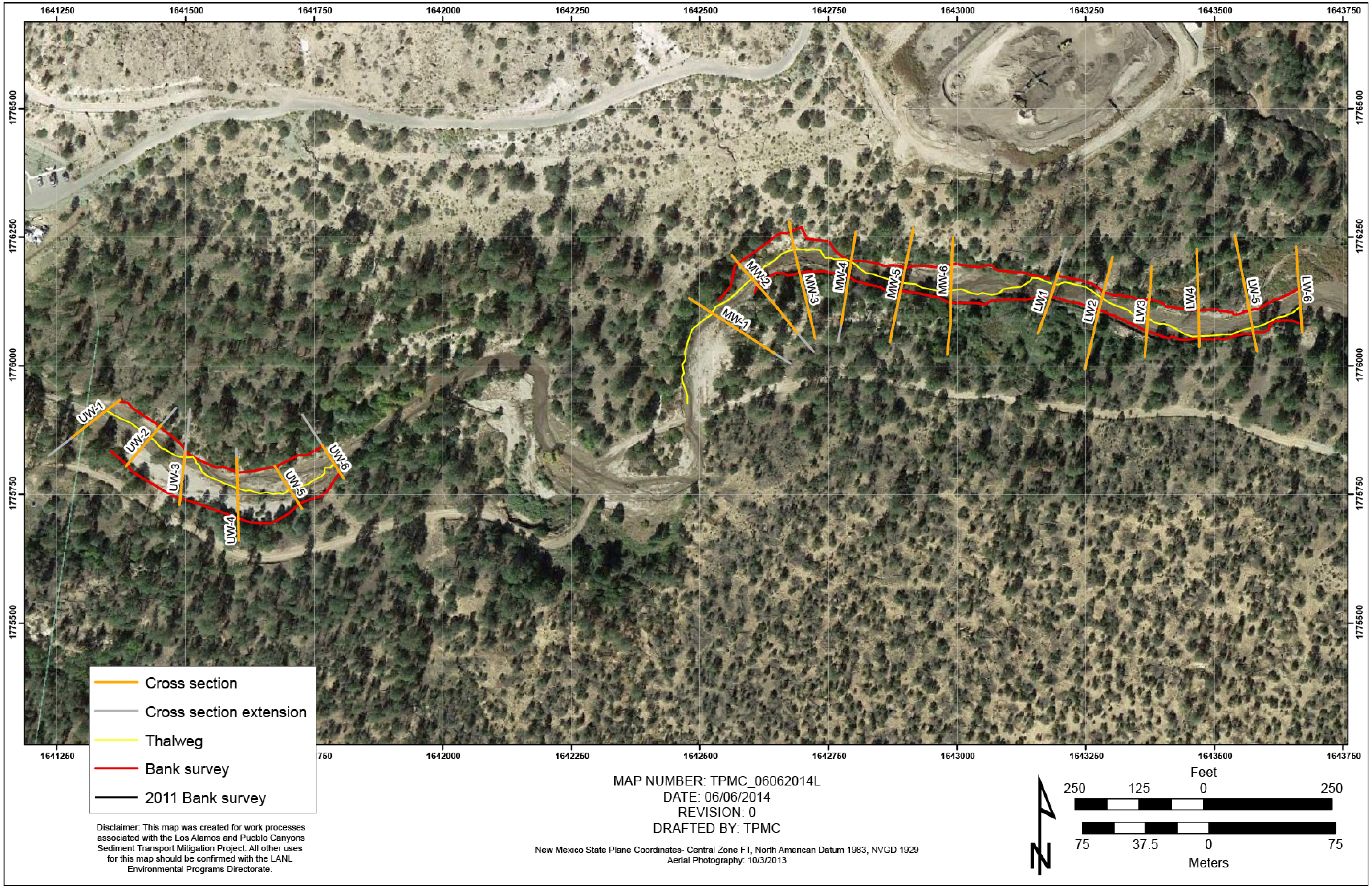



**Figure A-3.2-1** **Orthophoto showing the locations of surveyed cross-sections and thalweg profiles in the upper Pueblo Canyon willow-planting area**

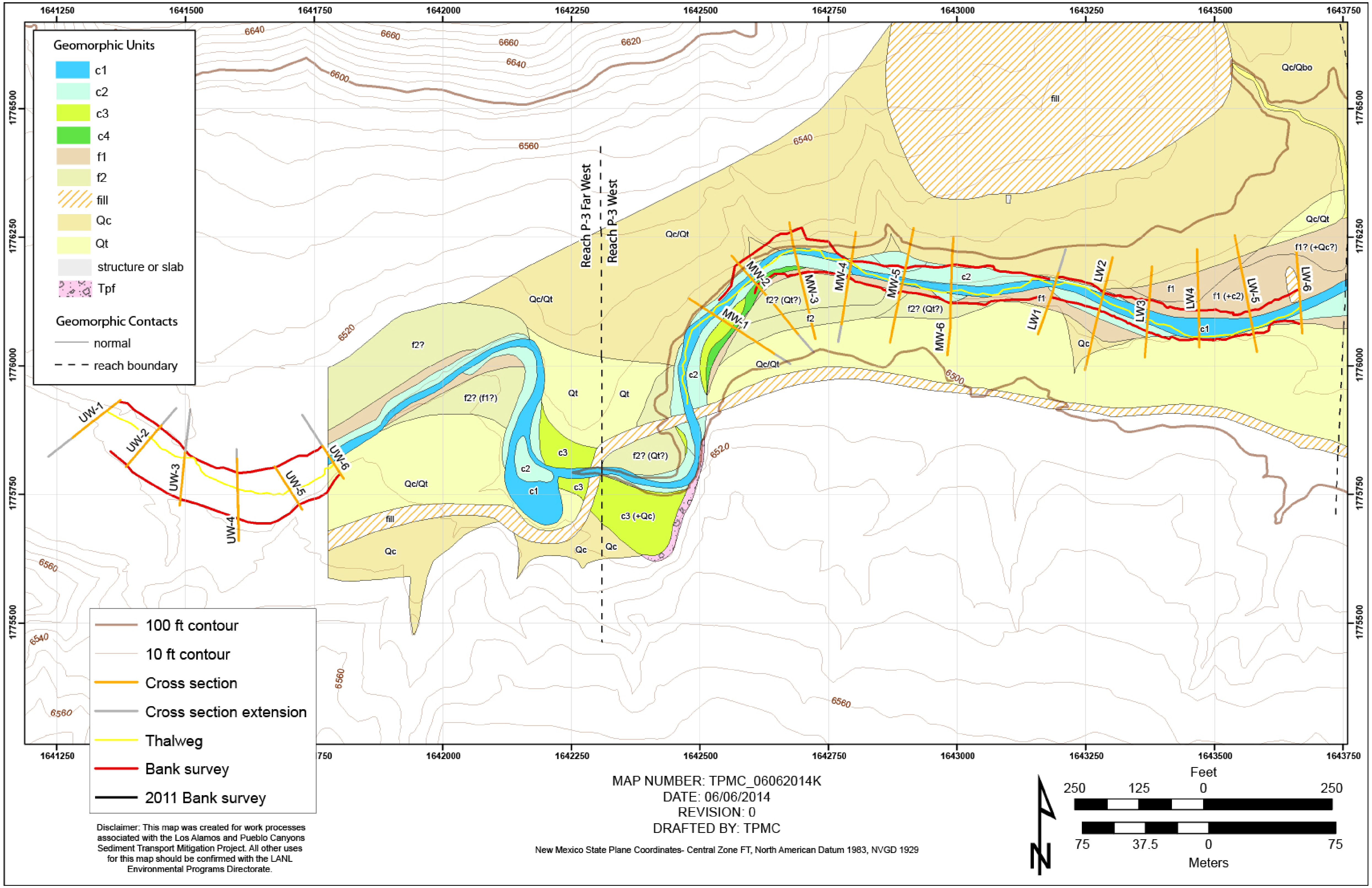



**Figure A-3.2-2 Geomorphic map showing the locations of surveyed cross-sections and thalweg profiles in the upper Pueblo Canyon willow-planting area; geomorphic mapping from 1997**

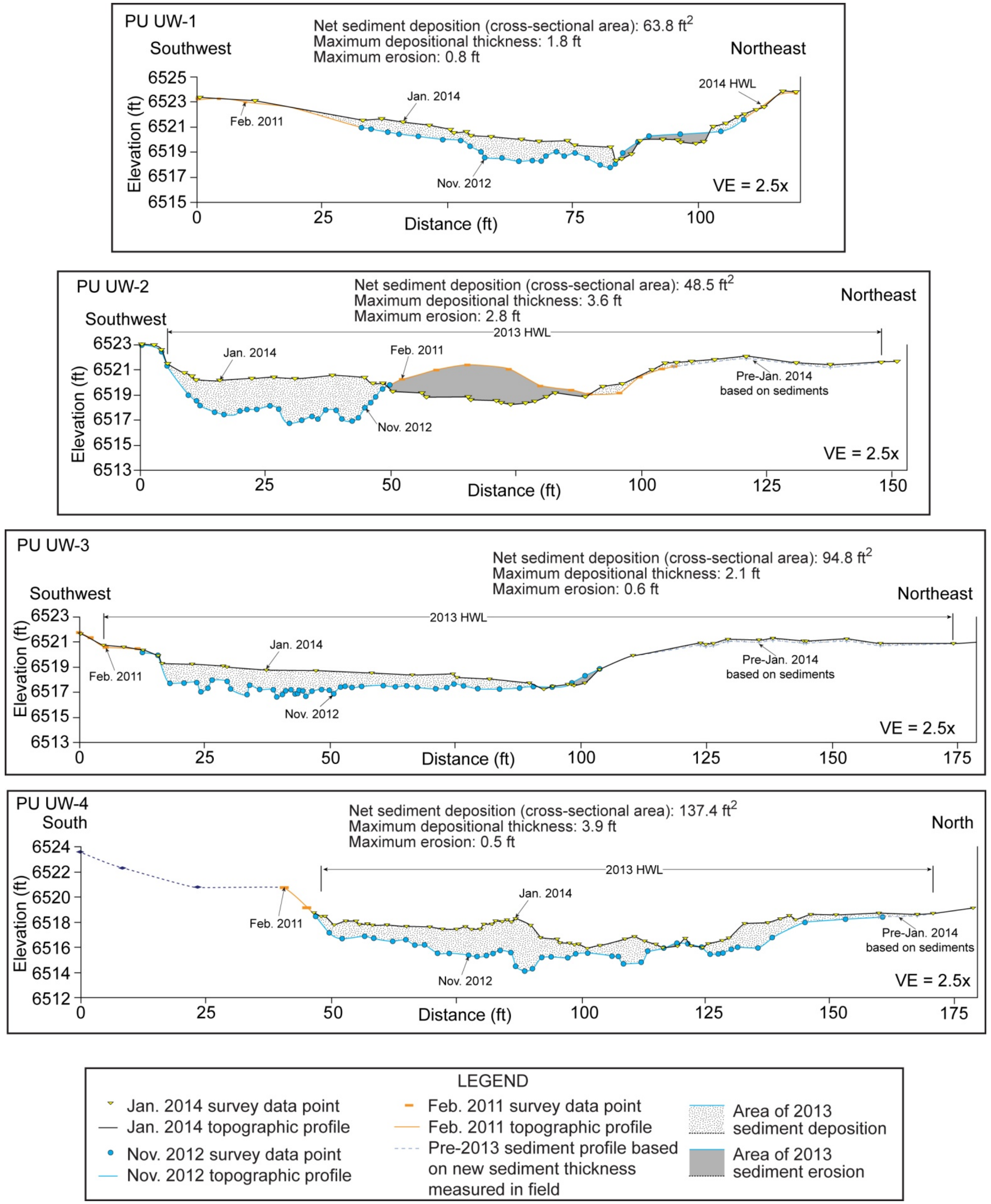



**Figure A-3.2-3 Cross-sections and thalweg profile in upper third of upper Pueblo Canyon willow-planting area**

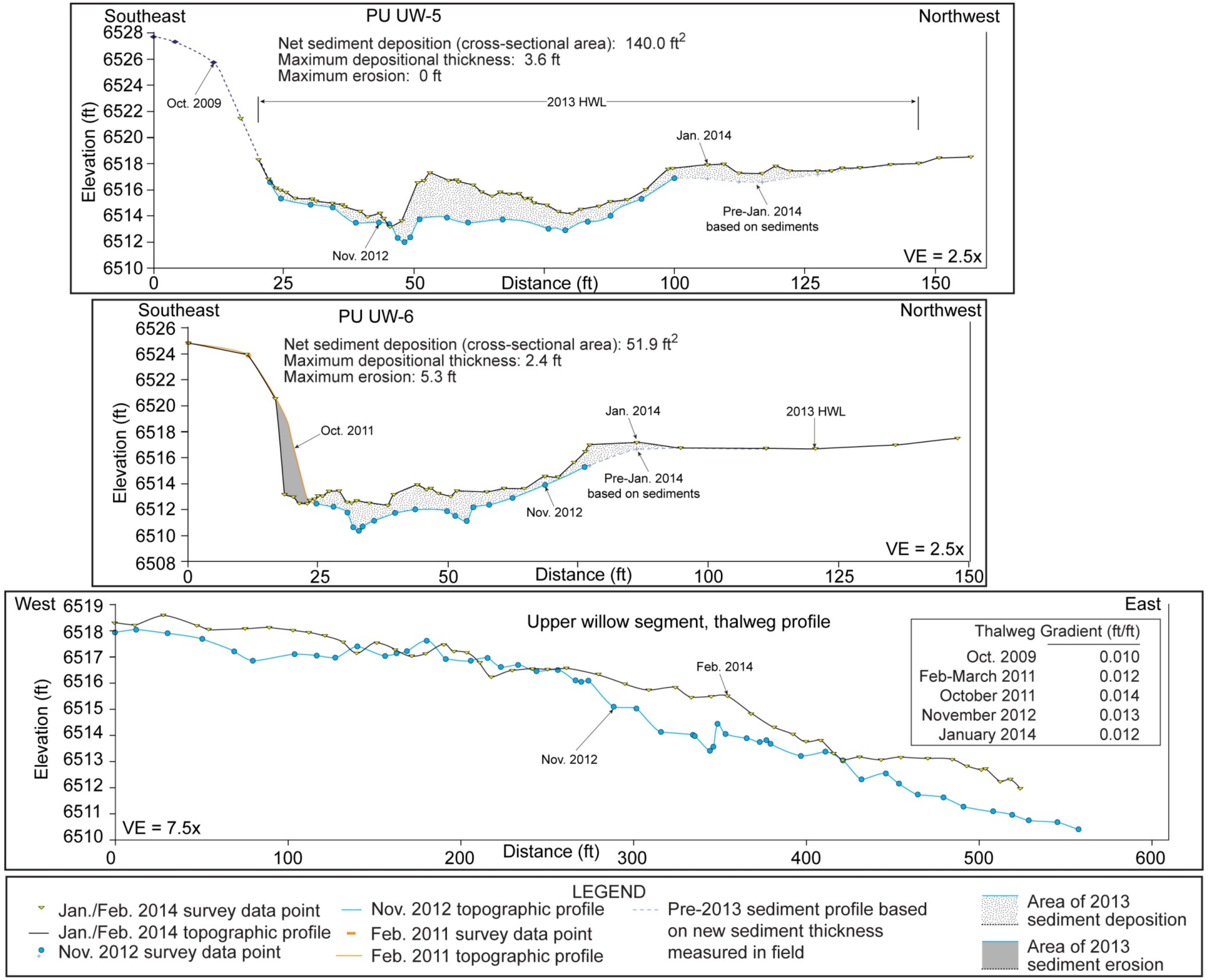



**Figure A-3.2-3 (continued) Cross-sections and thalweg profile in upper third of upper Pueblo Canyon willow-planting area**

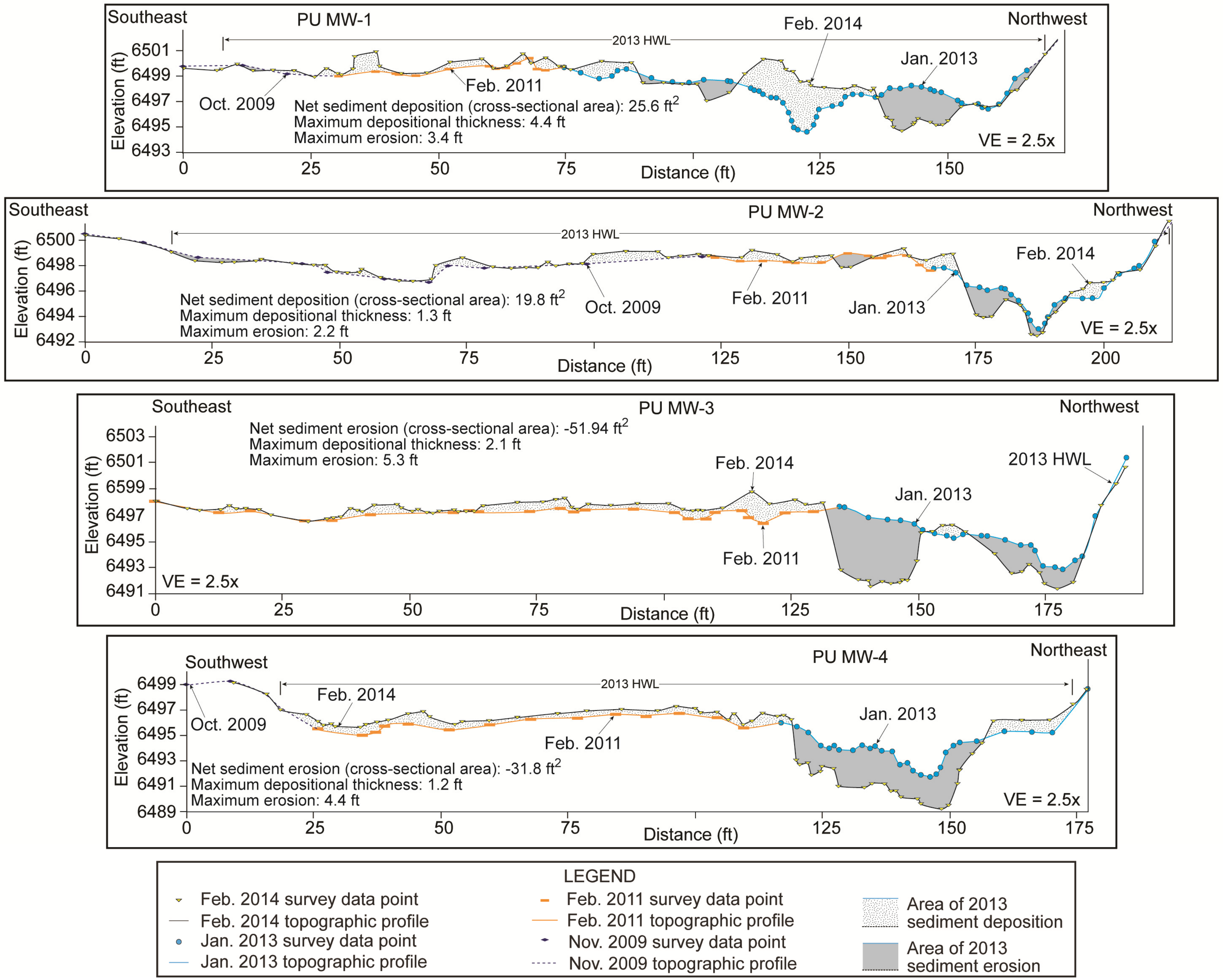



**Figure A-3.2-4 Cross-sections and thalweg profile in middle third of upper Pueblo Canyon willow-planting area**

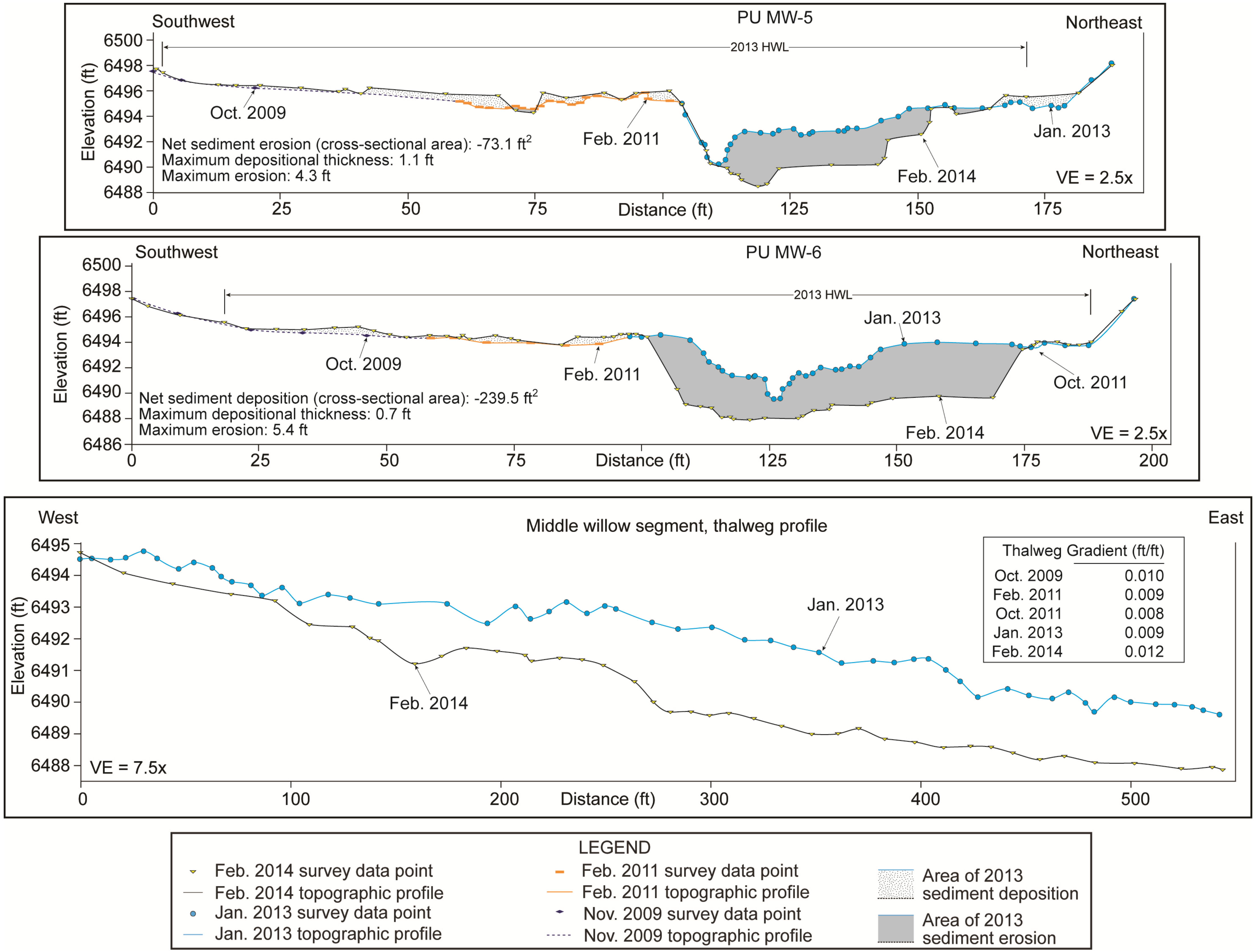
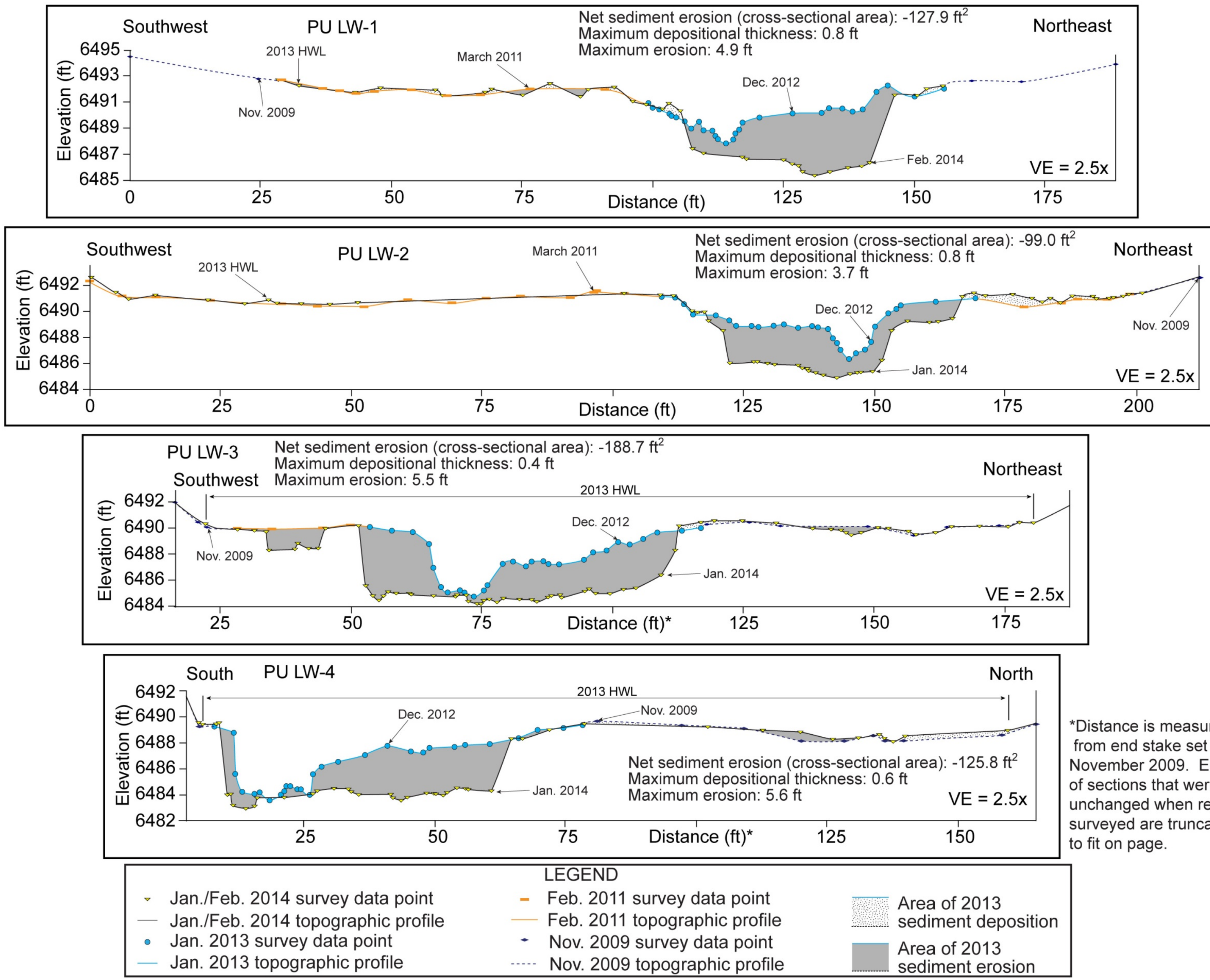



**Figure A-3.2-4 (continued) Cross-sections and thalweg profile in middle third of upper Pueblo Canyon willow-planting area**




*Distance is measured from end stake set in November 2009. Ends of sections that were unchanged when re-surveyed are truncated to fit on page.

**Figure A-3.2-5 Cross-sections and thalweg profile in lower third of upper Pueblo Canyon willow-planting area**

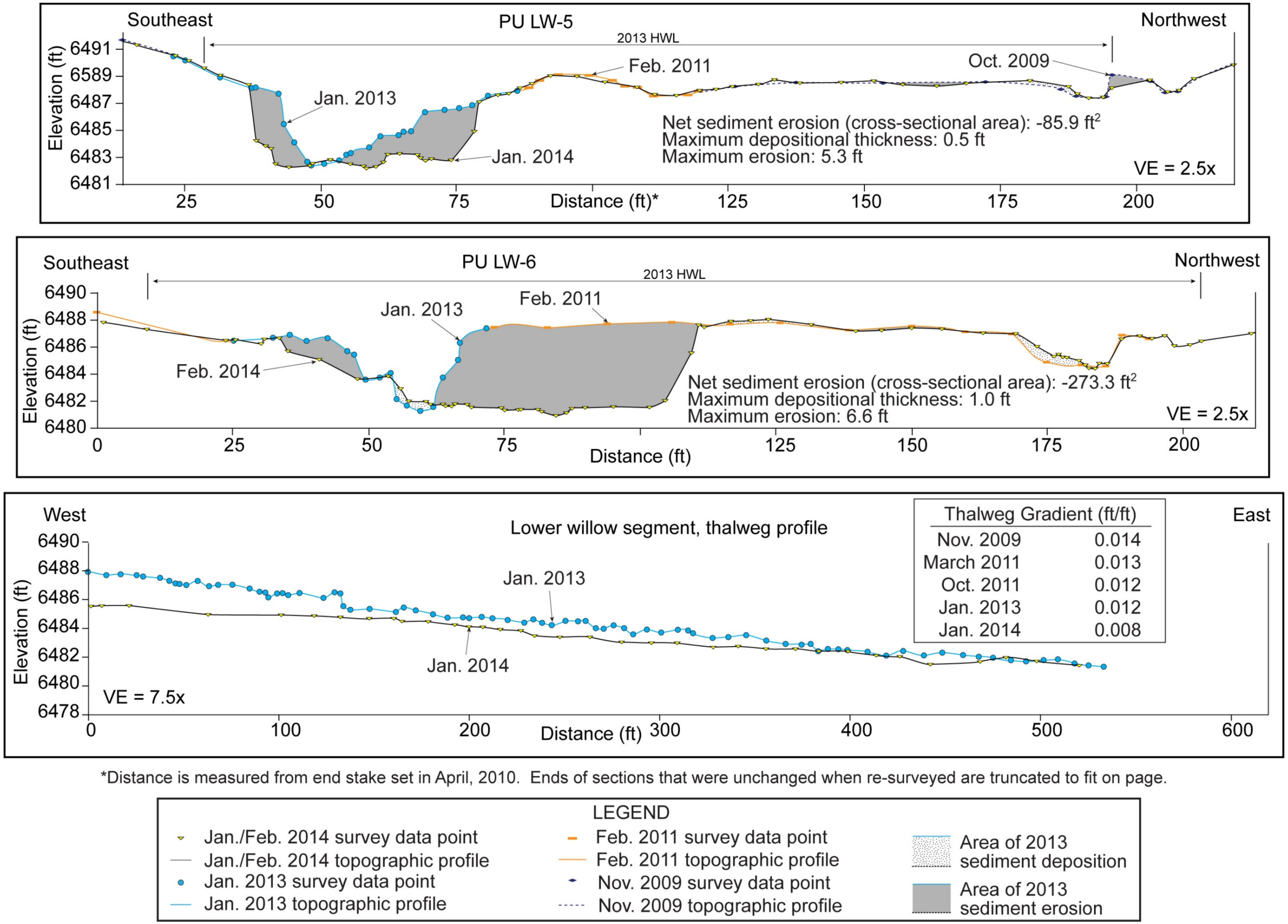



**Figure A-3.2-5 (continued)** **Cross-sections and thalweg profile in lower third of upper Pueblo Canyon willow-planting area**

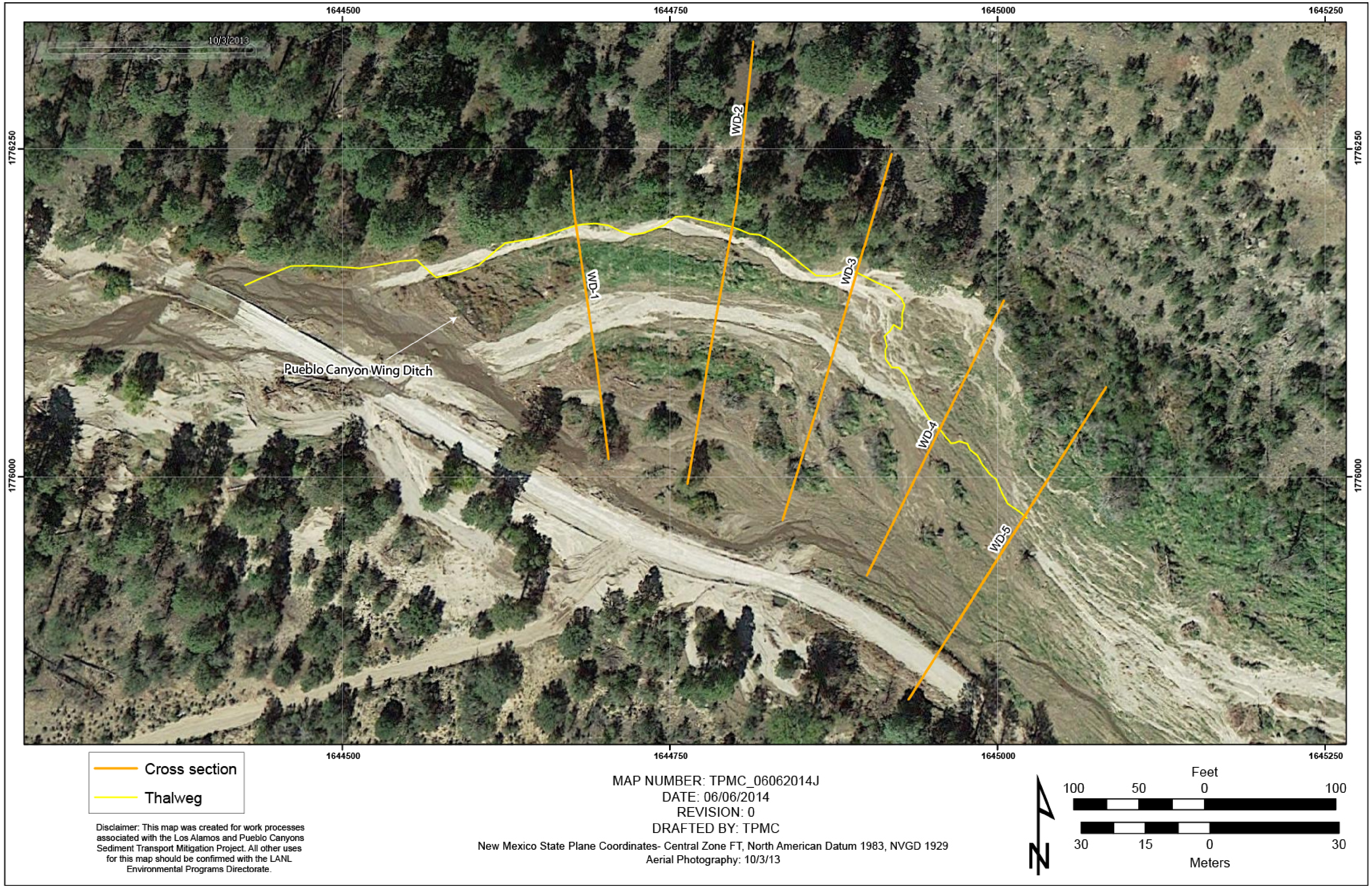



**Figure A-3.3-1 Orthophoto showing the locations of surveyed cross-sections and thalweg profiles near the Pueblo Canyon wing ditch**

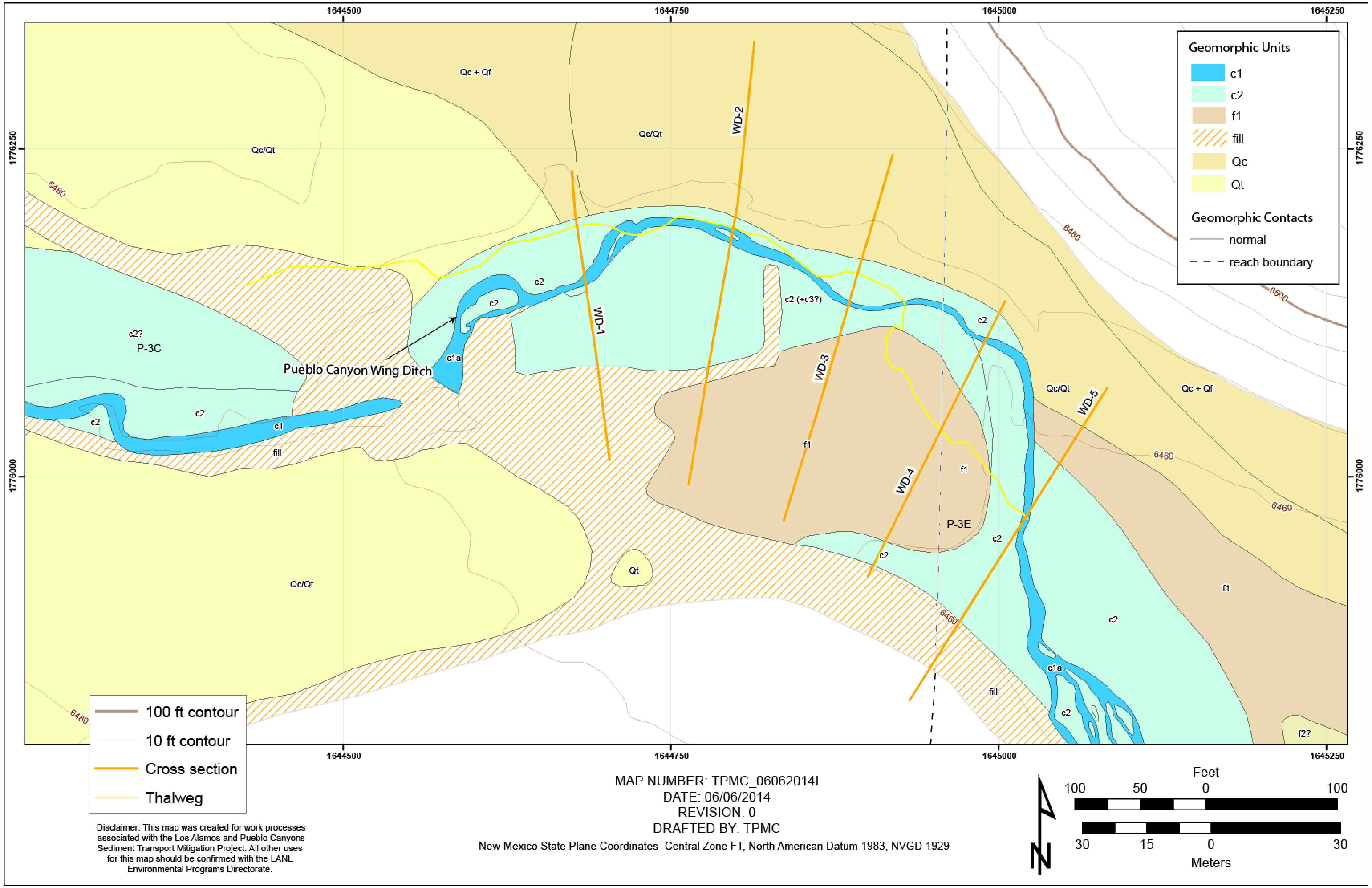



**Figure A-3.3-2** **Geomorphic map showing the locations of surveyed cross-sections and thalweg profiles near the Pueblo Canyon wing ditch; geomorphic mapping from 1997**

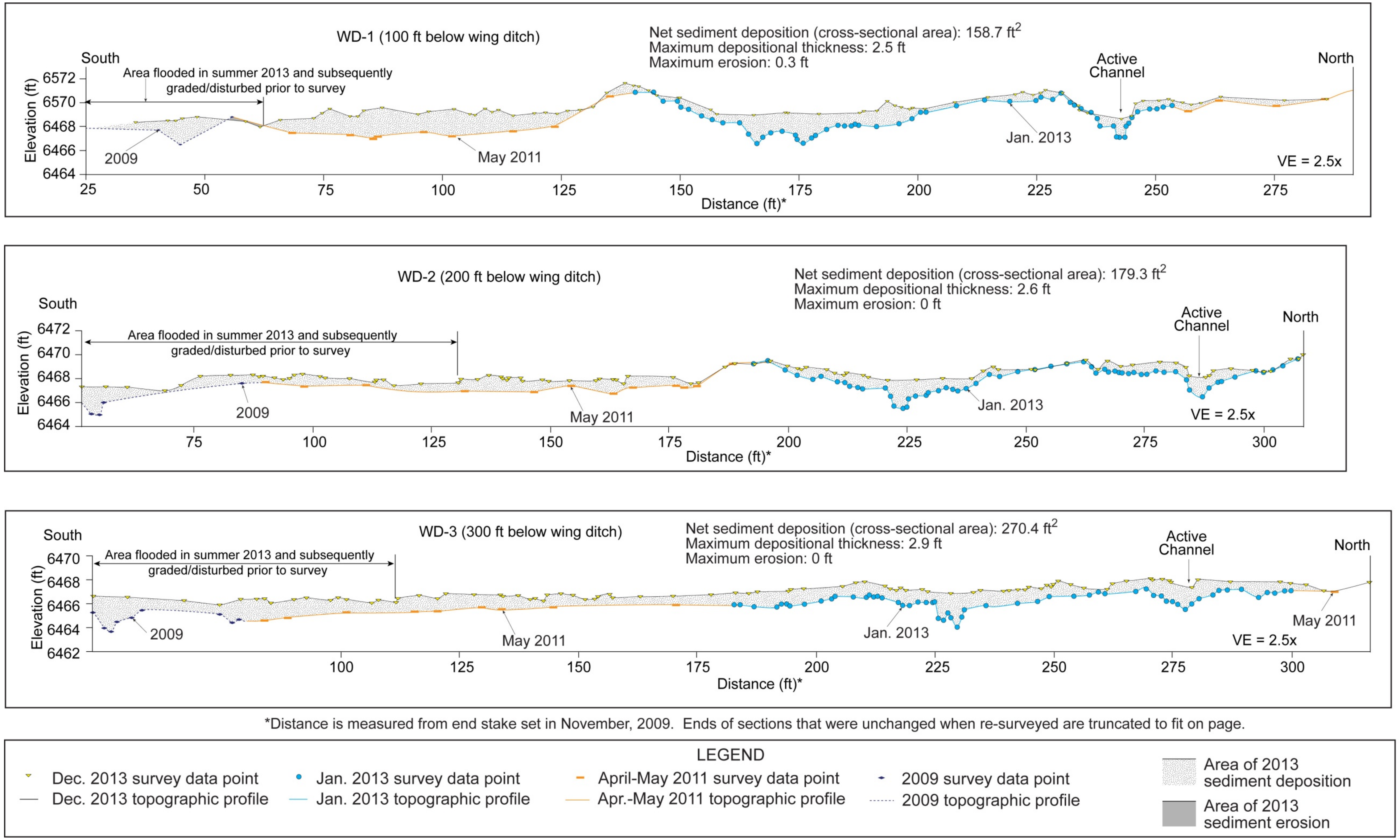
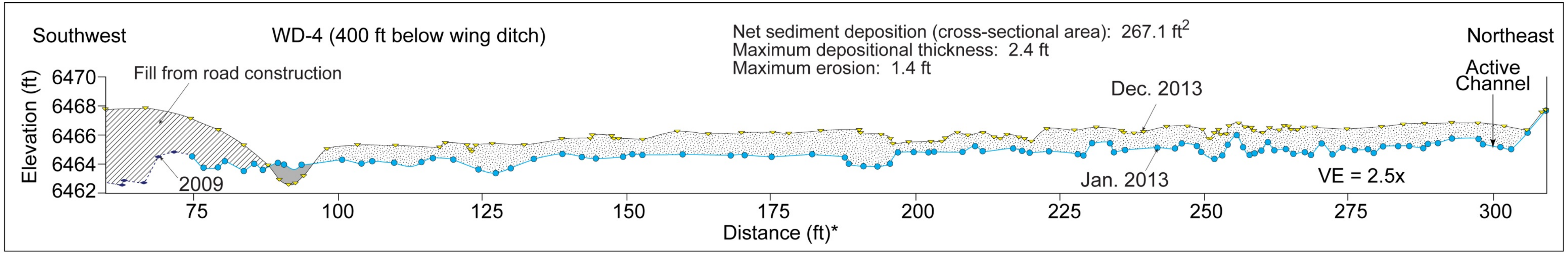
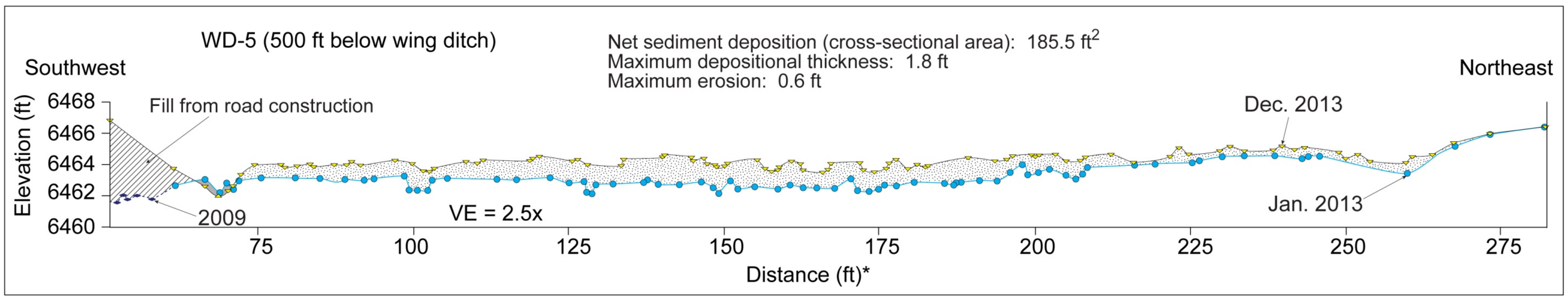



**Figure A-3.3-3 Cross-sections below the Pueblo Canyon wing ditch**




*Distance is measured from end stake set in November, 2009. Ends of sections that were unchanged when re-surveyed are truncated to fit on page.

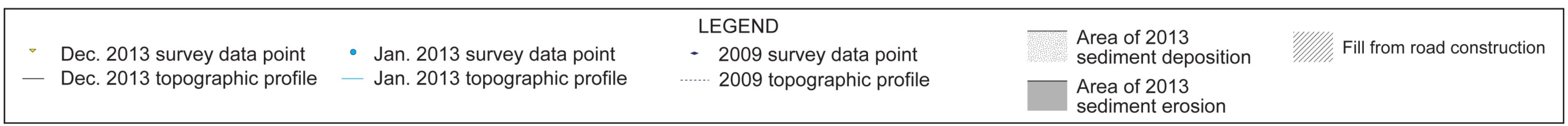



**Figure A-3.3-3 (continued)** **Cross-sections below the Pueblo Canyon wing ditch**

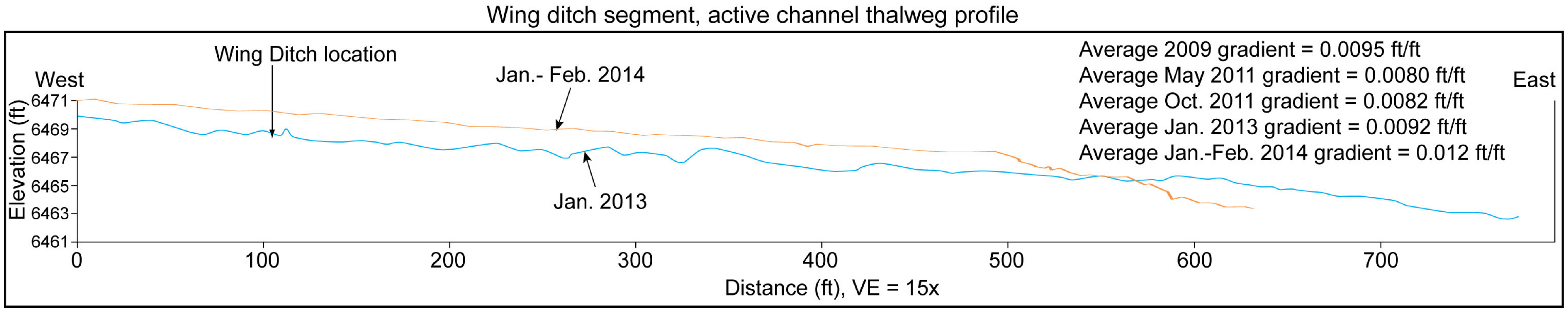



**Figure A-3.3-4** **Thalweg profiles near the Pueblo Canyon wing ditch**

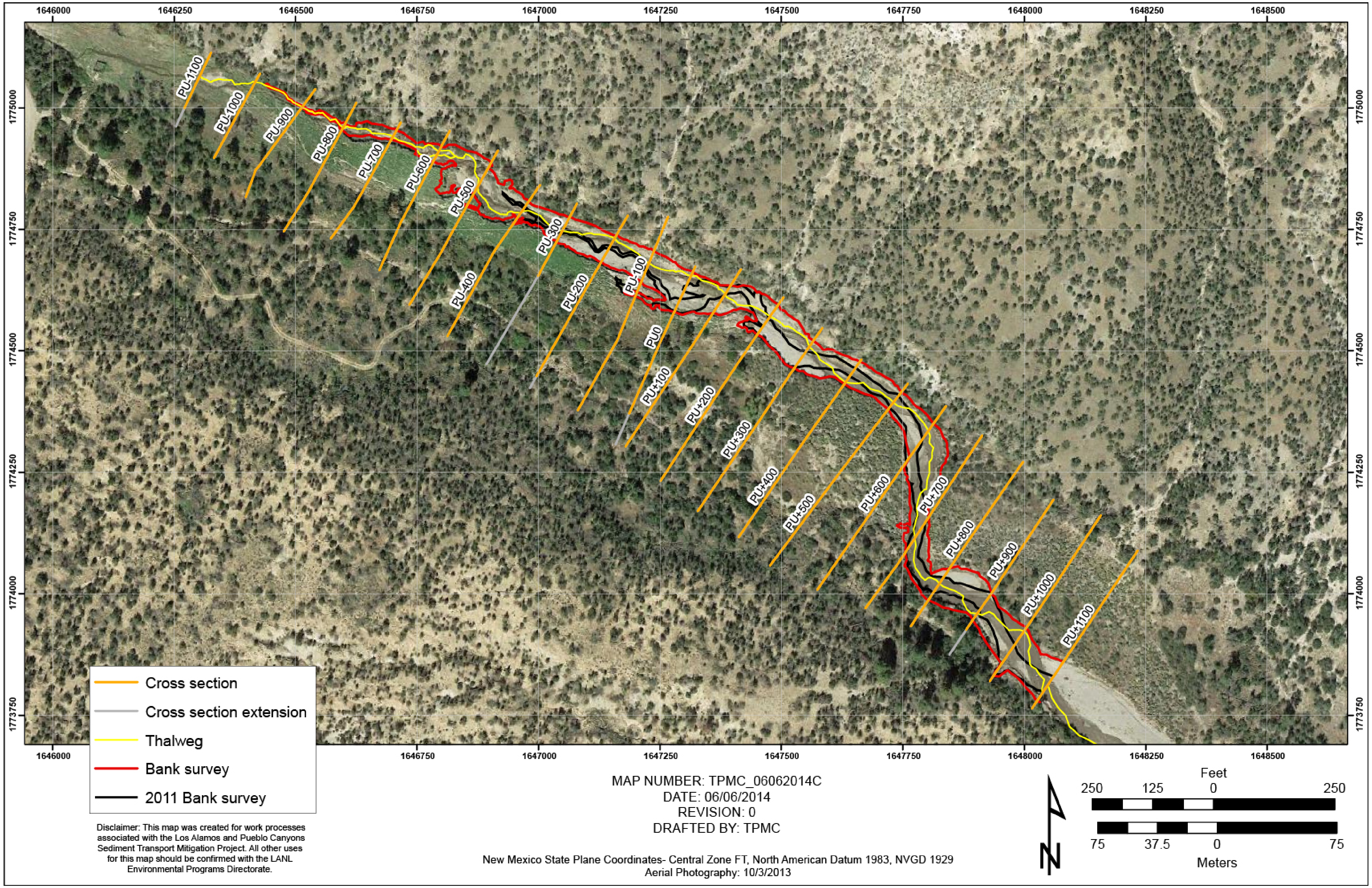



Figure A-3.4-1 Orthophoto showing the locations of surveyed cross-sections and stream banks in the lower Pueblo Canyon willow-planting area

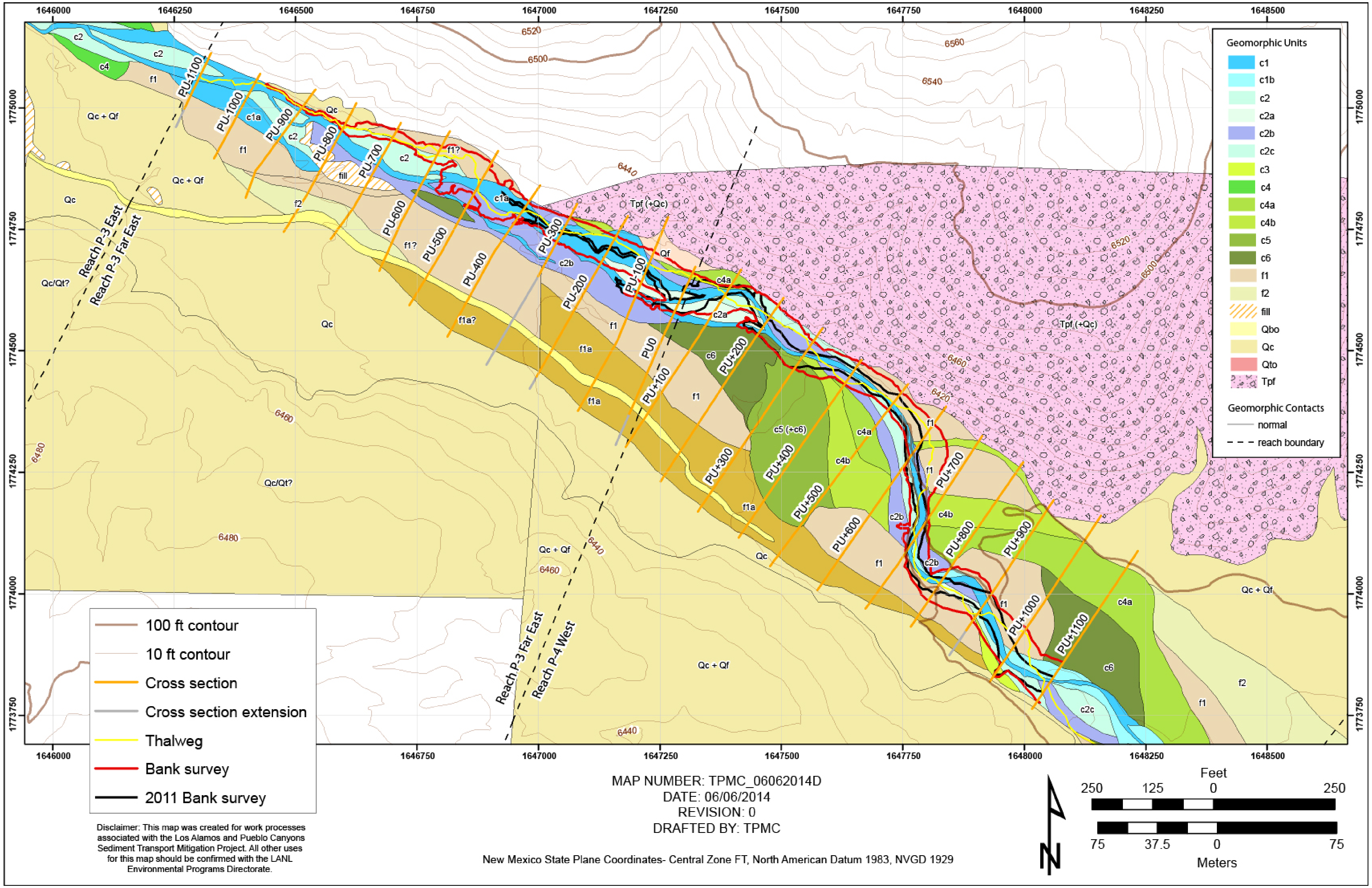



**Figure A-3.4-2** Geomorphic map showing the locations of surveyed cross-sections and stream banks in the lower Pueblo Canyon willow-planting area; geomorphic mapping from 1996–1997

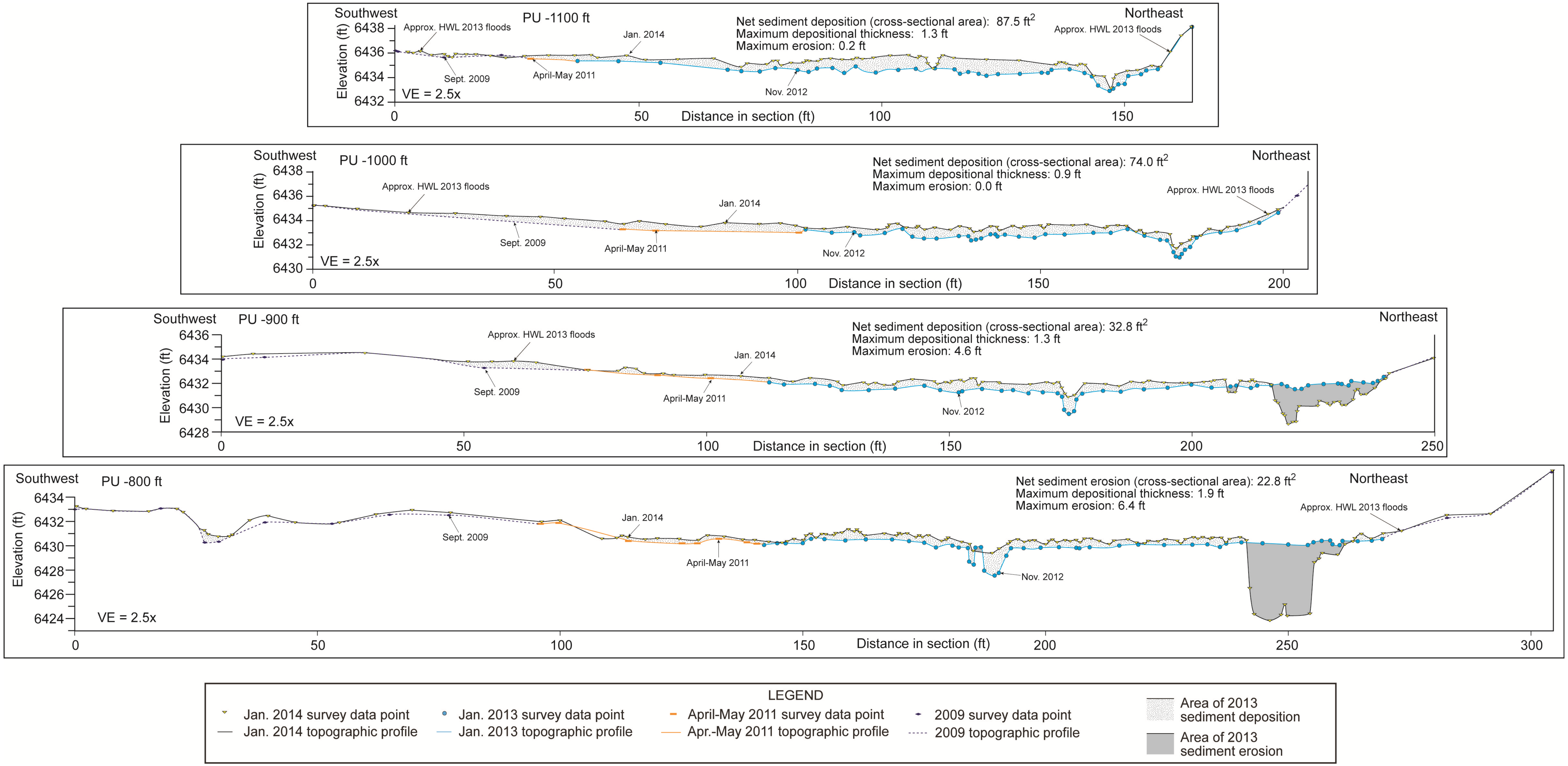



**Figure A-3.4-3  Cross-sections in the lower Pueblo Canyon willow-planting area**

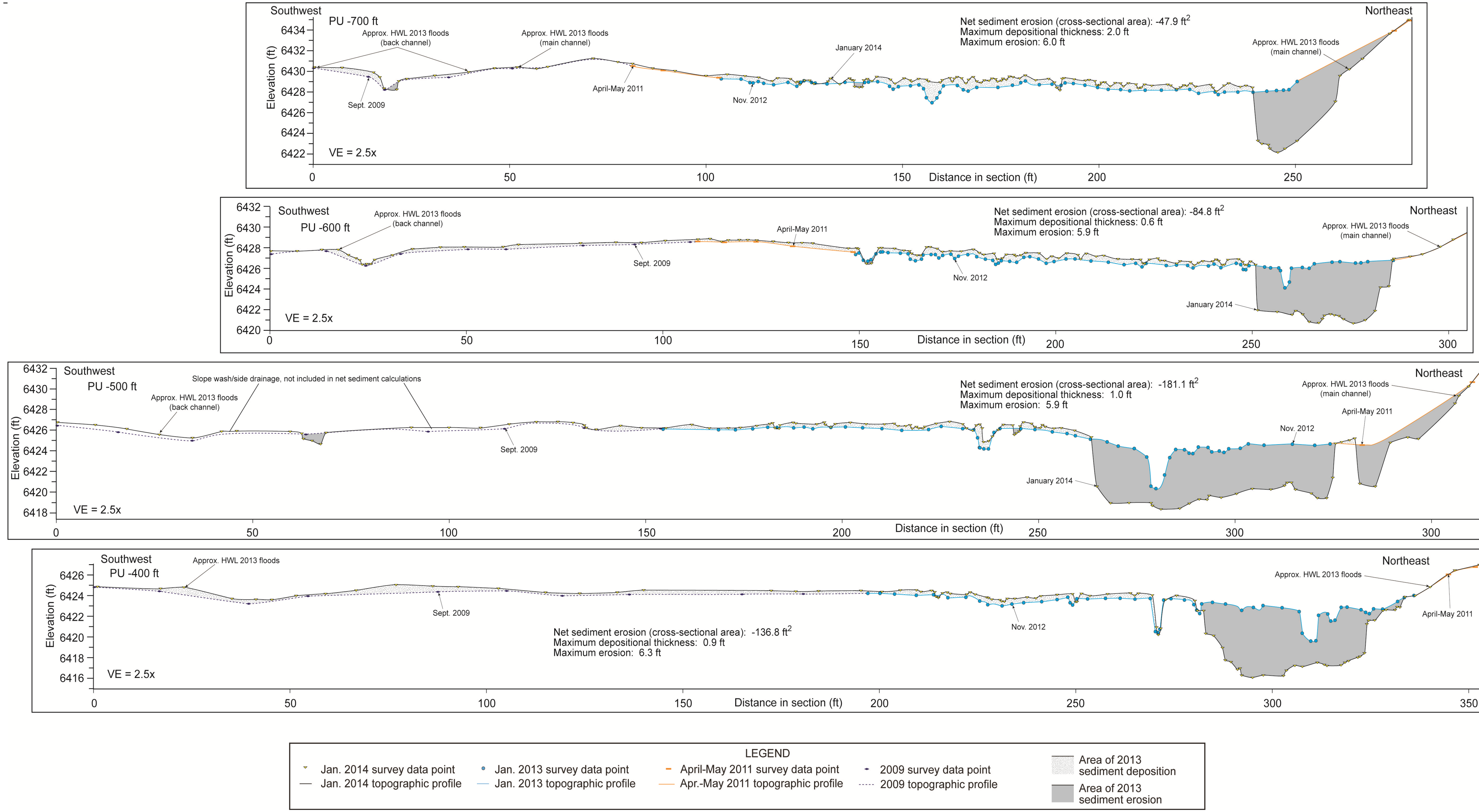



**Figure A-3.4-3 (continued) Cross-sections in the lower Pueblo Canyon willow-planting area**

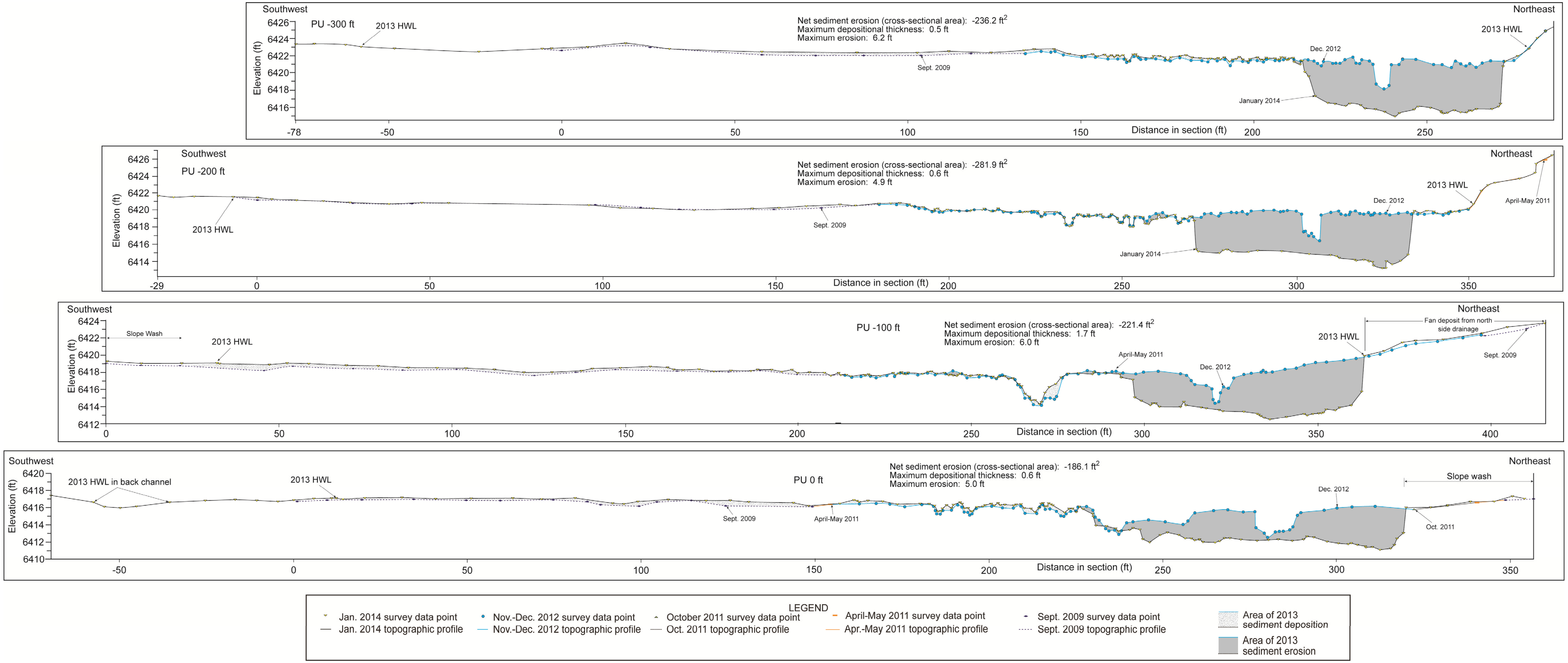



**Figure A-3.4-3 (continued) Cross-sections in the lower Pueblo Canyon willow-planting area**

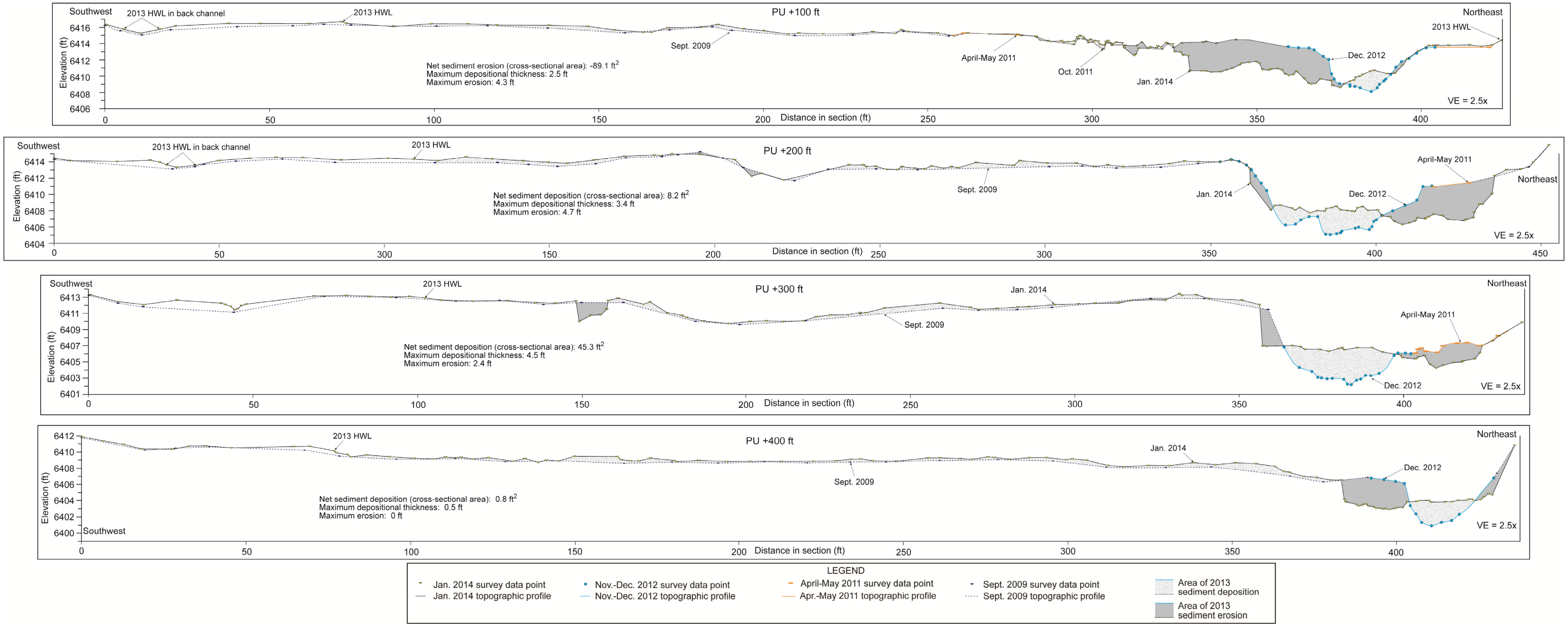



**Figure A-3.4-3 (continued) Cross-sections in the lower Pueblo Canyon willow-planting area**

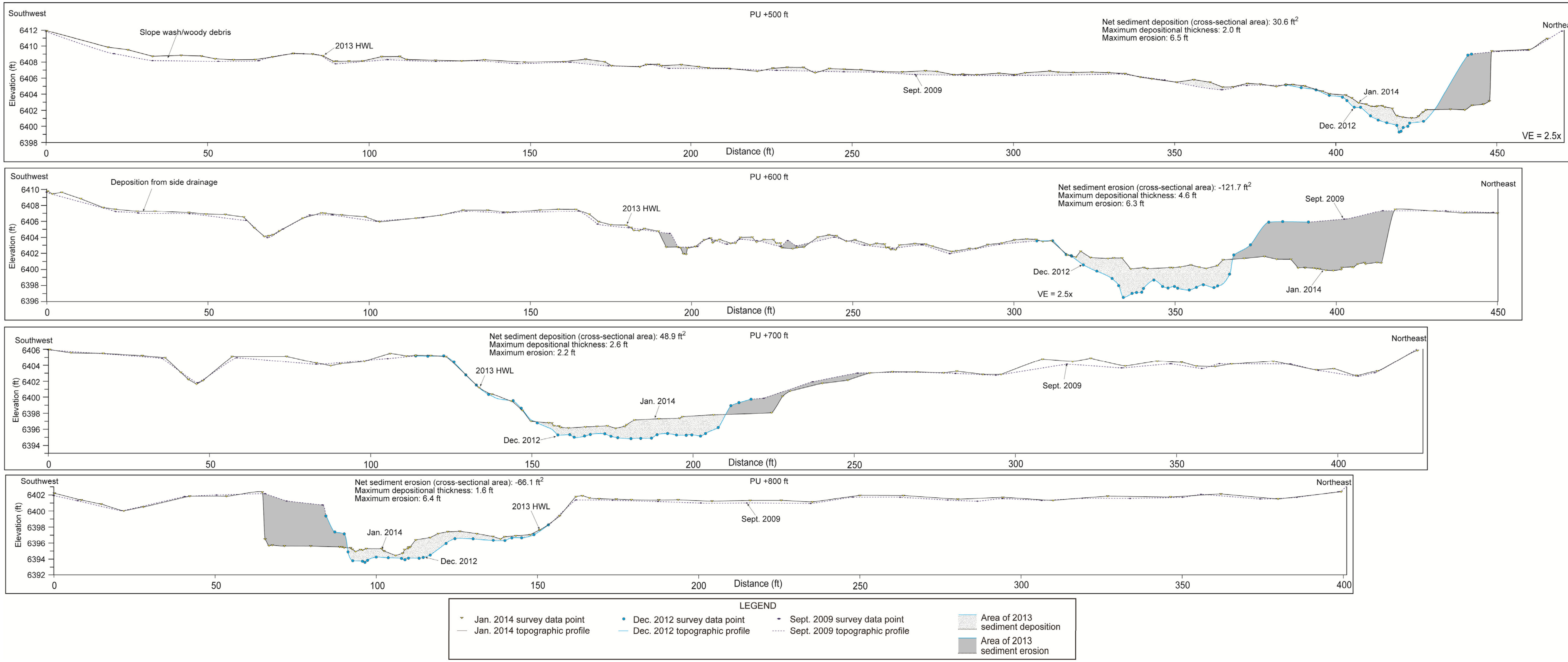



**Figure A-3.4-3 (continued)** **Cross-sections in the lower Pueblo Canyon willow-planting area**

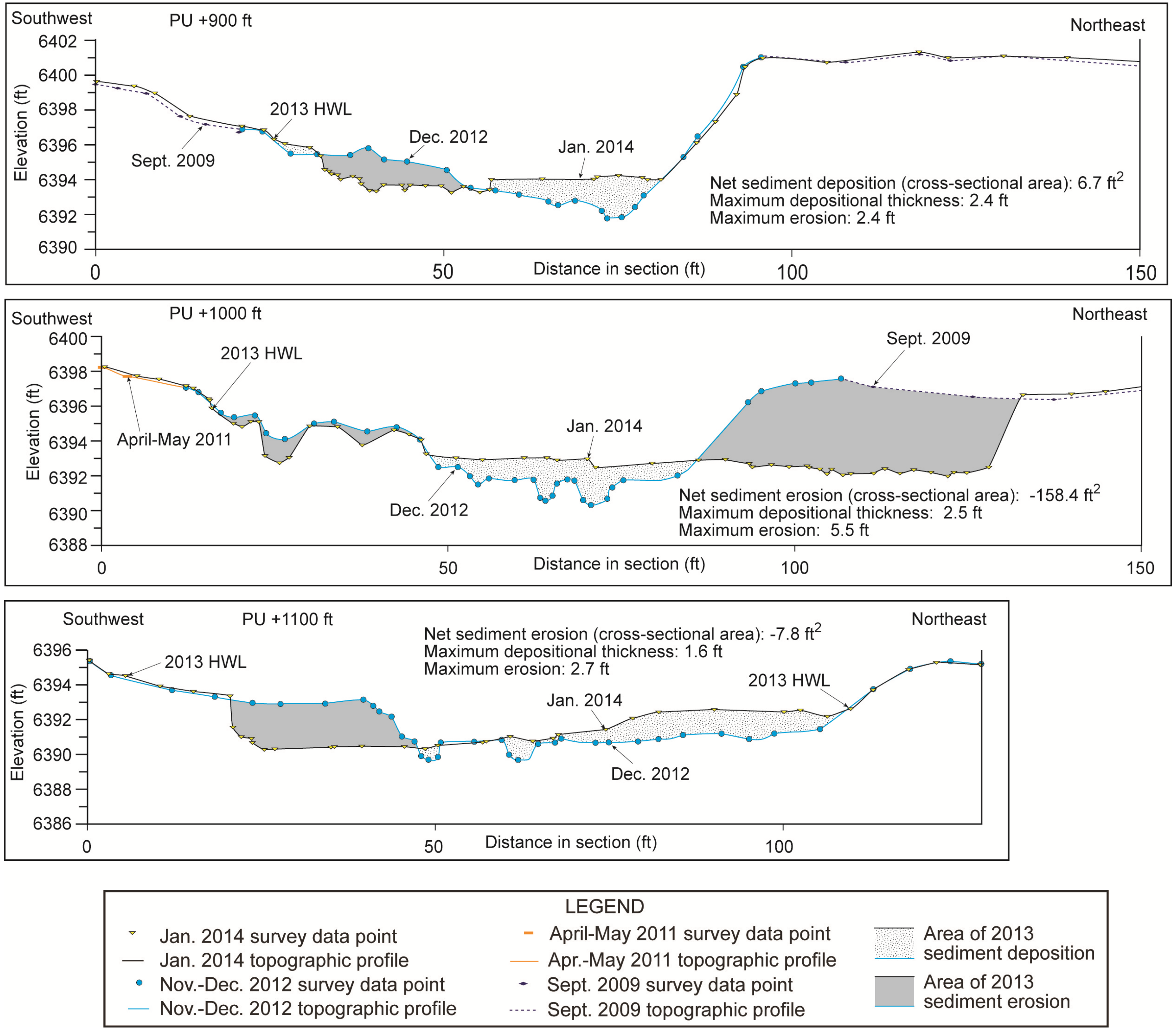
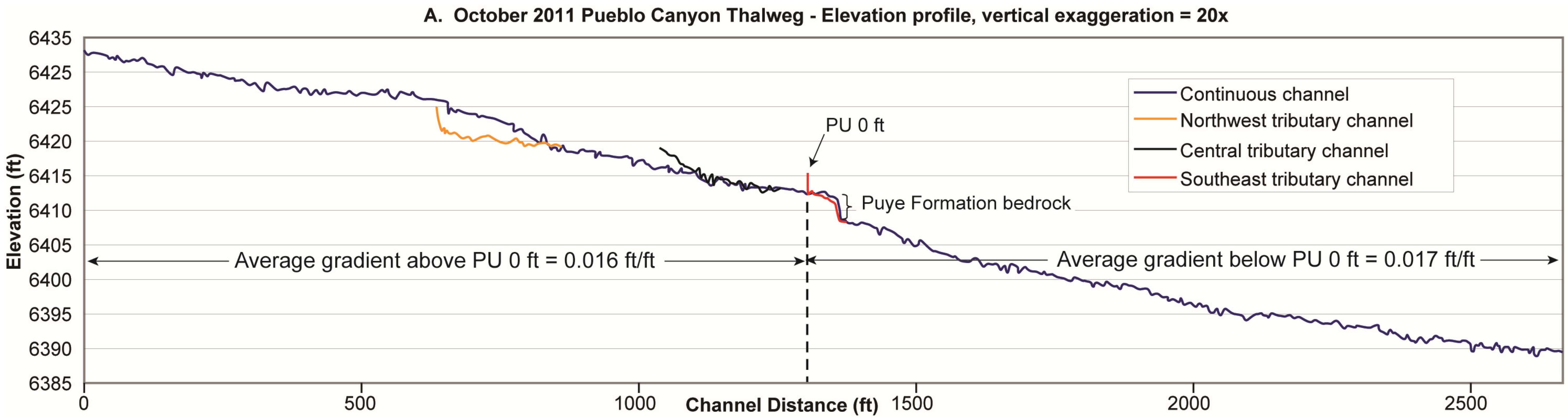



**Figure A-3.4-3 (continued)** **Cross-sections in the lower Pueblo Canyon willow-planting area**



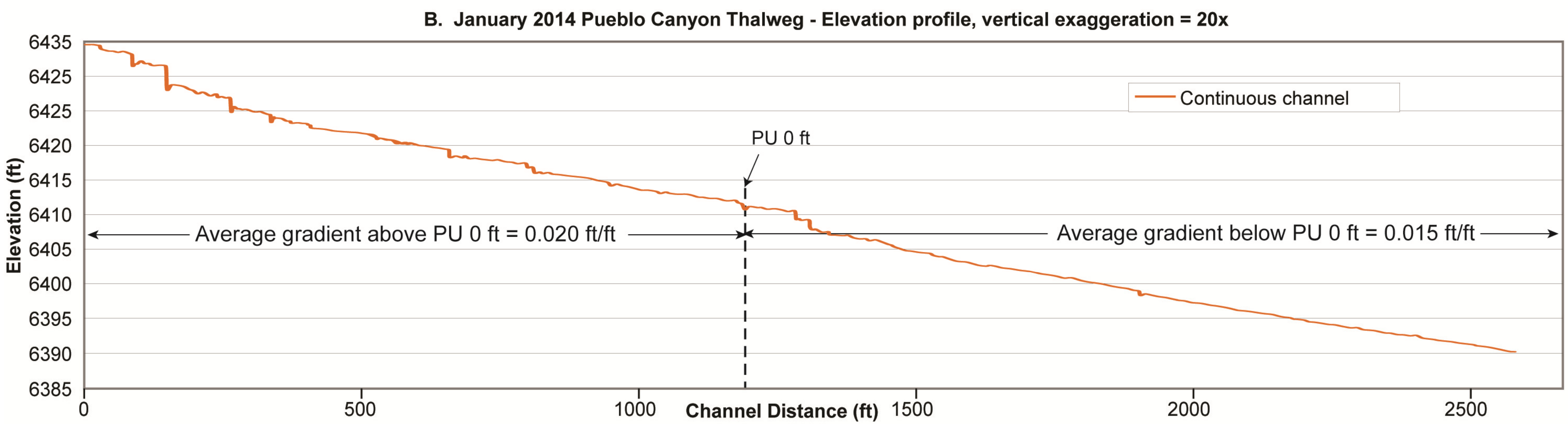




**Figure A-3.4-4 Thalweg profile in the lower Pueblo Canyon willow-planting area**

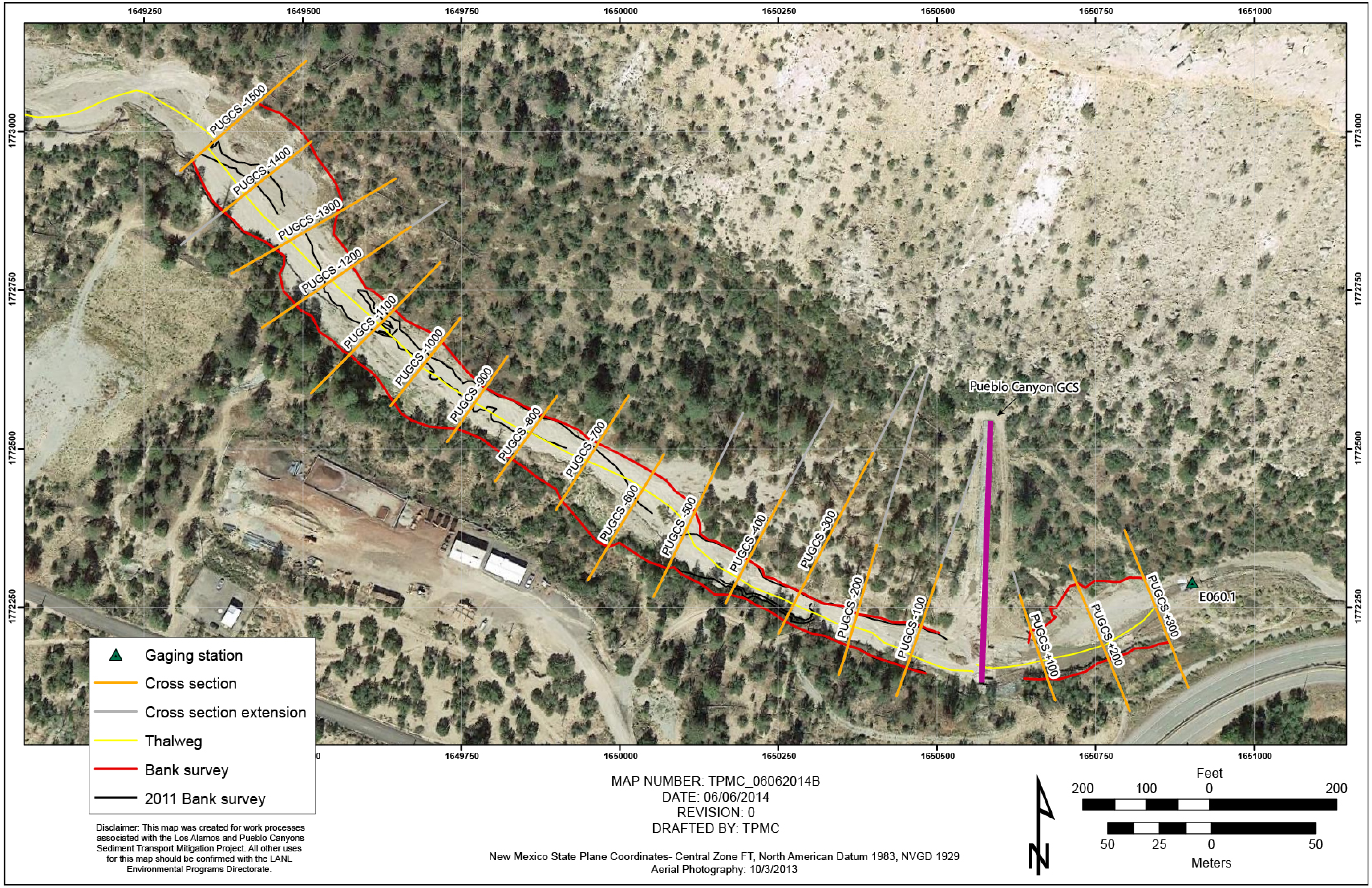



**Figure A-3.5-1 Orthophoto showing the locations of surveyed cross-sections and stream banks in the Pueblo Canyon GCS area**

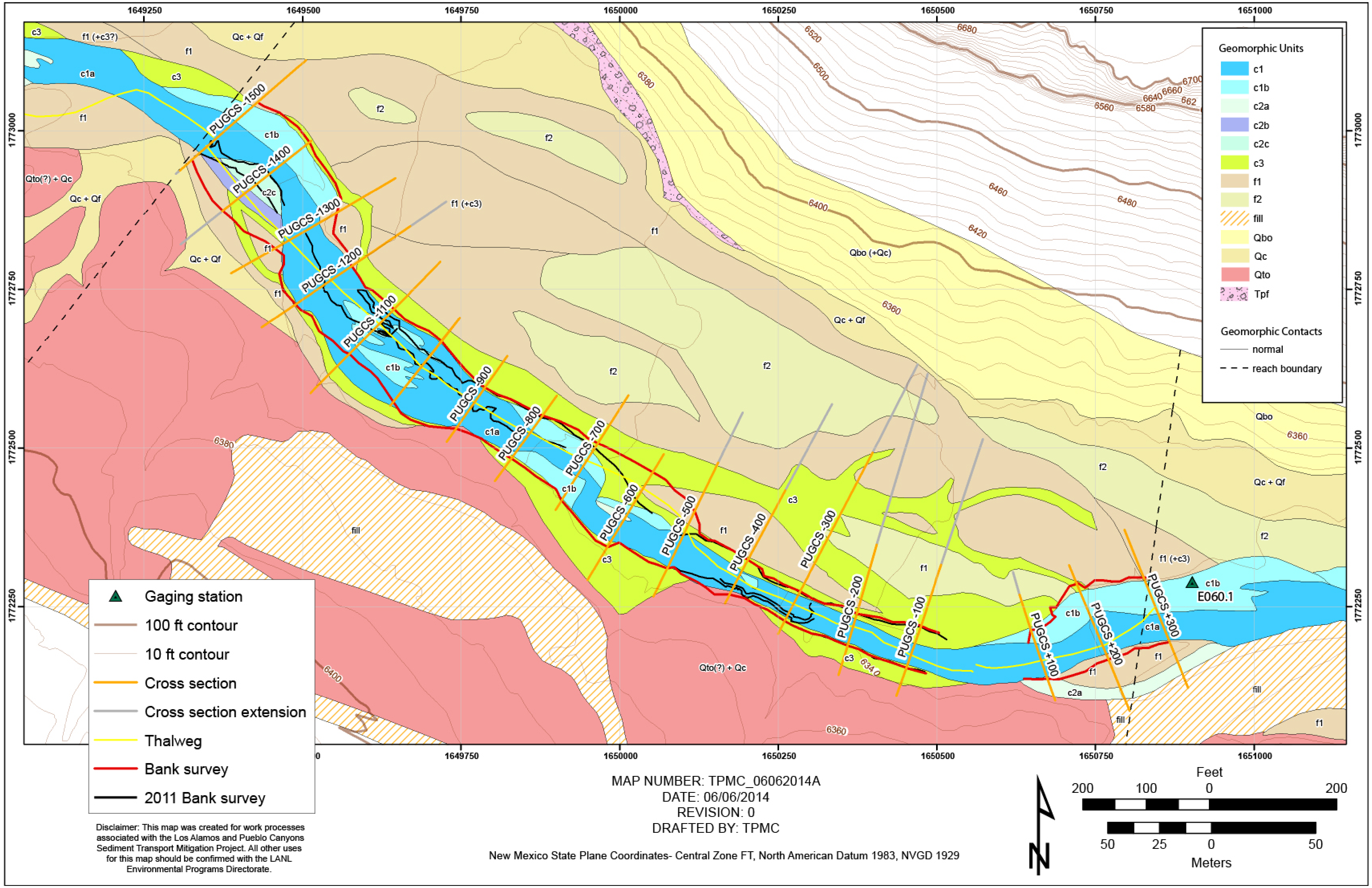



**Figure A-3.5-2 Geomorphic map showing the locations of surveyed cross-sections and stream banks in the Pueblo Canyon GCS area; geomorphic mapping from 1996–1997**

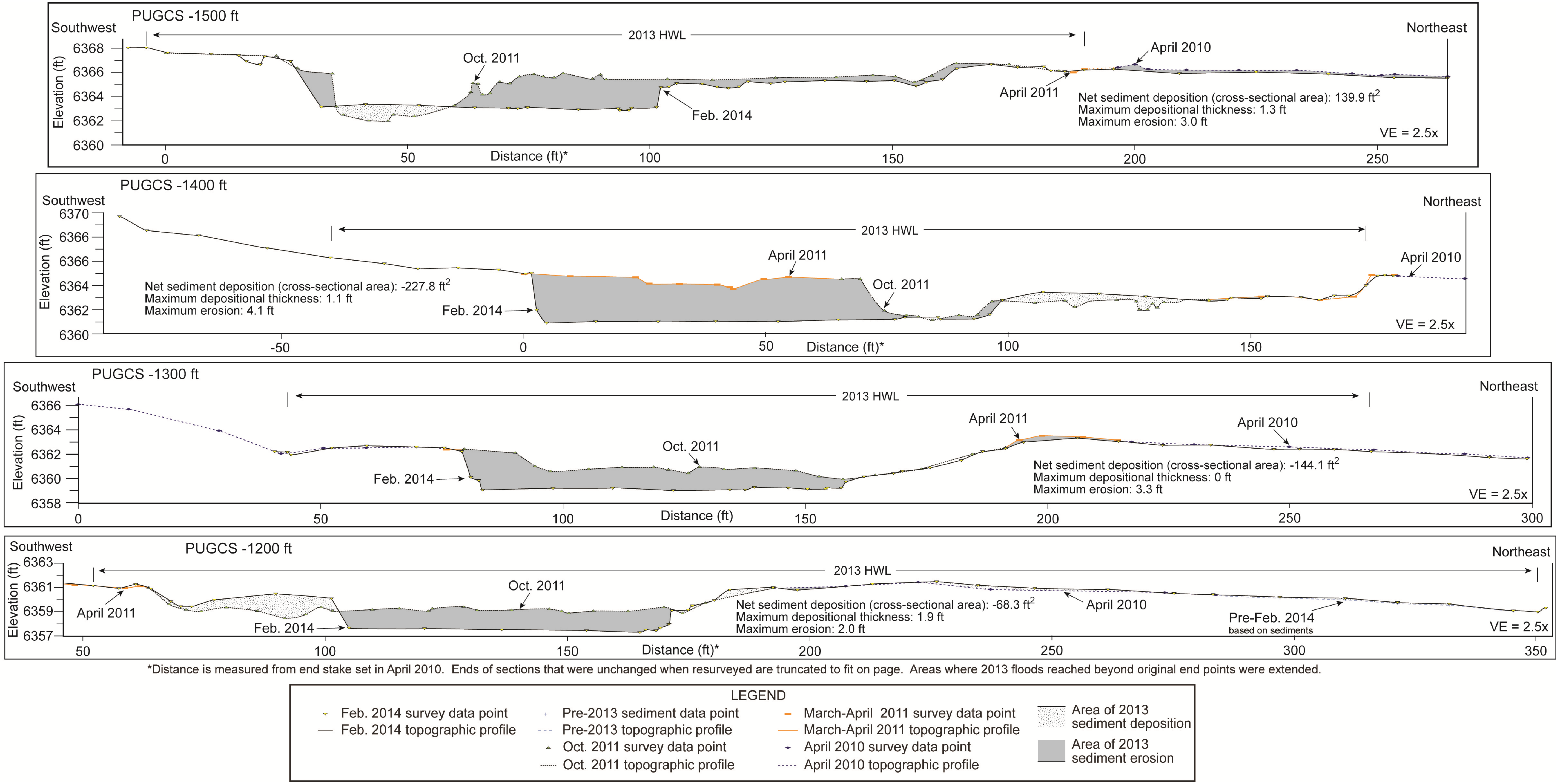



**Figure A-3.5-3 Cross-sections and thalweg profile in the Pueblo Canyon GCS area**

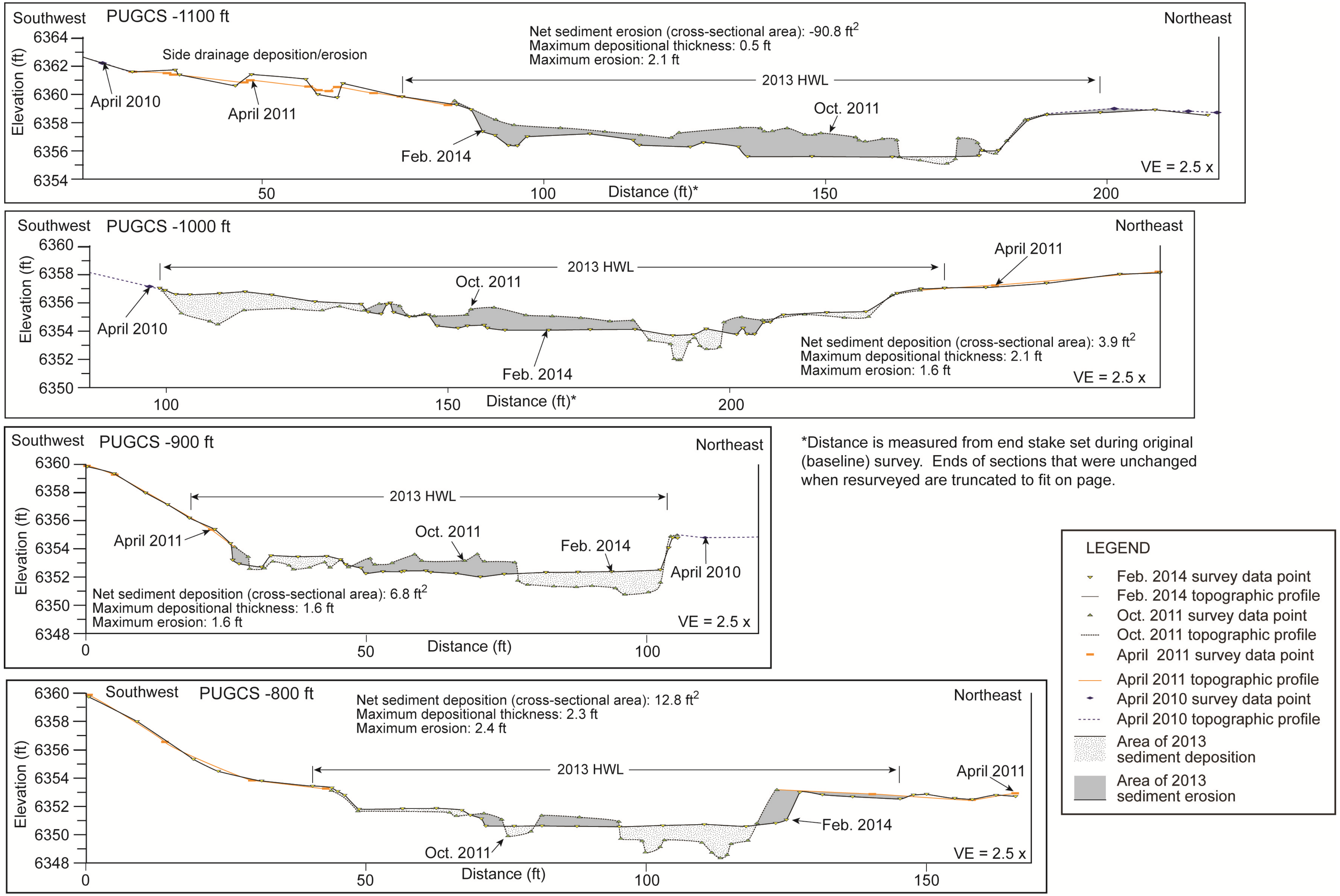



**Figure A-3.5-3 (continued)** **Cross-sections and thalweg profile in the Pueblo Canyon GCS area**

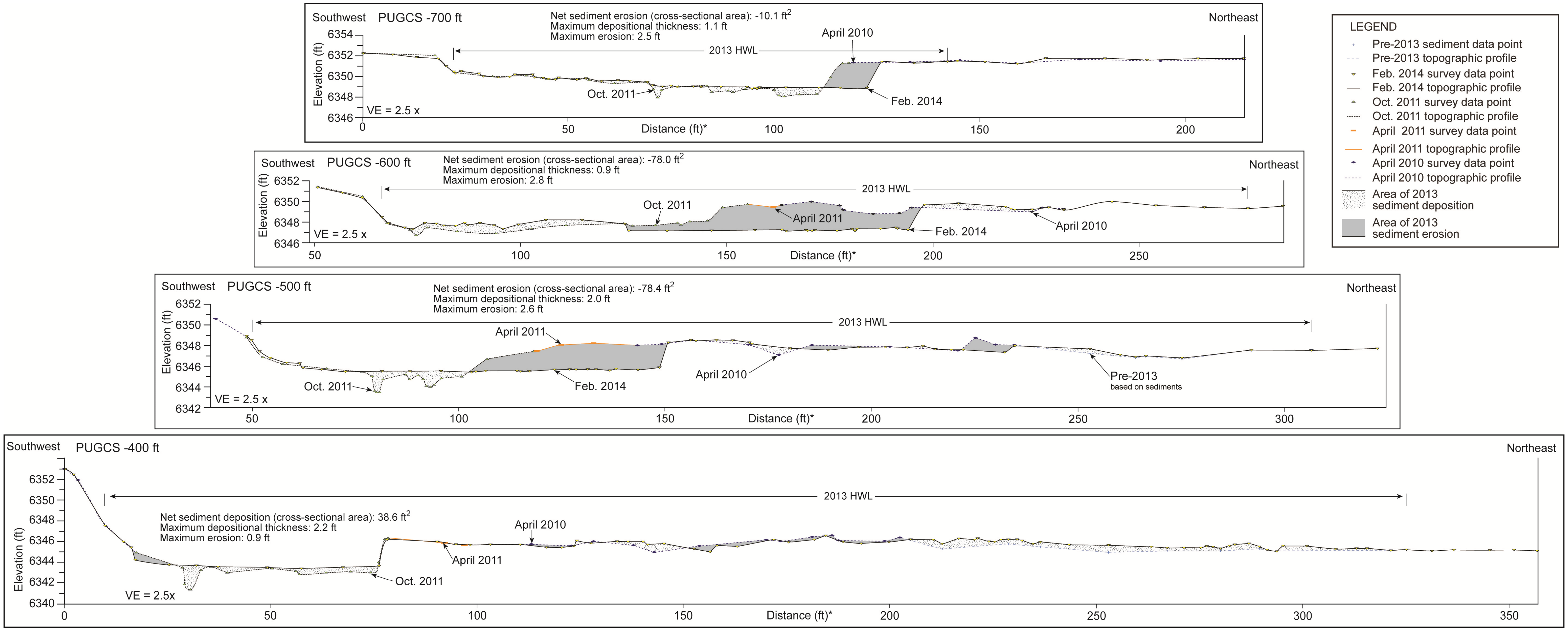



**Figure A-3.5-3 (continued)** **Cross-sections and thalweg profile in the Pueblo Canyon GCS area**

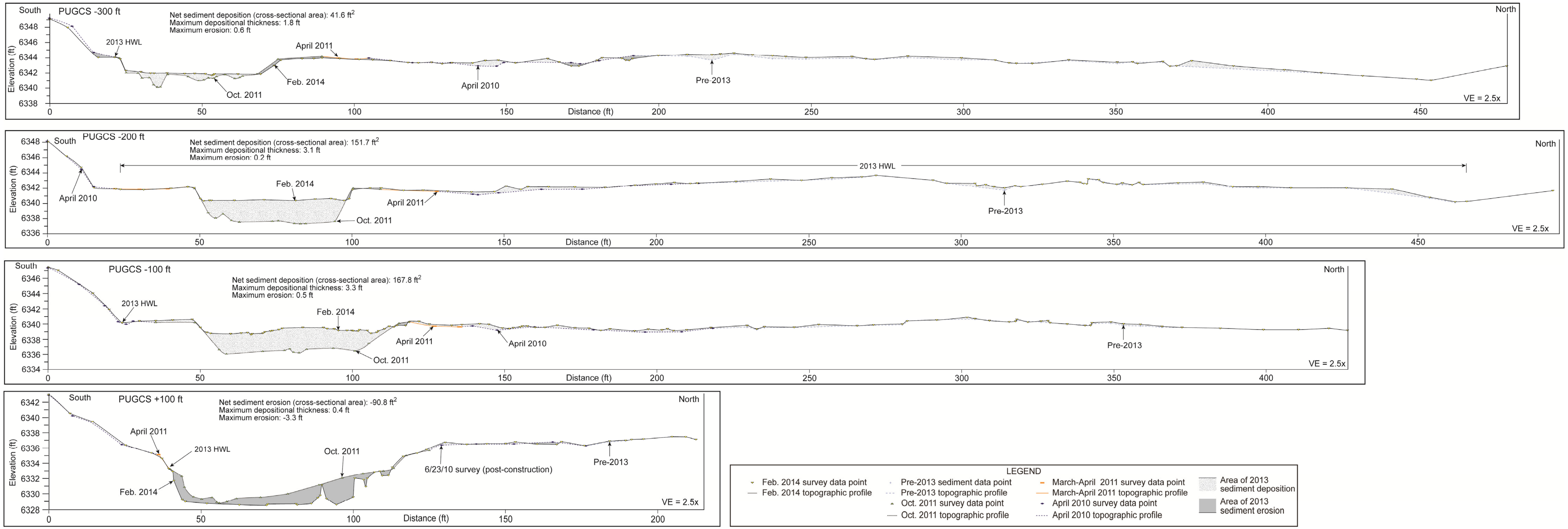



**Figure A-3.5-3 (continued)** **Cross-sections and thalweg profile in the Pueblo Canyon GCS area**

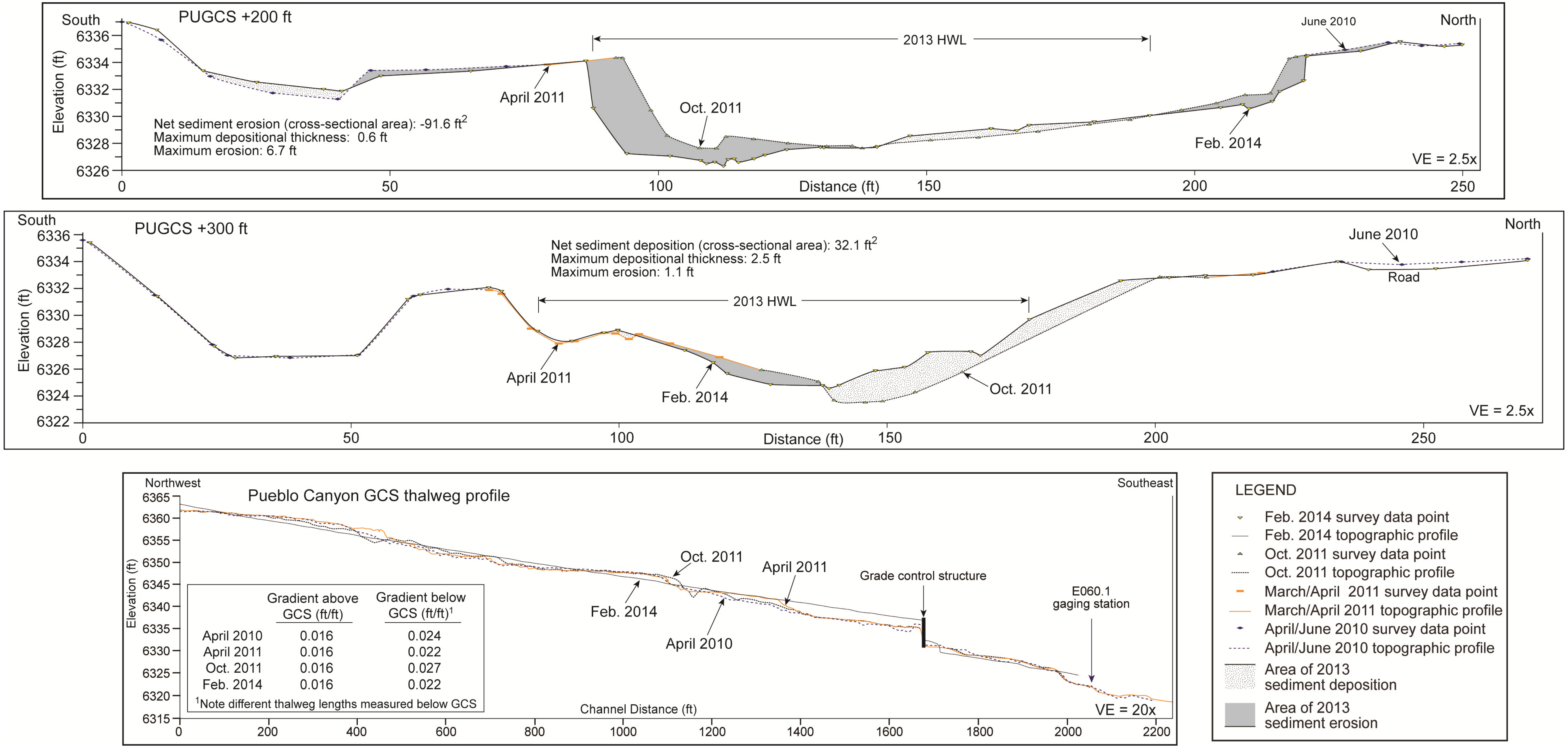



**Figure A-3.5-3 (continued)** **Cross-sections and thalweg profile in the Pueblo Canyon GCS area**

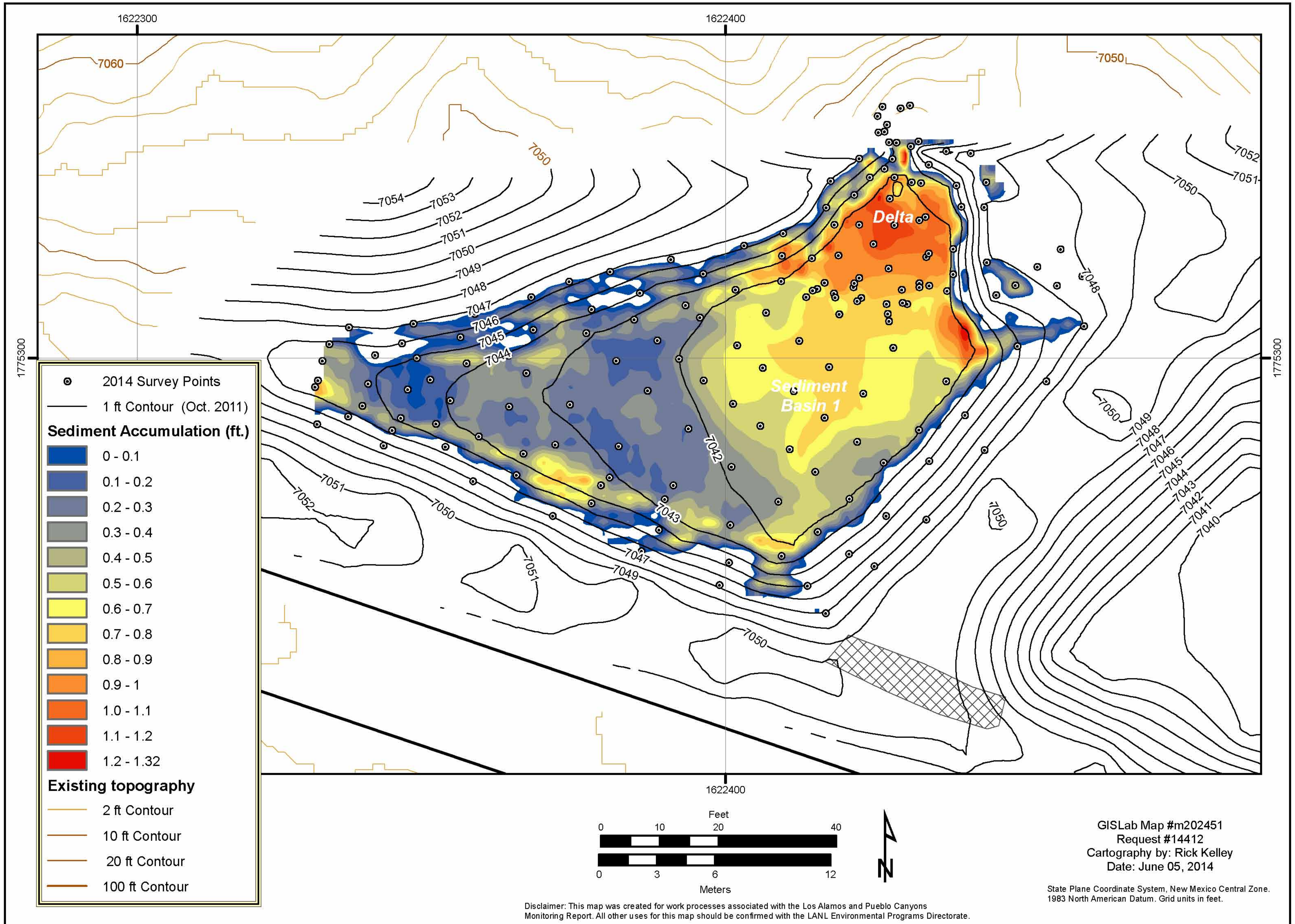



**Figure A-3.6-1 October 2011 topography and isopachs of total thickness of accumulated sediment in Basin 1 from 2013 monsoon season at the upper Los Alamos Canyon sediment detention basins**


**Figure A-3.7-1 Orthophoto showing the locations of surveyed cross-sections and thalweg profile near the DP Canyon GCS**

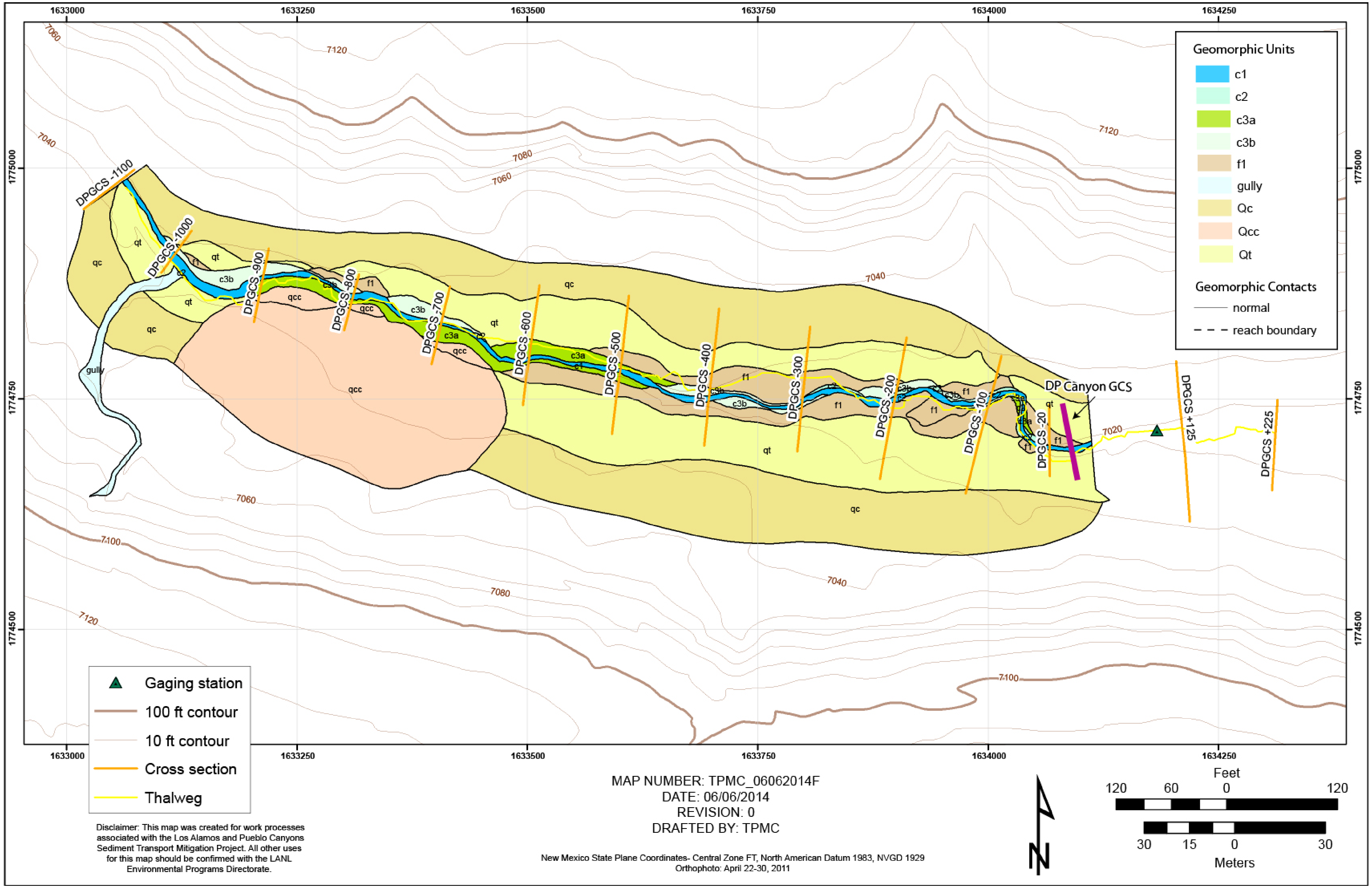



**Figure A-3.7-2** Geomorphic map showing the locations of surveyed cross-sections and thalweg profile near the DP Canyon GCS; geomorphic mapping from 1998

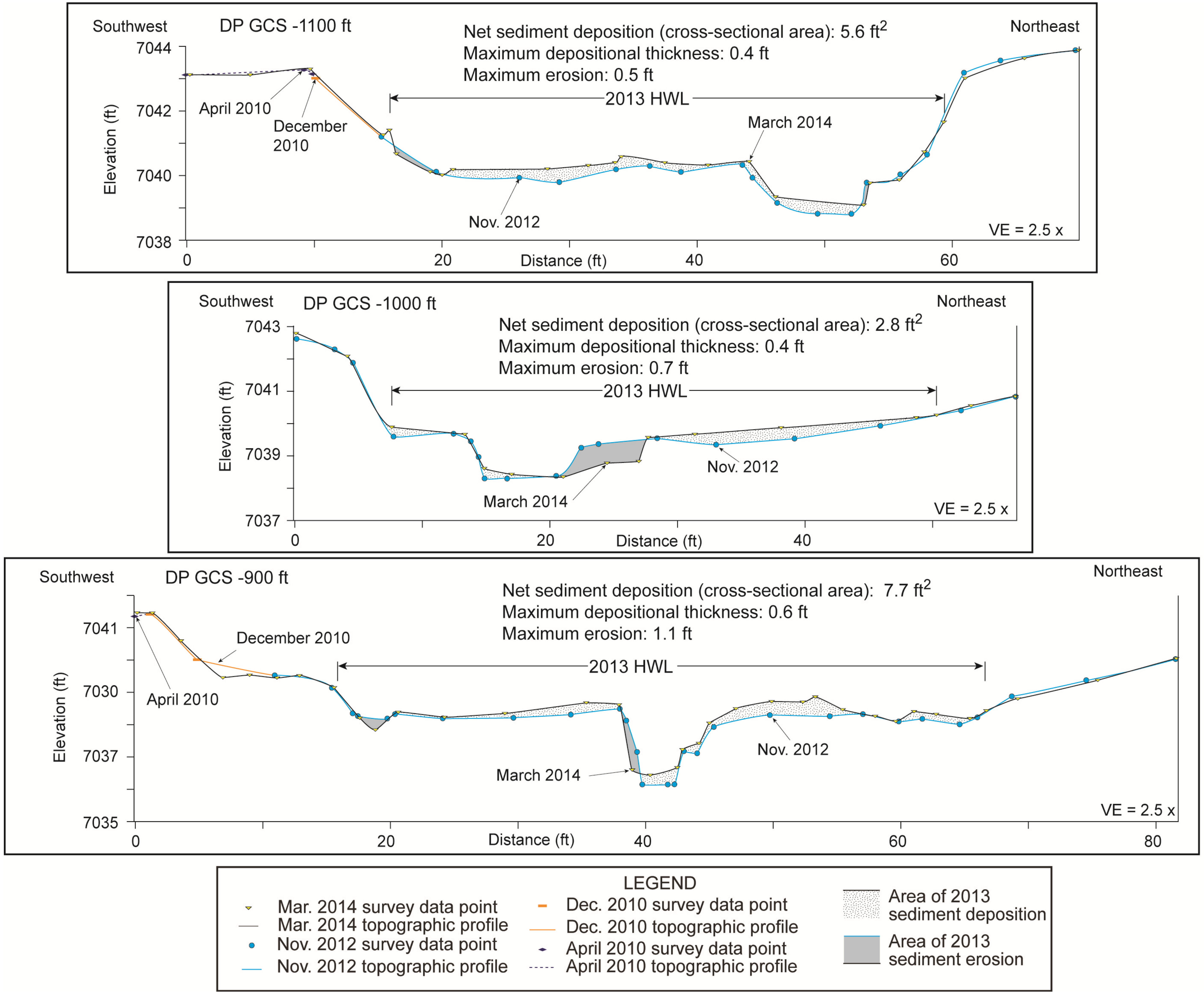



**Figure A-3.7-3 Cross-sections and thalweg profile near the DP Canyon GCS**

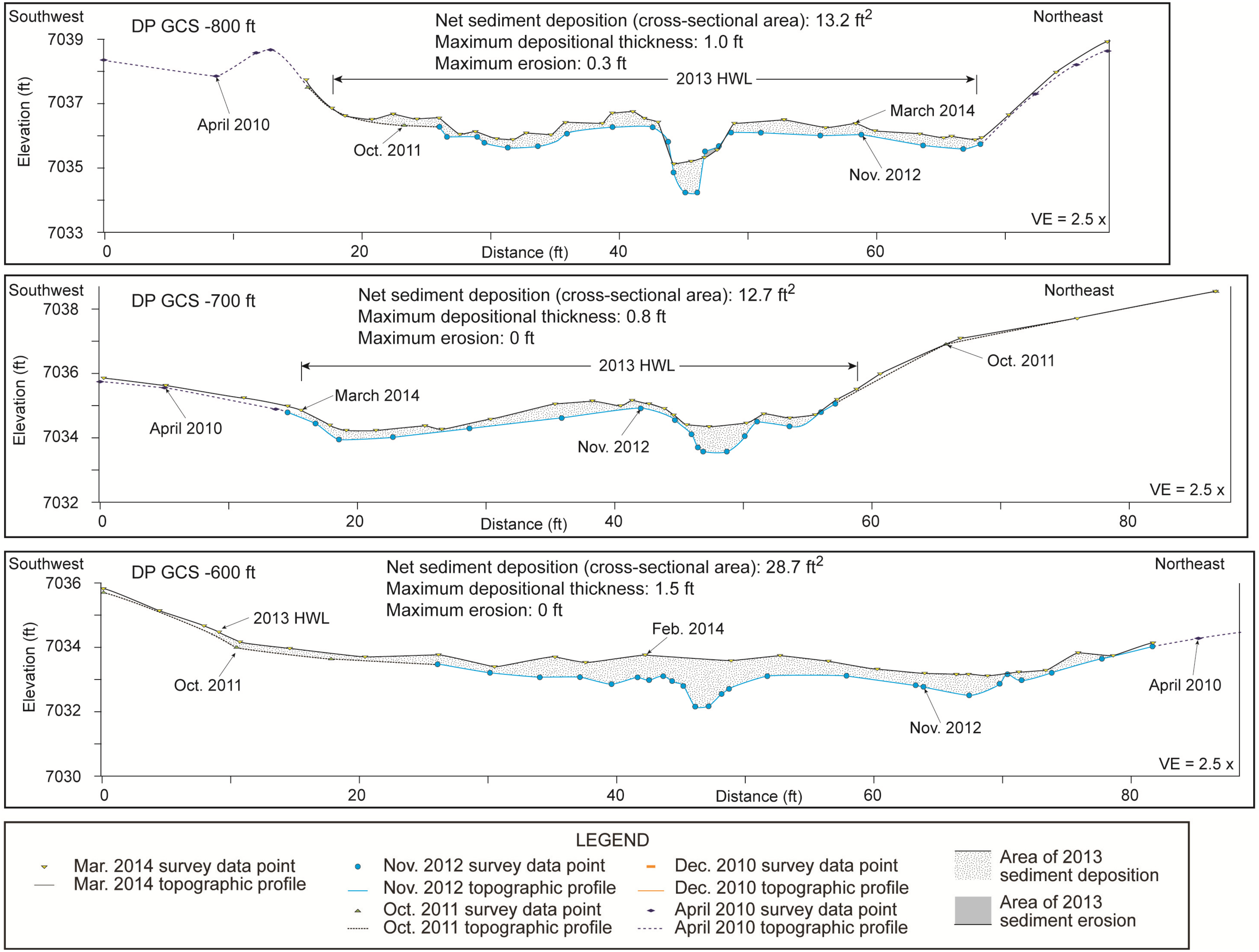



**Figure A-3.7-3 (continued)** **Cross-sections and thalweg profile near the DP Canyon GCS**

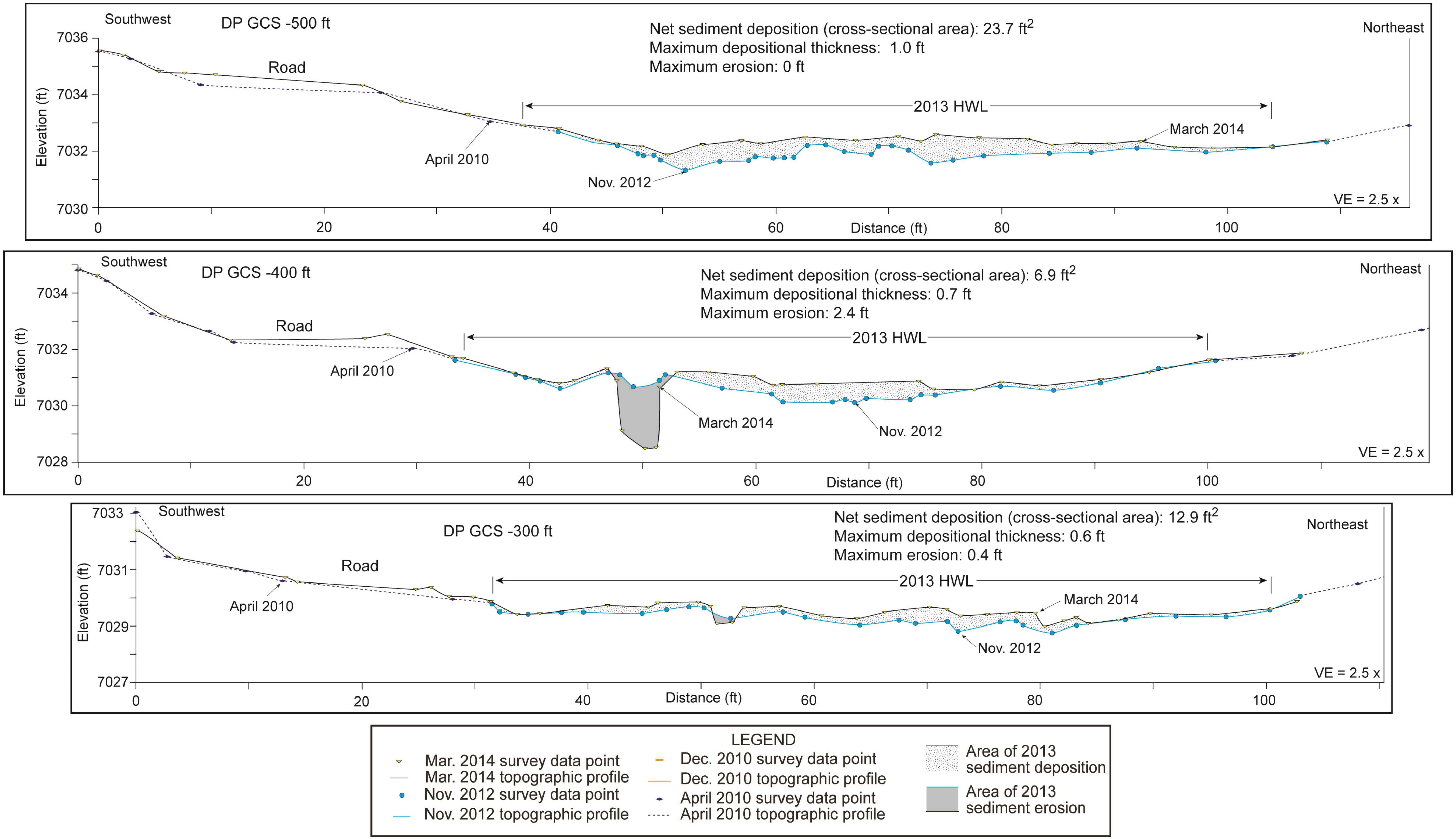



**Figure A-3.7-3 (continued)** **Cross-sections and thalweg profile near the DP Canyon GCS**

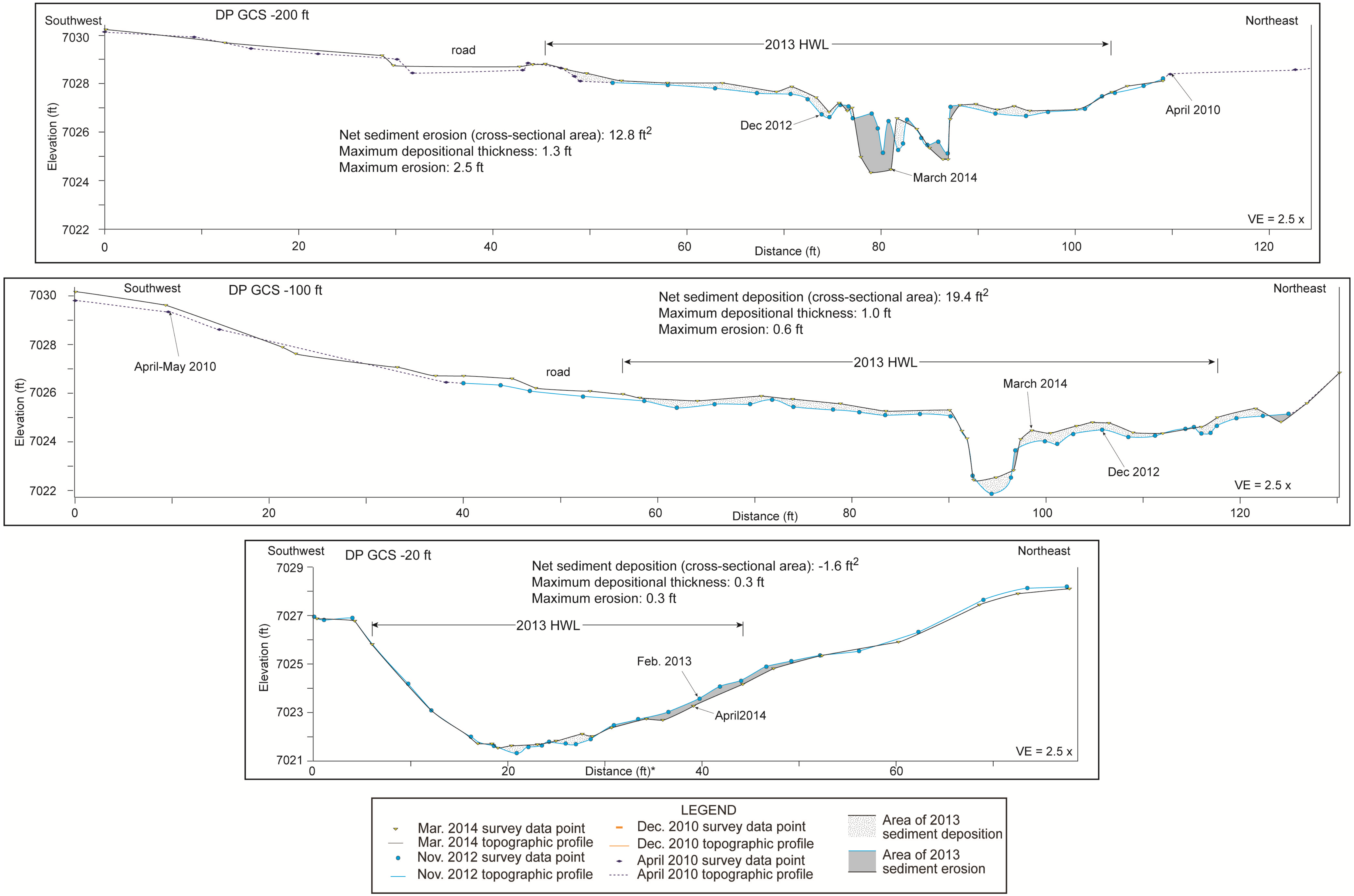



**Figure A-3.7-3 (continued)** **Cross-sections and thalweg profile near the DP Canyon GCS**

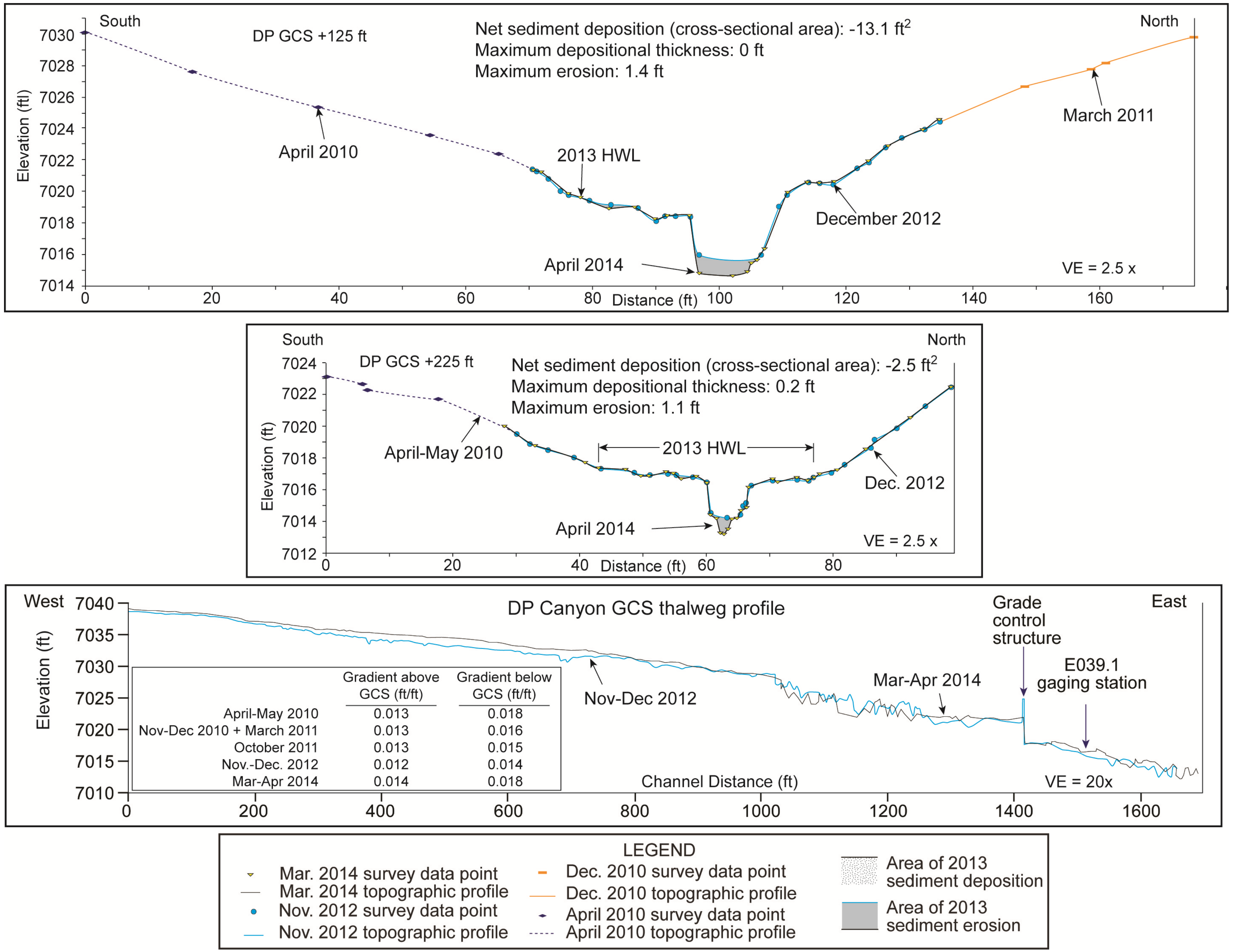



**Figure A-3.7-3 (continued)** **Cross-sections and thalweg profile near the DP Canyon GCS**

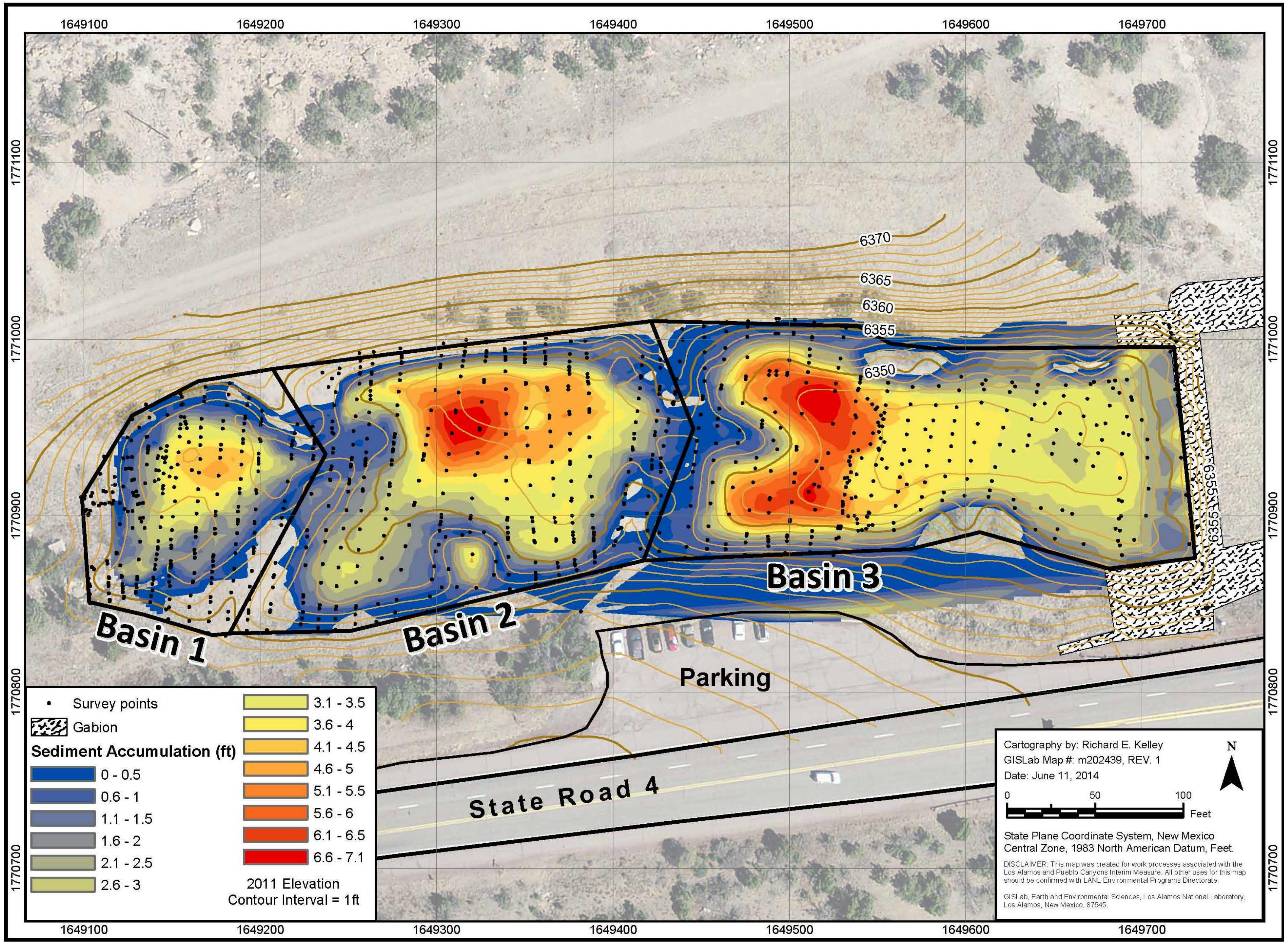



**Figure A-3.8-1 Topographic map of sediment retention basins above the Los Alamos Canyon low-head weir and isopachs of total thickness of accumulated sediment in Basin 3 from 2013 monsoon seasons**

**Table A-3.1-1**
**Summary of Geomorphic Changes at Pueblo Canyon CVS Cross-Sections**

| Section Name | 2013 Maximum New Sediment Thickness (ft) | 2013 Maximum Erosion (ft) | 2013 Net Sediment Cross-Sectional Area ($ft^2$) | 2013 Normalized Net Sediment Deposition ($m^3$/100 m)* | 2012 Normalized Net Sediment Deposition ($m^3$/100 m)* | 2011 Normalized Net Sediment Deposition ($m^3$/100 m)* | 2010 Normalized Net Sediment Deposition ($m^3$/100 m)* | 2013 Thalweg Elevation Change (ft) | 2012 Thalweg Elevation Change (ft) | 2011 Thalweg Elevation Change (ft) | 2010 Thalweg Elevation Change (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CVS#1 −50 ft | 1.0 | 2.4 | -30.5 | -283 | -33 | 33 | 207 | -0.7 | -0.2 | 0.2 | 0.5 |
| CVS#1 +50 ft | 0.3 | 0.8 | -14.3 | -132 | -36 | 44 | 101 | 0.2 | 0.0 | -0.1 | -0.3 |
| CVS#2 −50 ft | 0.7 | 1.3 | -15.2 | -141 | 3 | 40 | 281 | -0.1 | -0.1 | 0.4 | 0.3 |
| CVS#2 +50 ft | 1.5 | 1.2 | 9.4 | 88 | 6 | 30 | 81 | -0.1 | 0.0 | 0.1 | 0.4 |
| CVS#3 −50 ft | 0.5 | 2.0 | -56.0 | -519 | -7 | -15 | 112 | -0.7 | -0.2 | 0.0 | 0.2 |
| CVS#3 +50 ft | 1.7 | 2.1 | 1.9 | 18 | -15 | 29 | 118 | -0.6 | -0.2 | 0.1 | 0.0 |
| | | **Average** | **-17.4** | **-162** | **-14** | **27** | **150** | **-0.3** | **-0.1** | **0.1** | **0.2** |

* Normalized net sediment deposition is total estimated volume per 100 ft divided by distance between surveyed cross-sections (100 ft = 0.0305 km).

**Table A-3.2-1**
**Summary of Geomorphic Changes at the Upper Pueblo Canyon Willow-Planting Area Cross-Sections**

| Section Name | 2013 Maximum New Sediment Thickness (ft) | 2013 Maximum Erosion (ft) | 2013 Net Sediment Cross-Sectional Area ($ft^2$) | 2013 Normalized Net Sediment Deposition ($m^3$/100 m)* | 2012 Normalized Net Sediment Deposition ($m^3$/100 m)* | 2011 Normalized Net Sediment Deposition ($m^3$/100 m)* | 2010 Normalized Net Sediment Deposition ($m^3$/100 m)* | 2013 Thalweg Elevation Change (ft) | 2012 Thalweg Elevation Change (ft) | 2011 Thalweg Elevation Change (ft) | 2010 Thalweg Elevation Change (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Upper Third of Upper Willow-Planting Area** | | | | | | | | | | | |
| PU UW-1 | 1.8 | 0.8 | 63.8 | 592 | 18 | 200 | 276 | 0.6 | -0.1 | 1.2 | 1.0 |
| PU UW-2 | 3.6 | 2.8 | 48.5 | 451 | 32 | 175 | 95 | 1.5 | 0.2 | 0.3 | 1.1 |
| PU UW-3 | 2.1 | 0.6 | 94.8 | 880 | 218 | 141 | 371 | 0.6 | 0.7 | 0.8 | 1.0 |
| PU UW-4 | 3.9 | 0.5 | 137.4 | 1275 | 97 | 125 | 415 | 1.8 | -0.1 | 0.5 | 0.6 |
| PU UW-5 | 3.6 | 0 | 140.0 | 1299 | 0 | 154 | 175 | 1.2 | 0.2 | -0.2 | 0.4 |
| PU UW-6 | 2.4 | 5.3 | 51.9 | 482 | 9 | 28 | 151 | 2.0 | 0.1 | 0.0 | 0.2 |
| **Average, Upper Third** | | | **89.4** | **830** | **62** | **137** | **247** | **1.3** | **0.2** | **0.4** | **0.7** |
| **Middle Third of Upper Willow-Planting Area** | | | | | | | | | | | |
| PU MW-1 | 4.4 | 3.4 | 25.6 | 238 | 59 | 25 | 187 | 0.1 | 1.1 | -0.9 | -0.4 |
| PU MW-2 | 1.3 | 2.2 | 19.8 | 184 | 5 | 34 | 90 | -0.4 | 0.1 | -0.8 | 0.1 |
| PU MW-3 | 2.1 | 5.3 | -51.9 | -482 | 17 | 1 | 265 | -1.6 | 0.2 | -0.1 | -0.3 |
| PU MW-4 | 1.2 | 4.4 | -31.8 | -295 | 0 | 30 | 162 | -2.7 | 0.1 | -0.2 | 0.4 |
| PU MW-5 | 1.1 | 4.3 | -73.1 | -678 | 0 | 0 | 388 | -1.8 | 0.0 | 0.1 | 0.0 |
| PU MW-6 | 0.7 | 5.4 | -239.5 | -2224 | 17 | 12 | -41 | -1.7 | 0.2 | 0.0 | -0.5 |
| **Average, Middle Third** | | | **-58.5** | **-543** | **16** | **17** | **175** | **-1.4** | **0.3** | **-0.3** | **-0.1** |

## Table A-3.2-1 (continued)

| Section Name | 2013 Maximum New Sediment Thickness (ft) | 2013 Maximum Erosion (ft) | 2013 Net Sediment Cross-Sectional Area ($ft^2$) | 2013 Normalized Net Sediment Deposition ($m^3$/100 m)* | 2012 Normalized Net Sediment Deposition ($m^3$/100 m)* | 2011 Normalized Net Sediment Deposition ($m^3$/100 m)* | 2010 Normalized Net Sediment Deposition ($m^3$/100 m)* | 2013 Thalweg Elevation Change (ft) | 2012 Thalweg Elevation Change (ft) | 2011 Thalweg Elevation Change (ft) | 2010 Thalweg Elevation Change (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Lower Third of Upper Willow-Planting Area** | | | | | | | | | | | |
| PU LW-1 | 0.8 | 4.9 | -127.9 | -1187 | 0 | 12 | 129 | -2.5 | 0.0 | -0.1 | 0.1 |
| PU LW-2 | 0.8 | 3.7 | -99.0 | -919 | 6 | -36 | 70 | -1.5 | 0.0 | -0.2 | -0.3 |
| PU LW-3 | 0.4 | 5.5 | -188.7 | -1752 | 5 | -212 | 2 | -0.5 | 0.1 | -0.8 | -0.5 |
| PU LW-4 | 0.6 | 5.6 | -125.8 | -1168 | -70 | -197 | -147 | -0.7 | -0.1 | 0.1 | -0.7 |
| PU LW-5 | 0.5 | 5.3 | -85.9 | -797 | 16 | -388 | -4 | -0.1 | -0.1 | -0.4 | -0.3 |
| PU LW-6 | 1.0 | 6.6 | -273.3 | -2537 | -19 | -82 | -123 | -0.3 | 0.1 | 0.2 | -1.0 |
| **Average, Lower Third** | | | **-150.1** | **-1393** | **-10** | **-150** | **-12** | **-0.9** | **0.0** | **-0.2** | **-0.4** |
| **Average, Upper Pueblo Canyon** | | | **-39.7** | **-369** | **23** | **1** | **137** | **-0.3** | **0.2** | **0.0** | **0.0** |

* Normalized net sediment deposition is total estimated volume per 100 ft divided by distance between surveyed cross-sections (100 ft = 0.0305 km).

**Table A-3.3-1**
**Summary of Geomorphic Changes at the Pueblo Canyon Wing Ditch Cross-Sections**

| Section Name | 2013 Maximum New Sediment Thickness (ft) | 2013 Maximum Erosion (ft) | 2013 Net Sediment Cross-Sectional Area ($ft^2$) | 2013 Normalized Net Sediment Deposition ($m^3$/100 m)* | 2012 Normalized Net Sediment Deposition ($m^3$/100 m)* | 2011 Normalized Net Sediment Deposition ($m^3$/100 m)* | 2010 Normalized Net Sediment Deposition ($m^3$/100 m)* | 2013 Thalweg Elevation Change (ft) | 2012 Thalweg Elevation Change (ft) | 2011 Thalweg Elevation Change (ft) | 2010 Thalweg Elevation Change (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WD-1 | 2.5 | 0.3 | 239.4 | 2222 | -11 | 67 | 219 | 1.5 | -0.6 | 1.3 | 1.0 |
| WD-2 | 2.6 | 0 | 179.3 | 1664 | -6 | 25 | 424 | 1.8 | -0.2 | 0.0 | 1.7 |
| WD-3 | 2.9 | 0 | 270.4 | 2510 | -11 | -39 | 50 | 2.0 | -0.6 | 0.7 | 1.3 |
| WD-4 | 2.4 | 1.4 | 267.1 | 2479 | -72 | 0 | -125 | -2.4 | 0.2 | 0.1 | 1.4 |
| WD-5 | 1.8 | 0.6 | 185.5 | 1722 | -157 | 16 | 58 | -0.5 | -1.1 | 0.0 | 1.1 |
| | | **Average** | **228.3** | **2120** | **-52** | **14** | **125** | **0.5** | **-0.5** | **0.4** | **1.3** |

* Normalized net sediment deposition is total estimated volume per 100 ft divided by distance between surveyed cross-sections (100 ft = 0.0305 km).

**Table A-3.4-1**
**Summary of Geomorphic Changes at the Lower Pueblo Canyon Willow-Planting Area Cross-Sections**

| Section Name | 2013 Maximum New Sediment Thickness (ft) | 2013 Maximum Erosion (ft) | 2013 Net Sediment Cross-Sectional Area ($ft^2$) | 2013 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)* | 2012 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)* | 2011 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)* | 2010 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)* | 2013 Thalweg Elevation Change (ft) | 2012 Thalweg Elevation Change (ft) | 2011 Thalweg Elevation Change (ft) | 2010 Thalweg Elevation Change (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Upper Half of Lower Willow-Planting Area (P-3FE)** | | | | | | | | | | | |
| PU −1100 ft | 1.3 | 0.2 | 86.6 | 804 | 11 | -7 | 68 | 0.2 | -0.1 | 0.1 | 0.1 |
| PU −1000 ft | 0.9 | 0—[b] | 74.0 | 687 | 0 | 66 | -45 | 0.7 | 0.0 | 0.2 | 0.0 |
| PU −900 ft | 1.3 | 4.6 | 32.8 | 304 | 0 | 13 | 119 | -2.3 | 0.1 | -0.2 | 0.3 |
| PU −800 ft | 1.9 | 6.4 | -23.8 | -221 | -14 | -7 | 236 | -3.8 | 0.1 | -0.2 | 0.1 |
| PU −700 ft | 2.0 | 6.0 | -47.9 | -445 | 18 | -8 | 252 | -4.8 | -0.1 | -0.5 | 0.8 |
| PU −600 ft | 0.6 | 5.9 | -84.8 | -787 | 0 | 0 | 179 | -3.4 | -0.1 | 2.3 | 0.3 |
| PU −500 ft | 1.0 | 5.9 | -181.1 | -1681 | -12 | -4 | 110 | -2.0 | 0.0 | 2.8 | 0.5 |
| PU −400 ft | 0.9 | 6.3 | -136.8 | -1270 | -31 | -3 | 130 | -3.6 | 0.2 | 1.3 | 0.5 |
| PU −300 ft | 0.5 | 6.2 | -236.2 | -2193 | -6 | -18 | 97 | -3.2 | -0.1 | -0.9 | 0.3 |
| PU −200 ft | 0.6 | 4.9 | -281.9 | -2617 | 15 | -6 | 255 | -3.2 | 0.2 | -0.3 | 0.3 |
| PU −100 ft | 1.7 | 6.0 | -221.4 | -2055 | 1 | 3 | 142 | -1.9 | -0.1 | -0.4 | 0.4 |
| **Average, Upper Half** | | | **-92.8** | **-861** | **-1.6** | **2.6** | **140** | **-2.5** | **0.0** | **0.4** | **0.3** |

**Table A-3.4-1 (continued)**

| Section Name | 2013 Maximum New Sediment Thickness (ft) | 2013 Maximum Erosion (ft) | 2013 Net Sediment Cross-Sectional Area ($ft^2$) | 2013 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)* | 2012 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)* | 2011 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)* | 2010 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)* | 2013 Thalweg Elevation Change (ft) | 2012 Thalweg Elevation Change (ft) | 2011 Thalweg Elevation Change (ft) | 2010 Thalweg Elevation Change (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Lower Half of Lower Willow-Planting Area(P-4W)** | | | | | | | | | | | |
| PU 0 ft | 0.6 | 5.0 | -186.1 | -1728 | -3 | -140 | -16 | -1.8 | -0.1 | -0.2 | 1.0 |
| PU +100 ft | 2.5 | 4.3 | -89.1 | -827 | 31 | 9 | 94 | 0.5 | 0.5 | 0.4 | 0.2 |
| PU +200 ft | 3.4 | 4.7 | 8.2 | 76 | -4 | 6 | 9 | 1.2 | 0.3 | 0.0 | 0.4 |
| PU +300 ft | 4.5 | 2.4 | 45.3 | 421 | 6 | 2 | 96 | 2.1 | -0.1 | 0.1 | 0.4 |
| PU +400 ft | 2.9 | 3.7 | 17.6 | 164 | 7 | 39 | 15 | 2.0 | 0.2 | 0.4 | 0.4 |
| PU +500 ft | 2.0 | 6.5 | 30.6 | 284 | 10 | 0 | 93 | 1.8 | -0.1 | -0.2 | 0.4 |
| PU +600 ft | 4.6 | 6.3 | -121.7 | -1129 | 38 | -230 | -298 | 3.3 | 0.2 | 1.2 | -0.2 |
| PU +700 ft | 2.6 | 2.2 | 48.9 | 454 | 78 | -80 | 140 | 1.3 | 0.4 | 0.2 | 1.1 |
| PU +800 ft | 1.6 | 6.4 | -66.1 | -614 | 32 | 31 | -24 | 0.8 | 0.3 | 0.4 | -0.4 |
| PU +900 ft | 2.4 | 2.4 | 6.7 | 62 | 32 | 24 | -6 | 1.4 | 0.0 | 0.6 | -0.5 |
| PU +1000 ft | 2.5 | 5.5 | -158.4 | -1471 | 6 | 30 | -18 | 1.6 | 0.0 | 0.2 | 0.6 |
| PU +1100 ft | 1.6 | 2.7 | -7.8 | -72 | 7 | 81 | -116 | 0.6 | 0.2 | 0.1 | 0.1 |
| | **Average, Lower Half** | | **-39.3** | **-365** | **22** | **-8.1** | **-1.4** | **1.2** | **0.2** | **0.3** | **0.2** |

* Normalized net sediment deposition is total estimated volume per 100 ft divided by distance between surveyed cross-sections (100 ft = 0.0305 km).

**Table A-3.5-1**
**Summary of Geomorphic Changes at Cross-Sections above the Pueblo Canyon GCS**

| Section Name | 2013 Maximum New Sediment Thickness (ft) | 2013 Maximum Erosion (ft) | 2013 Net Sediment Cross-Sectional Area ($ft^2$) | 2013 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)[a] | 2012 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)[a] | 2011 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)[a] | 2010 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)[a] | 2013 Thalweg Elevation Change (ft) | 2011 Thalweg Elevation Change (ft) | 2010 Thalweg Elevation Change (ft) |
|---|---|---|---|---|---|---|---|---|---|---|
| PUGCS −1500 ft | 1.3 | 3.0 | -139.9 | -1299 | na[b] | 269 | -2785 | 1.0 | 0.1 | 0.2 |
| PUGCS −1400 ft | 1.1 | 4.1 | -227.8 | -2115 | na | 139 | 121 | -0.1 | 0.2 | 0.4 |
| PUGCS −1300 ft | 0.0 | 3.3 | -144.1 | -1310 | na | 37 | 2813 | -0.9 | 0.0 | 0.3 |
| PUGCS −1200 ft | 1.9 | 2.0 | -68.3 | -634 | na | 408 | 1968 | -1.6 | 0.6 | 0.1 |
| PUGCS −1100 ft | 0.5 | 2.1 | -90.8 | -843 | na | 269 | -678 | 0.6 | -0.1 | -0.4 |
| PUGCS −1000 ft | 2.1 | 1.6 | 3.9 | 36 | na | -56 | 678 | 1.6 | 0.1 | 0.1 |
| PUGCS −900 ft | 1.6 | 1.6 | 6.8 | 63 | na | -316 | 1903 | 0.7 | 0.6 | 0.8 |
| PUGCS −800 ft | 2.3 | 2.4 | 12.8 | 119 | na | -74 | -232 | 2.1 | 0.2 | -1.2 |
| PUGCS −700 ft | 1.1 | 2.5 | -10.1 | -94 | na | 0 | -390 | 0.7 | 0.1 | -0.5 |
| PUGCS −600 ft | 0.9 | 2.8 | -78.0 | -724 | na | 0 | -121 | -0.4 | 0.7 | 0.1 |
| PUGCS −500 ft | 2.0 | 2.6 | -78.4 | -728 | na | 93 | 28 | 1.9 | -0.1 | -0.5 |
| PUGCS −400 ft | 2.2 | 0.9 | 38.6 | 358 | na | 353 | -1170 | 1.9 | 0.1 | -0.2 |
| PUGCS −300 ft | 1.8 | 0.6 | 41.6 | 386 | na | -56 | 371 | 1.5 | 0.1 | 0.2 |
| PUGCS −200 ft | 3.1 | 0.2 | 151.7 | 1408 | na | 9 | -111 | 3.0 | 0.1 | -0.3 |
| PUGCS −100 ft | 3.3 | 0.5 | 167.8 | 1557 | na | 0 | 808 | 2.3 | 0.1 | 0.2 |
| | | **Average** | **-27.6** | **-256** | **na** | **72** | **214** | **0.9** | **0.2** | **-0.1** |

[a] Normalized net sediment deposition is total estimated volume per 100 ft divided by distance between surveyed cross-sections (100 ft = 0.0305 km).

[b] na = Not available. The Pueblo Canyon GCS was not surveyed in 2012 because of a lack of monsoonal flow in this area.

**Table A-3.5-2**
**Summary of Geomorphic Changes at Cross-Sections below the Pueblo Canyon GCS**

| Section Name | 2013 Maximum New Sediment Thickness (ft) | 2013 Maximum Erosion (ft) | 2013 Net Sediment Cross-Sectional Area ($ft^2$) | 2013 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)[a] | 2012 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)[a] | 2011 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)[a] | 2010 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)[a] | 2013 Thalweg Elevation Change (ft) | 2011 Thalweg Elevation Change (ft) | 2010 Thalweg Elevation Change (ft) |
|---|---|---|---|---|---|---|---|---|---|---|
| PUGCS +100 ft | 0.4 | 3.3 | -90.8 | -843 | na[b] | 0 | -260 | -0.3 | 0.1 | -0.8 |
| PUGCS +100 ft | 0.6 | 6.7 | -91.6 | -850 | na | 74 | -1448 | -1.3 | 0.1 | 0.1 |
| PUGCS +300 ft | 2.5 | 1.1 | 32.1 | 298 | na | 0 | -826 | 1.3 | -0.1 | 0.0 |
| | | **Average** | **-150.2** | **-1395** | **na** | **25** | **-845** | **-0.3** | **0.0** | **-0.2** |

[a] Normalized net sediment deposition is total estimated volume per 100 ft divided by distance between surveyed cross-sections (100 ft = 0.0305 km).

[b] na = Not available. The Pueblo Canyon GCS was not surveyed in 2012 because of a lack of monsoonal flow in this area.

**Table A-3.7-1**
**Summary of Geomorphic Changes at Cross-Sections above the DP Canyon GCS**

| Section Name | 2013 Maximum New Sediment Thickness (ft) | 2013 Maximum Erosion (ft) | 2013 Net Sediment Cross-Sectional Area ($ft^2$) | 2013 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)[a] | 2012 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)[a] | 2011 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)[a] | 2010 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)[a] | 2013 Thalweg Elevation Change (ft) | 2012 Thalweg Elevation Change (ft) | 2011 Thalweg Elevation Change (ft) | 2010 Thalweg Elevation Change (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DPGCS −1100 ft | 0.4 | 0.5 | 5.6 | 52 | 0 | 2 | 50 | 0.2 | 0.2 | -0.4 | 0.2 |
| DPGCS −1000 ft | 0.4 | 0.7 | 2.8 | 26 | 22 | 39 | 26 | 0.0 | 0.1 | 0.1 | 0.1 |
| DPGCS −900 ft | 0.6 | 1.1 | 7.7 | 71 | 71 | 57 | 110 | 0.3 | 0.5 | -0.8 | 0.7 |
| DPGCS −800 ft | 1.0 | 0.3 | 13.2 | 123 | 27 | 100 | 30 | 0.9 | 0.0 | 1.1 | -0.8 |
| DPGCS −700 ft | 0.8 | 0 | 12.7 | 117 | 45 | 38 | 59 | 0.8 | 0.5 | 0.6 | -0.5 |
| DPGCS −600 ft | 1.5 | 0 | 28.7 | 267 | 61 | 1 | 93 | 0.9 | 0.3 | 0.5 | 0.2 |
| DPGCS −500 ft | 1.0 | 0 | 23.7 | 220 | 117 | 6 | 130 | 1.0 | 0.3 | 0.5 | 0.2 |
| DPGCS −400 ft | 0.7 | 2.4 | 6.9 | 64 | 87 | 15 | 100 | 0.6 | -0.4 | 0.7 | 0.4 |
| DPGCS −300 ft | 0.6 | 0.4 | 12.9 | 119 | 57 | 45 | 150 | 0.2 | -0.4 | 0.1 | 0.8 |
| DPGCS −200 ft | 1.3 | 2.5 | 12.8 | 119 | -6 | -52 | 50 | -0.8 | 1.4 | -1.7 | -0.3 |
| DPGCS −100 ft | 1.0 | 0.6 | 19.4 | 141[c] | 29 | -67 | 18 | 0.6[c] | -0.2 | -0.2 | -0.6 |
| DPGCS −20 ft | 0.3 | 0.3 | -1.6 | | na[b] | na | na | | na | na | na |
| | | | **Average** | **120** | **46** | **17** | **74** | **0.4** | **0.2** | **0.1** | **0.0** |

[a] Normalized net sediment deposition is total estimated volume per 100 ft divided by distance between surveyed cross-sections (100 ft = 0.0305 km).

[b] na = Not available. Cross-section line DPGCS -20 ft was established in February 2013.

[c] Average value of normalized net sediment deposition for DPCGS -100 ft and DPGCS -20 ft, projected over the 100 ft distance to the GCS. This 2013 average value is not comparable with previous years because of the addition of the DPGCS -20-ft line in February 2013.

**Table A-3.7-2**
**Summary of Geomorphic Changes at Cross-Sections below the DP Canyon GCS**

| Section Name | 2013 Maximum New Sediment Thickness (ft) | 2013 Maximum Erosion (ft) | 2013 Net Sediment Cross-Sectional Area ($ft^2$) | 2013 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)* | 2012 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)* | 2011 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)* | 2010 Normalized Net Sediment Deposition or Erosion ($m^3$/100 m)* | 2013 Thalweg Elevation Change (ft) | 2012 Thalweg Elevation Change (ft) | 2011 Thalweg Elevation Change (ft) | 2010 Thalweg Elevation Change (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DPGCS +125 ft | 0— | 1.4 | -13.1 | -121 | 0.0 | -113 | 189 | -0.4 | 0.0 | -0.9 | 1.7 |
| DPGCS +225 ft | 0.2 | 1.1 | -2.5 | -23 | 15.8 | -35 | 20 | -1.0 | 0.3 | -0.1 | 0.0 |
| | | **Average** | **-7.8** | **-72** | **7.9** | **-74** | **105** | **-0.7** | **0.1** | **-0.5** | **0.8** |

* Normalized net sediment deposition is total estimated volume per 100 ft divided by distance between surveyed cross-sections (100 ft = 0.0305 km).

**Table A-3.8-1**
**Sediment Volume Changes at Los Alamos Canyon Low-Head Weir**

| Site | Total Net Change ($ft^3$) | Total Net Change ($m^3$) | Estimated Percent Coarse Sediment | Estimated Percent Fine Sediment | Estimated Volume Coarse Sediment ($m^3$) | Estimated Volume Fine Sediment ($m^3$) |
|---|---|---|---|---|---|---|
| **July 2011 to March 2012** | | | | | | |
| Basin 1 (west) | 8400 | 240 | 50% | 50% | 120 | 120 |
| Basin 2 (central) | 15,500 | 440 | 5% | 95% | 22 | 418 |
| Basin 3 (east) | 50,600 | 1430 | 0% | 100% | 0 | 1430 |
| **Total** | **74,500** | **2110** | **n/a*** | **n/a** | **142** | **1968** |
| **March 2012 to November 2012** | | | | | | |
| Basin 1 (west) | 700 | 20 | 20% | 80% | 4 | 16 |
| Basin 2 (central) | 8800 | 250 | 0% | 100% | 0 | 250 |
| Basin 3 (east) | 81,100 | 2300 | 0% | 100% | 0 | 2300 |
| **Total** | **90,600** | **2570** | **n/a** | **n/a** | **4** | **2566** |
| **May 2013 to February 2014** | | | | | | |
| Basin 1 (west) | 19,057 | 540 | 100% | 0% | 540 | 0 |
| Basin 2 (central) | 67,917 | 1923 | 100% | 0% | 1923 | 0 |
| Basin 3 (east) | 95,133 | 2694 | 40% | 60% | 1078 | 1616 |
| **Total** | **182,106** | **5157** | **n/a** | **n/a** | **3541** | **1616** |

* n/a = Not applicable.

**Table A-3.8-2**
**Sediment Accumulation at Los Alamos Canyon Low-Head Weir, 2000–2014**

| Period | Total Sedimentation ($m^3$) | Approximate Annual Sedimentation ($m^3$/yr) |
|---|---|---|
| June 2000 to May 2002 | 822 | 411 |
| May 2002 to August 2005 | 3377 | 1126 |
| August 2005 to July 2007 | 2555 | 1278 |
| July 2007 to September 2008 | 138 | 138 |
| September 2008 to May 2009 | 0 | —* |
| May 2009 to July 2010 | 510 | 510 |
| July 2010 to March 2011 | 274 | 274 |
| March 2011 to July 2011 | 0 | — |
| July 2011 to March 2012 | 2110 | 2110 |
| March 2012 to November 2012 | 2570 | 2570 |
| May 2013 to February 2014 | 5157 | 5157 |
| **June 2000 to February 2014** | **17,513** | **1250** |

*— = Not calculated; not in storm water runoff season.

# Attachment A-1

*Photographs of Sediment Transport Mitigation Sites in the Los Alamos and Pueblo Canyons Watershed*

**Photo A1-1 May 2014 photograph of sand lobe in the area of maximum sediment deposition at cross-section CVS#3 + 50 ft below Pueblo Canyon CVS #3, looking upstream**

**Photo A1-2 May 2014 photograph of area of maximum sediment erosion at CVS1-50, above Pueblo Canyon CVS #1, looking upstream**


(a)


(b)

**Photo A1-3 Repeat photographs of CVS1-50, looking upstream: (a) March 2012 (b) May 2014**

**Photo A1-4 May 2014 photograph of sand lobe in the area of maximum sediment deposition at cross-section MW-1, looking upstream**

**Photo A1-5 May 2014 photograph of lateral bank migration in the area of maximum sediment erosion at cross-section LW-6, looking downstream**

**Photo A1-6 May 2014 photograph of area of maximum sediment deposition below the Pueblo Canyon wing ditch at cross-section WD-3, looking upstream**

**Photo A1-7 May 2014 photograph of area of maximum sediment erosion below the Pueblo Canyon wing ditch at cross-section WD-4, looking upstream**


(a)


(b)

**Photo A1-8 Repeat photographs of WD-4 (northern part of cross-section), looking upstream: (a) January 2013, (b) May 2014**

**Photo A1-9 May 2014 photograph of area of maximum sediment deposition in the upper half of the lower Pueblo Canyon willow sections, PU-700 ft, looking upstream**

**Photo A1-10 May 2014 photograph of area of maximum sediment erosion in the upper half of the lower Pueblo willow sections, PU-800 ft, looking upstream**


(a)


(b)

**Photo A1-11 Repeat photographs of PU-300, looking upstream: (a) March 2012, (b) May 2014**

**Photo A1-12 May 2014 photograph of area of maximum sediment erosion in the lower half of the lower Pueblo willow sections, PU+500 ft, looking downstream**


(a)


(b)

**Photo A1-13 Repeat photographs of PU0, looking upstream: (a) January 2013, (b) May 2014**


(a)


(b)

**Photo A1-14 February 2014 photographs of the Pueblo Canyon grade control structure: (a) looking downstream, (b) looking upstream**

**Photo A1-15 May 2014 photograph of area of maximum sediment erosion above the Pueblo Canyon grade-control structure, PUGCS-1400 ft, looking downstream**

**Photo A1-16 May 2014 photograph of area of maximum sediment deposition above the Pueblo Canyon grade control structure, PUGCS-100 ft, looking upstream. Surface modified after surveying during excavation of the intake above the PUGCS.**


(a)


(b)

**Photo A1-17 Repeat photographs of PUGCS-1100, looking upstream: (a) March 2012, (b) May 2014**


(a)


(b)

**Photo A1-18 May 2014 photographs of LA-SMA-2 sediment detention basins, looking downstream: (a) upper sediment retention basin, (b) lower sediment retention basin**


(a)


(b)

**Photo A1-19 November 2013 photographs of the DP Canyon grade control structure: (a) looking downstream, (b) looking upstream**

**Photo A1-20 May 2014 photograph of maximum sediment deposition and erosion at DP, 600-ft section looking upstream**

**Photo A1-21 November 2011 photograph of maximum incision at DP, 200-ft section looking upstream**

**Photo A1-22 April 2014 photograph of the Los Alamos Canyon low-head weir looking upstream**

**Photo A1-23 April 2014 photograph of sediment accumulation and delta in the lower basin at the Los Alamos Canyon low-head weir**


(a)


(b)

**Photo A1-24 Repeat photographs of thick willow patches in upper third of upper Pueblo Canyon willow-planting area looking downstream near UW-5 section: (a) October 2011, (b) May 2014**

**Photo A1-25 May 2014 photograph showing willows laid down in the upper Pueblo willow section that have survived and are resprouting**


(a)


(b)

**Photo A1-26 Repeat photographs of thick willow patches in middle third of upper Pueblo Canyon willow-planting area looking upstream near MW-2 section: (a) November 2011, (b) May 2014**

**Photo A1-27 LW1 showing absence of willows in channel, view downstream**


(a)


(b)

**Photo A1-28 Repeat photographs of lower Pueblo Canyon willow-planting area looking downstream near PU+900 section: (a) November 2011, (b) May 2014**

**Photo A1-29 New willow plantings at PU+600 ft, view upstream**

**Photo A1-30 April 2014 photograph of rock armoring along stream banks in the south fork of Acid Canyon looking upstream**

# Attachment A-2

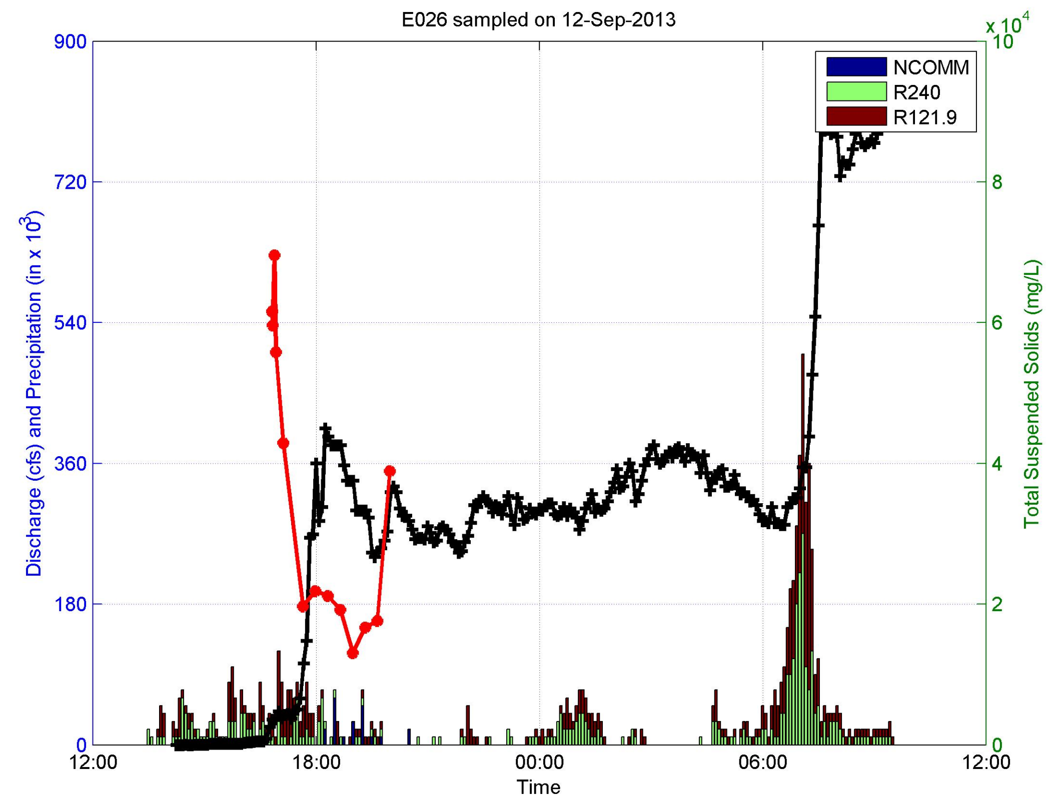
*Cross-Section Survey Data*
*(on CD included with this document)*

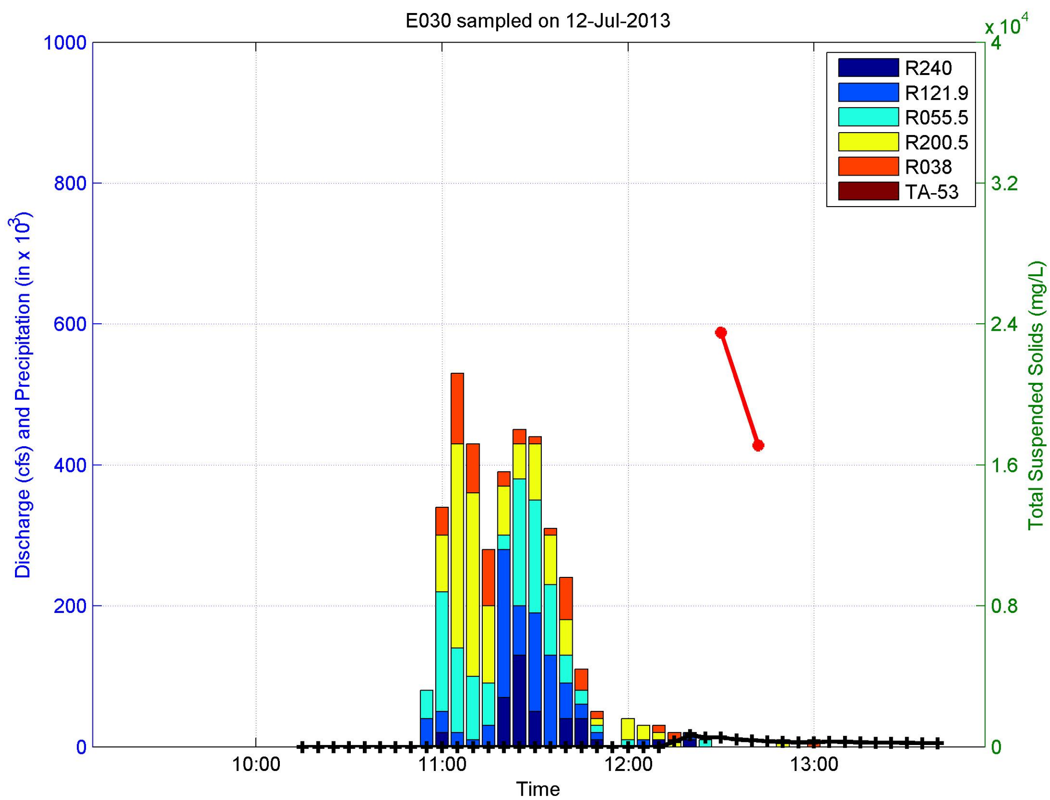
# Appendix B

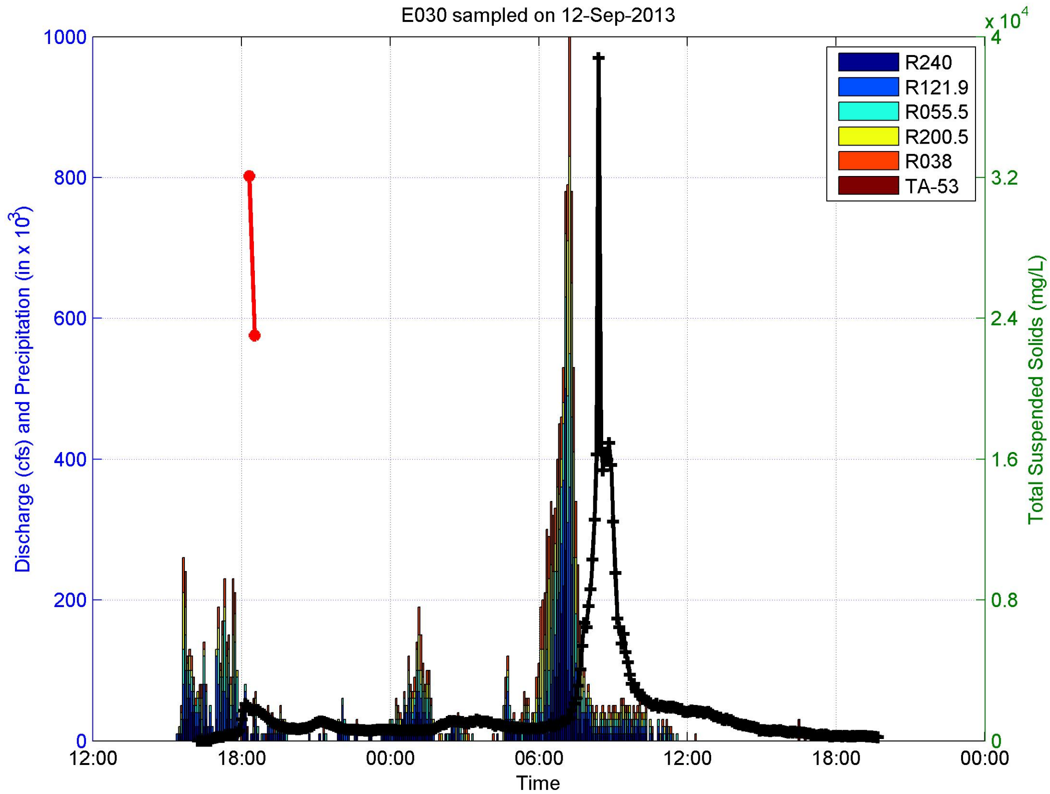
*Hydrographs, Hyetographs, and Sedigraphs for Samples Collected*

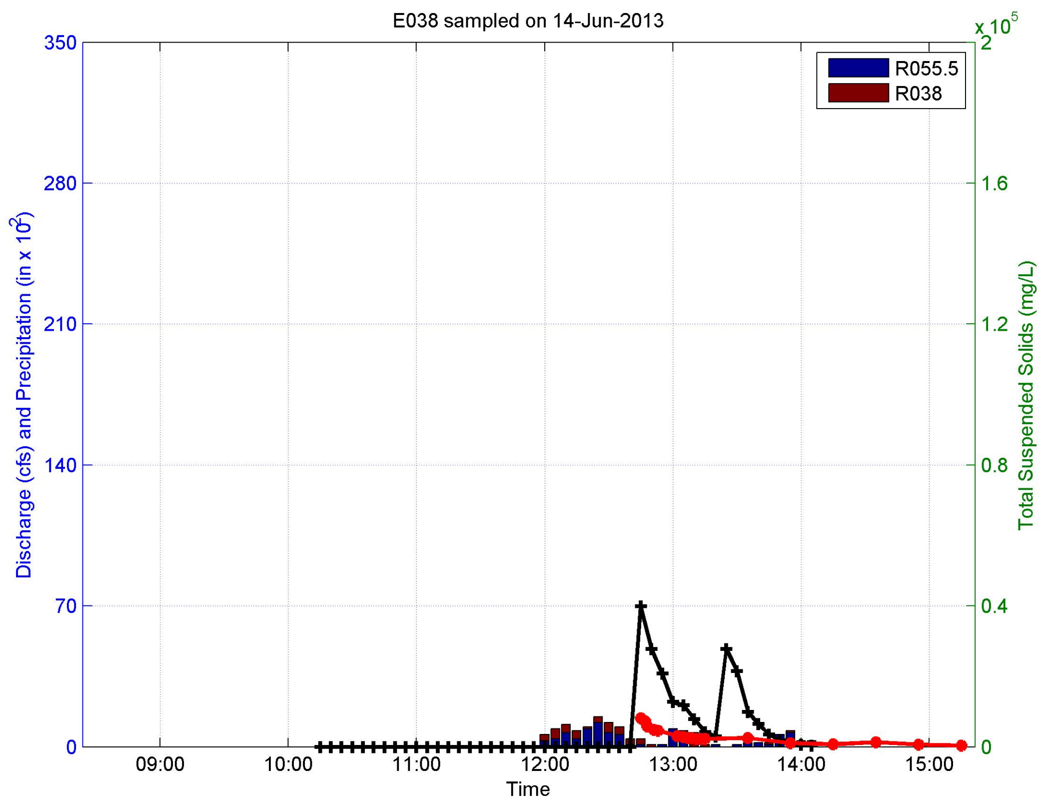
This appendix summarizes the relationships between precipitation, discharge, and total suspended solids (TSS) determined for each storm runoff event sampled. Plots of discharge versus time (hydrographs) at gages from each storm runoff event resulting in sample collection are presented, with the exception of events with missing or questionable discharge data as stated in Section 2. These hydrographs are overlaid with precipitation measured at associated rain gages (hyetographs) and TSS measured from storm water samples collected during runoff events (sedigraphs).

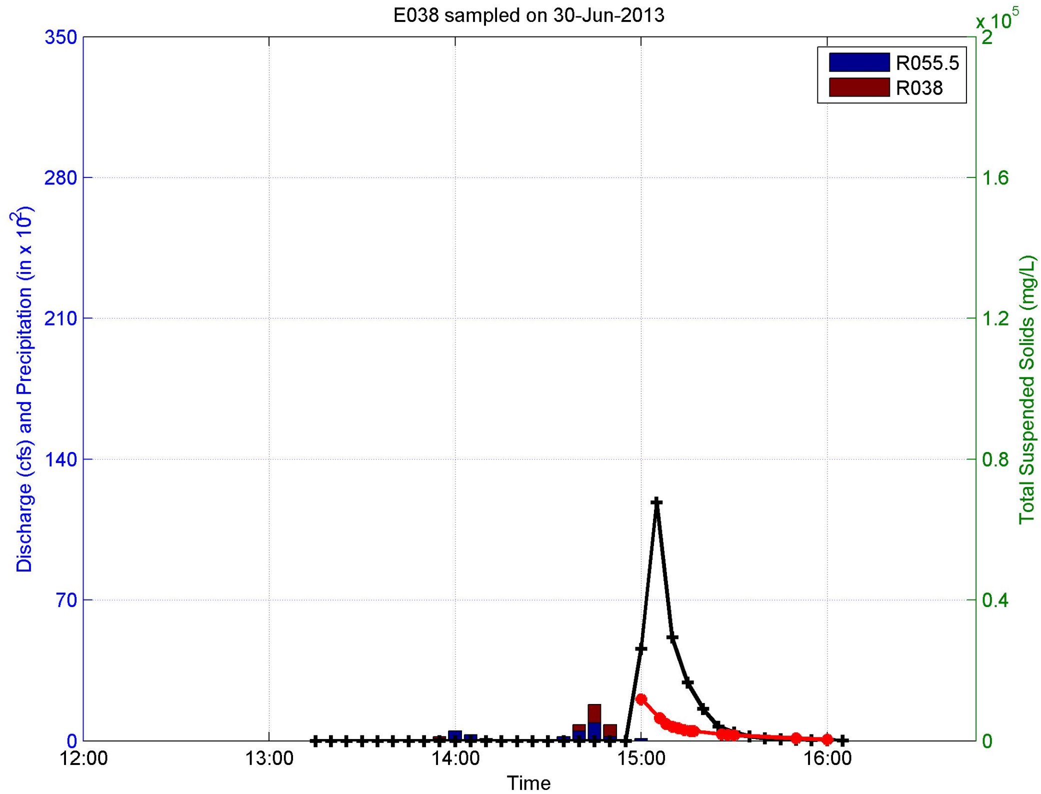
Hydrographs (**+**), hyetographs (assorted colors of stacked bars), and sedigraphs (●) for storm runoff events during which sampling was performed are displayed.

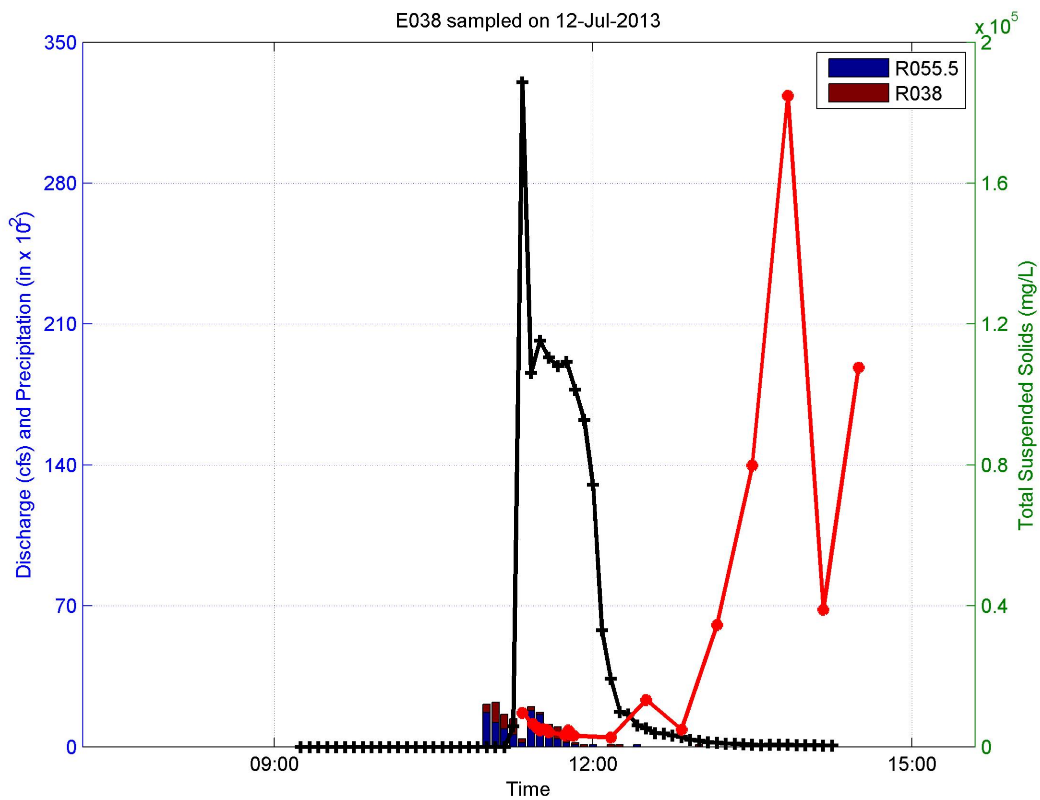

E026 sampled on 12-Sep-2013
Discharge (cfs) and Precipitation (in x 10^3)
Total Suspended Solids (mg/L)
x 10^4
NCOMM
R240
R121.9
Time
900
720
540
360
180
0
10
8
6
4
2
0
12:00
18:00
00:00
06:00
12:00

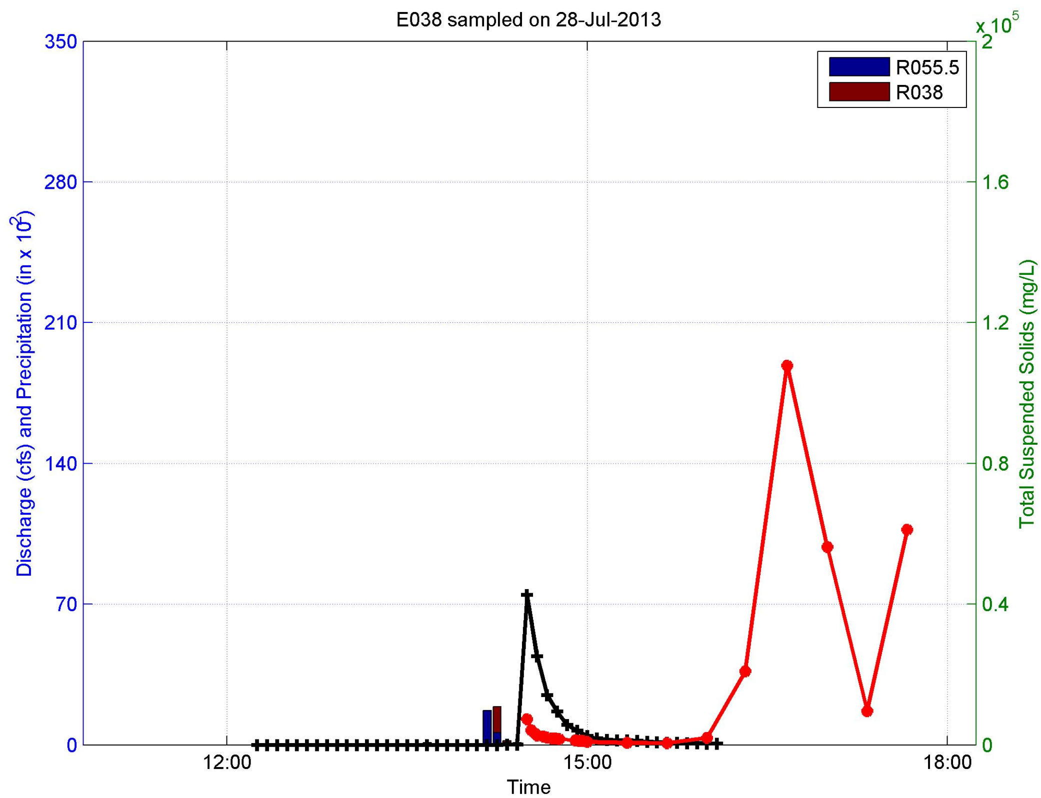

E030 sampled on 12-Jul-2013
Discharge (cfs) and Precipitation (in x 10^3)
Total Suspended Solids (mg/L)
x 10^4
R240
R121.9
R055.5
R200.5
R038
TA-53
Time
1000
800
600
400
200
0
4
3.2
2.4
1.6
0.8
0
10:00
11:00
12:00
13:00

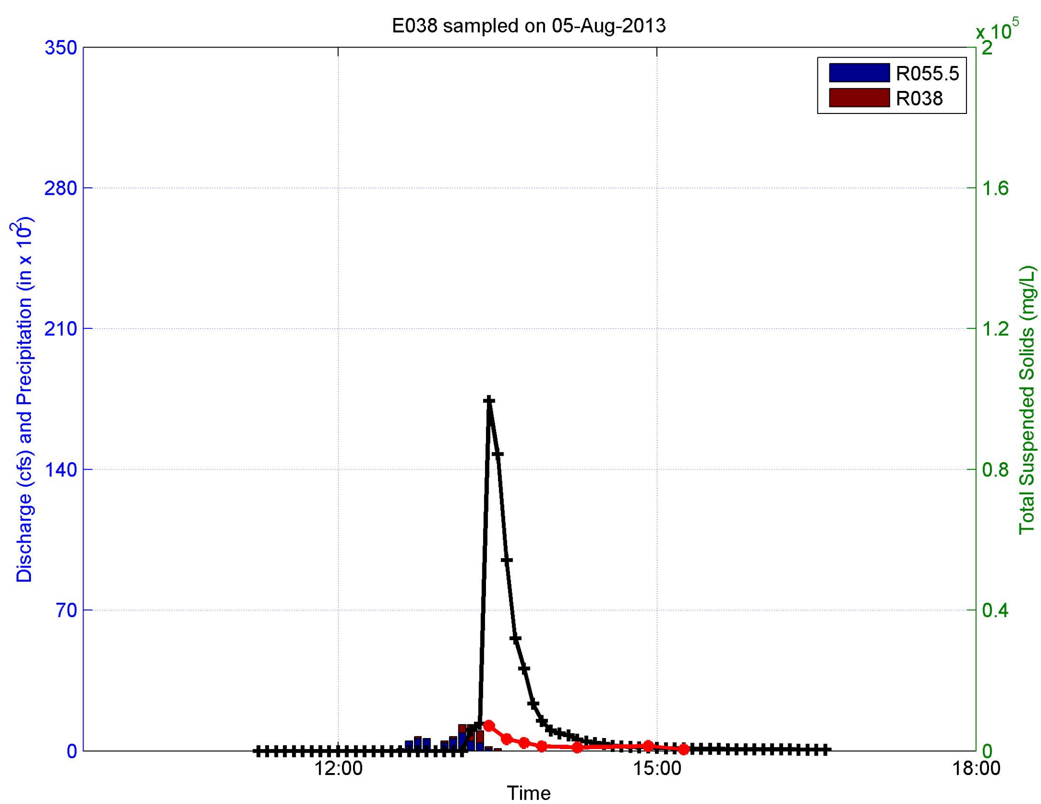

E030 sampled on 12-Sep-2013
Discharge (cfs) and Precipitation (in x 10^3)
Total Suspended Solids (mg/L)
x 10^4
R240
R121.9
R055.5
R200.5
R038
TA-53
1000
800
600
400
200
0
4
3.2
2.4
1.6
0.8
0
12:00
18:00
00:00
06:00
12:00
18:00
00:00
Time

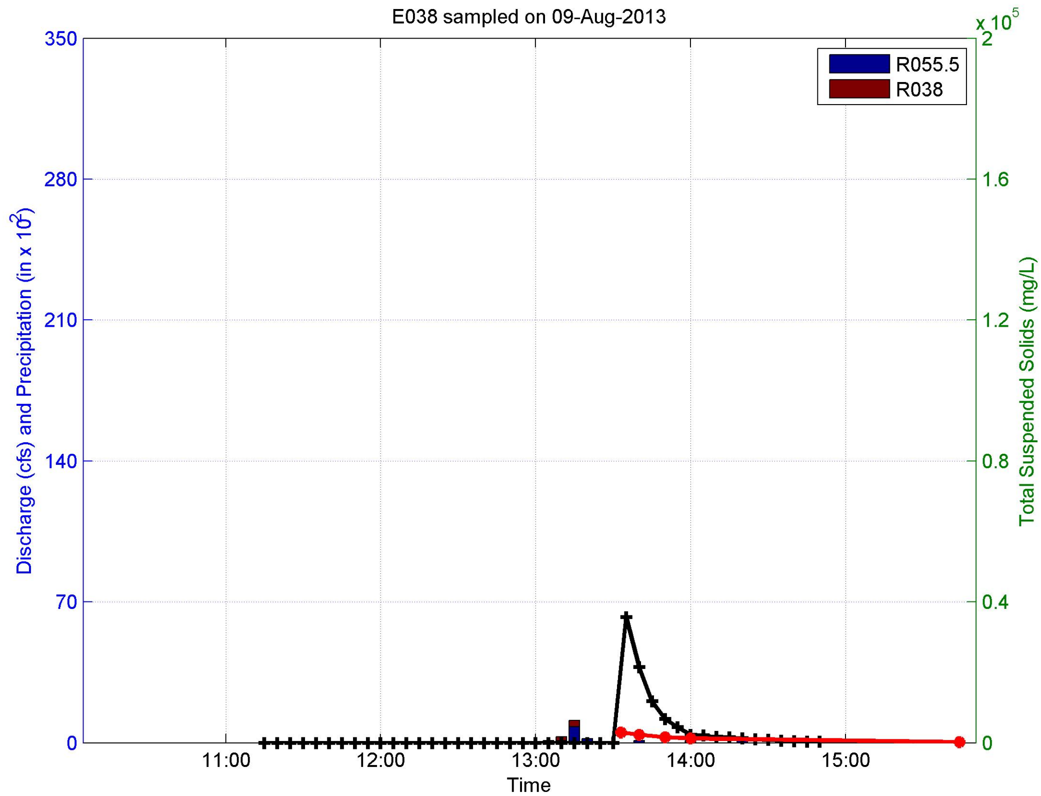

E038 sampled on 14-Jun-2013
Discharge (cfs) and Precipitation (in x 10^2)
Total Suspended Solids (mg/L)
x 10^5
R055.5
R038
350
280
210
140
70
0
2
1.6
1.2
0.8
0.4
0
09:00
10:00
11:00
12:00
13:00
14:00
15:00
Time

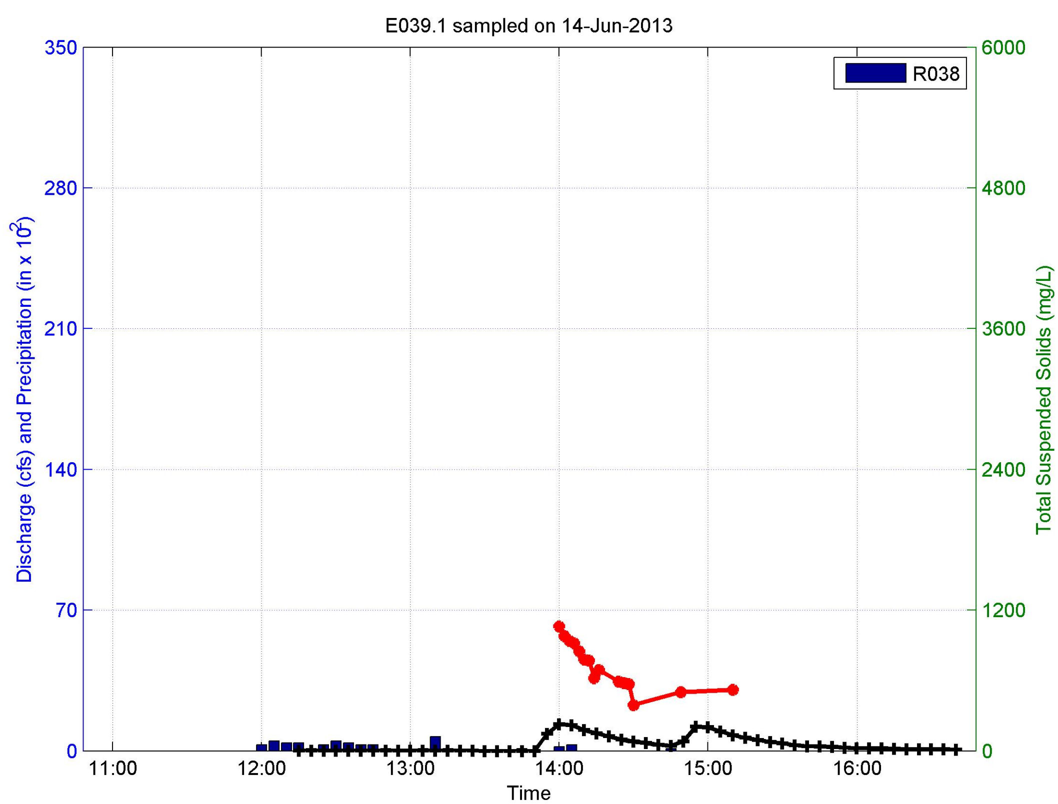

E038 sampled on 30-Jun-2013
R055.5
R038
Discharge (cfs) and Precipitation (in x 10^2)
Total Suspended Solids (mg/L)
x 10^5
350
280
210
140
70
0
2
1.6
1.2
0.8
0.4
0
12:00
13:00
14:00
15:00
16:00
Time

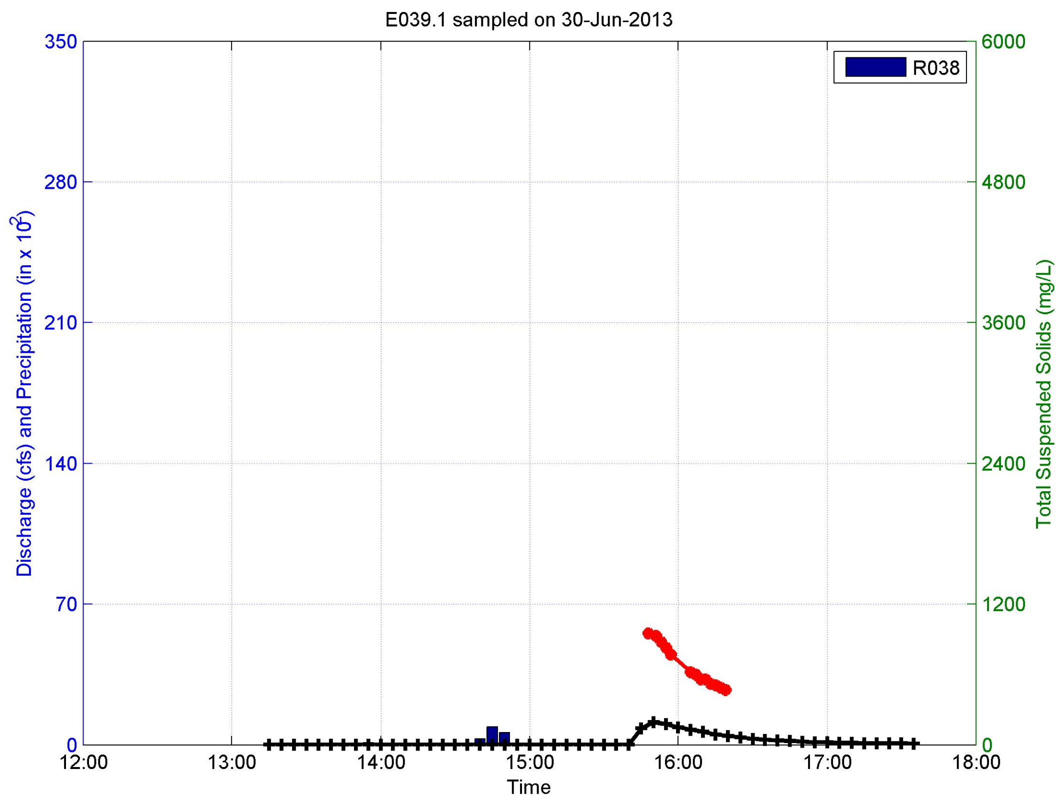

E038 sampled on 12-Jul-2013
R055.5
R038
Discharge (cfs) and Precipitation (in x 10^2)
Total Suspended Solids (mg/L)
x 10^5
350
280
210
140
70
0
2
1.6
1.2
0.8
0.4
0
09:00
12:00
15:00
Time

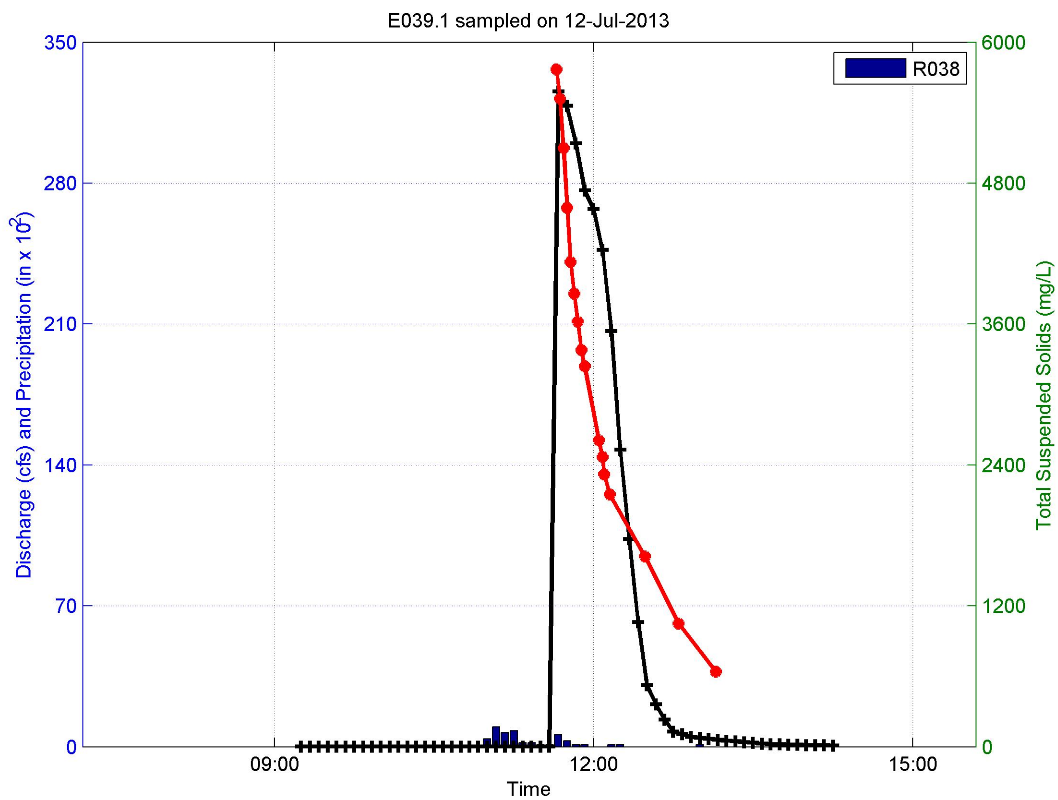

E038 sampled on 28-Jul-2013
R055.5
R038
Discharge (cfs) and Precipitation (in x 10^2)
Total Suspended Solids (mg/L)
x 10^5
Time
12:00
15:00
18:00
0
70
140
210
280
350
0
0.4
0.8
1.2
1.6
2

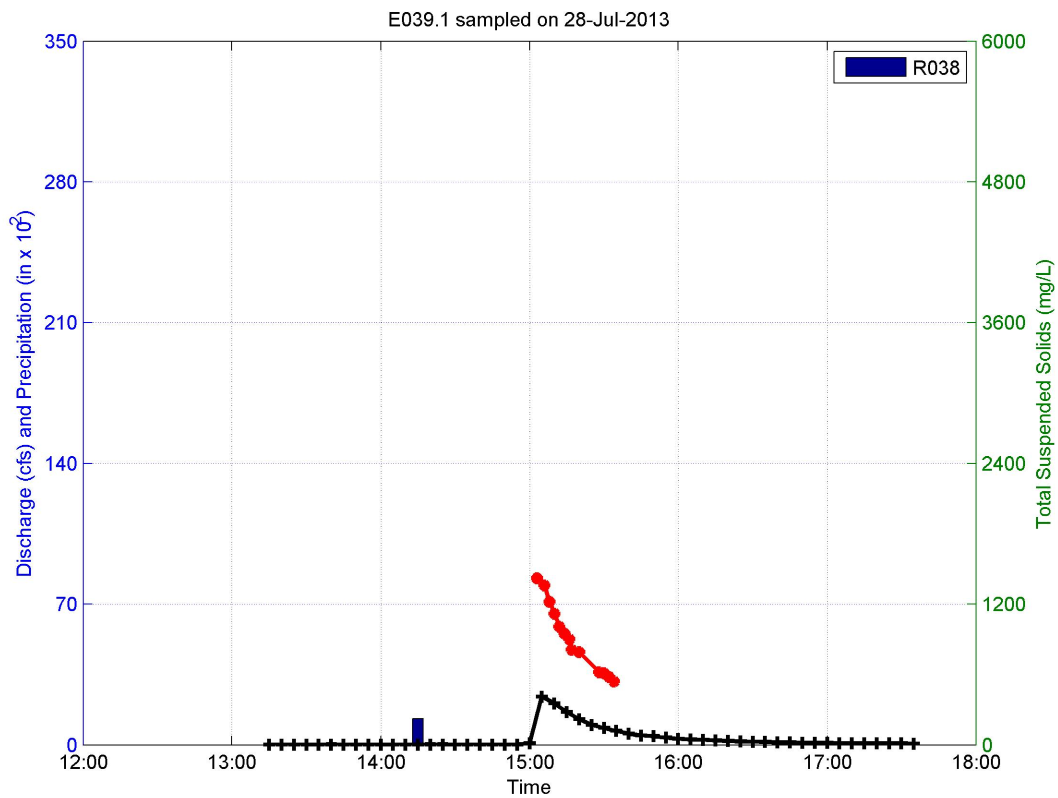

E038 sampled on 05-Aug-2013
R055.5
R038
Discharge (cfs) and Precipitation (in x 10^2)
Total Suspended Solids (mg/L)
x 10^5
Time
12:00
15:00
18:00
0
70
140
210
280
350
0
0.4
0.8
1.2
1.6
2

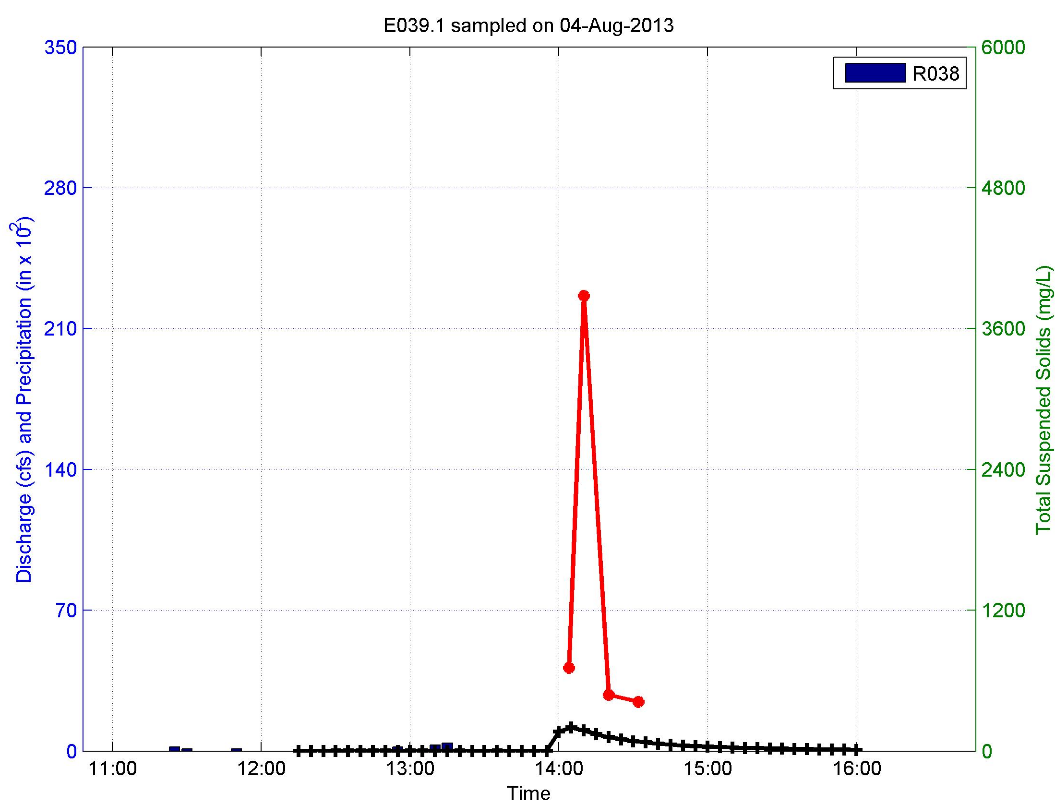

E038 sampled on 09-Aug-2013
Discharge (cfs) and Precipitation (in x 10$^2$)
Total Suspended Solids (mg/L)
x 10$^5$
R055.5
R038
350
280
210
140
70
0
2
1.6
1.2
0.8
0.4
0
11:00
12:00
13:00
14:00
15:00
Time

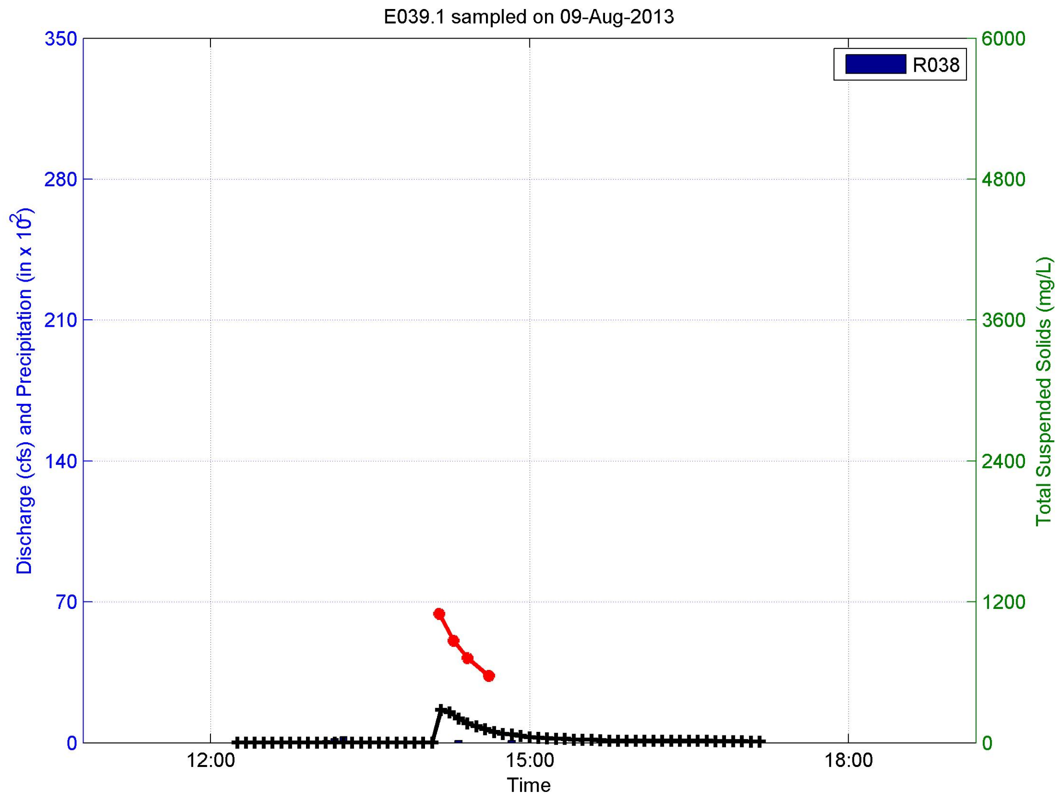

E039.1 sampled on 14-Jun-2013
Discharge (cfs) and Precipitation (in x 10$^2$)
Total Suspended Solids (mg/L)
R038
350
280
210
140
70
0
6000
4800
3600
2400
1200
0
11:00
12:00
13:00
14:00
15:00
16:00
Time

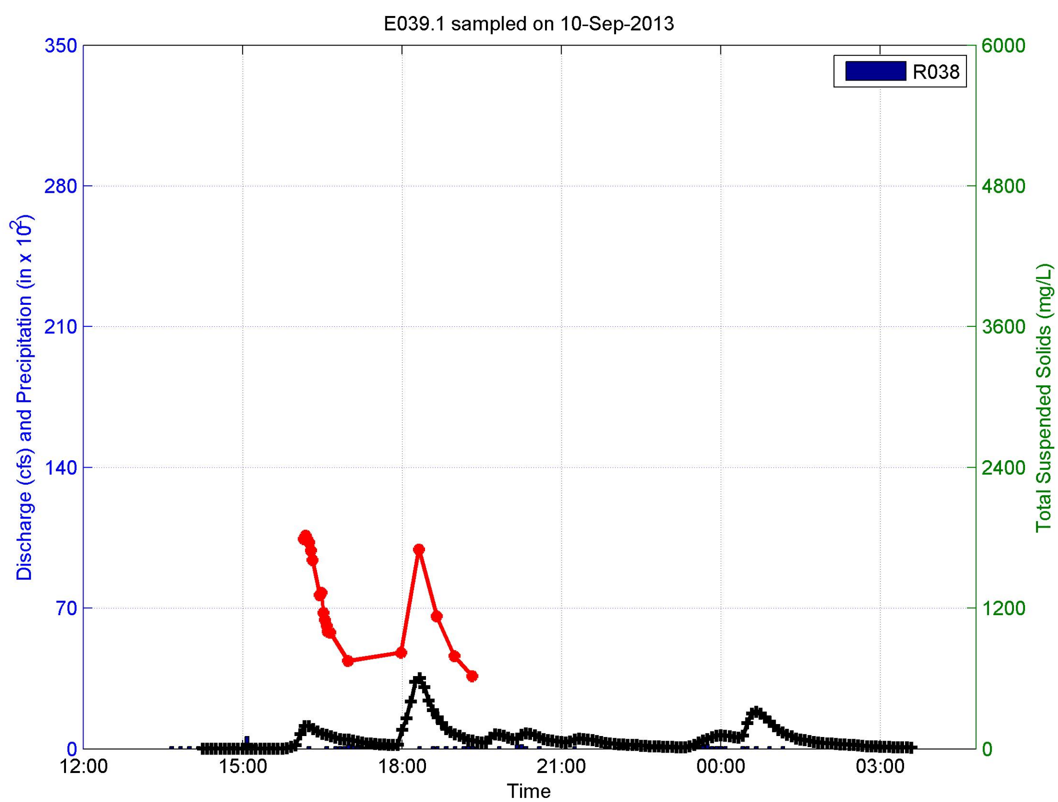

E039.1 sampled on 30-Jun-2013
R038
Discharge (cfs) and Precipitation (in x $10^2$)
Total Suspended Solids (mg/L)
350
280
210
140
70
0
6000
4800
3600
2400
1200
0
12:00
13:00
14:00
15:00
16:00
17:00
18:00
Time

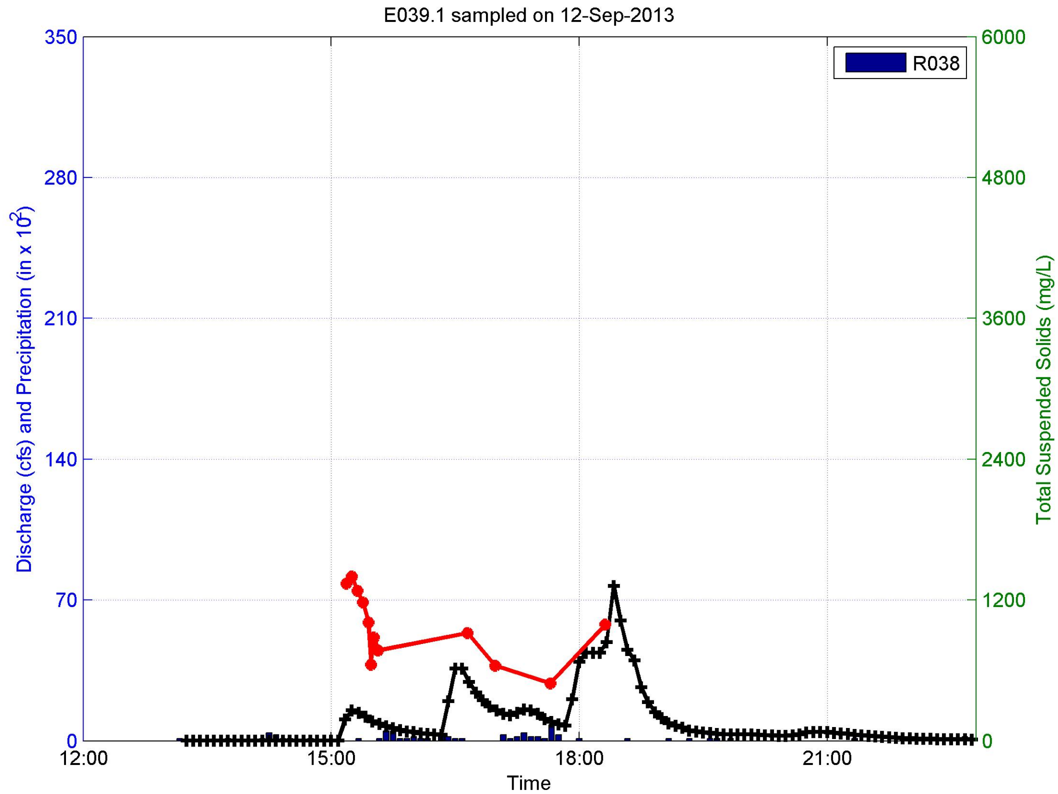

E039.1 sampled on 12-Jul-2013
R038
Discharge (cfs) and Precipitation (in x $10^2$)
Total Suspended Solids (mg/L)
350
280
210
140
70
0
6000
4800
3600
2400
1200
0
09:00
12:00
15:00
Time

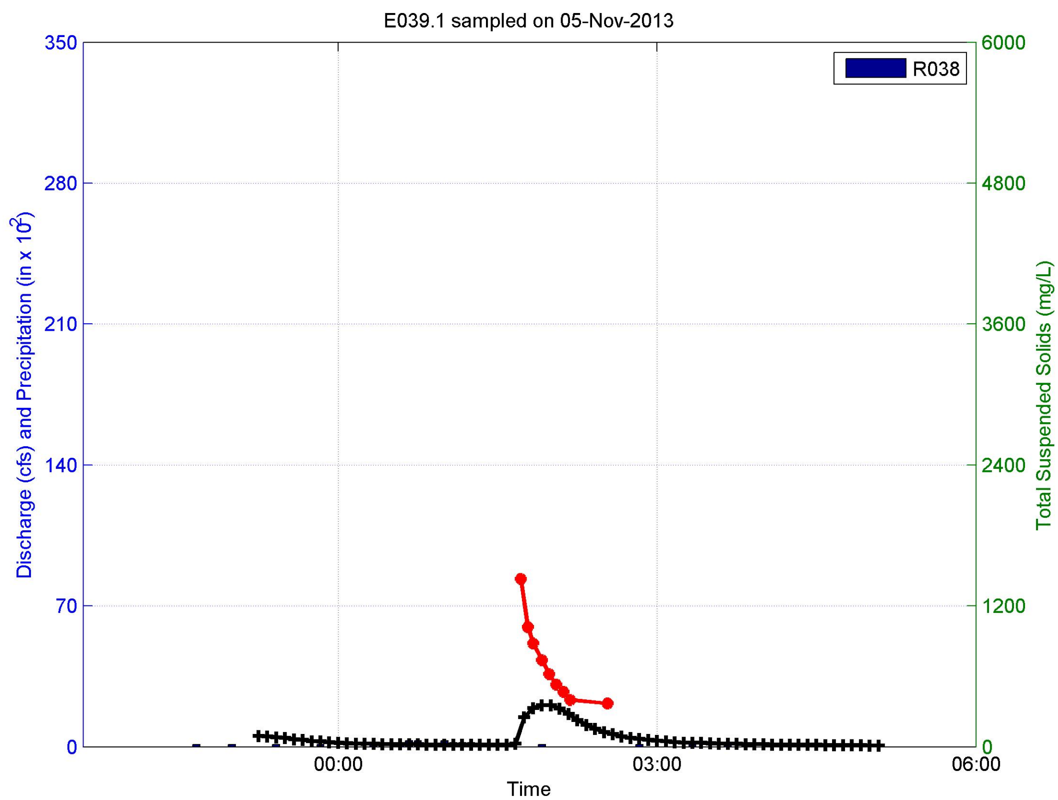

E039.1 sampled on 28-Jul-2013
R038
Discharge (cfs) and Precipitation (in x 10^2)
Total Suspended Solids (mg/L)
0
70
140
210
280
350
0
1200
2400
3600
4800
6000
12:00
13:00
14:00
15:00
16:00
17:00
18:00
Time

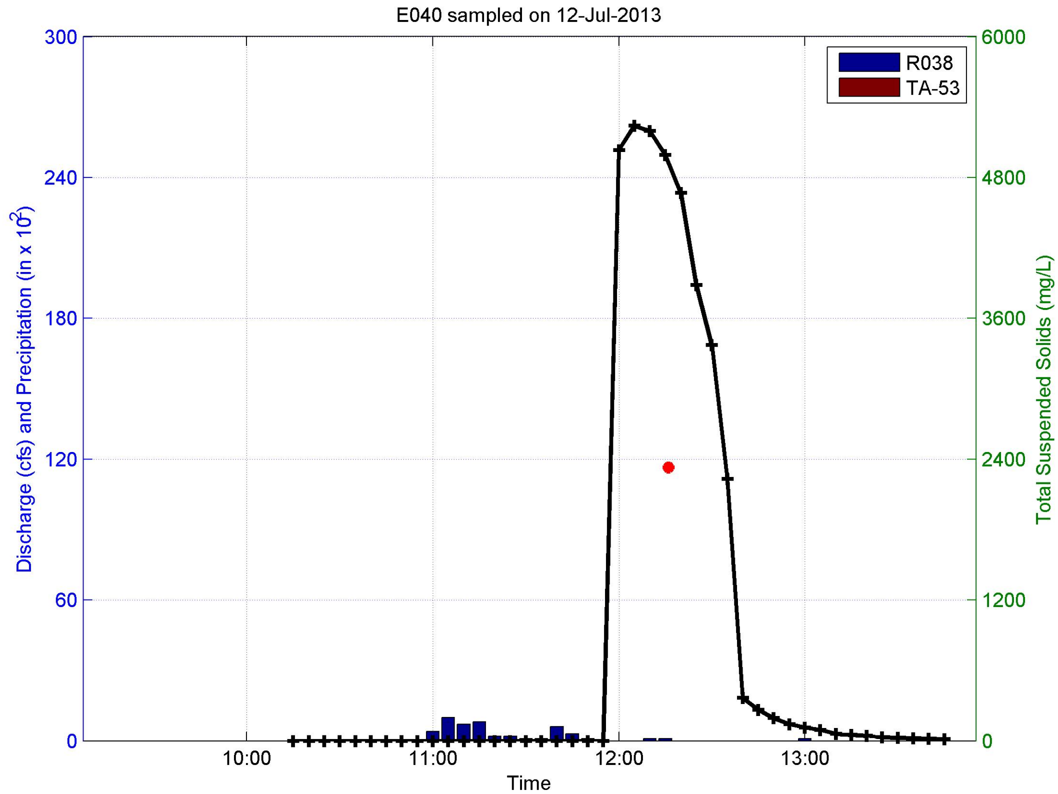

E039.1 sampled on 04-Aug-2013
R038
Discharge (cfs) and Precipitation (in x 10^2)
Total Suspended Solids (mg/L)
0
70
140
210
280
350
0
1200
2400
3600
4800
6000
11:00
12:00
13:00
14:00
15:00
16:00
Time

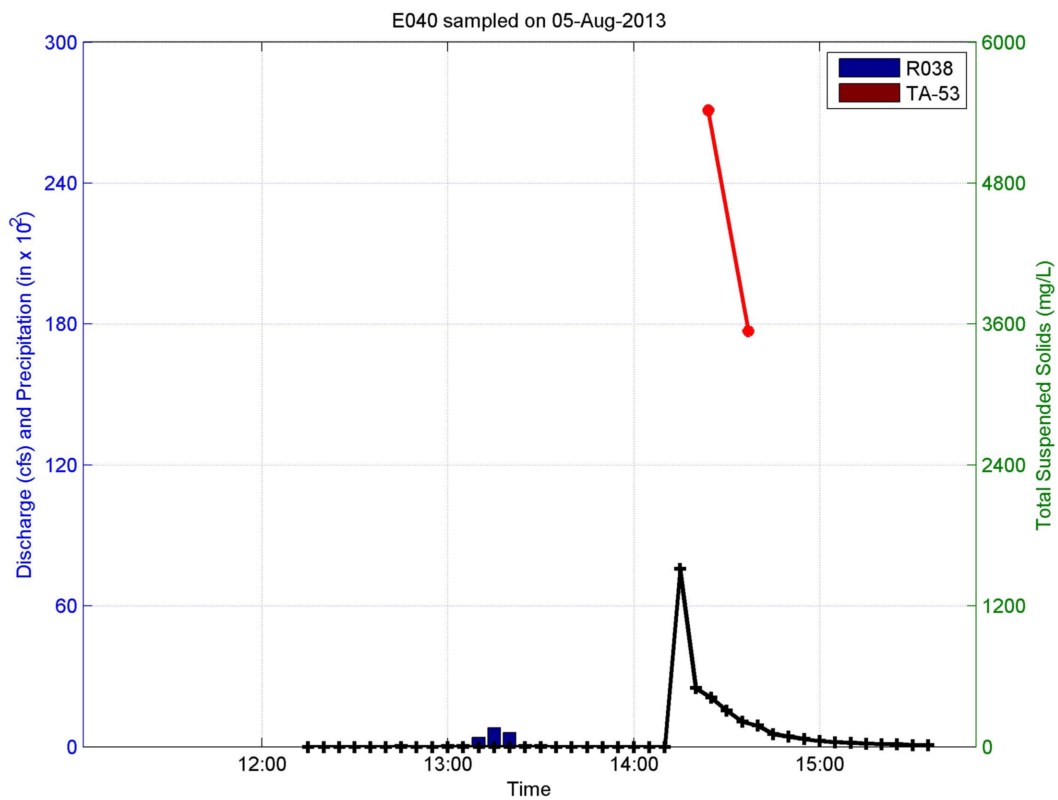

E039.1 sampled on 09-Aug-2013
R038
Discharge (cfs) and Precipitation (in x 10^2)
Total Suspended Solids (mg/L)
Time
350
280
210
140
70
0
6000
4800
3600
2400
1200
0
12:00
15:00
18:00

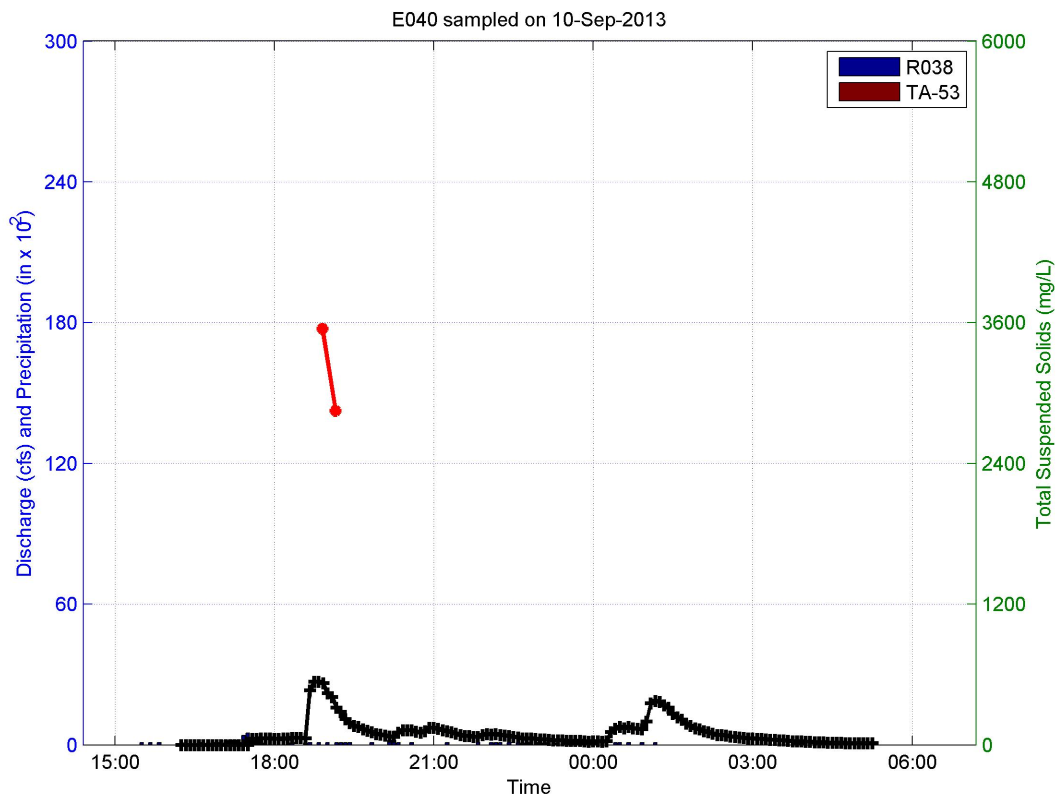

E039.1 sampled on 10-Sep-2013
R038
Discharge (cfs) and Precipitation (in x 10^2)
Total Suspended Solids (mg/L)
Time
350
280
210
140
70
0
6000
4800
3600
2400
1200
0
12:00
15:00
18:00
21:00
00:00
03:00

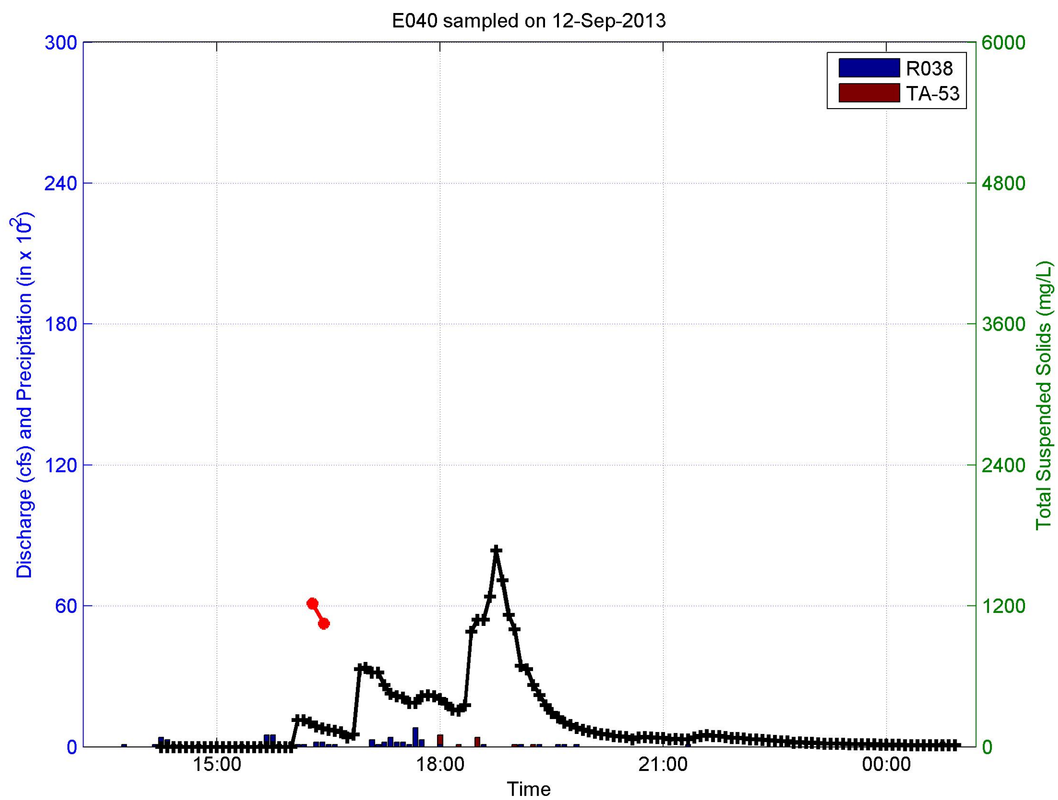

E039.1 sampled on 12-Sep-2013
R038
Discharge (cfs) and Precipitation (in x $10^2$)
Total Suspended Solids (mg/L)
Time
0
70
140
210
280
350
0
1200
2400
3600
4800
6000
12:00
15:00
18:00
21:00

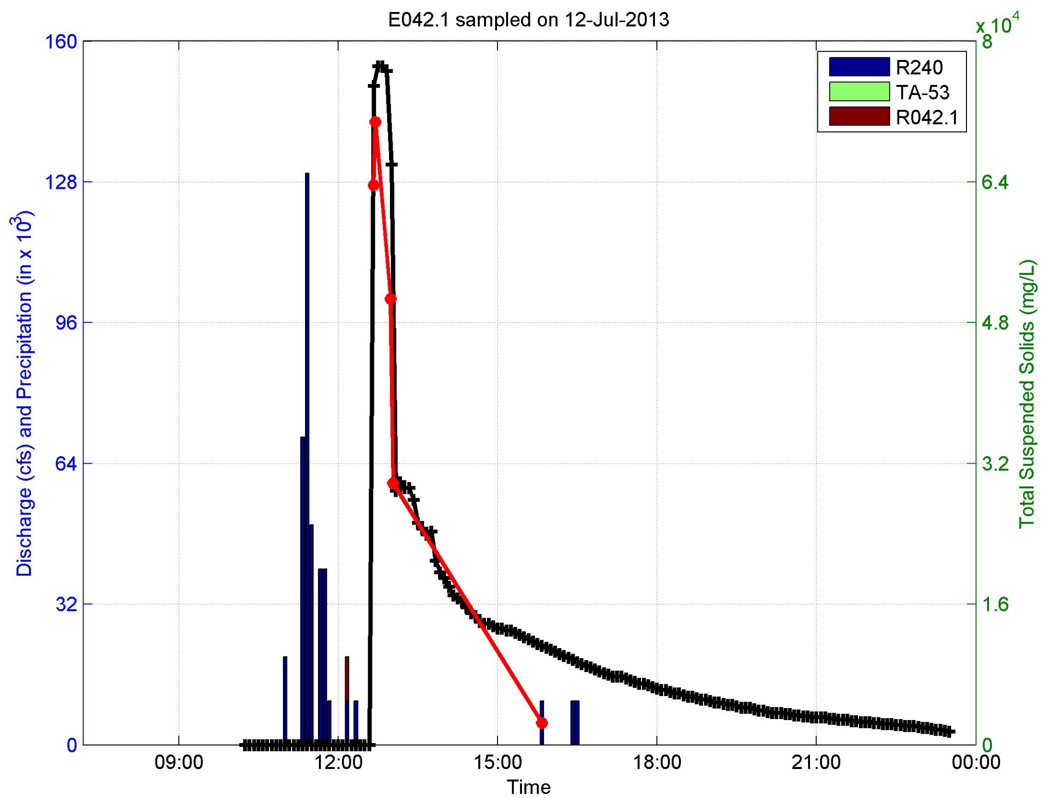

E039.1 sampled on 05-Nov-2013
R038
Discharge (cfs) and Precipitation (in x $10^2$)
Total Suspended Solids (mg/L)
Time
0
70
140
210
280
350
0
1200
2400
3600
4800
6000
00:00
03:00
06:00

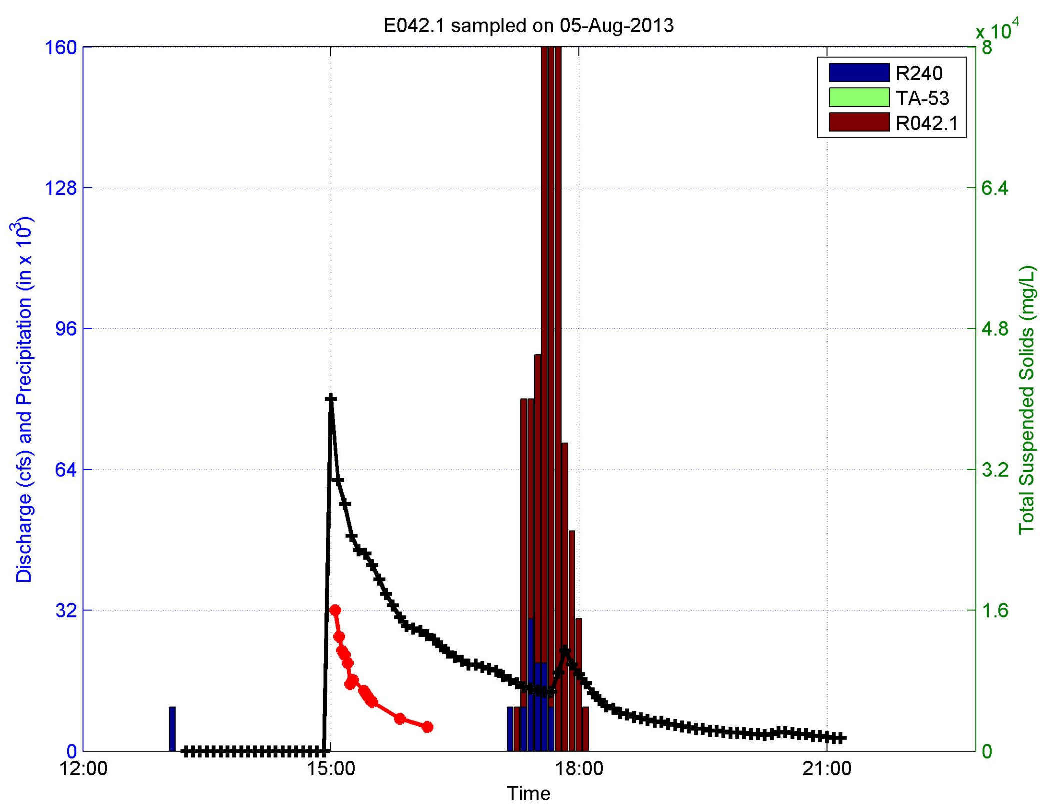

E040 sampled on 12-Jul-2013
R038
TA-53
Discharge (cfs) and Precipitation (in x 10^2)
Total Suspended Solids (mg/L)
Time
0
60
120
180
240
300
0
1200
2400
3600
4800
6000
10:00
11:00
12:00
13:00

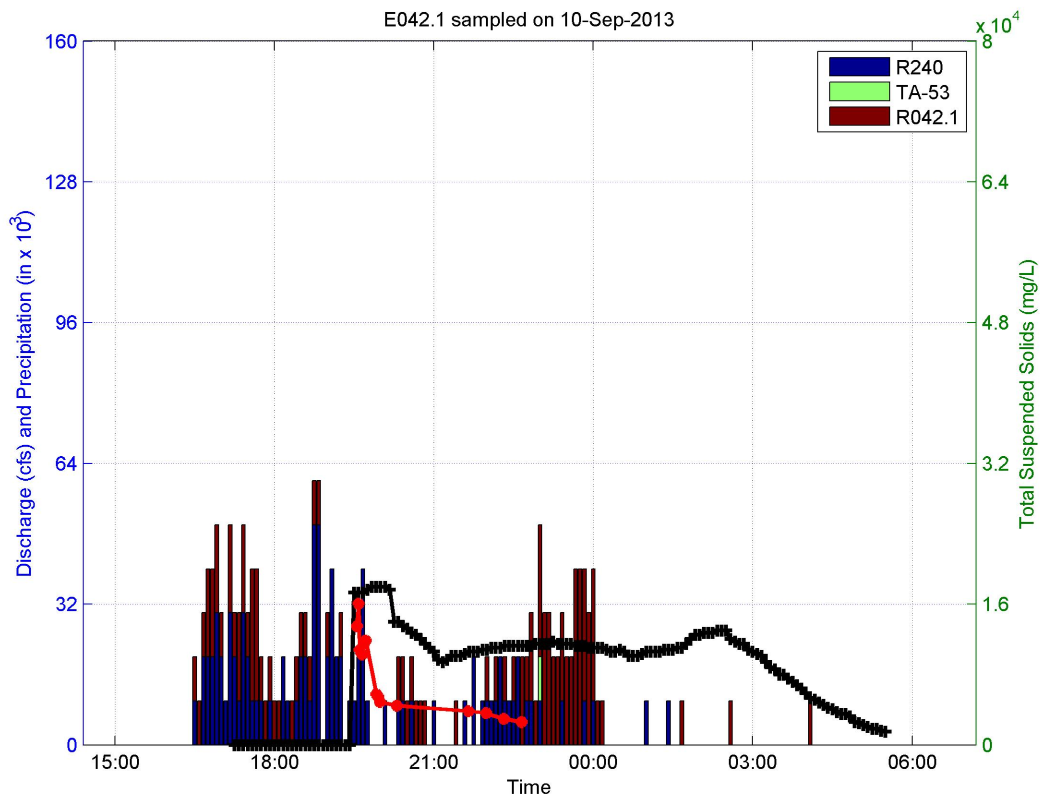

E040 sampled on 05-Aug-2013
R038
TA-53
Discharge (cfs) and Precipitation (in x 10^2)
Total Suspended Solids (mg/L)
Time
0
60
120
180
240
300
0
1200
2400
3600
4800
6000
12:00
13:00
14:00
15:00

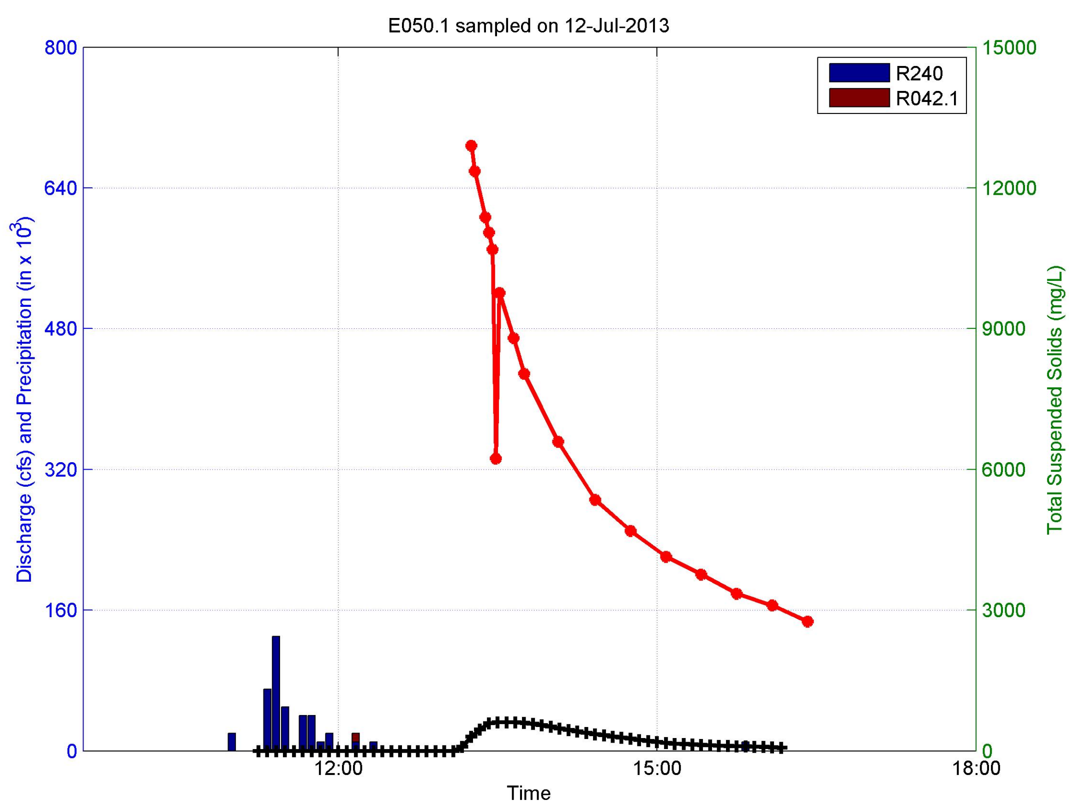

E040 sampled on 10-Sep-2013
R038
TA-53
Discharge (cfs) and Precipitation (in x 10$^2$)
Total Suspended Solids (mg/L)
Time
300
240
180
120
60
0
6000
4800
3600
2400
1200
0
15:00
18:00
21:00
00:00
03:00
06:00

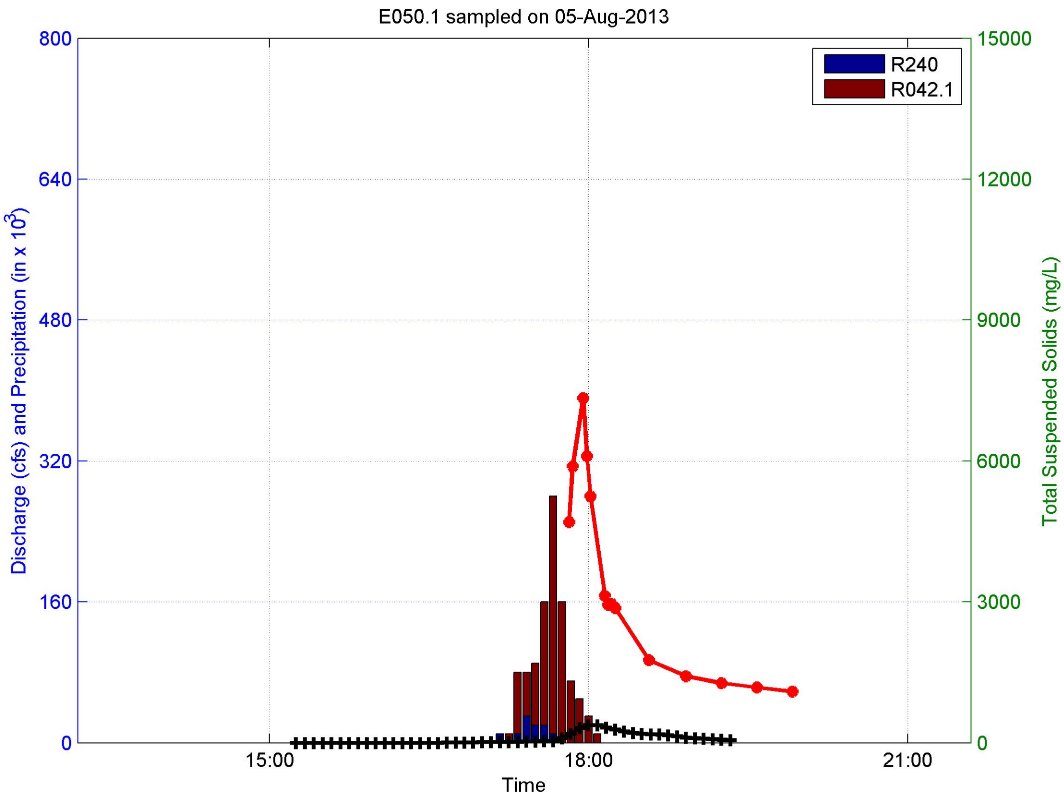

E040 sampled on 12-Sep-2013
R038
TA-53
Discharge (cfs) and Precipitation (in x 10$^2$)
Total Suspended Solids (mg/L)
Time
300
240
180
120
60
0
6000
4800
3600
2400
1200
0
15:00
18:00
21:00
00:00

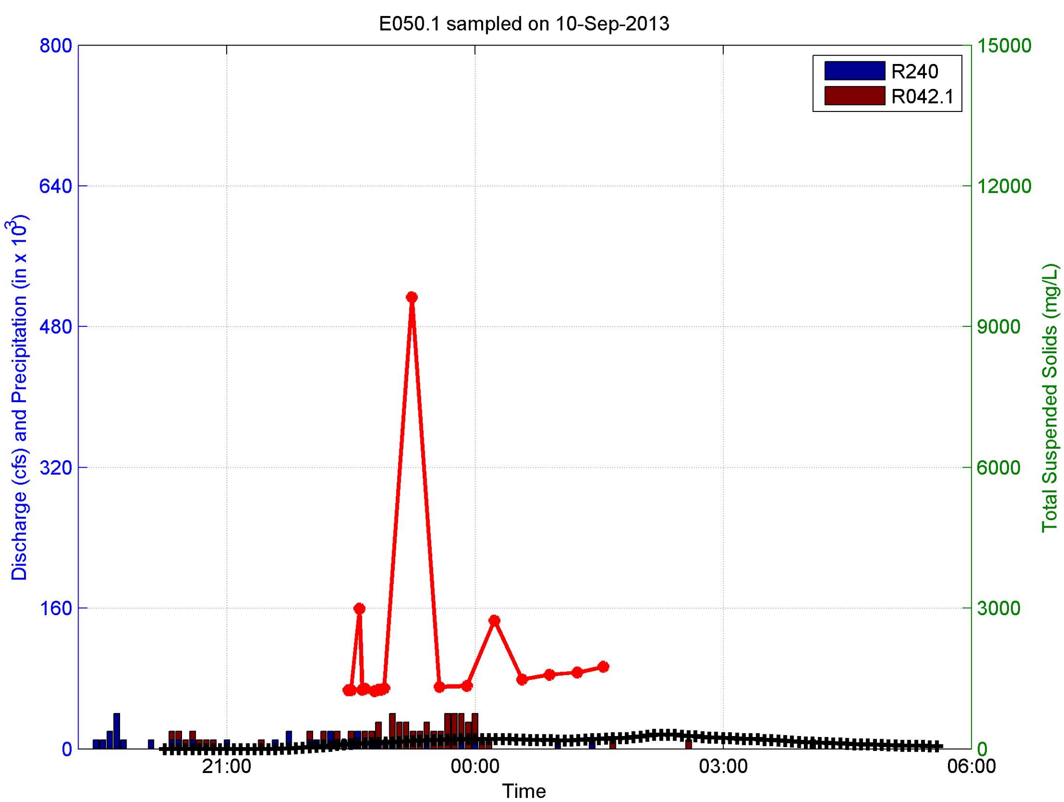

E042.1 sampled on 12-Jul-2013
R240
TA-53
R042.1
Discharge (cfs) and Precipitation (in x 10^3)
Total Suspended Solids (mg/L)
x 10^4
160
128
96
64
32
0
8
6.4
4.8
3.2
1.6
0
09:00
12:00
15:00
18:00
21:00
00:00
Time

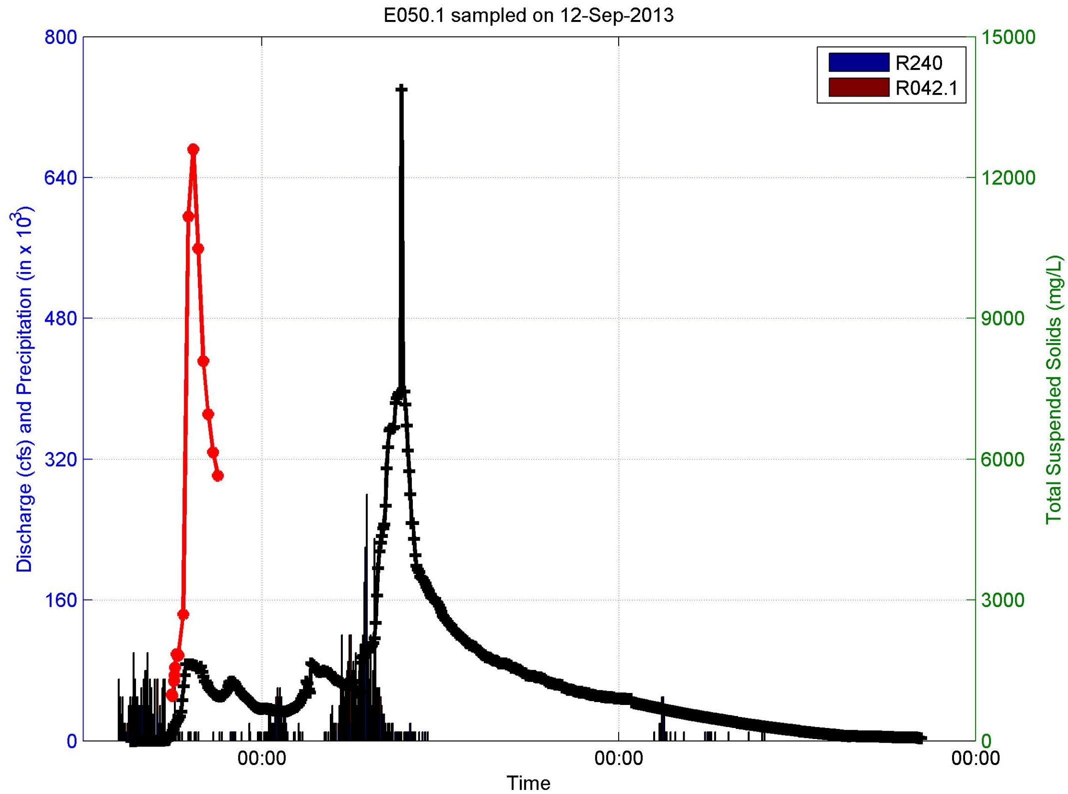

E042.1 sampled on 05-Aug-2013
R240
TA-53
R042.1
Discharge (cfs) and Precipitation (in x 10^3)
Total Suspended Solids (mg/L)
x 10^4
160
128
96
64
32
0
8
6.4
4.8
3.2
1.6
0
12:00
15:00
18:00
21:00
Time

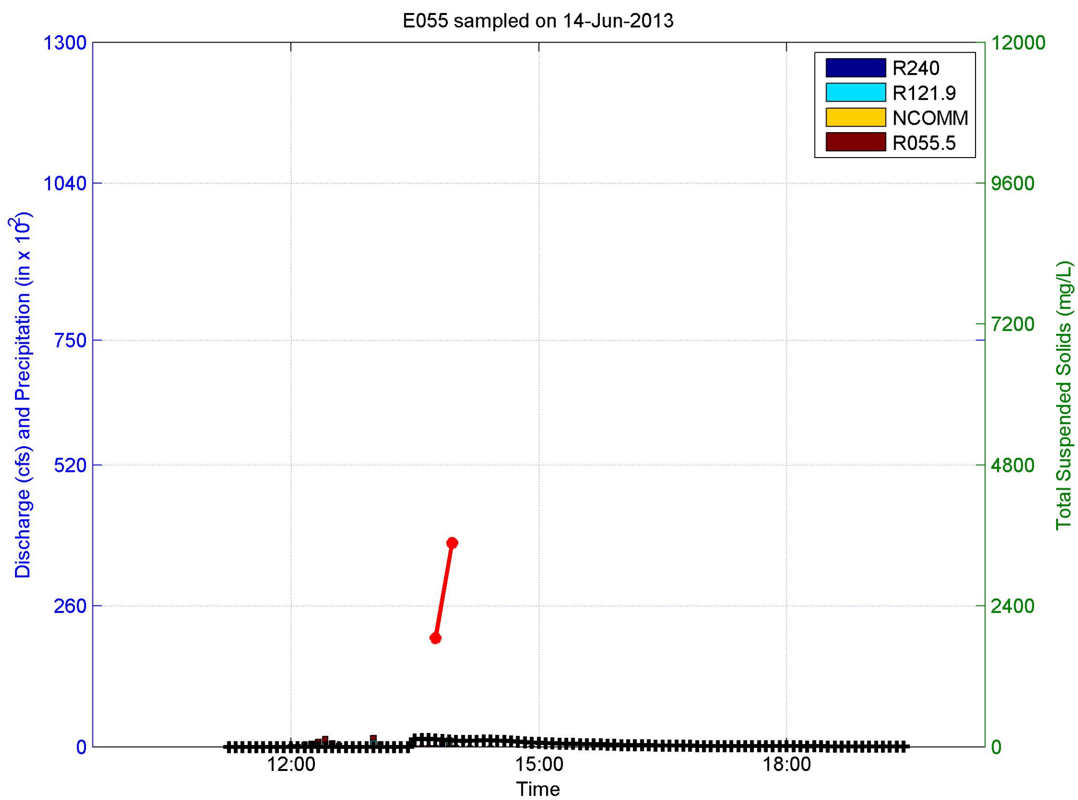

E042.1 sampled on 10-Sep-2013
Discharge (cfs) and Precipitation (in x 10$^3$)
Total Suspended Solids (mg/L)
x 10$^4$
R240
TA-53
R042.1
160
128
96
64
32
0
8
6.4
4.8
3.2
1.6
0
15:00
18:00
21:00
00:00
03:00
06:00
Time

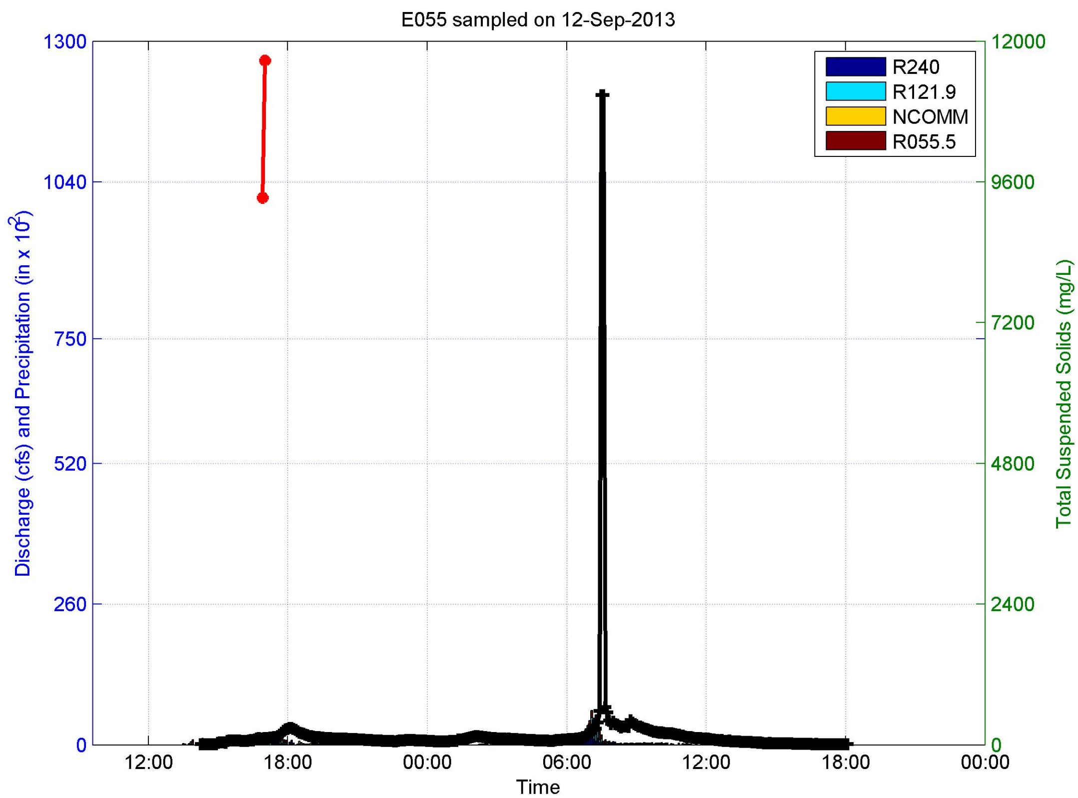

E050.1 sampled on 12-Jul-2013
Discharge (cfs) and Precipitation (in x 10$^3$)
Total Suspended Solids (mg/L)
R240
R042.1
800
640
480
320
160
0
15000
12000
9000
6000
3000
0
12:00
15:00
18:00
Time

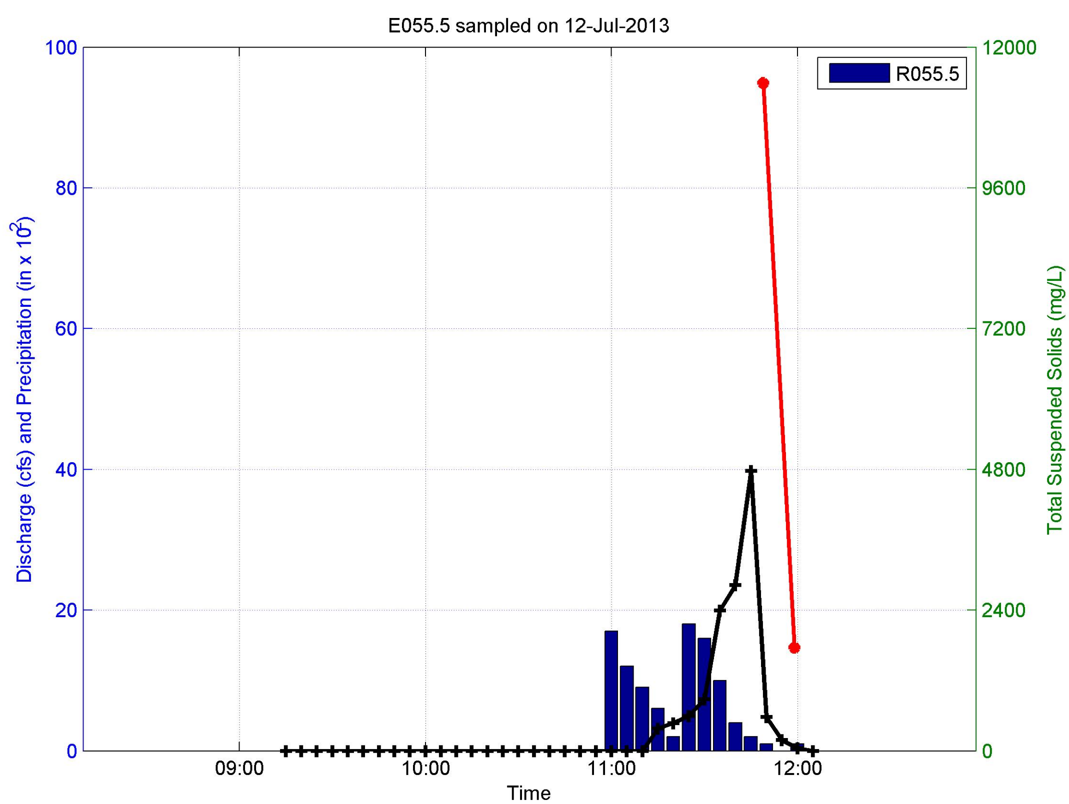

E050.1 sampled on 05-Aug-2013
R240
R042.1
Discharge (cfs) and Precipitation (in x 10^3)
Total Suspended Solids (mg/L)
Time
0
160
320
480
640
800
0
3000
6000
9000
12000
15000
15:00
18:00
21:00

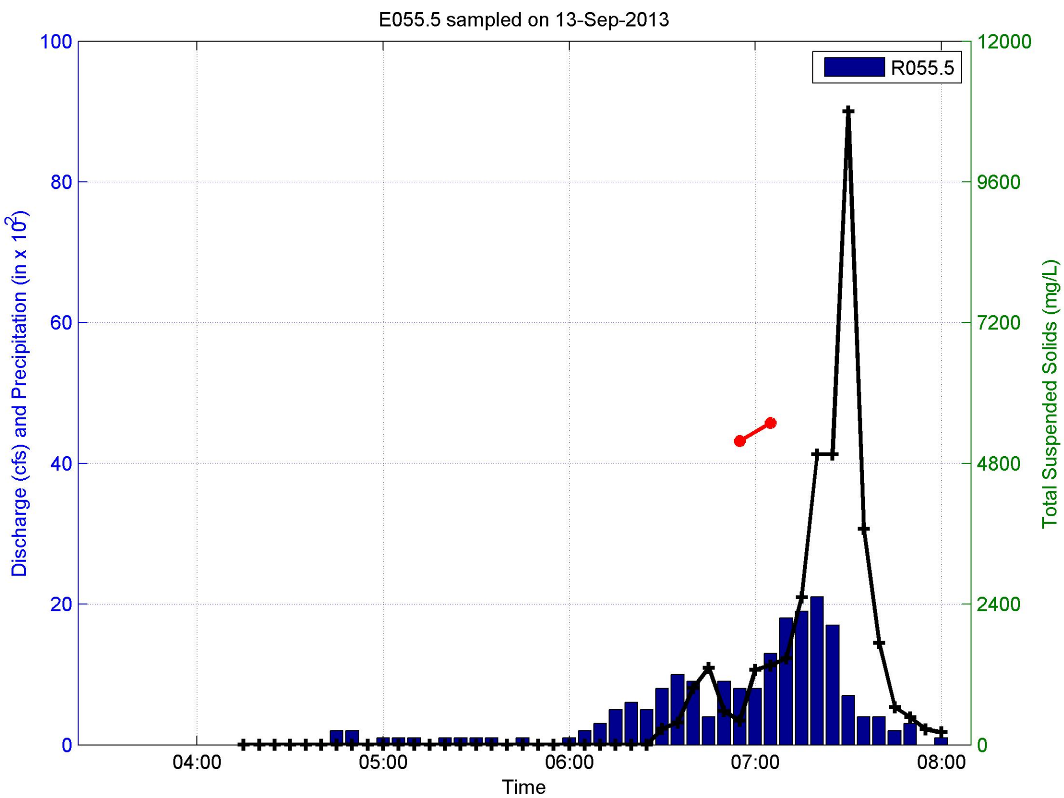

E050.1 sampled on 10-Sep-2013
R240
R042.1
Discharge (cfs) and Precipitation (in x 10^3)
Total Suspended Solids (mg/L)
Time
0
160
320
480
640
800
0
3000
6000
9000
12000
15000
21:00
00:00
03:00
06:00

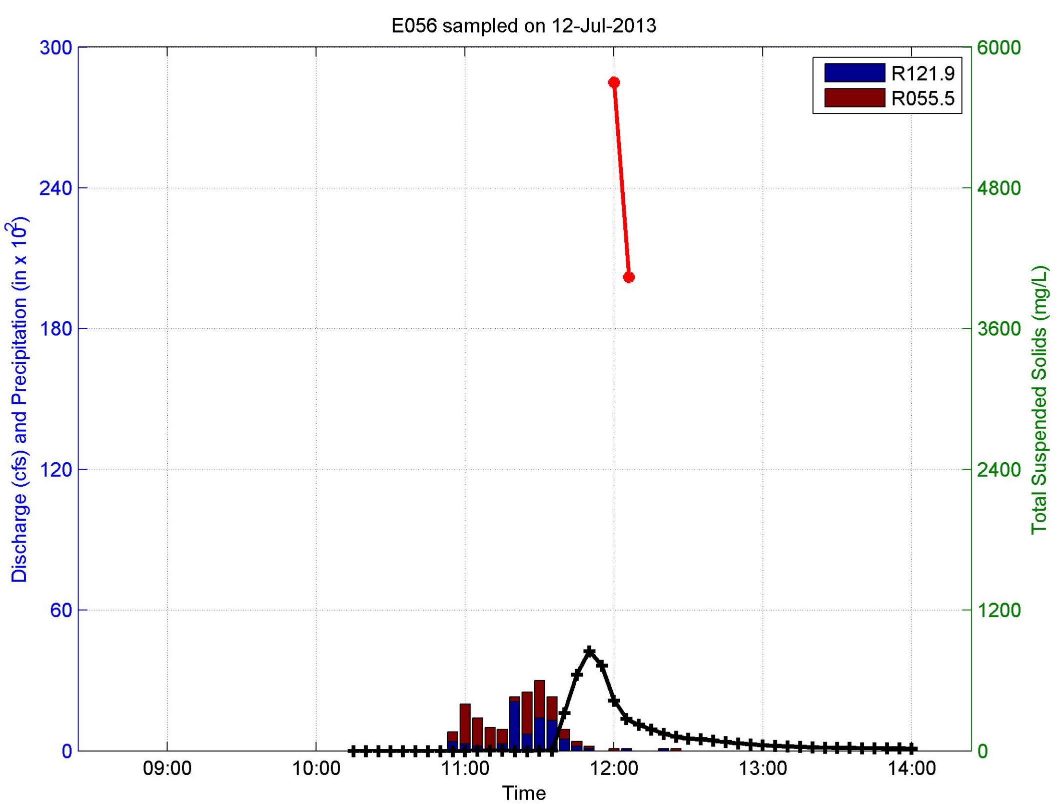

E050.1 sampled on 12-Sep-2013
R240
R042.1
Discharge (cfs) and Precipitation (in x 10^3)
Total Suspended Solids (mg/L)
800
640
480
320
160
0
15000
12000
9000
6000
3000
0
00:00
00:00
00:00
Time

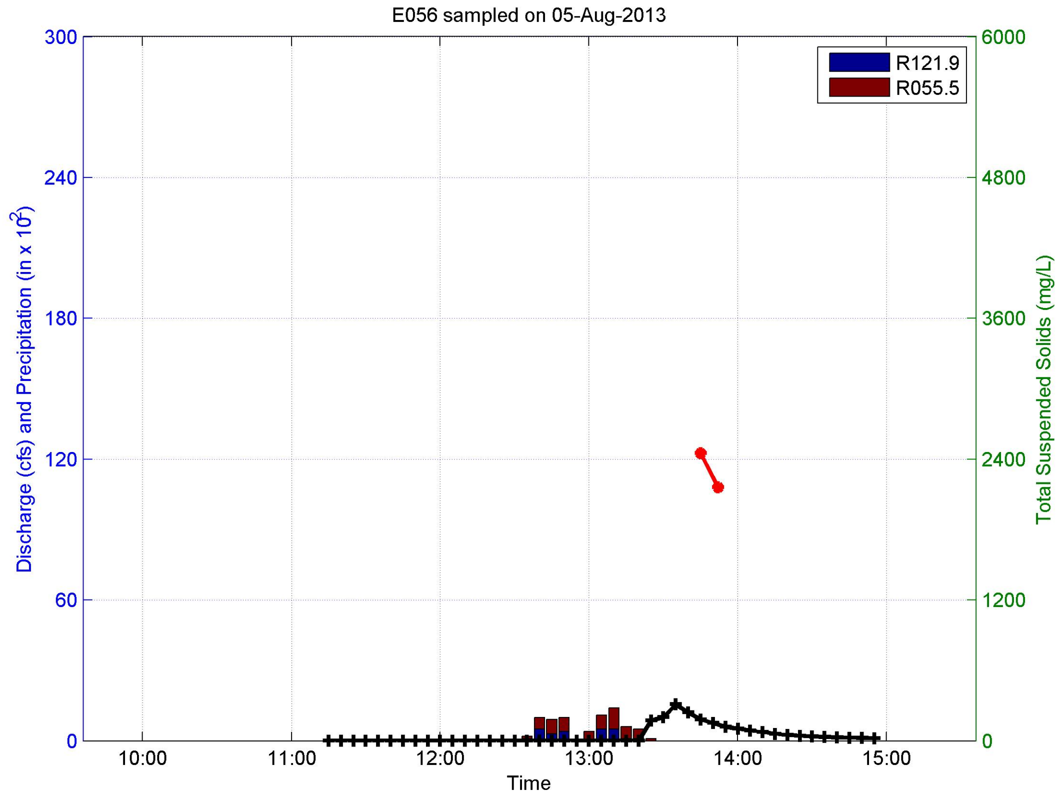

E055 sampled on 14-Jun-2013
R240
R121.9
NCOMM
R055.5
Discharge (cfs) and Precipitation (in x 10^3)
Total Suspended Solids (mg/L)
1300
1040
750
520
260
0
12000
9600
7200
4800
2400
0
12:00
15:00
18:00
Time

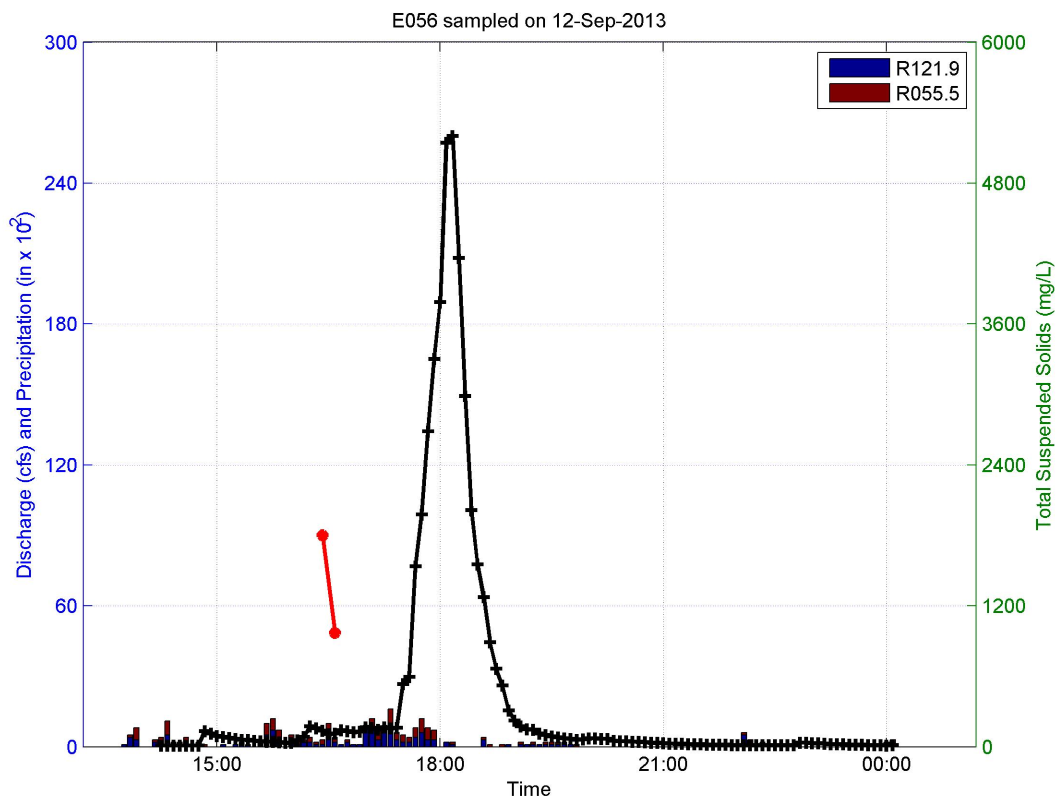

E055 sampled on 12-Sep-2013
R240
R121.9
NCOMM
R055.5
Discharge (cfs) and Precipitation (in x 10^2)
Total Suspended Solids (mg/L)
1300
1040
750
520
260
0
12000
9600
7200
4800
2400
0
12:00
18:00
00:00
06:00
12:00
18:00
00:00
Time

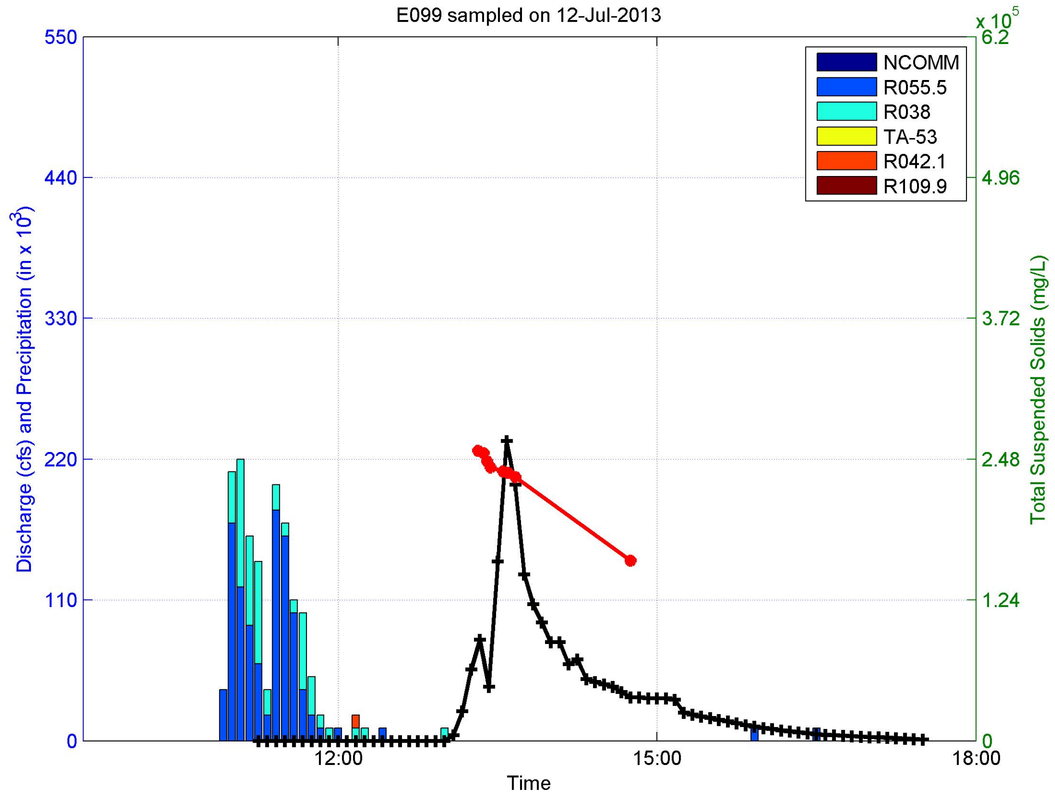

E055.5 sampled on 12-Jul-2013
R055.5
Discharge (cfs) and Precipitation (in x 10^2)
Total Suspended Solids (mg/L)
100
80
60
40
20
0
12000
9600
7200
4800
2400
0
09:00
10:00
11:00
12:00
Time

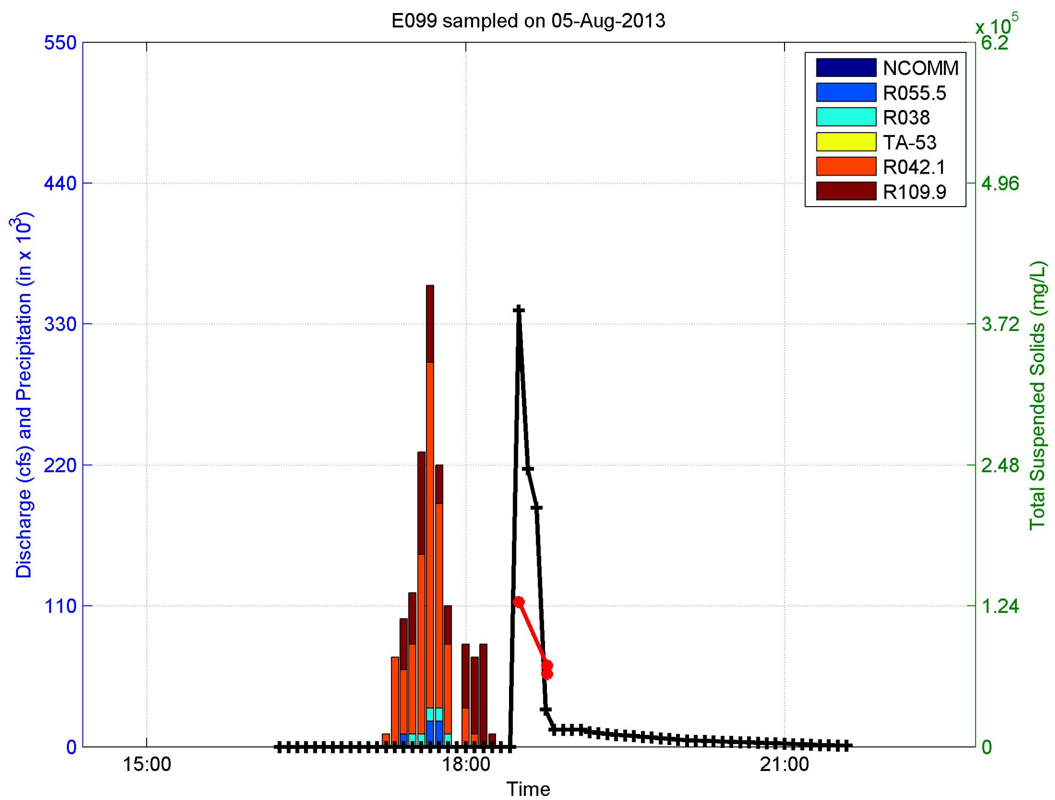

E055.5 sampled on 13-Sep-2013
R055.5
Discharge (cfs) and Precipitation (in x 10^2)
Total Suspended Solids (mg/L)
Time
100
80
60
40
20
0
12000
9600
7200
4800
2400
0
04:00
05:00
06:00
07:00
08:00

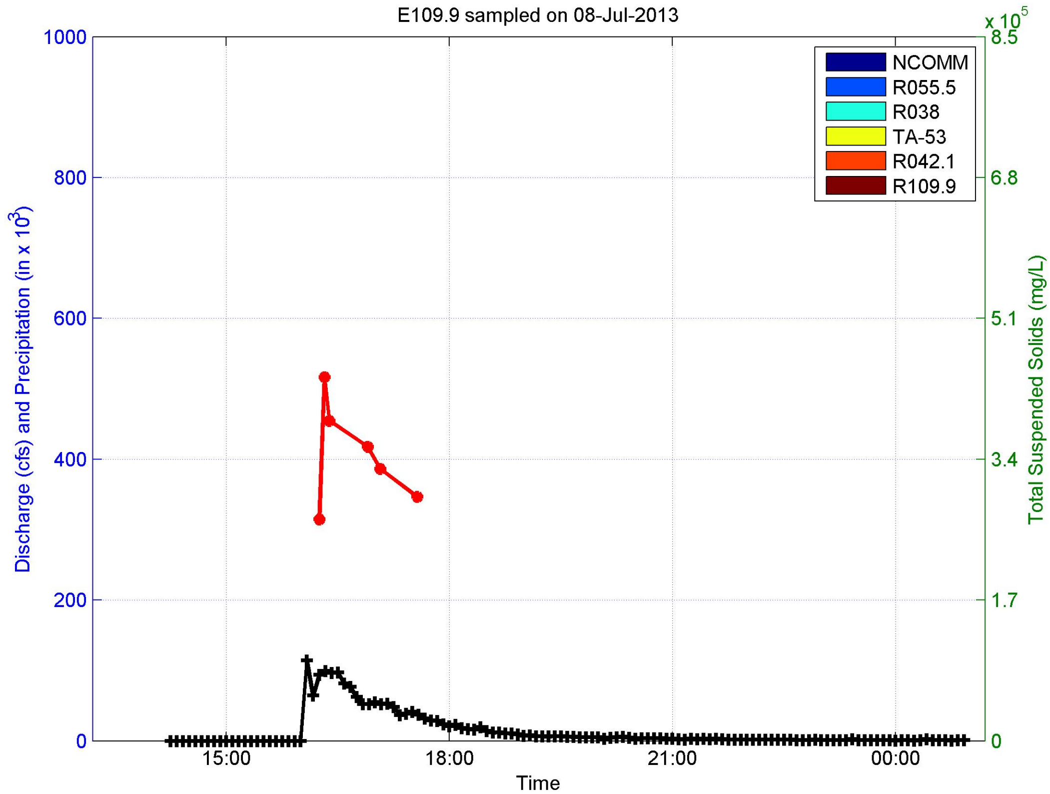

E056 sampled on 12-Jul-2013
R121.9
R055.5
Discharge (cfs) and Precipitation (in x 10^2)
Total Suspended Solids (mg/L)
Time
300
240
180
120
60
0
6000
4800
3600
2400
1200
0
09:00
10:00
11:00
12:00
13:00
14:00

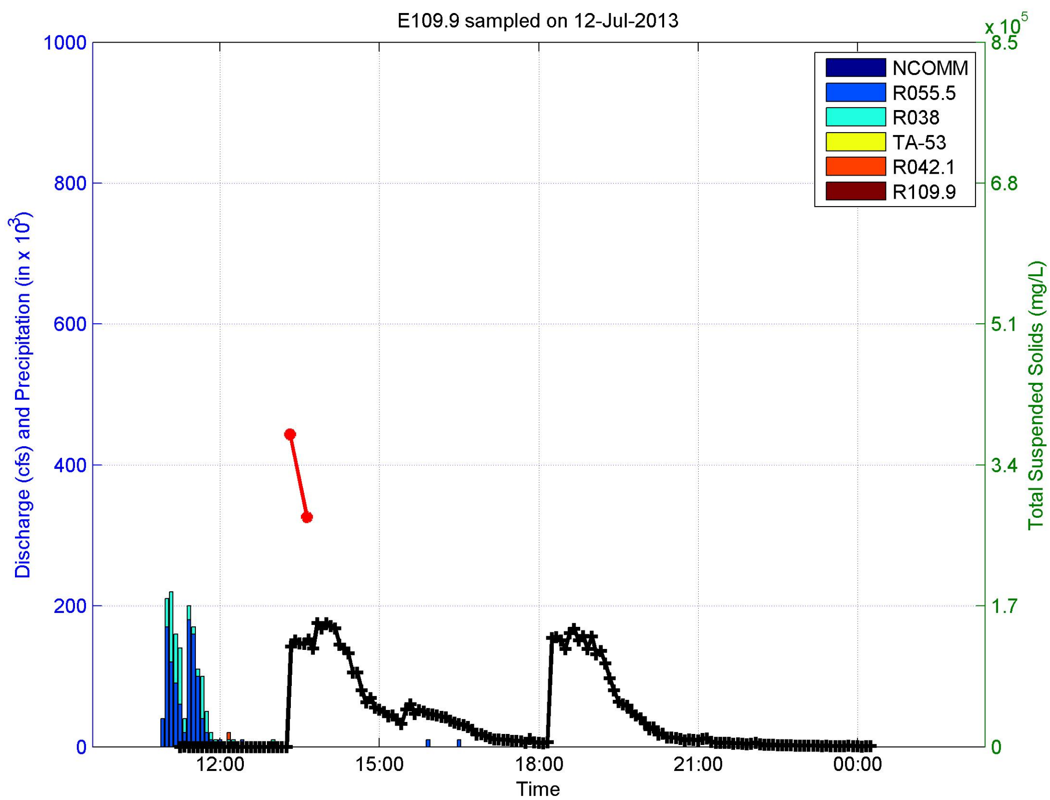

E056 sampled on 05-Aug-2013
R121.9
R055.5
Discharge (cfs) and Precipitation (in x 10$^2$)
Total Suspended Solids (mg/L)
Time
300
240
180
120
60
0
6000
4800
3600
2400
1200
0
10:00
11:00
12:00
13:00
14:00
15:00

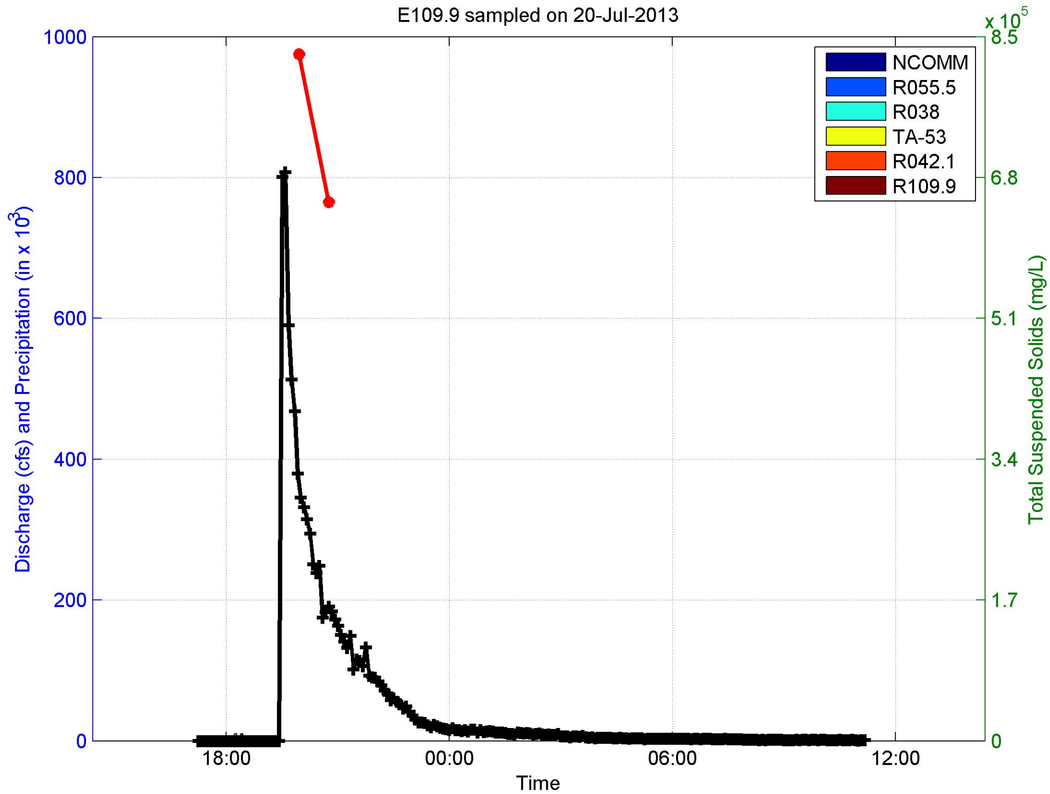

E056 sampled on 12-Sep-2013
R121.9
R055.5
Discharge (cfs) and Precipitation (in x 10$^2$)
Total Suspended Solids (mg/L)
Time
300
240
180
120
60
0
6000
4800
3600
2400
1200
0
15:00
18:00
21:00
00:00

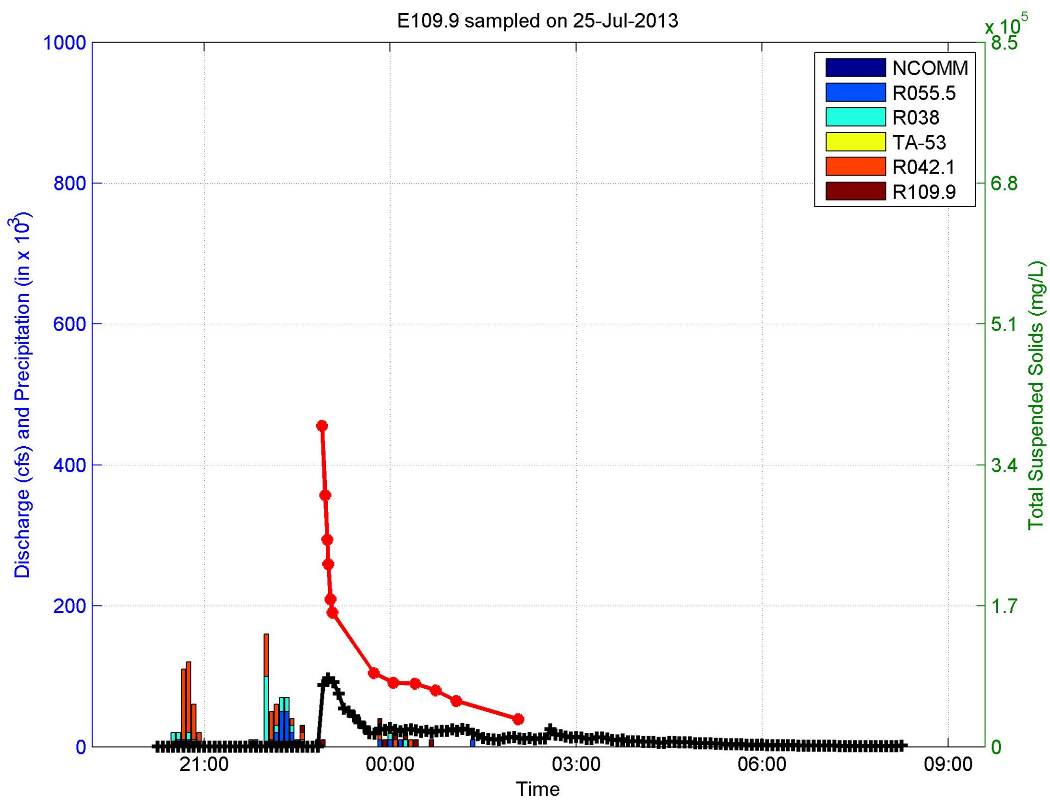

E099 sampled on 12-Jul-2013
Discharge (cfs) and Precipitation (in x 10$^3$)
Total Suspended Solids (mg/L)
x 10$^5$
550
440
330
220
110
0
6.2
4.96
3.72
2.48
1.24
0
12:00
15:00
18:00
Time
NCOMM
R055.5
R038
TA-53
R042.1
R109.9

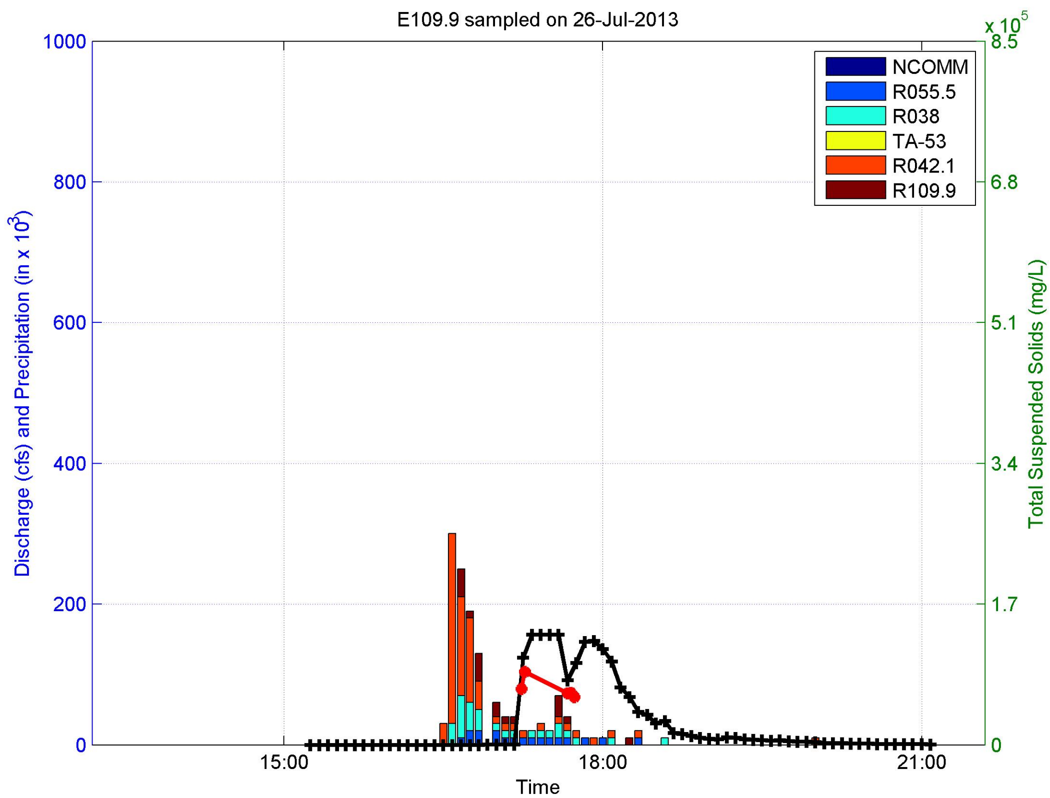

E099 sampled on 05-Aug-2013
Discharge (cfs) and Precipitation (in x 10$^3$)
Total Suspended Solids (mg/L)
x 10$^5$
550
440
330
220
110
0
6.2
4.96
3.72
2.48
1.24
0
15:00
18:00
21:00
Time
NCOMM
R055.5
R038
TA-53
R042.1
R109.9

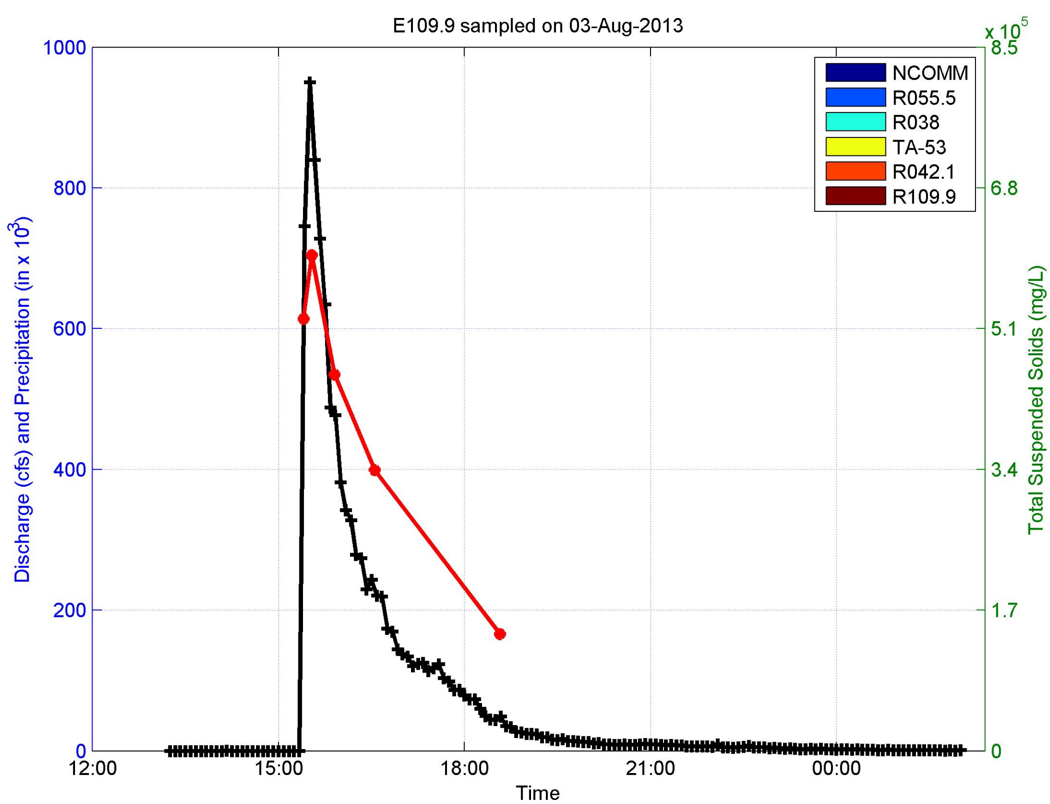

E109.9 sampled on 08-Jul-2013
Discharge (cfs) and Precipitation (in x 10³)
Total Suspended Solids (mg/L)
x 10⁵
1000
800
600
400
200
0
8.5
6.8
5.1
3.4
1.7
0
15:00
18:00
21:00
00:00
Time
NCOMM
R055.5
R038
TA-53
R042.1
R109.9

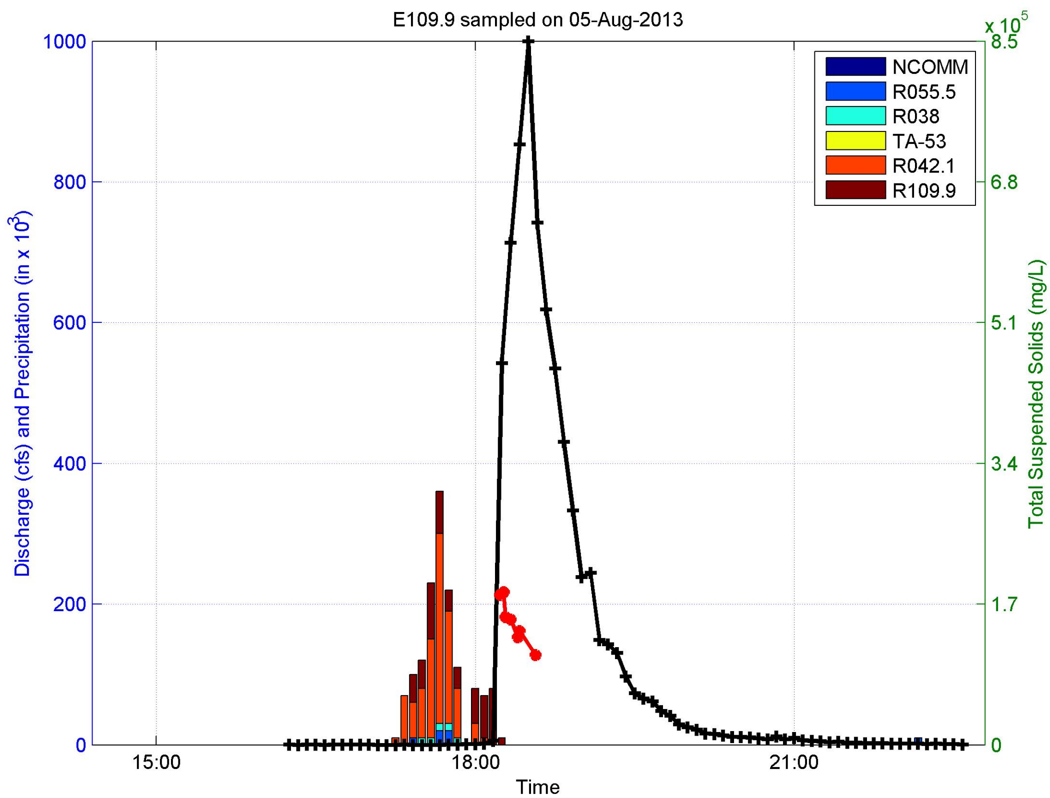

E109.9 sampled on 12-Jul-2013
Discharge (cfs) and Precipitation (in x 10³)
Total Suspended Solids (mg/L)
x 10⁵
1000
800
600
400
200
0
8.5
6.8
5.1
3.4
1.7
0
12:00
15:00
18:00
21:00
00:00
Time
NCOMM
R055.5
R038
TA-53
R042.1
R109.9

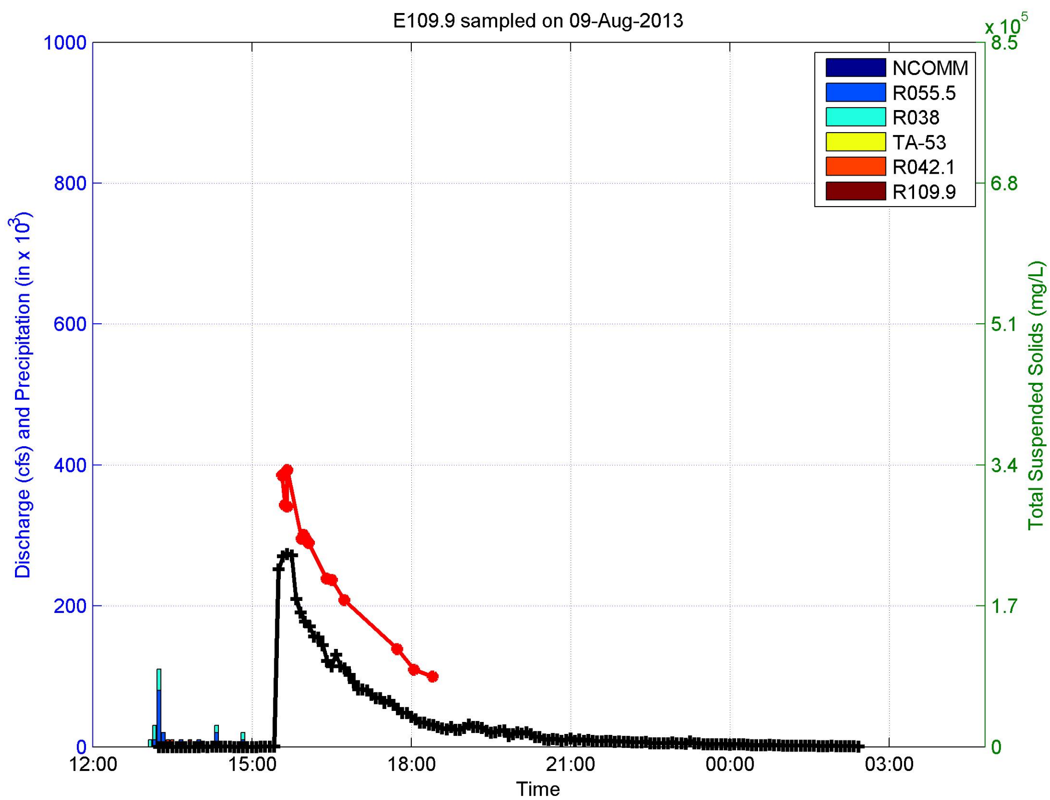

E109.9 sampled on 20-Jul-2013
Discharge (cfs) and Precipitation (in x 10$^3$)
Total Suspended Solids (mg/L)
x 10$^5$
NCOMM
R055.5
R038
TA-53
R042.1
R109.9
Time
1000
800
600
400
200
0
8.5
6.8
5.1
3.4
1.7
0
18:00
00:00
06:00
12:00

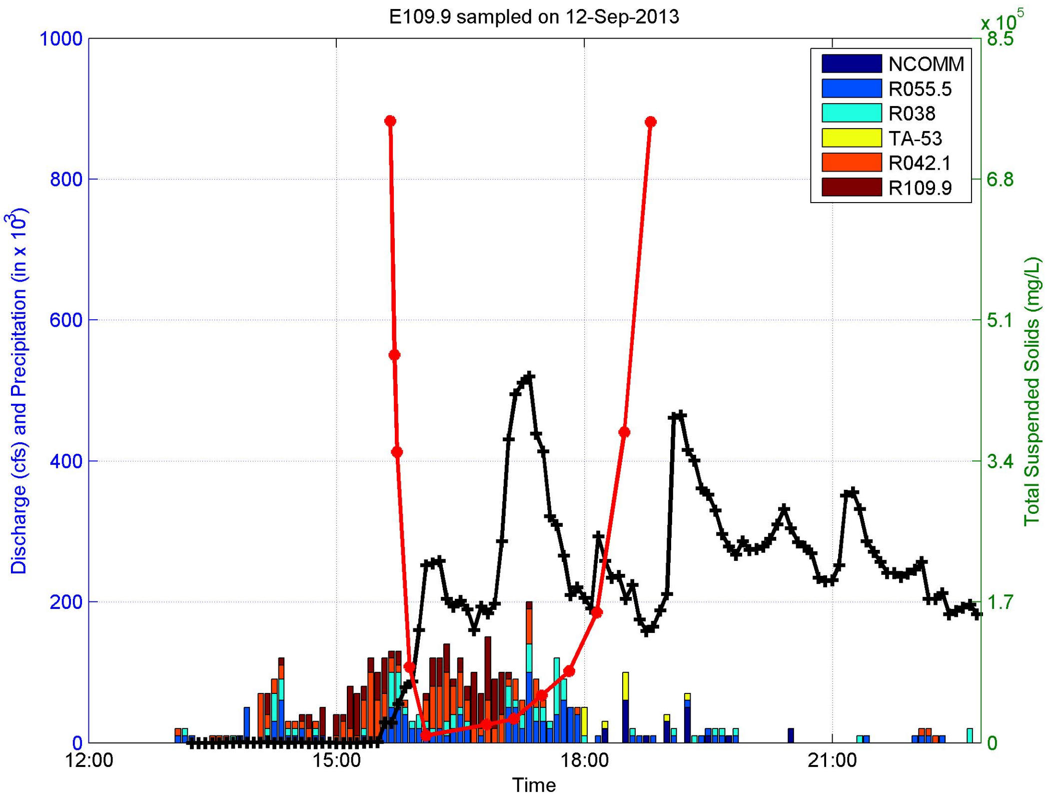

E109.9 sampled on 25-Jul-2013
Discharge (cfs) and Precipitation (in x 10$^3$)
Total Suspended Solids (mg/L)
x 10$^5$
NCOMM
R055.5
R038
TA-53
R042.1
R109.9
Time
1000
800
600
400
200
0
8.5
6.8
5.1
3.4
1.7
0
21:00
00:00
03:00
06:00
09:00


E109.9 sampled on 26-Jul-2013
Discharge (cfs) and Precipitation (in x 10$^3$)
Total Suspended Solids (mg/L)
x 10$^5$
1000
800
600
400
200
0
8.5
6.8
5.1
3.4
1.7
0
15:00
18:00
21:00
Time
NCOMM
R055.5
R038
TA-53
R042.1
R109.9


E109.9 sampled on 03-Aug-2013
Discharge (cfs) and Precipitation (in x 10$^3$)
Total Suspended Solids (mg/L)
x 10$^5$
1000
800
600
400
200
0
8.5
6.8
5.1
3.4
1.7
0
12:00
15:00
18:00
21:00
00:00
Time
NCOMM
R055.5
R038
TA-53
R042.1
R109.9


E109.9 sampled on 05-Aug-2013
Discharge (cfs) and Precipitation (in x 10^3)
Total Suspended Solids (mg/L)
x 10^5
NCOMM
R055.5
R038
TA-53
R042.1
R109.9
Time
15:00
18:00
21:00
1000
800
600
400
200
0
8.5
6.8
5.1
3.4
1.7
0


E109.9 sampled on 09-Aug-2013
Discharge (cfs) and Precipitation (in x 10^3)
Total Suspended Solids (mg/L)
x 10^5
NCOMM
R055.5
R038
TA-53
R042.1
R109.9
Time
12:00
15:00
18:00
21:00
00:00
03:00
1000
800
600
400
200
0
8.5
6.8
5.1
3.4
1.7
0


E109.9 sampled on 12-Sep-2013
Discharge (cfs) and Precipitation (in x 10^3)
Total Suspended Solids (mg/L)
x 10^5
1000
800
600
400
200
0
8.5
6.8
5.1
3.4
1.7
0
12:00
15:00
18:00
21:00
Time
NCOMM
R055.5
R038
TA-53
R042.1
R109.9

# Appendix C

*Analytical Results, Analytical Reports, and 5-Minute Discharge Results (on CD included with this document)*