

Verification Monitoring Report for the Slick Rock, Colorado, Processing Sites

May 2012



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**Verification Monitoring Report
for the
Slick Rock, Colorado, Processing Sites**

May 2012

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Abbreviations

| | |
|------------|--------------------------------------------------------------------------|
| ACL | alternate concentration limit |
| BTEX | benzene, toluene, ethylbenzene, and xylenes |
| CDPHE | Colorado Department of Public Health and Environment |
| CFR | <i>Code of Federal Regulations</i> |
| COPC | constituent of potential concern |
| DOE | U.S. Department of Energy |
| EPA | U.S. Environmental Protection Agency |
| ft | feet |
| GCAP | Groundwater Compliance Action Plan |
| IC | institutional control |
| mg/L | milligrams per liter |
| n | number of samples or data points |
| NRC | U.S. Nuclear Regulatory Commission |
| pCi/L | picocuries per liter |
| Ra-226 | radium-226 |
| Ra-228 | radium-228 |
| SDWA | Safe Drinking Water Act |
| SDWA MCL | maximum contaminant level (EPA Safe Drinking Water Act) |
| SOWP | Site Observational Work Plan |
| SRE | Slick Rock East |
| SRW | Slick Rock West |
| UMTRCA | Uranium Mill Tailings Radiation Control Act |
| UMTRCA MCL | maximum concentration limit (listed in 40 CFR 192, Table 1 to Subpart A) |
| VMR | Verification Monitoring Report |

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Executive Summary

The Slick Rock, Colorado, Processing Sites consist of two former uranium-ore processing facilities, the Slick Rock East (SRE) site and the Slick Rock West (SRW) site. The sites, managed by the U.S. Department of Energy, are located along the Dolores River in San Miguel County. Surface remediation of the two sites was completed in 1996. The purpose of this Verification Monitoring Report is to evaluate groundwater and surface water monitoring data collected since 2000 and to assess the status of the compliance strategy for groundwater cleanup.

The proposed compliance strategy for the Slick Rock sites is natural flushing combined with institutional controls and compliance monitoring. The U.S. Nuclear Regulatory Commission has not yet concurred with the sites' groundwater compliance action plan. Constituents of potential concern (COPCs) at the sites include uranium, selenium, manganese, molybdenum, and nitrate. Several other constituents, including BTEX (benzene, toluene, ethylbenzene, and xylenes), radium-226, and radium-228, are elevated only at a single SRW well. To assess the status of compliance, COPC concentrations are compared to benchmark values, which include a proposed alternate concentration limit for selenium at SRW.

At the SRE site, the current monitoring network consists of eight monitoring wells and three surface water locations. Uranium concentrations are highest in the central portion of the SRE site, just downgradient of the historical tailings boundary. Uranium in SRE well 0305 is not attenuating as rapidly as predicted. Selenium, elevated above the benchmark value at one well, is not considered a major contaminant at the SRE site. Surface water is not significantly affected by site contamination at either the SRE site or the SRW site.

Nine wells and four surface water locations are currently monitored at the SRW site. Uranium, selenium, manganese, molybdenum, and nitrate are elevated within the site's historical tailings boundary. Results indicate that a portion of the large increase in selenium and molybdenum observed at well 0318 between 2005 and 2010 may be attributable to siltation from well damage. This well was replaced in September 2010 with well 0318A, which shows lower, but still elevated, selenium and molybdenum concentrations. At SRW well 0508, no constituents are attenuating as rapidly as predicted except manganese. Although nitrate levels are also not attenuating as rapidly as predicted, they appear to be decreasing over time.

It is recommended that annual verification monitoring of groundwater from designated monitoring wells and surface water locations continue until contaminant concentrations stabilize or decline.

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1.0 Introduction

The Slick Rock, Colorado, Processing Sites consist of two former uranium-ore processing facilities, referred to as the Slick Rock East (SRE) site (formerly the North Continent site) and, approximately 1 mile downstream from SRE, the Slick Rock West (SRW) site (formerly the Union Carbide site). The Slick Rock processing sites, managed by the U.S. Department of Energy (DOE), are located along the Dolores River in San Miguel County (Figure 1 and Figure 2). Surface remediation of the two sites was completed in 1996.

1.1 Purpose of Report

The purpose of this Verification Monitoring Report (VMR) is to evaluate groundwater and surface water monitoring data collected at the Slick Rock processing sites since 2000 and to assess the status of the compliance strategy for groundwater cleanup.

1.2 Compliance Strategy

The proposed compliance strategy for the Slick Rock sites is natural flushing combined with institutional controls (ICs) and compliance monitoring as stated in the *Draft Final Groundwater Compliance Action Plan for the Slick Rock, Colorado, UMTRA Project Sites* (DOE 2006). This groundwater compliance action plan (GCAP) states that public health will be protected during the natural flushing process through ICs, which will restrict access to contaminated alluvial groundwater. The ICs to be used for the Slick Rock sites are environmental covenants between the State of Colorado, represented by the Colorado Department of Public Health and Environment (CDPHE), and the landowner, Umetco Minerals Corporation. The environmental covenants are still pending for the Slick Rock sites, and the U.S. Nuclear Regulatory Commission (NRC) has not yet concurred with the GCAP.

Constituents of potential concern (COPCs) at the Slick Rock sites include manganese, molybdenum, nitrate, selenium, and uranium. Selenium and uranium are the only COPCs common to both the SRE and SRW sites. Several other COPCs, including BTEX (benzene, toluene, ethylbenzene, and xylenes), radium-226 (Ra-226), and radium-228 (Ra-228), are limited to a single SRW alluvial well (0319).

To assess the status of compliance, COPC concentrations are compared to benchmark values (Table 1). Benchmark values include maximum concentration limits (UMTRCA MCLs), maximum contaminant levels (SDWA MCLs), a maximum background concentration for manganese, and a proposed alternate concentration limit (ACL) for selenium. The Uranium Mill Tailings Radiation Control Act (UMTRCA), codified in Title 40 *Code of Federal Regulations* Part 192 (40 CFR 192), includes the UMTRCA MCLs established by the U.S. Environmental Protection Agency (EPA). EPA also established SDWA MCLs for the Safe Drinking Water Act (SDWA). Because no UMTRCA MCL or SDWA MCL has been established for manganese, the benchmark for this constituent is the sites' maximum background concentration. Except for selenium, groundwater modeling conducted for the Site Observational Work Plan (SOWP) predicted that natural flushing for all COPCs would be completed within the 100-year regulatory time frame established in 40 CFR 192 (DOE 2002). Because selenium concentrations at SRW were not expected to decrease to levels below the UMTRCA MCL within 100 years, a human-health risk-based ACL was proposed in the GCAP (DOE 2006) for the SRW site.

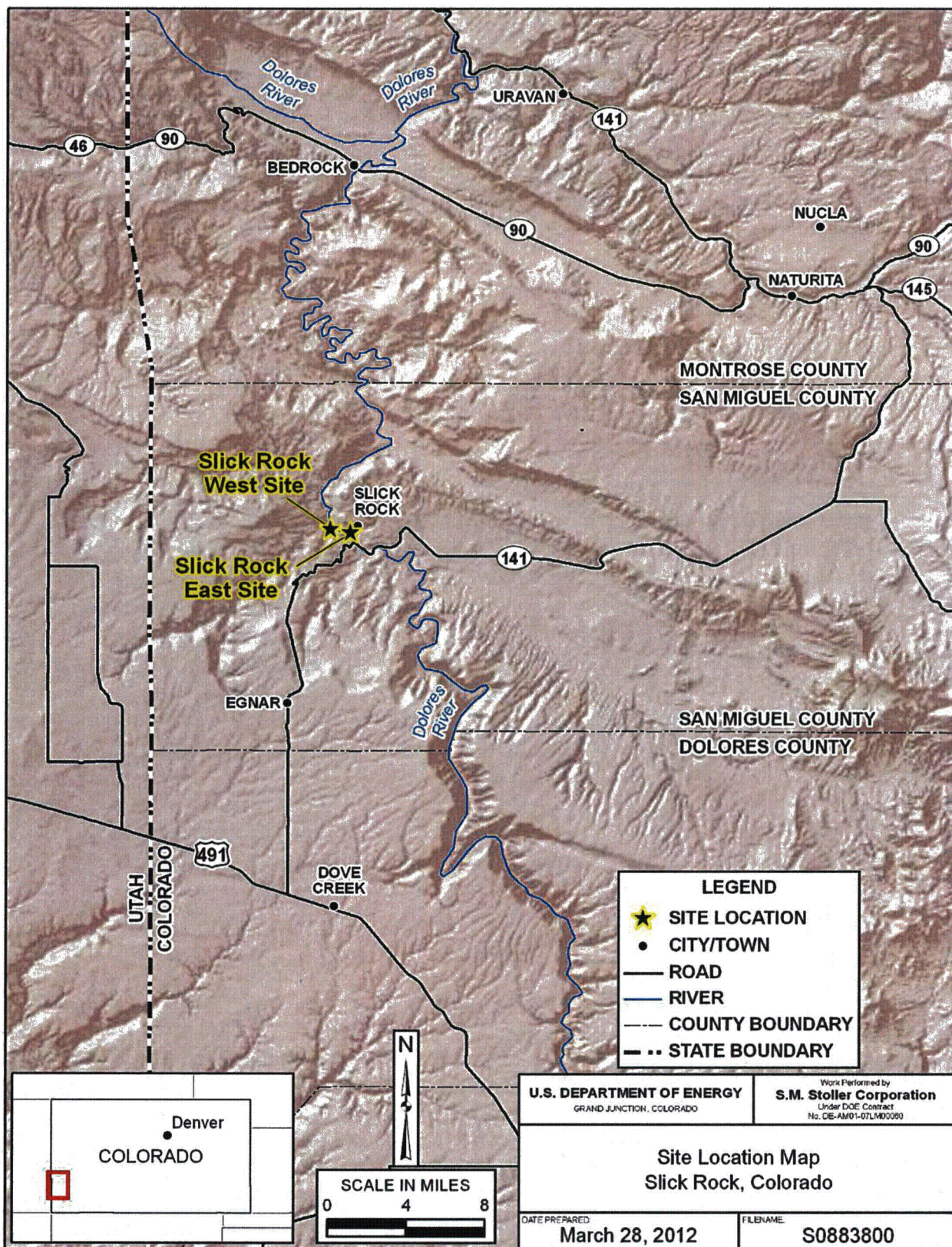


Figure 1. Slick Rock, Colorado, Processing Sites Location Map

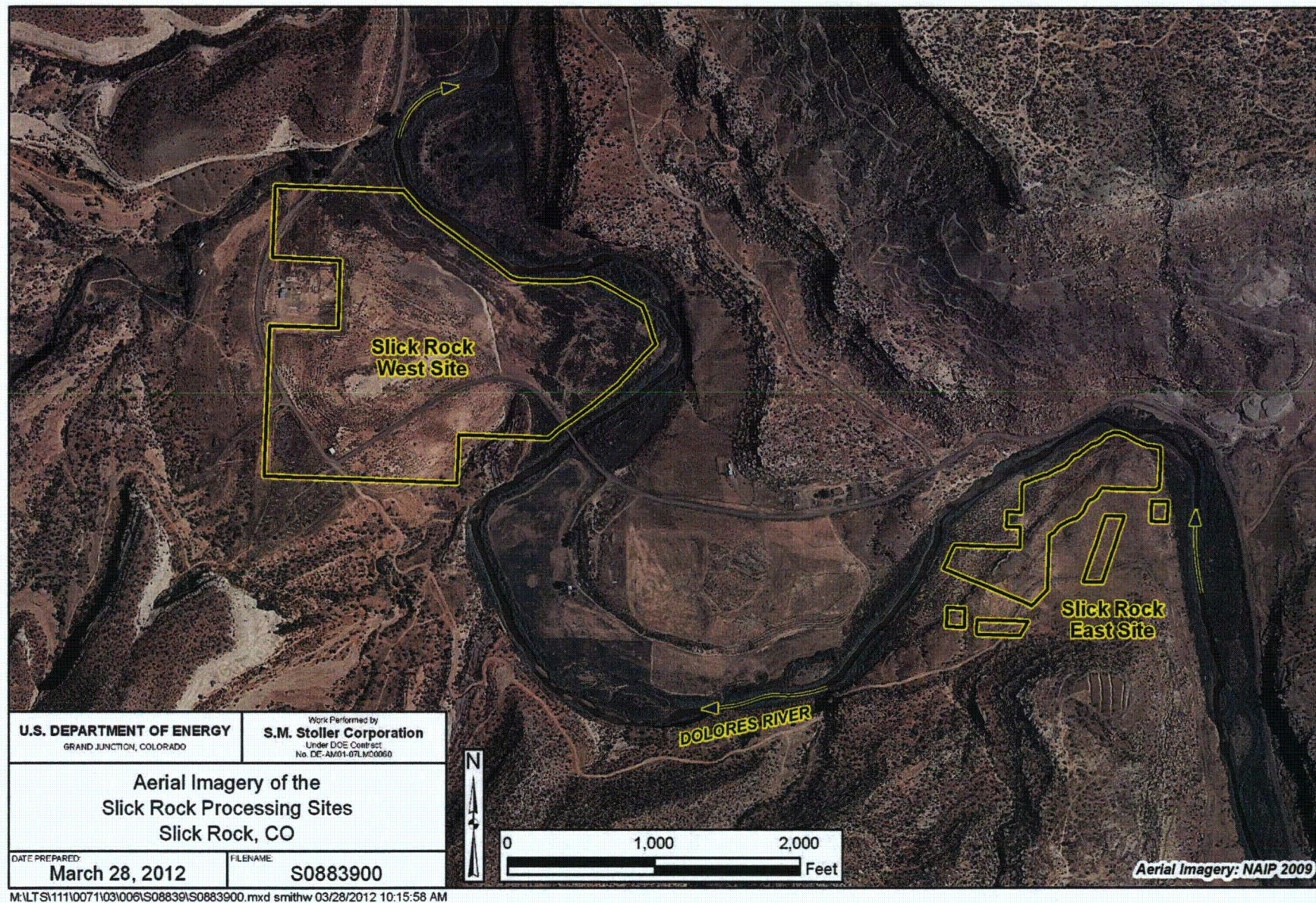


Figure 2. Aerial Photograph of the Slick Rock, Colorado, Processing Sites

Table 1. Groundwater Benchmarks for COPCs at the Slick Rock East and West Sites

| COPC ^a | Benchmark | Basis for Benchmark | Applicable Site | Applicable Wells ^b | Comment |
|---------------------------------------------|-----------------------------------------------------|----------------------------------------------------------|-----------------|------------------------------------------|----------------------------------------------------------------------------------------------------|
| Uranium | 0.044 mg/L | UMTRCA MCL | SRE, SRW | All wells except SRW wells 0317 and 0319 | The 0.044 mg/L standard is equivalent to the uranium standard of 30 pCi/L in 40 CFR 192. |
| Selenium | SRE: 0.01 mg/L SRW: 0.18 mg/L ^c | SRE: UMTRCA MCL SRW: Proposed ACL (DOE 2002) | SRE, SRW | SRE wells 0305 and 0307 All SRW wells | Note that the UMTRCA standard is less than the 0.05 mg/L SDWA MCL. |
| Manganese | 4.2 mg/L | Maximum background | SRW | All SRW wells except 0317 and 0319 | Maximum concentration measured at well 0300 in August 2001. ^d |
| Molybdenum | 0.10 mg/L | UMTRCA MCL | SRW | All SRW wells except 0319 | |
| Nitrate as NO ₃ | 44.3 mg/L | UMTRCA MCL | SRW | All SRW wells except 0317 and 0319 | The 44.3 mg/L standard is equivalent to the nitrate as nitrogen standard of 10 mg/L in 40 CFR 192. |
| Radium-226 + Radium-228 (Ra-226 and Ra-228) | 5 pCi/L | UMTRCA MCL | SRW | SRW well 0319 | Analysis for radium in other SRW wells was discontinued after 2001 (given levels below 5 pCi/L). |
| Benzene | 0.005 mg/L | SDWA MCL | SRW | SRW well 0319 | |
| Toluene | 1 mg/L | SDWA MCL | SRW | SRW well 0319 | |
| Ethylbenzene | 0.7 mg/L | SDWA MCL | SRW | SRW well 0319 | The 0.7 mg/L SDWA MCL has never been exceeded. |
| Xylenes | 10 mg/L | SDWA MCL | SRW | SRW well 0319 | The 10 mg/L SDWA MCL has never been exceeded. |

Notes

^a Constituents are listed in order of prevalence at the Slick Rock sites. For example, uranium is most prevalent at both sites, whereas Ra-226 and Ra-228 are limited to the immediate vicinity of SRW well 0319.

^b Applicable wells are only those currently monitored

(<http://gems.lm.doe.gov/imf/imf.jsp?site=slickrockeastprocessing&title=Slick%20Rock%20West%20and%20East,%20OCO,%20Processing%20Sites>). For historical results, refer to the SOWP (DOE 2002) and previous VMRs.

^c This proposed ACL for selenium was established in the SOWP (DOE 2002) based on the EPA human health Risk Table. Although the proposed ACL remains at 0.18 mg/L as established in the SOWP, EPA revised the risk-based value to 0.078 mg/L in November 2011. The EPA Risk Table (http://www.epa.gov/reg3hscd/risk/human/rb-concentration_table/Generic_Tables/index.htm [see tapwater screening level in the Summary Table]) was accessed in March 2012, and the most recent update was in November 2011.

^d The GCAP cited a maximum background value for manganese of 3.5 mg/L, which was the first (September 2000) measurement in background well 0300, not the highest measurement.

Abbreviations

mg/L = milligrams per liter

pCi/L = picocuries per liter

2.0 Site Conditions

2.1 Hydrogeology

The hydrostratigraphic units at the Slick Rock sites are, in descending stratigraphic order, the Dolores River alluvium (Quaternary), the Salt Wash Member of the Morrison Formation, the Summerville Formation, the Entrada Sandstone, and the Navajo Sandstone (all Jurassic). Although both sites overlie the Dolores River alluvium, not all other units are present at both sites.

The Dolores River alluvium, the only unit affected by site-related contamination,¹ contains the uppermost aquifer. The alluvial aquifer consists of unconsolidated material, primarily silty sands and silty sandy gravels with an occasional interbedded clay lens. The alluvium ranges from 15 to 20 feet (ft) thick and is laterally restricted by bedrock that forms the walls of the Dolores River canyon. In addition, the Dolores River floodplain is discontinuous and pinches out in areas where the river meets the canyon wall. Depth to groundwater in the unconfined alluvial aquifer ranges from 7 to 15 ft below ground surface. Groundwater flow generally follows the downstream direction of the Dolores River, which is the main recharge source for the alluvial aquifer.

At the SRE site, the Salt Wash Member of the Morrison Formation and the Summerville Formation underlie the Dolores River alluvium. Because these formations have an abundance of fine-grained, low-permeability units, they are considered aquitards, which prevent contaminated groundwater in the alluvial aquifer from moving downward into deeper aquifers (DOE 2002).

At the SRW site, Entrada Sandstone, ranging from 40 to 60 ft thick in the floodplain area, underlies the Dolores River alluvium. The Entrada aquifer is unconfined near the top of the unit (in contact with the alluvial aquifer), and it may be semi-confined near the bottom (in partial contact with the underlying Navajo aquifer). In wells completed in the Navajo Sandstone, which is approximately 180 ft thick in the Slick Rock area floodplain (DOE 2002), groundwater has an upward vertical gradient with respect to water in the overlying Entrada. Because of this, the Navajo aquifer discharges upward. The Entrada aquifer receives recharge from upgradient infiltration of precipitation, creating artesian pressure. Entrada groundwater has a slight upward vertical gradient with respect to water in the overlying alluvial aquifer, and hydraulic conductivity in the alluvial aquifer is two orders of magnitude greater than that of the Entrada. These conditions inhibit groundwater from flowing downward from the alluvial aquifer into underlying aquifers.

2.2 Groundwater Quality

2.2.1 SRE Site

Alluvial groundwater beneath the SRE site was contaminated as a result of former uranium-ore processing activities. This contamination is limited to the alluvial aquifer at the SRE site

¹ Samples from wells completed in the Entrada Sandstone at the SRW site (wells 0317 and 0324) have historically exceeded UMTRCA MCLs for molybdenum, nitrate, and selenium, probably the result of cross contamination from drilling through the alluvial aquifer. Sampling of well 0324 was discontinued in 2004 because nitrate and selenium concentrations were below the UMTRCA MCLs for three consecutive rounds of sampling.

(see Section 2.1) and consists only of uranium and selenium (DOE 2002). In the alluvial aquifer, uranium concentrations in wells 0303 and 0305 (wells with the highest uranium concentrations) have been on average approximately 1 milligram per liter (mg/L), exceeding the 0.044 mg/L UMRCA MCL. Selenium is not considered a major contaminant at the SRE site, as it has been elevated in only one well (0305). Since 2006, concentrations in well 0305 have remained at about 0.02 mg/L. Although this is twice the UMRCA groundwater standard of 0.01 mg/L, concentrations have always been below the SDWA primary drinking water standard of 0.05 mg/L.

2.2.2 SRW Site

Former uranium-ore processing activities also contaminated the groundwater beneath the SRW site. COPCs in the alluvial aquifer at the SRW site include manganese, molybdenum, nitrate, selenium, uranium, Ra-226, Ra-228, and BTEX. Contaminant plumes in the alluvial aquifer are limited to the site, and Ra-226, Ra-228, and BTEX contamination is isolated to the region of one well (0319). The primary COPCs in the alluvial aquifer are molybdenum, nitrate, selenium, and uranium (refer to Section 4.0 for contaminant distributions and trends).

2.3 Surface Water Quality

The Dolores River is the only perennial surface water feature in the vicinity of the Slick Rock sites. As discussed in Section 4.3, results from surface water sampling have demonstrated minimal impact to the Dolores River from site contamination.²

2.4 Remediation Activities

Surface remediation at the Slick Rock sites began in 1995 and was completed in 1996. Uranium mill tailings and other residual radioactive material associated with the former milling operations were relocated to the Slick Rock disposal cell (formerly the Burro Canyon disposal cell), approximately 5 miles east of the Slick Rock Processing Sites. The sites were regraded with onsite material, and subsequent revegetation efforts have been successful.

2.5 Land and Water Use

Umetco Minerals Corporation currently owns the SRE and SRW sites. The SRE site is not fenced and is used for livestock grazing. The majority of the SRW site is enclosed with a barbed-wire fence. Land between the two sites is privately owned, and land use includes irrigated alfalfa fields, livestock grazing, and gravel-mining operations. Water used to irrigate the alfalfa is pumped from the Dolores River. There is no current use of alluvial groundwater beneath the former processing sites. There are also no known uses of groundwater from the Entrada Sandstone in the area near the SRE and SRW sites. Groundwater for domestic or agricultural use in the Slick Rock area is primarily supplied by the Navajo Sandstone aquifer. Historically, wells completed in the Navajo Sandstone provided water for the milling operations and for the mill community at the SRW site.

² This stream segment (Segment 1) of the Lower Dolores River Basin is classified as Aquatic Life Cold 1, Recreation E, Water Supply, and Agriculture, and the classifications with the most restrictive water quality standards apply (CDPHE 2012).

3.0 Monitoring Program

Monitoring at the Slick Rock processing site is to be performed annually for the first 10 years following NRC concurrence with the GCAP (DOE 2006). Annual monitoring has been performed at the site since 2003 (more frequent monitoring occurred between 2000 and 2002), although the NRC has not yet concurred with the GCAP. This section describes the monitoring programs for the SRE and SRW sites.

3.1 SRE Site

At the SRE site, the current monitoring network consists of eight monitoring wells and three surface water locations (Table 2 and Figure 3). Sampling at two monitoring wells, 0310 and 0312, was resumed in 2005 (after a 3-year hiatus) to better characterize the extent of uranium contamination detected in well 0311. The farthest downstream SRE surface water location (0700) was also established at that time. In 2010, sampling was resumed at upgradient well 0300 to reestablish a groundwater background location for the SRE and SRW sites, but this well was not sampled in 2011. Sampling of well 0300 will resume in 2012.

Table 2. Monitoring Program at the SRE Site

| ID | Matrix | Location ^a | Rationale | Analytes |
|------|---------------|------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------------------|
| 0300 | Groundwater | Upgradient | Groundwater background for both SRE and SRW sites. | Manganese, molybdenum, nitrate, selenium, and uranium |
| 0303 | Groundwater | Onsite | Hot spot for uranium. | Uranium |
| 0305 | Groundwater | Onsite | Hot spot for uranium; selenium above the UMTRCA MCL. | Selenium and uranium |
| 0307 | Groundwater | Onsite | Downgradient of hot spots, monitor plume migration. | Selenium and uranium |
| 0309 | Groundwater | Onsite | Farthest downgradient well onsite. | Uranium |
| 0310 | Groundwater | Offsite (across the Dolores River) | Monitor migration of uranium between the SRE and SRW sites. | Uranium |
| 0311 | Groundwater | Offsite, downgradient | Adjacent to and north of well 0310. | Uranium |
| 0312 | Groundwater | Offsite, downgradient | Adjacent to and north of well 0311. | Uranium |
| 0696 | Surface Water | Upstream | Surface water background (inlet area; dry in 2011). | Uranium |
| 0692 | Surface Water | Adjacent to site | Predicted location where the centroid of the uranium plume intersects the river. | Uranium |
| 0700 | Surface Water | Downstream | Established in 2005; located about 100 ft southwest of well 0309. | Uranium |

^a The sampling locations in this table are listed first in order of matrix, and then by general flow direction (upgradient or upstream are listed first).

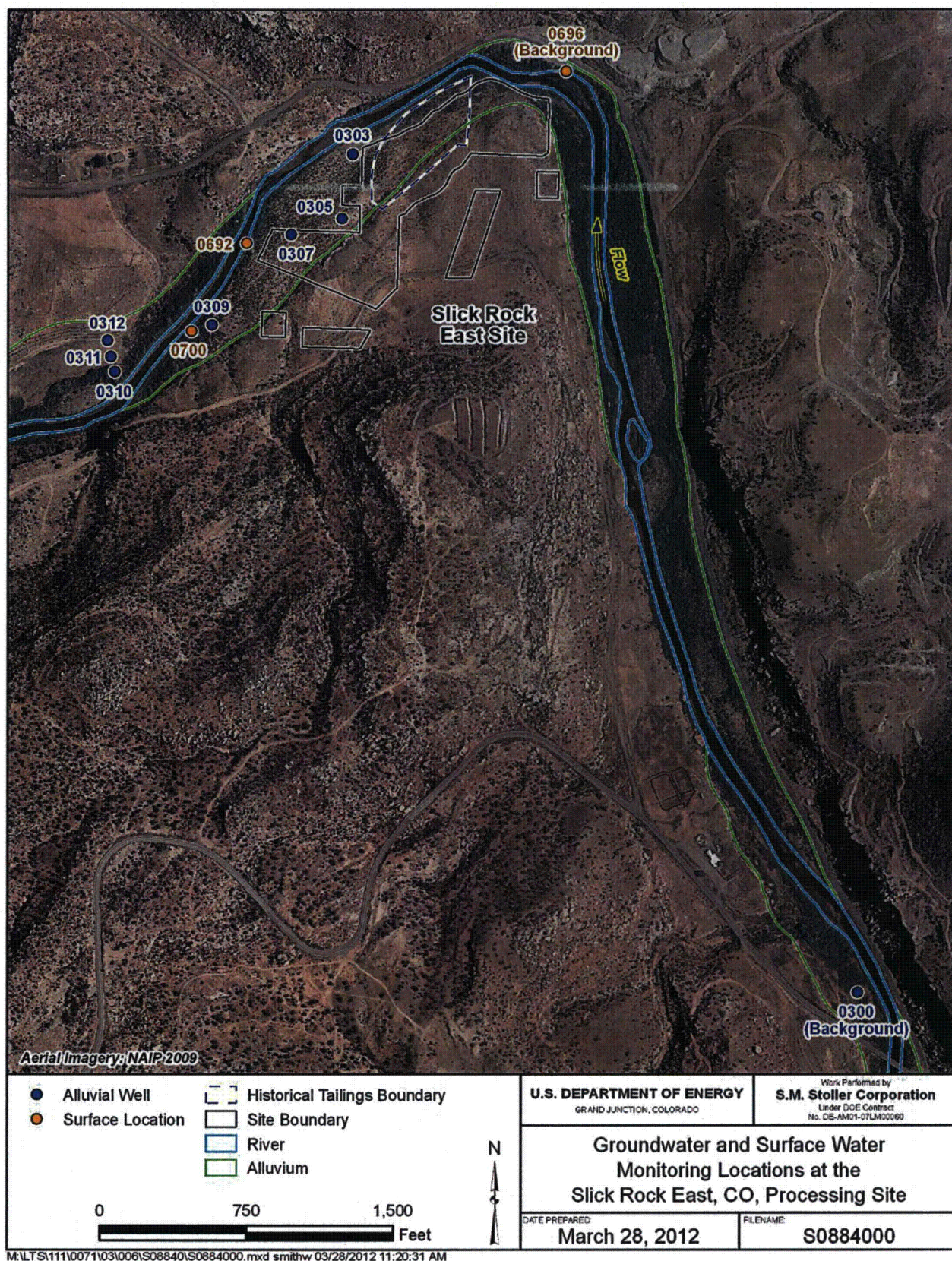


Figure 3. Groundwater and Surface Water Monitoring Locations at the Slick Rock East Site

3.2 SRW Site

At the SRW site, the monitoring network consists of nine monitoring wells and four surface water locations (Table 3 and Figure 4). In 2010, three new wells were installed at the SRW site: 0318A, 0339, and 0340. Well 0318A replaced damaged well 0318, and wells 0339 and 0340 were installed to better characterize selenium contamination at the site.

Table 3. Monitoring Program at the SRW Site

| ID | Matrix | Location ^a | Rationale | Analytes |
|-------|---------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| 0317 | Groundwater | Onsite | Entrada Sandstone well, exceeds molybdenum UMTRCA MCL. | Molybdenum and selenium |
| 0318A | Groundwater | Onsite | Hot spot for several COPCs. Installed in September 2010 to replace well 0318. | Manganese, molybdenum, nitrate, selenium, and uranium |
| 0339 | Groundwater | Onsite | Installed in September 2010 to better characterize selenium within the aquifer. | Manganese, molybdenum, nitrate, selenium, and uranium |
| 0340 | Groundwater | Onsite | Installed in September 2010; see rationale for well 0339 above. | Manganese, molybdenum, nitrate, selenium, and uranium |
| 0508 | Groundwater | Onsite | High selenium, nitrate, molybdenum, and uranium. | Manganese, molybdenum, nitrate, selenium, and uranium |
| 0510 | Groundwater | Onsite | Edge of former tailings pile, high COPC concentrations. | Manganese, molybdenum, nitrate, selenium, and uranium |
| 0319 | Groundwater | Onsite | Hot spot for BTEX and radium. | BTEX, radium (Ra-226, Ra-228), and selenium |
| 0320 | Groundwater | Onsite | Farthest downgradient well onsite; monitor plume movement. | Manganese, molybdenum, nitrate, selenium, and uranium |
| 0684 | Groundwater | Offsite | Farthest downgradient well; purpose is to verify that contaminants are not migrating offsite. | Manganese, molybdenum, nitrate, selenium, and uranium |
| 0693 | Surface Water | Upstream | Upstream SRW surface water location (but downstream of SRE). | Manganese, molybdenum, nitrate, selenium, and uranium |
| 0347 | Surface Water | Adjacent to site | Predicted location where the centroid of the selenium plume intersects the river; potential point of exposure for selenium (DOE 2006). | Manganese, molybdenum, nitrate, selenium, and uranium |
| 0349 | Surface Water | Adjacent to site | Predicted location where the centroids of contaminant plumes intersect the river. Potential point of exposure. | Manganese, molybdenum, nitrate, selenium, and uranium |
| 0694 | Surface Water | Downstream | Potential for contaminant plumes to discharge to the river at this location. | Manganese, molybdenum, nitrate, selenium, and uranium |

^a The sampling locations in this table are listed first in order of matrix, and then by general flow direction (upgradient or upstream are listed first).

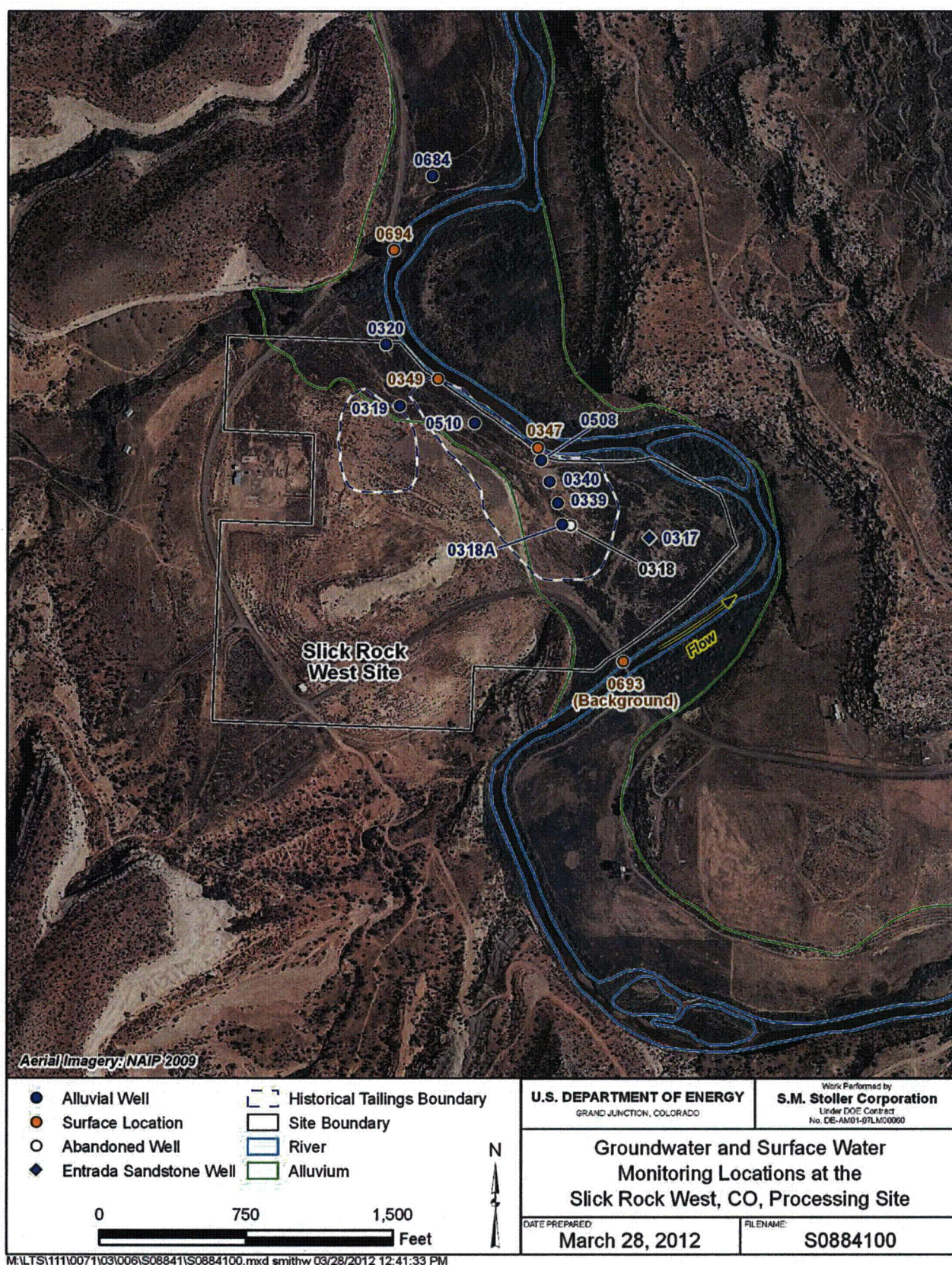


Figure 4. Groundwater and Surface Water Monitoring Locations at the Slick Rock West Site

4.0 Results of 2011 Monitoring

This section documents the results of groundwater and surface water monitoring conducted in 2011 for the SRE and SRW sites. Detailed analytical results are provided in Appendix A for groundwater and in Appendix B for surface water. Appendix C provides supporting static water level data and hydrographs.

4.1 SRE Site Groundwater Monitoring Results

Uranium and selenium are the only constituents currently monitored at SRE, as levels of other constituents have been below respective benchmarks. While uranium is monitored at all SRE well locations, selenium is monitored at only two wells (0305 and 0307). Recent and historical trends observed for each of these constituents are discussed below.

Uranium

The box plot in Figure 5 shows the historical distribution of uranium in currently active SRE wells, ordered (from left to right) by direction of groundwater flow (upgradient to downgradient). This figure shows that uranium concentrations are highest—greater than 10 times the 0.044 mg/L UMTRCA MCL—in SRE wells 0303, 0305, and 0307, located in the central portion of the SRE site, just downgradient of the historical tailings boundary. Uranium concentrations in these wells, along with well 0309, have also been the most variable.

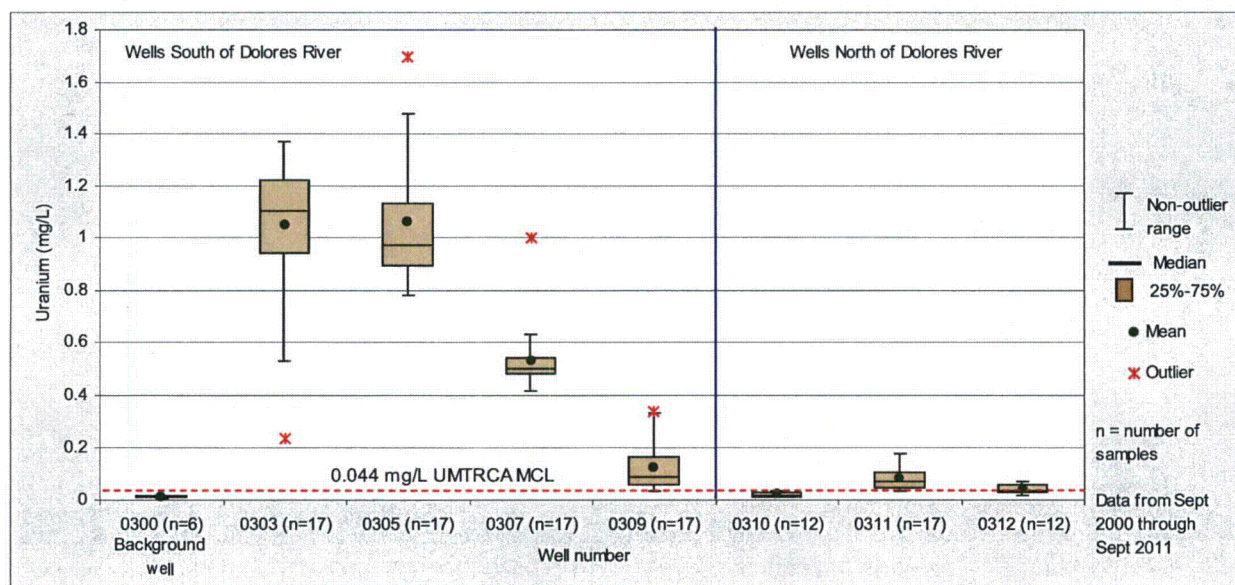


Figure 5. Box Plot of Uranium in SRE Wells

Figure 6 plots the results of the most recent (September 2011) sampling. Although uranium levels attenuate farther downgradient, concentrations are above the UMTRCA MCL at wells 0309 and 0311.

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Figure 7 shows uranium concentrations over time for SRE onsite alluvial wells south of the Dolores River. These wells have historically had the highest uranium concentrations. The uranium concentrations in SRE central wells (0303, 0305, and 0307) fluctuated between 2004 and 2007 but have since stabilized. In well 0309, located farther downgradient, uranium concentrations are about 0.1 mg/L. No attenuation over time (e.g., attributable to natural flushing) is apparent in any wells.

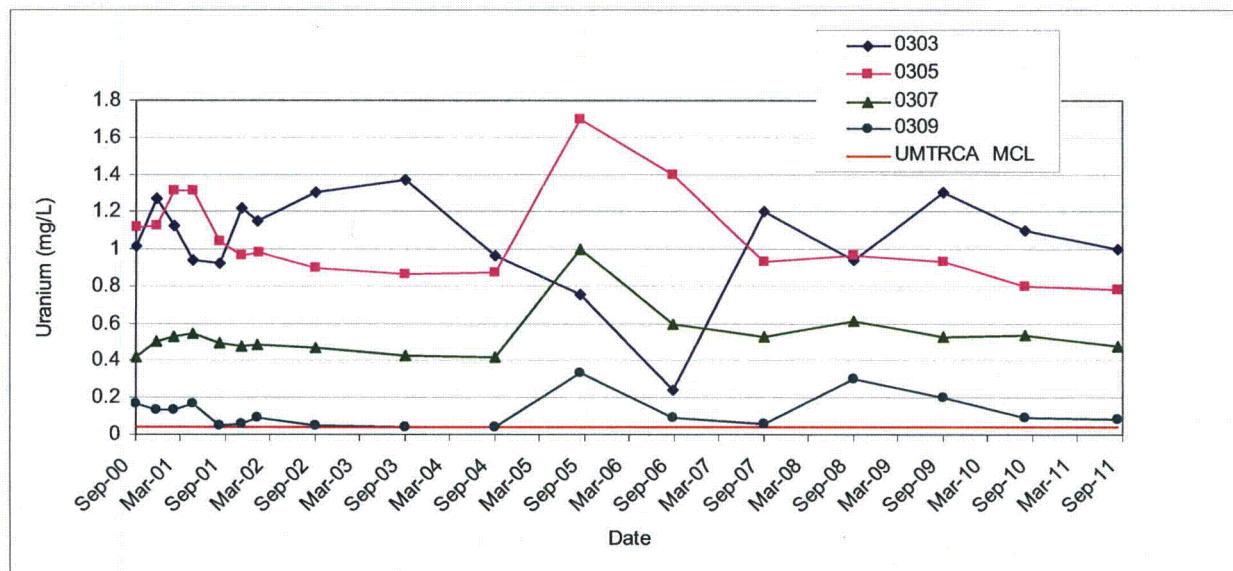


Figure 7. Uranium Concentration Versus Time in SRE Wells South of Dolores River

Figure 8 plots uranium concentrations over time for the remaining SRE alluvial wells north of the Dolores River. Uranium concentrations in SRE well 0310 have always been below the 0.044 mg/L UMTRCA MCL. Although uranium concentrations increased significantly between 2001 and 2008 in well 0311, they have since declined. The last two measurements in well 0312 were below the UMTRCA MCL. Although the cause of the elevated uranium in wells 0311 and 0312 is not clear, these findings might reflect contamination from the numerous uranium mining operations north of the Dolores River. These wells will continue to be monitored.

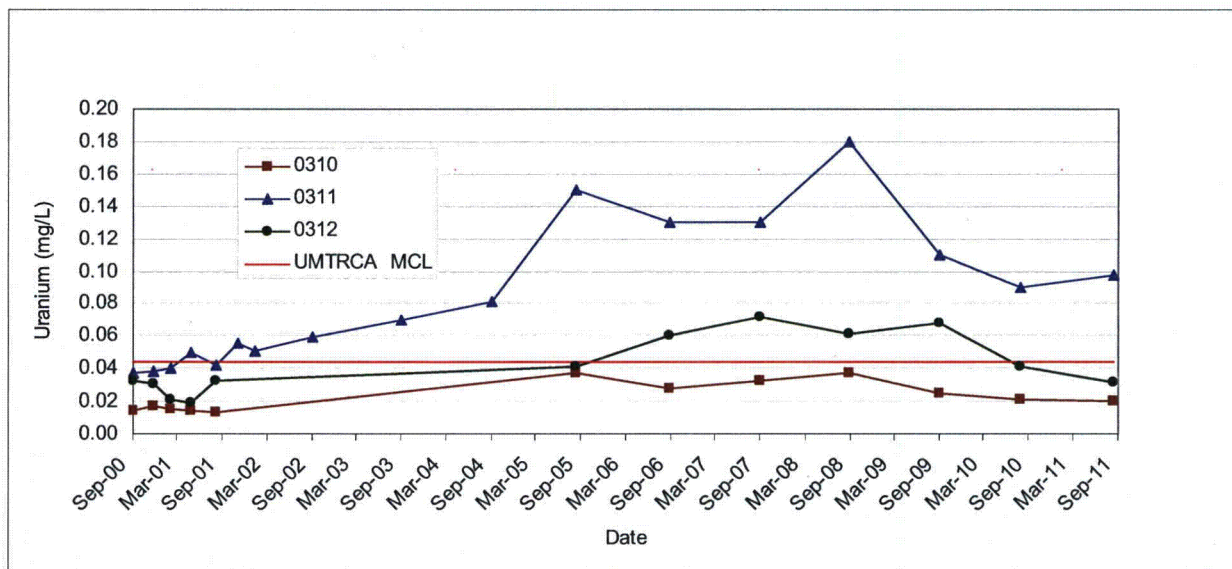


Figure 8. Uranium Concentration Versus Time in SRE Wells North of the Dolores River

Selenium

Figure 9 shows selenium concentration over time at currently monitored SRE wells. Selenium has been elevated only in well 0305 at the SRE site. Therefore, unlike at SRW, selenium is not considered a major contaminant at the SRE site. Only wells 0305, 0307, and background well 0300 are currently monitored. Although selenium concentrations in well 0305 have historically exceeded the 0.01 mg/L UMTRCA MCL, they have always been below the 0.05 mg/L SDWA primary drinking water standard. Although selenium concentrations in well 0307 have been consistently below the 0.01 mg/L UMTRCA MCL, it will continue to be monitored for selenium because well 0307 monitors for potential plume migration.

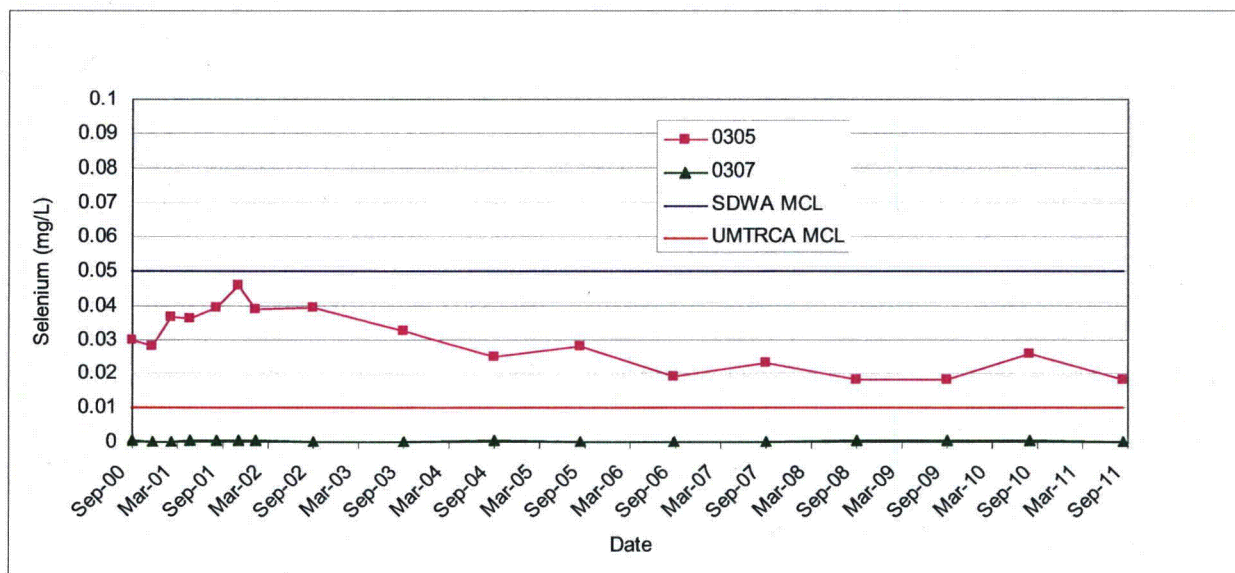


Figure 9. Selenium Concentration Versus Time in SRE Wells 0305 and 0307

4.2 SRW Site Groundwater Monitoring Results

The two COPCs common to both the SRW site and SRE site are uranium and selenium. Other constituents monitored at the SRW site include manganese, molybdenum, and nitrate. BTEX and Ra-226/Ra-228 are monitored at SRW well 0319, as this is the only location where these constituents have been elevated. Each constituent is presented separately below for SRW.

Figure 10 shows box plot diagrams for all COPCs currently monitored at all SRW wells. In 2010, three new alluvial wells were installed at SRW—0318A, 0339, and 0340. Well 0318A replaces well 0318, which was damaged and is no longer sampled. However, data from well 0318 and 0318A are both included in Figure 10. Although wells 0339 and 0340 were installed several days before they were first sampled in 2010, results are similar to 2011 results, indicating that installing the wells shortly before sampling in 2010 did not significantly affect results.

Uranium

Historically, uranium has exceeded the 0.044 mg/L UMTRCA MCL in only three wells—alluvial wells 0318, 0508, and 0510, all located within the historical tailings boundary. The average uranium in wells 0508 and 0510 are both at approximately 0.09 mg/L, about twice the UMTRCA MCL. Uranium in well 0318 has been below the standard since August 2001, and it stabilized at about 0.03 mg/L between 2007 and 2010, when it was abandoned. Well 0318A replaced well 0318 in 2010, and concentrations of uranium in both 2010 and 2011 have also been about 0.03 mg/L. Concentrations of uranium in well 0339, downgradient from well 0318A, have also been below the standard, at about 0.035 mg/L.

Uranium concentrations over time for currently monitored SRW wells are shown in Figure 11. Figure 12 maps the most recent (September 2011) uranium results on a site map.

Selenium

Like uranium, selenium has been historically elevated in SRW alluvial wells 0318, 0508, and 0510 within the historical tailings area (Figure 10). Selenium is also elevated in well 0318A, which replaced well 0318, and in wells 0339 and 0340. In all of the remaining SRW wells, selenium has been below the UMTRCA MCL of 0.01 mg/L.

Wells at SRW with elevated selenium are shown in Figure 13. Selenium levels in wells 0508 and 0510 have stabilized at about 1 mg/L, although levels at well 0510 have been more variable. Concentrations in well 0318 became significantly elevated—as high as 8 mg/L—since 2005. Measurements in well 0318A are lower, although still elevated, and are similar to measurements in wells 0339 and 0340. Damage to well 0318, which allowed sediment to accumulate in the well, may have contributed to the higher measured levels of selenium between 2005 and 2010.

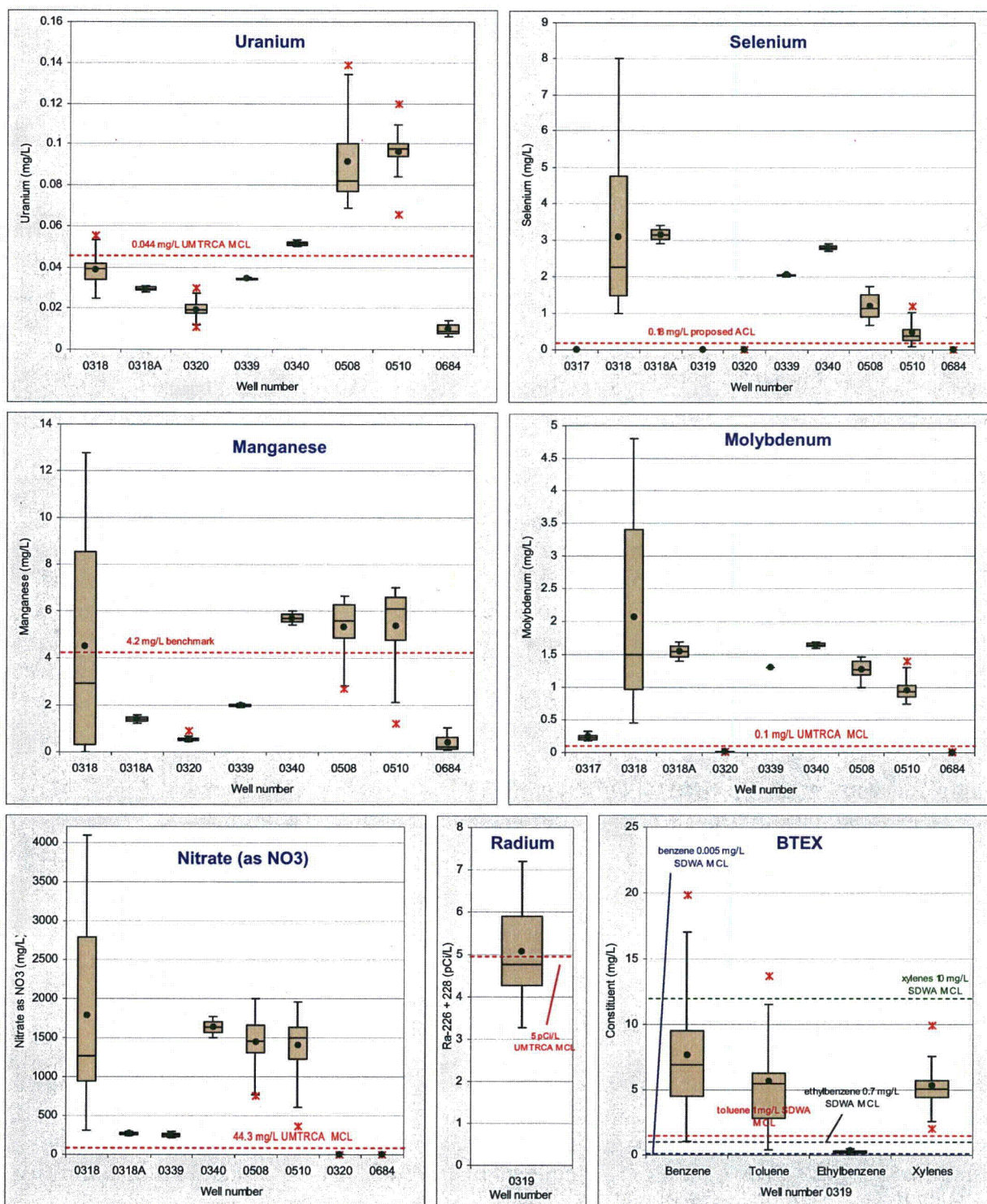


Figure 10. Box Plots of Constituents at SRW Wells³

³ The box plots above are similar to those shown previously for SRE (Figure 5) in that they depict the mean (•), median, lower and upper quartiles, and the non-outlier range. Points plotted beyond these limits are outliers. In each plot, wells are ordered according to the general direction of groundwater flow (upgradient to downgradient).

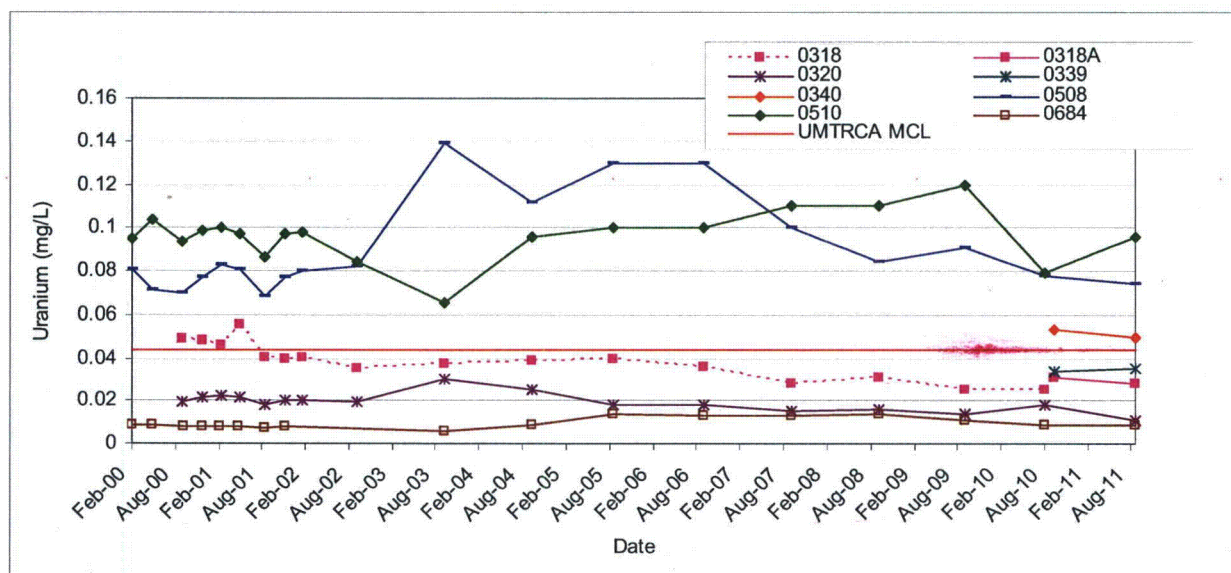


Figure 11. Uranium Concentration Versus Time in SRW Wells



Figure 12. Uranium Distribution at Slick Rock West Site, September 2011

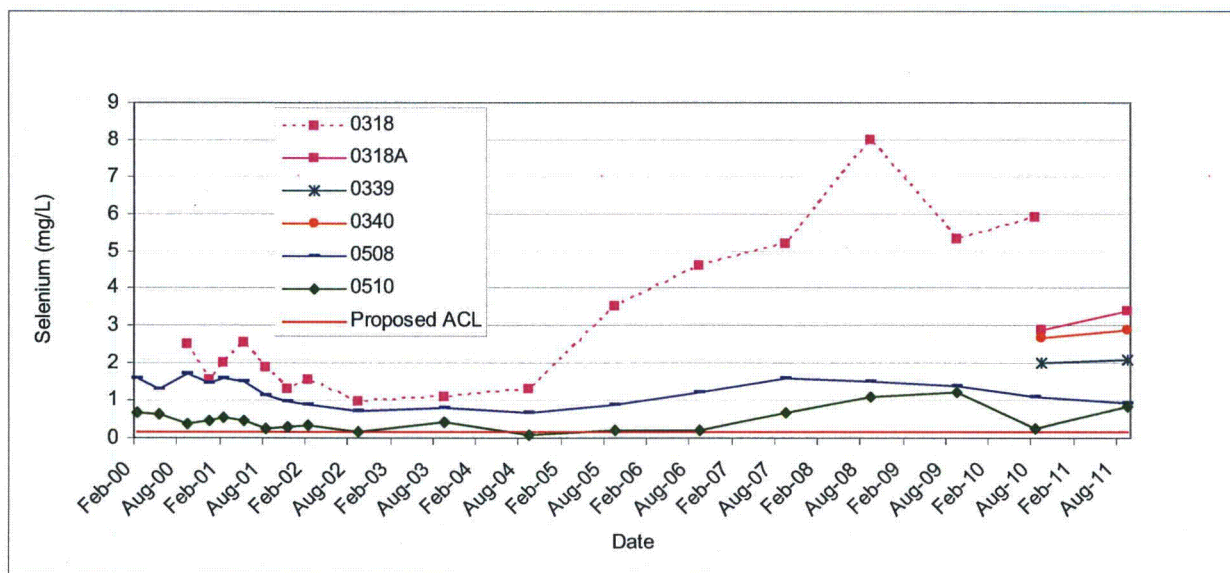


Figure 13. Selenium Concentration Versus Time in SRW Wells with Elevated Selenium

To better understand the distribution and movement of selenium in the alluvial aquifer at SRW, wells 0339 and 0340 were installed in 2010. Also, sampling for selenium was reinstated at wells 0317 and 0319. While wells 0339 and 0340 show elevated selenium and will be useful in monitoring selenium at the site, wells 0317 and 0319 have both remained well below the UMRCA MCL for selenium of 0.01 mg/L. Well 0317 is located in the Entrada Sandstone, where hydrological conditions prevent the movement of contaminants downward from the alluvial aquifer (see Section 2.1). Low levels of selenium at well 0317 indicate that selenium is not being introduced from other offsite sources via the sandstone aquifer. Well 0319 also did not show elevated selenium, and plume migration is already monitored at well 0320. Therefore, discontinuing monitoring at wells 0317 and 0319 again is warranted. Figure 14 summarizes the most recent (September 2011) monitoring results for selenium at SRW.

Manganese

Elevated concentrations of manganese have historically been limited to alluvial wells coinciding with the former tailings area (0318, 0508, and 0510; see Figure 10). Figure 15 shows concentrations over time at all SRW wells currently monitored for manganese. Although manganese was historically highest in well 0318, levels in that well declined significantly since April 2002, to well below the 4.2 mg/L (background) benchmark. Concentrations in well 0318A, which replaced well 0318 in 2010, are higher but still well below the benchmark. Concentrations in wells 0508 and 0510 have also decreased, but more gradually; concentrations at well 0510 were near the benchmark in 2011. Manganese concentrations are above the benchmark at well 0340 and below the benchmark at well 0339, both installed in 2010.



Figure 14. Selenium Distribution at Slick Rock West Site, September 2011

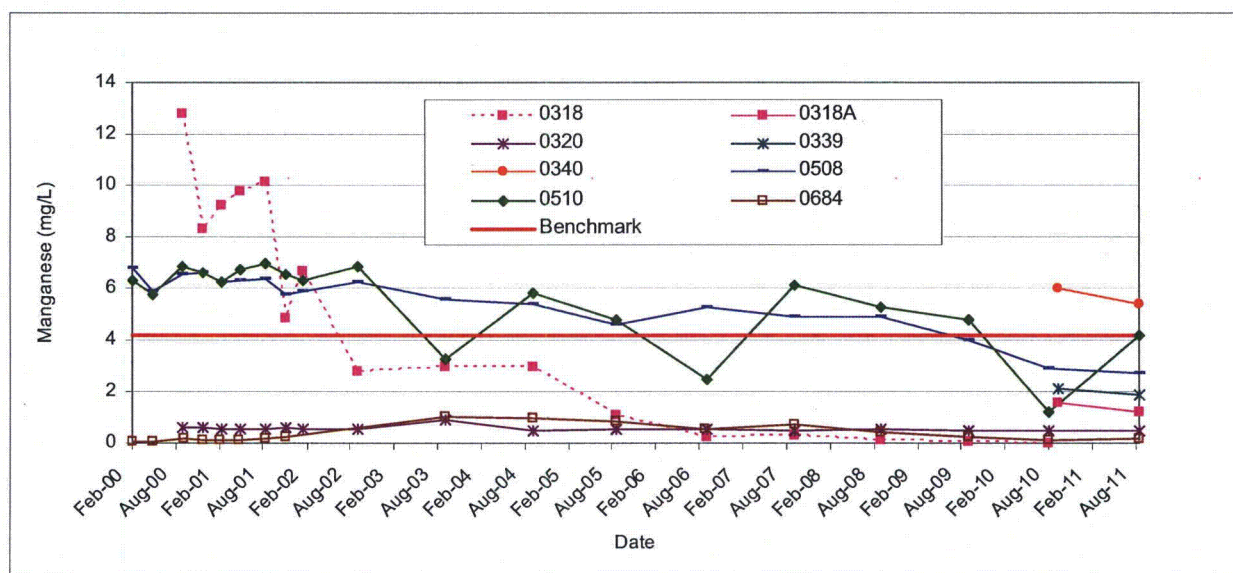


Figure 15. Manganese Concentration Versus Time at the SRW Site

Molybdenum

Like other SRW COPCs, molybdenum has been historically most elevated in alluvial wells 0318, 0508, and 0510 (see Figure 10). Figure 16 summarizes molybdenum concentrations over time at SRW wells where molybdenum is elevated. Similar to selenium, well 0318 showed a significant increase in molybdenum concentration between 2005 and 2010, when it was replaced by well 0318A, and concentrations are lower in well 0318A, although they are still more than an order of magnitude above the UMTRCA MCL (0.1 mg/L). Concentrations of molybdenum have generally been between about 1 and 1.5 mg/L at wells 0508 and 0510 and at the newer wells 0339 and 0340. No upward or downward trends are apparent. Molybdenum concentration in Entrada Sandstone well 0317 also exceed the UMTRCA MCL, but only slightly; and it may also be trending slightly downward. Wells 0320 and 0684, although monitored in 2011, are not shown in Figure 16 because they have always been well below the UMTRCA MCL and are not trending.

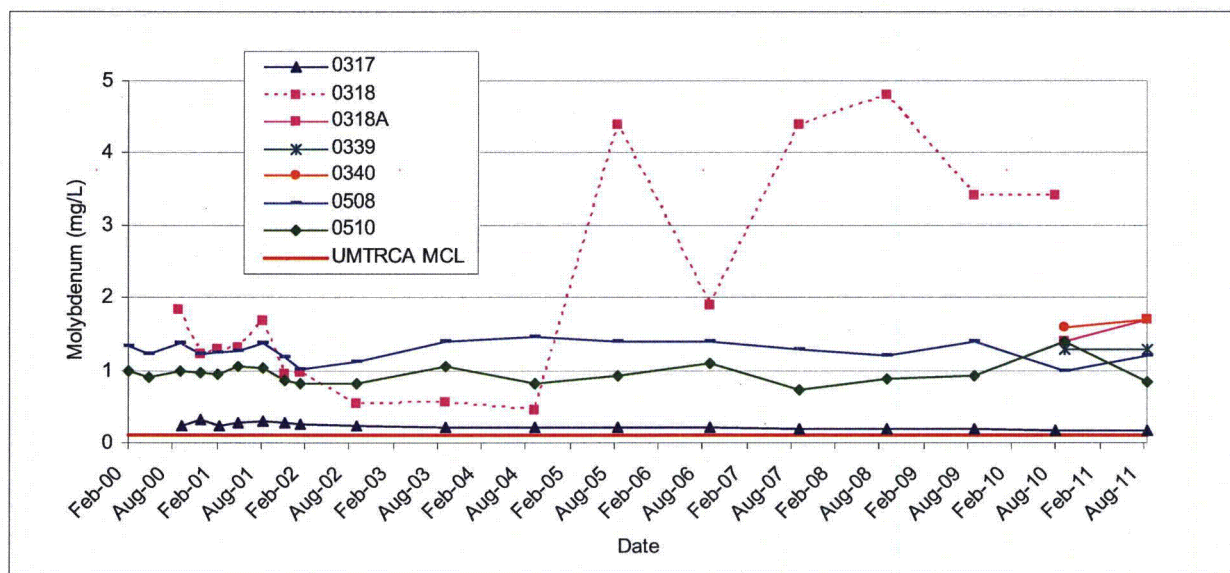


Figure 16. Molybdenum Concentration Versus Time at the SRW Site

Nitrate

Figure 17 shows nitrate concentrations over time at currently monitored SRW wells where this constituent has been elevated. Data from wells 0320 and 0684 are not shown because levels have been well below the 44.3 UMTRCA MCL (for nitrate as NO_3). Although nitrate concentrations have been variable, concentrations in all wells appear to be trending downward over time.

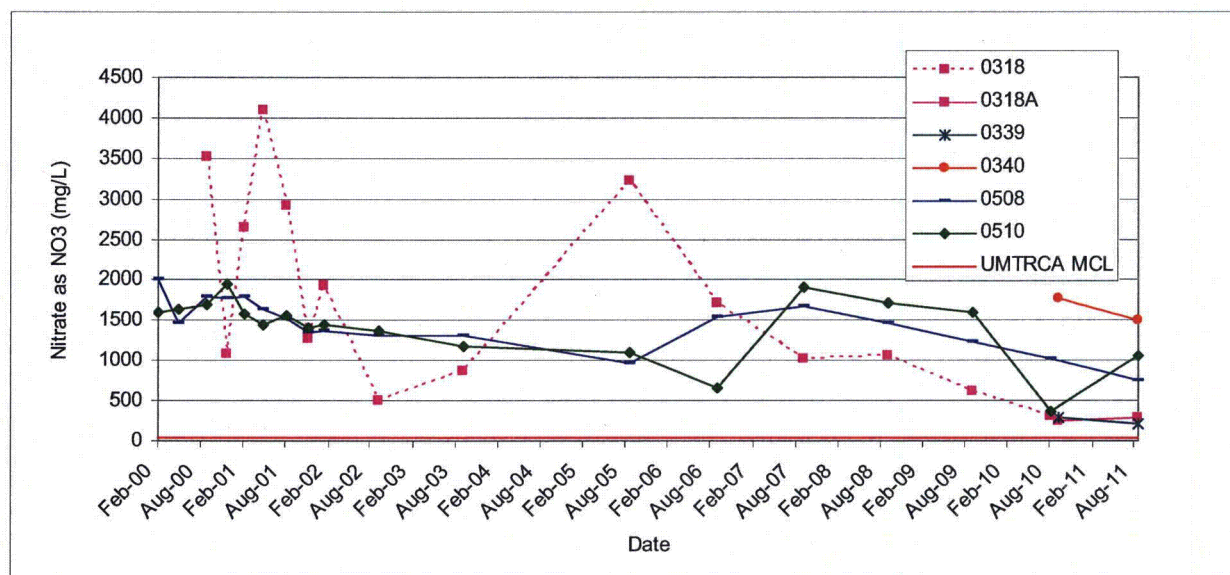


Figure 17. Nitrate (as NO_3) Concentrations Versus Time in SRW Wells with Concentrations Above the UMTRCA MCL

BTEX (Well 0319)

During site characterization activities conducted for the SOWP, a localized aromatic hydrocarbon plume was identified in the area of alluvial well 0319 (DOE 2002), where nonaqueous phase liquid had been identified. This is the only SRW well currently monitored for BTEX⁴. Corresponding time-trends are plotted in Figure 18. Benzene concentrations reached a peak in May 2001 (19.8 mg/L) and have fluctuated over time, with an overall decline. Similar fluctuations are apparent for toluene, the other constituent (in addition to benzene) that exceeds its SDWA MCL. The SDWA MCLs are drinking water standards, and exceeding these benchmarks presents no known risks at the SRW site because there is no exposure to alluvial groundwater. The SDWA MCLs for ethylbenzene and xylenes have never been exceeded at the SRW site.

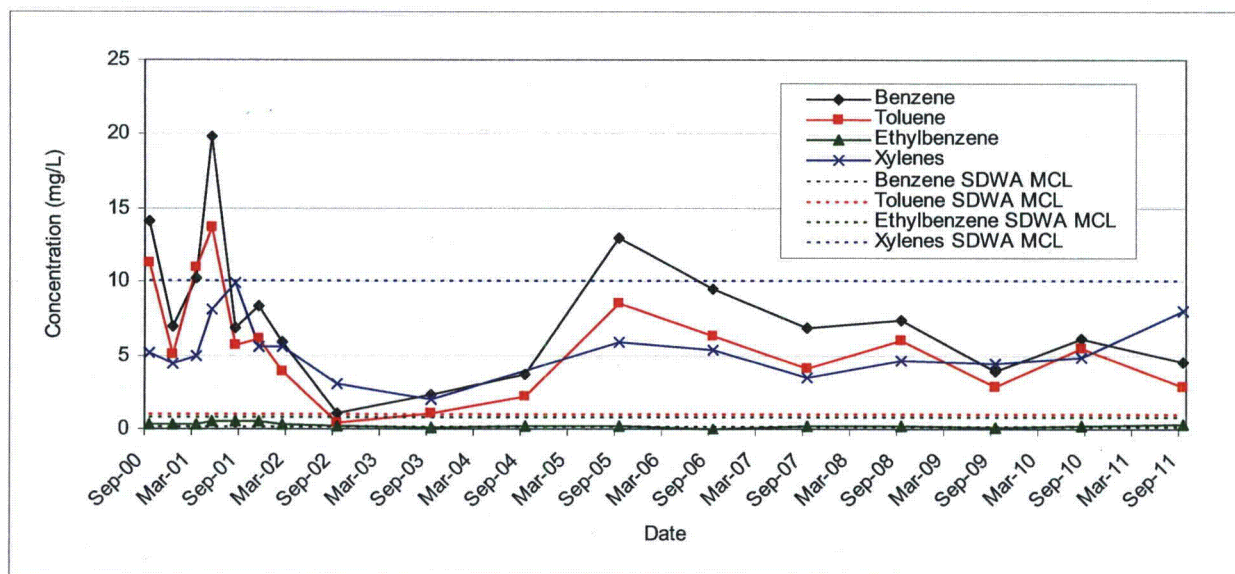


Figure 18. BTEX Concentrations Versus Time in SRW Well 0319

Ra-226, Ra-228 (Well 0319)

Although radium (Ra-226 + Ra-228) has been detected in other wells, its presence above the 5 picocuries per liter (pCi/L) UMTRCA MCL has historically been limited to well 0319, coinciding with the BTEX hot spot. Figure 19, which plots Ra-226 and Ra-228 concentrations in well 0319 over time, shows that radium levels (Ra-226/228 combined) have been below the 5 pCi/L UMTRCA MCL since 2008. The lowest historical value for Ra-226 was measured in 2011 (0.97 pCi/L). This suggests that radium's localized presence is not a major concern at SRW. If concentrations continue to decline and remain below the benchmark, continued monitoring for this constituent may not be necessary.

⁴ During initial site characterization activities, nine other SRW wells were monitored for BTEX in addition to well 0319: 0320, 0326, and 0332–0338 (0332–0338 have since been decommissioned). In 2000–2001, elevated levels were detected in wells 0332 and 0333, located within 100 ft of well 0319 to the south and southwest. Because the maximum benzene concentration was in well 0319 (nearly 20 mg/L), this well continues to be monitored.

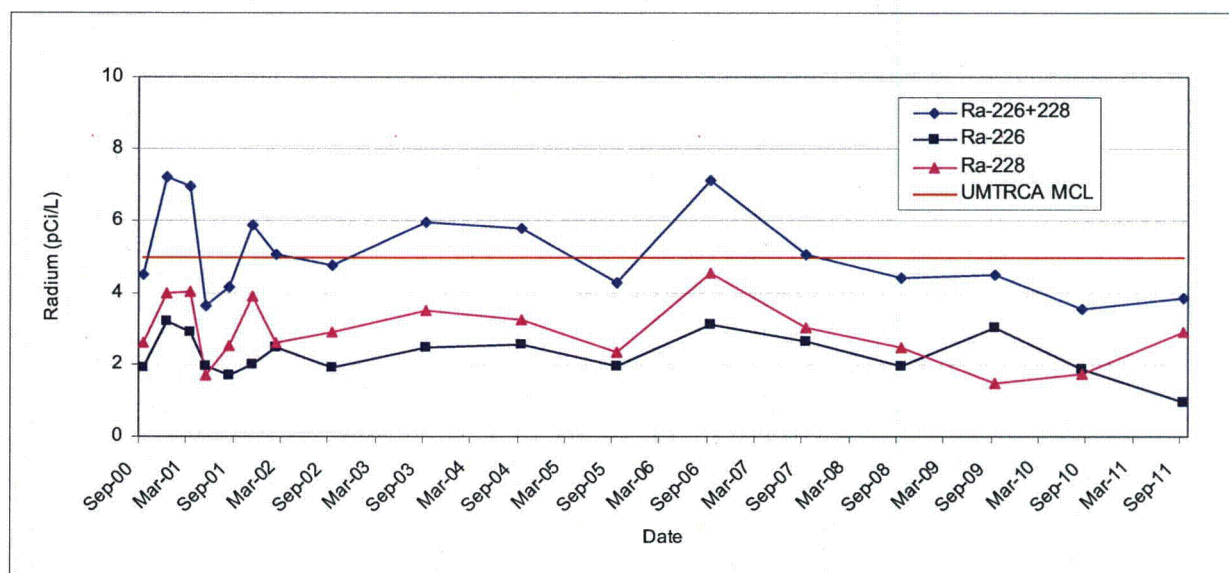


Figure 19. Ra-226 + Ra-228 Concentrations Versus Time in SRW Well 0319

4.3 Surface Water Monitoring Results (Both SRE and SRW Sites)

Surface water sampling results for the 2011 monitoring period demonstrate essentially no impact to the Dolores River from site activities at either the SRE or SRW sites. As shown in Table 4, no CDPHE water quality benchmarks were exceeded in 2011 (detailed results are in Appendix B). Figure 20 plots the distribution of uranium in historical Dolores River samples for both SRE and SRW sites (uranium is the only surface water COPC common to both). This plot demonstrates that, with the exception of a single outlier in 2006 (0.055 mg/L, not shown in Figure 20), uranium has always been below the CDPHE benchmark.⁵

Table 4. Comparison of 2011 COPC Concentrations in the Dolores River to CDPHE Benchmarks

| COPC | CDPHE Benchmark ^a (mg/L) | Dolores River Location | | | | | | |
|------------------------|-------------------------------------------|-----------------------------------|--------|---------|---------------|---------|---------|---------|
| | | SRE Site | | | SRW Site | | | |
| | | 0696 Bkgd. | 0692 | 0700 | 0693 Bkgd. | 0347 | 0349 | 0694 |
| | | 2011 Maximum Concentration (mg/L) | | | | | | |
| Manganese ^b | 0.05 | - | - | - | 0.0032 | 0.0041 | 0.02 | 0.0018 |
| Nitrate | 10 | - | - | - | 0.044 | 0.044 | 0.044 | 0.044 |
| Selenium | 0.0046 | - | - | - | 0.0003 | 0.00032 | 0.00032 | 0.00038 |
| Uranium | 0.03 ^c | - | 0.0006 | 0.00059 | 0.00053 | 0.0006 | 0.00061 | 0.00057 |

Notes

^a CDPHE 2012

^b The standard listed for manganese is for chronic exposure.

^c The uranium standard was recently revised to 0.03 mg/L for this segment of river. It was previously 40 pCi/L (approximately 0.059 mg/L).

⁵ The September 2006 sampling event occurred during a period of heavy rain. The anomalous 0696 measurement noted above (0.055 mg/L) was likely influenced by storm water runoff.

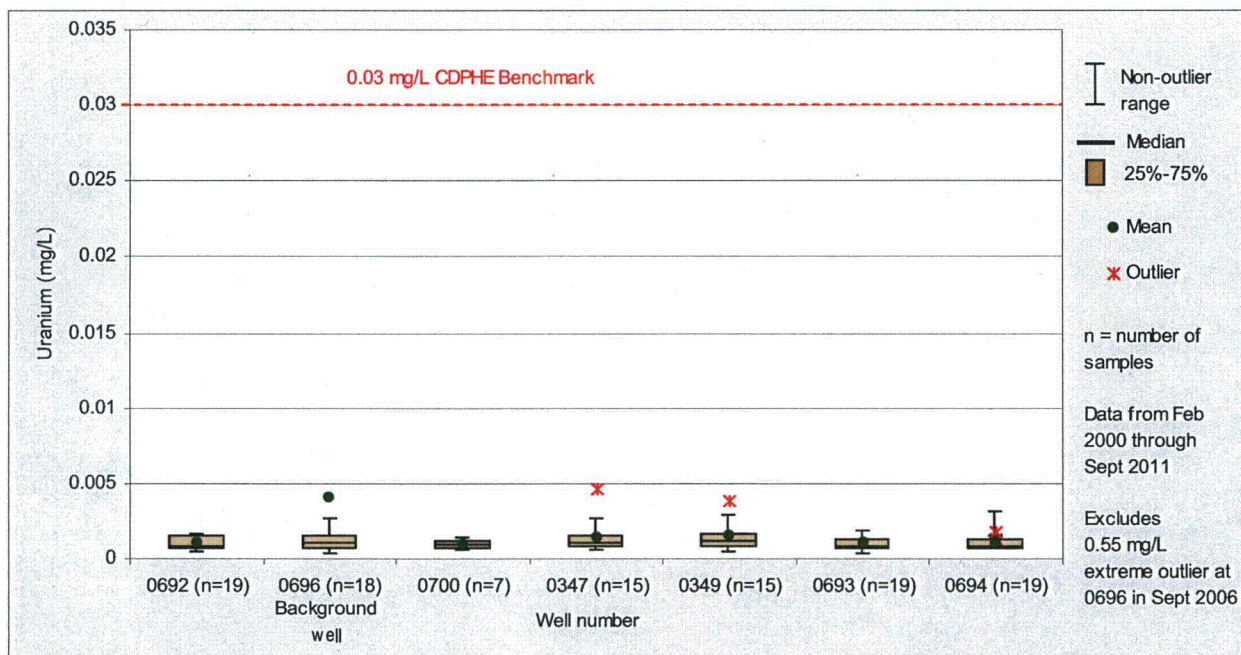


Figure 20. Box Plot of Uranium in Historical Slick Rock Surface Water (Dolores River) Samples

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5.0 Natural Flushing Assessment

In support of the SOWP for the Slick Rock site, a groundwater flow and transport model was developed to evaluate whether natural flushing would reduce site COPCs to levels below UMTRCA or SDWA MCLs or alternative benchmarks in the alluvial aquifer within 100 years (DOE 2002, Section 5.3 and Appendix H). Because modeling predicted that site COPCs would be below benchmarks within 50 years, natural flushing was selected as a compliance strategy.

This section evaluates the status of natural flushing for both the SRE and SRW sites, plotting predicted versus actual concentrations for the modeled constituents in the target wells (SRE well 0305 and SRW well 0508). A trend analysis for additional wells was provided in the 2010 VMR (DOE 2011).

5.1 SRE Site

Figure 21 plots uranium concentrations in SRE well 0305 versus groundwater model predictions. This figure shows that uranium concentrations are not attenuating as rapidly as predicted; in fact, actual concentrations (0.8–1 mg/L in the last several years) are about an order of magnitude above predicted values. A corresponding plot for selenium, the only other SRE COPC, is not provided because levels in well 0305 have stabilized at about 0.02 mg/L, close to the 0.01 mg/L UMTRCA MCL and below the 0.05 mg/L SDWA MCL (see Figure 9).

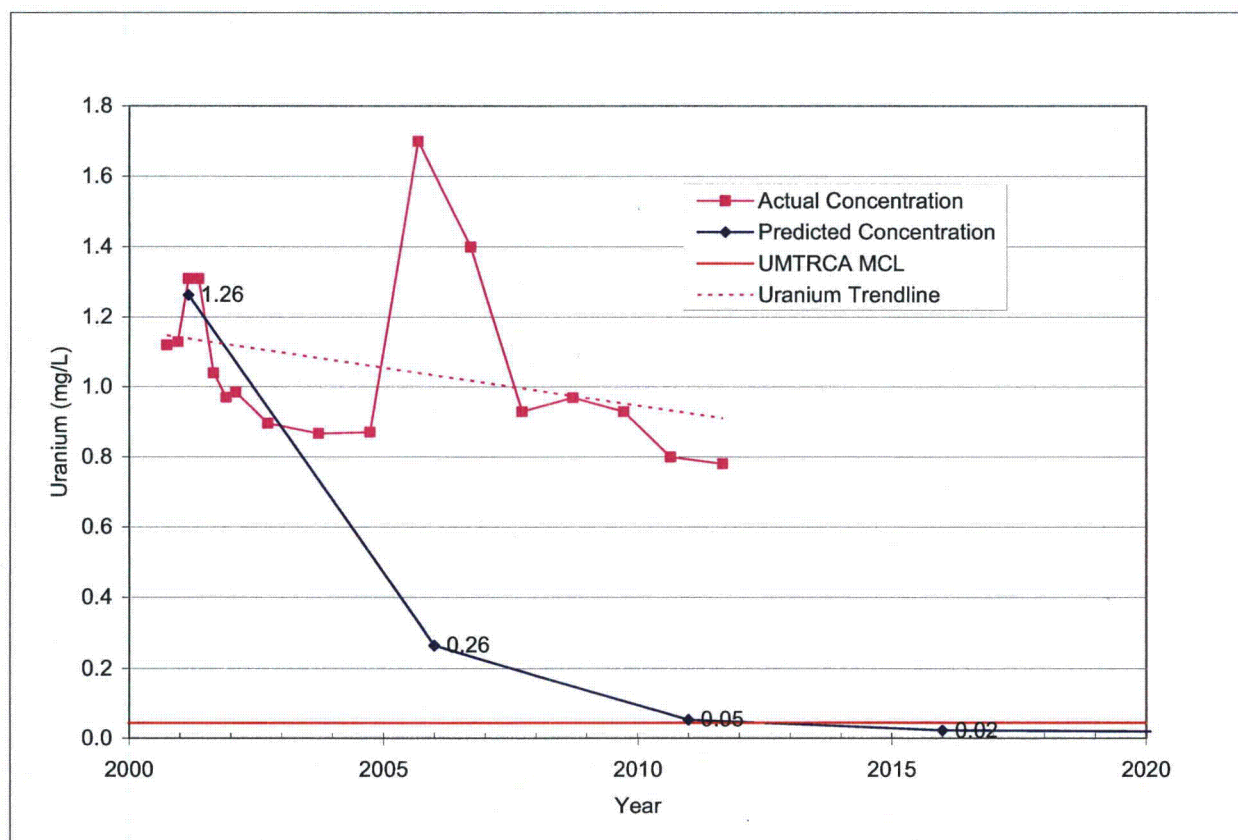


Figure 21. Predicted Versus Actual Uranium Concentrations in SRE Well 0305

5.2 SRW Site

Figures 22 through 26 plot concentrations of manganese, molybdenum, nitrate, selenium, and uranium in SRW well 0508 versus model predictions.

Manganese (Figure 22) is the only SRW constituent for which the actual trend agrees with the groundwater model prediction: concentrations in well 0508 have decreased to below background levels. Results for the other constituents are not in close agreement with values predicted from the model. However, these figures plot results only for a single SRW well, 0508, which was considered most representative for assessing natural flushing progress.

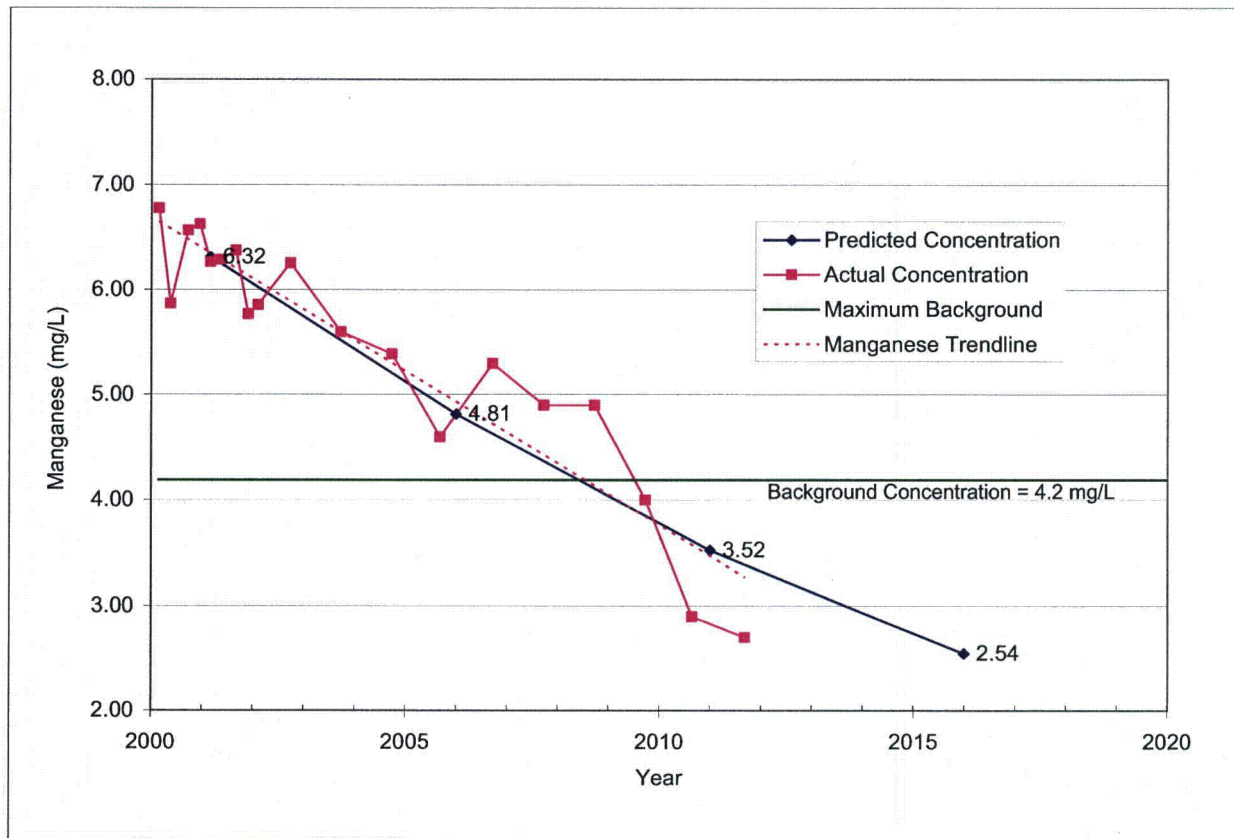


Figure 22. Manganese Concentrations in SRW Well 0508 Versus Groundwater Model Predictions

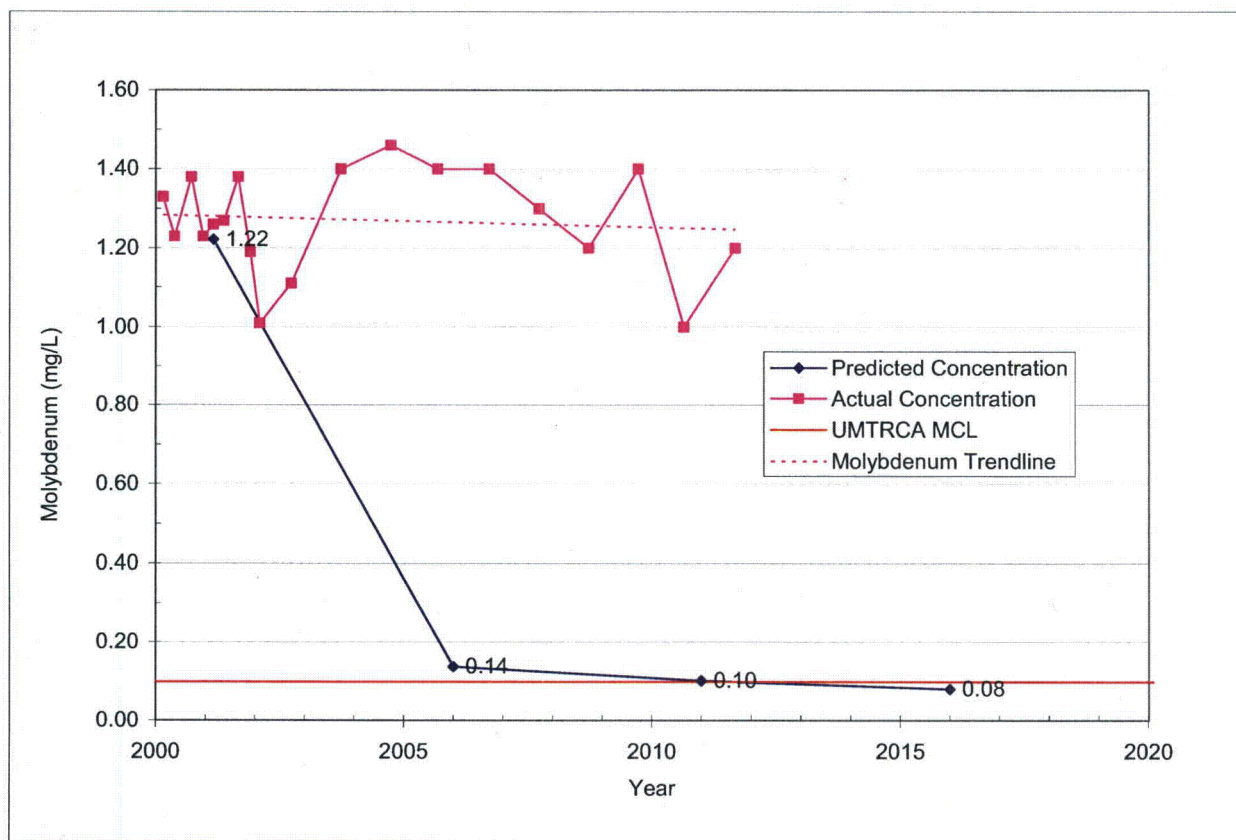


Figure 23. Molybdenum Concentrations in SRW Well 0508 Versus Groundwater Model Predictions

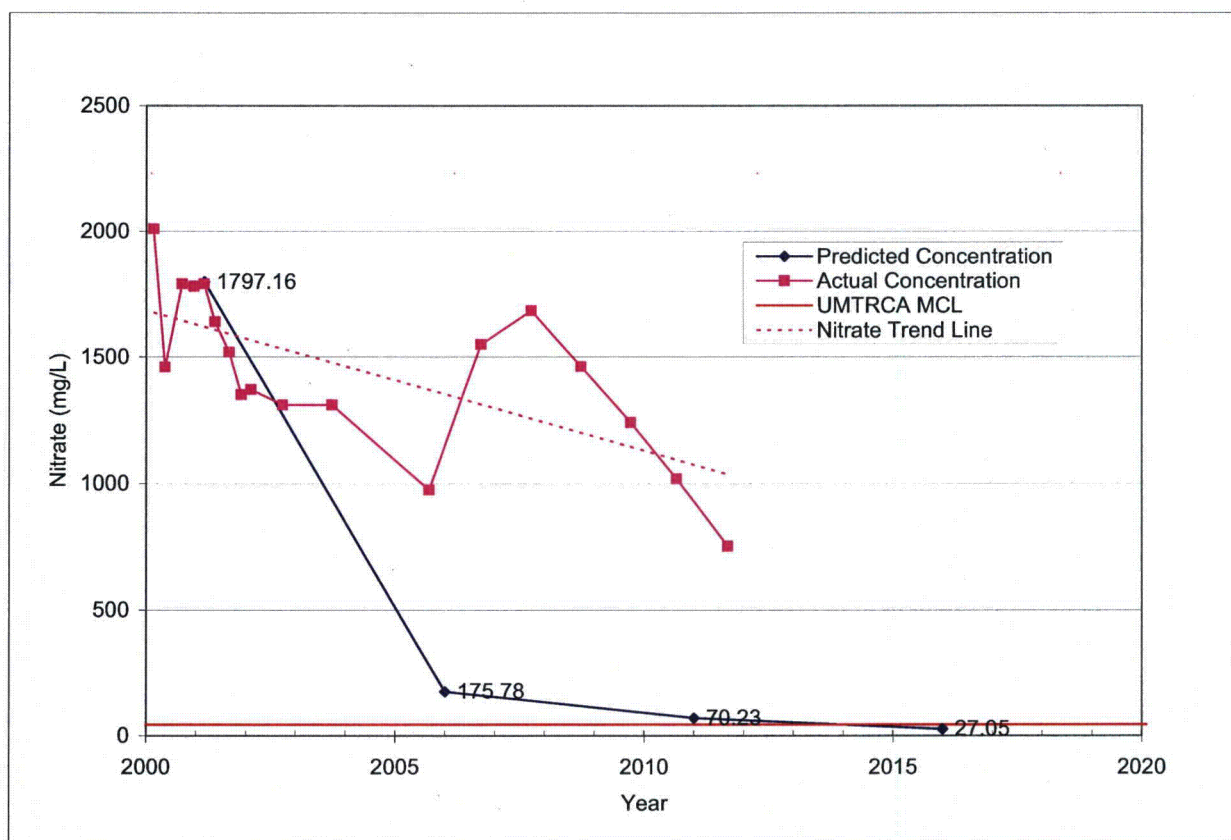


Figure 24. Nitrate (as NO_3) Concentrations in SRW Well 0508 Versus Groundwater Model Predictions

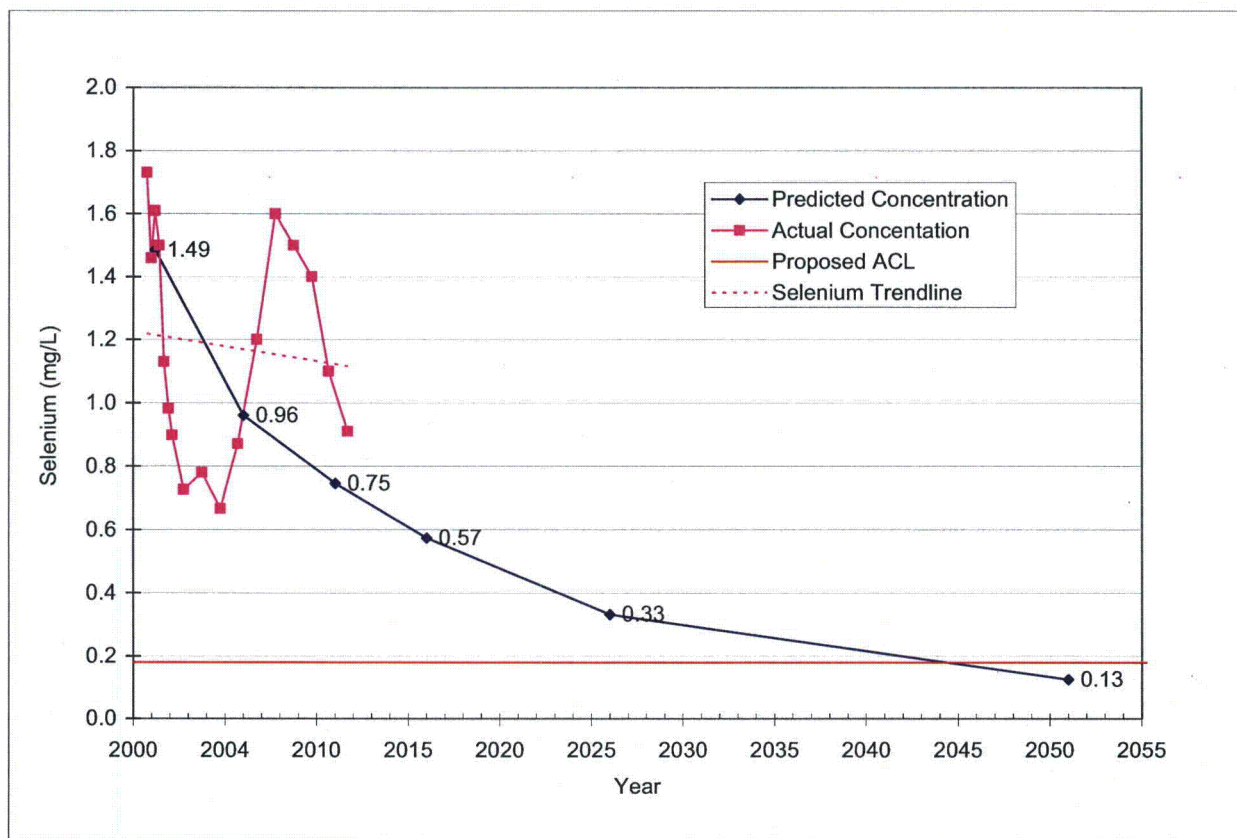


Figure 25. Selenium Concentrations in SRW Well 0508 Versus Groundwater Model Predictions

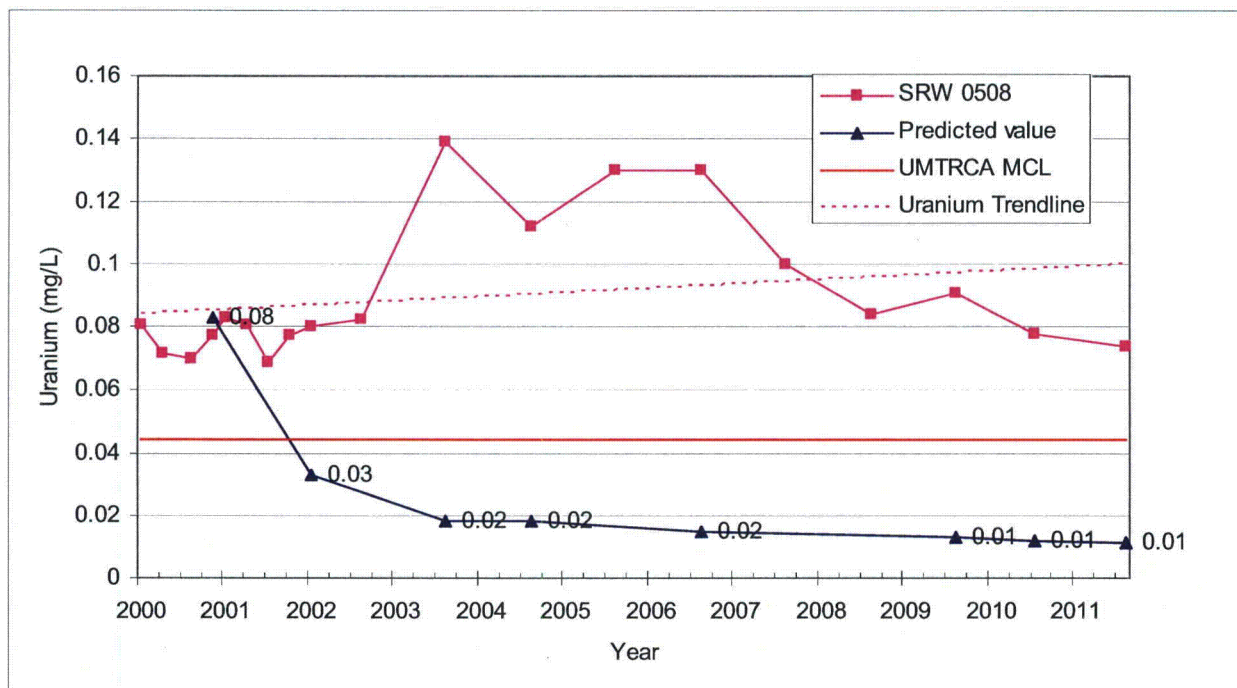


Figure 26. Uranium Concentrations in SRW Well 0508 Versus Groundwater Model Predictions

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6.0 Conclusions

6.1 Status of Site Compliance

Although it is still early in the 100-year time frame established in 40 CFR 192, data presented in Sections 4.0 and 5.0 suggest that certain constituents are not attenuating as initially predicted based on groundwater modeling conducted for the SOWP (DOE 2002). Trend analysis performed in the last several years (DOE 2010, DOE 2011) and time-concentration plots provided in this report indicate relatively stable, and in some cases even increasing, contaminant trends in a number of site wells.

6.2 Recommendations

It is recommended that annual verification monitoring of groundwater from designated monitoring wells and surface water locations continue as specified in the draft final GCAP (DOE 2006) and at new wells 0339 and 0340. Annual monitoring is planned for 10 years after NRC concurrence with the GCAP, after which monitoring requirements will be reevaluated. Based on modeling predictions, it had been anticipated that monitoring could eventually be decreased to once every 5 years. However, if fluctuations in contaminant concentrations continue, or if contamination persists north of the Dolores River, it may be advisable to continue monitoring annually until contaminant concentrations stabilize or decline.

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7.0 References

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DOE (U.S. Department of Energy), 2002. *Site Observational Work Plan for the Slick Rock, Colorado, UMTRA Project Site*, GJO-2001-257-TAR MAC-GWSKR 1.1, Grand Junction, Colorado, April.

DOE (U.S. Department of Energy), 2006. *Draft Final Groundwater Compliance Action Plan for the Slick Rock, Colorado, UMTRA Project Sites*, DOE-LM/1327-2006, Grand Junction, Colorado, September.

DOE (U.S. Department of Energy), 2010. *Verification Monitoring Report for the Slick Rock, Colorado, Processing Sites 2008 and 2009 Update*, LMS/SRE-SRW/S05428, Grand Junction, Colorado, July.

DOE (U.S. Department of Energy), 2011. *Verification Monitoring Report for the Slick Rock, Colorado, Processing Sites*, LMS/SRE-SRW/S07699, Office of Legacy Management, June.

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Appendix A

Groundwater Quality Data by Parameter

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GROUNDWATER QUALITY DATA BY PARAMETER WITH DEPTH (USEE200) FOR SITE SRK06, Slick Rock East Processing Site
 REPORT DATE: 4/11/2012 3:10 pm

| PARAMETER | UNITS | LOCATION CODE | LOCATION TYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB DATA QA | DETECTION LIMIT | UN-CERTAINTY |
|-------------------------------|----------|---------------|---------------|--------------|------|----------------------|-----------|-------------------------|-----------------|--------------|
| Alkalinity, Total (As CaCO3) | mg/L | 0303 | WL | 09/06/2011 | N001 | 4.30 - 14.30 | 560 | F # | - | - |
| | mg/L | 0305 | WL | 09/06/2011 | N001 | 8.70 - 18.70 | 448 | F # | - | - |
| | mg/L | 0307 | WL | 09/06/2011 | N001 | 4.40 - 14.40 | 764 | F # | - | - |
| | mg/L | 0309 | WL | 09/06/2011 | 0001 | 10.20 - 20.20 | 788 | F # | - | - |
| | mg/L | 0310 | WL | 09/06/2011 | N001 | 14.70 - 19.70 | 194 | F # | - | - |
| | mg/L | 0311 | WL | 09/06/2011 | N001 | 14.10 - 19.10 | 298 | F # | - | - |
| | mg/L | 0312 | WL | 09/06/2011 | N001 | 14.50 - 19.50 | 276 | F # | - | - |
| Oxidation Reduction Potential | mV | 0303 | WL | 09/06/2011 | N001 | 4.30 - 14.30 | -100 | F # | - | - |
| | mV | 0305 | WL | 09/06/2011 | N001 | 8.70 - 18.70 | 46 | F # | - | - |
| | mV | 0307 | WL | 09/06/2011 | N001 | 4.40 - 14.40 | -78 | F # | - | - |
| | mV | 0309 | WL | 09/06/2011 | N001 | 10.20 - 20.20 | -77 | F # | - | - |
| | mV | 0310 | WL | 09/06/2011 | N001 | 14.70 - 19.70 | -75 | F # | - | - |
| | mV | 0311 | WL | 09/06/2011 | N001 | 14.10 - 19.10 | 146 | F # | - | - |
| | mV | 0312 | WL | 09/06/2011 | N001 | 14.50 - 19.50 | 135 | F # | - | - |
| pH | s.u. | 0303 | WL | 09/06/2011 | N001 | 4.30 - 14.30 | 7.20 | F # | - | - |
| | s.u. | 0305 | WL | 09/06/2011 | N001 | 8.70 - 18.70 | 7.13 | F # | - | - |
| | s.u. | 0307 | WL | 09/06/2011 | N001 | 4.40 - 14.40 | 7.11 | F # | - | - |
| | s.u. | 0309 | WL | 09/06/2011 | N001 | 10.20 - 20.20 | 7.46 | F # | - | - |
| | s.u. | 0310 | WL | 09/06/2011 | N001 | 14.70 - 19.70 | 7.33 | F # | - | - |
| | s.u. | 0311 | WL | 09/06/2011 | N001 | 14.10 - 19.10 | 7.02 | F # | - | - |
| | s.u. | 0312 | WL | 09/06/2011 | N001 | 14.50 - 19.50 | 7.33 | F # | - | - |
| Selenium | mg/L | 0305 | WL | 09/06/2011 | N001 | 8.70 - 18.70 | 0.018 | F # | 0.0016 | - |
| | mg/L | 0307 | WL | 09/06/2011 | N001 | 4.40 - 14.40 | 0.00022 B | F # | 0.00016 | - |
| Specific Conductance | umhos/cm | 0303 | WL | 09/06/2011 | N001 | 4.30 - 14.30 | 3335 | F # | - | - |
| | umhos/cm | 0305 | WL | 09/06/2011 | N001 | 8.70 - 18.70 | 3186 | F # | - | - |

GROUNDWATER QUALITY DATA BY PARAMETER WITH DEPTH (USEE200) FOR SITE SRK06, Slick Rock East Processing Site
 REPORT DATE: 4/11/2012 3:10 pm

| PARAMETER | UNITS | LOCATION CODE | LOCATION TYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB DATA QA | DETECTION LIMIT | UN- CERTAINTY |
|----------------------|----------|------------------|------------------|-----------------|------|-------------------------|--------|----------------------------|--------------------|------------------|
| Specific Conductance | umhos/cm | 0307 | WL | 09/06/2011 | N001 | 4.40 - 14.40 | 5828 | F # | - | - |
| | umhos/cm | 0309 | WL | 09/06/2011 | N001 | 10.20 - 20.20 | 3637 | F # | - | - |
| | umhos/cm | 0310 | WL | 09/06/2011 | N001 | 14.70 - 19.70 | 823 | F # | - | - |
| | umhos/cm | 0311 | WL | 09/06/2011 | N001 | 14.10 - 19.10 | 1803 | F # | - | - |
| | umhos/cm | 0312 | WL | 09/06/2011 | N001 | 14.50 - 19.50 | 2049 | F # | - | - |
| Temperature | C | 0303 | WL | 09/06/2011 | N001 | 4.30 - 14.30 | 17.72 | F # | - | - |
| | C | 0305 | WL | 09/06/2011 | N001 | 8.70 - 18.70 | 15.71 | F # | - | - |
| | C | 0307 | WL | 09/06/2011 | N001 | 4.40 - 14.40 | 14.52 | F # | - | - |
| | C | 0309 | WL | 09/06/2011 | N001 | 10.20 - 20.20 | 14.23 | F # | - | - |
| | C | 0310 | WL | 09/06/2011 | N001 | 14.70 - 19.70 | 14.88 | F # | - | - |
| | C | 0311 | WL | 09/06/2011 | N001 | 14.10 - 19.10 | 15.43 | F # | - | - |
| | C | 0312 | WL | 09/06/2011 | N001 | 14.50 - 19.50 | 15.68 | F # | - | - |
| Turbidity | NTU | 0303 | WL | 09/06/2011 | N001 | 4.30 - 14.30 | 7.23 | FJ # | - | - |
| | NTU | 0305 | WL | 09/06/2011 | N001 | 8.70 - 18.70 | 7.58 | FJ # | - | - |
| | NTU | 0307 | WL | 09/06/2011 | N001 | 4.40 - 14.40 | 8.69 | FJ # | - | - |
| | NTU | 0309 | WL | 09/06/2011 | N001 | 10.20 - 20.20 | 34.0 | FJ # | - | - |
| | NTU | 0310 | WL | 09/06/2011 | N001 | 14.70 - 19.70 | 6.09 | FJ # | - | - |
| | NTU | 0311 | WL | 09/06/2011 | N001 | 14.10 - 19.10 | 1.76 | FJ # | - | - |
| | NTU | 0312 | WL | 09/06/2011 | N001 | 14.50 - 19.50 | 5.83 | FJ # | - | - |
| Uranium | mg/L | 0303 | WL | 09/06/2011 | N001 | 4.30 - 14.30 | 1.000 | F # | 0.00015 | - |
| | mg/L | 0305 | WL | 09/06/2011 | N001 | 8.70 - 18.70 | 0.780 | F # | 0.00015 | - |
| | mg/L | 0307 | WL | 09/06/2011 | N001 | 4.40 - 14.40 | 0.480 | F # | 0.00015 | - |
| | mg/L | 0309 | WL | 09/06/2011 | 0001 | 10.20 - 20.20 | 0.085 | F # | 2.9E-05 | - |
| | mg/L | 0310 | WL | 09/06/2011 | N001 | 14.70 - 19.70 | 0.020 | F # | 2.9E-05 | - |
| | mg/L | 0311 | WL | 09/06/2011 | N001 | 14.10 - 19.10 | 0.098 | F # | 2.9E-05 | - |

GROUNDWATER QUALITY DATA BY PARAMETER WITH DEPTH (USEE200) FOR SITE SRK06, Slick Rock East Processing Site

REPORT DATE: 4/11/2012 3:10 pm

| PARAMETER | UNITS | LOCATION CODE | LOCATION TYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB DATA QA | DETECTION LIMIT | UN-CERTAINTY |
|-----------|-------|---------------|---------------|--------------|------|----------------------|--------|-------------------------|-----------------|--------------|
| Uranium | mg/L | 0312 | WL | 09/06/2011 | N001 | 14.50 - 19.50 | 0.032 | F # | 2.9E-05 | - |

RECORDS: SELECTED FROM USEE200 WHERE site_code='SRK06' AND location_code in ('0303','0305','0307','0309','0310','0311','0312') AND (data_validation_qualifiers IS NULL OR data_validation_qualifiers NOT LIKE '%R%' AND data_validation_qualifiers NOT LIKE '%X%') AND DATE_SAMPLED between #1/1/2011# and #12/31/2011#

SAMPLE ID CODES: 000X = Filtered sample. N00X = Unfiltered sample. X = replicate number.

LOCATION TYPES: WL WELL

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- + Correlation coefficient for MSA < 0.995.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic & Radiochemistry: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- J Estimated
- M GFAA duplicate injection precision not met.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- P > 25% difference in detected pesticide or Aroclor concentrations between 2 columns.
- S Result determined by method of standard addition (MSA).
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Y Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Z Laboratory defined (USEPA CLP organic) qualifier, see case narrative.

DATA QUALIFIERS:

- | | | |
|------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------|
| F Low flow sampling method used. | G Possible grout contamination, pH > 9. | J Estimated value. |
| L Less than 3 bore volumes purged prior to sampling. | N Presumptive evidence that analyte is present. The analyte is "tentatively identified". | Q Qualitative result due to sampling technique |
| R Unusable result. | U Parameter analyzed for but was not detected. | X Location is undefined. |

QA QUALIFIER: # = validated according to Quality Assurance guidelines.

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GROUNDWATER QUALITY DATA BY PARAMETER WITH DEPTH (USEE200) FOR SITE SRK05, Slick Rock West Processing Site
 REPORT DATE: 4/11/2012 3:16 pm

| PARAMETER | UNITS | LOCATION CODE | LOCATION TYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB DATA QA | DETECTION LIMIT | UN-CERTAINTY |
|------------------------------|-------|---------------|---------------|--------------|------|----------------------|--------|-------------------------|-----------------|--------------|
| Alkalinity, Total (As CaCO3) | mg/L | 0317 | WL | 09/07/2011 | N001 | 19.46 - 39.52 | 266 | F # | - | - |
| | mg/L | 0318A | WL | 09/07/2011 | N001 | 9.20 - 14.20 | 282 | F # | - | - |
| | mg/L | 0319 | WL | 09/07/2011 | 0001 | 4.55 - 14.58 | 1020 | F # | - | - |
| | mg/L | 0320 | WL | 09/07/2011 | N001 | 4.92 - 9.96 | 370 | F # | - | - |
| | mg/L | 0339 | WL | 09/07/2011 | N001 | 11.00 - 14.00 | 294 | F # | - | - |
| | mg/L | 0340 | WL | 09/07/2011 | N001 | 6.51 - 11.51 | 290 | F # | - | - |
| | mg/L | 0508 | WL | 09/07/2011 | N001 | 1.01 - 11.01 | 308 | F # | - | - |
| | mg/L | 0510 | WL | 09/07/2011 | N001 | 4.92 - 13.92 | 303 | F # | - | - |
| | mg/L | 0684 | WL | 09/06/2011 | N001 | 11.00 - 21.00 | 197 | F # | - | - |
| Benzene | ug/L | 0319 | WL | 09/07/2011 | N001 | 4.55 - 14.58 | 4000 | F # | 33 | - |
| | ug/L | 0319 | WL | 09/07/2011 | N002 | 4.55 - 14.58 | 4500 | F # | 33 | - |
| Ethylbenzene | ug/L | 0319 | WL | 09/07/2011 | N001 | 4.55 - 14.58 | 250 | FJ # | 33 | - |
| | ug/L | 0319 | WL | 09/07/2011 | N002 | 4.55 - 14.58 | 330 | FJ # | 33 | - |
| m,p-Xylene | ug/L | 0319 | WL | 09/07/2011 | N001 | 4.55 - 14.58 | 5600 | FJ # | 44 | - |
| | ug/L | 0319 | WL | 09/07/2011 | N002 | 4.55 - 14.58 | 6900 | FJ # | 44 | - |
| Manganese | mg/L | 0318A | WL | 09/07/2011 | N001 | 9.20 - 14.20 | 1.200 | F # | 0.00011 | - |
| | mg/L | 0320 | WL | 09/07/2011 | N001 | 4.92 - 9.96 | 0.480 | F # | 0.00011 | - |
| | mg/L | 0339 | WL | 09/07/2011 | N001 | 11.00 - 14.00 | 1.900 | F # | 0.00011 | - |
| | mg/L | 0340 | WL | 09/07/2011 | N001 | 6.51 - 11.51 | 5.400 | F # | 0.00011 | - |
| | mg/L | 0508 | WL | 09/07/2011 | N001 | 1.01 - 11.01 | 2.700 | F # | 0.00011 | - |
| | mg/L | 0510 | WL | 09/07/2011 | N001 | 4.92 - 13.92 | 4.200 | F # | 0.00011 | - |
| | mg/L | 0684 | WL | 09/06/2011 | N001 | 11.00 - 21.00 | 0.220 | F # | 0.00011 | - |
| | mg/L | 0684 | WL | 09/06/2011 | N002 | 11.00 - 21.00 | 0.200 | F # | 0.00011 | - |
| Molybdenum | mg/L | 0317 | WL | 09/07/2011 | N001 | 19.46 - 39.52 | 0.180 | F # | 0.00032 | - |
| | mg/L | 0318A | WL | 09/07/2011 | N001 | 9.20 - 14.20 | 1.700 | F # | 0.00032 | - |

GROUNDWATER QUALITY DATA BY PARAMETER WITH DEPTH (USEE200) FOR SITE SRK05, Slick Rock West Processing Site
 REPORT DATE: 4/11/2012 3:16 pm

| PARAMETER | UNITS | LOCATION CODE | LOCATION TYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB DATA QA | DETECTION LIMIT | UN-CERTAINTY |
|-------------------------------|-------|---------------|---------------|--------------|------|----------------------|--------|-------------------------|-----------------|--------------|
| Molybdenum | mg/L | 0320 | WL | 09/07/2011 | N001 | 4.92 - 9.96 | 0.010 | F # | 0.00032 | - |
| | mg/L | 0339 | WL | 09/07/2011 | N001 | 11.00 - 14.00 | 1.300 | F # | 0.00032 | - |
| | mg/L | 0340 | WL | 09/07/2011 | N001 | 6.51 - 11.51 | 1.700 | F # | 0.00032 | - |
| | mg/L | 0508 | WL | 09/07/2011 | N001 | 1.01 - 11.01 | 1.200 | F # | 0.00032 | - |
| | mg/L | 0510 | WL | 09/07/2011 | N001 | 4.92 - 13.92 | 0.850 | F # | 0.00032 | - |
| | mg/L | 0684 | WL | 09/06/2011 | N001 | 11.00 - 21.00 | 0.006 | F # | 3.2E-05 | - |
| | mg/L | 0684 | WL | 09/06/2011 | N002 | 11.00 - 21.00 | 0.0062 | F # | 0.00032 | - |
| Nitrate + Nitrite as Nitrogen | mg/L | 0318A | WL | 09/07/2011 | N001 | 9.20 - 14.20 | 66 | F # | 0.5 | - |
| | mg/L | 0320 | WL | 09/07/2011 | N001 | 4.92 - 9.96 | 0.01 | U F # | 0.01 | - |
| | mg/L | 0339 | WL | 09/07/2011 | N001 | 11.00 - 14.00 | 48 | F # | 0.5 | - |
| | mg/L | 0340 | WL | 09/07/2011 | N001 | 6.51 - 11.51 | 340 | F # | 2 | - |
| | mg/L | 0508 | WL | 09/07/2011 | N001 | 1.01 - 11.01 | 170 | F # | 2 | - |
| | mg/L | 0510 | WL | 09/07/2011 | N001 | 4.92 - 13.92 | 240 | F # | 2 | - |
| | mg/L | 0684 | WL | 09/06/2011 | N001 | 11.00 - 21.00 | 0.01 | U F # | 0.01 | - |
| | mg/L | 0684 | WL | 09/06/2011 | N002 | 11.00 - 21.00 | 0.01 | U F # | 0.01 | - |
| Oxidation Reduction Potential | mV | 0317 | WL | 09/07/2011 | N001 | 19.46 - 39.52 | 185 | F # | - | - |
| | mV | 0318A | WL | 09/07/2011 | N001 | 9.20 - 14.20 | 193 | F # | - | - |
| | mV | 0319 | WL | 09/07/2011 | N001 | 4.55 - 14.58 | -132 | F # | - | - |
| | mV | 0320 | WL | 09/07/2011 | N001 | 4.92 - 9.96 | -66 | F # | - | - |
| | mV | 0339 | WL | 09/07/2011 | N001 | 11.00 - 14.00 | 224 | F # | - | - |
| | mV | 0340 | WL | 09/07/2011 | N001 | 6.51 - 11.51 | 235 | F # | - | - |
| | mV | 0508 | WL | 09/07/2011 | N001 | 1.01 - 11.01 | 240 | F # | - | - |
| | mV | 0510 | WL | 09/07/2011 | N001 | 4.92 - 13.92 | 237 | F # | - | - |
| | mV | 0684 | WL | 09/06/2011 | N001 | 11.00 - 21.00 | 7 | F # | - | - |
| o-Xylene | ug/L | 0319 | WL | 09/07/2011 | N001 | 4.55 - 14.58 | 970 | F # | 33 | - |

GROUNDWATER QUALITY DATA BY PARAMETER WITH DEPTH (USEE200) FOR SITE SRK05, Slick Rock West Processing Site
 REPORT DATE: 4/11/2012 3:16 pm

| PARAMETER | UNITS | LOCATION CODE | LOCATION TYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB DATA QA | DETECTION LIMIT | UN-CERTAINTY |
|----------------------|----------|---------------|---------------|--------------|------|----------------------|---------|-------------------------|-----------------|--------------|
| o-Xylene | ug/L | 0319 | WL | 09/07/2011 | N002 | 4.55 - 14.58 | 1100 | F # | 33 | - |
| pH | s.u. | 0317 | WL | 09/07/2011 | N001 | 19.46 - 39.52 | 7.29 | F # | - | - |
| | s.u. | 0318A | WL | 09/07/2011 | N001 | 9.20 - 14.20 | 6.91 | F # | - | - |
| | s.u. | 0319 | WL | 09/07/2011 | N001 | 4.55 - 14.58 | 6.91 | F # | - | - |
| | s.u. | 0320 | WL | 09/07/2011 | N001 | 4.92 - 9.96 | 7.07 | F # | - | - |
| | s.u. | 0339 | WL | 09/07/2011 | N001 | 11.00 - 14.00 | 6.95 | F # | - | - |
| | s.u. | 0340 | WL | 09/07/2011 | N001 | 6.51 - 11.51 | 6.60 | F # | - | - |
| | s.u. | 0508 | WL | 09/07/2011 | N001 | 1.01 - 11.01 | 6.69 | F # | - | - |
| | s.u. | 0510 | WL | 09/07/2011 | N001 | 4.92 - 13.92 | 6.54 | F # | - | - |
| | s.u. | 0684 | WL | 09/06/2011 | N001 | 11.00 - 21.00 | 7.32 | F # | - | - |
| Radium-226 | pCi/L | 0319 | WL | 09/07/2011 | 0001 | 4.55 - 14.58 | 0.55 | U F # | 0.55 | ± 0.40 |
| | pCi/L | 0319 | WL | 09/07/2011 | 0002 | 4.55 - 14.58 | 0.97 | F # | 0.29 | ± 0.44 |
| Radium-228 | pCi/L | 0319 | WL | 09/07/2011 | 0001 | 4.55 - 14.58 | 2.88 | FJ # | 0.49 | ± 0.94 |
| | pCi/L | 0319 | WL | 09/07/2011 | 0002 | 4.55 - 14.58 | 2.3 | FJ # | 0.53 | ± 0.79 |
| Selenium | mg/L | 0317 | WL | 09/07/2011 | N001 | 19.46 - 39.52 | 0.0052 | F # | 0.00032 | - |
| | mg/L | 0318A | WL | 09/07/2011 | N001 | 9.20 - 14.20 | 3.400 | F # | 0.00032 | - |
| | mg/L | 0319 | WL | 09/07/2011 | 0001 | 4.55 - 14.58 | 0.001 | F # | 3.2E-05 | - |
| | mg/L | 0320 | WL | 09/07/2011 | N001 | 4.92 - 9.96 | 0.00013 | F # | 3.2E-05 | - |
| | mg/L | 0339 | WL | 09/07/2011 | N001 | 11.00 - 14.00 | 2.100 | F # | 0.00032 | - |
| | mg/L | 0340 | WL | 09/07/2011 | N001 | 6.51 - 11.51 | 2.900 | F # | 0.00032 | - |
| | mg/L | 0508 | WL | 09/07/2011 | N001 | 1.01 - 11.01 | 0.910 | F # | 0.00032 | - |
| | mg/L | 0510 | WL | 09/07/2011 | N001 | 4.92 - 13.92 | 0.830 | F # | 0.00032 | - |
| | mg/L | 0684 | WL | 09/06/2011 | N001 | 11.00 - 21.00 | 0.00021 | F # | 3.2E-05 | - |
| | mg/L | 0684 | WL | 09/06/2011 | N002 | 11.00 - 21.00 | 0.00015 | F # | 3.2E-05 | - |
| Specific Conductance | umhos/cm | 0317 | WL | 09/07/2011 | N001 | 19.46 - 39.52 | 2439 | F # | - | - |

GROUNDWATER QUALITY DATA BY PARAMETER WITH DEPTH (USEE200) FOR SITE SRK05, Slick Rock West Processing Site
 REPORT DATE: 4/11/2012 3:16 pm

| PARAMETER | UNITS | LOCATION CODE | LOCATION TYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB DATA QA | DETECTION LIMIT | UN-CERTAINTY |
|----------------------|----------|---------------|---------------|--------------|------|----------------------|--------|-------------------------|-----------------|--------------|
| Specific Conductance | umhos/cm | 0318A | WL | 09/07/2011 | N001 | 9.20 - 14.20 | 2258 | F # | - | - |
| | umhos/cm | 0319 | WL | 09/07/2011 | N001 | 4.55 - 14.58 | 3823 | F # | - | - |
| | umhos/cm | 0320 | WL | 09/07/2011 | N001 | 4.92 - 9.96 | 884 | F # | - | - |
| | umhos/cm | 0339 | WL | 09/07/2011 | N001 | 11.00 - 14.00 | 2134 | F # | - | - |
| | umhos/cm | 0340 | WL | 09/07/2011 | N001 | 6.51 - 11.51 | 4819 | F # | - | - |
| | umhos/cm | 0508 | WL | 09/07/2011 | N001 | 1.01 - 11.01 | 3537 | F # | - | - |
| | umhos/cm | 0510 | WL | 09/07/2011 | N001 | 4.92 - 13.92 | 4159 | F # | - | - |
| | umhos/cm | 0684 | WL | 09/06/2011 | N001 | 11.00 - 21.00 | 682 | F # | - | - |
| Temperature | C | 0317 | WL | 09/07/2011 | N001 | 19.46 - 39.52 | 13.02 | F # | - | - |
| | C | 0318A | WL | 09/07/2011 | N001 | 9.20 - 14.20 | 16.91 | F # | - | - |
| | C | 0319 | WL | 09/07/2011 | N001 | 4.55 - 14.58 | 17.13 | F # | - | - |
| | C | 0320 | WL | 09/07/2011 | N001 | 4.92 - 9.96 | 16.19 | F # | - | - |
| | C | 0339 | WL | 09/07/2011 | N001 | 11.00 - 14.00 | 15.63 | F # | - | - |
| | C | 0340 | WL | 09/07/2011 | N001 | 6.51 - 11.51 | 18.32 | F # | - | - |
| | C | 0508 | WL | 09/07/2011 | N001 | 1.01 - 11.01 | 18.47 | F # | - | - |
| | C | 0510 | WL | 09/07/2011 | N001 | 4.92 - 13.92 | 17.16 | F # | - | - |
| | C | 0684 | WL | 09/06/2011 | N001 | 11.00 - 21.00 | 14.03 | F # | - | - |
| Toluene | ug/L | 0319 | WL | 09/07/2011 | N001 | 4.55 - 14.58 | 2600 | F # | 33 | - |
| | ug/L | 0319 | WL | 09/07/2011 | N002 | 4.55 - 14.58 | 2800 | F # | 33 | - |
| Turbidity | NTU | 0317 | WL | 09/07/2011 | N001 | 19.46 - 39.52 | 1.88 | FJ # | - | - |
| | NTU | 0318A | WL | 09/07/2011 | N001 | 9.20 - 14.20 | 8.37 | FJ # | - | - |
| | NTU | 0319 | WL | 09/07/2011 | N001 | 4.55 - 14.58 | 13.0 | FJ # | - | - |
| | NTU | 0320 | WL | 09/07/2011 | N001 | 4.92 - 9.96 | 6.43 | FJ # | - | - |
| | NTU | 0339 | WL | 09/07/2011 | N001 | 11.00 - 14.00 | 8.70 | FJ # | - | - |
| | NTU | 0340 | WL | 09/07/2011 | N001 | 6.51 - 11.51 | 8.06 | FJ # | - | - |

GROUNDWATER QUALITY DATA BY PARAMETER WITH DEPTH (USEE200) FOR SITE SRK05, Slick Rock West Processing Site
 REPORT DATE: 4/11/2012 3:16 pm

| PARAMETER | UNITS | LOCATION CODE | LOCATION TYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB DATA QA | DETECTION LIMIT | UN- CERTAINTY |
|-----------|-------|------------------|------------------|-----------------|------|-------------------------|--------|----------------------------|--------------------|------------------|
| Turbidity | NTU | 0508 | WL | 09/07/2011 | N001 | 1.01 - 11.01 | 2.05 | FJ # | - | - |
| | NTU | 0510 | WL | 09/07/2011 | N001 | 4.92 - 13.92 | 1.70 | FJ # | - | - |
| | NTU | 0684 | WL | 09/06/2011 | N001 | 11.00 - 21.00 | 5.28 | FJ # | - | - |
| Uranium | mg/L | 0318A | WL | 09/07/2011 | N001 | 9.20 - 14.20 | 0.028 | F # | 2.9E-05 | - |
| | mg/L | 0320 | WL | 09/07/2011 | N001 | 4.92 - 9.96 | 0.011 | F # | 2.9E-05 | - |
| | mg/L | 0339 | WL | 09/07/2011 | N001 | 11.00 - 14.00 | 0.035 | F # | 2.9E-05 | - |
| | mg/L | 0340 | WL | 09/07/2011 | N001 | 6.51 - 11.51 | 0.050 | F # | 2.9E-05 | - |
| | mg/L | 0508 | WL | 09/07/2011 | N001 | 1.01 - 11.01 | 0.074 | F # | 2.9E-05 | - |
| | mg/L | 0510 | WL | 09/07/2011 | N001 | 4.92 - 13.92 | 0.096 | F # | 2.9E-05 | - |
| | mg/L | 0684 | WL | 09/06/2011 | N001 | 11.00 - 21.00 | 0.009 | F # | 2.9E-05 | - |
| | mg/L | 0684 | WL | 09/06/2011 | N002 | 11.00 - 21.00 | 0.009 | F # | 2.9E-05 | - |

GROUNDWATER QUALITY DATA BY PARAMETER WITH DEPTH (USEE200) FOR SITE SRK05, Slick Rock West Processing Site
 REPORT DATE: 4/11/2012 3:16 pm

| PARAMETER | UNITS | LOCATION CODE | LOCATION TYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB DATA QA | DETECTION LIMIT | UN-CERTAINTY |
|-----------|-------|---------------|---------------|--------------|----|----------------------|--------|-------------------------|-----------------|--------------|
|-----------|-------|---------------|---------------|--------------|----|----------------------|--------|-------------------------|-----------------|--------------|

RECORDS: SELECTED FROM USEE200 WHERE site_code='SRK05' AND location_code in('0317','0318','0318A','0319','0320','0339','0340','0508','0510','0684') AND (data_validation_qualifiers IS NULL OR data_validation_qualifiers NOT LIKE '%R%' AND data_validation_qualifiers NOT LIKE '%X%') AND DATE_SAMPLED between #1/1/2011# and #12/31/2011#

SAMPLE ID CODES: 000X = Filtered sample. N00X = Unfiltered sample. X = replicate number.

LOCATION TYPES: WL WELL

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- + Correlation coefficient for MSA < 0.995.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic & Radiochemistry: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- J Estimated
- M GFAA duplicate injection precision not met.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- P > 25% difference in detected pesticide or Aroclor concentrations between 2 columns.
- S Result determined by method of standard addition (MSA).
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Y Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Z Laboratory defined (USEPA CLP organic) qualifier, see case narrative.

DATA QUALIFIERS:

- | | | |
|------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------|
| F Low flow sampling method used. | G Possible grout contamination, pH > 9. | J Estimated value. |
| L Less than 3 bore volumes purged prior to sampling. | N Presumptive evidence that analyte is present. The analyte is "tentatively identified". | Q Qualitative result due to sampling technique |
| R Unusable result. | U Parameter analyzed for but was not detected. | X Location is undefined. |

QA QUALIFIER: # = validated according to Quality Assurance guidelines.

Appendix B

Surface Water Quality Data by Parameter

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SURFACE WATER QUALITY DATA BY PARAMETER (USEE800) FOR SITE SRK06, Slick Rock East Processing Site
 REPORT DATE: 4/11/2012 3:20 pm

| PARAMETER | UNITS | LOCATION CODE | SAMPLE: DATE | ID | RESULT | QUALIFIERS: LAB DATA QA | DETECTION LIMIT | UN-CERTAINTY |
|-------------------------------------------|----------|---------------|--------------|------|--------|-------------------------|-----------------|--------------|
| Alkalinity, Total (As CaCO ₃) | mg/L | 0692 | 09/06/2011 | 0001 | 106 | | # | - |
| | mg/L | 0700 | 09/06/2011 | 0001 | 100 | | # | - |
| Oxidation Reduction Potential | mV | 0692 | 09/06/2011 | N001 | 67.5 | | # | - |
| | mV | 0700 | 09/06/2011 | N001 | 5.2 | | # | - |
| pH | s.u. | 0692 | 09/06/2011 | N001 | 8.34 | | # | - |
| | s.u. | 0700 | 09/06/2011 | N001 | 8.37 | | # | - |
| Specific Conductance | umhos/cm | 0692 | 09/06/2011 | N001 | 319 | | # | - |
| | umhos/cm | 0700 | 09/06/2011 | N001 | 317 | | # | - |
| Temperature | C | 0692 | 09/06/2011 | N001 | 19.62 | | # | - |
| | C | 0700 | 09/06/2011 | N001 | 19.72 | | # | - |
| Turbidity | NTU | 0692 | 09/06/2011 | N001 | 395 | J | # | - |
| | NTU | 0700 | 09/06/2011 | N001 | 218 | J | # | - |
| Uranium | mg/L | 0692 | 09/06/2011 | 0001 | 0.0006 | | # | 2.9E-05 |
| | mg/L | 0700 | 09/06/2011 | 0001 | 0.0005 | | # | 2.9E-05 |

SURFACE WATER QUALITY DATA BY PARAMETER (USEE800) FOR SITE SRK06, Slick Rock East Processing Site
REPORT DATE: 4/11/2012 3:20 pm

| PARAMETER | UNITS | LOCATION CODE | SAMPLE: DATE | ID | RESULT | QUALIFIERS: LAB DATA QA | DETECTION LIMIT | UN- CERTAINTY |
|-----------|-------|------------------|-----------------|----|--------|----------------------------|--------------------|------------------|
|-----------|-------|------------------|-----------------|----|--------|----------------------------|--------------------|------------------|

RECORDS: SELECTED FROM USEE800 WHERE site_code='SRK06' AND (data_validation_qualifiers IS NULL OR data_validation_qualifiers NOT LIKE '%R%' AND data_validation_qualifiers NOT LIKE '%X%') AND DATE_SAMPLED between #1/1/2011# and #12/31/2011#

SAMPLE ID CODES: 000X = Filtered sample. N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- + Correlation coefficient for MSA < 0.995.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic & Radiochemistry: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- J Estimated
- M GFAA duplicate injection precision not met.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- P > 25% difference in detected pesticide or Aroclor concentrations between 2 columns.
- S Result determined by method of standard addition (MSA).
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Y Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Z Laboratory defined (USEPA CLP organic) qualifier, see case narrative.

DATA QUALIFIERS:

- | | |
|------------------------------------------------------------------------------------------|------------------------------------------------------|
| F Low flow sampling method used. | G Possible grout contamination, pH > 9. |
| J Estimated value. | L Less than 3 bore volumes purged prior to sampling. |
| N Presumptive evidence that analyte is present. The analyte is "tentatively identified". | Q Qualitative result due to sampling technique |
| R Unusable result. | U Parameter analyzed for but was not detected. |
| X Location is undefined. | |

QA QUALIFIER: # = validated according to Quality Assurance guidelines.

SURFACE WATER QUALITY DATA BY PARAMETER (USEE800) FOR SITE SRK05, Slick Rock West Processing Site
 REPORT DATE: 4/11/2012 3:23 pm

| PARAMETER | UNITS | LOCATION CODE | SAMPLE: DATE | ID | RESULT | QUALIFIERS: LAB DATA QA | DETECTION LIMIT | UN-CERTAINTY |
|-------------------------------|----------|---------------|--------------|------|--------|-------------------------|-----------------|--------------|
| Alkalinity, Total (As CaCO3) | mg/L | 0347 | 09/07/2011 | 0001 | 101 | | # | - |
| | mg/L | 0349 | 09/07/2011 | 0001 | 103 | | # | - |
| | mg/L | 0693 | 09/06/2011 | 0001 | 88 | | # | - |
| | mg/L | 0694 | 09/06/2011 | 0001 | 110 | | # | - |
| Manganese | mg/L | 0347 | 09/07/2011 | 0001 | 0.0041 | B U | # 0.00011 | - |
| | mg/L | 0349 | 09/07/2011 | 0001 | 0.020 | | # 0.00011 | - |
| | mg/L | 0693 | 09/06/2011 | 0001 | 0.0032 | B U | # 0.00011 | - |
| | mg/L | 0694 | 09/06/2011 | 0001 | 0.0016 | B U | # 0.00011 | - |
| Molybdenum | mg/L | 0347 | 09/07/2011 | 0001 | 0.0023 | | # 0.00032 | - |
| | mg/L | 0349 | 09/07/2011 | 0001 | 0.0019 | U | # 0.00032 | - |
| | mg/L | 0693 | 09/06/2011 | 0001 | 0.0016 | U | # 0.00032 | - |
| | mg/L | 0694 | 09/06/2011 | 0001 | 0.0016 | U | # 0.00032 | - |
| Nitrate + Nitrite as Nitrogen | mg/L | 0347 | 09/07/2011 | 0001 | 0.01 | U | # 0.01 | - |
| | mg/L | 0349 | 09/07/2011 | 0001 | 0.01 | U | # 0.01 | - |
| | mg/L | 0693 | 09/06/2011 | 0001 | 0.01 | U | # 0.01 | - |
| | mg/L | 0694 | 09/06/2011 | 0001 | 0.01 | U | # 0.01 | - |
| Oxidation Reduction Potential | mV | 0347 | 09/07/2011 | N001 | 205 | | # | - |
| | mV | 0349 | 09/07/2011 | N001 | 113 | | # | - |
| | mV | 0693 | 09/06/2011 | N001 | 58.8 | | # | - |
| | mV | 0694 | 09/06/2011 | N001 | 126 | | # | - |
| pH | s.u. | 0347 | 09/07/2011 | N001 | 8.27 | | # | - |
| | s.u. | 0349 | 09/07/2011 | N001 | 8.27 | | # | - |
| | s.u. | 0693 | 09/06/2011 | N001 | 8.32 | | # | - |
| | s.u. | 0694 | 09/06/2011 | N001 | 8.35 | | # | - |
| Selenium | mg/L | 0347 | 09/07/2011 | 0001 | 0.0003 | | # 3.2E-05 | - |
| | mg/L | 0349 | 09/07/2011 | 0001 | 0.0003 | | # 3.2E-05 | - |
| | mg/L | 0693 | 09/06/2011 | 0001 | 0.0003 | | # 3.2E-05 | - |
| | mg/L | 0694 | 09/06/2011 | 0001 | 0.0003 | | # 3.2E-05 | - |
| Specific Conductance | umhos/cm | 0347 | 09/07/2011 | N001 | 402 | | # | - |
| | umhos/cm | 0349 | 09/07/2011 | N001 | 328 | | # | - |
| | umhos/cm | 0693 | 09/06/2011 | N001 | 319 | | # | - |
| | umhos/cm | 0694 | 09/06/2011 | N001 | 318 | | # | - |
| Temperature | C | 0347 | 09/07/2011 | N001 | 20.53 | | # | - |
| | C | 0349 | 09/07/2011 | N001 | 21.00 | | # | - |
| | C | 0693 | 09/06/2011 | N001 | 20.37 | | # | - |

SURFACE WATER QUALITY DATA BY PARAMETER (USEE800) FOR SITE SRK05, Slick Rock West Processing Site
REPORT DATE: 4/11/2012 3:23 pm

| PARAMETER | UNITS | LOCATION CODE | SAMPLE: DATE | ID | RESULT | QUALIFIERS: LAB DATA QA | DETECTION LIMIT | UN-CERTAINTY |
|-------------|-------|---------------|--------------|------|--------|-------------------------|-----------------|--------------|
| Temperature | C | 0694 | 09/06/2011 | N001 | 20.40 | | # | - |
| Turbidity | NTU | 0347 | 09/07/2011 | N001 | 918 | J | # | - |
| | NTU | 0349 | 09/07/2011 | N001 | 999 | J | # | - |
| | NTU | 0693 | 09/06/2011 | N001 | 200 | J | # | - |
| | NTU | 0694 | 09/06/2011 | N001 | 261 | J | # | - |
| Uranium | mg/L | 0347 | 09/07/2011 | 0001 | 0.0006 | | # | 2.9E-05 |
| | mg/L | 0349 | 09/07/2011 | 0001 | 0.0006 | | # | 2.9E-05 |
| | mg/L | 0693 | 09/06/2011 | 0001 | 0.0005 | | # | 2.9E-05 |
| | mg/L | 0694 | 09/06/2011 | 0001 | 0.0005 | | # | 2.9E-05 |

RECORDS: SELECTED FROM USEE800 WHERE site_code='SRK05' AND location_code in('0347','0349','0693','0694') AND (data_validation_qualifiers IS NULL OR data_validation_qualifiers NOT LIKE '%R%' AND data_validation_qualifiers NOT LIKE '%X%') AND DATE_SAMPLED between #1/1/2011# and #12/31/2011#

SAMPLE ID CODES: 000X = Filtered sample. N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- + Correlation coefficient for MSA < 0.995.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic & Radiochemistry: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- J Estimated
- M GFAA duplicate injection precision not met.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- P > 25% difference in detected pesticide or Aroclor concentrations between 2 columns.
- S Result determined by method of standard addition (MSA).
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Y Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Z Laboratory defined (USEPA CLP organic) qualifier, see case narrative.

DATA QUALIFIERS:

- F Low flow sampling method used.
- J Estimated value.
- N Presumptive evidence that analyte is present. The analyte is "tentatively identified".
- R Unusable result.
- X Location is undefined.
- G Possible grout contamination, pH > 9.
- L Less than 3 bore volumes purged prior to sampling.
- Q Qualitative result due to sampling technique
- U Parameter analyzed for but was not detected.

QA QUALIFIER: # = validated according to Quality Assurance guidelines.

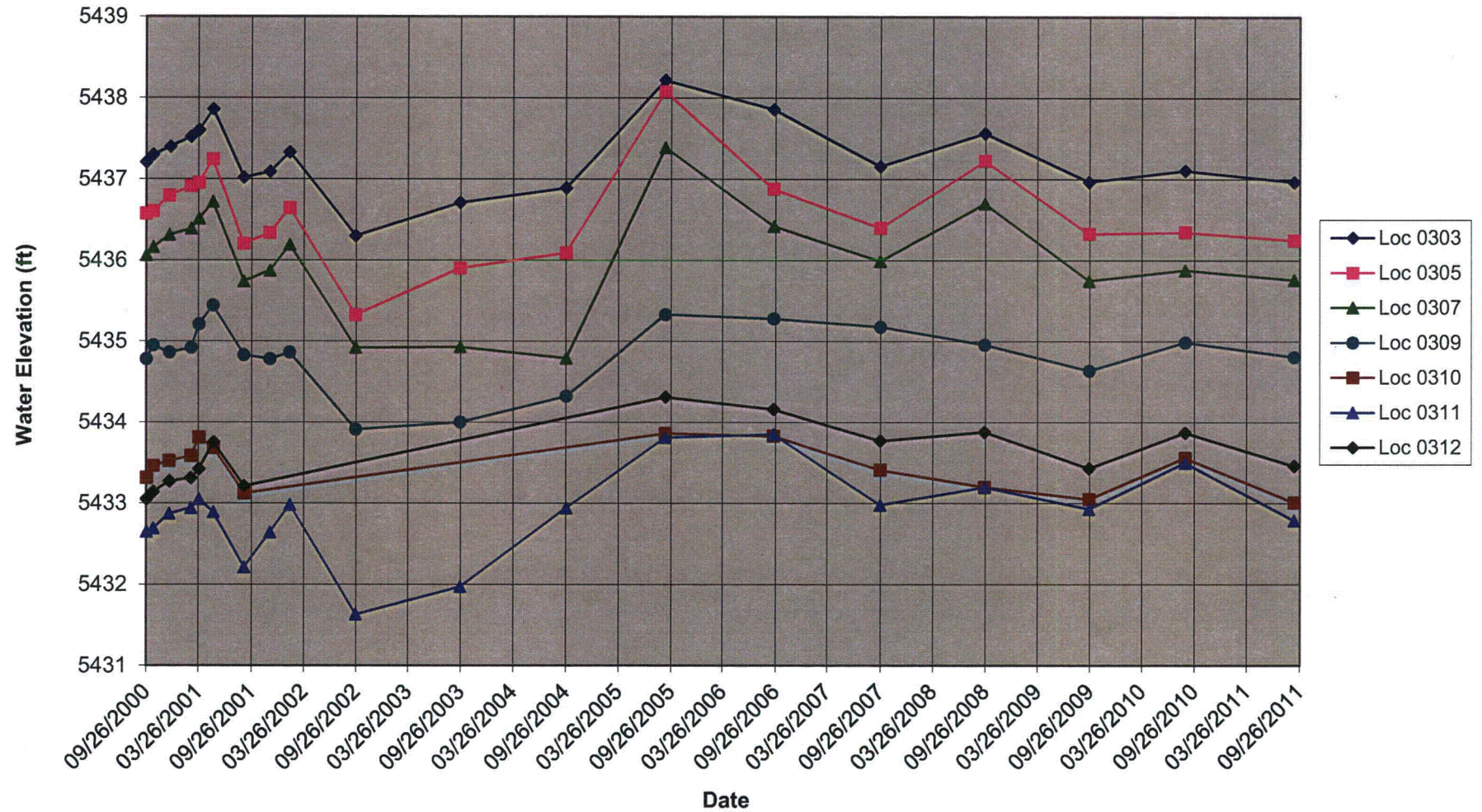
Appendix C

Hydrographs and Static Water Level Data

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Slick Rock East Processing Site (SRK06)

Hydrograph



STATIC WATER LEVELS (USee700) FOR SITE SRK06, Slick Rock East Processing Site
 REPORT DATE: 4/11/2012 3:29 pm

| LOCATION CODE | FLOW CODE | TOP OF CASING ELEVATION (FT) | MEASUREMENT | | DEPTH FROM TOP OF CASING (FT) | WATER ELEVATION (FT) | WATER LEVEL FLAG |
|---------------|-----------|------------------------------|-------------|-------|-------------------------------|----------------------|------------------|
| | | | DATE | TIME | | | |
| 0303 | O | 5446.91 | 09/26/2000 | 17:12 | 9.70 | 5437.21 | |
| | | 5446.91 | 10/20/2000 | 11:22 | 9.61 | 5437.30 | |
| | | 5446.91 | 12/19/2000 | 10:03 | 9.51 | 5437.40 | |
| | | 5446.91 | 02/28/2001 | 15:18 | 9.39 | 5437.52 | |
| | | 5446.91 | 03/27/2001 | 11:45 | 9.31 | 5437.60 | |
| | | 5446.91 | 05/15/2001 | 09:44 | 9.05 | 5437.86 | |
| | | 5446.91 | 08/29/2001 | 11:31 | 9.89 | 5437.02 | |
| | | 5446.91 | 11/28/2001 | 14:39 | 9.82 | 5437.09 | |
| | | 5446.91 | 02/04/2002 | 16:49 | 9.58 | 5437.33 | |
| | | 5446.91 | 09/24/2002 | 14:45 | 10.61 | 5436.30 | |
| | | 5446.91 | 09/24/2003 | 14:12 | 10.20 | 5436.71 | |
| | | 5446.91 | 09/27/2004 | 12:47 | 10.02 | 5436.89 | |
| | | 5446.91 | 09/06/2005 | 14:46 | 8.69 | 5438.22 | |
| | | 5446.91 | 09/20/2006 | 15:35 | 9.05 | 5437.86 | |
| | | 5446.91 | 09/25/2007 | | 9.75 | 5437.16 | |
| | | 5446.91 | 09/24/2008 | | 9.34 | 5437.57 | |
| | | 5446.91 | 09/23/2009 | | 9.94 | 5436.97 | |
| | | 5446.91 | 08/25/2010 | 14:20 | 9.80 | 5437.11 | |
| | | 5446.91 | 09/06/2011 | 13:05 | 9.94 | 5436.97 | |
| 0305 | O | 5448.75 | 09/26/2000 | 12:27 | 12.18 | 5436.57 | |
| | | 5448.75 | 10/20/2000 | 11:26 | 12.15 | 5436.60 | |
| | | 5448.75 | 12/15/2000 | 11:08 | 11.96 | 5436.79 | |
| | | 5448.75 | 02/28/2001 | 16:42 | 11.84 | 5436.91 | |
| | | 5448.75 | 03/27/2001 | 11:42 | 11.80 | 5436.95 | |
| | | 5448.75 | 05/14/2001 | 15:51 | 11.51 | 5437.24 | |
| | | 5448.75 | 08/29/2001 | 12:50 | 12.55 | 5436.20 | |
| | | 5448.75 | 11/28/2001 | 13:22 | 12.42 | 5436.33 | |
| | | 5448.75 | 02/05/2002 | 09:33 | 12.11 | 5436.64 | |
| | | 5448.75 | 09/24/2002 | 14:20 | 13.43 | 5435.32 | |
| | | 5448.75 | 09/24/2003 | 13:41 | 12.85 | 5435.90 | |
| | | 5448.75 | 09/27/2004 | 12:21 | 12.66 | 5436.09 | |
| | | 5448.75 | 09/06/2005 | 15:14 | 10.67 | 5438.08 | |
| | | 5448.75 | 09/20/2006 | 14:32 | 11.87 | 5436.88 | |
| | | 5448.75 | 09/26/2007 | | 12.35 | 5436.40 | |
| | | 5448.75 | 09/24/2008 | | 11.52 | 5437.23 | |
| | | 5448.75 | 09/23/2009 | | 12.42 | 5436.33 | |
| | | 5448.75 | 08/25/2010 | 13:58 | 12.40 | 5436.35 | |
| | | 5448.75 | 09/06/2011 | 12:30 | 12.50 | 5436.25 | |

STATIC WATER LEVELS (USEE700) FOR SITE SRK06, Slick Rock East Processing Site
 REPORT DATE: 4/11/2012 3:29 pm

| LOCATION CODE | FLOW CODE | TOP OF CASING ELEVATION (FT) | MEASUREMENT | | DEPTH FROM TOP OF CASING (FT) | WATER ELEVATION (FT) | WATER LEVEL FLAG |
|---------------|-----------|------------------------------|-------------|-------|-------------------------------|----------------------|------------------|
| | | | DATE | TIME | | | |
| 0307 | O | 5447.10 | 09/26/2000 | 15:29 | 11.04 | 5436.06 | |
| | | 5447.10 | 10/20/2000 | 11:30 | 10.94 | 5436.16 | |
| | | 5447.10 | 12/15/2000 | 10:17 | 10.79 | 5436.31 | |
| | | 5447.10 | 03/01/2001 | 08:53 | 10.71 | 5436.39 | |
| | | 5447.10 | 03/27/2001 | 11:36 | 10.59 | 5436.51 | |
| | | 5447.10 | 05/14/2001 | 14:49 | 10.38 | 5436.72 | |
| | | 5447.10 | 08/29/2001 | 10:27 | 11.36 | 5435.74 | |
| | | 5447.10 | 11/28/2001 | 12:33 | 11.23 | 5435.87 | |
| | | 5447.10 | 02/04/2002 | 15:57 | 10.91 | 5436.19 | |
| | | 5447.10 | 09/24/2002 | 13:52 | 12.18 | 5434.92 | |
| | | 5447.10 | 09/24/2003 | 13:08 | 12.17 | 5434.93 | |
| | | 5447.10 | 09/27/2004 | 11:56 | 12.31 | 5434.79 | |
| | | 5447.10 | 09/06/2005 | 14:10 | 9.71 | 5437.39 | |
| | | 5447.10 | 09/20/2006 | 13:51 | 10.68 | 5436.42 | |
| | | 5447.10 | 09/25/2007 | | 11.11 | 5435.99 | |
| | | 5447.10 | 09/24/2008 | | 10.40 | 5436.70 | |
| | | 5447.10 | 09/23/2009 | | 11.35 | 5435.75 | |
| | | 5447.10 | 08/25/2010 | 15:38 | 11.22 | 5435.88 | |
| | | 5447.10 | 09/06/2011 | 12:15 | 11.34 | 5435.76 | |
| 0309 | O | 5450.18 | 09/26/2000 | 09:29 | 15.40 | 5434.78 | |
| | | 5450.18 | 10/20/2000 | 11:35 | 15.23 | 5434.95 | |
| | | 5450.18 | 12/15/2000 | 09:43 | 15.32 | 5434.86 | |
| | | 5450.18 | 03/01/2001 | 09:26 | 15.26 | 5434.92 | |
| | | 5450.18 | 03/27/2001 | 11:30 | 14.97 | 5435.21 | |
| | | 5450.18 | 05/14/2001 | 14:04 | 14.74 | 5435.44 | |
| | | 5450.18 | 08/29/2001 | 09:43 | 15.35 | 5434.83 | |
| | | 5450.18 | 11/28/2001 | 11:53 | 15.40 | 5434.78 | |
| | | 5450.18 | 02/04/2002 | 13:30 | 15.32 | 5434.86 | |
| | | 5450.18 | 09/24/2002 | 12:38 | 16.27 | 5433.91 | |
| | | 5450.18 | 09/24/2003 | 12:42 | 16.18 | 5434.00 | |
| | | 5450.18 | 09/27/2004 | 10:44 | 15.86 | 5434.32 | |
| | | 5450.18 | 09/06/2005 | 13:22 | 14.85 | 5435.33 | |
| | | 5450.18 | 09/20/2006 | 12:34 | 14.90 | 5435.28 | |
| | | 5450.18 | 09/26/2007 | | 15.00 | 5435.18 | |
| | | 5450.18 | 09/23/2008 | | 15.22 | 5434.96 | |
| | | 5450.18 | 09/24/2009 | | 15.54 | 5434.64 | |
| | | 5450.18 | 08/25/2010 | 14:53 | 15.19 | 5434.99 | |

STATIC WATER LEVELS (USEE700) FOR SITE SRK06, Slick Rock East Processing Site
 REPORT DATE: 4/11/2012 3:29 pm

| LOCATION CODE | FLOW CODE | TOP OF CASING ELEVATION (FT) | MEASUREMENT | | DEPTH FROM TOP OF CASING (FT) | WATER ELEVATION (FT) | WATER LEVEL FLAG |
|---------------|-----------|------------------------------|-------------|-------|-------------------------------|----------------------|------------------|
| | | | DATE | TIME | | | |
| 0309 | O | 5450.18 | 09/06/2011 | 11:30 | 15.37 | 5434.81 | |
| 0310 | D | 5450.56 | 09/27/2000 | 13:34 | 17.25 | 5433.31 | |
| | | 5450.56 | 10/20/2000 | 12:52 | 17.10 | 5433.46 | |
| | | 5450.56 | 12/14/2000 | 16:34 | 17.04 | 5433.52 | |
| | | 5450.56 | 02/28/2001 | 10:28 | 16.98 | 5433.58 | |
| | | 5450.56 | 03/27/2001 | 12:45 | 16.75 | 5433.81 | |
| | | 5450.56 | 05/16/2001 | 14:35 | 16.88 | 5433.68 | |
| | | 5450.56 | 08/30/2001 | 09:28 | 17.44 | 5433.12 | |
| | | 5450.56 | 09/06/2005 | 17:14 | 16.70 | 5433.86 | |
| | | 5450.56 | 09/19/2006 | 17:34 | 16.73 | 5433.83 | |
| | | 5450.56 | 09/25/2007 | | 17.15 | 5433.41 | |
| | | 5450.56 | 09/22/2008 | | 17.36 | 5433.20 | |
| | | 5450.56 | 09/23/2009 | | 17.51 | 5433.05 | |
| | | 5450.56 | 08/25/2010 | 11:57 | 17.00 | 5433.56 | |
| | | 5450.56 | 09/06/2011 | 15:20 | 17.55 | 5433.01 | |
| 0311 | D | 5450.70 | 09/27/2000 | 14:00 | 18.05 | 5432.65 | |
| | | 5450.70 | 10/20/2000 | 12:49 | 18.01 | 5432.69 | |
| | | 5450.70 | 12/14/2000 | 17:00 | 17.83 | 5432.87 | |
| | | 5450.70 | 02/28/2001 | 11:03 | 17.76 | 5432.94 | |
| | | 5450.70 | 03/27/2001 | 12:41 | 17.65 | 5433.05 | |
| | | 5450.70 | 05/16/2001 | 13:46 | 17.81 | 5432.89 | |
| | | 5450.70 | 08/30/2001 | 08:50 | 18.49 | 5432.21 | |
| | | 5450.70 | 11/28/2001 | 15:59 | 18.06 | 5432.64 | |
| | | 5450.70 | 02/05/2002 | 10:48 | 17.72 | 5432.98 | |
| | | 5450.70 | 09/24/2002 | 16:10 | 19.07 | 5431.63 | |
| | | 5450.70 | 09/24/2003 | 15:14 | 18.73 | 5431.97 | |
| | | 5450.70 | 09/27/2004 | 14:07 | 17.76 | 5432.94 | |
| | | 5450.70 | 09/06/2005 | 16:46 | 16.89 | 5433.81 | |
| | | 5450.70 | 09/19/2006 | 17:11 | 16.85 | 5433.85 | |
| | | 5450.70 | 09/25/2007 | | 17.72 | 5432.98 | |
| | | 5450.70 | 09/22/2008 | | 17.50 | 5433.20 | |
| | | 5450.70 | 09/23/2009 | | 17.77 | 5432.93 | |
| | | 5450.70 | 08/25/2010 | 12:14 | 17.20 | 5433.50 | |
| | | 5450.70 | 09/06/2011 | 14:40 | 17.91 | 5432.79 | |
| 0312 | D | 5451.06 | 09/27/2000 | 14:56 | 18.01 | 5433.05 | |
| | | 5451.06 | 10/20/2000 | 12:47 | 17.92 | 5433.14 | |
| | | 5451.06 | 12/15/2000 | 09:04 | 17.79 | 5433.27 | |

STATIC WATER LEVELS (USEE700) FOR SITE SRK06, Slick Rock East Processing Site
REPORT DATE: 4/11/2012 3:29 pm

| LOCATION CODE | FLOW CODE | TOP OF CASING ELEVATION (FT) | MEASUREMENT | | DEPTH FROM TOP OF CASING (FT) | WATER ELEVATION (FT) | WATER LEVEL FLAG |
|---------------|-----------|------------------------------|-------------|-------|-------------------------------|----------------------|------------------|
| | | | DATE | TIME | | | |
| 0312 | D | 5451.06 | 02/28/2001 | 11:38 | 17.75 | 5433.31 | |
| | | 5451.06 | 03/27/2001 | 12:44 | 17.64 | 5433.42 | |
| | | 5451.06 | 05/16/2001 | 13:06 | 17.31 | 5433.75 | |
| | | 5451.06 | 08/30/2001 | 08:07 | 17.85 | 5433.21 | |
| | | 5451.06 | 09/06/2005 | 16:22 | 16.75 | 5434.31 | |
| | | 5451.06 | 09/19/2006 | 16:42 | 16.90 | 5434.16 | |
| | | 5451.06 | 09/25/2007 | | 17.29 | 5433.77 | |
| | | 5451.06 | 09/22/2008 | | 17.18 | 5433.88 | |
| | | 5451.06 | 09/23/2009 | | 17.63 | 5433.43 | |
| | | 5451.06 | 08/25/2010 | 12:36 | 17.19 | 5433.87 | |
| | | 5451.06 | 09/06/2011 | 14:15 | 17.60 | 5433.46 | |
| | | | | | | | |

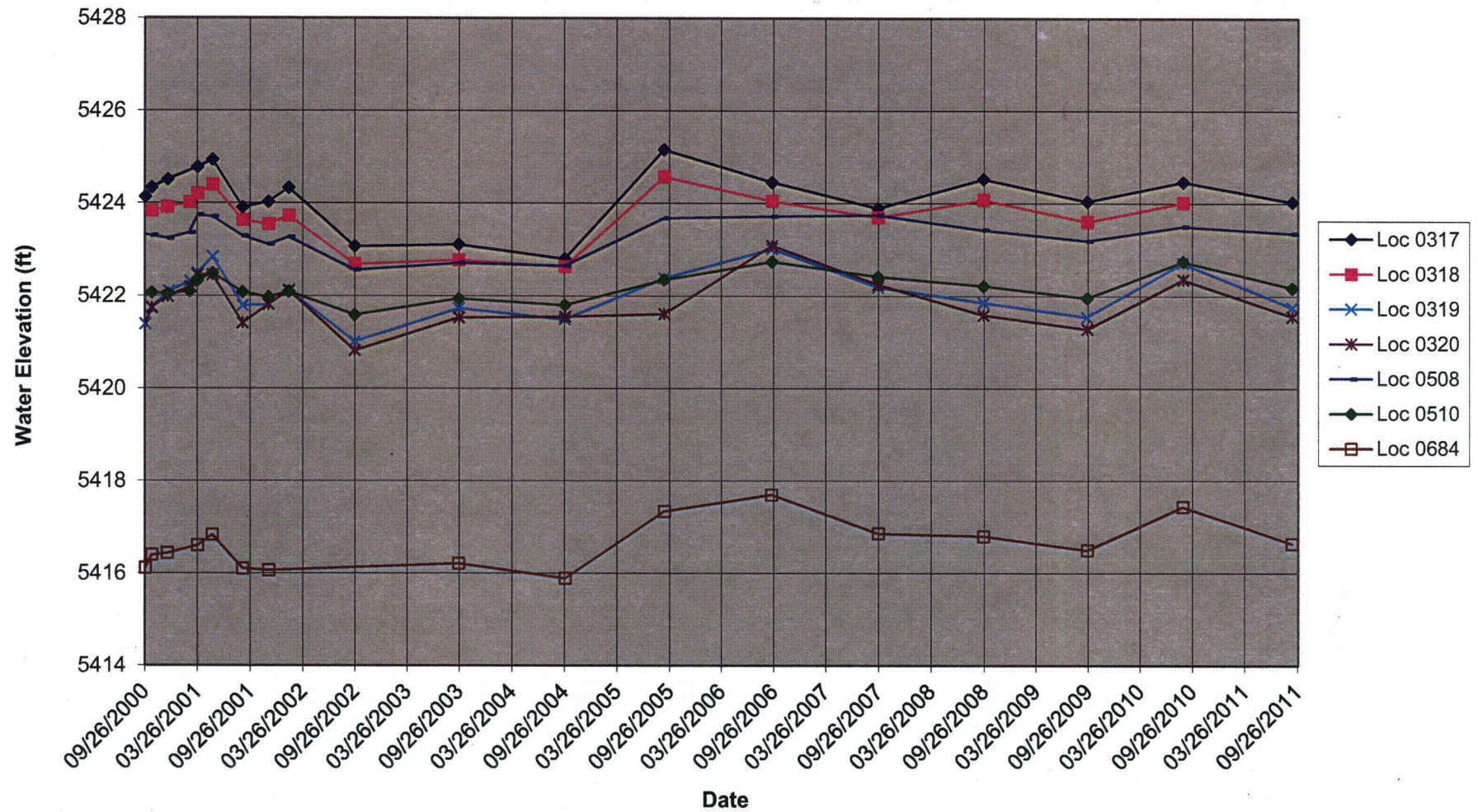
RECORDS: SELECTED FROM USEE700 WHERE site_code='SRK06' AND location_code in('0303','0305','0307','0309','0310','0311','0312') AND LOG_DATE between #1/1/2000# and #12/31/2011# :

FLOW CODES: D DOWN GRADIENT O ON-SITE

WATER LEVEL FLAGS:

Slick Rock West Processing Site (SRK05)

Hydrograph



STATIC WATER LEVELS (USEE700) FOR SITE SRK05, Slick Rock West Processing Site
 REPORT DATE: 4/11/2012 3:31 pm

| LOCATION CODE | FLOW CODE | TOP OF CASING ELEVATION (FT) | MEASUREMENT | | DEPTH FROM TOP OF CASING (FT) | WATER ELEVATION (FT) | WATER LEVEL FLAG |
|---------------|-----------|------------------------------|-------------|-------|-------------------------------|----------------------|------------------|
| | | | DATE | TIME | | | |
| 0317 | | 5435.18 | 09/28/2000 | 16:00 | 11.04 | 5424.14 | |
| | | 5435.18 | 10/20/2000 | 14:59 | 10.84 | 5424.34 | |
| | | 5435.18 | 12/14/2000 | 09:52 | 10.67 | 5424.51 | |
| | | 5435.18 | 03/27/2001 | 14:19 | 10.40 | 5424.78 | |
| | | 5435.18 | 05/17/2001 | 08:47 | 10.24 | 5424.94 | |
| | | 5435.18 | 08/30/2001 | 12:55 | 11.27 | 5423.91 | |
| | | 5435.18 | 11/27/2001 | 11:31 | 11.15 | 5424.03 | |
| | | 5435.18 | 02/05/2002 | 13:50 | 10.85 | 5424.33 | |
| | | 5435.18 | 09/25/2002 | 11:35 | 12.11 | 5423.07 | |
| | | 5435.18 | 09/24/2003 | 16:34 | 12.07 | 5423.11 | |
| | | 5435.18 | 09/27/2004 | 16:04 | 12.38 | 5422.80 | |
| | | 5435.18 | 09/07/2005 | 11:57 | 10.02 | 5425.16 | |
| | | 5435.18 | 09/21/2006 | 12:09 | 10.72 | 5424.46 | |
| | | 5435.18 | 09/24/2007 | | 11.28 | 5423.90 | |
| | | 5435.18 | 09/23/2008 | | 10.65 | 5424.53 | |
| | | 5435.18 | 09/23/2009 | 11:00 | 11.13 | 5424.05 | |
| | | 5435.18 | 08/25/2010 | 09:27 | 10.71 | 5424.47 | |
| | | 5435.18 | 09/07/2011 | 09:00 | 11.14 | 5424.04 | |
| 0318 | O | 5435.22 | 09/19/2000 | 13:27 | 11.35 | 5423.87 | |
| | | 5435.22 | 10/20/2000 | 14:47 | 11.40 | 5423.82 | |
| | | 5435.22 | 12/13/2000 | 16:40 | 11.31 | 5423.91 | |
| | | 5435.22 | 02/27/2001 | 10:49 | 11.21 | 5424.01 | |
| | | 5435.22 | 03/27/2001 | 14:05 | 11.02 | 5424.20 | |
| | | 5435.22 | 05/17/2001 | 09:47 | 10.83 | 5424.39 | |
| | | 5435.22 | 08/30/2001 | 14:34 | 11.59 | 5423.63 | |
| | | 5435.22 | 11/27/2001 | 12:36 | 11.68 | 5423.54 | |
| | | 5435.22 | 02/05/2002 | 14:33 | 11.50 | 5423.72 | |
| | | 5435.22 | 09/25/2002 | 10:52 | 12.54 | 5422.68 | |
| | | 5435.22 | 09/25/2003 | 09:00 | 12.45 | 5422.77 | |
| | | 5435.22 | 09/27/2004 | 15:28 | 12.59 | 5422.63 | |
| | | 5435.22 | 09/07/2005 | 12:24 | 10.65 | 5424.57 | |
| | | 5435.22 | 09/21/2006 | 12:42 | 11.17 | 5424.05 | |
| | | 5435.22 | 09/24/2007 | | 11.52 | 5423.70 | |
| | | 5435.22 | 09/23/2008 | | 11.14 | 5424.08 | |
| | | 5435.22 | 09/23/2009 | 11:30 | 11.61 | 5423.61 | |
| | | 5435.22 | 08/25/2010 | 09:52 | 11.20 | 5424.02 | |
| 0318A | | - | 09/29/2010 | 16:25 | 12.08 | -12.08 | |

STATIC WATER LEVELS (USEE700) FOR SITE SRK05, Slick Rock West Processing Site
 REPORT DATE: 4/11/2012 3:31 pm

| LOCATION CODE | FLOW CODE | TOP OF CASING ELEVATION (FT) | MEASUREMENT | | DEPTH FROM TOP OF CASING (FT) | WATER ELEVATION (FT) | WATER LEVEL FLAG |
|---------------|-----------|------------------------------|-------------|-------|-------------------------------|----------------------|------------------|
| | | | DATE | TIME | | | |
| 0318A | | - | 09/07/2011 | 09:35 | 12.05 | -12.05 | |
| 0319 | O | 5430.66 | 09/28/2000 | 15:28 | 9.27 | 5421.39 | |
| | | 5430.66 | 10/20/2000 | 14:25 | 8.93 | 5421.73 | |
| | | 5430.66 | 12/19/2000 | 13:40 | 8.56 | 5422.10 | |
| | | 5430.66 | 03/02/2001 | 09:00 | 8.35 | 5422.31 | |
| | | 5430.66 | 03/27/2001 | 13:49 | 8.17 | 5422.49 | |
| | | 5430.66 | 05/18/2001 | 08:32 | 7.82 | 5422.84 | |
| | | 5430.66 | 08/31/2001 | 08:53 | 8.87 | 5421.79 | |
| | | 5430.66 | 11/28/2001 | 08:45 | 8.85 | 5421.81 | |
| | | 5430.66 | 02/06/2002 | 09:34 | 8.54 | 5422.12 | |
| | | 5430.66 | 09/25/2002 | 14:58 | 9.65 | 5421.01 | |
| | | 5430.66 | 09/25/2003 | 10:56 | 8.93 | 5421.73 | |
| | | 5430.66 | 09/27/2004 | 17:00 | 9.17 | 5421.49 | |
| | | 5430.66 | 09/07/2005 | 13:13 | 8.28 | 5422.38 | |
| | | 5430.66 | 09/21/2006 | 09:49 | 7.64 | 5423.02 | |
| | | 5430.66 | 09/25/2007 | | 8.47 | 5422.19 | |
| | | 5430.66 | 09/23/2008 | | 8.80 | 5421.86 | |
| | | 5430.66 | 09/22/2009 | 15:55 | 9.11 | 5421.55 | |
| | | 5430.66 | 08/24/2010 | 16:54 | 7.94 | 5422.72 | |
| | | 5430.66 | 09/07/2011 | 12:25 | 8.90 | 5421.76 | |
| 0320 | O | 5427.40 | 09/20/2000 | 16:28 | 6.17 | 5421.23 | |
| | | 5427.40 | 10/20/2000 | 14:11 | 5.66 | 5421.74 | |
| | | 5427.40 | 12/14/2000 | 12:51 | 5.42 | 5421.98 | |
| | | 5427.40 | 03/02/2001 | 11:30 | 5.21 | 5422.19 | |
| | | 5427.40 | 03/27/2001 | 13:39 | 4.95 | 5422.45 | |
| | | 5427.40 | 05/17/2001 | 12:49 | 4.95 | 5422.45 | |
| | | 5427.40 | 08/30/2001 | 16:17 | 5.99 | 5421.41 | |
| | | 5427.40 | 11/27/2001 | 15:38 | 5.59 | 5421.81 | |
| | | 5427.40 | 02/05/2002 | 16:36 | 5.29 | 5422.11 | |
| | | 5427.40 | 09/25/2002 | 13:57 | 6.58 | 5420.82 | |
| | | 5427.40 | 09/25/2003 | 12:37 | 5.87 | 5421.53 | |
| | | 5427.40 | 09/28/2004 | 08:45 | 5.85 | 5421.55 | |
| | | 5427.40 | 09/07/2005 | 14:10 | 5.79 | 5421.61 | |
| | | 5427.40 | 09/21/2006 | 16:15 | 4.31 | 5423.09 | |
| | | 5427.40 | 09/25/2007 | | 5.15 | 5422.25 | |
| | | 5427.40 | 09/23/2008 | | 5.81 | 5421.59 | |
| | | 5427.40 | 09/23/2009 | 12:50 | 6.11 | 5421.29 | |

STATIC WATER LEVELS (USEE700) FOR SITE SRK05, Slick Rock West Processing Site
REPORT DATE: 4/11/2012 3:31 pm

| LOCATION CODE | FLOW CODE | TOP OF CASING ELEVATION (FT) | MEASUREMENT | | DEPTH FROM TOP OF CASING (FT) | WATER ELEVATION (FT) | WATER LEVEL FLAG |
|---------------|-----------|------------------------------|-------------|-------|-------------------------------|----------------------|------------------|
| | | | DATE | TIME | | | |
| 0320 | O | 5427.40 | 08/25/2010 | 11:01 | 5.04 | 5422.36 | |
| | | 5427.40 | 09/07/2011 | 11:30 | 5.84 | 5421.56 | |
| 0339 | | - | 09/29/2010 | 15:40 | 10.95 | -10.95 | |
| | | - | 09/07/2011 | 09:50 | 10.95 | -10.95 | |
| 0340 | | - | 09/29/2010 | 14:55 | 9.69 | -9.69 | |
| | | - | 09/07/2011 | 10:20 | 9.58 | -9.58 | |
| 0508 | O | 5430.20 | 02/23/2000 | 15:01 | 6.65 | 5423.55 | |
| | | 5430.20 | 05/17/2000 | 14:38 | 5.00 | 5425.20 | |
| | | 5430.20 | 09/20/2000 | 09:30 | 6.87 | 5423.33 | |
| | | 5430.20 | 10/20/2000 | 14:44 | 6.90 | 5423.30 | |
| | | 5430.20 | 12/14/2000 | 10:30 | 6.96 | 5423.24 | |
| | | 5430.20 | 02/26/2001 | 11:26 | 6.84 | 5423.36 | |
| | | 5430.20 | 03/27/2001 | 13:57 | 6.46 | 5423.74 | |
| | | 5430.20 | 05/17/2001 | 10:45 | 6.49 | 5423.71 | |
| | | 5430.20 | 08/30/2001 | 15:14 | 6.91 | 5423.29 | |
| | | 5430.20 | 11/27/2001 | 13:08 | 7.09 | 5423.11 | |
| | | 5430.20 | 02/05/2002 | 15:00 | 6.93 | 5423.27 | |
| | | 5430.20 | 09/25/2002 | 13:00 | 7.64 | 5422.56 | |
| | | 5430.20 | 09/25/2003 | 09:41 | 7.49 | 5422.71 | |
| | | 5430.20 | 09/27/2004 | 14:45 | 7.55 | 5422.65 | |
| | | 5430.20 | 09/07/2005 | 11:01 | 6.52 | 5423.68 | |
| | | 5430.20 | 09/21/2006 | 14:14 | 6.48 | 5423.72 | |
| | | 5430.20 | 09/24/2007 | | 6.45 | 5423.75 | |
| | | 5430.20 | 09/23/2008 | | 6.77 | 5423.43 | |
| | | 5430.20 | 09/23/2009 | 09:45 | 7.00 | 5423.20 | |
| | | 5430.20 | 08/25/2010 | 08:34 | 6.69 | 5423.51 | |
| | | 5430.20 | 09/07/2011 | 10:35 | 6.84 | 5423.36 | |
| 0510 | O | 5427.87 | 02/24/2000 | 08:38 | 5.56 | 5422.31 | |
| | | 5427.87 | 05/17/2000 | 15:56 | 3.92 | 5423.95 | |
| | | 5427.87 | 09/20/2000 | 11:04 | 5.92 | 5421.95 | |
| | | 5427.87 | 10/20/2000 | 14:38 | 5.80 | 5422.07 | |
| | | 5427.87 | 12/14/2000 | 12:02 | 5.83 | 5422.04 | |
| | | 5427.87 | 02/27/2001 | 12:05 | 5.77 | 5422.10 | |
| | | 5427.87 | 03/27/2001 | 13:51 | 5.53 | 5422.34 | |
| | | 5427.87 | 05/17/2001 | 11:23 | 5.38 | 5422.49 | |
| | | 5427.87 | 08/30/2001 | 15:46 | 5.79 | 5422.08 | |
| | | 5427.87 | 11/27/2001 | 14:58 | 5.90 | 5421.97 | |

STATIC WATER LEVELS (USEE700) FOR SITE SRK05, Slick Rock West Processing Site
 REPORT DATE: 4/11/2012 3:31 pm

| LOCATION CODE | FLOW CODE | TOP OF CASING ELEVATION (FT) | MEASUREMENT | | DEPTH FROM TOP OF CASING (FT) | WATER ELEVATION (FT) | WATER LEVEL FLAG |
|---------------|-----------|------------------------------|-------------|-------|-------------------------------|----------------------|------------------|
| | | | DATE | TIME | | | |
| 0510 | O | 5427.87 | 02/05/2002 | 15:41 | 5.78 | 5422.09 | |
| | | 5427.87 | 09/25/2002 | 13:24 | 6.28 | 5421.59 | |
| | | 5427.87 | 09/25/2003 | 10:17 | 5.93 | 5421.94 | |
| | | 5427.87 | 09/27/2004 | 16:34 | 6.07 | 5421.80 | |
| | | 5427.87 | 09/07/2005 | 10:13 | 5.52 | 5422.35 | |
| | | 5427.87 | 09/21/2006 | 15:17 | 5.13 | 5422.74 | |
| | | 5427.87 | 09/24/2007 | | 5.45 | 5422.42 | |
| | | 5427.87 | 09/23/2008 | | 5.65 | 5422.22 | |
| | | 5427.87 | 09/23/2009 | 09:15 | 5.91 | 5421.96 | |
| | | 5427.87 | 08/25/2010 | 10:15 | 5.12 | 5422.75 | |
| | | 5427.87 | 09/07/2011 | 11:05 | 5.69 | 5422.18 | |
| 0684 | D | 5432.68 | 02/23/2000 | 12:31 | 15.78 | 5416.90 | |
| | | 5432.68 | 05/17/2000 | 12:36 | 14.03 | 5418.65 | |
| | | 5432.68 | 09/28/2000 | 13:49 | 16.57 | 5416.11 | |
| | | 5432.68 | 10/20/2000 | 14:00 | 16.29 | 5416.39 | |
| | | 5432.68 | 12/13/2000 | 14:06 | 16.25 | 5416.43 | |
| | | 5432.68 | 03/27/2001 | 13:27 | 16.08 | 5416.60 | |
| | | 5432.68 | 05/16/2001 | 16:37 | 15.85 | 5416.83 | |
| | | 5432.68 | 08/30/2001 | 10:56 | 16.58 | 5416.10 | |
| | | 5432.68 | 11/28/2001 | 10:15 | 16.62 | 5416.06 | |
| | | 5432.68 | 09/24/2003 | 15:45 | 16.47 | 5416.21 | |
| | | 5432.68 | 09/28/2004 | 10:10 | 16.79 | 5415.89 | |
| | | 5432.68 | 09/07/2005 | 09:09 | 15.34 | 5417.34 | |
| | | 5432.68 | 09/19/2006 | 15:08 | 14.98 | 5417.70 | |
| | | 5432.68 | 09/25/2007 | | 15.82 | 5416.86 | |
| | | 5432.68 | 09/23/2008 | | 15.88 | 5416.80 | |
| | | 5432.68 | 09/23/2009 | 13:55 | 16.18 | 5416.50 | |
| | | 5432.68 | 08/24/2010 | 15:27 | 15.24 | 5417.44 | |
| | | 5432.68 | 09/06/2011 | 16:30 | 16.04 | 5416.64 | |

RECORDS: SELECTED FROM USEE700 WHERE site_code='SRK05' AND location_code in('0317','0318','0318A','0319','0320','0339','0340','0508','0510','0684') AND LOG_DATE between #1/1/2000# and #12/31/2011#

FLOW CODES: D DOWN GRADIENT O ON-SITE

WATER LEVEL FLAGS:

Verification Monitoring Report for the Slick Rock, Colorado, Processing Sites, 2012 Update

The U.S. Department of Energy (DOE) has prepared a Verification Monitoring Report to evaluate groundwater and surface water monitoring data previously collected at the Slick Rock processing sites to assess the status of the compliance strategy for groundwater cleanup. **At your request, you are receiving a hard copy of the report.**

The report can also be found on the Internet at the DOE Legacy Management (LM) website – www.lm.doe.gov. From the LM website home page, select the United States map icon titled Legacy Management Sites. Then select the Slick Rock Sites from the drop-down list. The report will be available on the Slick Rock Processing Sites page of the LM website under Documents and Links.

