Sheep Mountain Project – Mine Permit 381C

ADDENDUM D6-1 - HYDROLOGY UPDATE
2011 ADDENDUM

Table of Contents

D6.1 Introduction....Page 2
D6.2 Ground Water....Page 2
D6.3 Introduction to Surface Water....Page 6
D6.4 Surface Water Hydrology and Geomorphology....Page 6
D6.5 Water Rights....Page 9
D6.6 Surface Water Impacts....Page 9

Tables

D6.1 Well Completion Details
D6.2 Water Quality Summary
D6.3 Battle Spring Water Quality Data
D6.4 Fort Union Water Quality Data
D6.5 Ground Water Rights (within 3 mile radius)
D6.6 Historic Discharge Measurement
D6.7 Titan Discharge Measurements
D6.8 Precipitation Frequency
D6.9 Water Quality Field Parameters
D6.10 Water Quality Major Anions and Cations
D6.11 Water Quality Dissolved Metals
D6.12 Water Quality Radionuclides
D6.13 Surface Water Rights

Figures

D6.1 Monitor Well Locations
D6.2 Potentiometric Surface Map
D6.3 2009 & 2010 Monitoring Well Water Quality
D6.4 Surface Water and Ground Water Rights Location Map
D6.5 Surface Water Data Collection Locations
D6.6 Surface Water Drainage Basins
D6.7 Upper Basin Tributaries

Attachments

A Well Logs for the G Wells
B Historic Ground Water Data
C1 Crooks Creek Cross Sections
C2 Comparison – Channel Development Crooks DS 2010-2011
D Ephemeral Tributary Cross Section
E Laboratory Results

Addendum D6 – Hydrology Update

D6.1 Introduction

The purposes of this addendum are to 1) report the most recent project site ground water quality and elevation data for comparison to historically collected ground water data, and 2) report current surface water conditions and expand on the previous limited surface water hydrology evaluation. Ground water and surface water baseline data were submitted to the Wyoming Department of Environmental Quality (DEQ), Land Quality Division (LQD) with the original 1979 Permit Application and subsequent revisions (Permit 381C).

Titan Uranium USA, Inc. (Titan) has updated the DEQ permit document so that the format matches LQD Guideline 4, and to ensure it is in compliance with Chapter 11 of the LQD Rules and Regulations. As part of the LQD Chapter 11 Update, in 2010 and 2011 Titan drilled additional background monitoring wells and collected four sets of ground water quality data from a representative set of wells to verify that current ground water quality is consistent with historical baseline ground water quality. In 2010, Titan surveyed the site surface water drainages and collected surface water samples to better define geomorphic characteristics and water quality in the permit area and to bring the permit up to date with DEQ, LQD Guideline 8. Surface water hydrology data were modeled to design mine site surface water conveyance and erosion controls, and to establish background conditions for post mining reclamation. Water rights information has been updated to reflect permitted water rights recorded in the Wyoming State Engineer's database in 2011.

The original permit to mine was issued to Western Nuclear in 1978, although the area had been mined since the 1950's. At the time the original permit was submitted, the Paydirt Pit was an open impoundment. That pit has subsequently been reclaimed by the Wyoming AML Program. Western Nuclear began dewatering the Sheep Underground mine in the late 1970's and discharging the treated water to Hank's Draw to the north. From 1990 through October, 2000 dewatering continued with discharge to the McIntosh Pit. Water levels were drawn down to an elevation of 5800 feet in the Sheep Mountain I Shaft and 6105 feet in the Sheep Mountain II Shaft. Water levels have recovered approximately 1000 feet in the Sheep Mountain I Shaft, and 715 feet in the Sheep Mountain II Shaft, although they have not recovered to pre-mining levels.

D6.2 Ground Water

Ground Water Monitoring

Appendix D5 and Appendix D6 of the original permit document contain regional geology and hydrogeology information for the project site. The baseline water quality data and aquifer characterization for the project site are also included in Appendix D6. Water level and water quality data from 10 monitoring wells (PZ1-10) were included in the original permit application along with limited aquifer testing of the Battle Spring Aquifer. Subsequent owners of the property have continued to collect water quality data from the monitoring wells.

In 2010 and 2011, Titan installed additional monitoring wells to document conditions in the uppermost aquifer in the vicinity of the proposed Congo Pit and the proposed heap leach site near the existing McIntosh Pit. Monitor wells (MW 6,7,9, and 10) were paired with the existing PZ wells but completed 50 feet above and 50 feet below the anticipated bottom of the Congo Pit. Wells G3,4,5, and 6 were completed across the uppermost saturated zone of the Battle Spring or undifferentiated Battle Spring/Fort Union Aquifer downgradient from the proposed heap leach, and south of the McIntosh Pit. The locations of the monitor wells are shown on **Figure D6.1**. Completion information is included in **Table D6.1**. Well logs for the G wells are included in **Attachment A** to this addendum.

Ground Water Sampling

A Ground Water Sampling and Analysis Plan was submitted to DEQ/LQD in Lander in 2010. Before sampling, the static water level is measured in each well utilizing an electronic well sounder. The total depth of each well is also measured utilizing a geophysical probe or a weighted measuring tape. The volume of water standing in each well is calculated, and a minimum of three casing volumes are evacuated from each well using a submersible pump. The pumping rate varies depending on the characteristics of the well. During evacuation, the temperature, pH, and conductivity of the water are measured and recorded on field sampling forms. The water samples are collected directly from the pump hose into laboratory supplied bottles. Radon samples are collected in glass VOA bottles. Each bottle is labeled with a permanent marker denoting sample number, date, and time of sample collection. The samples are cooled in accordance with Environmental Protection Agency (EPA) protocol and shipped to IML laboratories in Sheridan, Wyoming for filtration, preservation, and analysis. Chain of Custody documentation accompanies the samples to the lab. Duplicate samples are collected for quality assurance/quality control purposes. All samples are analyzed for the LQD Guideline 8 list of constituents.

Ground Water Flow

Annual water levels have been measured in site monitoring wells since 1990. Titan began quarterly monitoring of static water levels in monitoring wells at the Sheep Mountain Project site in June, 2010. Water levels were measured in existing monitoring wells constructed by previous owners of the mining Project and compared to the baseline data presented in the 1979 and 1980 permit amendments. Completion information and static water levels for the wells that were sampled in 2010 and 2011 are summarized in **Table D6.1**. Using static water levels measured in June, 2011, a potentiometric map of the Battle Spring Aquifer beneath the Project site has been drawn (**Figure D6.2**). Downgradient from the project site towards the west, the Battle Spring unconformably overlies the Fort Union Formation. The contact is gradational and cannot be identified from drill cuttings or geophysical logs. Water levels in wells completed in the two aquifers indicate that they are connected hydraulically and likely behave as a single hydrostratigraphic unit.

Water levels measured in June, 2011 indicate that this aquifer is unconfined, and ground water flow is generally towards the west/northwest beneath the site. This flow

orientation correlates well with the 1979/1980 potentiometric surface determined by Western Nuclear. The ground water gradient varies across the site ranging from 0.066 ft/ft upgradient from the McIntosh Pit to 0.023 across the center of the site where the potentiometric surface is still showing residual drawdown from historic dewatering in the Sheep Mountain underground mine. Water levels are generally lower in elevation when compared to the 1979/1980 values ranging from 8 to 72 feet lower than those reported in the original permit. Plots of annual static water levels in wells around the McIntosh Pit indicate that since 1990 water levels have remained relatively stable through 10 years of dewatering and another 10 years after dewatering. Water level data plotted for wells PZ 1-5 are included in **Attachment B**.

Ground Water Quality

Between 1979 and 1980, Western Nuclear established baseline ground water quality concentrations for 10 wells located across the Sheep Mountain Project site. Eight wells were completed within the Battle Spring Aquifer (ore zone) and two wells were completed in the Fort Union Formation (PZ-7 and PZ-8). Monitoring wells sampled in 2010 were selected to provide representative spatial and stratigraphic distribution within the proposed mining area. They include wells PZ-1 through PZ-10. Five additional wells were drilled, completed in the vicinity of the proposed Congo Pit, and sampled by Titan in 2010 and 2011. These include wells MW-6N, MW-6S, MW-7, MW-9, and MW-10. Four more wells (G-3 through G-6) were completed in May 2011 to characterize ground water in the vicinity of the proposed heap leach pad adjacent to the McIntosh Pit. Samples were collected in June, 2011 but analytical results from these samples have not yet been received. The locations of all the wells are shown on **Figure D6.1**.

Three rounds of water quality samples were collected from the wells in June/July, September, and November of 2010 to analyze for additional constituents currently required by recent updates to DEQ guidelines. A fourth quarterly sample was collected in March 2011, but those analytical results have not been received from the laboratory. A summary of historical water quality results is presented in **Table D6.2** and includes the average, standard deviation, minimum and maximum values for all constituents. Battle Spring and Fort Union Aquifer water quality data have been evaluated separately from the summary table and are presented in **Tables D6.3** and **D6.4,** respectively.

Water quality varies within the Battle Spring Aquifer depending on where the well has been completed relative to mineralized zones. Overall, the Battle Spring water quality is dominated by calcium-sodium bicarbonate-sulfate water. The Fort Union water quality is dominated by sodium-bicarbonate-sulfate water with lower amounts of calcium. A trilinear diagram of water quality samples collected from area monitor wells in June and November 2010 is presented as **Figure D6.3**. This figure illustrates the variability in water quality for the different monitoring wells completed across the site. Water in both the Battle Spring and Fort Union Aquifer exceed DEQ/Water Quality Division Class III standards due to elevated radium 226 and gross alpha concentrations.

Various owners of the property have continued to collect annual water quality samples from the monitoring wells completed in the vicinity of the McIntosh Pit. Despite the dewatering that occurred from the late 1970’s through 2000, concentrations of major

cations and anions have remained remarkably stable. Graphs of water quality from Wells PZ1 through PZ5 are included in **Attachment B**.

Ground Water Rights

All ground water rights located within a 3-mile radius of the Permit Area are presented on **Figure D6.4** and in **Table D6.5**. The water rights data were downloaded from the Wyoming State Engineer's Office (SEO) e-permit database. The table includes the following information (if reported): water rights number, priority date, water rights status, owner, facility name, uses, location, yield, well depth, static water level, chemical analysis, latitude and longitude.

Water Use

According to the SEO e-permit database, there are 68 ground water rights within a 3-mile radius of the project area. Since these wells are installed in clusters and are only located to the nearest quarter section, the symbols on **Figure D6.4** indicate the quarter sections where the locations of the wells are reported in the SEO database. The majority of water wells are primarily used for livestock watering, monitoring, and industrial purposes. The industrial use consists of water for exploration drilling, and environmental wells for water quality monitoring and hydrologic studies for proposed uranium mining. There are five domestic wells located within 3 miles of the permit site. Three domestic/stock wells are located approximately 2 miles northwest of the project and two additional domestic/industrial wells are located on the site. There are also two municipal/miscellaneous wells located 1.5 miles east of the site at the Sheep Creek Oil Field.

Nearest Municipal Water Source/Public Water System

There is one Public Water Systems (PWS) in the vicinity of the project: Jeffrey City Water & Sewer District (PWS # 56000106) is located approximately 6 miles north of the Sheep Mountain Project site.

Ground Water Impacts

Both the underground and open pit will require dewatering for mine operations. Mine dewatering from the underground mine will be required in advance of re-opening the mine. Mine dewatering from the open pit mine will not be necessary until the 4th or 5th year of operations as the open pit mine does not reach the ground water level until that time. Initiation of underground mine dewatering is scheduled to begin in 2011. This activity is permitted under the active Mine Permit 381C. Waters from the mine will be pumped from the existing Sheep I Shaft and discharged into the McIntosh Pit. In line treatment of the mine waters with barium chloride to reduce the expected levels of Radium 226 will be completed prior to discharge into the pit. Additional barium chloride will be added to the discharge waters to gradually lower the levels of Radium 226 in the pit. No waters will be discharged to the surface.

Once the Project begins construction and operation, water will be needed for consumptive use for pollution and dust control and mineral processing. These consumptive uses may exceed the volume of water produced from mine dewatering. Additional, permitted water sources for the

Project include the McIntosh Pit which is permitted as the McIntosh No. 1 Reservoir, Permit 7714 Reservoir, which will be utilized as needed for operations.

Despite over 50 years of mining history at the site, some of which preceded modern regulations, existing ground water quality does not show significant degradation from mining. In the vicinity of the McIntosh Pit, the pit and five surrounding wells have been monitored for water level and water quality since 1988. This included the period of time from 1990 to October, 2000 when the Sheep underground mine was being dewatered and discharged into the McIntosh Pit. The principal impact has been to water levels in the vicinity of and downgradient from the underground mine workings, and upgradient from the McIntosh Pit. Compared to baseline water levels documented in the approved DEQ permit, water levels between the underground mine workings and in the pit remain lowered between 8 and 72 feet. Water quality in both the pit and monitor wells has remained stable and consistent. The only exceptions are slightly elevated levels of calcium and sulfate likely due to dissolution of gypsum, and a slight but general rise in Radium 226 and uranium concentrations in the McIntosh Pit. These changes do not impact the DEQ class of use for the aquifer.

D6.3 Introduction to Surface Water

As discussed in the general introduction to this addendum, Titan collected baseline surface water quality and quantity data, as well as geomorphology data and morphometric measurements to supplement data which are presented in the original permit (Permit 381C). These data were collected in 2010-2011 in accordance with the most recent EPA, NRC and LQD guidance and protocol. The surface water information collected during this monitoring period adequately supplements the historical data and provide important information to allow Titan to develop a Storm Water Management Plan, Mine Plan Hydrology and a final Reclamation Plan.

D6.4 Surface Water Hydrology and Geomorphology

Crooks Creek is located in the Sweetwater River drainage which is a tributary to the North Platte River. Crooks Creek, in the vicinity of the Sheep Mountain Project, oscillates between a sinuous single-thread meandering channel and sections of braiding where during low flow water moves as both surface and subsurface flow (**Figure D6.5**). Average channel sinuosity is 1.4 through the meandering portions of Crooks Creek from upstream to downstream of the Sheep Mountain Project boundary. In general, rivers with a sinuosity value of greater than 1.3 are considered meandering.

Titan surveyed eight cross sections along Crooks Creek in the vicinity of the Sheep Mountain Project. All surveyed cross sections can be found in **Attachment C**. In general channel banks range from steep and incised along meander bends to more gradual along straight sections. Where the channel is not incised, bank and overbank areas are moderately well vegetated with a sagebrush-grassland vegetation community.

Attachment C1 includes a second survey completed at the downstream Crooks Creek gaging station (CROOKS DS) completed on May 18, 2011. Titan observed channel aggradation at this location and the resurvey confirms that an average of 2 feet of sediment have been deposited at this location since it was originally surveyed on June 16, 2010. In addition site investigators observed that the aggradation occurred sometime between the most recent flow measurements on March 30, 2011 and the resurvey in May-less than 50 days later. The comparison of the 2010 and

2011 section is also presented in **Attachment C2**. Cattle have been present in and around the gaging site during previous sampling visits. A combination of spring flooding, additional sediment inputs from upstream tributaries and streambank instability in the immediate vicinity of the gaging site all likely contributed to aggradation.

Crooks Creek Hydrology

The U.S. Geological Survey operated a surface water gaging (#06638300) and water quality station on the West Fork of Crooks Creek upstream of the Titan permit area. The site is approximately 3 miles south (upstream) of the Sheep Mountain Project at Latitude 42°20'56" N, Longitude 107°51'45" W. At the location of the gaging station, the West Fork of Crooks Creek drains approximately 11.6 mi^2. The gage was in operation and collected peak discharge via a crest gage from 1961-1981. This methodology provides a physical measurement of peak river stage height over each respective monitoring period. Typically the gage technician will periodically check (monthly more or less) the crest stage gage, complete a measured cross section at that stage height and estimate the flow. Occasionally the gage technician will be present during a flow event and will perform on-site measurements. Peak discharge values range from 2 cubic feet per second (cfs) measured on May 19, 1976 to a maximum measured flow of 255 cfs on July 10, 1975 (**Table D6.6**).

Titan measured discharge at two locations (CCDS and CCUS, **Figure D6.5** on the mainstem of Crooks Creek near the Sheep Mountain Project from May 2010-March 2011. A third gaging site was added approximately 1.5 miles upstream of CCUS in May of 2011 to ensure that it measured flow from a watershed that would be essentially undisturbed by any proposed Titan operation Gaging station sites were located on a straight, hydraulically uniform section of the creek and surveyed using level and stadia rod (**Attachment C**). Discharge measurements necessitate recording streamflow velocities at a minimum of ten different locations across the section. Titan measured velocities with a Marsh-McBirney Flo-Mate portable velocity meter attached to a top-setting wading rod. Measurements were made at 0.6 times the depth of flow. Channel velocity was multiplied by the stream cross sectional area (Discharge (ft3/s) = Velocity (ft/s) * Area (ft^2)). The discharge values calculated at each of the ten locations were summed yielding a total streamflow value. Measured streamflow at the Crooks Creek Upstream (CCUS) gaging station, Crooks Creek Downstream (CCDS) and the recently added station upstream of the Macintosh Pit (CCMU) ranged from 3.3 cfs in October 2010 to 6.8 cfs in May 2010 (**Table D6.7**). Discharge measurements coincided with stream flow water quality measurements and samples.

Tributary Geomorphology

Tributary flow off the Titan permit area is ephemeral. The drainage divide between Sheep Creek (to the east) and Crooks Creek (to the West) runs north-south through the eastern portion of the Sheep Mountain Project. **Figure D6.6** shows the area in and around the Sheep Mountain Project divided up into twelve sub-watersheds, each of which is either tributary to Crooks Creek or to Sheep Creek. In all cases where channelized flow could be present, a cross section was measured along the ephemeral drainage. Titan surveyed eight cross sections along the stretch of Crooks Creek in the vicinity of the Sheep Mountain Project. All Crooks Creek surveyed cross sections can be found in **Attachment D**.

In general, drainages are steep and well defined in the upper sub-watersheds within the Sheep Mountain Project. Ephemeral tributary channels, while often dry, exhibit almost step-pool

structure with large boulders and areas of deposited sands in between. Step pool morphology is most likely due to the ephemeral nature of the summer thunderstorm events and headcut migration towards the drainage divide (**Figure D6.7a**). Manning's n values in upper basin drainages range from 0.04 to 0.07. As watershed area increases (in a downstream direction), channel substrate transitions from large boulder material to sand bed and the depth of incision increases. This section of the channel profile is typified by deeply incised meandering channels (**Figure D6.7b**).

As watershed area increases (in a downstream direction), topography flattens, discharge disperses and channelized flow is no longer present. On a small (project) scale, the site's watershed morphology is typical of a desert bahada landform, where alluvial fans coalesce. This is pronounced on the western edge of the Sheep Mountain Project between the north-south road leading to the MacIntosh Pit and Crooks Creek. In most cases, flow disperses from its channelized condition to more unchannelized flow and then is collected again by a roadside ditch before it enters Crooks Creek.

Precipitation Distribution

Precipitation depths were obtained from the National Oceanic and Atmospheric Administration Precipitation Frequency Atlas of the Western United States (Miller et al, 1973). Because of the rainfall intensity of typical storms in the area, Titan determined that the 6-hour storm duration was the most applicable design storm duration for the Sheep Mountain Project. **Table D6.8** presents the 2, 5, 10, 25, 50 and 100-year recurrence interval storm events along with the probable maximum precipitation event.

Surface Water Quality

Titan has collected four quarters of surface water quality samples from Crooks Creek since May of 2010 (**Figure D6.5**). These new data are intended to supplement existing data that were collected in the 1970's. While Titan has attempted to collect ephemeral stream flow water quality samples, no such events have presented the opportunity while Titan personnel were present. In addition to sampling surface water quality on Crooks Creek, Titan was able to sample temporarily impounded water at three sites: (SW-1, SW-2 and SW-3). These surface water impoundments were sampled and analyzed in April and May, 2010. No water was present at these sites during later sampling efforts.

The surface water quality in Crooks Creek in general meets DEQ Chapter VIII Class III or Livestock Standard Radionuclide levels are slightly elevated and exceed Class III standards on a periodic basis. Surface water quality is slightly alkaline (pH averages 8.3 and ranges from 8.1 to 8.4) and exhibits low concentrations of either dissolved or suspended solids (**Table D6.9**). Electrical conductivity (EC) estimates the amount of total dissolved salts or dissolved ions in the water by measuring the ability of a water sample to conduct electrical current. Typical EC range for freshwater streams is 100 to 2000 μmhos/cm (CASWRCB, 2004). The average value measured in Crooks Creek is 344 μmhos/cm with a range of 318 to 375 μmhos/cm. Turbidity is a measure of the "cloudiness" of a sample as it relates to suspended solids. Turbidity levels are also low averaging 5.4 NTUs and range from 1.4 to 17.3 NTUs. Turbidity changes seasonally and in response to thunderstorm events. It is a direct reflection of runoff conditions and will change rapidly during the rising limb of the surface stream hydrograph. Summer base flow turbidity is generally low.

Alkalinity is a measure of the substances dissolved in the water that "buffer" or resist a change in pH when acid is added. Stable pH is important to fish and other aquatic life in the river. Alkalinity of 100 to 200 mg/L is sufficient to "buffer" or neutralize incoming acids and provide for stable pH and values over 150 are considered “good”. The average total alkalinity (as CaCO3) is 148.5 mg/L and the average alkalinity (as HCO_3) is 178.5 mg/L (**Table D6.10**). Dissolved metals are generally below method detection limits (MDL) with very limited concentrations of arsenic (average 0.0016 mg/L), iron (average 0.07 mg/L), manganese (average 0.02 mg/L) and uranium (average 0.0174 mg/L) (boron, selenium and zinc are detected in less than 50% of the samples at low concentrations. Dissolved metals concentrations from the Titan permit area are presented in **Table D6.11**.

Dissolved and suspended Radium 226 is present in Crooks Creek. Dissolved Radium 226 averages 1.0 pCi/L; suspended Radium 226 averages 1.3 pCi/L (**Table D6.11**). In order to address NRC baseline sampling standards, Titan collected samples for dissolved and suspended lead 210, polonium 210 and thorium 230. Lead 210 is present in less than half of the samples at an average concentration of 1.7 pCi/L. Dissolved polonium and thorium 230 are below MDL. In its suspended form, these radionuclides are present in 2 of 15 samples. Suspended Uranium is present in 5 of 15 samples with an average concentration of 0.08 mg/L. **Table D6.12** presents radionuclide data. All water quality laboratory datasheets can be found in **Attachment E**.

In general, the impounded surface water sampling sites (SW-1 through SW-3) show impaired water quality as compared to Crooks Creek. Not only is the water stagnant but the SW sites are surrounded by previous mine disturbance. There is very little land within the Sheep Mountain Project boundary that is undisturbed. The impounded water quality sites show higher concentrations of both dissolved and suspended radionuclides (**Table D6.12**). Radionuclide levels within these upper basin stagnant water impoundments exhibit an order of magnitude increase in dissolved Lead 210, suspended Lead 210, Radium 226 and Uranium. Concentrations of Barium, Lead, Molybdenum and Selenium were also markedly higher (**Table D6.11**). Concentrations of Calcium, Magnesium, Chloride, Sodium, Sulfate, TDS and EC were generally lower with the exception of site SW-1 (**Tables D6.9 and D6.10**).

D6.5 Water Rights

A list of all surface water rights within the permit area and on adjacent lands, as of June 2011 is included in **Table D6.13**. The locations of the surface water rights within 3 miles of the project boundary are shown on **Figure D6.4**. The majority of surface water rights are for irrigation ditch diversions and domestic or stock pipe lines. The Union Oil Company of California has rights to three pipelines coming out of Sheep Creek for drilling and oil production use and the Atlantic Richfield Co. has a the rights to a similar pipeline from Crooks Creek.

D6.6 Surface Water Impacts

Both the underground and surface mining will result in surficial disturbances within the permit area. The area has been historically disturbed and much of it remains in an unreclaimed state. The current condition of the site includes steep watersheds delivering water and sediment from the upper basin to Crooks Creek. The proposed mine plan will include a Storm Water Pollution Protection Plan multiple stream diversions and sedimentation control. The underground mine will be dewatered, but nearly all of the dewatering will be stored and utilized in the mine processing operations or for dust control. The Mining Hydrology effort, which will include storm

water control, will prevent disturbed land runoff from entering the relatively undisturbed Crooks Creek. Runoff from out-of-pit stockpiles will be controlled and treated by berms and ditches. The Titan reclamation plan will include an increased drainage density, a stable geomorphically sound backfill plan, topsoil replacement and revegetation. As revegetation efforts become successful, runoff water quality will be vastly improved over its historic condition.

References

1. Miller, J.F., R.H. Frederick, R.J. Tracey, 1973. NOAA Atlas 2: Precipitation-Frequency Atlas of the Western United States. U.S. Department of Commerce, National Oceanic and Atmospheric Administration and National Weather Service. Stock Number 0317-00156.

TABLES

Table D6.1 Well Completion Details

Well Name	Northing	Easting	Ground Elevation	Measuring Point Elevation	Depth to Water (ft below top of casing)	Total Depth (ft)	Screen Interval (ft below ground surface)	Screen Elevation	Static Water Level Elevation	Casing Diameter
PZ-1	682638.9	2215821.4	6890.7	6891.14	113.0	192	118-198	6773-6693	6778.1	4.5" ID
PZ-2	682570.6	2217630.6	7223.4	7223.64	288.2	740	649-729	6574-6494	6935.4	4.5" ID
PZ-3	680847.0	2215915.8	6993.2	6993.56	151.5	274	194-279	6799-6714	6842.1	4.5" ID
PZ-4	679268.3	2217066.7	7005.2	7005.48	88.5	202	133-218	6872-6787	6917.0	4.5" ID
PZ-5	680534.2	2216233.7	7035.8	7036.45	202.0	445	357-437	6679-6599	6834.5	4.5" ID
PZ-6	not found		6842.0	6842.9	121.0	240	150-240	6692-6602	6721.9	4.3
MW-6N	687906.35	2213406.12	6697.8	6699.5	39.0	300	200-300	6499-6399	6660.5	5"
MW-6S	687889.48	2213396.58	6696.5	6699.4	85.1	400	300-400	6399-6299	6614.3	5"
PZ-7	691267.25	2217107.29	6884.0	6886.6	123.0	240	70-240	6814-6644	6763.6	4.3
MW-7	691502.54	2217167.24	6871.1	6873.3	79.3	360	260-360	6613-6513	6794.0	5"
PZ-8	688682.27	2217964.76	7099.2	7101.6	325.7	420	330-420	6771-6681	6775.9	4.3
PZ-9	692374.07	2219450.2	7067.0	7070.2	218.0	840	510-840	6557-6227	6852.2	4.3
MW-9	691966.43	2219470.08	7023.8	7026.3	192.0	480	380-480	6646-6546	6834.3	5"
PZ-10	690353.52	2221183.3	7100	7103.7	70.0	400	60-400	7040-6700	7033.7	4.3
MW-10	690454.88	2220881.46	7139.8	7141.3	361.6	600	500-600	6641-6541	6779.7	5"
Alluvium PZ	691532.8	217191.5	6872.4	6874.3	dry	60	40-60	6832-6812	dry	2"
G-3	684087.448	2213326.89	6714.5	6715.6	31.6	50	15-45	6701-6670	6684.0	4"
G-4	680716.827	2211768.91	6696.7	6697.8	12.7	45	10-40	6687-6657	6685.1	4"
G-5	677745.15	2214570.31	6900.1	6901.2	87.2	100	0-30	6900-6870	6814.0	4"
G-6	681614.763	681614.763	6762.3	6763.4	34.5	65	30-60	6732-6702	6728.9	4"

Table D6.2 Water Quality Summary

		Major Ions (mg/l)												Non-Metals (mg/L)				Trace Metals (mg/l) DISSOLVED																		Trace Metals (mg/l) TOTALS		Trace Metals (mg/l) SUSPENDED	Radiometrics (pCi/L) DISSOLVED					Radiometrics (pCi/L) SUSPENDED				Radiometrics (pCi/L) TOTALS	
		Calcium	Magnesium	Sodium	Potassium	Carbonate	Bicarbonate	Sulfate	Chloride	Ammonium as N	Nitrite + Nitrate as N	Fluoride	Silica	Total Dissolved Solids @ 180°C	Conductivity (umho/cm)	Alkalinity as CaCO3	pH (std units)	Aluminum	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Lead 210	Manganese	Mercury	Molybdenum	Nickel	Selenium	Vanadium	Zinc	Iron	Manganese	Lead 210	Uranium (mg/L)	Radium 226	Radium 228	Thorium 230	Polonium 210	Uranium (mg/L)	Radium 226	Thorium 230	Polonium 210	Gross Alpha	Gross Beta
Well Number	Sample Date	Ca	Mg	Na	K	CO3	HCO3	SO4	Cl	NH4	NO2+NO3	F	SiO2	TDS	Cond.	Alk.	pH	Al	As	Ba		B	Cd	Cr	Cu	Fe	Pb	Pb	Mn	Hg	Mo	Ni	Se	V	Zn	Fe	Mn	Pb	NatU	226Ra	228Ra		-	NatU	226Ra		-		
MW-6N	7/1/2010	4.0	1.0	299.0	2.0	14.0	459	187	15.0	0.30	ND	0.70	8.7	820	1200	399	8.6	0.30	ND	ND	ND	0.10	ND	ND	ND	0.17	ND	ND	0.01	ND	ND	ND	ND	ND	ND	3.73	0.04	ND	0.002	0.40	ND	ND	ND	0.00	0.80	0.20	ND	13.30	7.30
MW-6N	9/21/2010	4.0	1.0	287.0	2.0	24.0	453	184	14.0	0.10	ND	0.60	6.7	820	1220	412	8.8	ND	ND	ND	ND	ND	ND	ND	ND	0.12	ND	ND	0.01	ND	ND	ND	ND	ND	ND	1.88	0.03	ND	0.003	0.50	2.30	ND	ND	0.00	0.60	ND	ND	21.60	16.60
MW-6N	11/16/2010	4.0	1.0	284.0	2.0	19.0	448	229	8.0	ND	ND	0.70	7.0	910	1240	399	8.7	ND	0.001	ND	ND	ND	ND	ND	ND	0.10	ND	3.50	0.01	ND	ND	ND	0.001	ND	ND	0.81	0.02	3.50	0.002	0.80	ND	ND	ND	ND	ND	0.20	ND	8.90	ND
MW-6S	7/1/2010	7.0	2.0	404.0	3.0	16.0	547	8	255.0	0.40	ND	0.40	9.3	980	1690	475	8.6	0.30	0.002	ND	ND	0.30	ND	ND	ND	0.15	ND	ND	0.02	ND	ND	ND	0.002	ND	ND	4.06	0.06	ND	0.001	0.30	ND	ND	ND	0.00	0.50	ND	ND	ND	ND
MW-6S	9/21/2010	6.0	2.0	393.0	3.0	26.0	548	2	267.0	0.40	ND	0.30	7.5	1030	1730	492	8.7	0.20	ND	ND	ND	0.30	ND	ND	ND	0.14	ND	ND	0.02	ND	ND	ND	0.002	ND	ND	2.29	0.04	ND	0.001	0.30	ND	ND	ND	ND	0.20	ND	ND	7.40	3.70
MW-6S	11/16/2010	6.0	2.0	371.0	3.0	28.0	537	6	244.0	0.30	ND	0.40	7.0	1060	1680	487	8.7	ND	0.001	ND	ND	0.30	ND	ND	ND	ND	ND	3.60	0.02	ND	ND	ND	0.003	ND	ND	0.41	0.02	3.60	0.001	0.40	ND	ND	ND	ND	0.30	ND	ND	ND	ND
MW-7	7/1/2010	41.0	17.0	47.0	6.0	ND	280	42	7.0	0.70	ND	0.20	8.7	310	514	229	8.2	ND	ND	0.10	ND	ND	ND	ND	ND	ND	ND	2.47	0.04	ND	ND	ND	0.001	ND	ND	3.32	0.08	4.29	0.010	8.70	ND	ND	ND	0.00	3.85	1.80	ND	46.90	25.60
MW-7	9/20/2010	42.0	18.0	35.0	5.0	6.0	275	26	3.0	0.90	ND	ND	7.9	250	464	236	8.5	ND	ND	0.10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.002	ND	ND	0.55	0.02	2.80	0.007	10.60	ND	ND	ND	ND	0.40	ND	ND	18.80	9.40
MW-7	11/17/2010	42.0	18.0	36.0	5.0	ND	286	27	3.0	0.30	ND	0.20	8.0	260	469	235	8.0	ND	ND	0.10	ND	ND	ND	ND	ND	ND	ND	ND	0.03	ND	ND	ND	ND	ND	ND	1.61	0.05	4.20	0.007	11.30	ND	ND	ND	0.00	11.30	0.60	ND	30.50	11.30
MW-9	7/1/2010	7.0	1.0	194.0	4.0	ND	233	164	28.0	0.20	ND	0.40	10.0	580	865	198	8.4	0.20	ND	ND	ND	ND	ND	ND	ND	0.09	ND	1.30	ND	ND	0.04	ND	0.001	ND	ND	1.22	0.02	4.46	0.006	4.00	ND	0.50	ND	0.01	3.99	3.40	1.47	54.60	27.60
MW-9	9/21/2010	5.0	1.0	185.0	4.0	5.0	241	185	28.0	ND	ND	0.20	7.9	610	921	206	8.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.10	0.01	ND	0.02	ND	0.002	ND	0.01	0.37	0.01	2.60	0.007	4.00	ND	ND	ND	0.00	1.10	1.00	ND	26.00	14.10
MW-9	12/10/2010	4.0	1.0	190.0	3.0	41.0	168	185	28.0	ND	0.20	0.30	7.7	520	892	205	8.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	ND	0.02	ND	ND	ND	0.01	0.15	0.01	1.80	0.002	3.00	ND	ND	ND	0.00	0.30	0.20	2.50	14.00	6.10
MW-10	7/1/2010	3.0	ND	91.0	2.0	ND	177	39	9.0	0.20	ND	0.20	12.2	91	410	145	7.7	0.20	ND	ND	ND	ND	ND	ND	ND	0.07	ND	ND	ND	ND	0.01	ND	0.001	ND	ND	5.20	0.06	22.70	0.009	3.60	ND	ND	ND	0.05	45.90	13.60	10.60	334.00	120.00
MW-10	9/21/2010	2.0	ND	84.0	2.0	ND	181	36	3.0	0.10	ND	ND	10.6	84	382	153	8.5	ND	ND	ND	ND	ND	ND	ND	ND	0.07	ND	3.50	ND	ND	0.01	ND	ND	ND	ND	8.08	0.10	20.50	0.008	4.10	3.20	ND	ND	0.03	13.40	9.10	13.30	315.00	110.00
MW-10	11/17/2010	8.0	8.0	83.0	20.0	57.0	162	35	3.0	ND	ND	0.10	25.0	83	372	228	8.9	3.60	0.001	ND	ND	ND	ND	ND	0.02	1.01	ND	ND	ND	ND	0.01	0.14	ND	ND	0.03	11.00	0.13	20.10	0.023	4.60	ND	1.80	ND	0.04	115.00	3.90	3.70	463.00	174.00
PZ-1	1979	37.1	7.6	31.9	1.7	0	140	88	0.4	0.65	2.50	0.20	-	313	325	130	7.0	0.96	ND	0.80	-	-	ND	0.04	0.03	0.60	ND	-	ND	ND	0.02	0.03	0.002	ND	0.23	-	-	-	0.26	4.90	-	-	-	-	-	-	-	-	-
PZ-1	6/30/2010	52.0	7.0	45.0	2.0	ND	204	69	8.0	ND	0.40	0.10	20.0	350	494	167	7.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.95	0.07	ND	ND	ND	0.004	ND	0.02	ND	0.08	1.27	0.642	3.79	ND	ND	ND	ND	0.26	ND	ND	420.00	140.00
PZ-1	9/14/2010	54.0	7.0	47.0	2.0	ND	204	65	7.0	ND	0.30	0.10	20.0	390	475	167	7.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.50	0.09	ND	ND	ND	0.003	ND	0.01	0.12	0.09	1.60	0.589	2.70	3.60	ND	ND	ND	0.40	ND	ND	285.00	127.00
PZ-1	11/16/2010	55.0	7.0	44.0	2.0	ND	215	73	8.0	ND	0.60	0.10	19.0	410	504	177	8.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	11.60	0.04	ND	ND	ND	0.006	ND	0.01	1.74	0.10	6.80	0.906	3.40	2.80	ND	ND	0.00	10.90	ND	ND	418.00	135.00
PZ-2	1979	12.1	1.2	30.5	1.4	0	117	14	1.0	0.31	ND	0.20	-	182	140	96	8.7	1.52	ND	0.83	-	-	ND	0.20	0.03	1.50	0.01	-	ND	0.003	0.03	0.25	ND	ND	0.06	-	-	-	0.19	3.30	-	-	-	-	-	-	-	-	-
PZ-2	6/30/2010	16.0	2.0	29.0	2.0	ND	119	8	3.0	ND	ND	0.10	15.0	140	203	98	8.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.79	0.07	ND	ND	ND	ND	ND	ND	ND	ND	2.83	0.003	10.59	ND	ND	2.09	0.00	0.26	0.28	4.25	22.20	8.60
PZ-2	9/15/2010	17.0	2.0	29.0	2.0	ND	119	8	3.0	ND	ND	0.10	15.5	140	200	98	8.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.80	0.005	9.50	2.40	ND	1.30	ND	0.30	ND	2.10	19.00	8.40
PZ-2	11/16/2010	17.0	2.0	29.0	2.0	ND	109	8	3.0	ND	ND	0.10	14.0	190	201	89	8.2	ND	ND	ND	ND	ND	ND	ND	ND	0.16	ND	2.40	ND	ND	ND	ND	0.001	ND	ND	0.19	ND	4.60	0.003	9.30	ND	ND	ND	ND	3.10	ND	ND	20.30	10.80
PZ-3	1979	19.9	2.5	47.3	1.3	0	137	73	1.0	0.27	1.30	0.10	-	290	260	123	8.7	1.42	ND	0.72	-	-	ND	0.58	0.03	2.60	ND	-	ND	0.001	0.01	0.46	ND	ND	0.10	-	-	-	0.74	1.30	-	-	-	-	-	-	-	-	-
PZ-3	6/29/2010	68.0	5.0	61.0	3.0	ND	174	165	3.0	ND	ND	ND	16.6	450	638	142	8.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.002	ND	ND	0.09	0.07	1.63	0.004	2.57	ND	ND	ND	ND	0.77	ND	1.52	11.90	10.70
PZ-3	9/14/2010	70.0	6.0	62.0	2.0	ND	170	162	3.0	ND	ND	ND	16.9	490	603	139	8.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.06	ND	0.003	1.80	8.80	ND	ND	ND	ND	ND	3.00	8.70	9.00
PZ-3	11/17/2010	66.0	5.0	62.0	2.0	ND	172	165	3.0	ND	ND	ND	16.0	410	627	141	8.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.03	ND	0.06	ND	0.004	3.00	4.70	ND	ND	ND	0.60	ND	ND	8.69	8.22
PZ-4	1979	40.8	6.1	28.4	1.8	0	153	29	0.8	0.21	0.90	0.20	-	263	260	137	8.1	0.68	ND	0.48	-	-	ND	0.05	0.03	0.50	ND	-	ND	0.001	0.02	0.07	ND	ND	0.24	-	-	-	0.15	3.60	-	-	-	-	-	-	-	-	-
PZ-4	7/1/2010	50.0	7.0	16.0	2.0	ND	199	19	5.0	ND	0.20	0.20	12.0	210	350	163	8.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.50	ND	ND	ND	ND	0.001	ND	ND	1.81	0.04	46.00	0.299	2.50	ND	ND	ND	0.00	3.50	ND	45.80	253.90	140.40
PZ-4	9/20/2010	48.0	7.0	21.0	2.0	ND	194	17	4.0	ND	0.20	ND	11.2	210	344	165	8.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.10	ND	ND	ND	ND	0.002	ND	ND	0.22	ND	4.00	0.270	2.20	4.70	ND	ND	ND	ND	ND	2.30	163.00	49.80
PZ-4	11/16/2010	48.0	6.0	19.0	2.0	ND	205	18	5.0	ND	0.20	0.10	11.0	230	343	168	8.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.10	ND	ND	ND	ND	0.002	ND	ND	0.11	0.01	2.80	0.250	2.70	3.70	ND	ND	ND	0.30	ND	ND	172.00	52.00
PZ-5	1979	39.0	3.1	52.2	2.2	0	172	114	0.8	0.25	ND	0.10	-	-	330	154	8.4	0.21	ND	0.66	-	-	ND	0.36	0.05	1.40	ND	-	ND	0.001	0.01	0.22	ND	ND	0.09	-	-	-	0.07	7.00	-	-	-	-	-	-	-	-	-
PZ-5	6/30/2010	11.0	1.0	52.0	1.0	ND	125	32	3.0	ND	ND	ND	11.0	190	286	104	8.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.32	ND	ND	ND	ND	ND	ND	0.01	ND	ND	ND	0.004	1.87	ND	ND	ND	ND	ND	ND	ND	11.60	6.30
PZ-5	9/15/2010	12.0	1.0	54.0	ND	ND	128	36	4.0	ND	ND	ND	11.1	170	279	105	8.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.60	0.01	ND	ND	ND	ND	ND	ND	ND	0.01	1.90	0.004	1.60	4.10	ND	ND	ND	1.10	ND	1.60	10.60	7.60
PZ-5	11/16/2010	10.0	ND	49.0	ND	25.0	64	31	3.0	ND	ND	ND	10.0	260	274	94	8.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.30	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.00	0.003	1.70	1.40	ND	ND	ND	0.60	ND	1.30	7.30	4.70
PZ-6	8/16/1988	57.0	19.0	61.0	4.0	0	215	147	10.0	ND	0.02	1.14	-	462	660	177	7.7	ND	ND	ND	-	0.02	ND	ND	ND	0.02	ND	-	0.05	ND	ND	ND	ND	ND	0.06	-	-	-	0.007	4.80	-	-	-	-	-	-	-	-	-
PZ-6	8/16/1989	-	-	-	-	-	244	184	11.0	-	0.22	-	-	563	790	-	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	3.40	-	-	-	-	-	-	-	-	-
PZ-6	9/12/1990	-	-	-	-	-	139	4	9.0	-	0.51	-	-	216	250	-	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.013	1.20	-	-	-	-	-	-	-	-	-
PZ-6	7/23/1991	75.0	16.0	16.0	4.0	0	273	185	19.0	ND	1.48	0.18	-	547	690	224	7.4	ND	ND	ND	-	0.06	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	0.001	ND	ND	-	-	-	0.003	3.80	-	-	-	-	-	-	-	-	-
PZ-6	8/18/1992	-	-	-	-	-	239	176	8.0	-	0.27	-	-	486	570	-	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.003	3.50	-	-	-	-	-	-	-	-	-
PZ-6	7/13/1993	-	-	-	-	-	239	176	8.0	-	0.27	-	-	486	570	-	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.005	3.10	-	-	-	-	-	-	-	-	-
PZ-6	6/28/1994	-	-	-	-	0	259	132	10.0	-	1.30	-	-	441	760	-	7.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.042	3.40	-	-	-	-	-	-	-	-	-
PZ-6	7/3/1995	72.0	14.0	60.0	5.0	0	251	175	4.8	ND	ND	0.19	-	475	772	206	8.2	ND	ND	ND	-	0.07	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	-	-	-	0.002	4.90	-	-	-	-	-	-	-	-	-
PZ-6	7/2/1996	-	-	-	-	-	246	177	5.0	-	ND	-	-	510	726	-	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	1.90	-	-	-	-	-	-	-	-	-
PZ-6	7/21/1997	70.2	18.4	62.0	6.1	0	246	179	6.6	1.31	ND	0.10	11.6	459	734	202	8.1	ND	ND	ND	-	ND	ND	ND	ND	0.07	ND	-	0.04	ND	ND	ND	ND	ND	0.06	-	-	-	0.001	3.80	-	-	-	-	-	-	-	-	-
PZ-6	7/1/1998	-	-	-	-	-	200	184	2.1	-	0.49	-	-	447	686	-	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.010	2.80	-	-	-	-	-	-	-	-	-
PZ-6	6/8/1999	72.0	19.0	51.1	5.5	ND	197	181	6.0	0.69	2.17	0.13	14.0	468	684	162	8.0	ND	ND	ND	-	ND	ND	ND	0.01	ND	ND	-	0.19	ND	ND	ND	0.007	ND	0.51	-	-	-	0.009	3.10	-	-	-	-	-	-	-	-	-
PZ-6	7/7/2000	67.2	18.3	53.5	4.8	ND	218	156	6.9	0.59	2.31	0.10	12.8	444	700	180	7.4	ND	ND	ND	-	ND	ND	ND	0.03	ND	ND	-	0.14	ND	ND	ND	0.002	ND	0.45	-	-	-	0.009	4.50	-	-	-	-	-	-	-	-	-
PZ-6	7/6/2001	61.3	17.4	58.7	4.5	ND	233	145	7.8	1.03	0.14	ND	12.4	403	675	191	8.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	0.07	ND	ND	ND	0.002	ND	0.63	-	-	-	0.004	3.70	-	-	-	-	-	-	-	-	-
PZ-6	8/13/2002	64.1	17.5	58.0	4.7	ND	220	144	7.2	0.74	0.92	ND	12.2	434	670	181	8.0	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	0.08	ND	ND	ND	0.004	ND	0.59	-	-	-	0.004	4.40	-	-	-	-	-	-	-	-	-
PZ-7	1/9/1980	186.0	28.8	39.8	4.7	0	219	290	18.6	0.47	ND	0.52	-	694	550	-	7.0	ND	0.016	ND	-	0.16	ND	ND	ND	1.40	0.10	-	0.19	ND	ND	ND	ND	ND	0.29	1.83	-	-	3.90	23.00	-	-	-	-	-	-	-	-	-
PZ-7	7/8/1980	109.0	20.0	36.0	7.0	0	214	233	27.0	0.10	0.07	0.13	-	574	800	-	7.4	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	0.23	ND	ND	ND	ND	ND	0.01	ND	-	-	3.84	-	-	-	-	-	-	-	-	-	-
PZ-7	11/24/1980	118.0	26.0	51.0	6.0	0	249	244	25.0	244.00	0.32	0.11	-	603	950	-	7.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	0.07	ND	ND	ND	ND	ND	ND	-	-	-	3.78	-	-	-	-	-	-	-	-	-	-
PZ-7	8/16/1988	108.0	19.0	73.0	3.0	0	242	239	38.0	ND	0.48	1.25	-	712	940	199	7.6	ND	ND	ND	-	0.13	ND	ND	ND	0.07	ND	-	0.11	ND	ND	ND	ND	ND	0.11	-	-	-	5.199	21.20	-	-	-	-	-	-	-	-	-
PZ-7	8/16/1989	-	-	-	-	-	288	269	18.0	-	0.59	-	-	750	1800	-	7.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.410	44.00	-	-	-	-	-	-	-	-	-
PZ-7	9/11/1990	-	-	-	-	-	264	200	30.0	-	0.35	-	-	730	850	-	7.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.820	1.50	-	-	-	-	-	-	-	-	-
PZ-7	7/23/1991	125.0	28.0	63.0	3.0	0	337	210	35.0	ND	0.27	0.17	-	686	900	427	7.7	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	0.003	ND	ND	-	-	-	2.130	8.50	-	-	-	-	-	-	-	-	-
PZ-7	8/19/1992	-	-	-	-	-	327	271	30.0	-	ND	-	-	756	1060	-	7.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.590	41.80	-	-	-	-	-	-	-	-	-
PZ-7	7/12/1993	-	-	-	-	-	327	271	30.0	-	ND	-	-	756	1060	-	7.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.030	30.90	-	-	-	-	-	-	-	-	-
PZ-7	6/28/1994	117.0	25.0	78.0	4.0	0	288	248	34.0	ND	2.05	0.25	-	701	1150	247	6.7	ND	ND	ND	-	0.10	ND	ND	ND	0.02	ND	-	0.04	ND	ND	ND	ND	ND	0.01	-	-	-	1.017	59.30	-	-	-	-	-	-	-	-	-
PZ-7	7/3/1995	-	-	-	-	0	306	351	27.3	-	ND	-	-	794	1127	-	8.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.563	84.50	-	-	-	-	-	-	-	-	-
PZ-7	7/2/1996	-	-	-	-	-	288	321	21.3	-	ND	-	-	773	1046	-	7.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.306	62.20	-	-	-	-	-	-	-	-	-
PZ-7	7/21/1997	140.0	26.2	59.3	4.3	0	301	275	24.8	0.21	ND	0.11	15.7	724	1040	-	7.7	ND	ND	ND	-	ND	ND	ND	ND	0.50	ND	-	0.14	ND	ND	ND	ND	ND	0.08	-	-	-	0.387	40.30	-	-	-	-	-	-	-	-	-
PZ-7	7/1/1998	-	-	-	-	-	264	248	19.9	-	ND	-	-	630	929	-	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.685	29.10	-	-	-	-	-	-	-	-	-
PZ-7	6/8/1999	128.0	24.2	80.0	4.3	ND	281	306	23.0	0.07	0.24	0.11	15.0	734	1040	231	8.0	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	0.04	ND	ND	ND	ND	ND	0.38	-	-	-	0.774	48.90	-	-	-	-	-	-	-	-	-
PZ-7	7/6/2000	127.0	24.4	84.3	4.2	ND	247	332	23.9	0.06	ND	0.12	13.9	757	1075	202	7.8	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	0.16	ND	ND	ND	ND	ND	0.35	-	-	-	3.930	55.20	-	-	-	-	-	-	-	-	-
PZ-7	7/5/2001	123.0	24.1	85.1	3.9	ND	295	313	24.8	0.06	0.26	0.12	14.3	748	1110	242	7.6	ND	ND	ND	-	ND	ND	ND	ND	0.05	ND	-	0.01	ND	ND	ND	ND	ND	0.16	-	-	-	3.080	57.90	-	-	-	-	-	-	-	-	-
PZ-7	8/13/2002	120.0	23.1	73.2	4.0	ND	277	259	12.0	ND	0.08	0.10	12.4	685	989	227	7.8	ND	ND	ND	-	ND	ND	ND	ND	0.05	ND	-	0.12	ND	ND	ND	ND	ND	0.08	-	-	-	1.040	34.00	-	-	-	-	-	-	-	-	-
PZ-8	1/10/1980	12.3	2.4	37.0	2.0	8.3	105	26	3.2	0.12	ND	0.15	-	152	149	-	8.7	ND	0.01	ND	-	0.38	ND	ND	ND	0.18	0.06	-	0.03	0.012	ND	ND	ND	ND	0.02	35.80	-	-	0.14	3.70	-	-	-	-	-	-	-	-	-
PZ-8	11/24/1980	12.0	4.0	39.0	3.0	0	132	18	7.0	ND	0.51	0.09	-	159	279	-	7.5	1.42	ND	ND	-	ND	ND	ND	ND	0.77	ND	-	0.02	ND	ND	ND	ND	ND	0.04	-	-	-	0.04	-	-	-	-	-	-	-	-	-	-
PZ-8	8/16/1988	16.0	2.0	33.0	1.0	0	142	-	6.0	ND	0.34	1.04	-	148	290	117	7.9	ND	ND	ND	-	0.02	ND	ND	ND	0.03	ND	-	0.02	ND	ND	ND	ND	ND	0.04	-	-	-	0.028	2.30	-	-	-	-	-	-	-	-	-
PZ-8	8/16/1989	-	-	-	-	-	132	18	11.0	-	0.43	-	-	210	320	-	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.187	1.80	-	-	-	-	-	-	-	-	-
PZ-8	9/11/1990	-	-	-	-	-	242	134	11.0	-	1.23	-	-	570	680	-	7.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.004	4.80	-	-	-	-	-	-	-	-	-
PZ-8	7/23/1991	15.0	8.0	27.0	1.0	0	146	11	7.0	ND	0.27	0.21	-	187	250	120	8.0	ND	0.003	ND	-	ND	ND	ND	ND	ND	ND	-	0.01	ND	ND	ND	0.002	ND	ND	-	-	-	0.018	2.60	-	-	-	-	-	-	-	-	-
PZ-8	8/19/1992	-	-	-	-	-	127	19	5.0	-	0.11	-	-	157	270	-	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.009	1.50	-	-	-	-	-	-	-	-	-
PZ-8	7/12/1993	-	-	-	-	-	127	19	5.0	-	0.11	-	-	157	270	-	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.025	1.00	-	-	-	-	-	-	-	-	-
PZ-8	6/28/1994	-	-	-	-	0	146	45	8.0	-	2.79	-	-	202	280	-	7.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.027	9.30	-	-	-	-	-	-	-	-	-
PZ-8	7/3/1995	21.0	9.0	40.0	2.0	0	128	43	2.0	ND	ND	0.25	-	160	256	105	8.3	ND	ND	ND	-	ND	0.01	ND	ND	0.45	ND	-	0.10	ND	ND	ND	ND	ND	0.01	-	-	-	0.049	12.30	-	-	-	-	-	-	-	-	-
PZ-8	7/2/1996	-	-	-	-	-	122	23	3.6	-	0.22	-	-	205	243	-	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.027	3.50	-	-	-	-	-	-	-	-	-
PZ-8	7/21/1997	17.4	3.1	38.2	2.7	0	127	18	3.9	0.07	0.13	0.30	14.6	159	243	104	8.1	0.59	ND	ND	-	ND	ND	ND	ND	0.57	ND	-	0.10	ND	ND	ND	ND	ND	0.06	-	-	-	0.021	4.50	-	-	-	-	-	-	-	-	-
PZ-8	7/1/1998	-	-	-	-	-	113	18	1.4	-	0.16	-	-	160	235	-	7.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.016	2.00	-	-	-	-	-	-	-	-	-
PZ-8	6/14/1999	21.2	3.8	17.8	1.8	ND	104	15	4.2	0.07	0.29	0.17	17.0	149	215	86	8.1	ND	0.002	ND	-	ND	ND	ND	0.01	0.05	ND	-	ND	ND	ND	ND	ND	ND	0.20	-	-	-	0.033	3.60	-	-	-	-	-	-	-	-	-
PZ-8	7/7/2000	14.3	2.7	37.3	1.5	ND	122	19	3.0	ND	ND	0.13	10.6	140	250	100	8.0	ND	ND	0.10	-	ND	ND	ND	ND	0.05	ND	-	ND	ND	ND	ND	ND	ND	0.23	-	-	-	0.063	0.90	-	-	-	-	-	-	-	-	-
PZ-8	7/5/2001	13.2	2.5	39.1	1.7	ND	125	22	3.3	ND	ND	0.13	9.5	130	254	103	8.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	0.21	-	-	-	0.096	1.80	-	-	-	-	-	-	-	-	-
PZ-8	8/13/2002	13.5	2.4	40.3	1.9	1.3	117	21	ND	ND	0.08	0.10	8.3	169	252	98	8.3	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	0.42	-	-	-	0.083	2.00	-	-	-	-	-	-	-	-	-
PZ-9	1/7/1980	11.8	2.9	202.0	2.4	0	213	305	25.0	0.58	ND	0.50	-	694	720	-	8.0	ND	0.01	ND	-	0.20	ND	ND	ND	0.14	ND	-	0.04	ND	ND	ND	ND	ND	0.10	-	-	-	0.03	0.40	-	-	-	-	-	-	-	-	-
PZ-9	9/11/1990	-	-	-	-	-	264	170	29.0	-	ND	-	-	578	860	-	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.012	0.90	-	-	-	-	-	-	-	-	-
PZ-9	7/23/1991	37.0	13.0	156.0	3.0	0	322	195	29.0	ND	0.88	0.19	-	619	820	264	7.8	ND	0.005	ND	-	ND	ND	ND	ND	ND	ND	-	0.11	ND	ND	ND	0.006	ND	0.19	-	-	-	0.006	0.40	-	-	-	-	-	-	-	-	-
PZ-9	8/19/1992	-	-	-	-	-	288	218	26.0	-	0.07	-	-	577	800	-	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	1.60	-	-	-	-	-	-	-	-	-
PZ-9	7/12/1993	-	-	-	-	-	288	218	26.0	-	0.07	-	-	577	800	-	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.087	1.80	-	-	-	-	-	-	-	-	-
PZ-9	6/27/1994	50.0	7.0	132.0	4.0	0	254	168	32.0	0.27	4.75	0.22	-	539	1000	-	7.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	0.01	ND	ND	ND	0.001	ND	0.11	-	-	-	0.029	2.80	-	-	-	-	-	-	-	-	-
PZ-9	7/3/1995	-	-	-	-	0	276	254	25.6	-	0.47	-	-	858	1014	-	8.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.151	3.90	-	-	-	-	-	-	-	-	-
PZ-9	7/2/1996	-	-	-	-	-	267	252	28.4	-	0.13	-	-	661	984	-	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	0.261	0.90	-	-	-	-	-	-	-	-	-
PZ-9	7/30/1997	47.9	11.0	152.0	4.7	0	273	252	27.9	0.13	ND	ND	8.9	635	987	224	8.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	0.18	-	-	-	0.176	0.90	-	-	-	-	-	-	-	-	-
PZ-9	7/1/1998	-	-	-	-	-	270	242	28.4	-	ND	-	-	646	1010	-	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	0.221	ND	-	-	-	-	-	-	-	-	-
PZ-9	6/8/1999	52.0	12.0	159.0	4.3	ND	272	253	31.4	ND	ND	ND	8.2	655	1010	223	8.2	ND	ND	ND	-	ND	ND	ND	0.01	ND	ND	-	ND	ND	ND	ND	0.001	ND	0.38	-	-	-	0.309	0.70	-	-	-	-	-	-	-	-	-
PZ-9	7/6/2000	50.1	12.0	156.0	3.9	ND	265	243	33.2	ND	ND	ND	9.3	647	1008	218	8.1	ND	ND	ND	-	ND	ND	ND	0.01	ND	ND	-	0.09	ND	ND	ND	ND	ND	0.51	-	-	-	0.316	ND	-	-	-	-	-	-	-	-	-
PZ-9	7/9/2001	43.5	11.0	168.0	3.6	ND	273	229	31.8	ND	0.15	ND	8.9	618	1010	225	8.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	0.002	ND	0.56	-	-	-	0.256	0.30	-	-	-	-	-	-	-	-	-
PZ-10	1/6/1980	26.0	4.3	47.5	2.0	22.9	129	68	4.2	1.33	ND	0.30	-	266	220	-	9.2	0.60	0.01	ND	-	0.22	ND	ND	ND	0.67	ND	-	0.01	ND	ND	ND	ND	ND	0.02	14.40	-	-	0.10	1.20	-	-	-	-	-	-	-	-	-
PZ-10	11/24/1980	36.0	10.0	21.0	3.0	0	137	54	11.0	ND	1.32	0.18	-	214	400	-	7.3	ND	ND	ND	-	ND	ND	ND	ND	0.07	ND	-	0.03	ND	ND	ND	ND	ND	0.01	-	-	-	0.69	-	-	-	-	-	-	-	-	-	-
PZ-10	8/16/1988	50.0	11.0	22.0	2.0	0	197	52	8.0	ND	0.19	0.88	-	268	450	162	7.9	ND	ND	ND	-	0.10	ND	ND	ND	0.03	ND	-	0.06	ND	ND	ND	ND	ND	0.08	-	-	-	0.038	3.70	-	-	-	-	-	-	-	-	-
PZ-10	8/16/1989	-	-	-	-	-	205	58	11.0	-	0.14	-	-	330	540	-	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	0.075	3.60	-	-	-	-	-	-	-	-	-
PZ-10	9/11/1990	-	-	-	-	-	190	72	7.0	-	0.51	-	-	277	420	-	7.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	0.009	2.90	-	-	-	-	-	-	-	-	-
PZ-10	7/24/1991	51.0	14.0	15.0	2.0	0	210	42	10.0	ND	0.77	0.20	-	267	450	172	7.9	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	0.01	ND	ND	ND	ND	ND	ND	-	-	-	0.016	0.60	-	-	-	-	-	-	-	-	-

Table D6.2 Water Quality Summary

		Major Ions (mg/l)												Non-Metals (mg/L)			
		Calcium	Magnesium	Sodium	Potassium	Carbonate	Bicarbonate	Sulfate	Chloride	Ammonium as N	Nitrite + Nitrate as N	Fluoride	Silica	Total Dissolved Solids @ 180°C	Conductivity (umhos/cm)	Alkalinity as CaCO3	pH (std units)
Well Number	Sample Date	Ca	Mg	Na	K	CO3	HCO3	SO4	Cl	NH4	NO2+NO3	F	SiO2	TDS	Cond.	Alk.	pH
PZ-10	8/18/1992	-	-	-	-	-	190	55	7.0	-	0.22	-	-	269	450	-	7.6
PZ-10	7/12/1993	-	-	-	-	-	190	55	7.0	-	0.22	-	-	269	450	-	7.6
PZ-10	6/28/1994	45.0	7.0	21.0	2.0	0	176	33	6.0	0.13	7.45	0.32	-	220	430	-	7.0
PZ-10	7/3/1995	-	-	-	-	0	177	43	ND	-	ND	-	-	180	370	145	7.7
PZ-10	7/2/1996	-	-	-	-	-	143	57	3.6	-	ND	-	-	252	363	-	7.5
PZ-10	7/21/1997	46.9	12.7	16.5	1.6	0	172	53	4.3	ND	0.59	0.28	25.5	222	363	141	7.8
PZ-10	7/1/1998	-	-	-	-	-	163	56	2.1	-	0.14	-	-	268	382	-	7.5
PZ-10	6/8/1999	50.0	18.0	11.0	1.0	ND	207	44	3.0	ND	0.18	0.48	33.0	260	380	170	7.9
PZ-10	7/5/2000	50.8	14.9	21.1	2.4	ND	150	95	5.7	0.39	ND	ND	24.8	279	457	123	7.9
PZ-10	7/6/2001	52.4	13.9	18.8	1.6	ND	151	85	5.6	0.12	0.41	0.17	25.0	268	439	124	7.9
PZ-10	8/12/2002	58.0	14.2	21.1	2.0	ND	160	90	11.3	0.37	0.05	ND	22.9	300	456	-	-
n=		81	78	81	79	49	115	114	113	39	65	64	54	114	115	70	114
Average		46.7	10.2	81.8	3.2	6.0	220	125	18.9	6.63	0.72	0.27	13.4	432	638	193	7.9
Standard Deviatior		39.2	8.1	87.6	2.4	12.3	91	99	40.6	39.01	1.18	0.26	5.7	242	366	97	0.4
Minimum		2.0	1.0	11.0	1.0	0.0	64	2	0.4	0.06	0.02	0.09	5.7	83	140	86	6.7
Maximum		186	29	404	20	57	548	351	267	244	7.45	1.25	33.0	1060	1800	492	9.2

		Trace Metals (mg/l) DISSOLVED																																							
		Aluminum	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Lead 210	Manganese	Mercury	Molybdenum	Nickel	Selenium	Vanadium	Zinc	Trace Metals (mg/l) TOTALS Iron	Trace Metals (mg/l) TOTALS Manganese	Trace Metals (mg/l) SUSPENDED Lead 210	Radiometrics (pCi/L) DISSOLVED Uranium (mg/L)	Radium 226	Radium 228	Thorium 230	Polonium 210	Radiometrics (pCi/L) SUSPENDED Uranium (mg/L)	Radium 226	Thorium 230	Polonium 210	Radiometrics (pCi/L) TOTALS Gross Alpha	Gross Beta
Well Number	Sample Date	Al	As	Ba		B	Cd	Cr	Cu	Fe	Pb	Pb	Mn	Hg	Mo	Ni	Se	V	Zn	Fe	Mn	Pb	NatU	226Ra	228Ra		-	NatU	226Ra		-		
PZ-10	8/18/1992	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	0.012	4.00	-	-	-	-	-	-	-	-	-
PZ-10	7/12/1993	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	0.021	1.90	-	-	-	-	-	-	-	-	-
PZ-10	6/28/1994	ND	ND	ND	-	0.02	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	0.02	-	-	-	0.424	1.10	-	-	-	-	-	-	-	-	-
PZ-10	7/3/1995	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	0.473	7.20	-	-	-	-	-	-	-	-	-
PZ-10	7/2/1996	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	0.023	5.00	-	-	-	-	-	-	-	-	-
PZ-10	7/21/1997	ND	ND	ND	-	ND	ND	ND	ND	0.09	ND	-	0.01	ND	ND	ND	0.001	ND	0.08	-	-	-	0.162	2.20	-	-	-	-	-	-	-	-	-
PZ-10	7/1/1998	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	0.287	3.60	-	-	-	-	-	-	-	-	-
PZ-10	6/8/1999	ND	ND	ND	-	ND	ND	ND	0.02	0.08	ND	-	ND	ND	ND	ND	0.003	ND	0.26	-	-	-	0.418	4.20	-	-	-	-	-	-	-	-	-
PZ-10	7/5/2000	ND	ND	0.16	-	ND	ND	ND	0.01	ND	ND	-	0.07	ND	ND	ND	ND	ND	0.34	-	-	-	0.016	4.40	-	-	-	-	-	-	-	-	-
PZ-10	7/6/2001	ND	ND	0.20	-	ND	ND	ND	ND	0.03	ND	-	0.05	ND	ND	ND	0.001	ND	0.41	-	-	-	0.054	5.60	-	-	-	-	-	-	-	-	-
PZ-10	8/12/2002	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	0.08	ND	ND	ND	ND	ND	0.55	-	-	-	0.017	7.50	-	-	-	-	-	-	-	-	-
n=		14	11	11	0	16	1	5	13	37	3	17	48	5	11	6	32	0	53	25	24	23	115	109	11	2	2	14	26	11	13	28	27
Average		0.87	0.006	0.39	-	0.18	0.01	-	0.02	0.38	-	2.92	0.06	-	0.02	0.20	0.002	-	0.18	4.04	0.05	7.34	0.46	8.82	3.79	1.15	1.70	0.01	8.5	3.1	7.2	113.8	46.1
Standard Deviatior		0.92	0.006	0.31	-	0.12	-	-	0.01	0.56	-	2.50	0.06	-	0.01	-	0.002	-	0.19	7.53	0.03	10.53	1.00	15.48	1.95	0.92	0.56	0.02	23.6	4.4	12.2	152.2	55.9
Minimum		0.20	0.001	0.10	ND	0.02	0.01	0.04	0.01	0.02	0.01	1.10	0.01	0.001	0.01	0.03	0.001	ND	0.01	0.09	0.01	1.00	0.001	0.30	1.40	0.50	1.30	0.0003	0.2	0.2	1.3	7.3	3.7
Maximum		3.60	0.016	0.83	ND	0.38	0.01	0.6	0.05	2.60	0.10	11.60	0.23	0.012	0.04	0.46	0.007	ND	0.63	35.80	0.13	46.00	5.30	84.50	8.80	1.80	2.09	0.05	115.0	13.6	45.8	463.0	174.0

Notes: 1980 data have been interpreted from a poor original cop
Ammonium - MW-7, PZ-1, PZ-6, PZ-7, PZ-9, and PZ-10 exceed Class I suitabilit
Cadmium - PZ-8 exceeds Class II suitabilit
Chloride - MW-6S exceeds Class II suitabilit
Chromium - PZ-2, PZ-3, and PZ-5 exceed Class I and II suitability; PZ-4 exceed Class III suitabili
Iron - MW-10, PZ-1, PZ-2, PZ-3, PZ-4, PZ-5, PZ-7, PZ-8, PZ-9, and PZ-10 exceed Class I suitabilit
Lead - PZ-8 exceeds Class I suitability; PZ-7 exceeds Class III suitabilit
Manganese - PZ-1, PZ-6, PZ-7, PZ-8, PZ-9, and PZ-10 meet or exceed Class I suitability; PZ-7 exceed Class II suitabil
Mercury - PZ-2, PZ-3, PZ-4, PZ-5, and PZ-8 exceed Class III suitabilit
Nickel - PZ-2, PZ-3, and PZ-5 exceed Class II suitability
Sulfate - PZ-7 and PZ-9 exceed Class I and II suitability; MW-6N exceedS Class II suitabili
TDS - MW-6N, MW-6S, MW-9, PZ-6, PZ-7, PZ-8, and PZ-9 exceed Class I suitability
Ph - MW-6N, MW-6S, MW-7, MW-9, MW-10, PZ-2, PZ-3, PZ-5, and PZ-8 exceed Class I and III suitability; PZ-10 exceeds Class II suitabilit
Radium 226 + Radium 228 - MW-7, MW-10, PZ-1, PZ-2, PZ-3, PZ-4, PZ-5, PZ-7, PZ-8, and PZ-10 exceed Class I, II and III suitabilit
Gross Alpha - MW-6N, MW-7, MW-9, MW-10, PZ-1, PZ-2, and PZ-4, exceed Class I, II and III suitability

Table D6.5 Ground Water Rights (within 3 mile radius)

WR Number	Priority Date	Water Right Status	Owner	Facility Name	Uses	T	R	S	Qtr Qtr	Yield	Total Depth (Ft)	Static Water Level (Ft)	Chemical Analysis (Y/N)	Longitude	Latitude
CR UW03/438	04/15/1977		KENNETH L.MARBLE	ZENITH #1	MIS	027N	092W	01	NW1/4SW1/4	60				-107.77268	42.33928
CR UW04/134	05/18/1976		WILLIAM MCINTOSH	MCINTOSH WELL #2	MIS	028N	092W	29	NE1/4SE1/4	5				-107.83571	42.36854
CR UW04/135	06/14/1978		WILLIAM MCINTOSH	MCINTOSH WELL #3	MIS	028N	092W	29	NE1/4SE1/4	25				-107.83571	42.36854
CR UW04/136	08/27/1974		U.S. ENERGY- CRESTED CORPORATION	GOLDEN GOOSE II WATER	MIS	028N	092W	20	NE1/4SE1/4	7				-107.83562	42.38277
CR UW05/075	09/28/1977		KENNETH L.MARBLE	DOMINO #1	MIS	027N	092W	11	SE1/4NE1/4	15				-107.77773	42.32855
P100621.0W	09/14/1995	Incomplete		GOLDEN GOOSE #1 SHAFT	MIS	028N	092W	21	SW1/4NE1/4	60	860	859	N	-107.82109	42.38647
P102900.0W	07/05/1996		GREEN MOUNTAIN MINING VENTURE	JP-40	MON	027N	092W	10	NE1/4NE1/4	0	38	10.5	N	-107.7971	42.33222
P12423.0P	03/31/1967	Complete		MILLIE WELL #0774	STK	029N	091W	31	NE1/4NW1/4	1	250	200	N	-107.76958	42.44769
P12975.0P	07/05/1962	Complete		KIRK SPRINGS #0638 (A)	STK	028N	093W	13	SE1/4SW1/4	5	3	-1.00	N	-107.88431	42.39358
P12976.0P	07/05/1962	Complete		KIRK SPRINGS #0638 (B)	STK	028N	093W	12	NE1/4NE1/4	3	6	-1.00	N	-107.87449	42.4189
P145360.0W	05/08/2002			PAY DIRT PIT	MIS	028N	092W	20	NE1/4NE1/4	2500				-107.83563	42.38992
P147542.0W	10/21/2002	Complete		BEMW-001	MON	027N	092W	02	SE1/4SE1/4	0	98	56	N	-107.77763	42.33569
P147588.0W	10/22/2002	Complete		BEMW-002	MON	027N	092W	02	SE1/4SE1/4	0	80	51.6	N		
P147589.0W	10/22/2002	Complete		BEMW-003	MON	027N	092W	02	SE1/4SE1/4	0	95	73.25	N		
P147590.0W	10/22/2002	Complete	Kennecott Uranium Co.	BEMW-004	MON	027N	092W	02	SE1/4SE1/4	0	100	73.2	N		
P147591.0W	10/22/2002	Complete	Kennecott Uranium Co.	BEMW-005	MON	027N	092W	02	SE1/4SE1/4	0	120	90.06	N		
P147592.0W	10/22/2002	Complete		BEMW-006	MON	027N	092W	02	NW1/4SE1/4	0	170	148.99	N		
P148684.0W	12/03/2002	Complete		RIGBY PASTURE NO. 1	DOM_GW; STK	028N	092W	05	SW1/4NE1/4	25	100	40	N	-107.84048	42.42967
P1490.0W	05/06/1965	Incomplete	TITAN URANIUM USA INC	GOLDEN GOOSE WATER WELL #1	DOM_GW; IND_GW	028N	092W	21	SW1/4NE1/4	5	800	-1.00	N	-107.82109	42.38647
P16758.0W	11/29/1972	Complete		BOULDER SPRING #4039	STK	028N	092W	12	NW1/4NE1/4	10	8	-1.00	N	-107.76303	42.41883
P170167.0W	08/24/2005		Wyo. State Lands & Investments	PZ7	STK	028N	092W	16	SW1/4SW1/4	25				-107.83082	42.39357
P172609.0W	12/14/2005		U.S. ENERGY CORP. / CREST CORP.	CONGO PIT NO. 1 WELL	MIS	028N	092W	16	SE1/4SW1/4	25				-107.82597	42.39365
P181596.0W	06/05/2007	Incomplete	KENNECUTT URANIUM COMPANY	BE-005	TST	028N	091W	31	SW1/4SE1/4	0				-107.74414	42.34905
P181597.0W	06/05/2007	Incomplete	KENNECUTT URANIUM COMPANY	BE-006	TST	028N	091W	31	NW1/4SE1/4	0				-107.74416	42.35267
P181598.0W	06/05/2007	Incomplete	KENNECUTT URANIUM COMPANY	BE-002	TST	027N	091W	06	NW1/4NE1/4	0				-107.74412	42.34625
P181642.0W	06/08/2007		GREEN MOUNTAIN MINING VENTURE	ENL. ZENITH #1 WELL	MIS	027N	092W	01	NW1/4SW1/4	0	850	210	N	-107.77268	42.33928
P181753.0W	06/05/2007	Incomplete	KENNECUTT URANIUM COMPANY	BE-001	MIS	027N	091W	06	NW1/4NE1/4	150				-107.74412	42.34625
P189722.0W	02/25/2009	Complete	KENNECOTT URANIUM CO.	BE-007/P-10	MON	028N	091W	31	SE1/4SW1/4	0	2310	1112.6	N	-107.746992	42.348769
P192610.0W	01/19/2010	Incomplete	TITAN URANIUM USA	CONGO MW 1	MON	028N	092W	16	SW1/4SW1/4	0				-107.830858	42.393103
P192611.0W	01/19/2010	Incomplete	TITAN URANIUM USA	CONGO MW 2	MON	028N	092W	16	NW1/4SE1/4	0				-107.820861	42.396836
P192612.0W	01/19/2010	Incomplete	TITAN URANIUM USA	CONGO MW 3	MON	028N	092W	21	NE1/4NE1/4	0				-107.816128	42.389728
P192613.0W	01/19/2010	Incomplete	TITAN URANIUM USA	CONGO MW 4	MON	028N	092W	20	NE1/4NE1/4	0				-107.835631	42.389428
P21884.0W	06/08/1973	Complete		WWPP TEST HOLE #1	MON	029N	093W	36	NW1/4SE1/4	0	1000	220	Y	-107.90174	42.44068
P21885.0W	06/08/1973			WWPP TEST HOLE #2	MIS	029N	093W	36	NW1/4SE1/4	0	360	187	N	-107.90174	42.44068
P28674.0W	08/27/1974	Unadjudicated	TITAN URANIUM USA INC	SHEEP MOUNTAIN #1 WATER	IND_GW	028N	092W	21	NE1/4SE1/4	10	1360	-1.00	N	-107.81621	42.38291
P28675.0W	08/27/1974	Fully Adjudicated	TITAN URANIUM USA INC	GOLDEN GOOSE II WATER	IND_GW	028N	092W	20	SE1/4SE1/4	7	500	-1.00	N	-107.83561	42.37925
P33910.0W	05/18/1976	Fully Adjudicated	U.S. ENERGY-CRESTED CORPORATION	MCINTOSH WELL #2	MIS	028N	092W	29	NE1/4SE1/4	5	250	160	Y	-107.83571	42.36854
P34440.0W	08/19/1976	Incomplete	GREEN MOUNTAIN MINING VENTURE	ROCK WELL #1	MIS	027N	092W	11	NW1/4NW1/4	0	358	16.7	Y	-107.79228	42.33222
P35444.0W	10/29/1976	Complete	GREEN MOUNTAIN MINING VENTURE	ROCK WELL #2	MON	027N	092W	11	NW1/4NW1/4	-1.00	99.6	11	Y	-107.79228	42.33222
P409.0C	07/31/1945	Incomplete	SINCLAIR REFINING CO.	CROOKS GAP STATION WATER	IND_GW	028N	092W	18	NE1/4NE1/4	15	215	10		-107.85499	42.4045
P41033.0W	04/15/1977	Fully Adjudicated	GREEN MOUNTAIN MINING VENTURE	ZENITH #1	MIS	027N	092W	01	NW1/4SW1/4	60	850	210	N	-107.77268	42.33928
P4158.0W	01/12/1970	Unadjudicated	TITAN URANIUM USA INC	YELLOWSANDS #1	DOM_GW; IND_GW	028N	092W	20	SE1/4SE1/4	12	500	200	N	-107.83561	42.37925
P42150.0W	09/28/1977	Fully Adjudicated	GREEN MOUNTAIN MINING VENTURE	DOMINO #1	MIS	027N	092W	11	SE1/4NE1/4	15	190	20	N	-107.77773	42.32855
P43197.0W	05/09/1978	Complete		BORDENS WELL #101	DOM_GW; STK	028N	092W	05	NW1/4SE1/4	12	235	140	N	-107.84046	42.42609
P43954.0W	06/14/1978	Fully Adjudicated	U.S. ENERGY-CRESTED CORPORATION	MCINTOSH WELL #3	MIS	028N	092W	29	NE1/4SE1/4	25	300	1207	N	-107.83571	42.36854
P44469.0W	07/17/1978	Unadjudicated	TITAN URANIUM USA INC	SD 18 16	MIS	028N	092W	28	SW1/4NE1/4	20	1410	757	Y	-107.82113	42.37213
P44886.0W	08/21/1978	Unadjudicated	U.S. ENERGY-CRESTED CORPORATION	PL 21A	MIS	028N	092W	22	NE1/4SW1/4	35	1410	675	Y	-107.8065	42.38296
P49786.0W	07/25/1979	Complete	TITAN URANIUM USA INC	PIEZO #1	MON	028N	092W	29	NE1/4SE1/4	0	200	101	N	-107.83571	42.36854
P49787.0W	07/25/1979	Complete	TITAN URANIUM USA INC	PIEZO #2	MON	028N	092W	08	NE1/4SW1/4	0	730	236	Y	-107.84519	42.4117
P49788.0W	07/25/1979	Complete	TITAN URANIUM USA INC	PIEZO #3	MON	028N	092W	29	SE1/4SE1/4	0	280	129	Y	-107.83574	42.36493
P49789.0W	07/25/1979	Complete	TITAN URANIUM USA INC	PIEZO #4	MON	028N	092W	33	NW1/4NW1/4	0	220	168	Y	-107.83092	42.36133
P49790.0W	07/25/1979	Complete	TITAN URANIUM USA INC	PIEZO #5	MON	028N	092W	32	SE1/4NE1/4	0	440	134.5	Y	-107.83578	42.35781
P52287.0W	05/30/1980	Complete	TITAN URANIUM USA INC	PZ 6A	MON	028N	092W	20	NE1/4NE1/4	0	240	123	Y	-107.83563	42.38992
P52288.0W	05/30/1980	Complete	TITAN URANIUM USA INC	PZ 6B	MON	028N	092W	20	NE1/4NW1/4	0	241	124	N	-107.84526	42.38995
P52289.0W	05/30/1980	Complete	TITAN URANIUM USA INC	PZ 6C	MON	028N	092W	20	NW1/4NE1/4	0	240	123	N	-107.8404	42.38992
P52291.0W	05/30/1980	Complete	TITAN URANIUM USA INC	PZ 8	MON	028N	092W	21	SE1/4NW1/4	0	420	304	N	-107.82596	42.38641
P52292.0W	05/30/1980	Complete	TITAN URANIUM USA INC	PZ 9	MON	028N	092W	16	NE1/4SE1/4	0	840	205	Y	-107.81619	42.39742
P52293.0W	05/30/1980	Complete	TITAN URANIUM USA INC	PZ 10	MON	028N	092W	21	NE1/4NE1/4	0	400	31.55	N	-107.81619	42.39017
P64607.0W	07/11/1983	Complete	Pathfinder Mines Corp.	GREEN MOUNTAIN OBSERVATION #1	MON	028N	091W	31	SW1/4SE1/4	0	2515	847	N	-107.74414	42.34905
P64608.0W	07/11/1983	Complete	Pathfinder Mines Corp.	GREEN MOUNTAIN OBSERVATION #2	MON	028N	091W	31	SW1/4SE1/4	0	2686	667	N	-107.74414	42.34905
P70389.0W	03/28/1985	Complete		IME #JC 1	MON	028N	092W	17	SE1/4NW1/4	0	39	35.7	N	-107.84522	42.40083
P70390.0W	03/28/1985	Complete		IME #JC 3	MON	028N	092W	17	SE1/4NW1/4	0	61.5	28.2	N	-107.84522	42.40083
P70391.0W	03/28/1985	Complete		IME #JC 4	MON	028N	092W	17	SE1/4NW1/4	0	13	-1.00	N	-107.84522	42.40083
P74066.0W	02/23/1987	Incomplete	TITAN URANIUM USA INC	MCINTOSH PIT #1	MIS; STK	028N	092W	32	SE1/4NE1/4	15				-107.83578	42.35781
P7439.0P	05/15/1929	Complete	BESSIE A.MCINTOSH	LAZY C S #1	DOM_GW; STK	029N	092W	33	SW1/4SE1/4	10	280	20	N	-107.84302	42.43697
P94242.0W	11/17/1993	Incomplete		SUN HEALD "A" PORTAL	MIS	028N	092W	29	NE1/4SE1/4	5	33	20	N	-107.83571	42.36854
P94243.0W	11/17/1993	Incomplete		BIG SHEEP DECLINE #1	MIS	028N	092W	29	NE1/4SE1/4	10	39	31	N	-107.83571	42.36854
P98528.0W	09/12/1994	Complete	JAMES L.MCINTOSH	BUTTE SPRINGS #2	STK	028N	092W	01	SE1/4SE1/4	3	50	0	N	-107.75822	42.42246

Table D6.6 Historic Discharge Measurement

Date	Peak Flow (cfs)	Gage Height (ft)
1961*	22	*
1962-03	128	6.27
1963*	26	*
1964*	26	*
1965-04	67	5.1
1966*	13	*
1967*	13	*
1968*	13	*
1969*	13	*
4/24/1970	12	3.7
1971-04	108	5.89
1972-04	51	4.76
5/20/1973	97	5.67
4/20/1974	3	2.91
7/10/1975	255	8.98
5/19/1976	2	2.8
7/25/1977	37	4.43
7/21/1978	29	4.2
4/20/1979	3	2.93
4/23/1980	49	4.71
5/24/1981	17	4.18

*Discharge is less than the the indicated value which is the minimum recordable discharge at this site.

Table D6.7 Titan Discharge Measurements

Location	Date	Discharge (cfs)
CCUS	5/24/2010	6.8
CCUS	6/16/2010	4.6
CCUS	8/17/2010	5.5
CCUS	10/6/2010	3.3
CCUS	3/30/2011	3.8
CCUS	5/18/2011	3.8
CCDS	6/16/2010	5.4
CCDS	8/17/2010	5.7
CCDS	10/6/2010	3.3
CCDS	3/30/2011	4.1
CCDS	5/18/2011	3.7
CCMU	5/18/2011	3.3

Table D6.8 Precipitation Frequency

Storm RI, Duration	Precipitation Depth (in)
2-yr, 6-hr	0.9
5-yr, 6-hr	1.2
10-yr, 6-hr	1.4
25-yr, 6-hr	1.7
50-yr, 6-hr	1.9
100-yr, 6-hr	2.1
PMP	24

Table D6.9 Water Quality Field Parameters

			Field Parameters				
Site	Date	pH	EC (µmhos/cm)	TDS (mg/L)	TSS (mg/L)	SiO_2 (mg/L)	Turbidity (NTU)
SW-01	4/13/2010	7.7	566	412	-	-	-
SW-02	4/13/2010	6.7	45	62	-	-	-
SW-03	4/13/2010	7.1	72	126	-	-	-
SW-01	5/25/2010	8.3	590	430	588	13	226
SW-02	5/25/2010	8.0	194	160	260	12	295
CROOKS US	5/25/2010	8.4	318	220	6	20.0	2.7
CROOKS DS	5/25/2010	8.4	338	240	22	21.0	5.1
CROOKS US	6/28/2010	8.3	346	300	10	22.0	1.4
CROOKS DS	6/29/2010	8.3	375	270	6	22.1	2.2
CROOKS US	7/22/2010	8.2	325	240	ND	22.5	2.1
CROOKS DS	7/22/2010	8.3	338	240	41	22.2	17.3
CROOKS US	8/18/2010	8.3	352	260	6	18.5	4.7
CROOKS DS	8/18/2010	8.2	372	270	46	21.0	16.5
CROOKS US	9/14/2010	8.2	332	230	ND	20.4	2.1
CROOKS DS	9/21/2010	8.4	358	240	ND	20.4	-
CROOKS US	10/7/2010	8.4	347	290	ND	22.1	4.6
CROOKS DS	10/7/2010	8.4	359	260	12	22.0	5.9
CROOKS US	11/15/2010	8.1	325	170	ND	22.4	2.4
CROOKS DS	11/15/2010	8.1	342	150	20	22.3	3.3
CROOKS DS	12/10/2010	8.3	337	200	10	21.5	5.7

ND = Non-Detect.

Table D6.10 Water Quality Major Anions and Cations*

Site	Date	Calcium	Alkalinity (HCO_3)	Alkalinity (CO_3)	Magnesium	Potassium	Chloride	Sodium	Flouride	Nitrate-Nitrite	Sulfate	Alkalinity ($CaCO_3$)	Ammonia
SW-01	4/13/2010	41	158	ND	10	5	8	53	0.2	ND	154	-	-
SW-02	4/13/2010	4	27	ND	ND	4	ND	ND	ND	ND	1	-	-
SW-03	4/13/2010	8	36	ND	1	3	ND	ND	ND	ND	8	-	-
SW-01	5/25/2010	50	223	ND	13	7	8	50	0.2	ND	102	183	ND
SW-02	5/25/2010	27	114	ND	4	4	1	3	0.1	ND	5	94	ND
CROOKS US	5/25/2010	38	167	ND	4	2	2	22	0.2	ND	21	140	ND
CROOKS DS	5/25/2010	42	174	ND	5	2	3	25	0.2	ND	26	146	ND
CROOKS US	6/28/2010	48	187	ND	5	2	2	20	0.2	ND	27	156	ND
CROOKS DS	6/29/2010	49	194	ND	6	2	3	28	0.2	ND	35	161	ND
CROOKS US	7/22/2010	46	181	ND	5	2	2	18	0.2	ND	27	148	ND
CROOKS DS	7/22/2010	46	185	ND	5	2	3	20	0.2	ND	29	152	ND
CROOKS US	8/18/2010	49	190	ND	5	2	2	24	0.2	ND	37	158	ND
CROOKS DS	8/18/2010	49	193	ND	6	2	4	27	0.2	ND	46	158	ND
CROOKS US	9/14/2010	45	179	ND	5	2	2	24	0.2	ND	33	146	ND
CROOKS DS	9/21/2010	47	178	ND	5	2	3	26	ND	ND	36	152	ND
CROOKS US	10/7/2010	47	173	ND	5	3	3	19	0.2	ND	32	149	ND
CROOKS DS	10/7/2010	48	179	ND	5	2	3	21	0.2	ND	36	154	ND
CROOKS US	11/15/2010	46	153	ND	5	2	2	19	ND	ND	36	126	ND
CROOKS DS	11/15/2010	47	166	ND	5	2	3	22	ND	ND	39	136	ND
CROOKS DS	12/10/2010	45	178	ND	5	2	3	27	0.2	ND	37	146	ND

ND = Non-Detect.

* All units are in mg/L

Table D6.11 Water Quality Dissolved Metals

Site	Date	Aluminum	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Uranium	Vanadium	Zinc
SW-01	4/13/2010	0.1	0.001	0.2	ND	ND	ND	ND	ND	0.11	ND	ND	ND	ND	ND	0.007	1.56	ND	ND
SW-02	4/13/2010	0.1	ND	ND	ND	ND	ND	ND	ND	0.10	ND	ND	ND	ND	ND	ND	0.0029	ND	ND
SW-03	4/13/2010	0.1	ND	ND	ND	ND	ND	ND	ND	0.08	0.001	ND	ND	ND	ND	ND	0.0133	ND	ND
SW-01	5/25/2010	ND	0.002	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.02	ND	0.007	2.79	ND	ND
SW-02	5/25/2010	0.2	ND	ND	ND	ND	ND	ND	ND	0.27	ND	ND	ND	ND	ND	ND	0.0148	ND	0.02
CROOKS US	5/25/2010	ND	ND	ND	ND	ND	ND	ND	ND	0.08	ND	0.01	ND	ND	ND	ND	0.0165	ND	ND
CROOKS DS	5/25/2010	ND	0.001	ND	ND	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	ND	0.0185	ND	ND
CROOKS US	6/28/2010	ND	0.002	ND	ND	ND	ND	ND	ND	0.06	ND	0.02	ND	ND	ND	0.001	0.0123	ND	ND
CROOKS DS	6/29/2010	ND	0.002	ND	ND	ND	ND	ND	ND	ND	ND	0.01	ND	ND	ND	0.002	0.0197	ND	ND
CROOKS US	7/22/2010	ND	0.002	ND	ND	ND	ND	ND	ND	0.11	ND	ND	ND	ND	ND	ND	0.0137	ND	0.01
CROOKS DS	7/22/2010	ND	0.002	ND	ND	ND	ND	ND	ND	0.07	ND	ND	ND	ND	ND	ND	0.0172	ND	0.02
CROOKS US	8/18/2010	ND	0.002	ND	ND	0.2	ND	ND	ND	ND	ND	0.02	ND	ND	ND	ND	0.0152	ND	ND
CROOKS DS	8/18/2010	ND	0.002	ND	ND	0.2	ND	ND	ND	0.09	ND	ND	ND	ND	ND	ND	0.0232	ND	ND
CROOKS US	9/14/2010	ND	0.001	ND	ND	ND	ND	ND	ND	0.05	ND	0.03	ND	ND	ND	ND	0.0150	ND	ND
CROOKS DS	9/21/2010	ND	0.001	ND	ND	ND	ND	ND	ND	0.06	ND	0.01	ND	ND	ND	ND	0.0208	ND	ND
CROOKS US	10/7/2010	ND	ND	ND	ND	ND	ND	ND	ND	0.10	ND	0.03	ND	ND	ND	ND	0.0140	ND	ND
CROOKS DS	10/7/2010	ND	ND	ND	ND	ND	ND	ND	ND	0.08	ND	0.01	ND	ND	ND	0.001	0.0199	ND	ND
CROOKS US	11/15/2010	ND	ND	ND	ND	ND	ND	ND	ND	0.06	ND	0.05	ND	ND	ND	ND	0.0137	ND	ND
CROOKS DS	11/15/2010	ND	ND	ND	ND	ND	ND	ND	ND	0.05	ND	0.01	ND	ND	ND	ND	0.0188	ND	ND
CROOKS DS	12/10/2010	ND	0.001	ND	ND	ND	ND	ND	ND	0.06	ND	0.01	ND	ND	ND	ND	0.0215	ND	ND

ND = Non-Detect.
* All units are mg/L

Table D6.12 Water Quality Radionuclides

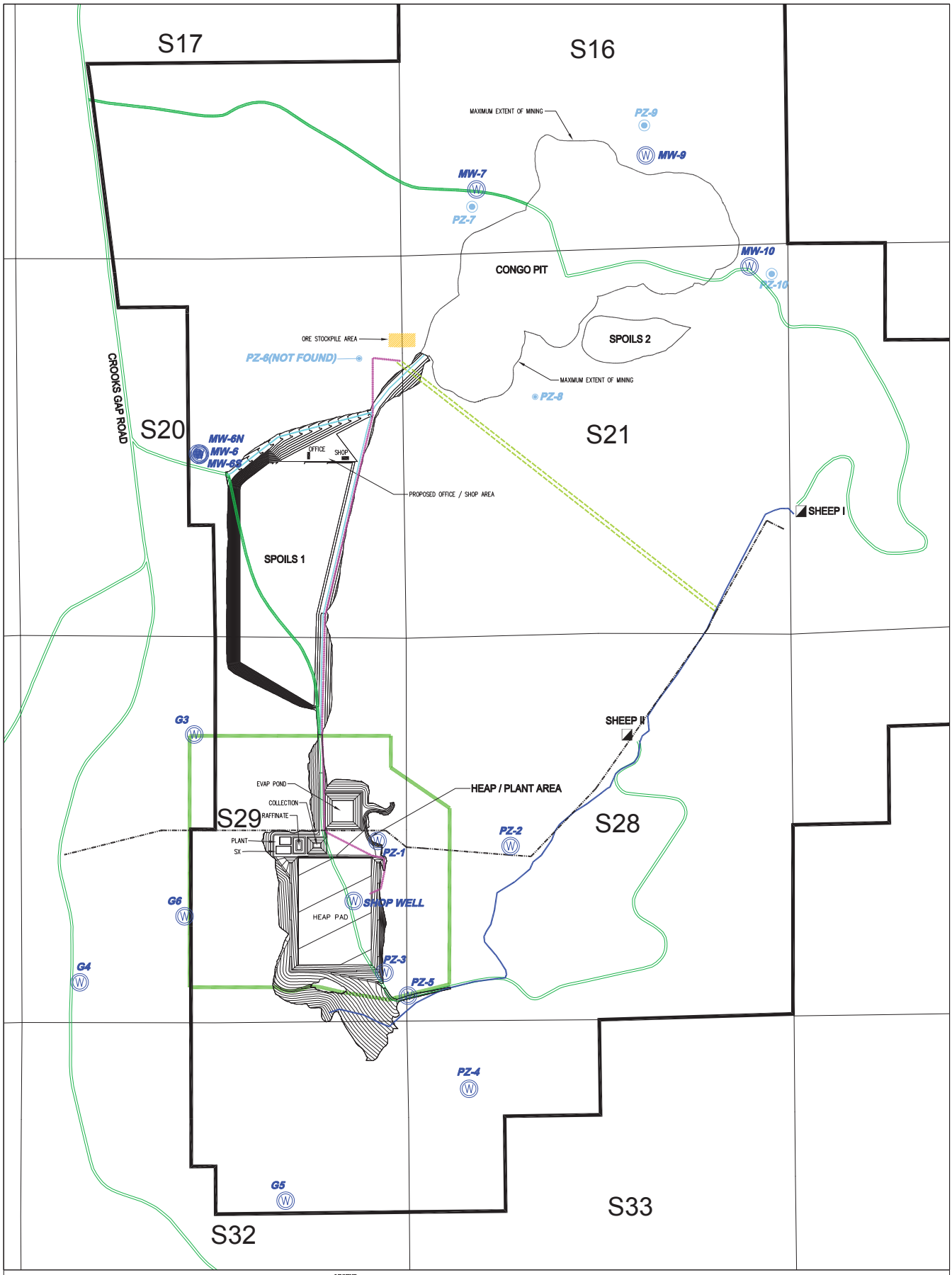
		Dissolved Radionuclides (all units are pCi/L)					Suspended Radionuclides (all units are pCi/L)				
Site	Date	Lead 210	Polonium 210	Radium 228	Radium 226	Thorium 230	Lead 210	Polonium 210	Radium 226	Thorium 230	Uranium
SW-01	4/13/2010	-	-	1.9	4.3	-	-	-	-	-	-
SW-02	4/13/2010	-	-	0.9	0.52	-	-	-	-	-	-
SW-03	4/13/2010	-	-	1.5	9.8	-	-	-	-	-	-
SW-01	5/25/2010	13.0	ND	ND	4.33	ND	50.4	9.51	30.48	ND	38.5
SW-02	5/25/2010	ND	ND	2.09	1.29	ND	4.46	ND	6.56	ND	16.0
CROOKS US	5/25/2010	ND	ND	ND	0.77	ND	ND	ND	0.31	ND	0.118
CROOKS DS	5/25/2010	ND	ND	ND	0.82	ND	ND	ND	0.42	ND	0.287
CROOKS US	6/28/2010	ND	ND	ND	1.13	ND	ND	ND	0.25	ND	ND
CROOKS DS	6/29/2010	ND	ND	ND	1.13	ND	ND	ND	ND	ND	ND
CROOKS US	7/22/2010	ND	ND	ND	1.00	ND	ND	ND	ND	ND	ND
CROOKS DS	7/22/2010	ND	ND	ND	0.90	ND	ND	ND	0.78	ND	0.0007
CROOKS US	8/18/2010	ND	ND	ND	1.30	ND	ND	ND	0.3	ND	ND
CROOKS DS	8/18/2010	ND	ND	ND	1.30	ND	ND	ND	0.9	ND	0.001
CROOKS US	9/14/2010	1.2	ND	1.90	2.1	ND	ND	4.0	ND	ND	ND
CROOKS DS	9/21/2010	2.0	ND	ND	1.0	ND	ND	ND	ND	ND	ND
CROOKS US	10/7/2010	1.5	ND	ND	0.9	ND	ND	ND	3.6	0.3	ND
CROOKS DS	10/7/2010	ND	ND	ND	1.0	ND	ND	ND	6.3	2.2	ND
CROOKS US	11/15/2010	1.6	ND	ND	0.7	ND	1.0	ND	ND	ND	ND
CROOKS DS	11/15/2010	2.4	ND	ND	0.8	ND	1.9	ND	0.3	ND	ND
CROOKS DS	12/10/2010	ND	ND	ND	0.80	ND	2.2	2.3	0.3	ND	0.0003

ND = Non-Detect.

Table D6.13 Surface Water Rights

Permit Number	Notes	Type	Comment	Longitude	Latitude
P5600.0D	Spring Creek Ditch	IRR_SW	SPARHAWK	-107.86424	42.34654
P16964.0D	Burnt Gulch 2" Water Line Pipeline	DOM_SW; MIS_SW; OIL; STO	PRODUCERS & REFINERS CORP.	-107.8849	42.39437
P20128.0D	Crooks Gap Unit Water Pipe Line	DOM_SW; IND_SW	Atlantic Richfield Co.	-107.88431	42.39358
P3193.0D	Stevens Ditch No. 1	IRR_SW	STEVENS	-107.88431	42.39719
P3194.0D	Stevens Ditch No. 2	IRR_SW	STEVENS	-107.87962	42.38656
P1565.0D	Rigby Reservoir Supply Ditch	RES	Rigby	-107.82742	42.44908
P17410.0D	Kirk Pipe Line	DOM_SW; STO	KIRK	-107.84767	42.428
P17411.0D	J. M. Ditch	DOM_SW; IRR_SW; RES; STO	KIRK	-107.85	42.43337
P17412.0D	Garden Ditch	IRR_SW	KIRK	-107.84765	42.42802
P22281.0D	Sheehan Spring Diversion	DOM_SW; MIN	Heald Project #2	-107.83084	42.37212
P34183.0D	CROOKS GAP WATER HAUL	TEM; TEM	CROOKS GAP WATER HAUL	-107.84689	42.38
P34470.0D	CROOKS GAP WATER HAUL	TEM	CROOKS GAP WATER HAUL	-107.84689	42.38
P1275.0D	Crooks Creek Ditch	IRR_SW	FISHER	-107.85767	42.35753
P15549.0D	Harris Ditch	DOM_SW; IRR_SW; STO	MARRIS	-107.86153	42.35083
P15570.0D	Kirk Ditch No. 1	IRR_SW	Claytor	-107.85506	42.40831
P15571.0D	Kirk Ditch No. 2	IRR_SW	Claytor	-107.85461	42.41342
P17019.0D	Sheep Creek Pipe Line No. 1	DOM_SW; DRI; MIS_SW; OIL; STO	UNION OIL COMPANY OF CALIFORNIA	-107.80746	42.40466
P17020.0D	Sheep Creek Pipe Line No. 2	DOM_SW; DRI; MIS_SW; OIL; STO	UNION OIL COMPANY OF CALIFORNIA	-107.80642	42.40466
P17021.0D	Sheep Creek Pipe Line No. 3	DOM_SW; DRI; MIS_SW; OIL; STO	UNION OIL COMPANY OF CALIFORNIA	-107.79668	42.40824
P17025.0D	Crooks Creek 2" Water Line Pipeline	DOM_SW; DRI; MIS_SW; OIL; STO	Atlantic Richfield Co.	-107.85489	42.39708
P17409.0D	Supply Ditch No. 4 (as Changed to Kirk No. 1 Ditch)	DOM_SW; IRR_SW; RES; STO	Claytor	0	0
P3195.0D	Stevens Ditch No. 3	IRR_SW	STEVENS	-107.85392	42.39047
P3197.0D	Sheep Creek Ditch No. 2	IRR_SW	MCLAUGHLIN	-107.80361	42.39057
P5453.0D	Butte Springs Ditch	IRR_SW	Johnson	-107.76334	42.41909
P7774.0D	Crook's Creek Ditch	IRR_SW	Lemmon	-107.84661	42.37966
P7817.0D	Sheep Creek Ditch No. 1	IRR_SW	Rushton	-107.81574	42.42275
P7823.0D	Sheep Creek Ditch No. 2	IRR_SW	Rushton	-107.81576	42.42276
P8994.0D	Sheep Creek Ditch No. 4	DOM_SW; IRR_SW; STO	JOHNSON	-107.81744	42.42623
P9136.0D	Sheep Creek Ditch No. 3	DOM_SW; IRR_SW; STO	JOHNSON	-107.81742	42.42621
P25671.0D	Green Mountain Mine Diversion Ditch	RES	Kennecott Uranium Co.	-107.78073	42.35271
P7714.0R	McIntosh No. 1 Reservoir	MIN; MIS_SW; COMBBU	U.S. ENERGY/CRESTED CORPORATION	-107.83567	42.37213

FIGURES



LEGEND

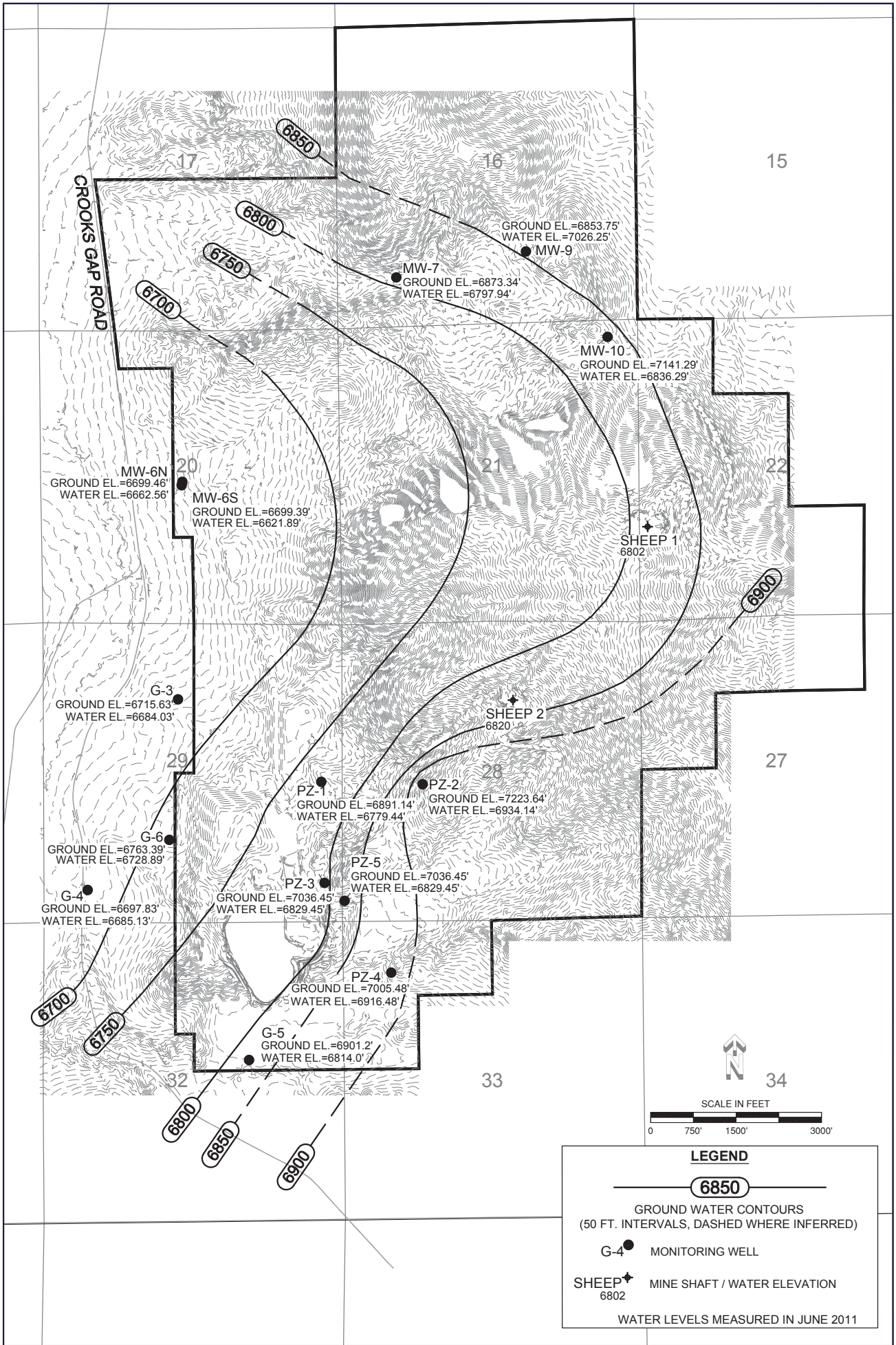
SECTION LINE
PERMIT BOUNDARY
EXISTING ROAD / ACCESS ROUTES
EXISTING ROAD TO BE REMOVED / RECLAIMED
EXISTING GROUND CONTOURS C3-10'
DESIGN CONTOURS C3-10'
RADIATION CONTROL BOUNDARY
DEWATERING PIPELINE ALIGNMENT
PROPOSED DECLINE TO UNDERGROUND MINE WORKINGS
PROPOSED ROAD / ACCESS ROUTE
PROPOSED CONVEYOR ALIGNMENT
PROPOSED OVERHEAD POWER LINE
EXISTING MINE SHAFT
MW-6N MONITOR WELL LOCATION
PZ-10 OLD MONITOR WELL LOCATION

T. 28 N. , R. 92 W.

1 inch = 600

BRS ENGINEERING	FIGURE D6.1 - MONITOR WELL LOCATIONS	SHEEP MOUNTAIN MINES FREMONT COUNTY, WYOMING	REVISION DATE: 06/15/11
	SCALE: 1"=600'		CAD FILENAME: F:\2008\PERMITING\OPERATING PLAN
	DRAWN BY:CDS DATE: 5/20/11		DWG.:

TITAN URANIUM USA INC



T. Bielenberg and Associates, Inc.	FIGURE D6.2 POTENTIOMETRIC SURFACE MAP	SHEEP MOUNTAIN MINES FREMONT COUNTY, WYOMING	REVISION DATE: 06/15/11
	SCALE: 1"=1500'		CAD FILENAME:
	DRAWN BY: SOM / DATE: JUNE 12, 2011		DWG. NUMBER: NUMBER

TITAN URANIUM USA INC

Titan Uranium - Sheep Mountain Mines

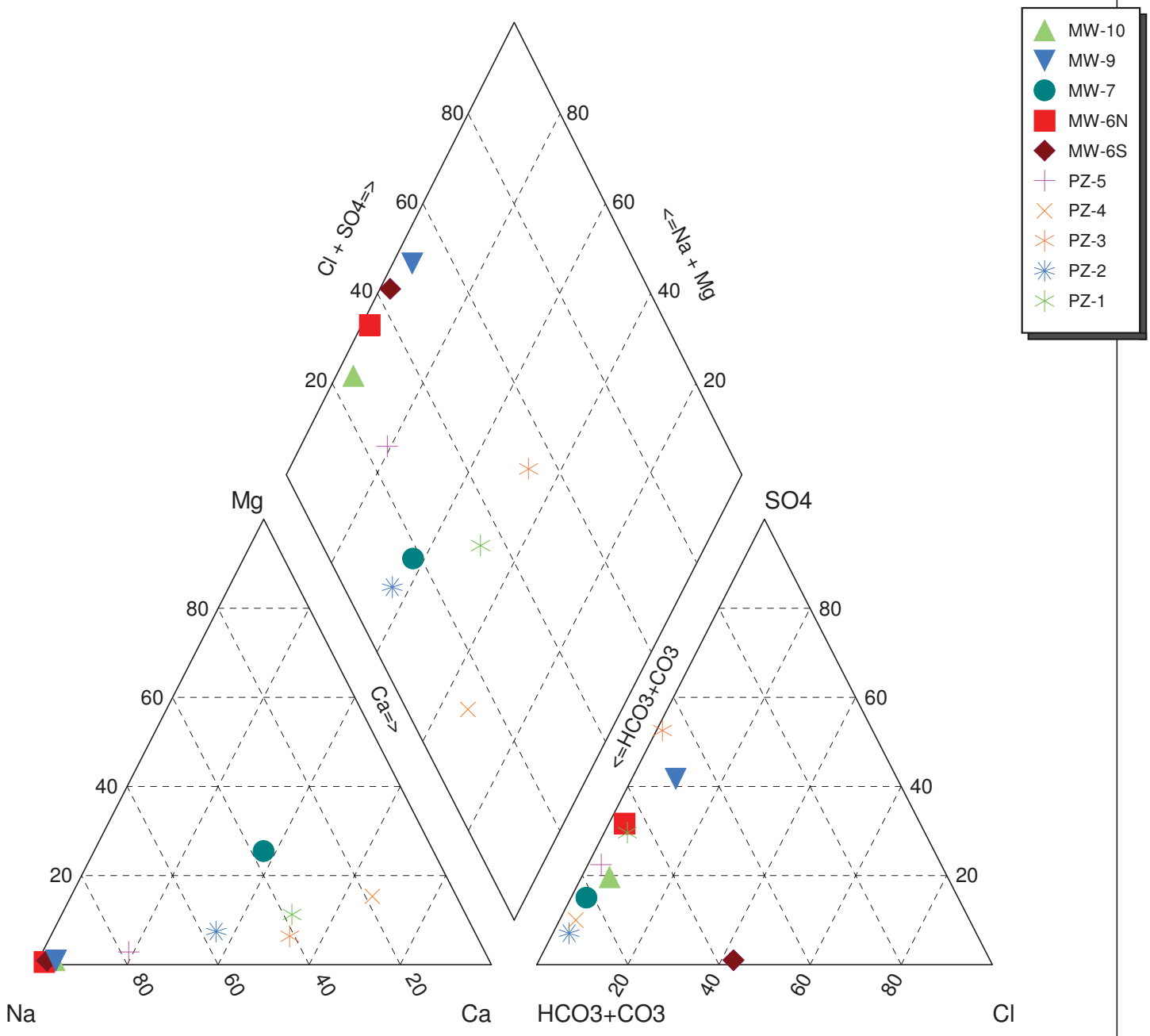
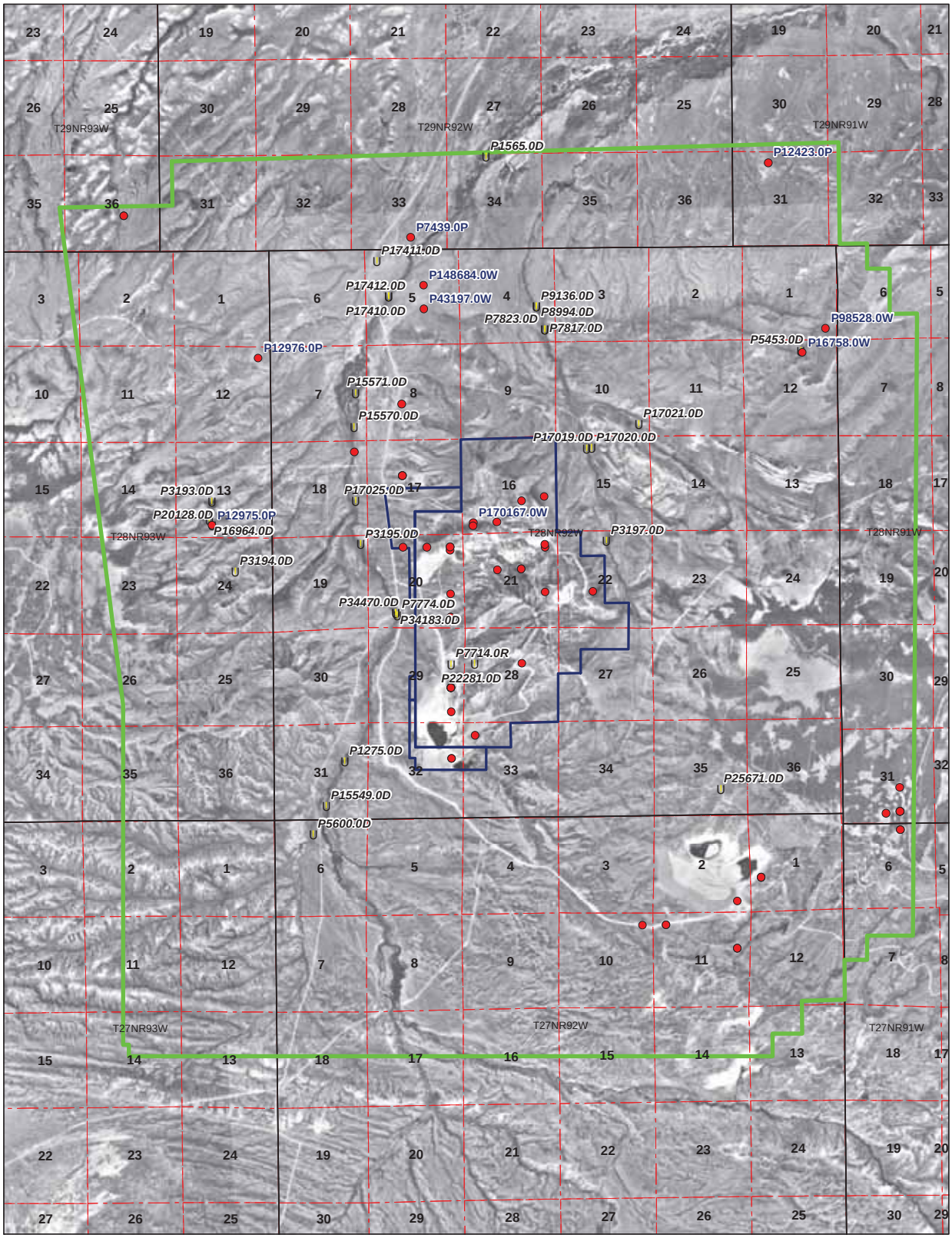


FIGURE D6.3

DESCRIPTION: 2009 & 2010 Monitoring Well Water Quality		
	PROJECT: Sheep Mountain	PROJECT NO: WYTUI101
	CLIENT: Titan Uranium	DATE: 2/15/2011



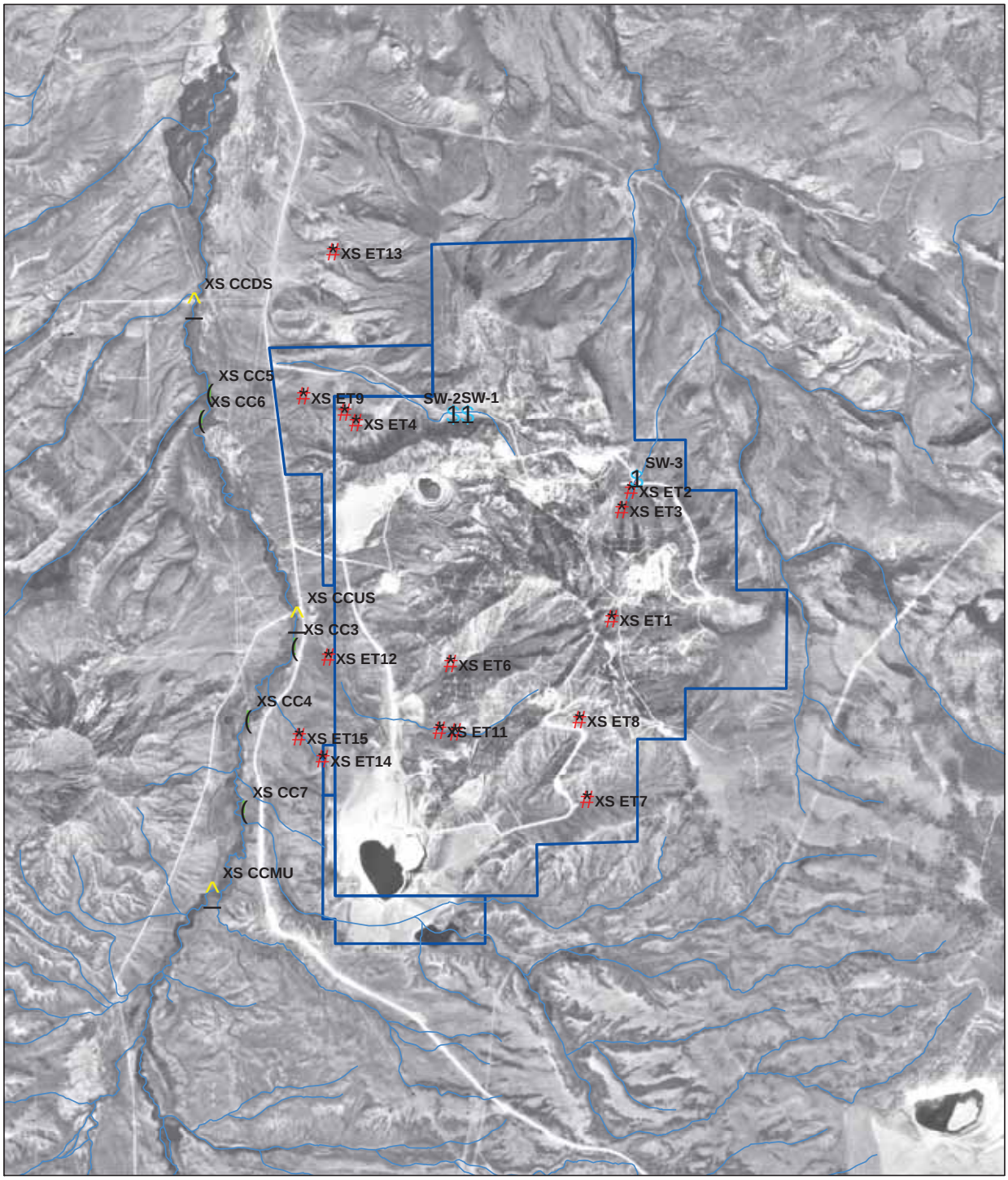
*WATER RIGHTS WITHOUT LABELS ARE MINING INUSTRY MONITORING WELLS.

LEGEND

- GROUND WATER RIGHTS WITHIN 3 MILES
- SURFACE WATER RIGHTS WITHIN 3 MILES
- 3 MILE OFFSET
- PROJECT BOUNDARY

0 0.5 1 2 3 Miles

	FIGURE D6.4 SURFACE WATER AND GROUND WATER RIGHTS LOCATION MAP	SHEEP MOUNTAIN FREMONT COUNTY, WYOMING	REVISION DATE:	TITAN URANIUM USA INC
	SCALE: 1 IN. = 1 MI.		WYTUI101 HYDROLOGY - WATER RIGHTS.MXD	
	DRAWN BY: JHF/AMK	DATE: 6/14/11	DWG. NUMBER	



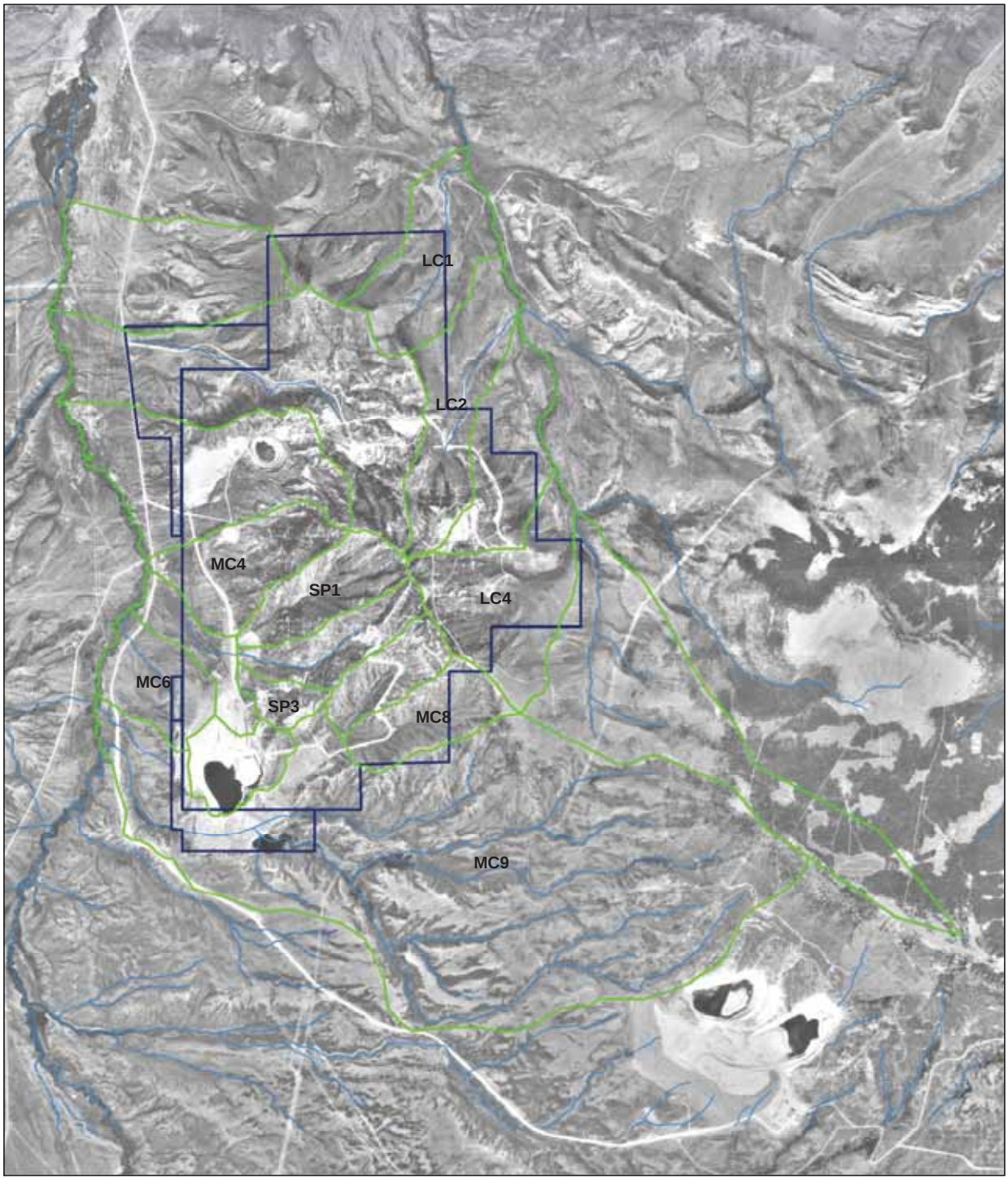
LEGEND

- IMPOUNDMENT SAMPLING LOCATIONS
- CROOKS CREEK GAGING STATIONS
- CROOKS CREEK CROSS SECTIONS
- EPHEMERAL TRIBUTARY CROSS SECTIONS
- STREAMS
- PROJECT BOUNDARY

Ü

1 0.5 0 1 Miles

	FIGURE D6.5 SURFACE WATER DATA COLLECTION LOCATIONS	SHEEP MOUNTAIN FREMONT COUNTY, WYOMING	REVISION DATE:	TITAN URANIUM USA INC
	SCALE: 1 IN. = 0.5 MI. / DRAWN BY: JHF/AMK	DATE: 6/14/11	WYTUI101 HYDROLOGY - BASELINE SAMPLE LOCATIONS.MXD	
			DWG. NUMBER	



LEGEND

- DRAINAGE BASINS
- PROJECT BOUNDARY
- STREAMS

Ü

1 0.5 0 1 Miles

	FIGURE D6.6 SURFACE WATER DRAINAGE BASINS	**SHEEP MOUNTAIN FREMONT COUNTY, WYOMING**	REVISION DATE:	TITAN URANIUM USA INC
	SCALE: 1 IN. = 1 MI.		WYTUI101 HYDROLOGY-BASELINE WATERSHEDS.mxd	
	DRAWN BY: JHF/AMK	DATE: 6/14/11	DWG. NUMBER	

ATTACHMENTS

Attachment A
Well Logs for the G Wells

BOREHOLE LOG

PROJECT NAME Sheep Mt. LOGGED BY DAL
BOREHOLE ID G-1 DATE 5/16/2011
LOCATION COUNTY/STATE Fremont, WY

COMMENTS
Near intersection of Lost Creek Mine Rd and road up towards McIntosh Pit
W of disturbed area immediately E of gas pipelines
0-10 ft, Qal/Qcl; 10-50 ft, Tfu; Kc contact 50 ft
No water was encountered in borehole. No well completed at this location. No geophisical log.

LITHOLOGY CLASSIFICATION

Clayey Sand
Sandstone
Shale
Clay

STRATIGRAPHY CLASSIFICATION

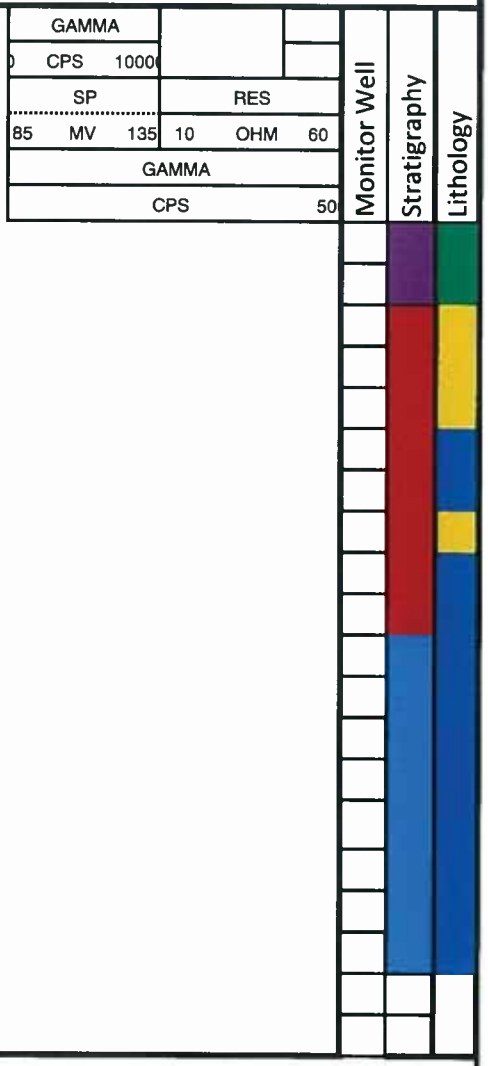
Quaternary Alluvium/colluvium
Fort Union
Cody Shale

Monitor Well

Blank Casing Screened

Depth (ft) From	To	Descriptive Geology: Color	Grain Size	Sorting	Angularity	Argilaceous (%)	Oxi/Red	Composition*: Hematite	Limonite	Calcite	Feldspar	Carbon	Lab Sample ID*
0	5	Brn	vf-vc	P	SA	-	O	-	-	-	-	-	
5	10	Yellow-Brn	vf-vc	P	SA	-	O	-	-	-	-	-	
10	15	Yellow-Brn	vf-vc	P	SA	-	O	-	-	-	-	-	
15	20	Yellow-Brn	vf-vc	P	SA	-	O	-	-	-	-	-	
20	25	Yellow-Brn	fc	m	SA	-	O	-	-	-	-	-	
25	30	Grey-Green	-	-	-	-	R	-	-	-	-	-	
30	35	Grey-Green	-	-	-	-	R	-	-	-	-	-	
35	40	Grey-Green	vf-fc	P	SA	-	R	-	-	-	-	-	
40	45	Grey-Green	-	-	-	-	R	-	-	-	-	-	
45	50	Grey-Green	-	-	-	-	R	-	-	-	-	-	
50	55	Grey	-	-	-	-	-	-	-	-	-	-	
55	60	Grey	-	-	-	-	-	-	-	-	-	-	
60	65	Grey	-	-	-	-	-	-	-	-	-	-	
65	70	Grey	-	-	-	-	-	-	-	-	-	-	
70	75	Grey	-	-	-	-	-	-	-	-	-	-	
75	80	Grey	-	-	-	-	-	-	-	-	-	-	
80	85	Grey	-	-	-	-	-	-	-	-	-	-	
85	90	Grey	-	-	-	-	-	-	-	-	-	-	

Hawkins CBM Logging, Inc.



Grain Size Description
vf=fine (<0.075 mm)
f=fine (0.075-0.425 mm)
m=medium (0.425-2.0 mm)
c=coarse (2.0-4.75 mm)
vc=very coarse (>4.75 mm)

TITAN URANIUM USA INC

BOREHOLE LOG

PROJECT NAME Sheep Mt. LOGGED BY DAL
BOREHOLE ID G-2 DATE 5/17/2011
LOCATION Directly W of spoil pile N of McIntosh Pit, S. of access road. COUNTY/STATE Fremont, WY
elevation ~ 6653 ft

COMMENTS 0-10 ft Qal/Qcl; 10-36 ft Tbs/Tfu Undivided; Kc Contact 36 ft SWL at +55'
The upper sands were unsaturated. No well completion at this location. SWL elevation ~6653 ft

LITHOLOGY CLASSIFICATION

Clayey Sand
Sandstone
Shale
Clay

Stratigraphic Classification

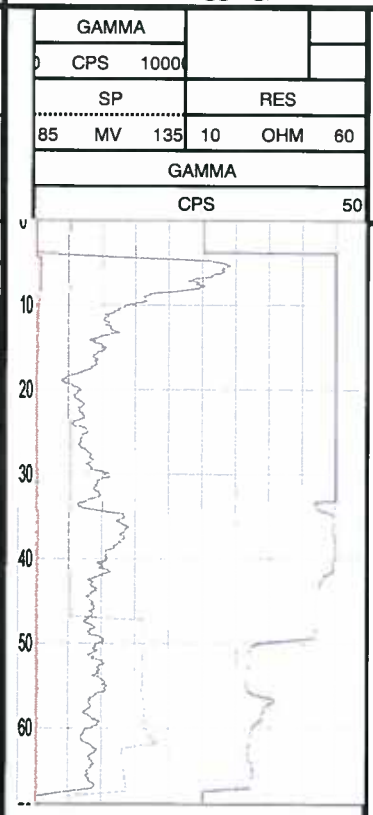
Quaternary Alluvium/colluvium
Fort Union
Cody Shale

Monitor Well

Blank Casing Screened

Depth (ft)		Descriptive Geology						Composition*					
From	To	Color	Grain Size	Sorting	Angularity	Argilaceous (%)	Oxi/Red	Hematite	Limonite	Calcite	Feldspar	Carbon	Lab Sample ID*
0	5	Brn	vf-vc	P	SA	-	O	-	-	-	-	-	
5	10	Brn	vf-vc	P	SA	-	O	-	-	-	5-10%	-	
10	15	Yellow-Brn	f-vc	P	SA	-	O	-	-	-	5-10%	-	
15	20	Yellow-Brn	f-vc	P	SA	-	O	-	-	-	5%	-	
20	25	Brn	fc	m	SA	-	O	-	-	-	5%	-	
25	30	Brn	fc	m	SA	-	O	-	-	-	5%	-	
30	35	Brn	fc	m	SA	-	O	-	-	-	-	-	
35	40	Grey	-	-	-	-	-	-	-	-	-	-	
40	45	Grey	-	-	-	-	-	-	-	-	-	-	
45	50	Grey	-	-	-	-	-	-	-	-	-	-	
50	55	Grey	-	-	-	-	-	-	-	-	-	-	
55	60	Grey	-	-	-	-	-	-	-	-	-	-	
60	65	Grey	-	-	-	-	-	-	-	-	-	-	
65	70	Grey	-	-	-	-	-	-	-	-	-	-	

Hawkins CBM Logging, Inc.



Monitor Well | Stratigraphy | Lithology

Grain Size Description
vf=fine (<0.075 mm)
f=fine (0.075-0.425 mm)
m=medium (0.425-2.0 mm)
c=coarse (2.0-4.75 mm)
vc=very coarse (>4.75 mm)

TITAN URANIUM USA NC

BOREHOLE LOG

PROJECT NAME: Sheep Mt. LOGGED BY: DAL
BOREHOLE ID: G-3 DATE: 5/17 & 18/2011
LOCATION: NE of proposed heap leach site near intersection of permit boundary and section 17/20 line. COUNTY/STA: Fremont, WY

COMMENTS
0-5 ft Qal/Qcl; 5-55 ft Tfu; Kc contact at 55 ft
Monitor well completed at this location. Ground elevation ~ 6714
SWL at 33 ft. SW elevation ~6681 ft.
SWL allowed to stabalize overnight- prior to setting SWL at 30.5 feet
SWL as of 6-8-11: 31.6"

LITHOLOGY CLASSIFICATION

Clayey Sand
Sandstone
Shale
Clay

STRATIGRAPHY CLASSIFICATION

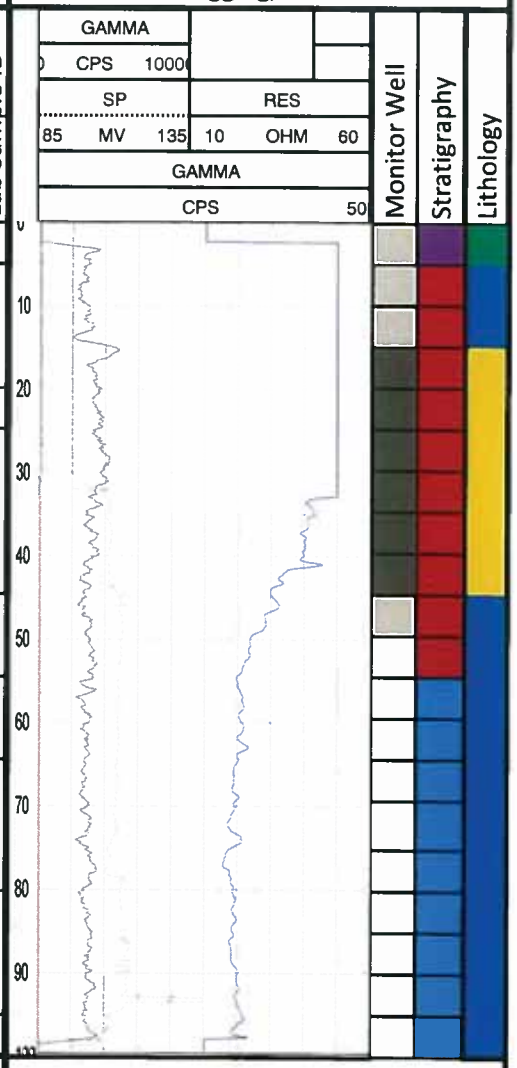
Quaternary Alluvium/colluvium
Fort Union
Cody Shale

Monitor Well

Blank Casing
Screened

Depth (ft) From	To	Descriptive Geology: Color	Grain Size	Sorting	Angularity	Argilaceous (%)	Oxi/Red	Composition*: Hematite	Limonite	Calcite	Feldspar	Carbon	Lab Sample ID*
0	5	Brown	vf-vc	P	SA	-	O	-	-	-	-	-	
5	10	Grey-Green	-			-	P	-	-	-	-	-	
10	15	Grey-Green	-			-	P	-	-	-	-	-	
15	20	Yellow-Green	vf-m	m	SA	-	R	-	-	-	-	-	
20	25	Yellow-Green	vf-m	m	SA	-	R	-	-	-	-	-	
25	30	Yellow-Green	vf-m	m	SA	-	R	-	T	-	-	-	
30	35	Yellow-Green	vf-f	m	SA	-	R	-	-	-	-	-	
35	40	Yellow-Green	vf-f	m	SA	-	R	-	T	-	-	-	
40	45	Yellow-Green	vf-f	m	SA	-	R	-	-	-	-	-	
45	50	Yellow-Green	-	-	-	-	R	-	-	-	-	-	
50	55	Blue-Grey	-	-	-	-	R	-	-	-	-	-	
55	60	Grey	-	-	-	-	-	-	-	-	-	-	
60	65	Grey	-	-	-	-	-	-	-	-	-	-	
65	70	Grey	-	-	-	-	-	-	-	-	-	-	
70	75	Grey	-										
75	80	Grey	-										
80	85	Grey	-										
85	90	Grey	-										
90	95	Grey	-										
95	100	Grey	-										

Hawkins CBM Logging, Inc.



Grain Size Description
vf=fine (<0.075 mm)
f=fine (0.075-0.425 mm)
m=medium (0.425-2.0 mm)
c=coarse (2.0-4.75 mm)
vc=very coarse (>4.75 mm)

TITAN
URANIUM USA NC

BOREHOLE LOG

PROJECT NAME Sheep Mt. LOGGED BY DAL
BOREHOLE ID G-4 DATE 5/17 & 18/2011
LOCATION W of N end of McIntosh COUNTY/STATE Fremont, WY
Pit between Lost Creek Mine Rd and pipelines

COMMENTS
0-12 ft Qcl; Tfu contact at 12 ft; did not reach Kc contact
Ground elevation ~ 6697ft, SWL 12 ft, SW elevation ~6685
SWL as of 6-8-11: 12.7'

LITHOLOGY CLASSIFICATION

Clayey Sand
Sandstone
Shale
Clay

Stratigraphic Classification

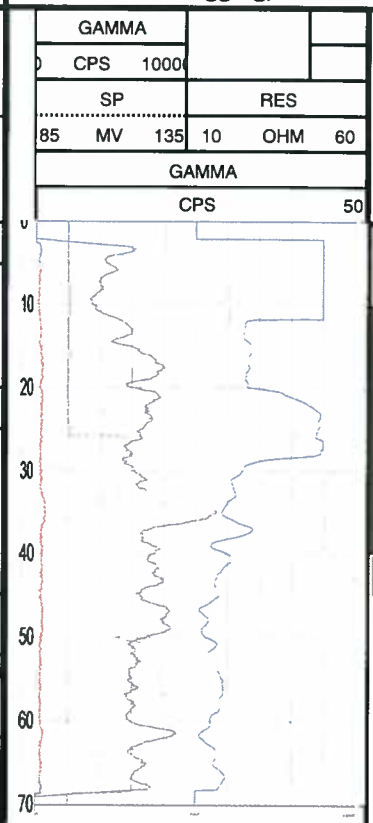
Quaternary Alluvium/colluvium
Fort Union
Cody Shale

Monitor Well

Blank Casing Screened

Depth (ft) From	To	Descriptive Geology Color	Grain Size	Sorting	Angularity	Argilaceous (%)	Oxi/Red	Composition* Hematite	Limonite	Calcite	Feldspar	Carbon	Lab Sample ID*
0	5	Brown	-			-	O	-	-	-	-	-	
5	10	Brown	-			-	O	-	-	-	-	-	
10	15	Light Tan	f-vc	P		-	O	-	-	-	-	-	
15	20	Light Brown	vf-vc	P	SR	-	O	-	-	-	-	-	
20	25	Yellow-Brov	vf-vc	P	SR	-	O	-	T	-	-	-	
25	30	Light Grey	vf-vc	P	SR	-	O	-	-	-	-	-	
30	35	Tan	c-vc	m	SR	-	O	-	-	-	-	-	
35	40	Brown	c-vc	m	SR	-	O	-	-	-	-	-	
40	45	Tan	c-vc	m	SR	-	O	-	-	-	-	-	
45	50	Tan	c-vc	m	SR	-	O	-	-	-	-	-	
50	55	Light Grey	f-vc	P	SR	-	O	-	-	-	-	-	
55	60	Light Grey	f-vc	P	SR	-	O	-	-	-	-	-	
60	65	Light Grey	f-vc	P	SR	-	-	-	T	-	-	-	
65	70	Light Grey	f-vc	P	SR	-	-	-	-	-	-	-	

Hawkins CBM Logging, Inc.



Monitor Well | Stratigraphy | Lithology

Grain Size Description
vf=fine (<0.075 mm)
f=fine (0.075-0.425 mm)
m=medium (0.425-2.0 mm)
c=coarse (2.0-4.75 mm)
vc=very coarse (>4.75 mm)

TITAN URANIUM USA INC

BOREHOLE LOG

PROJECT NAME Sheep Mt. LOGGED BY DAL
BOREHOLE ID G-5 DATE 6/1/2011
LOCATION Located directly S of McIntosh Pit just N or permit boundary COUNTY/STATE Fremont, WY

COMMENTS
0-15 ft Qal/Qcl; Tbs contact at 15 ft; did not reach Tfu or Kc
Last 25 feet completed in coarse sandstone and conglomerates
SWL prior to setting the well ~89 ft
SWL as of 6-8-11: 87.2'
TD 110 ft- poor recovery after 100ft. Hard drilling.

LITHOLOGY CLASSIFICATION

Clayey Sand
Sandstone
Shale
Alluvium/Fill

Stratigraphic Classification

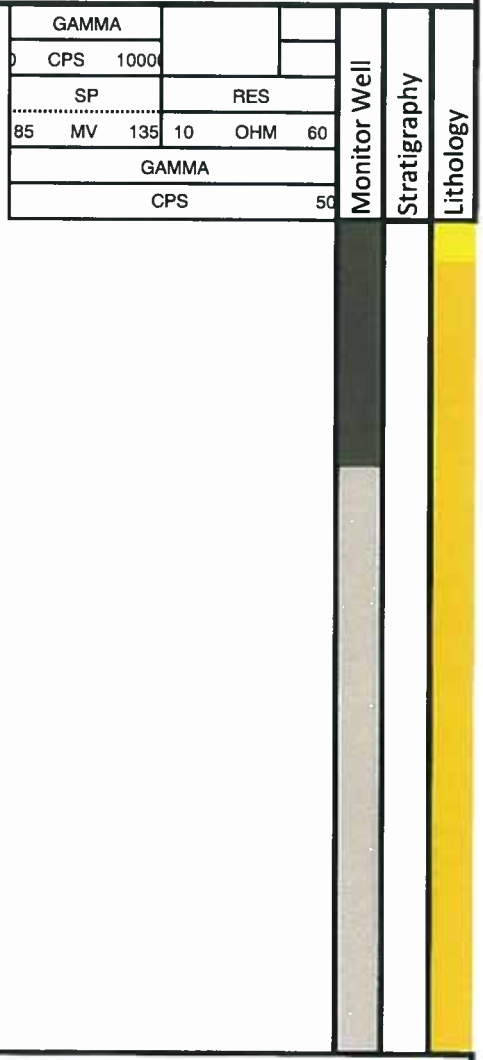
Quaternary Alluvium/colluvium
Fort Union
Battle Springs Sandstone

Monitor Well

Blank Casing Screened

Hawkins CBM Logging, Inc.

Depth (ft) From	To	Descriptive Geology Color	Grain Size	Sorting	Angularity	Argilaceous (%)	Oxi/Red	Composition* Hematite	Limonite	Calcite	Feldspar	Carbon	Lab Sample ID*
0	5	Brn	vf-vc	P	SA	-	-	-	-	-	-	-	
5	10	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
10	15	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
15	20	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
20	25	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
25	30	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
30	35	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
35	40	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
40	45	Brn-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
45	50	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
50	55	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
55	60	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
60	65	yellow-grn	vf-m	P	SA	-	-	-	m	-	-	-	
65	70	yellow-grn	vf-c	P	SA	-	-	-	m	-	-	-	
70	75	yellow-grn	vf-m	P	SA	-	-	-	m	-	-	-	
75	80	yellow-grn	vf-vc	P	SA	-	-	-	m	-	-	-	
80	85	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
85	90	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
90	95	yellow-grn	vf-vc	P	SA	-	-	-	-	-	-	-	
95	100	yellow-grn	vf-vc	P	SA	-	-	-	-	-	-	-	



Grain Size Description
vf=fine (<0.075 mm)
f=fine (0.075-0.425 mm)
m=medium (0.425-2.0 mm)
c=coarse (2.0-4.75 mm)
vc=very coarse (>4.75 mm)

TITAN URANIUM USA INC

BOREHOLE LOG

PROJECT NAME Sheep Mt. LOGGED BY DAL

BOREHOLE ID G-5 DATE 6/1/2011

LOCATION Located directly S of McIntosh Pit just N or permit boundary COUNTY/STATE Fremont, WY

COMMENTS

LITHOLOGY CLASSIFICATION

Clayey Sand
Sandstone
Shale
Alluvium/Fill

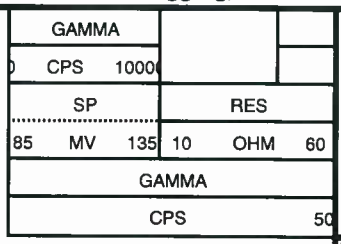
Stratigraphic Classification

Quaternary Alluvium/colluvium
Fort Union
Battle Springs Sandstone

Monitor Well

Blank Casing Screened

Hawkins CBM Logging, Inc.



Depth (ft) From	Depth (ft) To	Descriptive Geology: Color	Grain Size	Sorting	Angularity	Argilaceous (%)	Oxi/Red	Composition*: Hematite	Limonite	Calcite	Feldspar	Carbon	Lab Sample ID*	Monitor Well	Stratigraphy	Lithology
100	105	Poor Recovery														
105	110	Poor Recovery														

Grain Size Description

vf=fine (<0.075 mm)
f=fine (0.075-0.425 mm)
m=medium (0.425-2.0 mm)
c=coarse (2.0-4.75 mm)
vc=very coarse (>4.75 mm)

TITAN
URANIUM USA INC

BOREHOLE LOG

PROJECT NAME Sheep Mt. LOGGED BY DAL
BOREHOLE ID G-6 DATE 5/25&26/2011
LOCATION W of proposed heap leach just W of permit boundary COUNTY/STATE Fremont, WY

COMMENTS
0-15 ft Qal/Qcl; contact with Tbs/Tfu undivied at 15 ft
Ground elevation ~6769 ft, SWL 45 ft, SW elevation ~6729ft
SWL 34 ft, 15 ft of "sluff" in drill hole.
"sluff" compacted and stabalized with sand at depth of 65ft
SWL as of 6-8-11: 34.5'

LITHOLOGY CLASSIFICATION

Clayey Sand
Sandstone
Shale
Clay

Stratigraphic Classification

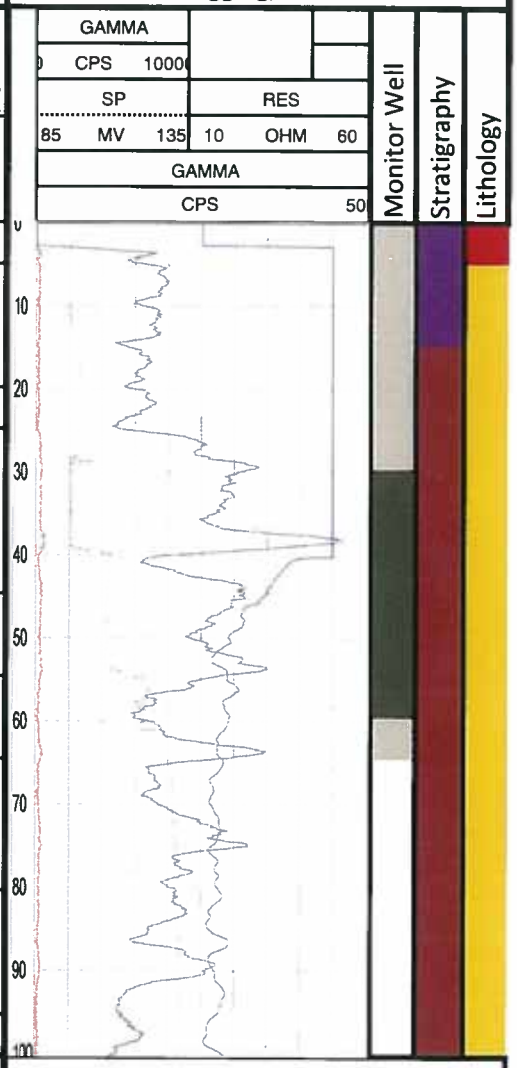
Quaternary Alluvium/colluvium
Fort Union
Battle Springs Sandstone

Monitor Well

Blank Casing Screened

Depth (ft) From	To	Descriptive Geology Color	Grain Size	Sorting	Angularity	Argilaceous (%)	Oxi/Red	Composition* Hematite	Limonite	Calcite	Feldspar	Carbon	Lab Sample ID*
0	5	Yellow-Brov	f-vc	P	SA	-	O	-	-	-	-	-	
5	10	Yellow-Gree	vf-vc	P	SA	-	O	-	-	-	-	-	
10	15	Yellow-Gree	vf-vc	P	SA	-	O	-	-	-	-	-	
15	20	Grey-Green	vf-vc	P	SA	-	R	-	-	-	-	-	
20	25	Grey-Green	vf-c	P	SA	-	R	-	-	-	-	-	
25	30	Yellow Gree	vf-vc	P	SA	-	P	-	-	-	-	-	
30	35	Grey-Green	vf-vc	P	SA	-	P	-	-	-	-	-	
35	40	Grey-Green	vf-c	P	SA	-	R	-	-	-	-	-	
40	45	Light Grey-(	vf-m	m	SA	-	O	-	m	-	-	-	
45	50	Grey-Green	vf-m	m	SA	-	R	-	-	-	-	-	
50	55	Grey-Green	vf-m	m	SA	-	R	-	-	-	-	-	
55	60	Grey-Green	vf-c	p	SA	-	R	-	-	-	-	-	
60	65	Grey-Green	vf-m	m	SA	-	R	-	-	-	-	-	
65	70	Grey-Green	vf-c	p	SA	-	R	-	-	-	-	-	
70	75	Grey-Green	vf-m	m	SA	-	R	-	-	-	-	-	
75	80	Grey-Green	vf-m	m	SA	-	R	-	-	-	-	-	
80	85	Grey-Green	vf-m	m	SA	-	R	-	-	-	-	-	
85	90	Grey-Green	vf-m	m	SA	-	R	-	-	-	-	-	
90	95	Grey-Green	vf-m	m	SA	-	R	-	-	-	-	-	
95	100	Grey-Green	vf-vc	p	SA	-	R	-	-	-	-	-	

Hawkins CBM Logging, Inc.



Grain Size Description
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f=fine (0.075-0.425 mm)
m=medium (0.425-2.0 mm)
c=coarse (2.0-4.75 mm)
vc=very coarse (>4.75 mm)

TITAN
URANIUM USA INC

BOREHOLE LOG

PROJECT NAME Sheep Mt. LOGGED BY DAL
BOREHOLE ID G-6 DATE 5/25&26/2011
LOCATION COUNTY/STATE Fremont, WY
Pit between Lost Creek Mine Rd and pipelines
COMMENTS
Due to blow-out around auger, not sure to accuracy of cuttings

LITHOLOGY CLASSIFICATION

Clayey Sand
Sandstone
Shale
Clay

Stratigraphic Classification

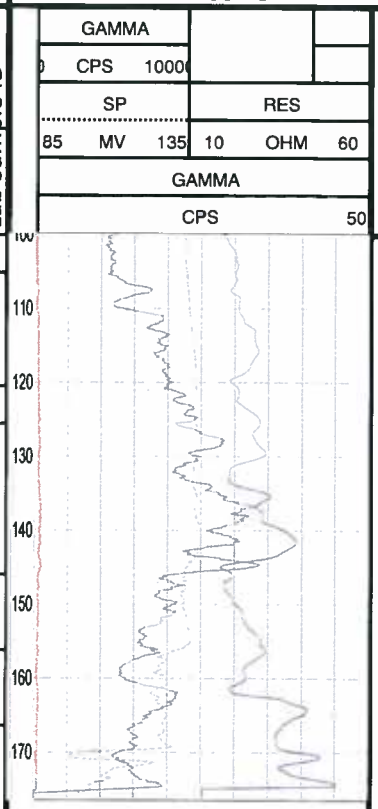
Quaternary Alluvium/colluvium
Fort Union
Battle Springs Sandstone

Monitor Well

Blank Casing Screened

Depth (ft) From	To	Descriptive Geology Color	Grain Size	Sorting	Angularity	Argilaceous (%)	Oxi/Red	Composition* Hematite	Limonite	Calcite	Feldspar	Carbon	Lab Sample ID*
100	5	Yellow-Brov	vf-c	p	SA	-	R	-	-	-	-	-	
105	110	Yellow-Gree	vf-c	p	SA	-	R	-	-	-	-	-	
110	115	Yellow-Gree	f-vc	p	SA	-	R	-	-	-	-	-	
115	120	Grey-Green	SAND- Almost no recovery										
120	125	Grey-Green	f-c	p	SA	-	R	-	-	-	-	-	
125	130	Yellow Gree	f-c	p	SA	-	R	-	-	-	-	-	
130	135	Grey-Green	f-vc	p	SA	-	R	-	-	-	-	-	
135	140	Grey-Green	f-vc	p	SA	-	R	-	-	-	-	-	
140	145	Light Grey-(	f-vc	p	SA	-	R	-	-	-	-	-	
145	150	Grey-Green	f-vc	p	SA	-	R	-	-	-	-	-	
150	155	Grey-Green	f-vc	p	SA	-	R	-	-	-	-	-	
155	160	Grey-Green	f-vc	p	SA	-	R	-	-	-	-	-	
160	165	Grey-Green	vf-c	p	SA	-	R	-	-	-	-	-	
165	170	Grey-Green	vf-c	p	SA	-	R	-	-	-	-	-	
170	175	Grey-Green	vf-c	p	SA	-	R	-	-	-	-	-	

Hawkins CBM Logging, Inc.



Monitor Well | Stratigraphy | Lithology

Grain Size Description

vf=fine (<0.075 mm)
f=fine (0.075-0.425 mm)
m=medium (0.425-2.0 mm)
c=coarse (2.0-4.75 mm)
vc=very coarse (>4.75 mm)

TITAN
URANIUM USA INC

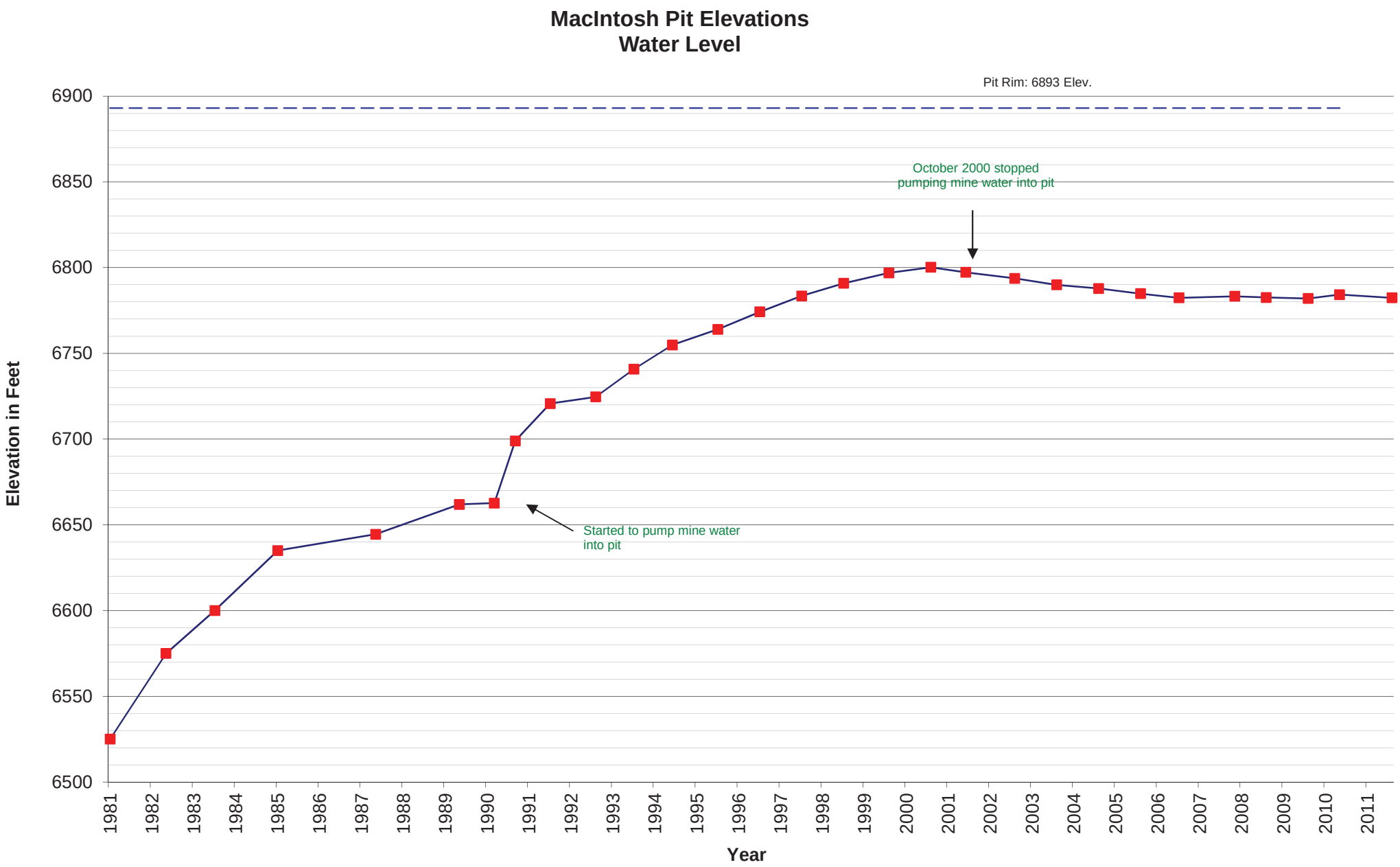
Attachment B
Historic Ground Water Data

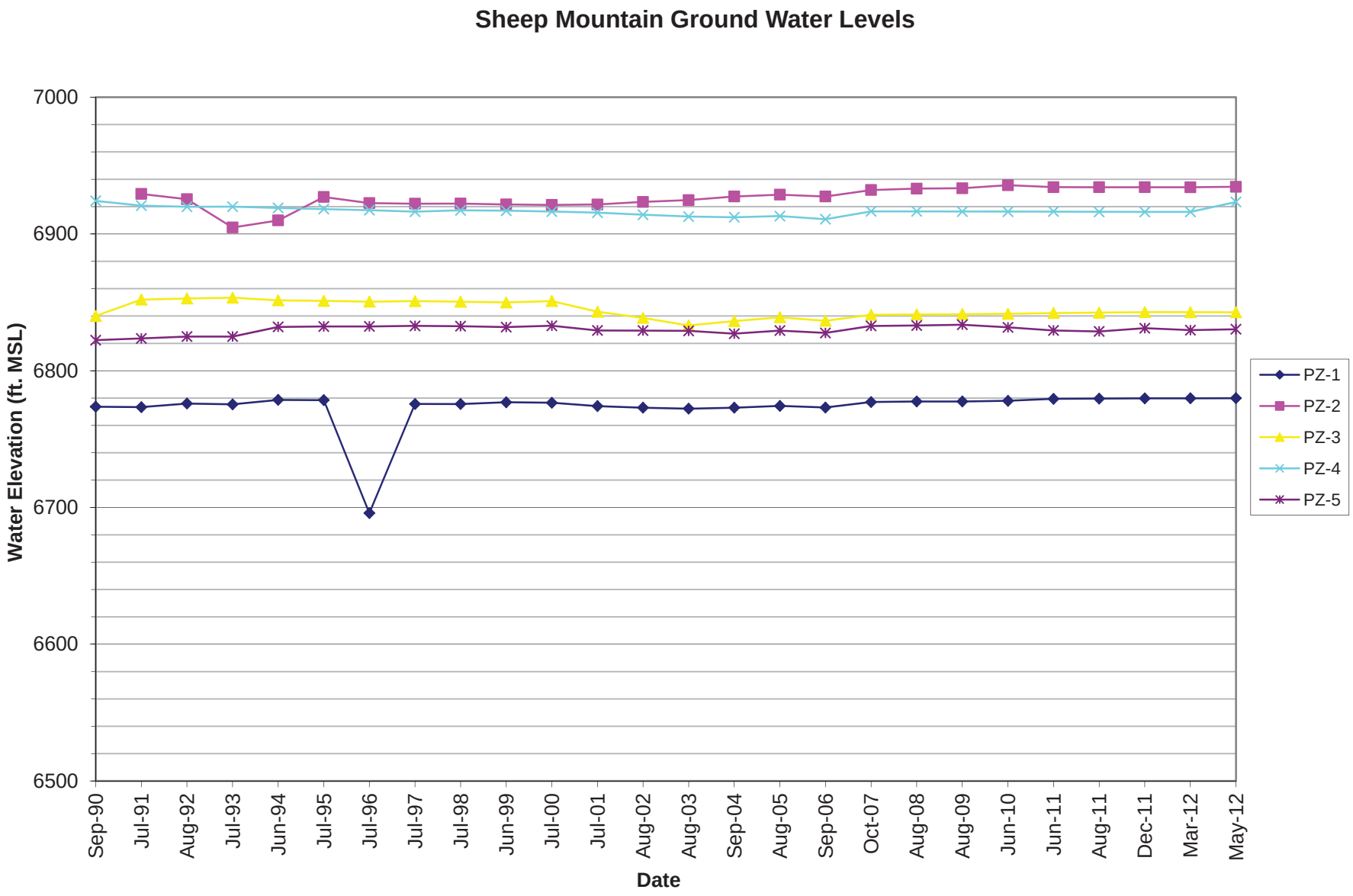
Sheep Mountain Mines

Ground Water Elevation Data

PZ-1			PZ-2			PZ-3			PZ-4			PZ-5			MW-6N			MW-6			MW-7			MW-9		
Measuring Point (ft)		6891.14	Measuring Point (ft)		7223.64	Measuring Point (ft)		6993.56	Measuring Point (ft)		7005.48	Measuring Point (ft)		7036.45	Measuring Point (ft)		6699.46	Measuring Point (ft)		6698.28	Measuring Point (ft)		6873.34	Measuring Point (ft)		7026.25
Date	Depth to Water (ft)	H20 Elev.	Date	Depth to Water (ft)	H20 Elev.	Date	Depth to Water (ft)	H20 Elev.	Date	Depth to Water (ft)	H20 Elev.	Date	Depth to Water (ft)	H20 Elev.	Date	Depth to Water (ft)	H20 Elev.	Date	Depth to Water (ft)	H20 Elev.	Date	Depth to Water (ft)	H20 Elev.	Date	Depth to Water (ft)	H20 Elev.
9/1/90		6773.66				9/1/90		6840	9/1/90		6924.2	9/1/90		6822.35												
7/1/91		6773.35	7/1/91		6929.29	7/1/91		6852	7/1/91		6920.7	7/1/91		6823.6												
8/1/92		6775.98	8/1/92		6925.46	8/1/92		6852.8	8/1/92		6919.9	8/1/92		6824.99												
7/1/93		6775.44	7/1/93		6904.74	7/1/93		6853.4	7/1/93		6919.95	7/1/93		6824.99												
6/1/94		6778.66	6/1/94		6909.94	6/1/94		6851.5	6/1/94		6919.02	6/1/94		6832.02												
7/1/95		6778.5	7/1/95		6927.06	7/1/95		6851.1	7/1/95		6918.2	7/1/95		6832.36												
7/1/96		6695.9	7/1/96		6922.6	7/1/96		6850.5	7/1/96		6917.4	7/1/96		6832.4												
7/1/97		6775.67	7/1/97		6922.16	7/1/97		6850.9	7/1/97		6916.3	7/1/97		6832.77												
7/1/98		6775.66	7/1/98		6922.21	7/1/98		6850.44	7/1/98		6917.26	7/1/98		6832.56												
6/7/99		6776.92	6/7/99		6921.6	6/8/99		6849.92	6/7/99		6917	6/8/99		6831.89												
7/5/00		6776.56	7/6/00		6921.25	7/6/00		6850.93	7/5/00		6916.38	7/6/00		6832.88												
7/5/01		6774.12	7/2/01		6921.57	7/2/01		6843.16	7/2/01		6915.58	7/2/01		6829.43												
8/14/02		6772.98	8/12/02		6923.43	8/12/02		6838.65	8/12/02		6914.08	8/13/02		6829.37												
8/4/03		6772.26	8/5/03		6924.76	8/5/03		6833.12	8/5/03		6912.71	8/5/03		6829.14												
9/4/04		6772.95	9/4/04		6927.4	9/4/04		6836.28	9/4/04		6912.24	9/4/04		6827.06												
8/30/05		6774.24	8/5/05		6928.73	8/5/05		6839.07	8/5/05		6913.08	8/5/05		6829.35												
9/25/06		6773.1	9/6/06		6927.4	9/6/06		6836.5	9/6/06		6910.8	9/6/06		6827.6												
10/2/07	114.04	6777.10	10/2/07	291.5	6932.14	10/2/07	152.67	6840.89	10/2/07	88.97	6916.51	10/2/07	203.69	6832.76												
8/26/08	113.63	6777.51	8/26/08	290.5	6933.14	8/26/08	152.45	6841.11	8/26/08	88.97	6916.51	8/26/08	203.41	6833.04												
8/4/09	113.60	6777.54	8/4/09	290.2	6933.44	8/4/09	152.17	6841.39	8/4/09	89.1	6916.38	8/4/09	202.8	6833.65												
6/30/10	113.13	6778.01	6/30/10	288	6935.64	6/29/10	152	6841.56	7/1/10	89.17	6916.31	6/30/10	204.71	6831.74							9/20/10	76.88	6796.46	9/20/10	181.00	6845.25
6/21/11	111.7	6779.44	6/22/11	289.4	6934.24	6/22/11	151.3	6842.26	6/22/11	89	6916.48	6/225/11	207	6829.45							6/21/11	75.30	6798.04	6/21/11	172.00	6854.25
8/23/11	111.54	6779.60	8/24/11	289.45	6934.19	8/23/11	151.15	6842.41	8/23/11	89.35	6916.13	8/24/11	207.74	6828.71				8/24/11	16.00	6682.28	8/23/11	75.23	6798.11	8/23/11	171.60	6854.65
12/14/11	111.35	6779.79	12/15/11	289.45	6934.19	12/14/11	150.72	6842.84	2/14/11	89.35	6916.13	12/15/11	205.37	6831.08				12/14/11	15.05	6683.23	12/14/11	74.60	6798.74			
3/12/12	111.3	6779.84	3/12/12	289.5	6934.14	3/13/12	150.8	6842.76	3/13/12	89.3	6916.18	3/12/12	206.8	6829.65				3/12/12	14.90	6683.38	3/14/12	74.40	6798.94	3/13/12	169.10	6857.15
5/15/12	111.2	6779.94	5/14/12	289.14	6934.50	5/15/12	150.82	6842.74	5/16/12	82.09	6923.39	5/15/12	206.11	6830.34	5/16/12	35.92	6663.54	5/15/12	14.70	6683.58	5/15/12	74.32	6799.02	5/15/12	168.92	6857.33

MW-10			PZ-G-3			PZ-G-4			PZ-G-5			PZ-G-6			McIntosh Pit		
Measuring Point (ft)		7141.3	Measuring Point (ft)		6715.63	Measuring Point (ft)		6697.83	Measuring Point (ft)		6901.2	Measuring Point (ft)		6763.39			
Date	Depth to Water (ft)	H20 Elev.	Date	Depth to Water (ft)	H20 Elev.	Date	Depth to Water (ft)	H20 Elev.	Date	Depth to Water (ft)	H20 Elev.	Date	Depth to Water (ft)	H20 Elev.	Date	H20 Elev.	Comment
															1/1/81	6525	Pit date & elev. data approximate, visually interpreted from historic graph
															5/1/82	6575	Pit date & elev. data approximate, visually interpreted from historic graph
															7/1/83	6600	Pit date & elev. data approximate, visually interpreted from historic graph
															1/1/85	6635	Pit date & elev. data approximate, visually interpreted from historic graph
					6684.03			6685.13			6814.00			6728.89	5/1/87	6644.5	Pit date & elev. data approximate, visually interpreted from historic graph
															5/1/89	6661.9	Pit date & elev. data approximate, visually interpreted from historic graph
															3/31/90	6662.7	Started to pump mine water into pit, Pit date data approximate, visually interpreted from historic graph
															9/14/90	6698.90	Pit date data approximate, visually interpreted from historic graph
															7/23/91	6720.70	Pit date data approximate, visually interpreted from historic graph
															8/18/92	6724.60	Pit date data approximate, visually interpreted from historic graph
															7/13/93	6740.80	Pit date data approximate, visually interpreted from historic graph
															6/28/94	6754.90	Pit date data approximate, visually interpreted from historic graph
															7/3/95	6764.00	Pit date data approximate, visually interpreted from historic graph
															7/2/96	6774.20	Pit date data approximate, visually interpreted from historic graph
															7/21/97	6783.50	Pit date data approximate, visually interpreted from historic graph
															7/20/98	6790.82	Pit date data approximate, visually interpreted from historic graph
															8/5/99	6796.92	Pit date data approximate, visually interpreted from historic graph
															8/17/00	6800.18	Pit date data approximate, visually interpreted from historic graph
															6/1/01	6797.25	Pit date data approximate, visually interpreted from historic graph
															8/12/02	6793.72	Pit date data approximate, visually interpreted from historic graph
															8/5/03	6789.92	
															8/11/04	6787.86	
															8/16/05	6784.8	
															7/31/06	6782.4	
															11/6/07	6783.3	
															8/29/08	6782.6	
															8/4/09	6782	
7/1/10	325.00	6816.30										7/1/10	325.00	6438.39	5/21/10	6784.27	All points surveyed using modern survey grade GPS equipment for first time in 2010
6/21/11	304.60	6836.70										6/21/11	304.60	6458.79	8/9/11	6782.36	All points surveyed using modern survey grade GPS equipment for first time in 2010
8/23/11	304.46	6836.84	8/25/11	33.75	6681.88	8/24/11	15.70	6682.13	8/25/11	90.15	6811.05	8/25/11	63.79	6699.60			
		7141.30	12/16/11	33.74	6681.89	12/8/11	15.80	6682.03	12/15/11	88.50	6812.70	12/8/11	37.10	6726.29			
			3/13/12	33.70	6681.93	3/13/12	15.20	6682.63	3/13/12	90.20	6811.00	3/13/12	37.10	6726.29			
5/15/12	296.29	6845.01	5/16/12	33.72	6681.91	5/16/12	15.01	6682.82	5/16/12	89.79	6811.41	5/16/12	36.85	6726.54			


MacIntosh Pit Elevations
Water Level
Pit Rim: 6893 Elev.
October 2000 stopped
pumping mine water into pit
Started to pump mine water
into pit
Elevation in Feet
6900
6850
6800
6750
6700
6650
6600
6550
6500
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Year


Sheep Mountain Ground Water Levels
Water Elevation (ft. MSL)
7000
6900
6800
6700
6600
6500
Sep-90
Jul-91
Aug-92
Jul-93
Jun-94
Jul-95
Jul-96
Jul-97
Jul-98
Jun-99
Jul-00
Jul-01
Aug-02
Aug-03
Sep-04
Aug-05
Sep-06
Oct-07
Aug-08
Aug-09
Jun-10
Jun-11
Aug-11
Dec-11
Mar-12
May-12
Date
PZ-1
PZ-2
PZ-3
PZ-4
PZ-5

McIntosh Pit

Major Ions	Units	09/08/88	10/24/90	07/25/91	08/19/92	07/13/93	06/28/94	07/03/95	06/04/96	08/25/97	07/06/98	08/10/99	05/16/00	07/09/01	08/12/02	07/22/03	08/07/04	08/31/05	09/25/06	11/6/2007	8/26/2008	8/5/2009	6/28/2010	9/15/2011	3/28/2012	5/14/2012
Calcium	mg/L		56			33						47	49.5	46.3	51.6	52	48.1	49.6	52.8	50	72.6	60	61	60	49	61
Magnesium	mg/L		12			6						6	6	5.9	6.4	6.3	6.4	6.7	6.4	6	8.4	7	7	7	6	7
Sodium	mg/L		49			84			82.8			88	97.1	94.8	99.4	96.1	95.3	104	90	88	107	101	95	106	78	98
Potassium	mg/L		1			2			1.9			2.5	2.4	1.8	2	2	2.2	2.2	2.3	3	2.9	3	3	4	3	3
Carbonate	mg/L		0			0		0	0			2.1	2	2.1	2.8	2.4	<1	2	<1	<1	<1	4	<5	<5	<5	7
Bicarbonate	mg/L	137	132	146	171	171	156	157	154	156	156	158	155	160	160	161	153	150	154	157	152	145	162	153	134	169
Sulfate	mg/L	162	156	205	171	171	121	189	189	184	186	183	194	186	205	214	240	218	225	249	271	244	225	233	176	240
Chloride	mg/L	7	12	11	8	8	10	5.4	6.8	6.3	6.4	7	5.6	5.3	3.6	8.8	8	8	7	7	7	6	6	7	5	6
Ammonium as N	mg/L		<0.05						<0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.07	<0.05	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1
Nitrite as N	mg/L								<0.1			<0.1	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA				
Nitrate + Nitrite as N	mg/L	0.11	<0.01	0.01	0.6	0.6	0.68	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.1	0.05	<0.05	<0.05	<0.1	0.18	<0.1	<0.05	<0.01		<0.1	<0.1	<0.1
Flouride	mg/L		0.33			0.61			0.16			0.18	0.17	0.17	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2
Silica	mg/L											6	6.1	5.3	5.45	5.05	5.1	6	5.4	4.7	NA	NA	5.2	5	4	5
Non Metals																										
TDS @ 180° C	mg/L	475	433	388	372	372	393	390	449	427	399	406	434	428	475	488	477	458	462	512	521	509	530	550	450	570
Conductivity	µmho/cm	500	600	670	570	570	660	678	681	675	667	682	664	689	705	734	587	718	723		741	792	751	826	675	747
Alkalinty as $CaCO_3$	mg/L		106					129	126			133	130	135	135	135	125	126	126	NA	NA	NA	134	NA	110	150
pH	S.U.	7.4	7.97	7.7	8.2	8.2	7.97	8.46	8.23	8.36	8.28	8.38	8.32	8.37	8.49	8.42	7.89	8.46	8.24	8.26	8.10	8.46	8.3	8.4	8.2	8.4
Dissolved Metals																										
Aluminum	mg/L		<0.1						<0.1			<0.1	<0.10	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L		<0.001			0.001			<0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.001	<0.001	<0.01	<0.01	<0.01
Barium	mg/L		<0.1			<0.1			<0.1			<0.1	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Berylium	mg/L																						<0.001	<0.01	<0.01	<0.01
Boron	mg/L		0.1			0.13			<0.1			<0.1	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.005	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L		0.004			<0.002			0.01			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L		<0.01			<0.01			<0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01
Copper	mg/L		<0.01			<0.01			<0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L		0.03			0.02			<0.05			<0.05	<0.05	0.03	<0.03	<0.03	<0.03	0.14	<0.03	<0.03	NA	<0.03	<0.05	<0.05	<0.05	<0.05
Iron (total)	mg/L																			Not Previously Analyzed		<0.03	<0.05	<0.05	0.18	<0.05
Lead	mg/L		<0.05			<0.05			<0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.001	<0.002	<0.05	<0.01	<0.01	<0.01	<0.01
Manganese	mg/L		0.01			0.04			<0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NA	<0.01	<0.01	<0.01	<0.01	<0.01
Manganese (total)	mg/L																			Not Previously Analyzed		<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/L		<0.0002			<0.0002			<0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.01	0.01
Molybdenum	mg/L		<0.1			<0.1			<0.1			<0.1	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.013	<0.1	0.01	<0.01	<0.01	<0.01
Nickel	mg/L		<0.02			<0.02			<0.05			<0.05	<0.05	<0.05	<0.05	<.05	<0.05	<0.05	<0.05	<0.05	NA	<0.05	<0.05	<0.05	0.003	0.003
Selenium	mg/L		0.004			0.002			<0.005			0.005	0.005	0.005	0.005	0.004	0.004	0.005	0.004	0.005	<0.005	0.005	0.005	<0.005	2.94	3.45
Silver	mg/L																				<0.005	NA				
Vanadium	mg/L		<0.1			<0.1			<0.1			<0.1	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	mg/L		0.016			0.025			<0.01			<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Radiometric																										
Uranium	mg/L	1.577	1.435	2.068	1.697	1.23	1.696	2.617	2.724	2.07	2.82	2.57	3.2	2.63	2.98	2.77	2.75	2.28	3.42	3.41	3.84	3.43	3.69	3.26	2.94	3.45
Radium 226	pCi/L	10.1	8.7	6.3	9.9	8.9	13.1	16.7	1.4	22.7	24.7	18.2	22.9	22	21.7	15	16.1	13.5	27.3	14.7	17	16	20.59	10.8	26.6	13.8
Radium Precision (+/-)	pCi/L	1.1	0.8	0.9	1	1.2	1.3	2.1	0.2	1.4	1.5	1.4	1.1	1.4	1.6	1.2	1.3	0.9	1.7	1.5	0.85	0.84	0.81	0.05	0.2	0.2
Ra-228	pCi/L																Not Previously Analyzed			2.9	NA	2.5		2.1	2.6	1.7
Ra-228 Precision (+/-)	pCi/L																			1.1	NA	0.9		1.1	1	1
Adjusted Gross Alpha	pCi/L																	Not Previously Analyzed			23.8	17		2130	1650	2090
Adjusted Gross Alpha Precision (+/-)	pCi/L																				1.4	1.6		24	2	3
Gross Beta	pCi/L																Not Previously Analyzed			951	NA	840		412	827	1120
Gross Beta Precision (+/-)	pCi/L																			7.3	NA	8.0		7.0	3	4
Quality Assurance Data																										
Anion	meq/L		5.74						6.67			6.69	6.82	6.74	7.08	7.42	7.74	7.3	7.42	7.48	8.33	7.77	7.54	7.62	6.08	8.17
Cation	meq/L		5.94						6.6			6.76	7.27	6.99	7.56	7.43	7.13	7.63	7.15	6.87	9.05	8.01	7.82	8.31	6.37	7.97
WYDEQ A/C Balance	%											0.54	3.25	1.83	3.27				-1.84	4.2	4.16	1.54	1.82	4.33		
Calc TDS	mg/L											421	441	428	459	470	480	471	465	458	547	501	483.4	500	390	510
TDS A/C Balance	dec. %											0.96	0.99	1	1.03	1.03	0.99	0.97	0.99	1.12	0.95	1.02		1.1	1.15	1.14

NA = Not Analyzed
All measurements are "dissolved" (filtered) unless otherwise noted

MW 6

Major Ions	Units	08/24/11	12/14/11	03/12/12	05/15/12
Calcium	mg/L	40	39	39	41
Magnesium	mg/L	9	9	9	10
Sodium	mg/L	71	72	66	66
Potassium	mg/L	3	3	3	3
Carbonate	mg/L	<5	<5	<5	7
Bicarbonate	mg/L	218	212	225	221
Sulfate	mg/L	83	80	90	91
Chloride	mg/L	13	10	11	10
Ammonium as N	mg/L	<0.1	0.1	0.1	0.1
Fluoride	mg/L	0.1	<0.1	0.1	0.1
Silica	mg/L	14	17	13	14

Non Metals

TDS @ 180° C	mg/L	360	330	370	400
TSS	mg/L		18		<5
Conductivity	µmho/cm	565	545	587	536
Alkalinty as $CaCO_3$	mg/L	179	173	185	193
pH	S.U.	8.3	7.2	8.2	8.3

Dissolved Metals

Aluminum	mg/L	<0.1	0.7	<0.1	<0.1
Arsenic	mg/L	<0.001	0.002	<0.001	<0.001
Barium	mg/L	<0.1	<0.1	<0.1	<0.1
Beryllium	mg/L	<0.01	<0.001	<0.001	<0.001
Boron	mg/L	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	<0.05	0.16	<0.05	<0.05
Iron (total)	mg/L	0.6	0.25	0.27	0.26
Lead	mg/L	<0.01	<0.01	<0.01	<0.01
Manganese	mg/L	0.11	0.1	0.11	0.12
Manganese (total)	mg/L	0.18	0.12	0.13	0.12
Mercury	mg/L	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	<0.01	<0.01	<0.01	<0.01
Nickel	mg/L	<0.05	<0.05	<0.05	<0.05
Selenium	mg/L	<0.001	<0.001	<0.001	<0.001
Silver	mg/L				
Vanadium	mg/L	<0.01	<0.1	<0.1	<0.1
Zinc	mg/L	0.01	<0.01	<0.01	<0.01

Radiometric

Uranium	mg/L	0.0088	0.0048	0.0038	0.0042
Radium 226	pCi/L	2.5	2.8	3.1	2.9
Radium Precision (+/-)	pCi/L	0.2	0.2	0.2	0.2
Ra-228	pCi/L	2	2.6	2.8	2.5
Ra-228 Precision (+/-)	pCi/L	0.8	1.4	1.4	1
Adjusted Gross Alpha	pCi/L	8.7	6.8	7	6.3
Adjusted Gross Alpha Precision (+/-)	pCi/L	1.2	1.2	1.3	1.2
Gross Beta	pCi/L	5.5	5.6	6.2	6.4
Gross Beta Precision (+/-)	pCi/L	1.2	1.2	1.3	1.3

Quality Assurance Data

Anion	meq/L	5.69	5.68	5.86	6.07
Cation	meq/L	5.91	5.85	5.57	5.75
WYDEQ A/C Balance	%	1.89	1.45	2.53	2.71
Calc TDS	mg/L	340	330	340	350
TDS A/C Balance	dec. %	1.06	1	1.09	1.14

MDC = Minimum Detectable Concentration
NA = Not Analyzed
All measurements are "dissolved" (filtered) unless otherwise noted

MW 6N

Major Ions	Units	07/01/10	03/16/11
Calcium	mg/L	4	4
Magnesium	mg/L	1	1
Sodium	mg/L	299	310
Potassium	mg/L	2	2
Carbonate	mg/L	14	20
Bicarbonate	mg/L	459	443
Sulfate	mg/L	187	236
Chloride	mg/L	15	9
Ammonium as N	mg/L	0.3	0.4
Fluoride	mg/L	0.7	0.6
Silica	mg/L	8.7	8

Non Metals

TDS @ 180° C	mg/L	820	860
TSS	mg/L		
Conductivity	µmho/cm	1200	1240
Alkalinty as $CaCO_3$	mg/L	399	396
pH	S.U.	8.60	8.7

Dissolved Metals

Aluminum	mg/L	0.3	0.2
Arsenic	mg/L	<0.001	<0.01
Barium	mg/L	<0.1	<0.1
Beryllium	mg/L	<0.001	<0.01
Boron	mg/L	0.1	0.1
Cadmium	mg/L	<0.001	<0.002
Chromium	mg/L	<0.01	<0.01
Copper	mg/L	0.01	<0.01
Iron	mg/L	0.17	0.11
Iron (total)	mg/L	3.73	0.41
Lead	mg/L	<0.01	<0.02
Manganese	mg/L	0.01	<0.02
Manganese (total)	mg/L	0.04	<0.02
Mercury	mg/L	<0.001	<0.001
Molybdenum	mg/L	<0.01	<0.02
Nickel	mg/L	<0.05	<0.01
Selenium	mg/L	<0.001	<0.01
Silver	mg/L		
Vanadium	mg/L	<0.1	<0.02
Zinc	mg/L	<0.01	<0.01

Radiometric

Uranium	mg/L	0.0022	0.0022
Radium 226	pCi/L	0.44	0.7
Radium Precision (+/-)	pCi/L	0.12	0.1
Ra-228	pCi/L		<1
Ra-228 Precision (+/-)	pCi/L		1
Adjusted Gross Alpha	pCi/L		8.4
Adjusted Gross Alpha Precision (+/-)	pCi/L		1.6
Gross Beta	pCi/L		<4
Gross Beta Precision (+/-)	pCi/L		4

Quality Assurance Data

Anion	meq/L	12.33	13.23
Cation	meq/L	13.38	13.88
WYDEQ A/C Balance	%	4.08	2.40
Calc TDS	mg/L	760.9	800
TDS A/C Balance	dec. %		

MDC = Minimum Detectable Concentration
NA = Not Analyzed
All measurements are "dissolved" (filtered) unless otherwise noted

MW 6S

Major Ions	Units	07/01/10	03/15/11
Calcium	mg/L	7	6
Magnesium	mg/L	2	2
Sodium	mg/L	404	427
Potassium	mg/L	3	3
Carbonate	mg/L	16	16
Bicarbonate	mg/L	547	543
Sulfate	mg/L	8	8
Chloride	mg/L	255	283
Ammonium as N	mg/L	0.4	0.4
Fluoride	mg/L	0.4	0.3
Silica	mg/L	9.3	11

Non Metals

TDS @ 180° C	mg/L	980	990
TSS	mg/L		
Conductivity	µmho/cm	1690	1600
Alkalinty as $CaCO_3$	mg/L	475	473
pH	S.U.	8.6	8.53

Dissolved Metals

Aluminum	mg/L	0.3	1
Arsenic	mg/L	0.002	<0.01
Barium	mg/L	<0.1	<0.1
Beryllium	mg/L	<0.001	<0.01
Boron	mg/L	0.3	0.3
Cadmium	mg/L	<0.001	<0.002
Chromium	mg/L	<0.01	<0.01
Copper	mg/L	<0.01	<0.01
Iron	mg/L	0.15	0.54
Iron (total)	mg/L	4.06	6.34
Lead	mg/L	<0.01	<0.02
Manganese	mg/L	0.02	<0.02
Manganese (total)	mg/L	0.06	0.1
Mercury	mg/L	<0.001	<0.001
Molybdenum	mg/L	<0.01	<0.02
Nickel	mg/L	<0.05	<0.01
Selenium	mg/L	0.002	<0.01
Silver	mg/L		
Vanadium	mg/L	<0.1	<0.02
Zinc	mg/L	<0.01	<0.01

Radiometric

Uranium	mg/L	0.0008	0.0005
Radium 226	pCi/L	0.34	0.7
Radium Precision (+/-)		0.11	0.2
Ra-228	pCi/L		<1
Ra-228 Precision (+/-)	pCi/L		1
Adjusted Gross Alpha	pCi/L		<4
Adjusted Gross Alpha Precision (+/-)	pCi/L		4
Gross Beta	pCi/L		<7
Gross Beta Precision (+/-)	pCi/L		7

Quality Assurance Data

Anion	meq/L	16.88	17.8
Cation	meq/L	18.15	19.08
WYDEQ A/C Balance	%	3.63	3.47
Calc TDS	mg/L	978.2	1010
TDS A/C Balance	dec. %		

MDC = Minimum Detectable Concentration
NA = Not Analyzed
All measurements are "dissolved" (filtered) unless otherwise noted

MW 7

Major Ions	Units	07/01/10	08/23/11	12/14/11	03/12/12	05/15/12
Calcium	mg/L	41	46	41	44	43
Magnesium	mg/L	17	21	19	17	19
Sodium	mg/L	47	35	32	29	27
Potassium	mg/L	6	5	5	5	5
Carbonate	mg/L	<5	<5	<5	<5	10
Bicarbonate	mg/L	280	280	293	292	264
Sulfate	mg/L	42	28	27	27	26
Chloride	mg/L	7	6	4	4	4
Ammonium as N	mg/L	0.7	0.6	0.8	0.7	0.8
Fluoride	mg/L	0.2	0.1	<0.1	0.2	0.2
Silica	mg/L	8.7	9	9	8	8

Non Metals

TDS @ 180° C	mg/L	310	290	250	270	310
TSS	mg/L			<5		40
Conductivity	µmho/cm	514	504	469	505	453
Alkalinty as $CaCO_3$	mg/L	229	231	240	240	233
pH	S.U.	8.2	8.3	6.8	8.1	8.4

Dissolved Metals

Aluminum	mg/L	<0.1	<.1	<0.1	<0.1	<0.1
Arsenic	mg/L	<0.001	<0.005	0.001	<0.001	<0.001
Barium	mg/L	0.1	0.1	<0.1	<0.1	0.1
Beryllium	mg/L	<0.001	<.001	0.001	<0.001	<0.001
Boron	mg/L	<0.1	<.1	<0.1	<0.1	<0.1
Cadmium	mg/L	<0.001	<.001	<0.001	<0.001	<0.001
Chromium	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Iron (total)	mg/L	3.32	<.05	0.6	0.93	2.75
Lead	mg/L	<0.01	<.01	<0.01	<0.01	<0.01
Manganese	mg/L	0.04	0.03	0.02	0.02	0.03
Manganese (total)	mg/L	0.08	0.04	0.02	0.04	0.05
Mercury	mg/L	<0.001	<.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	<0.01	<.01	<0.01	<0.01	<0.01
Nickel	mg/L	<0.05	<.005	<0.05	<0.05	<0.05
Selenium	mg/L	0.001	<.001	<0.001	<0.001	<0.001
Silver	mg/L					
Vanadium	mg/L	<0.1	<.01	<0.1	<0.1	<0.1
Zinc	mg/L	<0.01	<.01	<0.01	<0.01	<0.01

Radiometric

Uranium	mg/L	0.0096	0.0083	0.0067	0.0078	0.0073
Radium 226	pCi/L	8.73	10	11.9	10.7	12.1
Radium Precision (+/-)		0.51	0.4	0.4	0.4	0.4
Ra-228	pCi/L		1.8	1.6	<1	2
Ra-228 Precision (+/-)	pCi/L		1.1	1.5		1.2
Adjusted Gross Alpha	pCi/L		22.3	22.4	17.1	16.2
Adjusted Gross Alpha Precision (+/-)	pCi/L		1.9	1.8	1.7	1.7
Gross Beta	pCi/L		7.3	8.2	9.3	8.5
Gross Beta Precision (+/-)	pCi/L		1.3	1.2	1.3	1.3

Quality Assurance Data

Anion	meq/L	5.65	5.38	5.47	5.47	5.32
Cation	meq/L	5.62	5.62	5.16	4.98	4.97
WYDEQ A/C Balance	%	-0.27	2.18	2.85	4.7	3.37
Calc TDS	mg/L	308.9	280	270	280	270
TDS A/C Balance	dec. %			0.93	0.96	1.15

MDC = Minimum Detectable Concentration
NA = Not Analyzed
All measurements are "dissolved" (filtered) unless otherwise noted

MW 9

Major Ions	Units	07/01/10	08/23/11	12/14/11	03/12/12	05/15/12
Calcium	mg/L	7	4	3	4	4
Magnesium	mg/L	1	1	ND	ND	1
Sodium	mg/L	194	216	197	211	212
Potassium	mg/L	4	2	2	2	2
Carbonate	mg/L	<5	7	ND	ND	7
Bicarbonate	mg/L	233	231	239	255	305
Sulfate	mg/L	164	188	173	195	208
Chloride	mg/L	28	34	33	28	36
Ammonium as N	mg/L	0.2	0.1	0.3	0.3	0.3
Fluoride	mg/L	0.4	0.2	ND	0.3	0.3
Silica	mg/L	10.0	9	8	8	8

Non Metals

TDS @ 180° C	mg/L	580	610	560	590	600
TSS	mg/L			ND	0	ND
Conductivity	µmho/cm	865	986	899	994	922
Alkalinty as $CaCO_3$	mg/L	198	201	198	212	261
pH	S.U.	8.4	8.7	6.1	8.4	8.6

Dissolved Metals

Aluminum	mg/L	0.2	<0.1	ND	ND	ND
Arsenic	mg/L	<0.001	<0.01	0.001	ND	ND
Barium	mg/L	<0.1	<0.1	ND	ND	ND
Beryllium	mg/L	<0.001	<0.01	0.002	ND	ND
Boron	mg/L	<0.1	<0.1	ND	ND	ND
Cadmium	mg/L	<0.001	<.002	ND	ND	ND
Chromium	mg/L	<0.01	<0.01	ND	ND	ND
Copper	mg/L	<0.01	<0.01	ND	ND	ND
Iron	mg/L	0.09	<0.05	ND	ND	ND
Iron (total)	mg/L	1.22	0.07	0.1	0.07	0.08
Lead	mg/L	<0.01	<0.02	ND	ND	ND
Manganese	mg/L	<0.01	<0.02	ND	ND	ND
Manganese (total)	mg/L	0.02	<0.02	0.01	ND	0.01
Mercury	mg/L	<0.001	<0.001	ND	ND	ND
Molybdenum	mg/L	0.04	<0.02	ND	ND	ND
Nickel	mg/L	<0.05	<0.01	ND	ND	ND
Selenium	mg/L	0.001	<0.01	ND	ND	ND
Silver	mg/L					
Vanadium	mg/L	<0.1	<0.02	ND	ND	ND
Zinc	mg/L	<0.01	<0.01	ND	ND	ND

Radiometric

Uranium	mg/L	0.0056	0.0032	0.0009	0.0012	0.001
Radium 226	pCi/L	3.92	1.8	2.4	2.2	2.4
Radium Precision (+/-)		0.34	0.2	0.2	0.2	0.2
Ra-228	pCi/L		1.8	ND	ND	ND
Ra-228 Precision (+/-)	pCi/L		1.1	NA	NA	NA
Adjusted Gross Alpha	pCi/L		9.1	5.9	5.1	4.9
Adjusted Gross Alpha Precision (+/-)	pCi/L		2.2	1.3	1.5	1.1
Gross Beta	pCi/L		4	3.1	4.2	ND
Gross Beta Precision (+/-)	pCi/L		2.3	1.5	2.2	NA

Quality Assurance Data

Anion	meq/L	8.17	8.9	8.49	9.11	10.58
Cation	meq/L	9.03	9.77	8.78	9.45	9.59
WYDEQ A/C Balance	%	5.00	4.66			
Calc TDS	mg/L	524.9	610	540	580	630
TDS A/C Balance	dec. %			1.04	1.02	0.95

MDC = Minimum Detectable Concentration
NA = Not Analyzed
All measurements are "dissolved" (filtered) unless otherwise noted

MW 10

Major Ions	Units	07/01/10	08/23/11	12/14/11	03/12/12	05/15/12
Calcium	mg/L	3	2	1	2	2
Magnesium	mg/L	<1	<1	<1	<1	<1
Sodium	mg/L	91	90	91	98	106
Potassium	mg/L	2	<1	2	2	1
Carbonate	mg/L	<5	9	<5	8	8
Bicarbonate	mg/L	177	161	195	205	198
Sulfate	mg/L	39	40	42	47	48
Chloride	mg/L	9	4	4	3	4
Ammonium as N	mg/L	0.2	6.5	0.3	0.2	0.1
Fluoride	mg/L	0.2	<0.1	0.1	0.1	0.1
Silica	mg/L	12.2	14	34	19	17

Non Metals

TDS @ 180° C	mg/L	440	290	1610	1480	450
TSS	mg/L			4590		1300
Conductivity	µmho/cm	410	395	421	471	392
Alkalinty as $CaCO_3$	mg/L	145	147	162	182	176
pH	S.U.	7.7	8.4	8.3	8.7	8.7

Dissolved Metals

Aluminum	mg/L	0.2	0.3	5.2	1.5	1.1
Arsenic	mg/L	<0.001	<0.01	0.118	<0.001	<0.001
Barium	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Beryllium	mg/L	<0.001	<0.01	<0.001	<0.001	<0.001
Boron	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	<0.001	<0.002	<0.001	<0.001	<0.001
Chromium	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.07	0.11	1.24	0.57	0.38
Iron (total)	mg/L	5.20	2.77	21.9	27	9.07
Lead	mg/L	<0.01	<0.02	<0.01	<0.01	<0.01
Manganese	mg/L	<0.01	<0.02	<0.01	<0.01	<0.01
Manganese (total)	mg/L	0.06	0.05	0.4	0.52	0.19
Mercury	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	0.01	<0.01	0.01	<0.01	<0.01
Nickel	mg/L	<0.05	<0.01	<0.05	<0.05	<0.05
Selenium	mg/L	0.001	0.01	0.001	<0.001	<0.001
Silver	mg/L					
Vanadium	mg/L	<0.1	<0.02	<0.1	<0.1	<0.1
Zinc	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01

Radiometric

Uranium	mg/L	0.0090	0.0123	0.0189	0.0131	0.0058
Radium 226	pCi/L	3.59	2.5	20.1	20.8	10.9
Radium Precision (+/-)		0.32	0.2	0.5	0.5	0.5
Ra-228	pCi/L		<1	15.6	22.3	1.9
Ra-228 Precision (+/-)	pCi/L		NA	1.6	2.4	2
Adjusted Gross Alpha	pCi/L		23.4	187	96.3	152
Adjusted Gross Alpha Precision (+/-)	pCi/L		1.8	5.1	4.3	5
Gross Beta	pCi/L		14.8	81.9	67.8	42
Gross Beta Precision (+/-)	pCi/L		1.4	2.3	2.2	1.7

Quality Assurance Data

Anion	meq/L	3.99	3.89	4.22	4.72	4.63
Cation	meq/L	4.13	4	4.07	4.4	4.76
WYDEQ A/C Balance	%	1.72	1.39	1.85	3.5	1.31
Calc TDS	mg/L	244.9	240	270	280	280
TDS A/C Balance	dec. %		1.21	5.93	5.29	1.61

MDC = Minimum Detectable Concentration
NA = Not Analyzed
All measurements are "dissolved" (filtered) unless otherwise noted

Sheep Mountain Mines
Quality Report for PZ-1

PZ-1

Major Ions	Units	08/16/88	08/16/89	09/14/90	07/23/91	08/19/92	07/13/93	06/28/94	07/03/95	07/02/96	07/21/97	06/30/98	06/07/99	07/05/00	07/05/01	08/14/02	08/05/03	08/27/04	08/31/05	09/25/06	10/3/2007	8/26/2008	8/4/2009	6/30/2010	8/23/2011	12/14/2011	3/12/2012	5/15/2012
Calcium	mg/L	53			77			51			41.9		47	44.1	43.5	49.1	45	58.5	53.8	60	43.2	69.1	52	2.58	58	55	53	53
Magnesium	mg/L	9			14			13			8.1		7.3	8.1	6.6	7.3	8.1	8.6	8.3	9	5.7	9.7	7	0.57	8	7	7	7
Sodium	mg/L	31			48			41			39.9		39	41.9	43.3	43.5	44	45.1	45.6	42.9	42.6	48.3	45	1.97	49	46	44	43
Potassium	mg/L	2			2			2			2		1.8	2	1.5	1.6	1.8	1.8	2.1	1.9	1.6	1.8	2	0.04	2	2	2	2
Carbonate	mg/L	0			0			0	0		0		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<5	<5	<5	<5
Bicarbonate	mg/L	151	224	234	257	215	190	214	196	183	161	166	178	168	180	187	185	195	209	209	204	204	197	204	206	210	213	219
Sulfate	mg/L	65	105	25	116	112	92	74	90	79.1	78.4	74.9	81	79	68.4	73.4	88.3	85	96	96	64	101	71	69	80	81	79	81
Chloride	mg/L	22	32	20	27	15	16	16	8.2	2.2	9	6.4	9	3.3	72	9.2	<1	11	12	11	9	12	9	8	12	11	8	9
Ammonium as N	mg/L	<0.05			<0.05			0.13			0.09		0.05	<0.05	<0.05	<0.05	0.05	<0.05	0.16	0.21	0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite as N	mg/L	<0.001			<0.001						<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1								
Nitrate + Nitrite as N	mg/L	1.59	2.13	1.86	2.16	0.34	0.34	1.48	1.14	0.39	0.24	0.47	0.52	0.43	0.23	0.24	0.28	0.39	0.5	1.04	0.3	0.71	0.35	<0.01	0.5	0.7	0.6	0.8
Fluoride	mg/L	1.53			0.45			0.3			0.19		0.17	0.14	0.15	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.2	0.1	<0.1			
Silica	mg/L										23.3		23.3	22.1	20.3	19.3	20.3	23.6	22	22	18.6			19.6	21	21	19	19
Non Metals																												
TDS @ 180° C	mg/L	262	485	506	443	366	375	325	343	317	281	295	324	295	269	301	314	376	334	362	294	358	310	350	350	330	340	380
TSS	mg/L														3											<5	0	<5
Conductivity	µmho/cm	460	700	560	660	560	550	550	548	475	450	438	450	456	449	471	506	494	522	561	469	527		494	536	510	543	502
Alkalinty as $CaCO_3$	mg/L	124			211				161		132		146	139	148	154	152	160	172	171	167			167	169	172	175	180
pH	S.U.	7.20	7.06	7.28	7.24	7.36	6.9	6.72	8.08	7.1	7.72	7.21	6.83	7.7	7.75	7.81	7.46	6.7	7.26	7.61	7.1	6.88	7.0	7.8	8	7.5	7.9	8.1
Dissolved Metals																												
Aluminum	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	<0.001			<0.001			<0.001			<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.001	<0.001	<0.01	0.001	<0.01	<0.01
Barium	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beryllium																								<0.001	<0.01	0.001	<0.01	<0.01
Boron	mg/L	0.04			<0.01			<0.01			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	<0.002			<0.002			<0.002			<0.01		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.005	<0.001	<0.002	<0.002	<0.002	<0.002
Chromium	mg/L	<0.01			<0.01			<0.01			<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	<0.01			<0.01			<0.01			<0.01		0.12	0.02	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.04			<0.01			0.02			0.4		<0.05	<0.03	<0.03	<0.03	<0.03	1.43	0.11	0.19	0.007		<0.03	<0.05	<0.05	<0.05	<0.05	<0.05
Iron (Total)	mg/L																							<0.05	0.2			
Lead	mg/L	<0.05			<0.05			<0.05			<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.002	<0.002	<0.05	<0.01	<0.02	<0.01	<0.01	<0.01
Manganese	mg/L	0.03			<0.01			<0.01			0.07		<0.01	<0.01	0.06	0.03	0.03	0.52	0.41	<0.01	0.07		0.06	0.07	0.07	0.05	0.05	0.06
Manganese (Total)	mg/L																							0.08	0.08			
Mercury	mg/L	<0.0002			<0.0002			<0.0002			<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.005	<0.1	<0.01	<0.02	<0.01	<0.01	<0.01
Nickel	mg/L	<0.02			<0.02			<0.02			<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	mg/L	<0.001			0.001			0.001			0.022		0.023	0.02	0.01	0.009	0.006	0.008	0.01	0.008	<0.005	0.005	0.002	0.004	0.008	0.005	<0.005	0.004
Silver	mg/L																				<0.005	<0.005						
Vanadium	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	<0.02	<0.02	<0.02	<0.1
Zinc	mg/L	0.291			<0.005			0.014			0.07		1.3	0.39	0.74	0.62	0.39	0.12	0.39	0.05	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01
Radiometric																												
Uranium	mg/L	0.384	0.814	0.573	1.186	0.905	0.647	1.27	1.206	0.813	0.3	0.394	0.443	0.665	0.461	0.673	0.848	0.858	1.06	1.34	0.488	1.20	0.620	0.642	0.5713	0.789	0.799	0.694
Radium 226	pCi/L	3.7	1.9	9.8	4.1	2.2	1	3.4	4.4	4.1	2.2	0.9	1.3	0.8	3.5	4.2	2.7	36.3	437	6.3	4.4	2.2	2.8	3.79	4.2	4	2.9	2.5
Ra-226 Precision (+/-)	pCi/L	0.6	0.5	0.9	0.7	0.5	0.4	0.7	0.8	0.4	0.2	0.2	0.2	0.2	0.3	0.4	0.3	2.7	8.5	0.8	0.8	0.34	0.37	0.35	0.3	0.2	0.2	0.2
Gross Alpha	pCi/L																				315	*5.8			320	443	430	410
Gross Alpha estimate																					6	0.9						
																		*2008 Gross alpha adjusted for Rn-22 and Unat										
Quality Assurance Data																												
Anion	meq/L	4.56			7.62			5.5			4.55		4.91	4.56	4.61	4.89	4.9	5.34	5.81	5.8	4.96	5.83	4.98	5.00	5.15	5.46	5.43	5.59
Cation	meq/L	4.78			7.13			5.43			4.6		4.76	4.78	4.69	5.04	4.93	5.87	5.49	5.68	4.52	6.4	5.17	5.17	5.13	5.41	5.13	5.14
WYDEQ A/C Balance	%										0.51		-1.54	2.41	0.82	1.52				-1.06	4.64	4.62	1.79	1.67				
Calc TDS	mg/L										285		301	288	283	300	303	333	345	350	286	361	305	305.1	300	330	320	320
TDS A/C Balance	dec. %										0.99		1.08	1.03	0.95	1	1.03	1.13	0.97	1.03	1.03	0.99	1.02		1.1	1	1.06	1.19

Sheep Mountain Mines
Quality Report for PZ-2

PZ 2

Major Ions	Units	08/16/88	08/16/89	09/12/90	07/23/91	08/18/92	07/13/93	06/28/94	07/03/95	07/02/96	07/21/97	06/30/98	06/07/99	07/06/00	08/12/02	08/05/03	08/27/04	08/31/05	09/25/06	10/4/2007	8/26/2008	8/5/2009	6/30/2010	8/24/2011	12/15/2012	3/12/2012	5/14/2012
Calcium	mg/L	19			19			15			20.8		22	23.5	19.4	13.7	19.4	17.8	17.1	20.2	19.3	18	16	18	17	17	17
Magnesium	mg/L	4			3			2			2.2		1.9	4.7	2	2	2.1	1.9	1.7	2.1	1.9	2	2	2	2	2	2
Sodium	mg/L	22			26			26			24.5		30	5.8	25.3	25.8	27.3	26.8	23.4	25.6	26.2	25	29	27	26	25	25
Potassium	mg/L	1			1			2			1.6		1.7	<1	1.5	1.6	1.6	1.9	1.5	1.5	1.6	1	2	1	1	2	1
Carbonate	mg/L	0			0			0	0		0		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<5	<5	<5	<5
Bicarbonate	mg/L	122	117	120	127	117	112	107	115	112	115	115	132	100	115	111	113	111	113	116	124	121	119	117	120	123	119
Sulfate	mg/L	2	7	4	10	10	10	7	10	10	11.1	8.9	12	9.3	9.4	10.4	11	20	10	13	12	7	8	8	8	8	8
Chloride	mg/L	10	12	10	7	5	8	6	3.4	5	4.7	3.6	6	<1	<1	<1	5	5	4	3	3	3	3	4	4	3	3
Ammonium as N	mg/L	<0.05			<0.05			0.14			0.08		<0.05	<0.05	<0.05	<0.05	0.12	0.1	0.11		<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite as N	mg/L	<0.001			<0.001						<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA					
Nitrate + Nitrite as N	mg/L	0.18	0.14	0.13	0.26	0.68	0.68	1.77	0.11	<0.1	<0.1	<0.1	0.11	<0.1	0.09	<0.05	<0.05	<0.05	0.17	0.1	0.07	0.08		<0.1	<0.1	<0.1	<0.1
Fluoride	mg/L	0.82			0.37			0.32			0.2		0.19	0.25	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.1	<0.1	0.2	0.2
Silica	mg/L										15.7		16.1	9.7	14.8	10.4	15.8	16	14.4	15.4	NA	NA	15.4	16	16	15	15
Non Metals																											
TDS @ 180° C	mg/L	130	224	188	130	123	148	120	130	139	132	145	149	110	144	127	125	135	112	150	145	130	140	140	120	130	170
TSS	mg/L																			NA	NA	NA			<5	<5	20
Conductivity	µmho/cm	250	300	200	270	240	250	240	219	217	221	220	220	183	210	219	208	208	204	178	205	225	203	220	209	221	197
Alkalinty as $CaCO_3$	mg/L	100			60				94.3		94.6		108	83	95	91	92	91	92	95	NA	NA	98	97	101	100	99
pH	S.U.	7.44	7.31	7.94	7.64	7.68	7.59	7.49	8.1	7.66	7.9	7.95	7.63	7.37	8.21	8.05	7.58	8.09	8.19	7.93	8.04	8.36	8.2	8.4	8	8	8.4
Dissolved Metals																											
Aluminum	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	<0.001			<0.001			<0.001			<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01
Barium	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beryllium	mg/l																						<0.001	<0.01	<0.01	<0.01	<0.01
Boron	mg/L	0.03			<0.01			<0.01			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	<0.002			<0.002			<0.002			<0.01		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.005	<0.001	<0.002	<0.002	<0.002	<0.002
Chromium	mg/L	<0.01			<0.01			<0.01			<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	<0.01			<0.01			<0.01			<0.01		0.01	<0.01	<0.01	<0.01	<0.01	0.07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.08			<0.01			<0.01			0.1		<0.05	<0.03	<0.03	<0.03	0.81	0.29	<0.03	0.014	NA	<0.03	<0.05	<0.05	<0.05	<0.05	<0.05
Iron (total)	mg/L																		Not Previously Analyzed			0.29	<0.05	<0.05			
Lead	mg/L	<0.05			<0.05			<0.05			<0.05		<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.002	<0.002	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01
Manganese	mg/L	0.02			<0.01			<0.01			<0.01		<0.01	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	NA	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02
Manganese (total)	mg/L																		Not Previously Analyzed			<0.01	<0.01	<0.02			
Mercury	mg/L	<0.0002			<0.0002			<0.0002			<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.005	<0.1	<0.01	<0.02	<0.02	<0.02	<0.02
Nickel	mg/L	<0.02			<0.02			<0.02			<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NA	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01
Selenium	mg/L	<0.001			0.001			0.002			<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01
Silver	mg/L																			<0.005	<0.005	NA					
Vanadium	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.02	<0.02	<0.02	<0.02
Zinc	mg/L	0.155			<0.005			<0.005			0.06		0.3	3.91	0.34	0.39	2.41	0.63	0.07	0.08	0.05	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Radiometric																											
Uranium	mg/L	0.006	0.016	0.002	0.006	0.0045	0.0017	0.0256	0.0035	0.0027	0.003	0.0044	0.0027	0.141	0.0037	0.0028	0.0034	0.0035	0.0037	0.009	0.004	0.0028	0.0028	0.0026	0.0028	0.0088	0.0071
Ra-226	pCi/L	6.6	4.8	7.1	1.9	10.3	1.9	55.3	9.9	8.1	9.3	10.1	10.3	2.6	10.9	11.3	12	10.6	9	11	8.4	9.3	10.59	8.4	9.7	10.8	9.9
Ra-226 Precision (+/-)	pCi/L	0.9	0.8	0.7	0.5	1	0.5	2.7	1.2	0.6	0.9	1	0.9	0.3	0.6	1.1	1.2	1.3	1	1.3	0.2	0.66	0.58	0.4	0.2	0.2	0.2
Ra-228	pCi/L																		Not Previously Analyzed			<1.5		1.6	3.3	1.1	1.8
Ra-228 Precision (+/-)	pCi/L																					0.9		0.8			
Adjusted Gross Alpha	pCi/L																	Not Previously Analyzed			9.1	11.3		17.3	21.7	14.4	18.4
Adjusted Gross Alpha Precision (+/-)	pCi/L																				1.1	1.3		1.5			
Gross Beta	pCi/L																					4.9		6.3	9.7	8.6	8.7
Gross Beta Precision (+/-)	pCi/L																		Not Previously Analyzed			1.7		1.1			
Quality Assurance Data																											
Anion	meq/L	2.32			2.51			2.07			2.27		2.6	1.9	2.12	2.05	2.21	2.37	2.17	2.28	2.37	2.23	2.20	2.22	2.29	2.27	2.25
Cation	meq/L	2.27			2.35			2.09			2.35		2.63	1.98	2.28	2.02	2.42	2.28	2.06	2.33	2.3	2.12	2.22	2.26	2.12	2.1	2.08
WYDEQ A/C Balance	%										1.75		0.7	2.03	3.75				-2.59	1.2	1.56	2.55	0.45	0.81			
Calc TDS	mg/L										139		157	110	132	125	137	144	128	139	137	133	135	140	120	130	130
TDS A/C Balance	dec. %										0.95		0.95	1	1.09	1.01	0.91	0.94	0.88	1.08	1.06	0.98		1	1	1	1.31

MDC = Minimum Detectable Concentration
NA = Not Analyzed
All measurements are "dissolved" (filtered) unless otherwise noted

Sheep Mountain Mines
Quality Report for PZ-3

PZ-3

Major Ions	Units	08/16/88	08/16/89	09/12/90	07/23/91	08/18/92	07/13/93	06/28/94	07/03/95	07/02/96	07/21/97	06/30/98	06/08/99	07/06/00	07/02/01	08/13/02	08/05/03	08/27/04	08/31/05	09/25/06	10/3/2007	8/26/2008	8/4/2009	6/29/2010	8/23/2011	12/14/2011	3/12/2012	5/15/2012
Calcium	mg/L	12			87			111			157		159	154	102	57.8	71.8	109	116	103	86.4	98.9	80	68	63	60	57	60
Magnesium	mg/L	2			11			17			12.6		13	12.9	8.7	4.8	5.8	8.6	9.8	8.4	6.6	7.7	6	5	5	5	4	5
Sodium	mg/L	68			60			58			54.8		53	52.8	43.3	40.5	37.9	50.9	55.2	52.1	55.4	62.5	60	61	64	63	60	60
Potassium	mg/L	1			2			3			3.1		3.4	3	2.4	2	2.1	2.3	2.7	2.3	2.5	2.4	2	3	3	2	2	2
Carbonate	mg/L	0			0			0	0		0		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<5	<5	<5	<5
Bicarbonate	mg/L	132	129	193	220	259	225	244	245	233	237	244	234	227	201	176	176	195	214	194	192	174	173	174	167	175	173	185
Sulfate	mg/L	55	73	150	190	277	275	236	327	336	326	336	334	318	202	81.4	138	207	259	250	206	234	199	165	154	154	159	156
Chloride	mg/L	11	11	11	8	7	10	10	4.8	5	5.7	5	7	5	9.4	<1	1.1	5	6	4	5	4	4	3	3	4	3	4
Ammonium as N	mg/L	<0.05			<0.05			0.23			<0.05		<0.05	<0.05	0.15	0.06	0.16	0.13	0.25	0.19	<0.05	0.1	0.12	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite as N	mg/L	<0.001			<0.001						<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA					
Nitrate + Nitrite as N	mg/L	0.35	0.32	0.12	0.19	0.77	0.77	<0.01	<0.1	<0.1	0.24	<0.1	0.24	0.2	<0.1	<0.05	<0.05	<0.05	<0.05	0.15	<0.1	<0.05	<0.01		<0.1	<0.1	<0.1	<0.1
Fluoride	mg/L	1.14			0.22			0.2			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Silica	mg/L										20.8		21.3	22.2	18.5	17.1	18	18.9	19.9	17.4	17.4	NA	NA	16.6	17	17	16	17
Non Metals																												
TDS @ 180° C	mg/L	220	311	577	517	616	724	606	387	713	716	697	709	702	459	307	368	514	572	532	508	487	452	450	430	400	410	440
TSS	mg/L																				NA	NA	NA			<5	0	<5
Conductivity	µmho/cm	390	550	600	800	860	900	960	1011	966	990	1020	968	956	753	468	561	681	820	784	774	699	727	638	647	593	629	570
Alkalinty as $CaCO_3$	mg/L	108			180				201		194		192	187	166	144	145	160	176	159	157	NA	NA	142	137	144	142	154
pH	S.U.	7.65	7.77	7.75	7.68	7.72	7.17	7.21	8.13	7.58	8.01	7.83	8.06	8.11	8.1	8.12	7.97	7.36	7.85	7.92	7.69	7.49	7.8	8.1	8.2	7.4	8.1	8.3
Dissolved Metals																												
Aluminum	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	<0.001			<0.001			<0.001			<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01
Barium	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beryllium	mg/L																							<0.001	<0.01	<0.01	<0.01	<0.01
Boron	mg/L	0.03			0.03			0.05			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	<0.002			<0.002			<0.002			<0.01		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.005	<0.001	<0.002	<0.002	<0.002	<0.002
Chromium	mg/L	<0.01			<0.01			<0.01			<0.05		<0.05	<0.05	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	<0.01			<0.01			<0.01			<0.01		0.01	0.02	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.07			<0.01			<0.01			<0.05		<0.05	<0.03	<0.03	<0.03	<0.03	0.42	0.19	<0.03	0.007	NA	<0.03	<0.05	<0.05	<0.05	<0.05	<0.05
Iron (total)	mg/L																			Not Previously Analyzed			0.85	0.09	<0.05	<0.05	<0.05	<0.05
Lead	mg/L	<0.05			<0.05			<0.05			<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.002	<0.002	<0.05	<0.01	<0.02	<0.02	<0.02	<0.02
Manganese	mg/L	0.02			<0.01			<0.01			0.02		0.01	0.02	0.11	0.08	0.07	0.14	0.11	0.09	0.07	NA	0.06	0.06	0.06	0.05	0.05	0.06
Manganese (total)	mg/L																			Not Previously Analyzed			0.08	0.07	0.06	0.05	0.06	0.05
Mercury	mg/L	<0.0002			<0.0002			<0.0002			<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.005	<0.1	<0.01	<0.02	<0.02	<0.02	<0.02
Nickel	mg/L	<0.02			<0.02			<0.02			<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	mg/L	<0.001			0.002			<0.001			<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.001	0.002	<0.01	<0.01	<0.01	<0.01
Silver	mg/L																				<0.005	<0.005	NA					
Vanadium	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.02	<0.02	<0.02	<0.02
Zinc	mg/L	0.048			<0.005			<0.005			0.04		0.28	0.36	1.23	0.34	0.87	0.54	0.29	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Radiometric																												
Uranium	mg/L	0.044	0.019	0.01	0.011	0.0068	0.0064	0.042	0.0086	0.0067	0.006	0.0063	0.0042	0.0061	0.0037	0.0038	0.0039	0.0052	0.0055	0.0044	0.004	0.0032	0.0035	0.0035	0.0092	<0.0001	<0.0001	<0.0001
Radium 226	pCi/L	0.9	1.8	8.7	4.1	9.5	7.9	9.3	6.3	6.2	3.2	4.4	3.4	2.5	33	4.8	4.3	5.4	5.1	5.5	3.2	2.4	2.9	2.57	2.8	2.5	2.8	2.8
Radium Precision (+/-)		0.4	0.5	0.8	0.7	1	1	1.1	1	0.4	0.3	0.4	0.3	0.3	0.3	0.4	0.4	0.8	0.7	0.8	0.7	0.34	0.35	0.28	0.2	0.2	0.2	0.2
Ra-228	pCi/L																			Not Previously Analyzed			5.1		3.6	4.5	5	5.1
Ra-228 Precision (+/-)	pCi/L																						1		1.3	1.6	1.4	1.5
Adjusted Gross Alpha	pCi/L																	Not Previously Analyzed			12.3	3.6	7.6	11.9	13.9	9.4	11.2	8.7
Adjusted Gross Alpha Precision (+/-)	pCi/L																				0.9	0.7	1.1	1.8	1.5	1.3	1.4	1.2
Gross Beta	pCi/L																			Not Previously Analyzed			11	10.7	9.9	8.6	8.6	11.3
Gross Beta Precision (+/-)	pCi/L																						2.0	1.6	1.5	1.2	1.3	1.3
Quality Assurance Data																												
Anion	meq/L	3.61			8.17			9.19			10.85		11.02	10.5	7.81	4.57	5.81	7.66	9.07	8.51	7.57	7.83	7.08	6.36	6.35	6.2	6.24	6.41
Cation	meq/L	3.75			7.91			9.52			11.38		11.45	11.1	7.84	5.11	5.81	8.47	9.1	8.19	7.34	8.36	7.19	6.59	6.37	6.19	5.83	6.03
WYDEQ A/C Balance	%										2.37		1.93	2.84	0.2	5.57				-1.91	1.54	3.25	0.774	1.78	0.157			
Calc TDS	mg/L										700		709	683	489	292	365	498	574	534	473	508	456	408.6	400	400	410	440
TDS A/C Balance	dec. %										1.02		1	1.03	0.94	1.05	1	1.03	1	1	1.07	0.96	0.99			1.03	1.05	1.13

MDC = Minimum Detectable Concentration
NA = Not Analyzed
All measurements are "dissolved" (filtered) unless otherwise noted

Sheep Mountain Mines
Quality Report for PZ-4

PZ-4

Major Ions	Units	08/16/88	08/16/89	09/12/90	07/23/91	08/18/92	07/13/93	06/28/94	07/03/95	07/02/96	07/21/97	06/30/98	06/07/99	07/05/00	07/02/01	08/12/02	08/05/03	08/27/04	08/31/05	09/25/06	10/3/2007	8/26/2008	8/4/2009	7/1/2010	8/23/2011	12/14/2011	3/12/2012	5/15/2012
Calcium	mg/L	51			46			51			56.4		56.2	50.8	54.3	54.5	46.2	54.2	51.1	50.1	44.9	56.4	50	50	52	50	47	49
Magnesium	mg/L	6			7			6			7.8		8	8.3	8	7.9	7.8	7.9	7.6	7.2	6.1	7.8	7	7	7	6	6	7
Sodium	mg/L	14			14			19			17		18.3	18.4	19.2	17.5	17.4	18	17.7	16	15.6	16.2	15	16	17	17	16	16
Potassium	mg/L	2			2			2			2		2.3	2.3	2.3	1.9	1.8	1.9	2.9	1.9	2	2	2	2	2	2	2	2
Carbonate	mg/L	0			0			0	0		0		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<5	<5	<5	6
Bicarbonate	mg/L	142	198	195	188	207	200	195	209	194	200	203	197	200	203	200	192	192	203	188	195	182	194	199	194	194	204	203
Sulfate	mg/L	52	18	10	13	19	20	21	22	23	24.1	23.2	24	22.8	22.6	22.5	25	24	26	24	19.7	31	18	19	20	19	21	22
Chloride	mg/L	10	12	13	11	9	11	12	6.1	6.7	8.1	7.1	8.3	3.8	12.5	4.2	3.6	7	8	7	7	7	6	5	7	7	6	7
Ammonium as N	mg/L	<0.05			<0.05			<0.05			<0.05		<0.05	<0.05	0.05	<0.05	0.07	<0.05	0.11	<0.05	<0.05	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite as N	mg/L	<0.001			<0.001						<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA					
Nitrate + Nitrite as N	mg/L	0.83	0.75	0.42	0.64	0.41	0.41	4.84	0.47	0.49	0.52	0.46	0.49	0.53	0.59	0.48	0.3	0.3	0.2	0.41	0.3	0.25	0.21		0.2	0.1	0.1	0.2
Fluoride	mg/L	1.04			0.24			0.32			0.19		0.19	0.17	0.17	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2
Silica	mg/L										12.6		13	12.8	11.9	12.1	12.2	12	13.1	11.3	11.2	NA	NA	12.0	12.0	12	11	12
Non Metals																												
TDS @ 180° C	mg/L	203	280	217	207	208	216	223	240	236	221	225	233	215	247	234	218	242	200	190	190	227	222	210	230	210	220	220
TSS	mg/L																				NA	NA	NA			<5	0	<5
Conductivity	µmho/cm	380	430	340	420	370	400	410	392	378	384	387	385	376	381	372	386	356	363	360	332	370	380	350	372	346	375	343
Alkalinity as $CaCO_3$	mg/L	117			144				171		164		162	165	167	164	158	157	166	154	160	NA	NA	163	160	165	167	175
pH	S.U.	7.81	7.71	7.93	7.85	7.65	6.91	7.42	8.21	7.8	8.18	8.05	7.63	8.16	8.13	8.28	8.05	7.34	8.14	8.13	7.89	7.77	8.12	8.1	8.3	8	8.2	8.5
Dissolved Metals																												
Aluminum	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	<0.001			<0.001			<0.001			<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.001	<0.001	<0.01	0.001	<0.01	<0.01
Barium	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beryllium	mg/L																							<0.001	<0.01	<0.01	<0.01	<0.01
Boron	mg/L	0.02			<0.01			<0.01			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	<0.002			<0.002			<0.002			<0.01		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.005	<0.001	<0.002	<0.002	<0.002	<0.002
Chromium	mg/L	<0.01			<0.01			<0.01			<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	<0.01			<0.01			<0.01			<0.01		0.01	0.01	<0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.01			<0.01			<0.01			0.12		<0.05	<0.03	<0.03	<0.03	0.202	1.05	2.69	0.11	0.02	NA	<0.03	<0.05	<0.05	<0.05	<0.05	<0.05
Iron (total)	mg/L																			Not Previously Analyzed			0.10	1.81	0.1	0.09	0.13	0.1
Lead	mg/L	<0.05			<0.05			<0.05			<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.002	<0.002	<0.05	<0.01	<0.02	<0.02	<0.02	<0.02
Manganese	mg/L	0.01			<0.01			<0.01			<0.01		<0.01	<0.01	<0.01	<0.01	0.05	0.03	0.05	0.01	<0.01	NA	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02
Manganese (total)	mg/L																			Not Previously Analyzed			<0.01	0.04	<0.02	<0.02	<0.02	<0.02
Mercury	mg/L	<0.0002			<0.0002			<0.0002			<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.005	<0.1	<0.01	<0.02	<0.02	<0.02	<0.02
Nickel	mg/L	<0.02			<0.02			<0.02			<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NA	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01
Selenium	mg/L	<0.001			0.002			<0.001			<0.001		0.001	<0.001	0.001	0.002	0.002	0.001	0.001	<0.001	<0.005	<0.005	<0.001	0.001	<0.01	<0.01	<0.01	<0.01
Silver	mg/L																				<0.005	<0.005	NA					
Vanadium	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.02	<0.02	<0.02	<0.02
Zinc	mg/L	0.065			<0.005			<0.005			0.04		0.24	0.28	0.99	1.12	0.44	1.33	0.34	0.12	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Radiometric																												
Uranium	mg/L	0.304	0.178	0.181	0.233	0.164	0.253	0.12	0.268	0.312	0.226	0.308	0.292	0.282	0.293	0.262	0.301	0.269	0.286	0.295	0.277	0.305	0.287	0.299	0.274	<0.001	<0.001	<0.001
Radium 226	pCi/L	2.9	2.1	2	1.3	1.9	0.6	2.8	2.3	2.9	2.3	2.3	2.3	1.5	2.8	3	5.6	3.4	6.2	3.4	3.3	2.0	2.2	2.47	2.4	2.4	2.7	2.4
Radium Precision (+/-)	pCi/L	0.6	0.5	0.4	0.4	0.4	0.3	0.6	0.6	0.4	0.3	0.3	0.2	0.2	0.3	0.3	0.4	0.7	0.8	0.6	0.7	0.30	0.31	0.27	0.2	0.2	0.2	0.2
Ra-228	pCi/L																			Not Previously Analyzed			1.9		1.2	5.8	2	3.4
Ra-228 Precision (+/-)	pCi/L																						0.8		1.1	2.4	1.1	1
Adjusted Gross Alpha	pCi/L																		Not Previously Analyzed			3.2	5.2		164	178	141	93.2
Adjusted Gross Alpha Precision (+/-)	pCi/L																					0.7	0.9		4.9	4.9	4.6	3.5
Gross Beta	pCi/L																			Not Previously Analyzed			70		39	60	44.5	48.6
Gross Beta Precision (+/-)	pCi/L																						2.6		1.8	2	1.9	1.9
Quality Assurance Data																												
Anion	meq/L	3.69			3.69			3.98			4.06		4.02	3.93	4.21	3.91	3.81	3.87	4.11	3.81	3.82	3.84	3.74	3.80	3.81	3.9	3.95	4.18
Cation	meq/L	3.69			3.53			3.91			4.28		4.36	4.12	4.32	4.23	3.8	4.23	4.13	3.85	3.47	4.22	3.74	3.80	3.96	3.78	3.59	3.8
WYDEQ A/C Balance	%										2.71		4.03	2.33	1.27	3.96				0.557		4.65	0.004	0	1.89			
Calc TDS	mg/L										231		232	223	236	224	213	221	227	212	204	220	206	210.9	210	210	220	220
TDS A/C Balance	dec. %										0.96		1.01	0.97	1.04	1.04	1.02	1.1	0.88	0.9	0.93	1.03	1.08		1.1	1	1.05	1.05

MDC = Minimum Detectable Concentration
NA = Not Analyzed
All measurements are "dissolved" (filtered) unless otherwise noted

Sheep Mountain Mines
Quality Report for PZ-5

PZ-5

Major Ions	Units	08/16/88	08/16/89	09/12/90	07/23/91	08/18/92	07/13/93	06/28/94	07/03/95	07/02/96	07/21/97	06/30/98	06/08/99	07/06/00	07/02/01	08/13/02	08/05/03	08/27/04	08/31/05	09/25/06	10/2/2007	8/26/2008	8/5/2009	6/30/2010	8/24/2011	12/15/2012	3/12/2012	5/15/2012
Calcium	mg/L	5			8			2			15.9		28	19.7	15.7	26.2	22.9	27	13.3	9.2	7.6	9.9	18	11	12	10	11	12
Magnesium	mg/L	2			3			2			1.6		5	2.1	2.4	4.3	4.4	4.5	1.7	0.8	0.5	0.8	3	1	1	ND	ND	1
Sodium	mg/L	51			43			55			62.9		4.1	26.2	32	9.4	3	5.7	48.1	50.8	52.5	59.3	6	52	55	57	52	50
Potassium	mg/L	1			1			1			<1		<1	1.5	<1	<1	<1	<0.5	0.6	0.8	0.7	0.7	1	1	<1	<1	<1	<1
Carbonate	mg/L	0			0			0	0		0		<1	<1	<1	<1	<1	<1	2	2	5	2	<1	<5	<5	<5	<5	<5
Bicarbonate	mg/L	142	120	110	121	122	122	122	123	124	127	97.5	113	112	117	104	92.1	97	120	113	119	118	82	125	128	131	134	127
Sulfate	mg/L	14	8	4	14	23	23	22	34	54.4	65.7	4.6	8	10.5	22	11.2	8.1	9	38	40	32.8	39	3	32	39	36	37	39
Chloride	mg/L	8	10	11	10	8	8	10	3.4	4.6	6.4	<1	2	4	9.1	<1	<1	2	3	6	5	4	<1	3	4	4	4	4
Ammonium as N	mg/L	<0.05			<0.05			0.36			<0.05		<0.05	<0.05	0.07	<0.05	0.05	<0.05	0.15	0.07	<0.05	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite as N	mg/L	<0.001			<0.001						<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA					
Nitrate + Nitrite as N	mg/L	0.08	0.24	0.09	0.26	0.14	0.14	1.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.13	<0.05	0.05	<0.1	0.19	<0.1	<0.05	0.09		<0.1	<0.1	<0.1	<0.1
Fluoride	mg/L	1.25			0.22			0.2			0.11		0.26	0.17	0.18	0.3	0.3	0.3	0.1	<0.1	0.1	<0.1	0.4	<0.1	<0.1	<0.1	0.1	<0.1
Silica	mg/L										10.4		9	16.9	8.7	9.03	8.47	8.8	10.2	9.3	9.72	NA	NA	10.7	11	11	10	11
Non Metals																												
TDS @ 180° C	mg/L	147	218	171	174	170	170	164	180	211	230	108	123	126	126	116	89	105	148	150	162	189	88	190	190	170	190	220
TSS	mg/L																				NA	NA	NA					
Conductivity	µmho/cm	300	370	250	320	300	300	310	293	329	368	169	182	215	240	198	172	175	273	286	246	288	164	286	287	297	314	285
Alkalinty as $CaCO_3$	mg/L	117			32				101		104		93	93	96	86	76	80	101	96	105	NA	NA	104	106	110	110	108
pH	S.U.	7.98	7.98	8.2	7.87	8.16	8.16	8.12	8.25	8	8.06	7.8	7.73	7.81	8	8.02	7.83	7.08	8.37	8.55	8.56	8.6	8.1	8.4	8.5	8.4	8.3	8.5
Dissolved Metals																												
Aluminum	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	<0.001			<0.001			<0.001			0.002		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.001	<0.001	<0.01	0.001	<0.01	<0.01
Barium	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beryllium	mg/L																							<0.001	<0.01	<0.01	<0.01	<0.01
Boron	mg/L	0.01			<0.01			<0.01			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	<0.002			<0.002			<0.002			<0.01		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.005	<0.001	<0.002	<0.002	<0.002	<0.002
Chromium	mg/L	<0.01			<0.01			<0.01			<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	<0.01			<0.01			<0.01			<0.01		<0.01	<0.01	<0.01	<0.01	0.01	0.02	0.04	<0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.05			<0.01			<0.01			<0.05		<0.05	<0.03	<0.03	<0.03	<0.03	0.31	0.14	<0.03	<0.005	NA	<0.03	<0.05	<0.05	<0.05	<0.05	<0.05
Iron (total)	mg/L																			Not Previously Analyzed			0.20	<0.05	<0.05	<0.05	<0.05	<0.05
Lead	mg/L	<0.05			<0.05			<0.05			<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.002	<0.002	<0.05	<0.01	<0.02	<0.02	<0.02	<0.02
Manganese	mg/L	0.01			<0.01			<0.01			<0.01		<0.01	<0.01	0.11	0.11	<0.01	0.03	0.02	<0.01	<0.01	NA	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02
Manganese (total)	mg/L																			Not Previously Analyzed			0.01	<0.01	<0.02	<0.02	<0.02	<0.02
Mercury	mg/L	<0.0002			<0.0002			<0.0002			<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.005	<0.1	<0.01	<0.02	<0.02	<0.02	<0.02
Nickel	mg/L	<0.02			<0.02			<0.02			<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.05	<0.05	NA	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01
Selenium	mg/L	<0.001			0.001			<0.001			<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.005	<0.005	<0.001	<0.001	0.007	<0.001	<0.001	<0.001
Silver	mg/L																				<0.005	<0.005	NA					
Vanadium	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.02	<0.02	<0.02	<0.02
Zinc	mg/L	0.032			<0.005			0.012			0.08		3.2	0.33	1.62	3.7	1.49	2.94	0.78	0.07	<0.01	<0.01	0.24	0.01	<0.01	<0.01	<0.01	<0.01
Radiometric																												
Uranium	mg/L	0.006	0.003	0.002	0.008	0.0034	0.0034	0.018	0.0131	0.0022	0.002	0.175	0.148	0.0029	0.0768	0.131	0.139	0.125	0.0305	0.0029	0.003	0.0014	0.0649	0.0042	0.0017	0.002	0.0026	0.0031
Radium 226	pCi/L	1.2	0.9	1.2	0.7	1.2	0.6	1.1	2.9	1.9	1.1	1.3	2.5	9.2	2	4.5	2.8	5	2.2	1.1	1.4	0.95	1.4	1.87	2.2	1.9	2.8	2.2
Radium Precision (+/-)	pCi/L	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.7	0.3	0.2	0.2	0.2	1	0.3	0.4	0.3	0.8	0.5	0.4	0.5	0.23	0.28	0.25	0.2	-0.8	0.2	0.2
Ra-228	pCi/L																			Not Previously Analyzed			2.2		1.7	<1.5	1.6	2.3
Ra-228 Precision (+/-)	pCi/L																						1		0.8	0	1	1
Adjusted Gross Alpha	pCi/L																		Not Previously Analyzed			1.3	4.0		9	9.6	9	9.8
Adjusted Gross Alpha Precision (+/-)	pCi/L																					0.5	0.8		1.2	1	2	2
Gross Beta	pCi/L																			Not Previously Analyzed			29		5.3	8.9	5.2	5.1
Gross Beta Precision (+/-)	pCi/L																						2.1		1.2	2	3	3
Quality Assurance Data																												
Anion	meq/L	2.77			2.59			2.74			3.64		2.1	2.21	2.66	1.97	1.7	1.85	2.91	2.92	2.92	2.92	1.44	2.83	3	3.05	3.08	3.07
Cation	meq/L	2.66			2.54			2.68			3.71		2.14	2.36	2.48	2.21	1.7	2	2.93	2.76	2.72	3.16	1.42	2.90	3.02	2.95	2.8	2.82
WYDEQ A/C Balance	%										0.91		0.77	3.45	-3.57	5.75				-2.8	105	3.88	0.738	1.22	0.31			
Calc TDS	mg/L										228		118	139	152	118	95.8	105	176	175	172	182	82	173.2	180	180	180	180
TDS A/C Balance	dec. %										1.01		1.04	0.91	0.83	0.98	0.93	1	0.84	0.86	0.94	1.04	1.07		1.06	0.94	1.06	1.22

MDC = Minimum Detectable Concentration
NA = Not Analyzed
All measurements are "dissolved" (filtered) unless otherwise noted

Sheep Mountain Mines
Quality Report for PZ-6

PZ-6

Major Ions	Units	8/16/1988	8/16/1989	9/12/1990	7/23/1991	8/18/1992	7/13/1993	6/28/1994	7/3/1995	7/2/1996	7/21/1997	7/1/1998	6/8/1999	7/7/2000	7/6/2001	8/13/2002
Calcium	mg/L	57			75			72			70.2		72	67.2	61.3	64.1
Magnesium	mg/L	19			16			14			18.4		19	18.3	17.4	17.5
Sodium	mg/L	61			16			60			62		51.1	53.5	58.7	58
Potassium	mg/L	4			4			5			6.1		5.5	4.8	4.5	4.7
Carbonate	mg/L	0			0			0	0		0		<1	<1	<1	<1
Bicarbonate	mg/L	215	244	139	273	239	239	259	251	246	246	200	197	218	233	220
Sulfate	mg/L	147	184	4	185	176	176	132	175	177	179	184	181	156	145	144
Chloride	mg/L	10	11	9	19	8	8	10	4.8	5	6.6	2.1	6	6.9	7.8	7.2
Ammonium as N	mg/L	<0.05			<0.05			<0.05			1.31		0.69	0.59	1.03	0.74
Nitrite as N	mg/L	0.004			<0.001						<0.1		<0.1	<0.1	<0.1	<0.1
Nitrate + Nitrite as N	mg/L	0.02	0.22	0.51	1.48	0.27	0.27	1.3	<0.1	<0.1	<0.1	0.49	2.17	2.31	0.14	0.92
Flouride	mg/L	1.14			0.18			0.19			0.1		0.13	0.1	<0.1	<0.1
Silica	mg/L										11.6		14	12.8	12.4	12.2
Non Metals																
TDS @ 180° C	mg/L	462	563	216	547	486	486	441	475	510	459	447	468	444	403	434
TSS	mg/L														28	
Conductivity	µmho/cm	660	790	250	690	570	570	760	772	726	734	686	684	700	675	670
Alkalinty as $CaCO_3$	mg/L	177			224				206		202		162	180	191	181
pH	S.U.	7.68	7.72	7.9	7.44	7.55	7.55	7.37	8.17	7.55	8.06	7.59	7.96	7.4	8.08	8.03
Trace Metals																
Aluminum	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	<0.001			<0.001			<0.001			<0.001		<0.001	<0.001	<0.001	<0.001
Barium	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1
Boron	mg/L	0.02			0.06			0.07			<0.1		<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	<0.002			<0.002			<0.002			<0.01		<0.005	<0.005	<0.005	<0.005
Chromium	mg/L	<0.01			<0.01			<0.01			<0.05		<0.05	<0.05	<0.05	<0.05
Copper	mg/L	<0.01			<0.01			<0.01			<0.01		0.01	0.03	<0.01	<0.01
Iron	mg/L	0.02			<0.01			<0.01			0.07		<0.05	<0.03	<0.03	<0.03
Lead	mg/L	<0.05			<0.05			<0.05			<0.05		<0.05	<0.05	<0.05	<0.05
Manganese	mg/L	0.05			<0.01			<0.01			0.04		0.19	0.14	0.07	0.08
Mercury	mg/L	<0.0002			<0.0002			<0.0002			<0.001		<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1
Nickel	mg/L	<0.02			<0.02			<0.02			<0.05		<0.05	<0.05	<0.05	<0.05
Selenium	mg/L	<0.001			0.001			<0.001			<0.001		0.007	0.002	0.002	0.004
Vanadium	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1
Zinc	mg/L	0.057			<0.005			<0.005			0.06		0.51	0.45	0.63	0.59
Radiometric																
Uranium	mg/L	0.007	0.002	0.0131	0.0025	0.0028	0.0047	0.042	0.0024	0.0005	0.001	0.01	0.0091	0.0091	0.0041	0.0038
Radium 226	pCi/L	4.8	3.4	1.2	3.8	3.5	3.1	3.4	4.9	1.9	3.8	2.8	3.1	4.5	3.7	4.4
Radium Error Estimate		0.8	0.7	0.3	0.7	0.6	0.7	0.7	0.8	0.4	0.3	0.3	0.3	0.7	0.3	0.4
Quality Assurance Data																
Anion	meq	6.87			8.09			7.28			7.97		7.34	7.21	7.08	3.39
Cation	meq	7.15			8.03			7.47			7.99		7.64	7.41	7.29	6.89
WYDEQ A/C Balance	%										0.13		1.96	1.37	1.5	3.39
Calc TDS	mg/L										478		458	440	425	424
TDS A/C Balance	dec. %										0.96		1.02	1.01	0.95	1.02

Sheep Mountain Mines
Quality Report for PZ-7

PZ-7

Major Ions	Units	8/16/1988	8/16/1989	9/11/1990	7/23/1991	8/19/1992	7/12/1993	6/28/1994	7/3/1995	7/2/1996	7/21/1997	7/1/1998	6/8/1999	7/6/2000	7/5/2001	8/13/2002	3/15/2011
Calcium	mg/L	108			125			117			140		128	127	123	120	92
Magnesium	mg/L	19			28			25			26.2		24.2	24.4	24.1	23.1	17
Sodium	mg/L	73			63			78			59.3		80	84.3	85.1	73.2	56
Potassium	mg/L	3			3			4			4.3		4.3	4.2	3.9	4	6
Carbonate	mg/L	0			0			0	0		0		<1	<1	<1	<1	<5
Bicarbonate	mg/L	242	288	264	337	327	327	288	306	288	301	264	281	247	295	277	90
Sulfate	mg/L	239	269	200	210	271	271	248	351	321	275	248	306	332	313	259	317
Chloride	mg/L	38	18	30	35	30	30	34	27.3	21.3	24.8	19.9	23	23.9	24.8	12	4
Ammonium as N	mg/L	<0.05			<0.05			<0.05			0.21		0.07	0.06	0.06	<0.05	<0.1
Nitrite as N	mg/L	0.005			<0.001						<0.1		<0.1	<1	<0.1	<0.1	
Nitrate + Nitrite as N	mg/L	0.48	0.59	0.35	0.27	<0.01	<0.01	2.05	<0.1	<0.1	<0.1	<0.1	0.24	<1	0.26	0.08	<0.1
Flouride	mg/L	1.25			0.17			0.25			0.11		0.11	0.12	0.12	0.1	0.2
Silica	mg/L										15.7		15	13.9	14.3	12.4	20
Non Metals																	
TDS @ 180° C	mg/L	712	750	730	686	756	756	701	794	773	724	630	734	757	748	685	600
TSS	mg/L														107		
Conductivity	µmho/cm	940	1800	850	900	1060	1060	1150	1127	1046	1040	929	1040	1075	1110	989	785
Alkalinty as $CaCO_3$	mg/L	199			427						247		231	202	242	227	74
pH	S.U.	7.64	7.41	7.82	7.73	7.42	7.42	6.73	8.07	7.41	7.67	7.64	7.96	7.82	7.61	7.77	7.4
Trace Metals																	
Aluminum	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	<0.001			<0.001			<0.001			<0.001		<0.001	<0.001	<0.001	<0.001	<0.005
Barium	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Boron	mg/L	0.13			<0.01			0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	<0.002			<0.002			<0.002			<0.01		<0.005	<0.005	<0.005	<0.005	<0.002
Chromium	mg/L	<0.01			<0.01			<0.01			<0.05		<0.05	<0.05	<0.05	<0.05	<0.01
Copper	mg/L	<0.01			<0.01			<0.01			<0.01		<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.07			<0.01			0.02			0.5		<0.05	<0.03	0.05	0.051	<0.05
Lead	mg/L	<0.05			<0.05			<0.05			<0.05		<0.05	<0.05	<0.05	<0.05	<0.02
Manganese	mg/L	0.11			<0.01			0.04			0.14		0.04	0.16	0.01	0.12	0.14
Mercury	mg/L	<0.0002			<0.0002			<0.0002			<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.2
Nickel	mg/L	<0.02			<0.02			<0.02			<0.05		<0.05	<0.05	<0.05	<0.05	<0.01
Selenium	mg/L	<0.001			0.003			<0.001			<0.001		<0.001	<0.001	<0.001	<0.001	<0.01
Vanadium	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.02
Zinc	mg/L	0.114			<0.005			0.01			0.08		0.38	0.35	0.16	0.08	0.05
Radiometric																	
Uranium	mg/L	5.199	1.41	1.82	2.13	1.59	3.03	1.017	2.563	2.306	0.387	0.685	0.774	3.93	3.08	1.04	0.279
Radium 226	pCi/L	21.2	44	1.5	8.5	41.8	30.9	59.3	84.5	62.2	40.3	29.1	48.9	55.2	57.9	34	10.8
Radium Error Estimate		1.7	2.4	0.3	1.1	2	2.1	2.9	3	1.2	1.8	1.7	1.8	2.3	2.4	2	0.4
Quality Assurance Data																	
Anion	meq	10.01			11.3			10.84			11.38		11.67	11.6		10.3	8.52
Cation	meq	10.21			11.36			11.36			11.93		12.04	12.2		11.2	8.6
WYDEQ A/C Balance	%										2.38		1.57	2.3		4.46	0.467
Calc TDS	mg/L										697		723	733		644	540
TDS A/C Balance	dec. %										1.04		1.02	1.03		1.06	

* PZ 7 was sampled in 2011 to provide comparison to historic lab analyses.

Sheep Mountain Mines
Quality Report for PZ-8

PZ-8

Major Ions	Units	8/16/1988	8/16/1989	9/11/1990	7/23/1991	8/19/1992	7/12/1993	6/28/1994	7/3/1995	7/2/1996	7/21/1997	7/1/1998	6/14/1999	7/7/2000	7/5/2001	8/13/2002	8/14/2002	8/15/2002	8/16/2002	3/29/2011
Calcium	mg/L	16			15			21			17.4		21.2	14.3	13.2	13.5	13.5	13.5	13.5	11
Magnesium	mg/L	2			8			9			3.1		3.8	2.7	2.5	2.4	2.4	2.4	2.4	2
Sodium	mg/L	33			27			40			38.2		17.8	37.3	39.1	40.3	40.3	40.3	40.3	63
Potassium	mg/L	1			1			2			2.7		1.8	1.5	1.7	1.9	1.9	1.9	1.9	2
Carbonate	mg/L	0			0			0	0		0		<1	<1	<1	1.3	1.3	1.3	1.3	5
Bicarbonate	mg/L	142	132	242	146	127	127	146	128	122	127	113	104	122	125	117	117	117	117	125
Sulfate	mg/L	Trace	18	134	11	19	19	45	43	22.7	18.2	18.2	15.1	18.5	22.2	20.9	20.9	20.9	20.9	57
Chloride	mg/L	6	11	11	7	5	5	8	2	3.6	3.9	1.4	4.2	3	3.3	<1	<2	<3	<4	3
Ammonium as N	mg/L	<0.05			<0.05			<0.05			0.07		0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.10
Nitrite as N	mg/L	<0.001			<0.001						<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Nitrate + Nitrite as N	mg/L	0.34	0.43	1.23	0.27	0.11	0.11	2.79	<0.1	0.22	0.13	0.16	0.29	<0.1	<0.1	0.08	0.08	0.08	0.08	<0.10
Flouride	mg/L	1.04			0.21			0.25			0.3		0.17	0.13	0.13	0.1	0.1	0.1	0.1	0.1
Silica	mg/L										14.6		17	10.6	9.5	8.26	8.26	8.26	8.26	7
Non Metals																				
TDS @ 180° C	mg/L	148	210	570	187	157	157	202	160	205	159	160	149	140	130	169	169	169	169	220
TSS	mg/L														44					
Conductivity	µmho/cm	290	320	680	250	270	270	280	256	243	243	235	215	250	254	252	252	252	252	324
Alkalinty as $CaCO_3$	mg/L	117			120				105		104		86	100	103	98	98	98	98	111
pH	S.U.	7.89	7.87	7.8	7.97	7.98	7.98	7.8	8.29	7.9	8.09	7.8	8.09	7.97	8.09	8.31	8.31	8.31	8.31	8.7
Trace Metals																				
Aluminum	mg/L	<0.1			<0.1			<0.1			0.59		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	<0.001			0.003			<0.001			<0.001		0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01
Barium	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Boron	mg/L	0.02			<0.01			<0.01			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L	<0.002			<0.002			0.012			<0.01		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002
Chromium	mg/L	<0.01			<0.01			<0.01			<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01
Copper	mg/L	<0.01			<0.01			<0.01			<0.01		0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.03			<0.01			0.45			0.57		0.05	0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05
Lead	mg/L	<0.05			<0.05			<0.05			<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02
Manganese	mg/L	0.02			0.01			0.1			0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02
Mercury	mg/L	<0.0002			<0.0002			<0.0002			<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02
Nickel	mg/L	<0.02			<0.02			<0.02			<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01
Selenium	mg/L	<0.001			0.002			<0.001			<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01
Vanadium	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02
Zinc	mg/L	0.043			<0.005			0.007			0.06		0.2	0.23	0.21	0.42	0.42	0.42	0.42	0.01
Radiometric																				
Uranium	mg/L	0.028	0.187	0.0037	0.018	0.0085	0.0246	0.027	0.049	0.027	0.021	0.0162	0.033	0.0625	0.0957	0.0827	0.0827	0.0827	0.0827	0.132
Radium 226	pCi/L	2.3	1.8	4.8	2.6	1.5	1	9.3	12.3	3.5	4.5	2	3.6	0.9	1.8	2	2	2	2	1.4
Radium Error Estimate		0.6	0.4	0.6	0.6	0.4	0.4	1.1	2.6	0.5	0.3	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.2
Quality Assurance Data																				
Anion	meq	2.5			2.84			3.56			2.59		2.18	2.48	2.63	2.41	2.41	2.41	2.41	3.49
Cation	meq	2.43			2.61			3.57			2.86		2.22	2.63	2.64	2.69	2.69	2.69	2.69	3.48
WYDEQ A/C Balance	%										4.94		0.9	2.77	0.11	5.55	5.55	5.55	5.55	-0.143
Calc TDS	mg/L										163		135	150	155	148	148	148	148	210
TDS A/C Balance	dec. %										0.97		1.1	0.93	0.84	1.13	1.13	1.13	1.13	

* PZ 8 was sampled in 2011 to provide comparison to historic lab analyses.

Sheep Mountain Mines
Quality Report for PZ-9

PZ-9

Major Ions	Units	9/11/1990	7/23/1991	8/19/1992	7/12/1993	6/27/1994	7/3/1995	7/2/1996	7/30/1997	7/1/1998	6/8/1999	7/6/2000	7/9/2001	3/15/2011
Calcium	mg/L		37			50			47.9		52	50.1	43.5	23
Magnesium	mg/L		13			7			11		12	12	11	6
Sodium	mg/L		156			132			152		159	156	168	166
Potassium	mg/L		3			4			4.7		4.3	3.9	3.6	4
Carbonate	mg/L		0			0	0		0		<1	<1	<1	<5
Bicarbonate	mg/L	264	322	288	288	254	276	267	273	270	272	265	273	266
Sulfate	mg/L	170	195	218	218	168	254	252	252	242	253	243	229	170
Chloride	mg/L	29	29	26	26	32	25.6	28.4	27.9	28.4	31.4	33.2	31.8	20
Ammonium as N	mg/L		<0.05			0.27			0.13		<0.05	<0.05	<0.05	<0.1
Nitrite as N	mg/L		<0.001						<0.1		<0.1	<0.1	<0.1	
Nitrate + Nitrite as N	mg/L	<0.01	0.88	0.07	0.07	4.75	0.47	0.13	<0.1	<0.1	<0.1	<0.1	0.15	0.2
Flouride	mg/L		0.19			0.22			<0.1		<0.1	<0.1	<0.1	<0.1
Silica	mg/L								8.9		8.21	9.3	8.9	8
Non Metals														
TDS @ 180° C	mg/L	578	619	577	577	539	858	661	635	646	655	647	618	550
TSS	mg/L													
Conductivity	µmho/cm	860	820	800	800	1000	1014	984	987	1010	1010	1008	1010	841
Alkalinty as $CaCO_3$	mg/L		264						224		223	218	225	218
pH	S.U.	7.71	7.76	7.92	7.92	7.5	8.42	7.73	8.12	7.88	8.21	8.06	8.09	8.3
Trace Metals														
Aluminum	mg/L		<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L		0.005			<0.001			<0.001		<0.001	<0.001	<0.001	<0.01
Barium	mg/L		<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1
Boron	mg/L		<0.01			<0.01			<0.1		<0.1	<0.1	<0.1	<0.1
Cadmium	mg/L		<0.002			<0.002			<0.01		<0.005	<0.005	<0.005	<0.002
Chromium	mg/L		<0.01			<0.01			<0.05		<0.05	<0.05	<0.05	<0.01
Copper	mg/L		<0.01			<0.01			<0.01		0.01	0.01	<0.01	<0.01
Iron	mg/L		<0.01			<0.01			<0.05		<0.05	<0.03	<0.03	<0.05
Lead	mg/L		<0.05			<0.05			<0.05		<0.05	<0.05	<0.05	<0.02
Manganese	mg/L		0.11			0.01			<0.01		<0.01	0.09	<0.01	<0.02
Mercury	mg/L		<0.0002			<0.0002			<0.001		<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L		<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.02
Nickel	mg/L		<0.02			<0.02			<0.05		<0.05	<0.05	<0.05	<0.01
Selenium	mg/L		0.006			0.001			<0.001		0.001	<0.001	0.002	<0.01
Vanadium	mg/L		<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.02
Zinc	mg/L		0.185			0.113			0.18		0.38	0.51	0.56	0.51
Radiometric														
Uranium	mg/L	0.012	0.0062	0.085	0.087	0.029	0.151	0.261	0.176	0.221	0.309	0.316	0.256	0.0459
Radium 226	pCi/L	0.9	0.4	1.6	1.8	2.8	3.9	0.9	0.9	<0.2	0.7	<0.2	0.3	0.4
Radium Error Estimate		0.3	0.2	0.4	0.5	0.6	0.9	0.2	0.2		0.2		0.2	0.1
Quality Assurance Data														
Anion	meq		10.54			8.57			10.53		10.63	10.4	10.2	8.63
Cation	meq		9.78			8.91			10.05		10.65	10.4	10.5	8.96
WYDEQ A/C Balance	%								-2.32		0.12	0.33	1.64	1.87
Calc TDS	mg/L								642		658	642	634	520
TDS A/C Balance	dec. %								0.99		1	1.01	0.97	

* PZ 9 was sampled in 2011 to provide comparison to historic lab analyses.

Sheep Mountain Mines
Quality Report for PZ-10

PZ-10

Major Ions	Units	8/16/1988	8/16/1989	9/11/1990	7/24/1991	8/18/1992	7/12/1993	6/28/1994	7/3/1995	7/2/1996	7/21/1997	7/1/1998	6/8/1999	7/5/2000	7/9/2001	8/12/2002	8/13/2002	8/14/2002	3/15/2011
Calcium	mg/L	50			51			45			46.9		50	50.8	52.4	58	58	58	58
Magnesium	mg/L	11			14			7			12.7		18	14.9	13.9	14.2	14.2	14.2	13
Sodium	mg/L	22			15			21			16.5		11	21.1	18.8	21.1	21.1	21.1	21
Potassium	mg/L	2			2			2			1.6		1	2.4	1.6	2	2	2	2
Carbonate	mg/L	0			0			0	0		0		<1	<1	<1	<1	<2	<3	<5
Bicarbonate	mg/L	197	205	190	210	190	190	176	177	143	172	163	207	150	151	160	160	160	169
Sulfate	mg/L	52	58	72	42	55	55	33	43	57.3	52.5	56.1	44	94.5	84.7	89.5	89.5	89.5	87
Chloride	mg/L	8	11	7	10	7	7	6	<1	3.6	4.3	2.1	3	5.7	5.6	11.3	11.3	11.3	7
Ammonium as N	mg/L	<0.05			<0.05			0.13			<0.05		<0.05	0.39	0.12	0.37	0.37	0.37	0.3
Nitrite as N	mg/L	<0.001			<0.001						<0.1		0.1	<0.1	<0.1	<0.1	<0.2	<0.3	
Nitrate + Nitrite as N	mg/L	0.19	0.14	0.51	0.77	0.22	0.22	7.45	<0.1	<0.1	0.59	0.14	0.18	<0.1	0.41	0.05	1.05	2.05	<0.1
Flouride	mg/L	0.88			0.2			0.32			0.28		0.48	<0.1	0.17	<0.1	<0.2	<0.3	<0.1
Silica	mg/L										25.5		33	24.8	25	22.9	22.9	22.9	25
Non Metals																			
TDS @ 180° C	mg/L	268	330	277	267	269	269	220	180	252	222	268	260	279	268	300	300	300	320
TSS	mg/L																		
Conductivity	µmho/cm	450	540	420	450	450	450	430	370	363	363	382	380	457	439	456	456	456	450
Alkalinty as $CaCO_3$	mg/L	162			172				145		141		170	123	124				139
pH	S.U.	7.92	7.65	7.76	7.86	7.57	7.57	7.03	7.72	7.51	7.81	7.53	7.86	7.89	7.88				8
Trace Metals																			
Aluminum	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/L	<0.001			<0.001			<0.001			<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01
Barium	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	0.16	0.2	<0.1	<0.1	<0.1	<0.1
Boron	mg/L	0.1			<0.01			0.02			<0.1		<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1
Cadmium	mg/L	<0.002			<0.002			<0.002			<0.01		<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002
Chromium	mg/L	<0.01			<0.01			<0.01			<0.05		<0.05	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01
Copper	mg/L	<0.01			<0.01			<0.01			<0.01		0.02	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L	0.03			<0.01			<0.01			0.09		0.08	<0.03	0.03	<0.01	<0.01	<0.01	<0.05
Lead	mg/L	<0.05			<0.05			<0.05			<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02
Manganese	mg/L	0.06			0.01			<0.01			0.01		<0.01	0.07	0.05	0.08	1.08	2.08	0.03
Mercury	mg/L	<0.0002			<0.0002			<0.0002			<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02
Nickel	mg/L	<0.02			<0.02			<0.02			<0.05		<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01
Selenium	mg/L	<0.001			<0.001			<0.001			0.001		0.003	<0.001	0.001	<0.001	<0.001	<0.001	<0.01
Vanadium	mg/L	<0.1			<0.1			<0.1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02
Zinc	mg/L	0.077			<0.005			0.021			0.08		0.26	0.34	0.41	0.55	0.55	0.55	0.02
Radiometric																			
Uranium	mg/L	0.038	0.075	0.009	0.0158	0.0124	0.0212	0.424	0.473	0.023	0.162	0.287	0.418	0.0159	0.0538	0.0168	0.0168	0.0168	0.0299
Radium 226	pCi/L	3.7	3.6	2.9	0.6	4	1.9	1.1	7.2	5	2.2	3.6	4.2	4.4	5.6	7.5	7.5	7.5	4.6
Radium Error Estimate		0.7	0.7	0.5	0.3	0.6	0.5	0.4	1.7	0.4	0.2	0.3	0.3	0.4	0.4	5	5	5	0.3
Quality Assurance Data																			
Anion	meq	4.54			4.68			3.75			4.09		4.44	4.6	4.44	4.8	4.8	4.8	5.18
Cation	meq	4.41			4.4			3.78			4.18		4.53	4.82	4.67	5.1	5.1	5.1	4.99
WYDEQ A/C Balance	%										1.12		1.03	2.27	2.55	2.95	2.95	2.95	-1.868
Calc TDS	mg/L										249		265	2.9	280	300	300	300	270
TDS A/C Balance	dec. %										0.89		0.98	0.96	0.96	0.99	0.99	0.99	

* PZ 10 was sampled in 2011 to provide comparison to historic lab analyses.

G3

Major Ions	Units	12/16/2011	3/13/2012	5/16/2012
Calcium	mg/L	168	155	166
Magnesium	mg/L	91	87	93
Sodium	mg/L	426	428	420
Potassium	mg/L	9	10	9
Carbonate	mg/L	ND	ND	9
Bicarbonate	mg/L	411	414	404
Sulfate	mg/L	1360	1310	1340
Chloride	mg/L	14	12	15
Ammonium as N	mg/L	0.6	0.5	0.5
Nitrite as N	mg/L			
Nitrate + Nitrite as N	mg/L	ND	ND	ND
Fluoride	mg/L	0.3	0.2	0.2
Silica	mg/L	11	10	11
Non Metals				
TDS @ 180° C	mg/L	2260	2320	2260
TSS	mg/L	60	0	181
Conductivity	µmho/cm	2530	2880	2530
Alkalinty as $CaCO_3$	mg/L	337	339	346
pH	S.U.	8.2	8	8.4
Dissolved Metals				
Aluminum	mg/L	ND	ND	ND
Arsenic	mg/L	0.005	ND	ND
Barium	mg/L	ND	ND	ND
Beryllium	mg/L	ND	ND	ND
Boron	mg/L	0.7	0.6	0.6
Cadmium	mg/L	ND	ND	ND
Chromium	mg/L	ND	ND	ND
Copper	mg/L	ND	ND	ND
Iron	mg/L	ND	ND	ND
Iron (total)	mg/L	3.29	2.39	5.36
Lead	mg/L	ND	ND	ND
Manganese	mg/L	0.61	0.59	0.61
Manganese (total)	mg/L	0.68	0.73	0.69
Mercury	mg/L	ND	ND	ND
Molybdenum	mg/L	ND	ND	ND
Nickel	mg/L	ND	ND	ND
Selenium	mg/L	ND	ND	ND
Silver	mg/L			
Vanadium	mg/L	ND	ND	ND
Zinc	mg/L	ND	ND	ND
Radiometric				
Uranium	mg/L	0.119	0.0989	0.1
Radium 226	pCi/L	0.8	0.9	0.9
Radium Precision (+/-)	pCi/L	0.2	0.2	0.2
Ra-228	pCi/L	ND	ND	1.6
Ra-228 Precision (+/-)	pCi/L	1	1	1
Adjusted Gross Alpha	pCi/L	50.2	53.6	49.1
Adjusted Gross Alpha Precision (+/-)	pCi/L	5	5	5
Gross Beta	pCi/L	25	33.2	31.6
Gross Beta Precision (+/-)	pCi/L	8	9	7
Quality Assurance Data				
Anion	meq/L	35.39	34.47	35.26
Cation	meq/L	34.62	33.71	34.47
WYDEQ A/C Balance	%			
Calc TDS	mg/L	2280	2220	2260
TDS A/C Balance	dec. %	0.99	1.05	1

MDC = Minimum Detectable Concentration
NA = Not Analyzed
All measurements are "dissolved" (filtered) unless otherwise noted

G4

Major Ions	Units	12/8/2011	3/13/2012	5/16/2012
Calcium	mg/L	81	83	85
Magnesium	mg/L	10	10	11
Sodium	mg/L	34	33	34
Potassium	mg/L	2	2	2
Carbonate	mg/L	ND	ND	ND
Bicarbonate	mg/L	225	228	255
Sulfate	mg/L	136	129	139
Chloride	mg/L	7	5	6
Ammonium as N	mg/L	ND	ND	ND
Nitrite as N	mg/L			
Nitrate + Nitrite as N	mg/L	ND	ND	ND
Fluoride	mg/L	0.3	0.2	0.2
Silica	mg/L	22	21	21
Non Metals				
TDS @ 180° C	mg/L	420	420	420
TSS	mg/L			
Conductivity	µmho/cm	600	642	591
Alkalinty as $CaCO_3$	mg/L	185	187	215
pH	S.U.	8	8	8.4
Dissolved Metals				
Aluminum	mg/L	ND	ND	ND
Arsenic	mg/L	0.006	ND	ND
Barium	mg/L	ND	ND	ND
Beryllium	mg/L	ND	ND	ND
Boron	mg/L	ND	ND	ND
Cadmium	mg/L	ND	ND	ND
Chromium	mg/L	ND	ND	ND
Copper	mg/L	ND	ND	ND
Iron	mg/L	ND	ND	ND
Iron (total)	mg/L	ND	ND	1.38
Lead	mg/L	ND	ND	ND
Manganese	mg/L	0.12	0.14	0.13
Manganese (total)	mg/L	0.14	0.16	0.23
Mercury	mg/L	ND	ND	ND
Molybdenum	mg/L	ND	ND	ND
Nickel	mg/L	ND	ND	ND
Selenium	mg/L	ND	ND	ND
Silver	mg/L			
Vanadium	mg/L	ND	ND	ND
Zinc	mg/L	ND	ND	ND
Radiometric				
Uranium	mg/L	0.0382	0.0396	0.0356
Radium 226	pCi/L	20	20.5	24.5
Radium Precision (+/-)	pCi/L	-0.8	0.2	0.2
Ra-228	pCi/L	3.9	7.8	6.1
Ra-228 Precision (+/-)	pCi/L	0	1	1
Adjusted Gross Alpha	pCi/L	46.9	48.3	36.5
Adjusted Gross Alpha Precision (+/-)	pCi/L	1	2	2
Gross Beta	pCi/L	22.4	26	22
Gross Beta Precision (+/-)	pCi/L	2	3	3
Quality Assurance Data				
Anion	meq/L	6.74	6.58	7.37
Cation	meq/L	6.41	6.42	6.67
WYDEQ A/C Balance	%			
Calc TDS	mg/L	400	400	410
TDS A/C Balance	dec. %	1.05	1.05	1.02

MDC = Minimum Detectable Concentration
NA = Not Analyzed
All measurements are "dissolved" (filtered) unless otherwise noted

G5

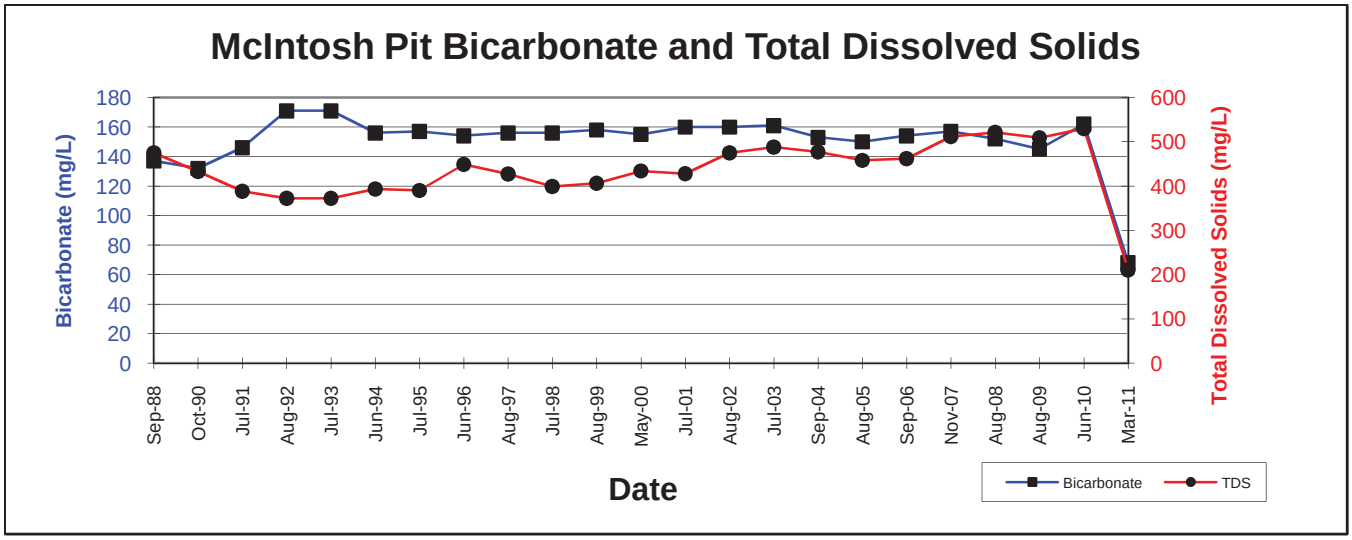
Major Ions	Units	12/16/2011	3/13/2012	5/16/2012
Calcium	mg/L	149	148	136
Magnesium	mg/L	19	17	20
Sodium	mg/L	37	46	40
Potassium	mg/L	2	3	3
Carbonate	mg/L	ND	ND	ND
Bicarbonate	mg/L	172	131	180
Sulfate	mg/L	371	416	383
Chloride	mg/L	5	5	5
Ammonium as N	mg/L	ND	ND	ND
Nitrite as N	mg/L			
Nitrate + Nitrite as N	mg/L	ND	0.4	0.2
Fluoride	mg/L	0.2	0.3	0.2
Silica	mg/L	22	25	22
Non Metals				
TDS @ 180° C	mg/L	810	800	720
TSS	mg/L			
Conductivity	µmho/cm	921	1060	889
Alkalinty as $CaCO_3$	mg/L	141	108	147
pH	S.U.	7.7	7	8
Dissolved Metals				
Aluminum	mg/L	ND	0.2	ND
Arsenic	mg/L	0.005	ND	ND
Barium	mg/L	ND	ND	ND
Beryllium	mg/L	ND	ND	ND
Boron	mg/L	ND	ND	ND
Cadmium	mg/L	ND	ND	ND
Chromium	mg/L	ND	ND	ND
Copper	mg/L	ND	ND	ND
Iron	mg/L	ND	ND	ND
Iron (total)	mg/L	0.17	0.2	0.15
Lead	mg/L	ND	ND	ND
Manganese	mg/L	0.15	0.28	0.25
Manganese (total)	mg/L	0.15	0.32	0.25
Mercury	mg/L	ND	ND	ND
Molybdenum	mg/L	ND	ND	ND
Nickel	mg/L	ND	ND	ND
Selenium	mg/L	0.014	0.036	0.022
Silver	mg/L			
Vanadium	mg/L	ND	ND	ND
Zinc	mg/L	ND	0.04	0.03
Radiometric				
Uranium	mg/L	0.443	0.299	0.465
Radium 226	pCi/L	5.5	7.5	7.1
Radium Precision (+/-)	pCi/L	0.2	0.2	0.2
Ra-228	pCi/L	7	11.3	9.1
Ra-228 Precision (+/-)	pCi/L	1	1	1
Adjusted Gross Alpha	pCi/L	249	223	267
Adjusted Gross Alpha Precision (+/-)	pCi/L	3	2	2
Gross Beta	pCi/L	115	104	114
Gross Beta Precision (+/-)	pCi/L	4	4	3
Quality Assurance Data				
Anion	meq/L	10.68	10.99	11.08
Cation	meq/L	10.69	10.85	10.21
WYDEQ A/C Balance	%			
Calc TDS	mg/L	690	730	680
TDS A/C Balance	dec. %	1.17	1.1	1.06

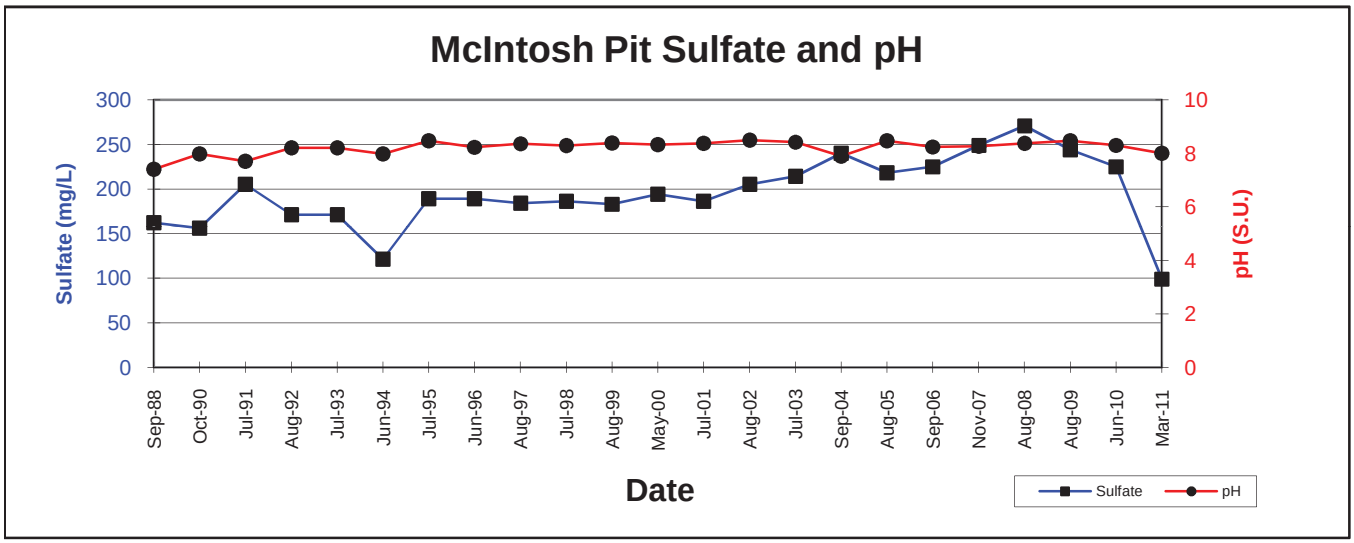
MDC = Minimum Detectable Concentration
NA = Not Analyzed
All measurements are "dissolved" (filtered) unless otherwise noted

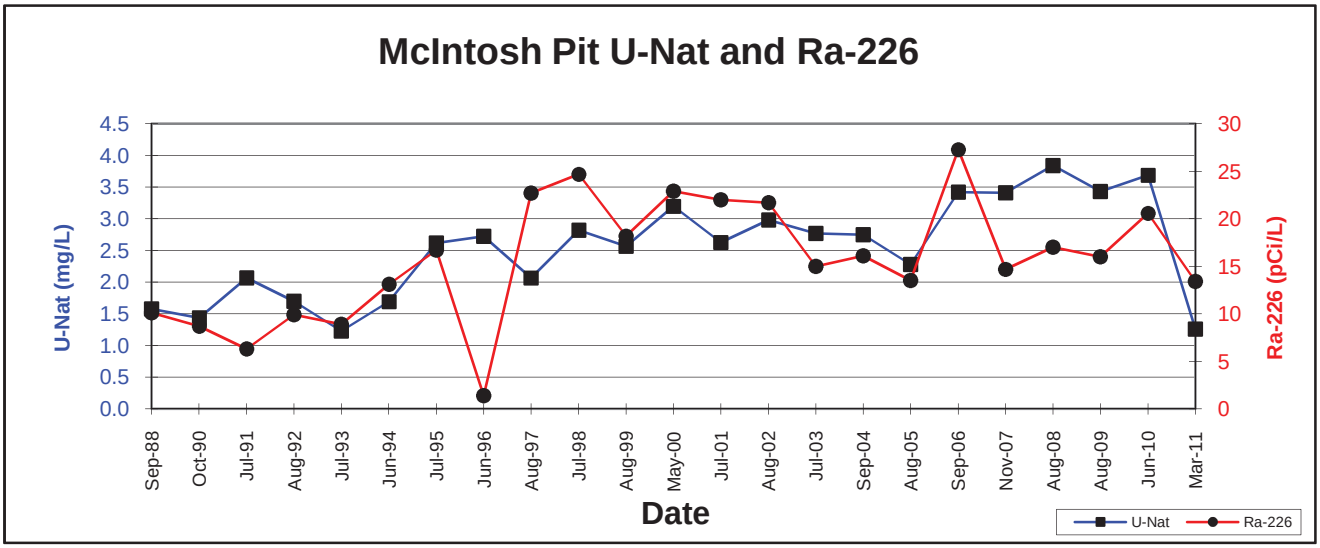
G6

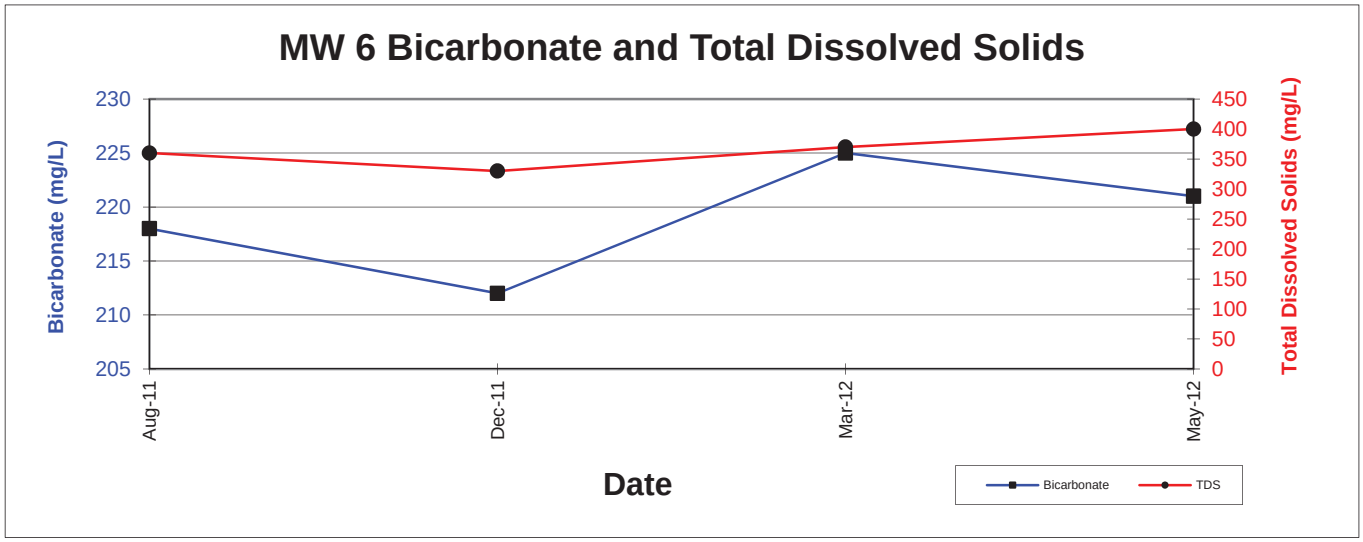
Major Ions	Units	12/9/2011	3/13/2012	5/16/2012
Calcium	mg/L	79	96	85
Magnesium	mg/L	9	10	10
Sodium	mg/L	47	52	48
Potassium	mg/L	2	2	2
Carbonate	mg/L	ND	ND	6
Bicarbonate	mg/L	231	245	238
Sulfate	mg/L	126	165	151
Chloride	mg/L	16	18	18
Ammonium as N	mg/L	ND	0.5	ND
Nitrite as N	mg/L			
Nitrate + Nitrite as N	mg/L	ND	ND	ND
Fluoride	mg/L	0.2	0.2	0.2
Silica	mg/L	19	18	19
Non Metals				
TDS @ 180° C	mg/L	440	530	460
TSS	mg/L			
Conductivity	µmho/cm	642	803	669
Alkalinty as $CaCO_3$	mg/L	190	201	205
pH	S.U.	8.1	8	8.4
Dissolved Metals				
Aluminum	mg/L	ND	ND	ND
Arsenic	mg/L	0.006	ND	ND
Barium	mg/L	ND	ND	ND
Beryllium	mg/L	ND	ND	ND
Boron	mg/L	ND	ND	ND
Cadmium	mg/L	ND	ND	ND
Chromium	mg/L	ND	ND	ND
Copper	mg/L	ND	ND	ND
Iron	mg/L	ND	ND	ND
Iron (total)	mg/L	1.41	7.57	14.2
Lead	mg/L	ND	ND	ND
Manganese	mg/L	0.2	0.15	0.19
Manganese (total)	mg/L	0.23	0.23	0.31
Mercury	mg/L	ND	ND	ND
Molybdenum	mg/L	ND	ND	ND
Nickel	mg/L	ND	ND	ND
Selenium	mg/L	ND	ND	ND
Silver	mg/L			
Vanadium	mg/L	ND	ND	ND
Zinc	mg/L	ND	ND	ND
Radiometric				
Uranium	mg/L	0.0444	0.0926	0.0467
Radium 226	pCi/L	4.2	5.3	1
Radium Precision (+/-)	pCi/L	0.2	0.2	0.2
Ra-228	pCi/L	2.5	4.8	6.3
Ra-228 Precision (+/-)	pCi/L	1	1	1
Adjusted Gross Alpha	pCi/L	29.5	50.9	29.2
Adjusted Gross Alpha Precision (+/-)	pCi/L	2	2	2
Gross Beta	pCi/L	13.1	33.4	18.8
Gross Beta Precision (+/-)	pCi/L	3	4	3
Quality Assurance Data				
Anion	meq/L	6.88	7.94	7.73
Cation	meq/L	6.76	7.92	7.18
WYDEQ A/C Balance	%			
Calc TDS	mg/L	410	480	460
TDS A/C Balance	dec. %	1.07	1.1	1

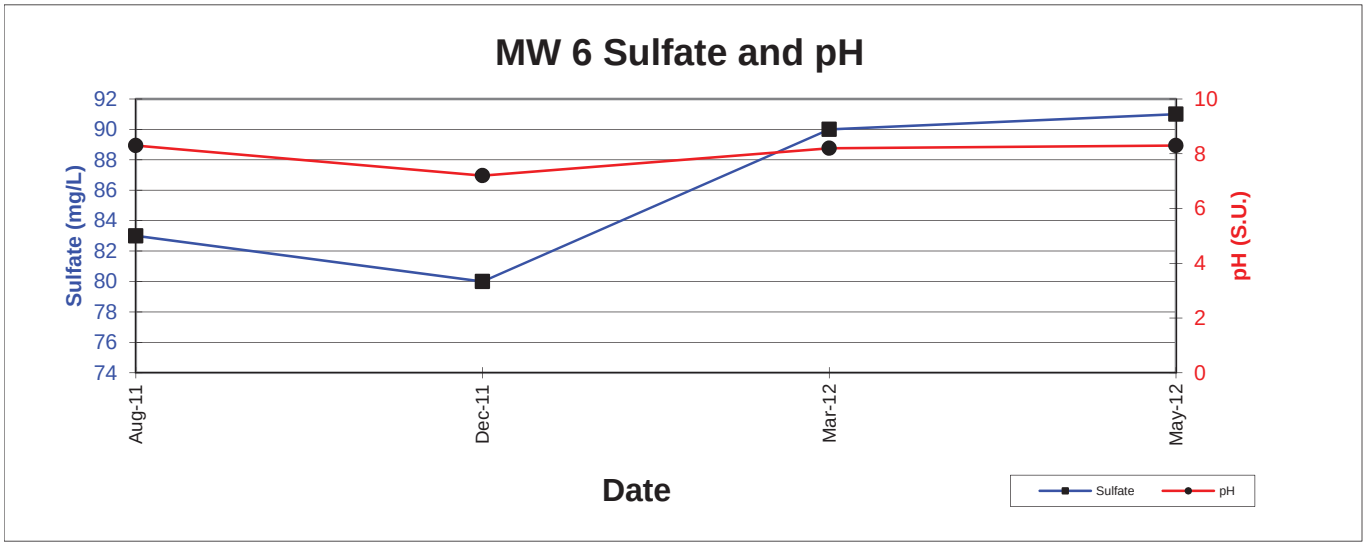
MDC = Minimum Detectable Concentration
NA = Not Analyzed
All measurements are "dissolved" (filtered) unless otherwise noted

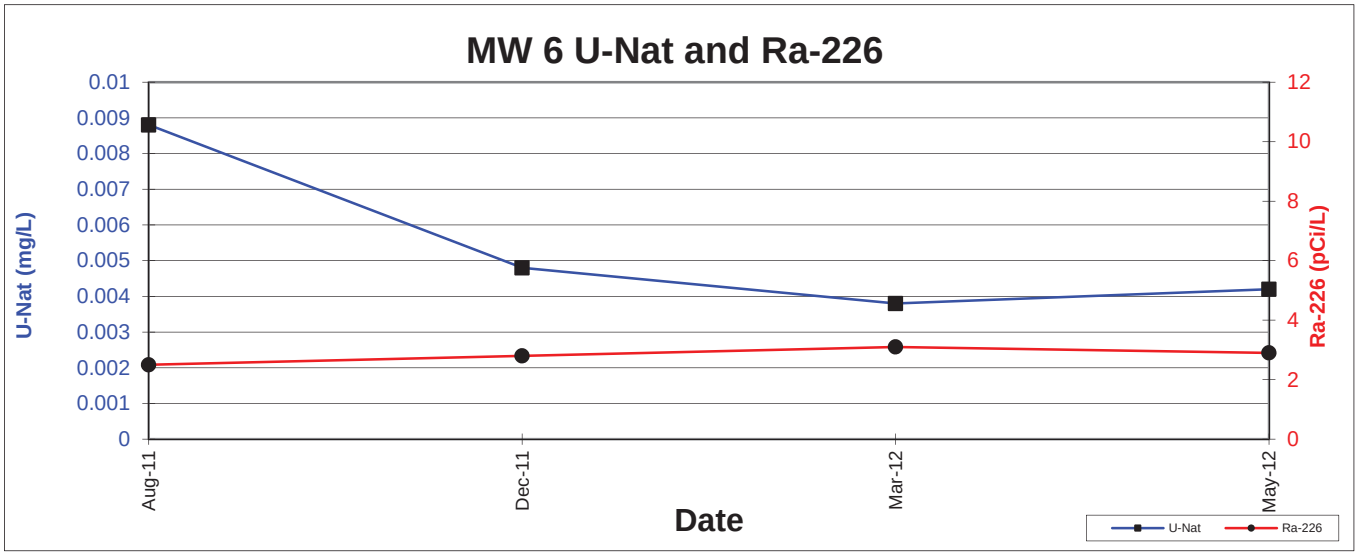

McIntosh Pit Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
Date
Bicarbonate
TDS

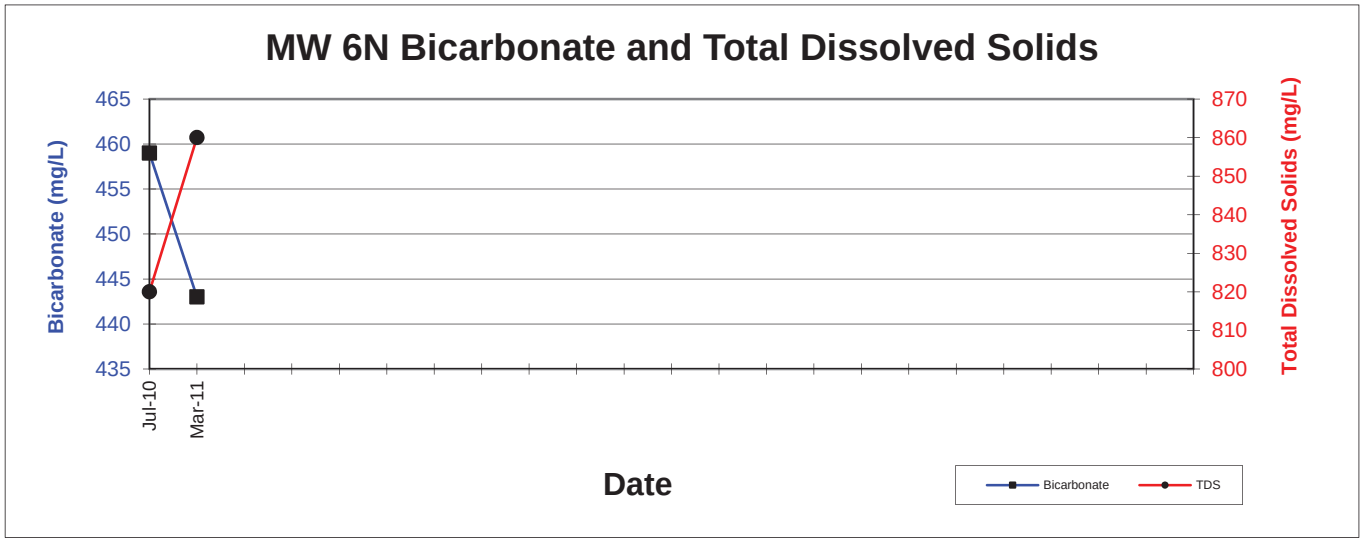

McIntosh Pit Sulfate and pH
Sulfate (mg/L)
pH (S.U.)
Date
Sulfate
pH

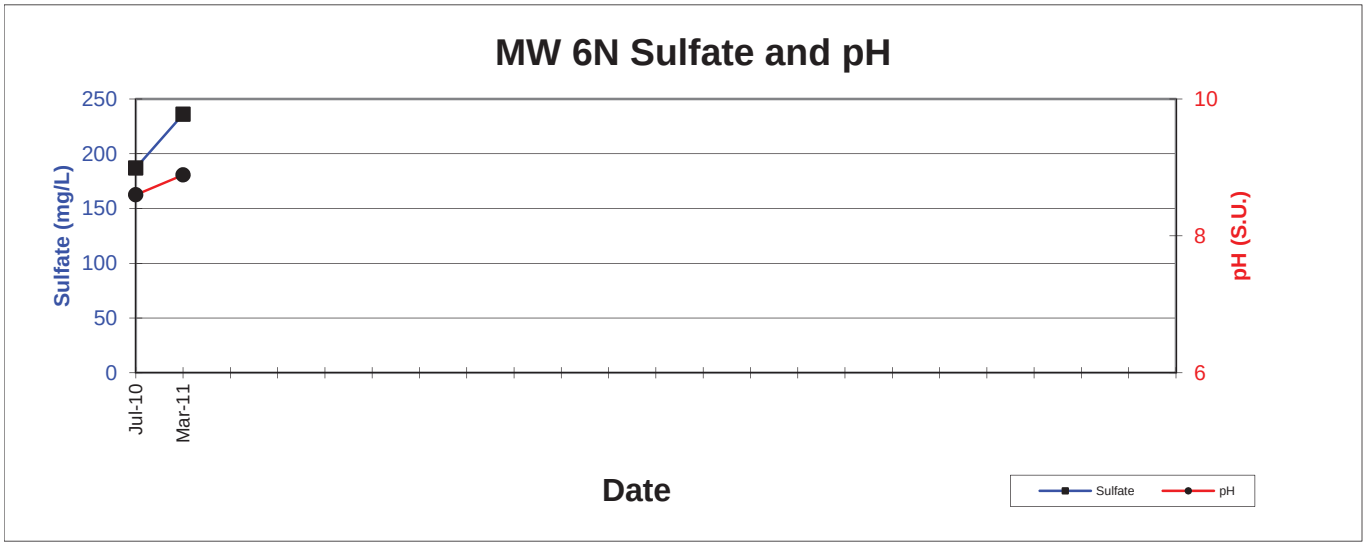

McIntosh Pit U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
Date
U-Nat
Ra-226

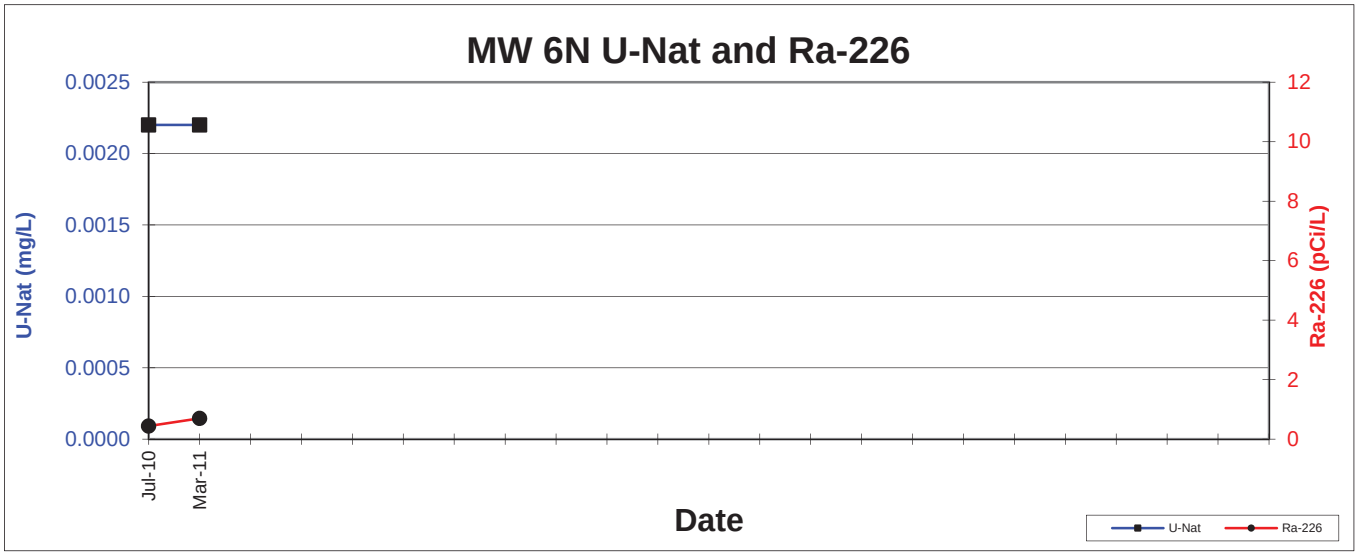

MW 6 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
230
225
220
215
210
205
Total Dissolved Solids (mg/L)
450
400
350
300
250
200
150
100
50
0
Aug-11
Dec-11
Mar-12
May-12
Date
Bicarbonate
TDS

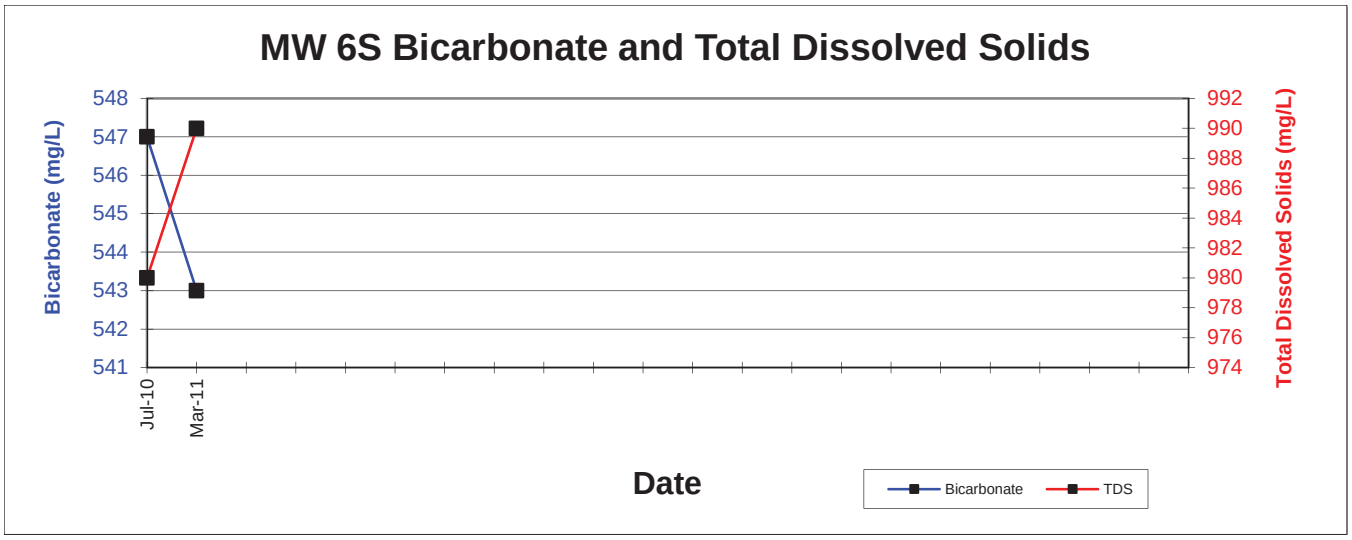

MW 6 Sulfate and pH
Sulfate (mg/L)
92
90
88
86
84
82
80
78
76
74
pH (S.U.)
10
8
6
4
2
0
Aug-11
Dec-11
Mar-12
May-12
Date
Sulfate
pH

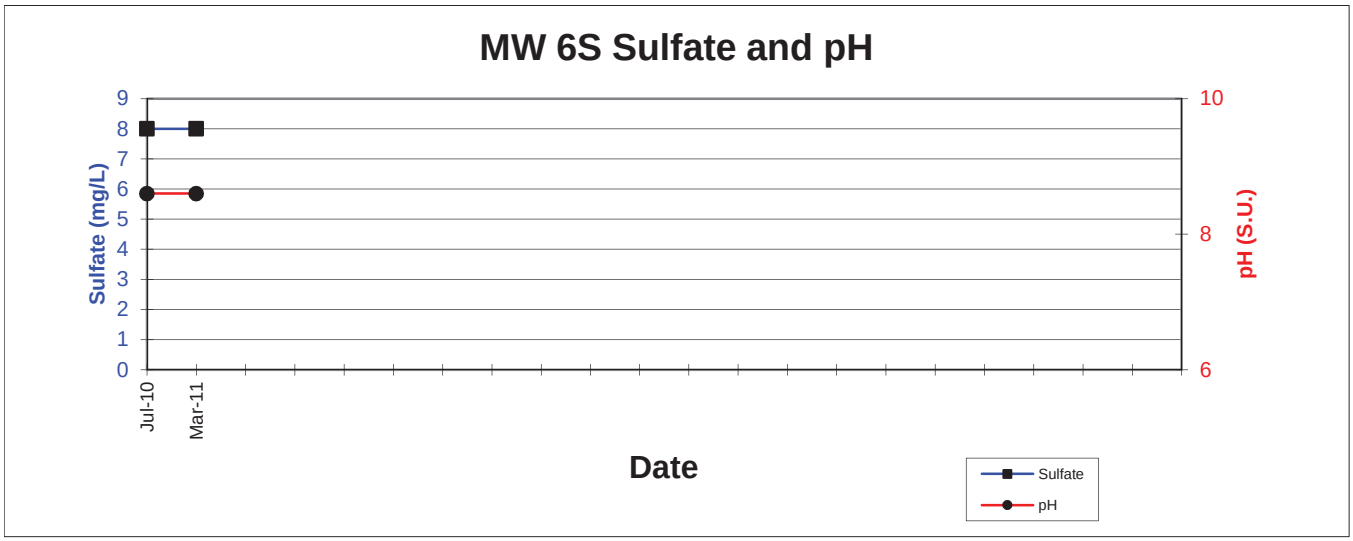

MW 6 U-Nat and Ra-226
U-Nat (mg/L)
0.01
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
Ra-226 (pCi/L)
12
10
8
6
4
2
0
Aug-11
Dec-11
Mar-12
May-12
Date
U-Nat
Ra-226

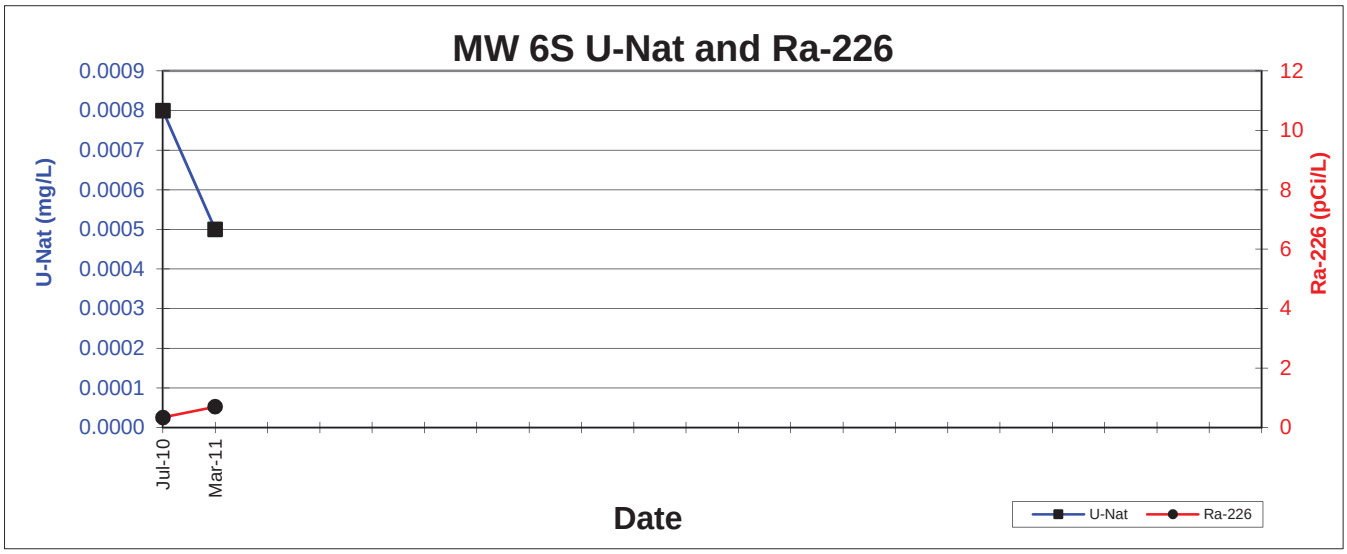

MW 6N Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
465
460
455
450
445
440
435
Total Dissolved Solids (mg/L)
870
860
850
840
830
820
810
800
Jul-10
Mar-11
Date
Bicarbonate
TDS

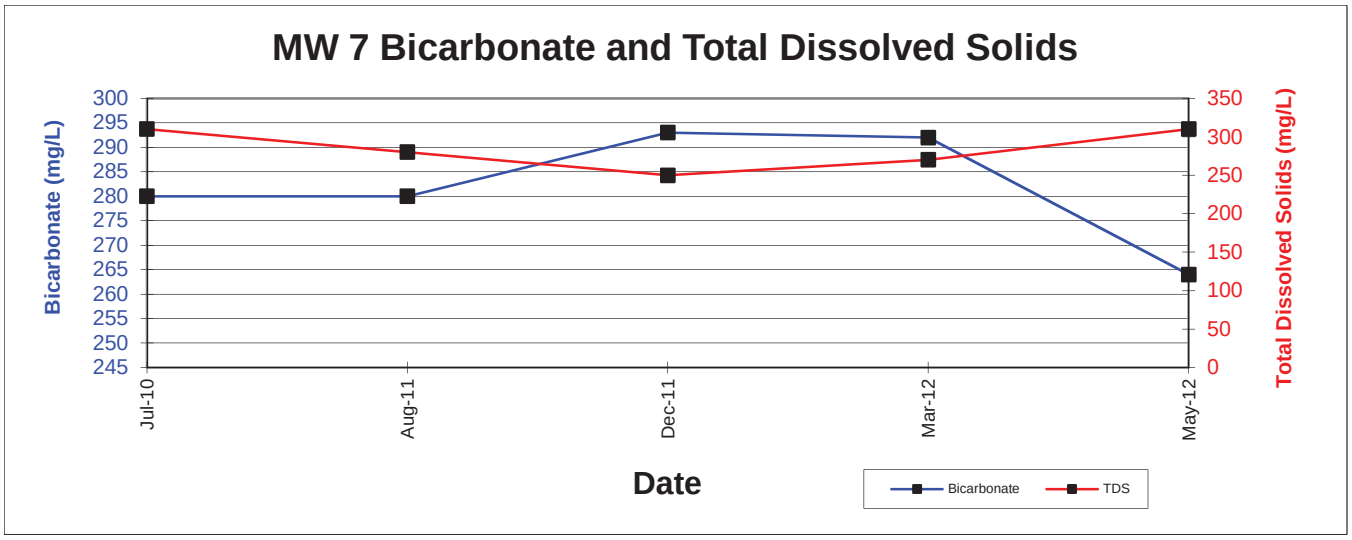

MW 6N Sulfate and pH
Sulfate (mg/L)
250
200
150
100
50
0
pH (S.U.)
10
8
6
Jul-10
Mar-11
Date
Sulfate
pH

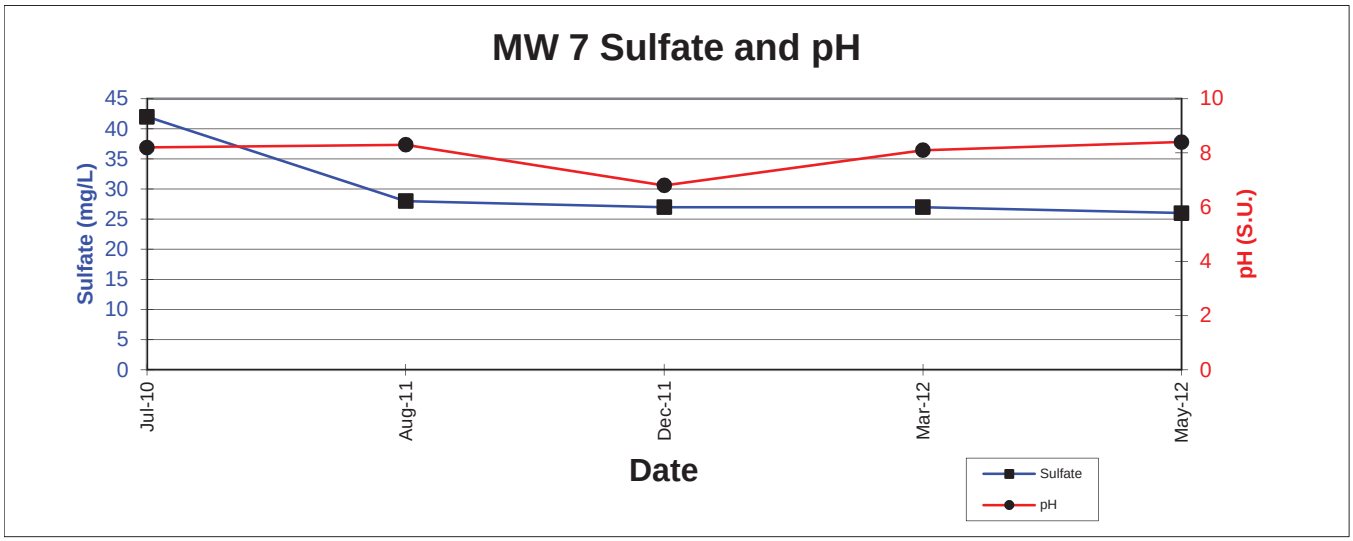

MW 6N U-Nat and Ra-226
U-Nat (mg/L)
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
Ra-226 (pCi/L)
12
10
8
6
4
2
0
Jul-10
Mar-11
Date
U-Nat
Ra-226

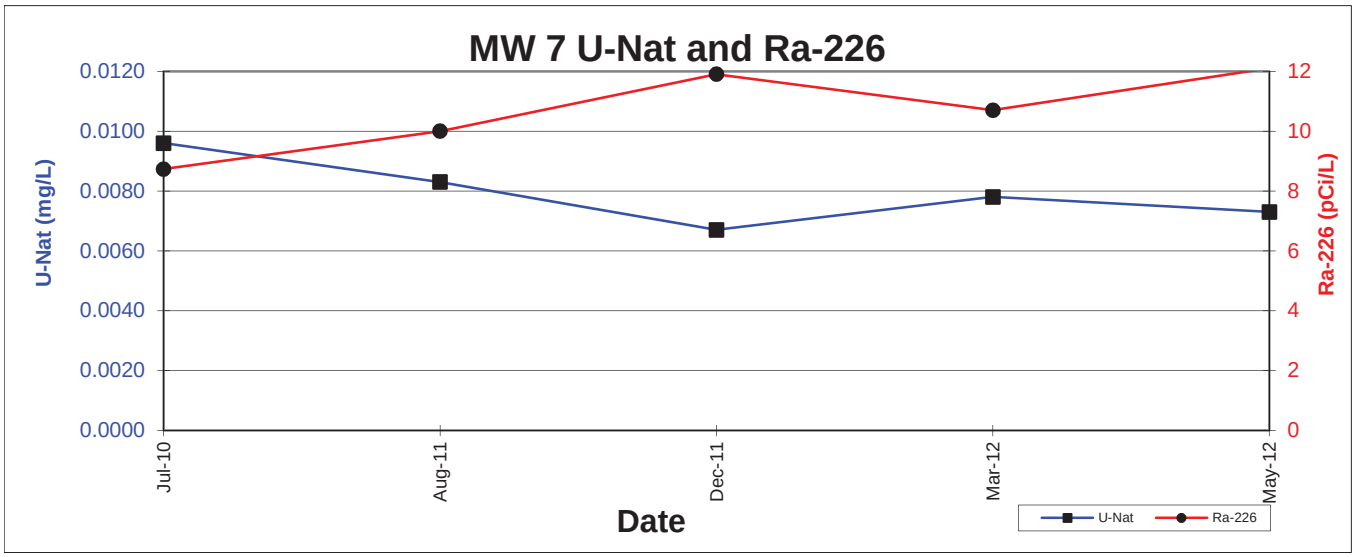

MW 6S Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
548
547
546
545
544
543
542
541
Total Dissolved Solids (mg/L)
992
990
988
986
984
982
980
978
976
974
Jul-10
Mar-11
Date
Bicarbonate
TDS

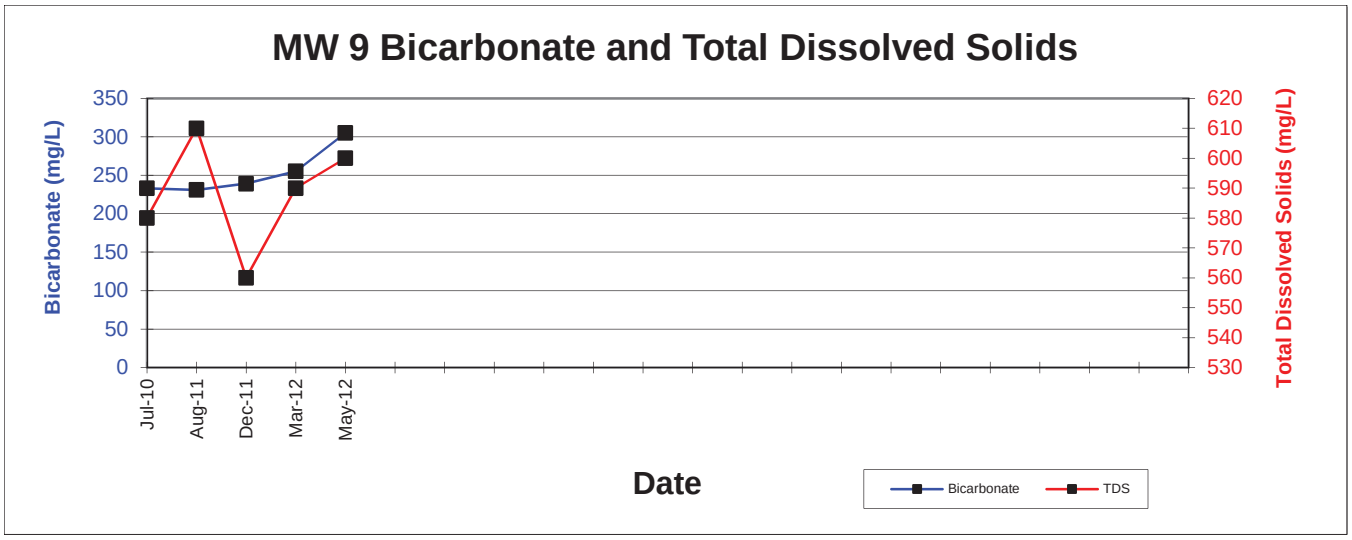

MW 6S Sulfate and pH
Sulfate (mg/L)
9
8
7
6
5
4
3
2
1
0
pH (S.U.)
10
8
6
Jul-10
Mar-11
Date
Sulfate
pH

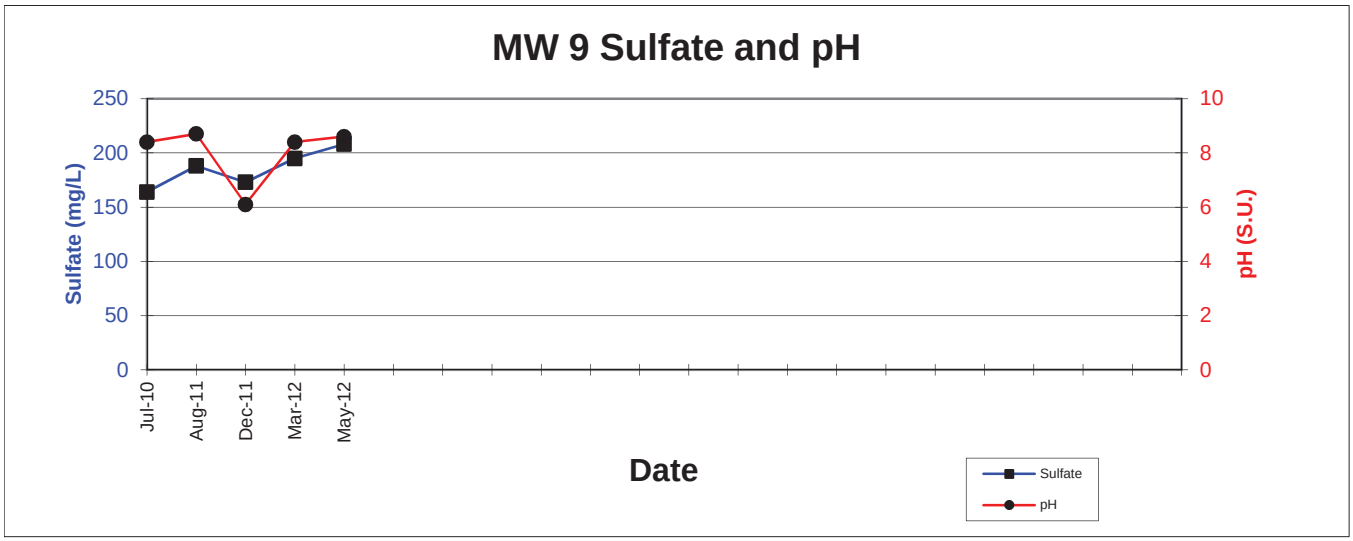

MW 6S U-Nat and Ra-226
U-Nat (mg/L)
0.0009
0.0008
0.0007
0.0006
0.0005
0.0004
0.0003
0.0002
0.0001
0.0000
Ra-226 (pCi/L)
12
10
8
6
4
2
0
Jul-10
Mar-11
Date
U-Nat
Ra-226

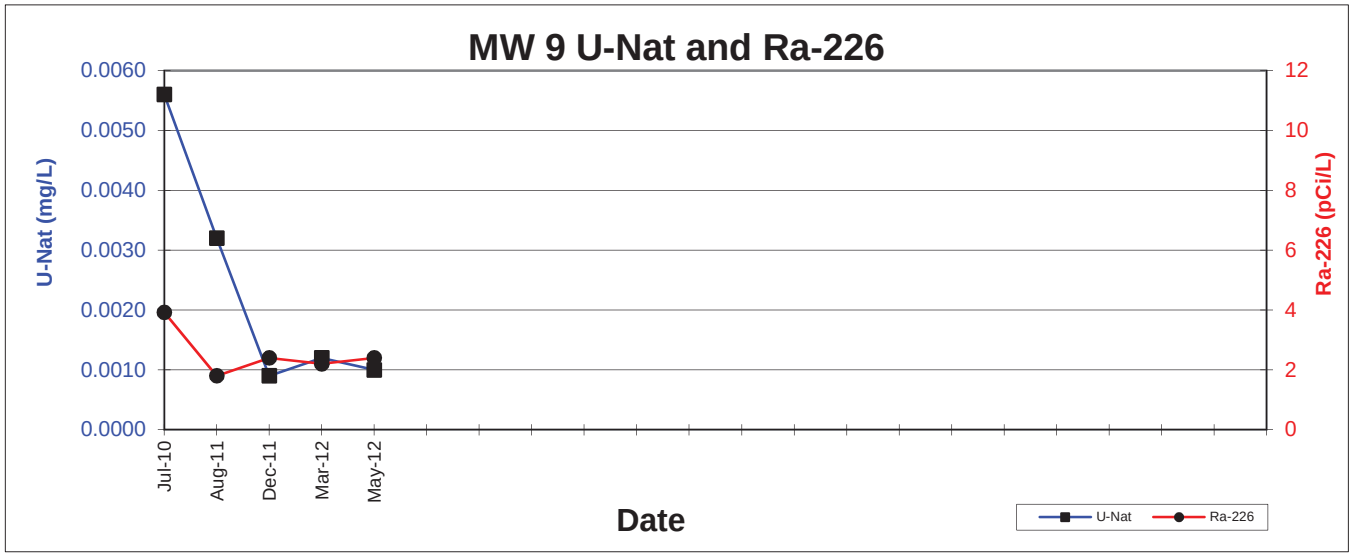

MW 7 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
300
295
290
285
280
275
270
265
260
255
250
245
Total Dissolved Solids (mg/L)
350
300
250
200
150
100
50
0
Jul-10
Aug-11
Dec-11
Mar-12
May-12
Date
Bicarbonate
TDS

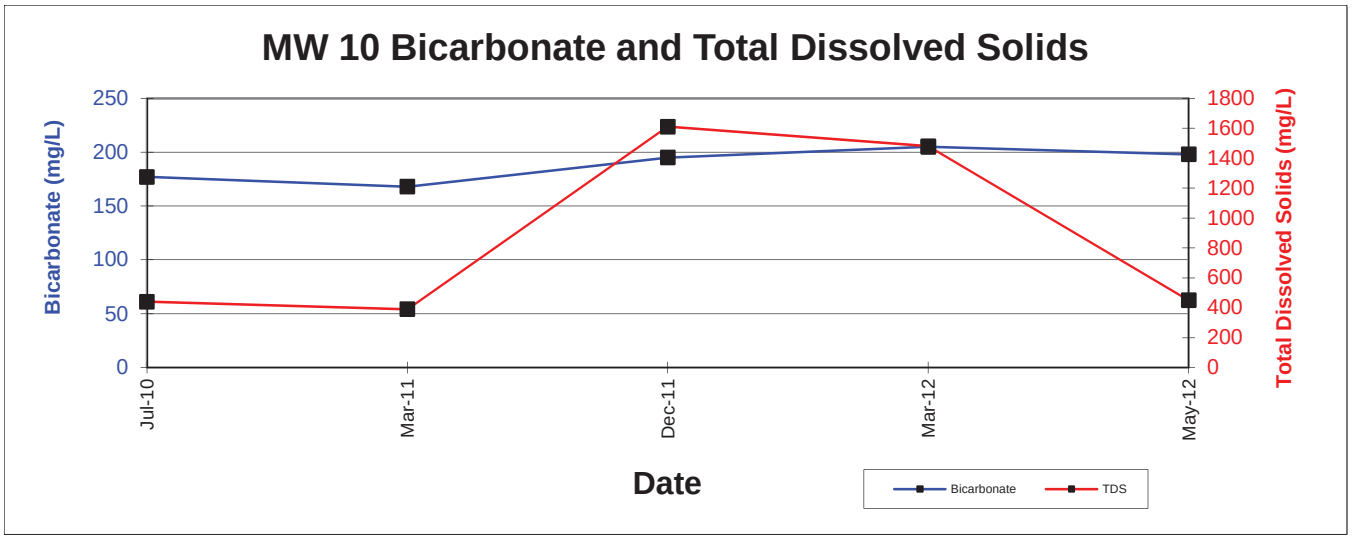

MW 7 Sulfate and pH
Sulfate (mg/L)
45
40
35
30
25
20
15
10
5
0
pH (S.U.)
10
8
6
4
2
0
Jul-10
Aug-11
Dec-11
Mar-12
May-12
Date
Sulfate
pH

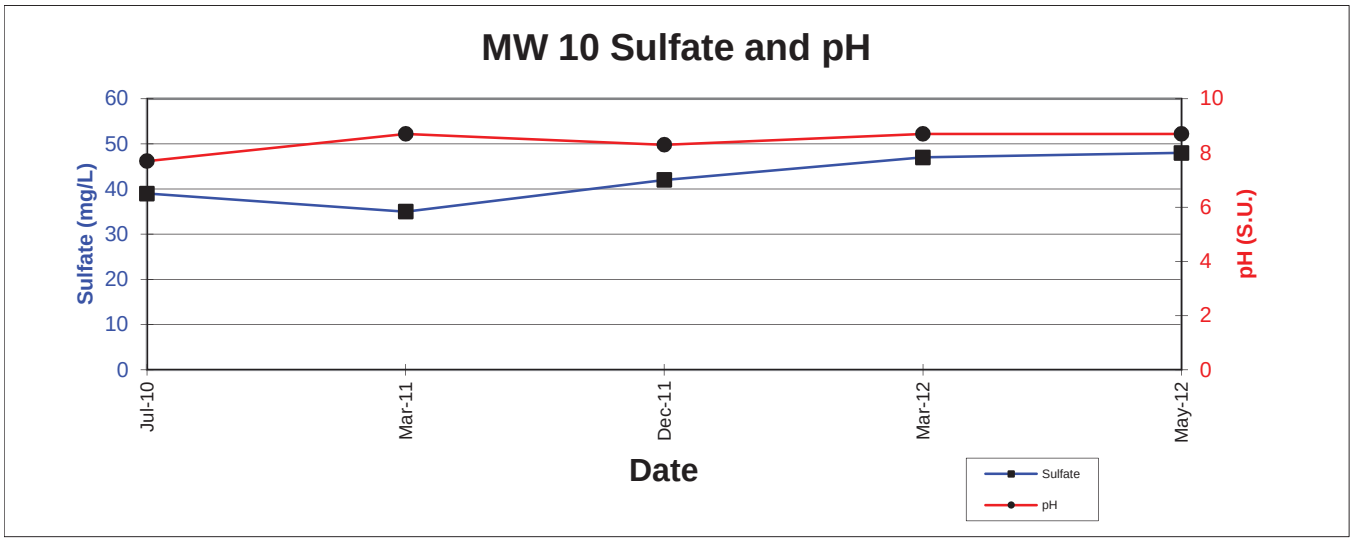

MW 7 U-Nat and Ra-226
U-Nat (mg/L)
0.0120
0.0100
0.0080
0.0060
0.0040
0.0020
0.0000
Ra-226 (pCi/L)
12
10
8
6
4
2
0
Jul-10
Aug-11
Dec-11
Mar-12
May-12
Date
U-Nat
Ra-226

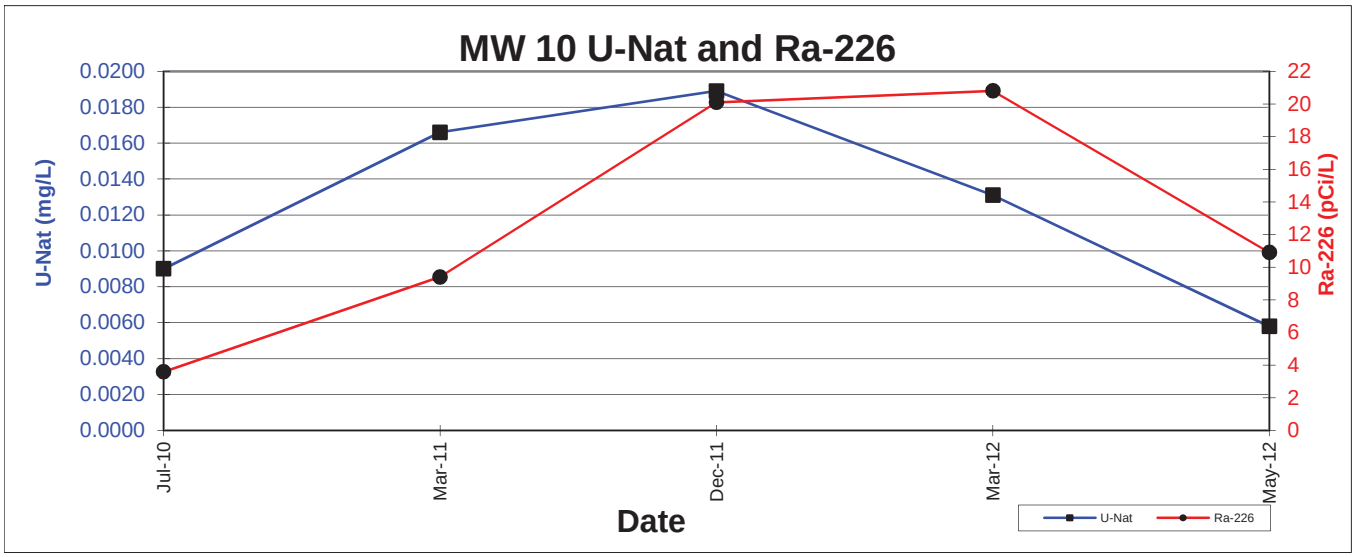

MW 9 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
350
300
250
200
150
100
50
0
620
610
600
590
580
570
560
550
540
530
Jul-10
Aug-11
Dec-11
Mar-12
May-12
Date
Bicarbonate
TDS

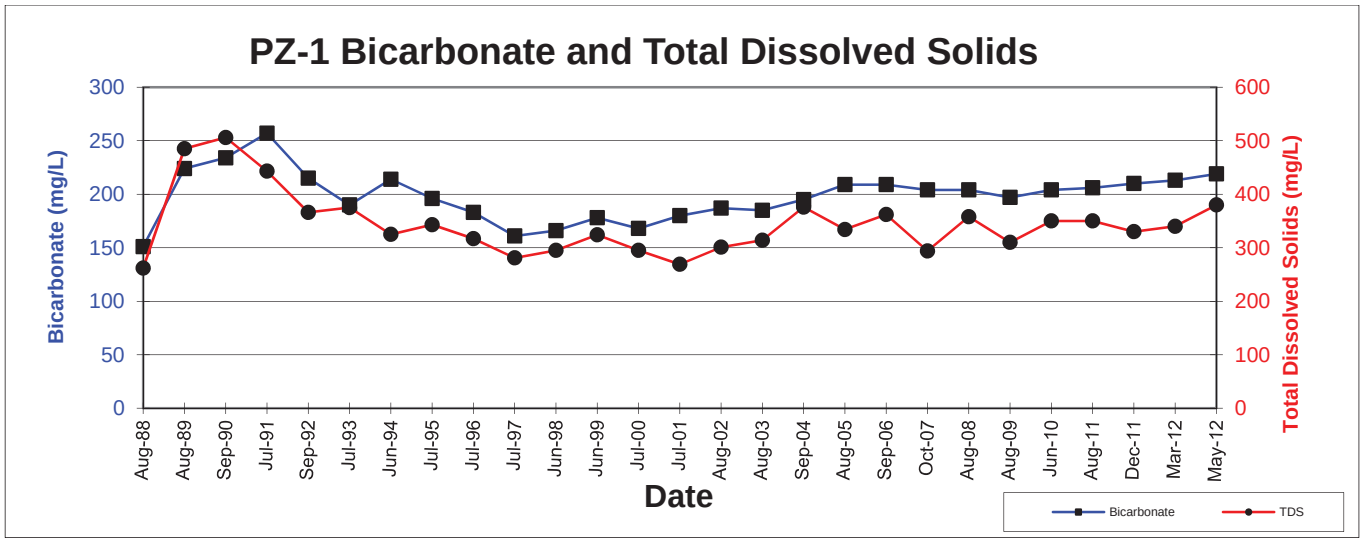

MW 9 Sulfate and pH
Sulfate (mg/L)
pH (S.U.)
250
200
150
100
50
0
10
8
6
4
2
0
Jul-10
Aug-11
Dec-11
Mar-12
May-12
Date
Sulfate
pH

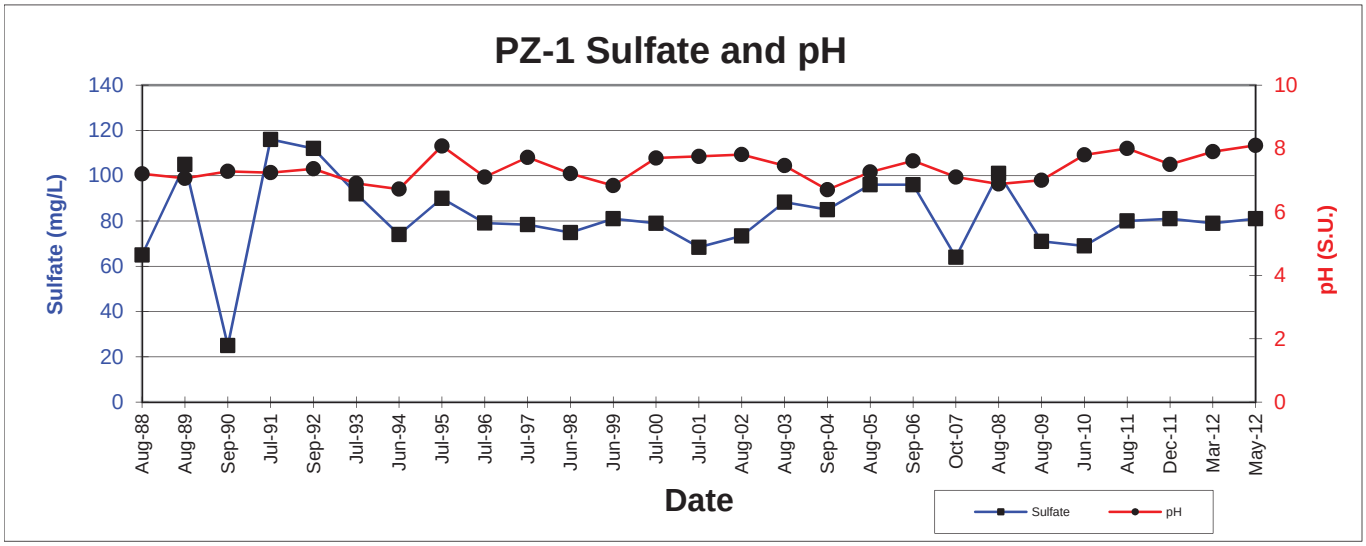

MW 9 U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
0.0060
0.0050
0.0040
0.0030
0.0020
0.0010
0.0000
12
10
8
6
4
2
0
Jul-10
Aug-11
Dec-11
Mar-12
May-12
Date
U-Nat
Ra-226

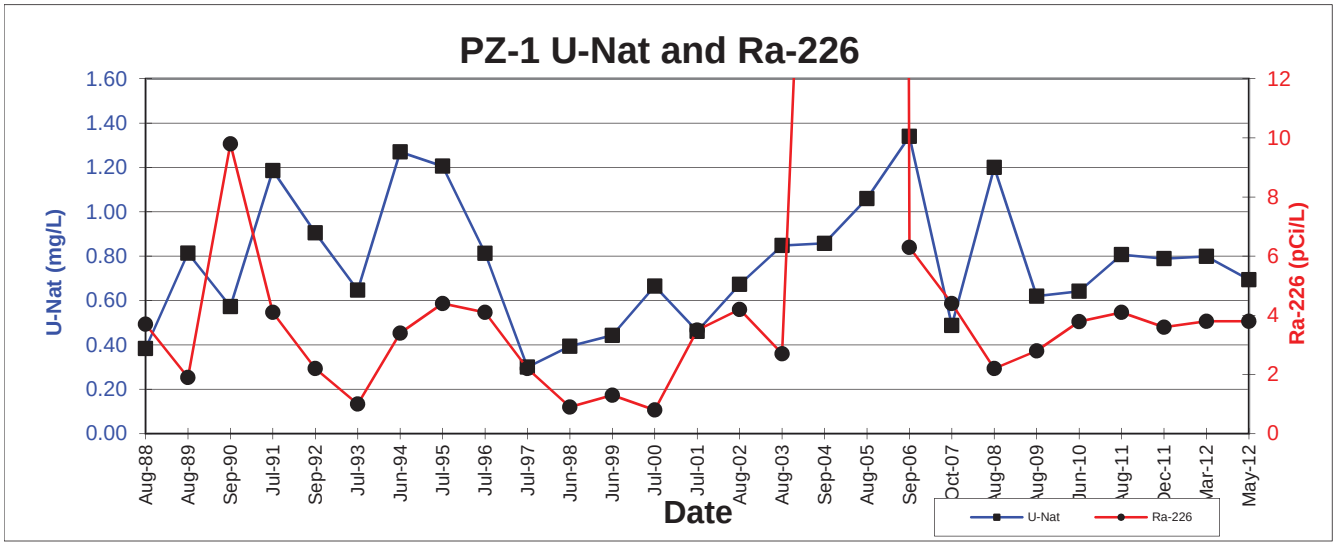

MW 10 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
250
200
150
100
50
0
1800
1600
1400
1200
1000
800
600
400
200
0
Jul-10
Mar-11
Dec-11
Mar-12
May-12
Date
Bicarbonate
TDS

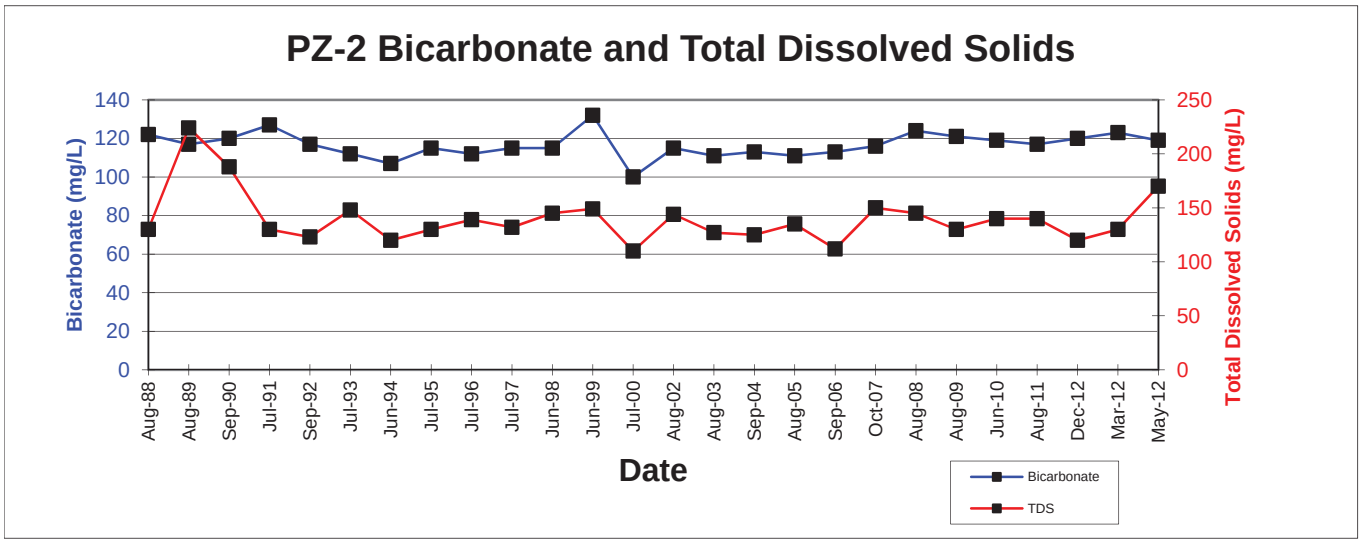

MW 10 Sulfate and pH
Sulfate (mg/L)
pH (S.U.)
60
50
40
30
20
10
0
10
8
6
4
2
0
Jul-10
Mar-11
Dec-11
Mar-12
May-12
Date
Sulfate
pH

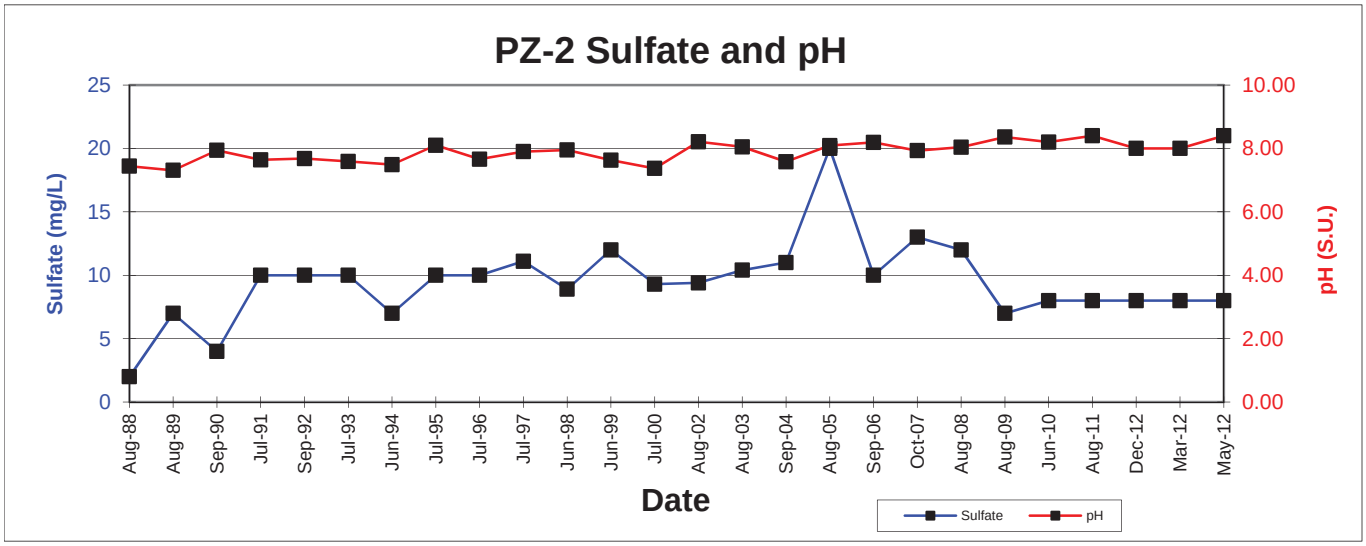

MW 10 U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
0.0200
0.0180
0.0160
0.0140
0.0120
0.0100
0.0080
0.0060
0.0040
0.0020
0.0000
22
20
18
16
14
12
10
8
6
4
2
0
Jul-10
Mar-11
Dec-11
Mar-12
May-12
Date
U-Nat
Ra-226

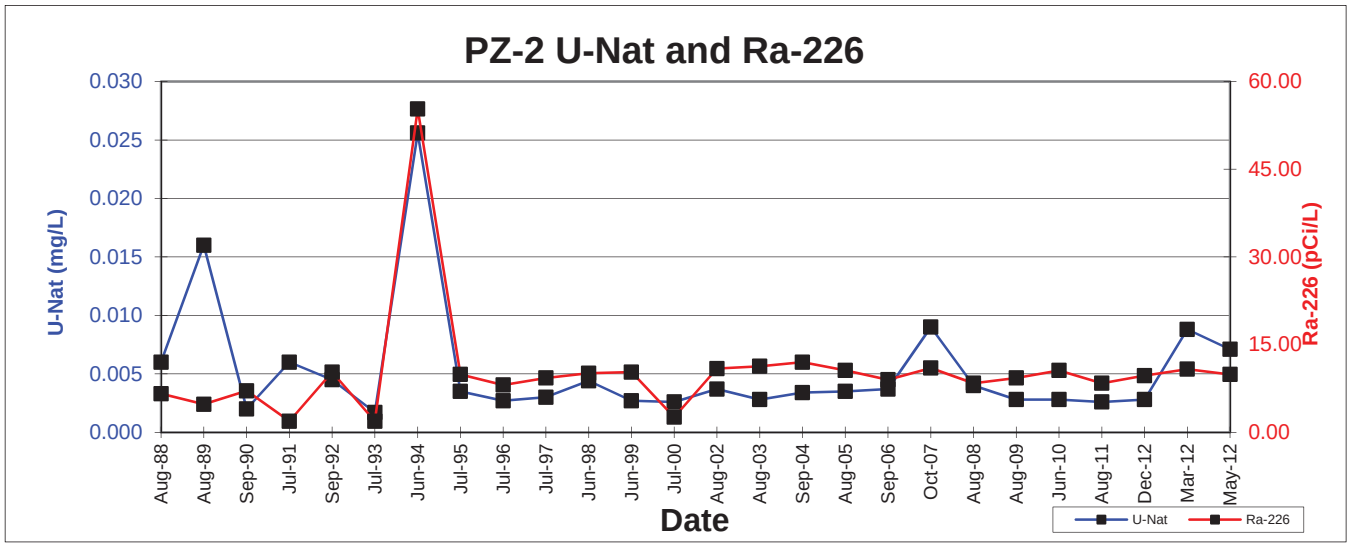

PZ-1 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
Date
Bicarbonate
TDS

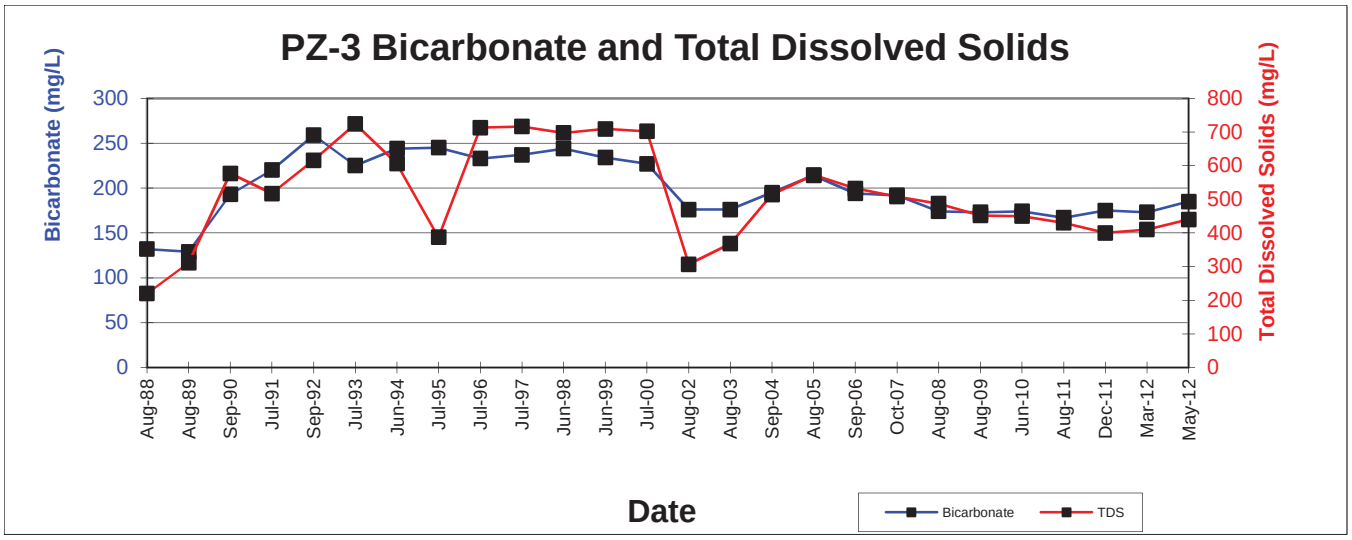

PZ-1 Sulfate and pH
Sulfate (mg/L)
pH (S.U.)
Date
Sulfate
pH

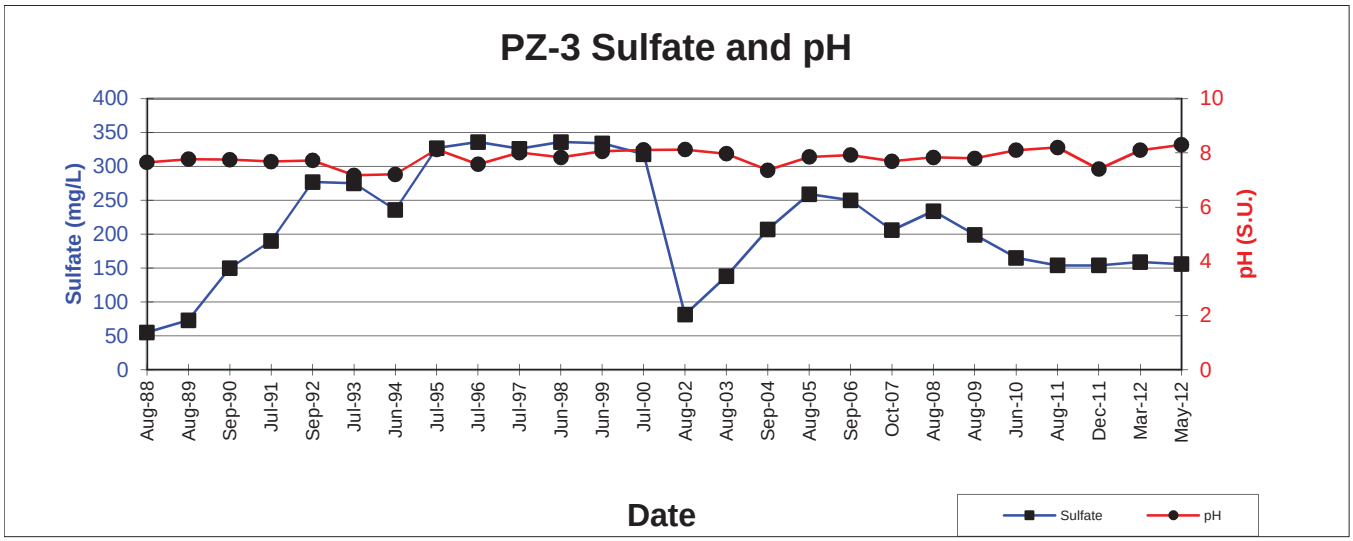

PZ-1 U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
Date
U-Nat
Ra-226

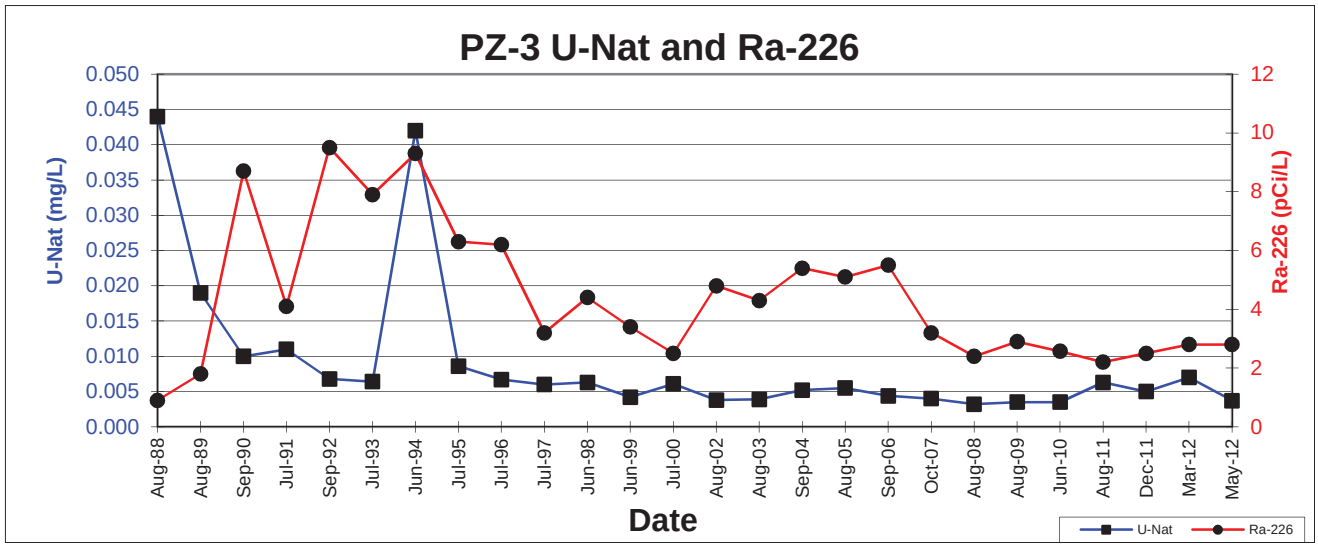

PZ-2 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
Date
Bicarbonate
TDS

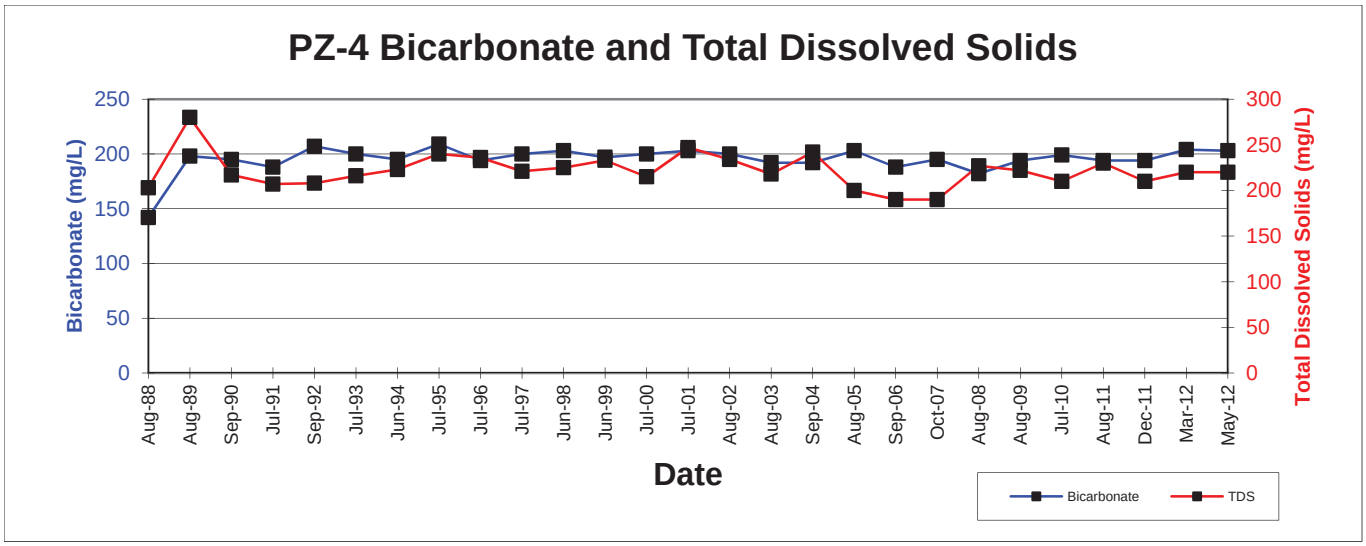

PZ-2 Sulfate and pH
Sulfate (mg/L)
pH (S.U.)
Date
Sulfate
pH

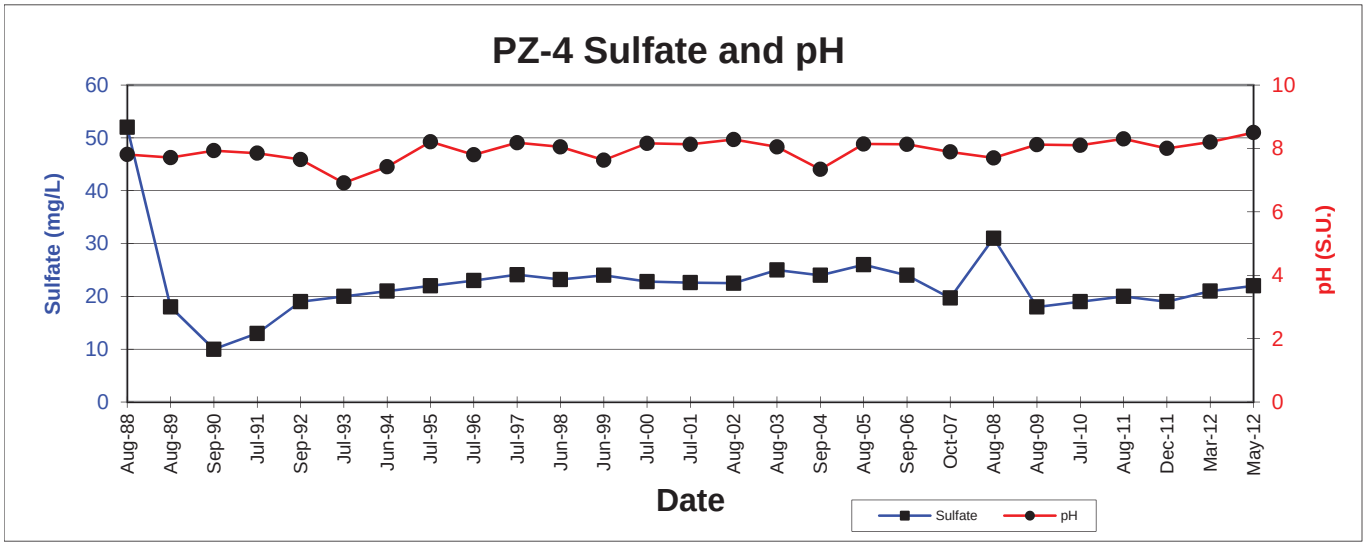

PZ-2 U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
Date
U-Nat
Ra-226

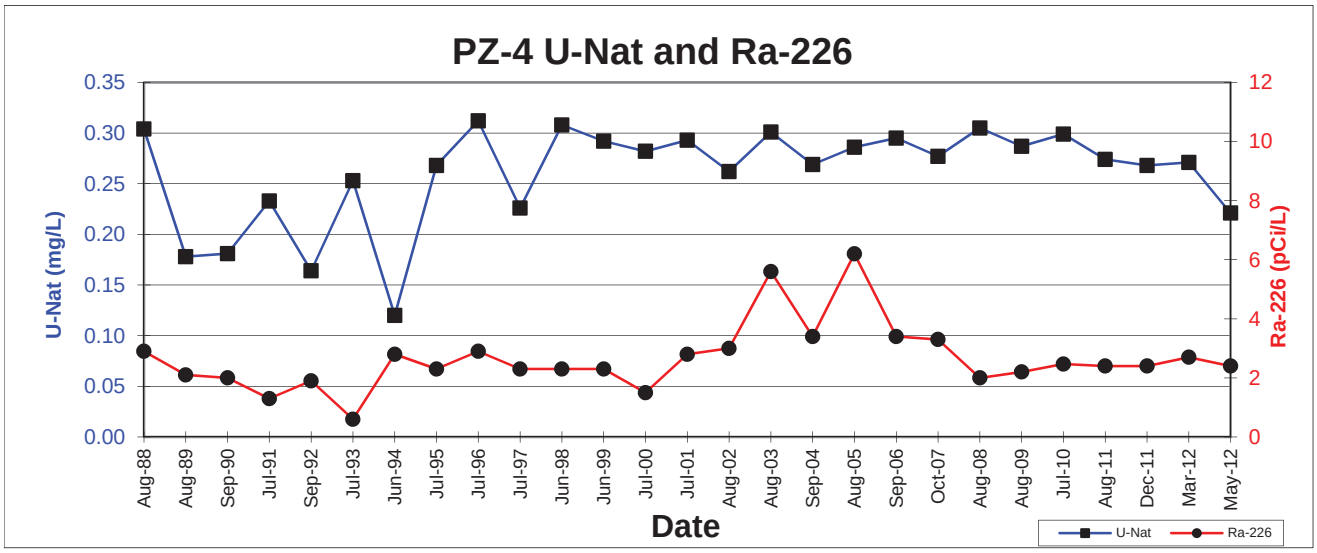

PZ-3 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
Date
Bicarbonate
TDS

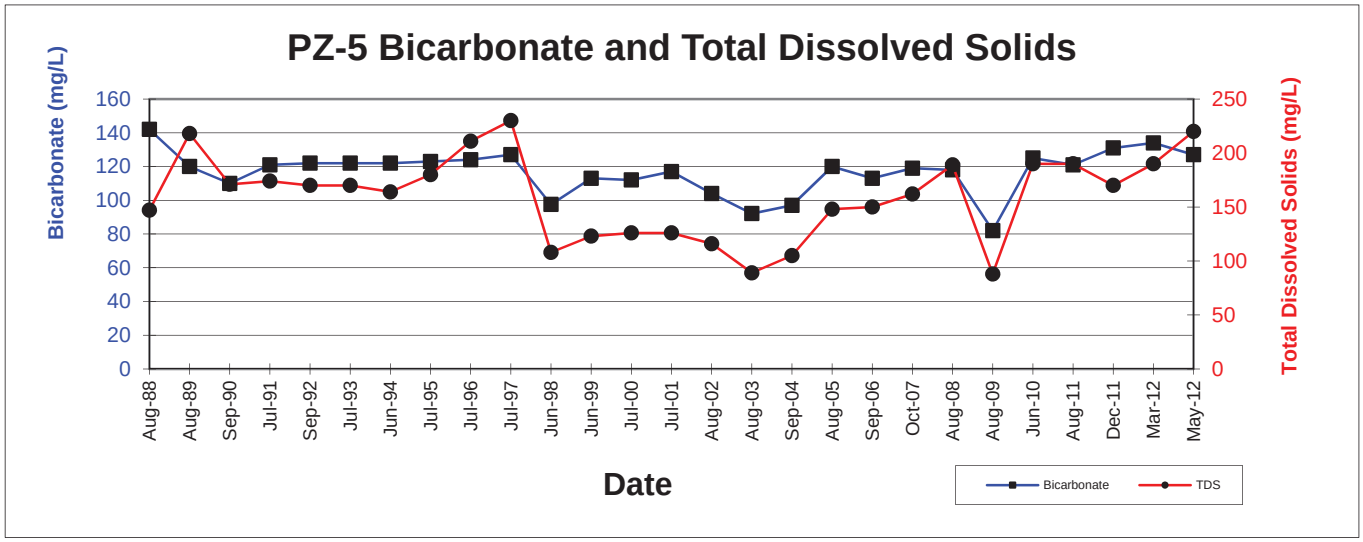

PZ-3 Sulfate and pH
Sulfate (mg/L)
pH (S.U.)
Date
Sulfate
pH

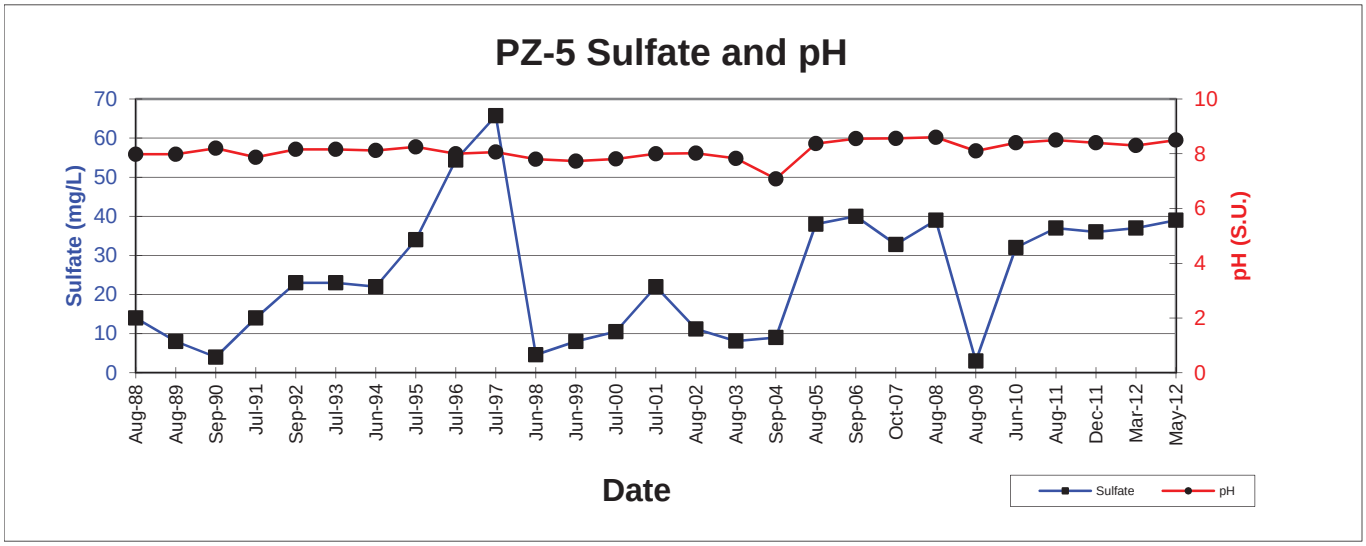

PZ-3 U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
Date
U-Nat
Ra-226

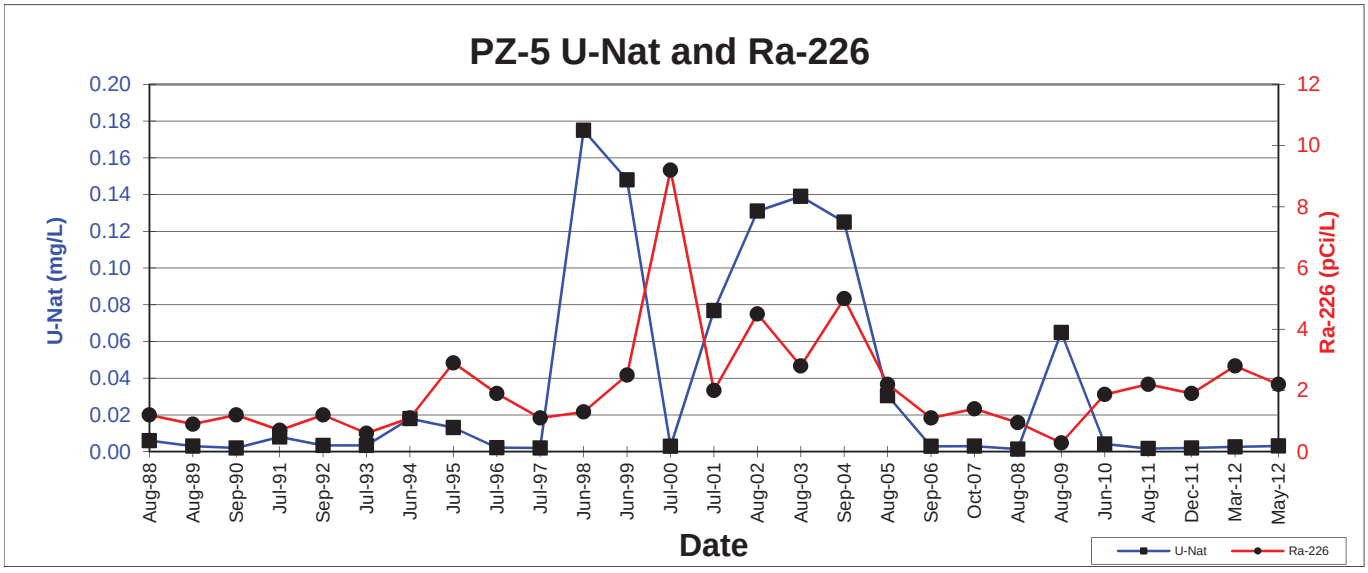

PZ-4 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
Date
Bicarbonate
TDS

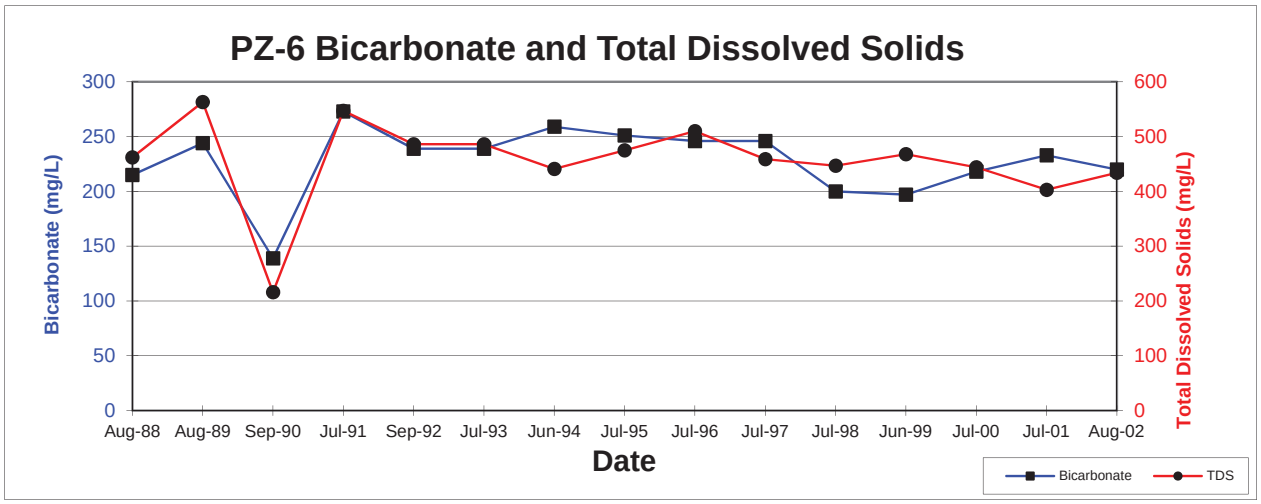

PZ-4 Sulfate and pH
Sulfate (mg/L)
pH (S.U.)
Date
Sulfate
pH

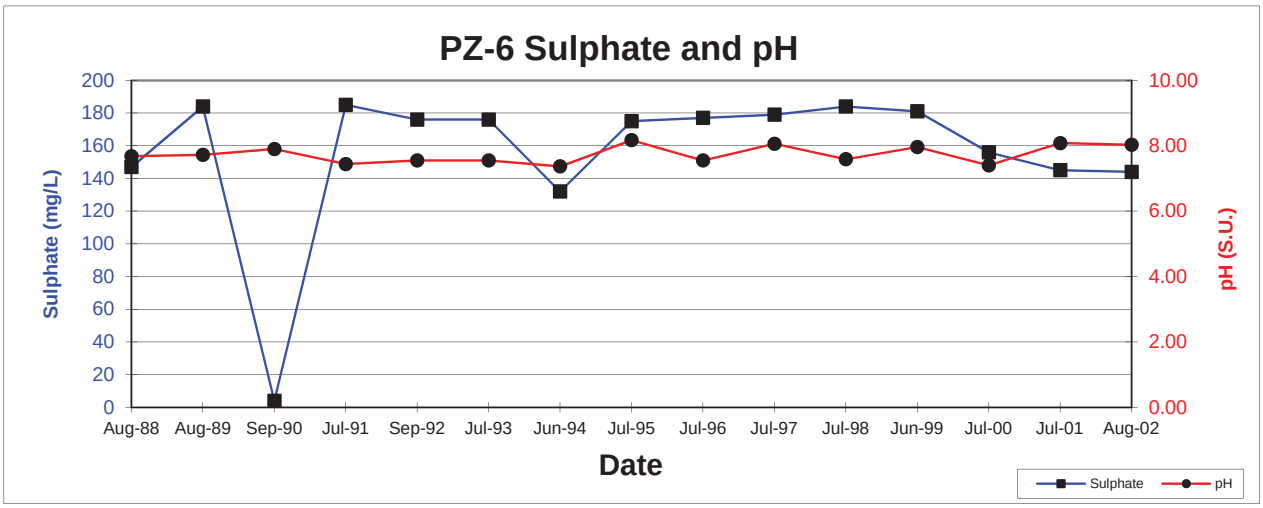

PZ-4 U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
Date
U-Nat
Ra-226

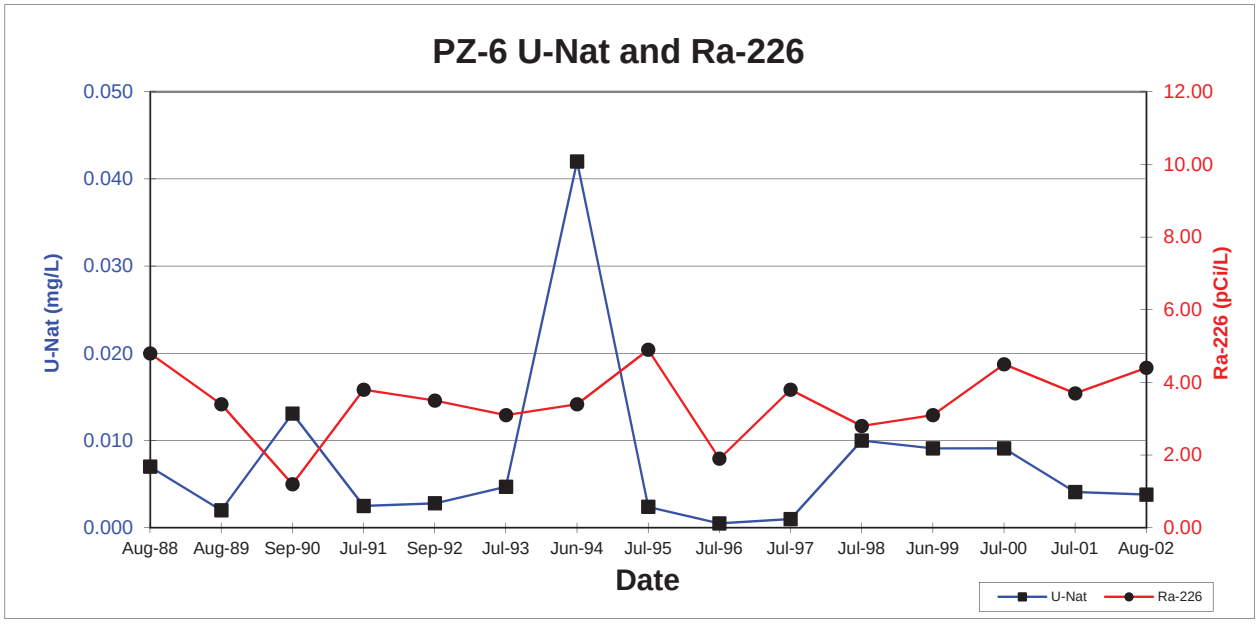

PZ-5 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
Date
Bicarbonate
TDS

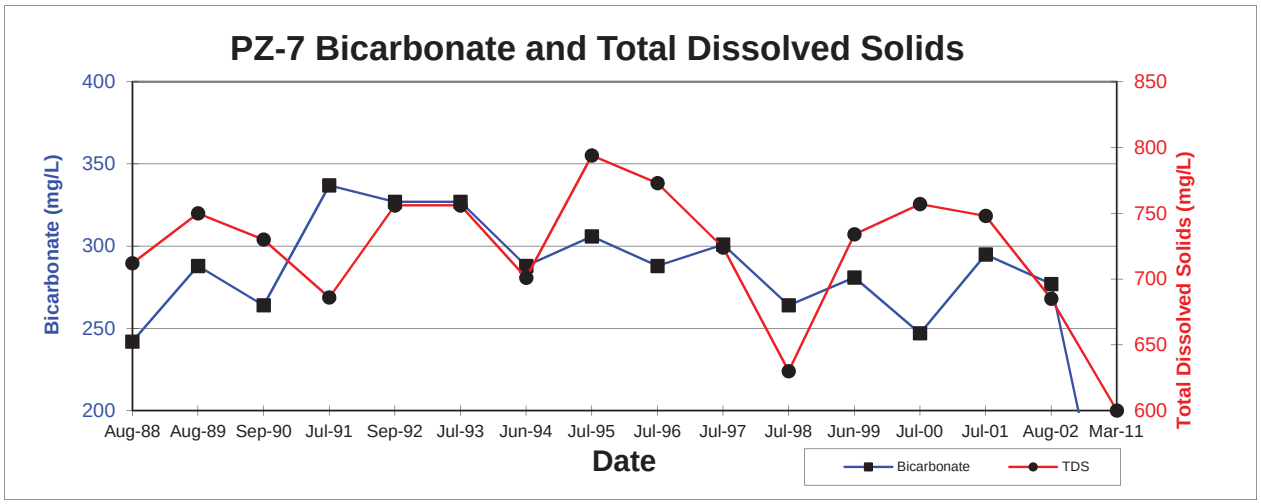

PZ-5 Sulfate and pH
Sulfate (mg/L)
pH (S.U.)
Date
Sulfate
pH

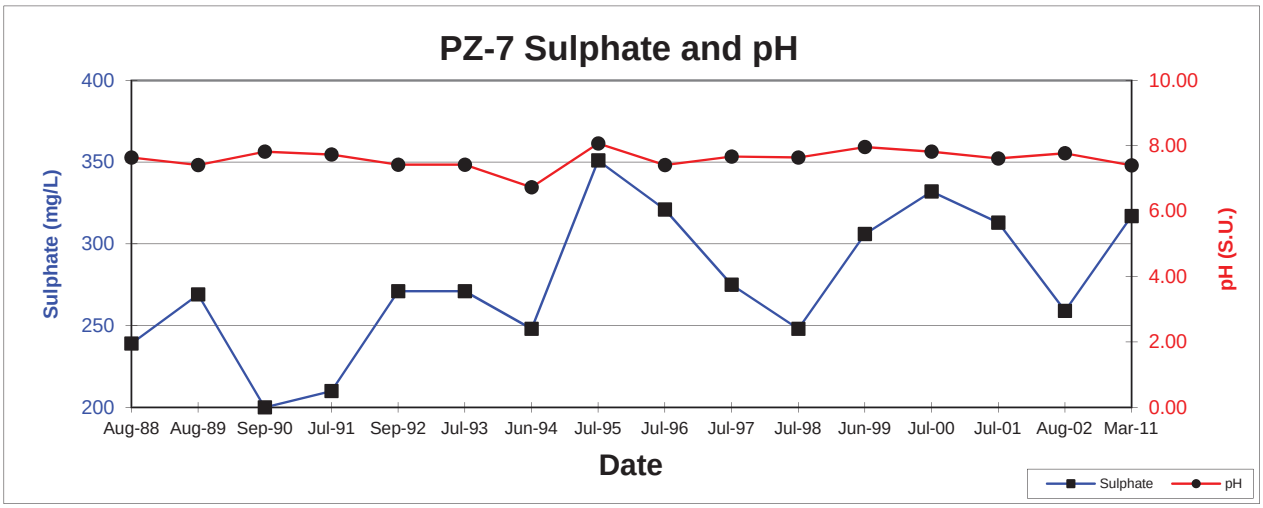

PZ-5 U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
Date
U-Nat
Ra-226

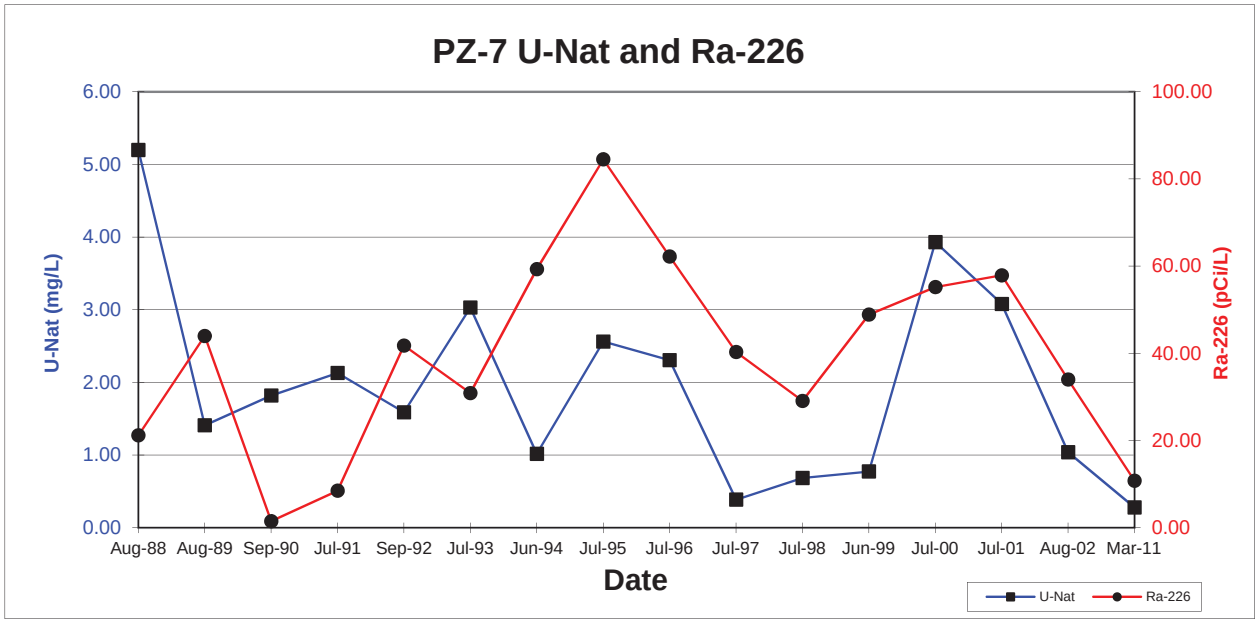

PZ-6 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
300
250
200
150
100
50
0
600
500
400
300
200
100
0
Aug-88
Aug-89
Sep-90
Jul-91
Sep-92
Jul-93
Jun-94
Jul-95
Jul-96
Jul-97
Jul-98
Jun-99
Jul-00
Jul-01
Aug-02
Date
Bicarbonate
TDS

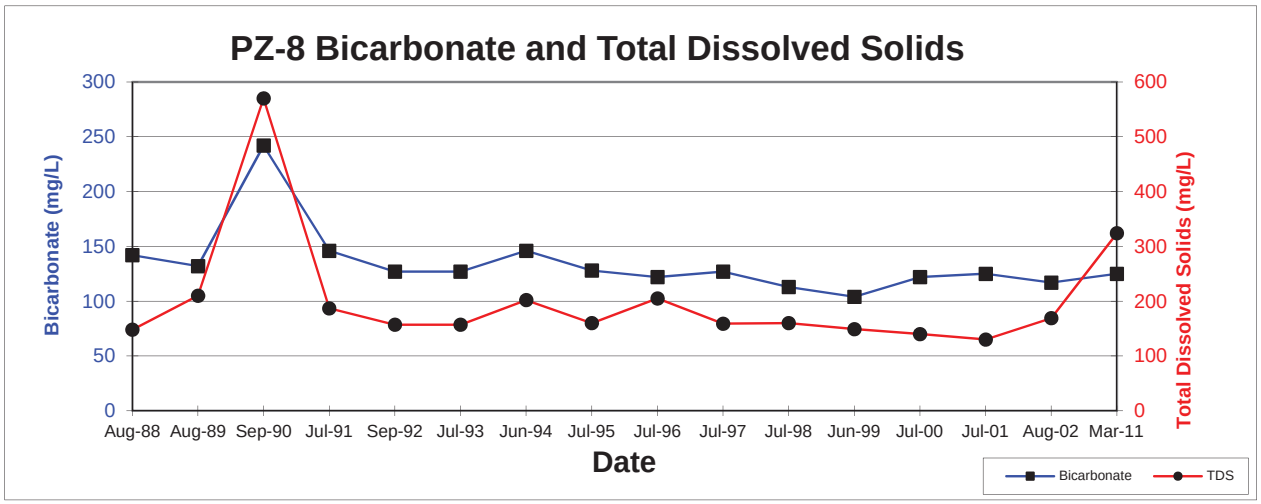

PZ-6 Sulphate and pH
Sulphate (mg/L)
pH (S.U.)
200
180
160
140
120
100
80
60
40
20
0
10.00
8.00
6.00
4.00
2.00
0.00
Aug-88
Aug-89
Sep-90
Jul-91
Sep-92
Jul-93
Jun-94
Jul-95
Jul-96
Jul-97
Jul-98
Jun-99
Jul-00
Jul-01
Aug-02
Date
Sulphate
pH

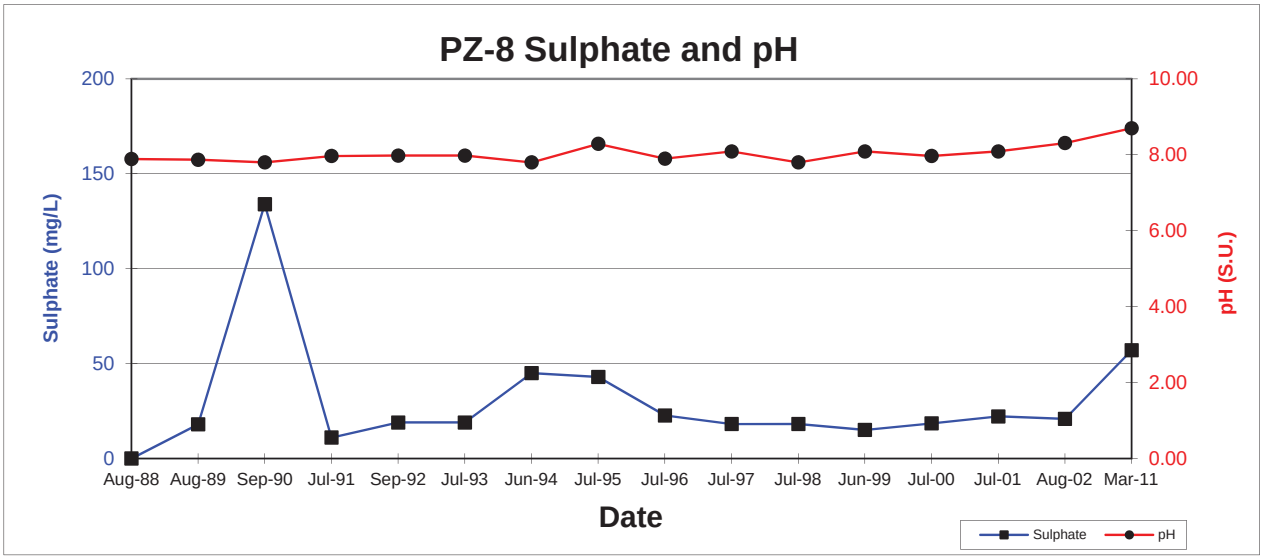

PZ-6 U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
0.050
0.040
0.030
0.020
0.010
0.000
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Aug-88
Aug-89
Sep-90
Jul-91
Sep-92
Jul-93
Jun-94
Jul-95
Jul-96
Jul-97
Jul-98
Jun-99
Jul-00
Jul-01
Aug-02
Date
U-Nat
Ra-226

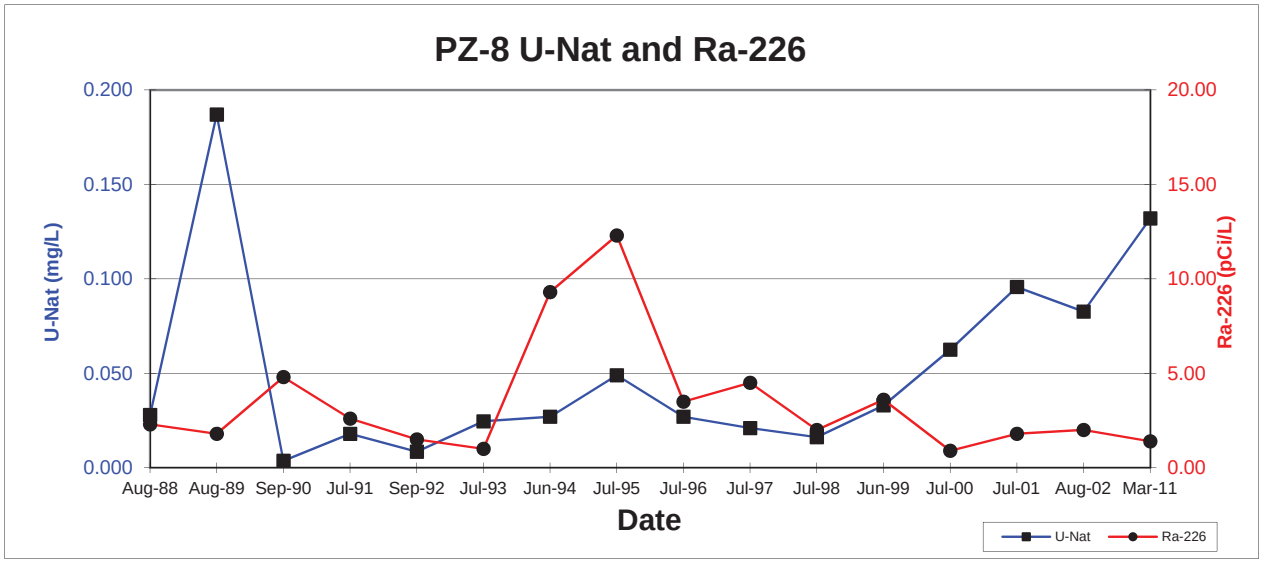

PZ-7 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
400
350
300
250
200
850
800
750
700
650
600
Aug-88 Aug-89 Sep-90 Jul-91 Sep-92 Jul-93 Jun-94 Jul-95 Jul-96 Jul-97 Jul-98 Jun-99 Jul-00 Jul-01 Aug-02 Mar-11
Date
Bicarbonate
TDS

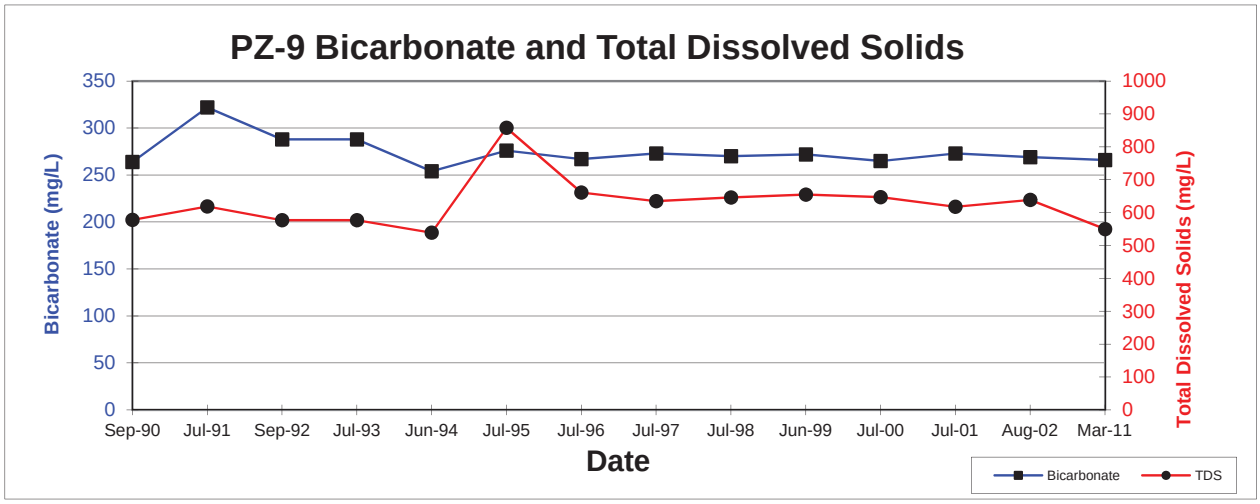

PZ-7 Sulphate and pH
Sulphate (mg/L)
pH (S.U.)
400
350
300
250
200
10.00
8.00
6.00
4.00
2.00
0.00
Aug-88 Aug-89 Sep-90 Jul-91 Sep-92 Jul-93 Jun-94 Jul-95 Jul-96 Jul-97 Jul-98 Jun-99 Jul-00 Jul-01 Aug-02 Mar-11
Date
Sulphate
pH

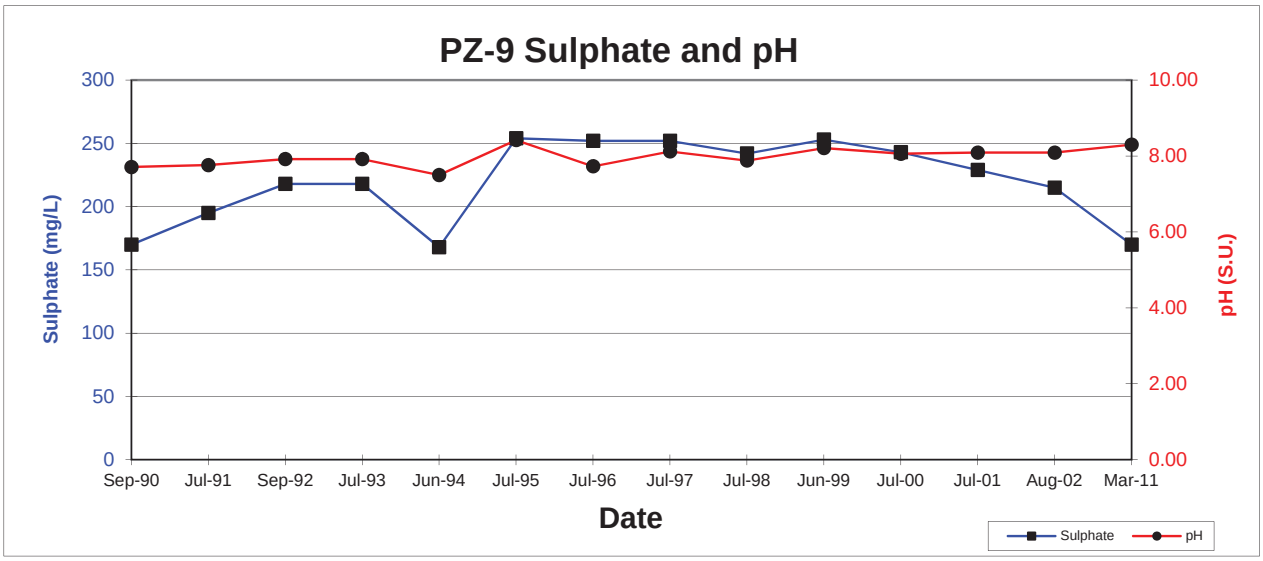

PZ-7 U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
6.00
5.00
4.00
3.00
2.00
1.00
0.00
100.00
80.00
60.00
40.00
20.00
0.00
Aug-88 Aug-89 Sep-90 Jul-91 Sep-92 Jul-93 Jun-94 Jul-95 Jul-96 Jul-97 Jul-98 Jun-99 Jul-00 Jul-01 Aug-02 Mar-11
Date
U-Nat
Ra-226

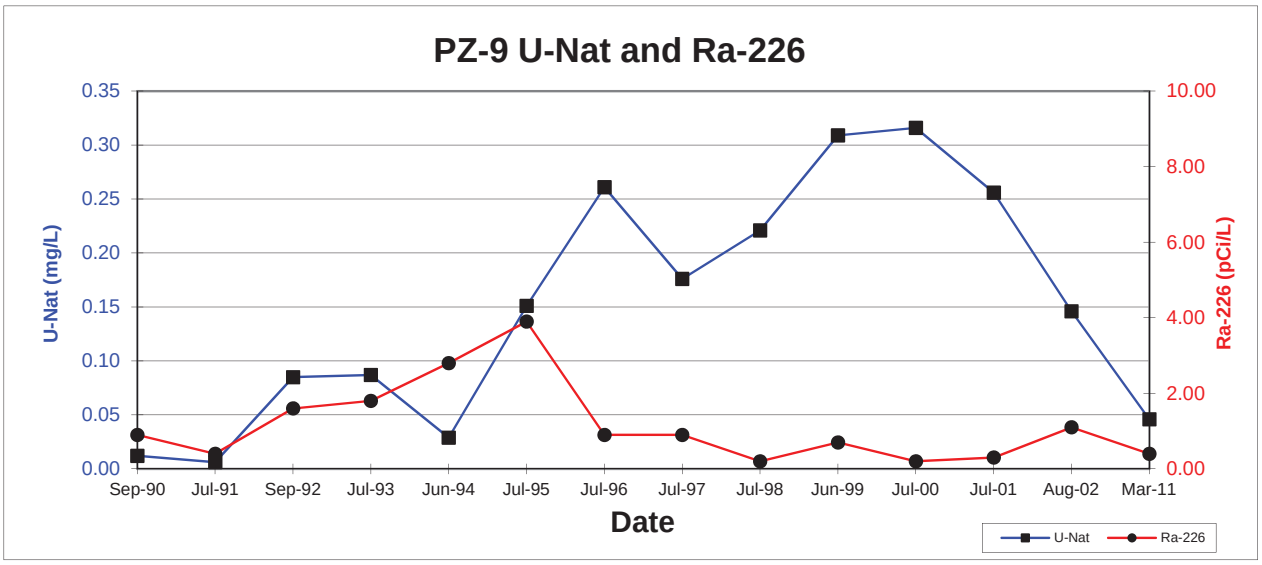

PZ-8 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
300
250
200
150
100
50
0
600
500
400
300
200
100
0
Aug-88 Aug-89 Sep-90 Jul-91 Sep-92 Jul-93 Jun-94 Jul-95 Jul-96 Jul-97 Jul-98 Jun-99 Jul-00 Jul-01 Aug-02 Mar-11
Date
Bicarbonate
TDS

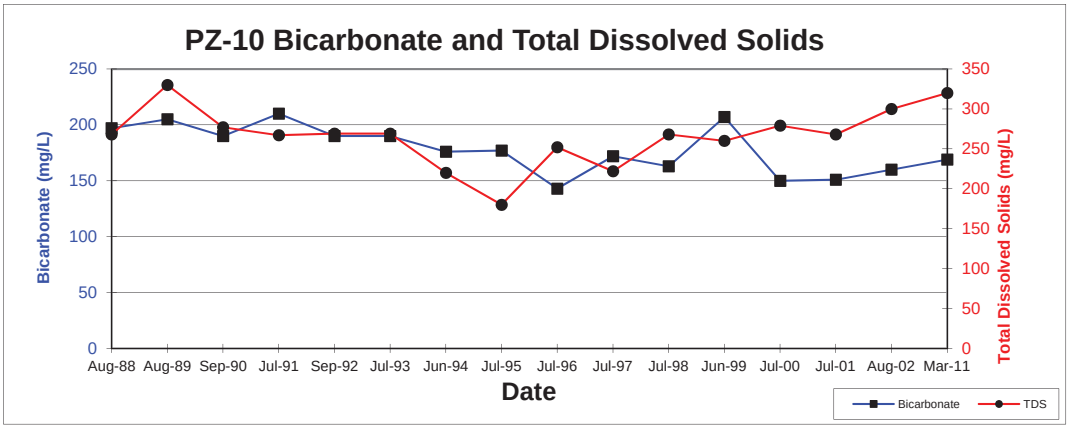

PZ-8 Sulphate and pH
Sulphate (mg/L)
pH (S.U.)
200
150
100
50
0
10.00
8.00
6.00
4.00
2.00
0.00
Aug-88 Aug-89 Sep-90 Jul-91 Sep-92 Jul-93 Jun-94 Jul-95 Jul-96 Jul-97 Jul-98 Jun-99 Jul-00 Jul-01 Aug-02 Mar-11
Date
Sulphate
pH

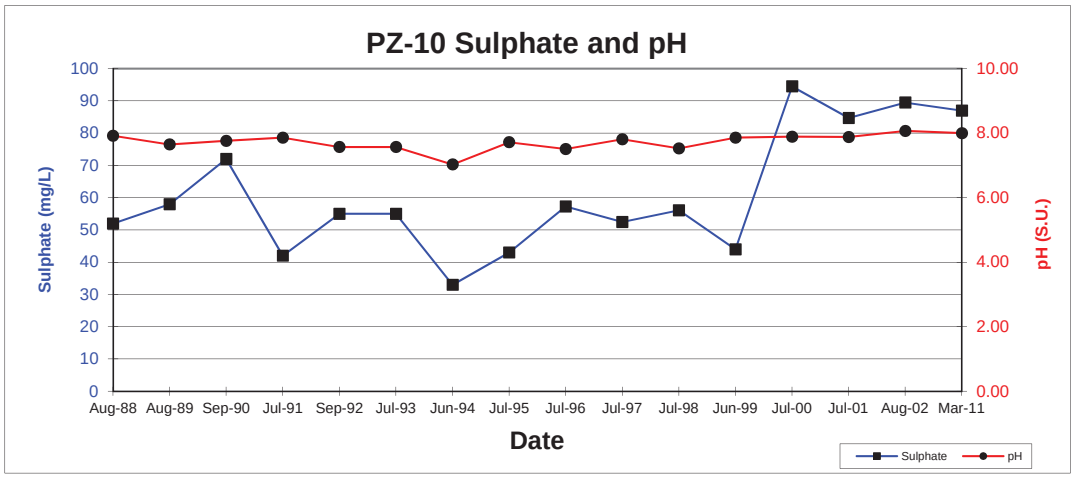

PZ-8 U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
0.200
0.150
0.100
0.050
0.000
20.00
15.00
10.00
5.00
0.00
Aug-88 Aug-89 Sep-90 Jul-91 Sep-92 Jul-93 Jun-94 Jul-95 Jul-96 Jul-97 Jul-98 Jun-99 Jul-00 Jul-01 Aug-02 Mar-11
Date
U-Nat
Ra-226

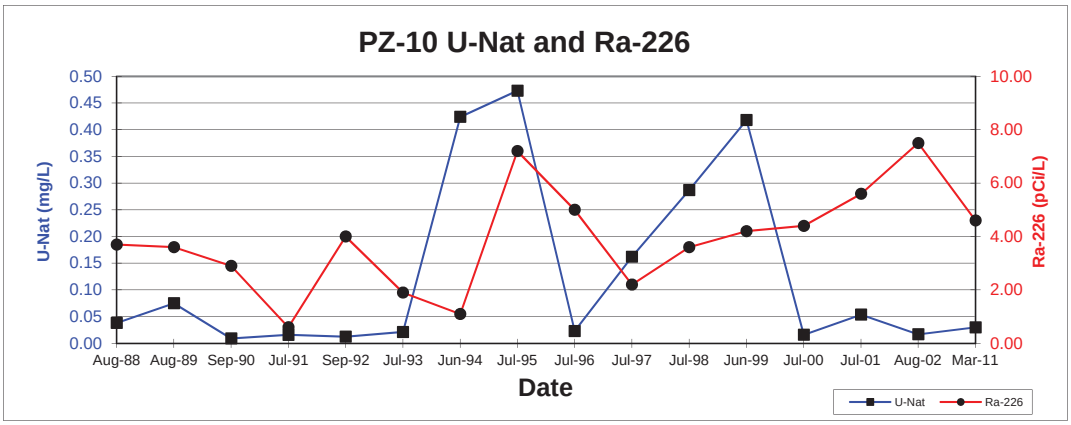

PZ-9 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
350
300
250
200
150
100
50
0
1000
900
800
700
600
500
400
300
200
100
0
Sep-90
Jul-91
Sep-92
Jul-93
Jun-94
Jul-95
Jul-96
Jul-97
Jul-98
Jun-99
Jul-00
Jul-01
Aug-02
Mar-11
Date
Bicarbonate
TDS

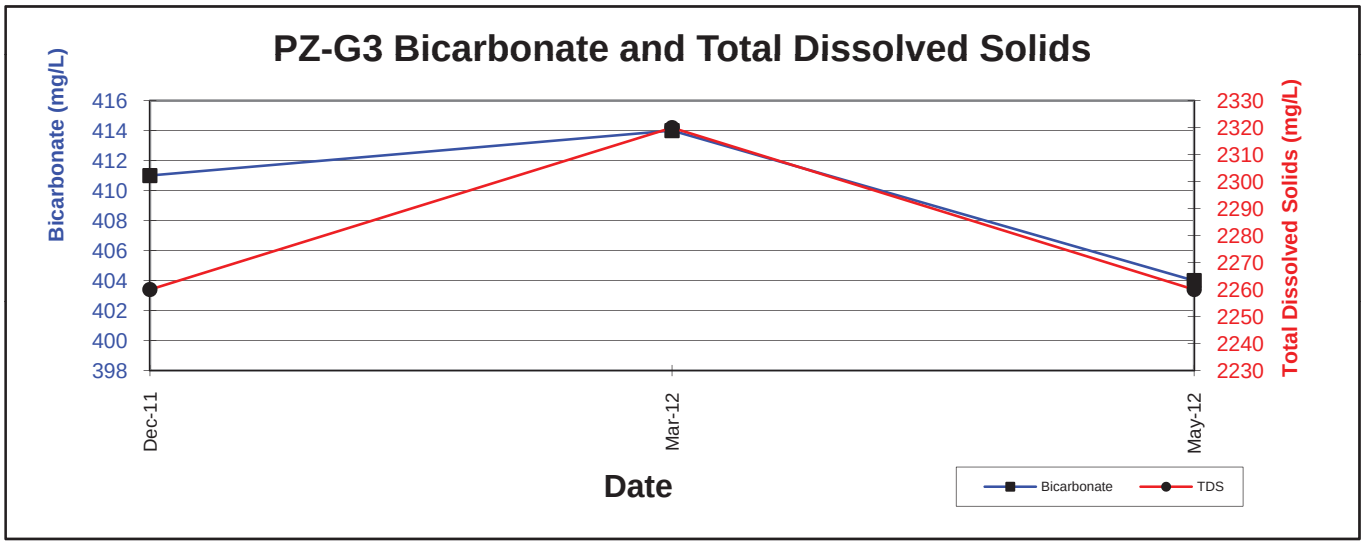

PZ-9 Sulphate and pH
Sulphate (mg/L)
pH (S.U.)
300
250
200
150
100
50
0
10.00
8.00
6.00
4.00
2.00
0.00
Sep-90
Jul-91
Sep-92
Jul-93
Jun-94
Jul-95
Jul-96
Jul-97
Jul-98
Jun-99
Jul-00
Jul-01
Aug-02
Mar-11
Date
Sulphate
pH

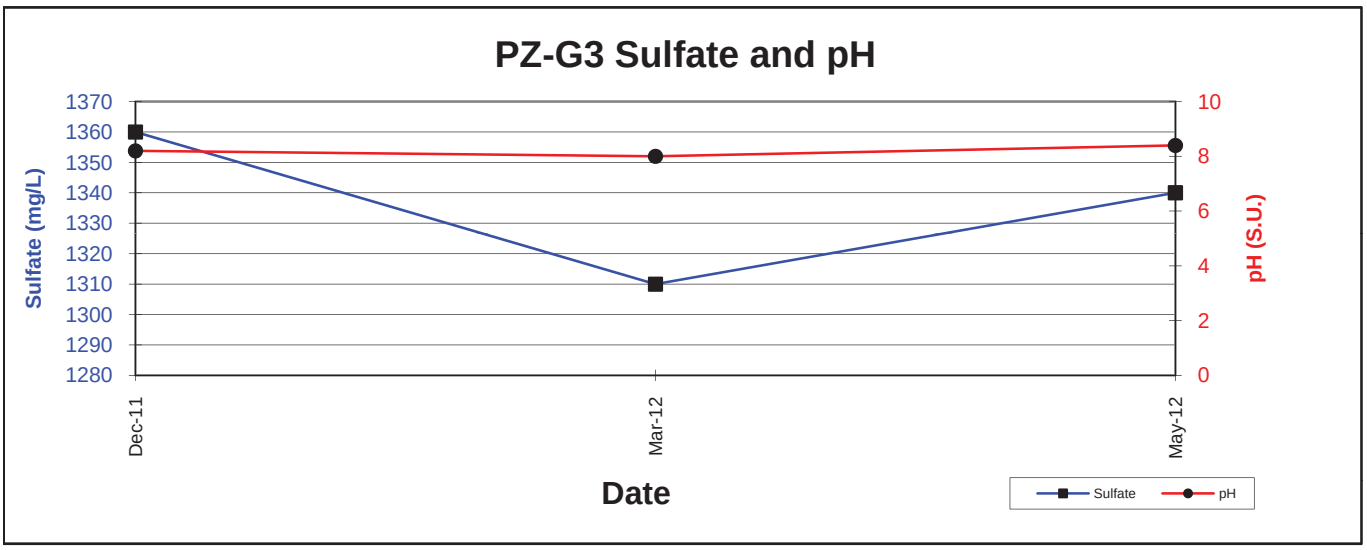

PZ-9 U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
10.00
8.00
6.00
4.00
2.00
0.00
Sep-90
Jul-91
Sep-92
Jul-93
Jun-94
Jul-95
Jul-96
Jul-97
Jul-98
Jun-99
Jul-00
Jul-01
Aug-02
Mar-11
Date
U-Nat
Ra-226

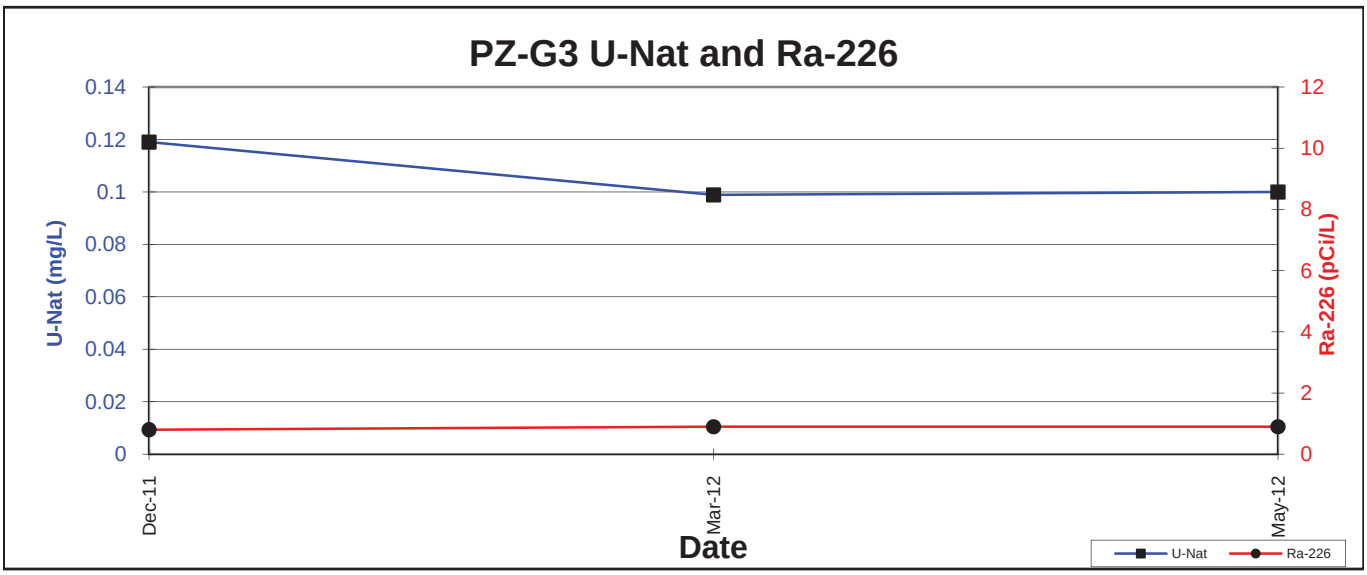

PZ-10 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
250
200
150
100
50
0
350
300
250
200
150
100
50
0
Aug-88 Aug-89 Sep-90 Jul-91 Sep-92 Jul-93 Jun-94 Jul-95 Jul-96 Jul-97 Jul-98 Jun-99 Jul-00 Jul-01 Aug-02 Mar-11
Date
Bicarbonate
TDS

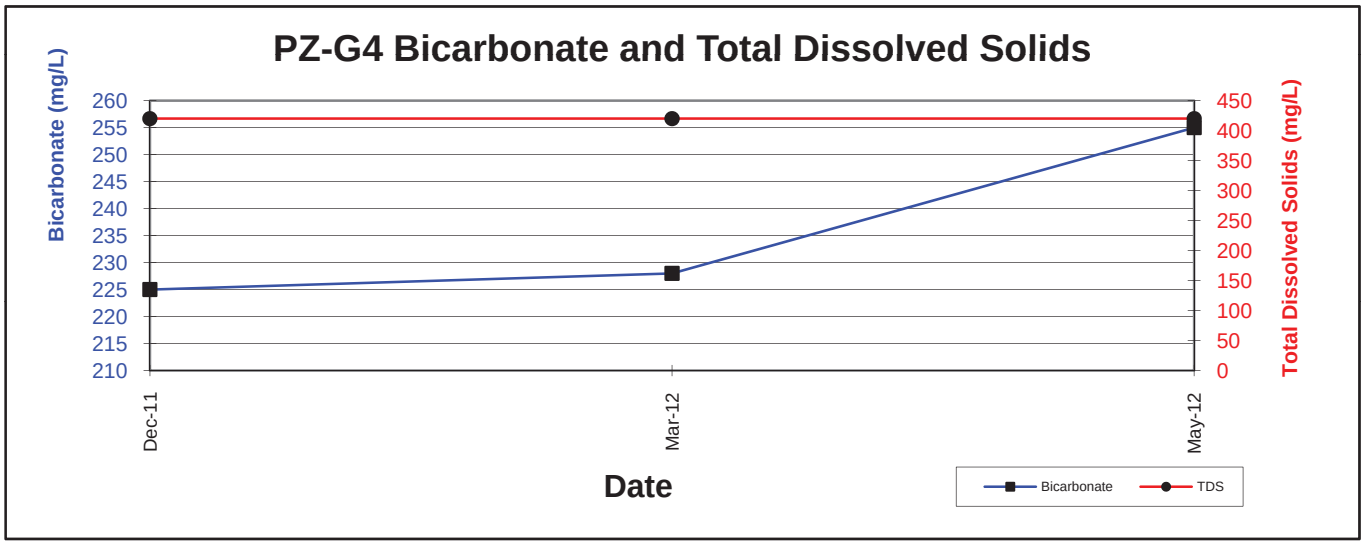

PZ-10 Sulphate and pH
Sulphate (mg/L)
pH (S.U.)
100
90
80
70
60
50
40
30
20
10
0
10.00
8.00
6.00
4.00
2.00
0.00
Aug-88 Aug-89 Sep-90 Jul-91 Sep-92 Jul-93 Jun-94 Jul-95 Jul-96 Jul-97 Jul-98 Jun-99 Jul-00 Jul-01 Aug-02 Mar-11
Date
Sulphate
pH

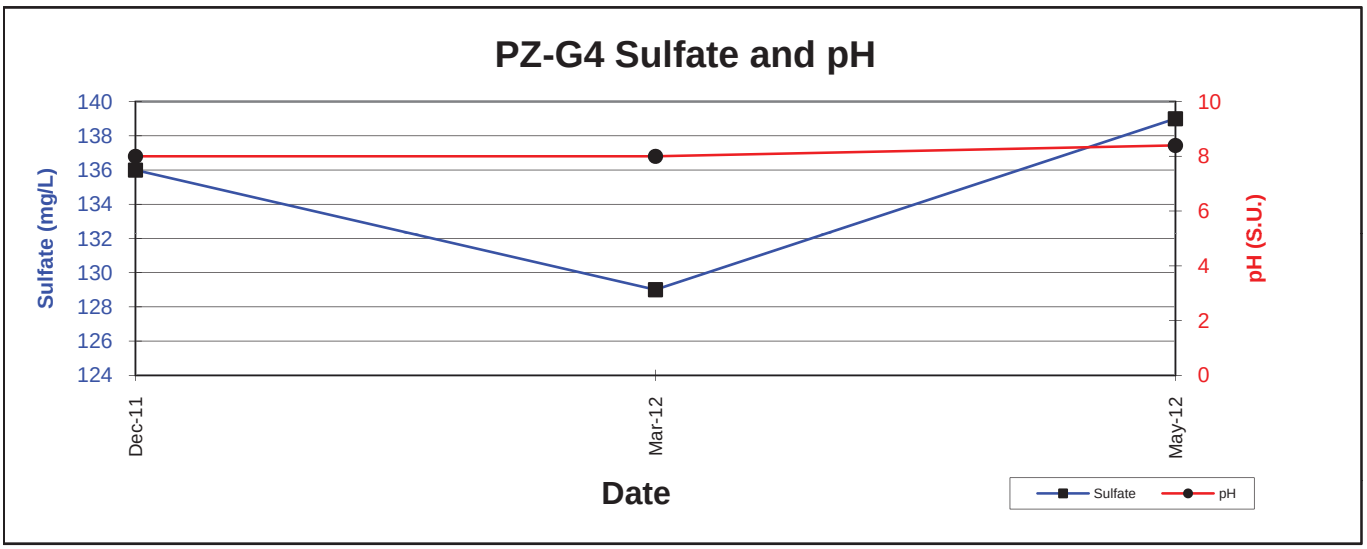

PZ-10 U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
10.00
8.00
6.00
4.00
2.00
0.00
Aug-88 Aug-89 Sep-90 Jul-91 Sep-92 Jul-93 Jun-94 Jul-95 Jul-96 Jul-97 Jul-98 Jun-99 Jul-00 Jul-01 Aug-02 Mar-11
Date
U-Nat
Ra-226

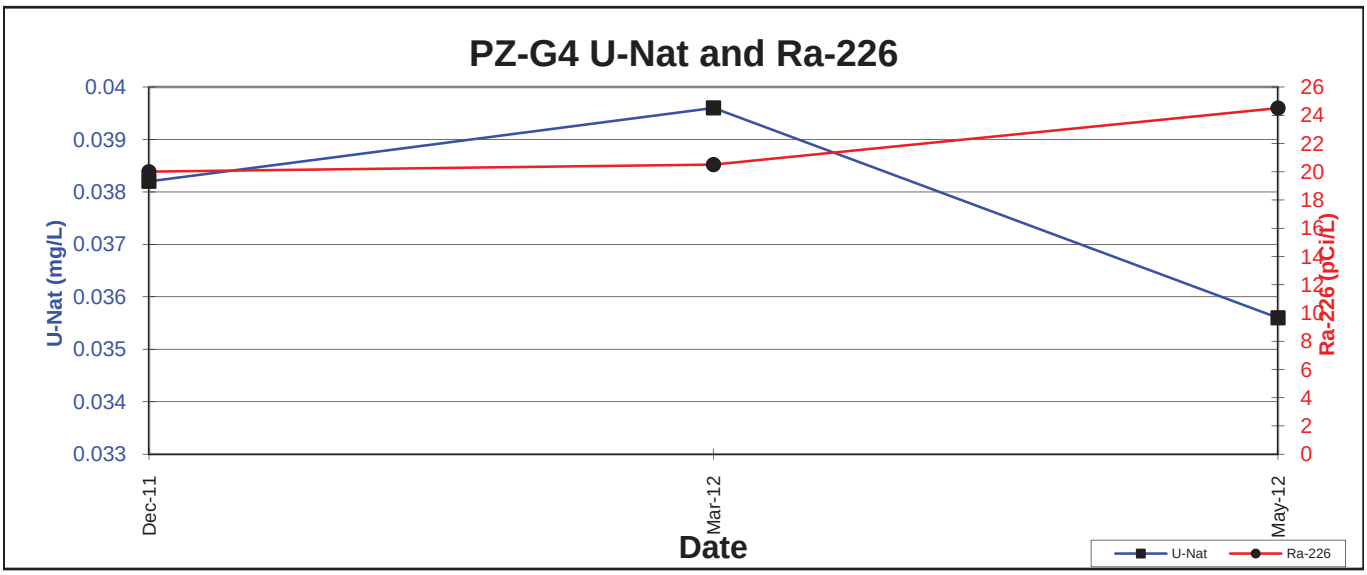

PZ-G3 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
416
414
412
410
408
406
404
402
400
398
Total Dissolved Solids (mg/L)
2330
2320
2310
2300
2290
2280
2270
2260
2250
2240
2230
Dec-11
Mar-12
May-12
Date
Bicarbonate
TDS

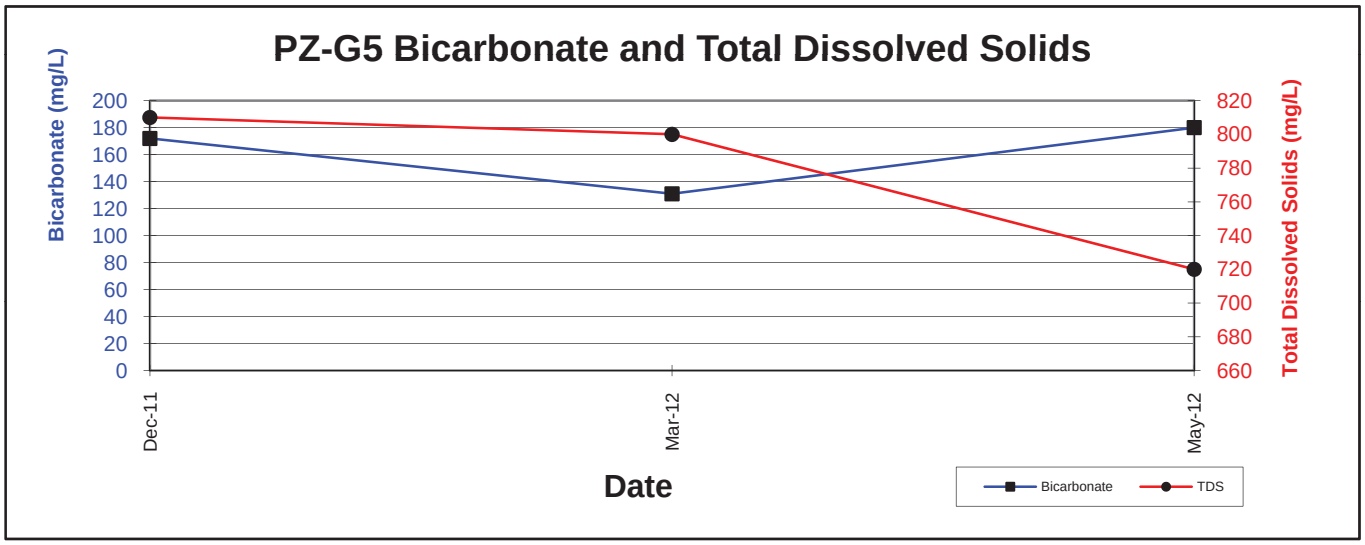

PZ-G3 Sulfate and pH
Sulfate (mg/L)
1370
1360
1350
1340
1330
1320
1310
1300
1290
1280
pH (S.U.)
10
8
6
4
2
0
Dec-11
Mar-12
May-12
Date
Sulfate
pH

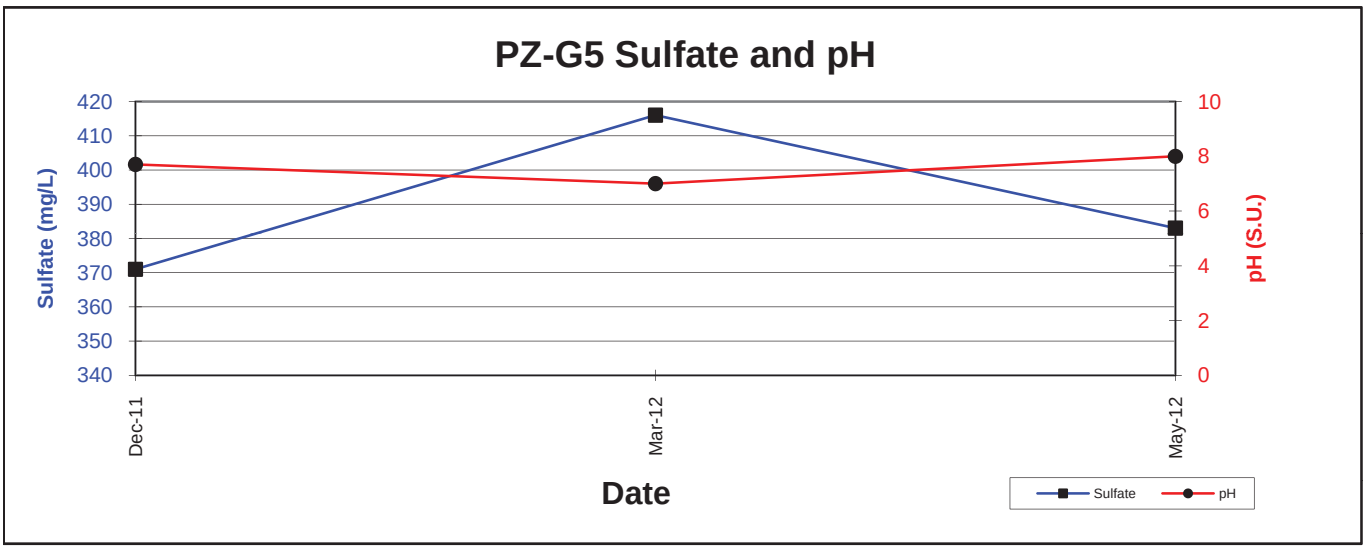

PZ-G3 U-Nat and Ra-226
U-Nat (mg/L)
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
Ra-226 (pCi/L)
12
10
8
6
4
2
0
Dec-11
Mar-12
May-12
Date
U-Nat
Ra-226

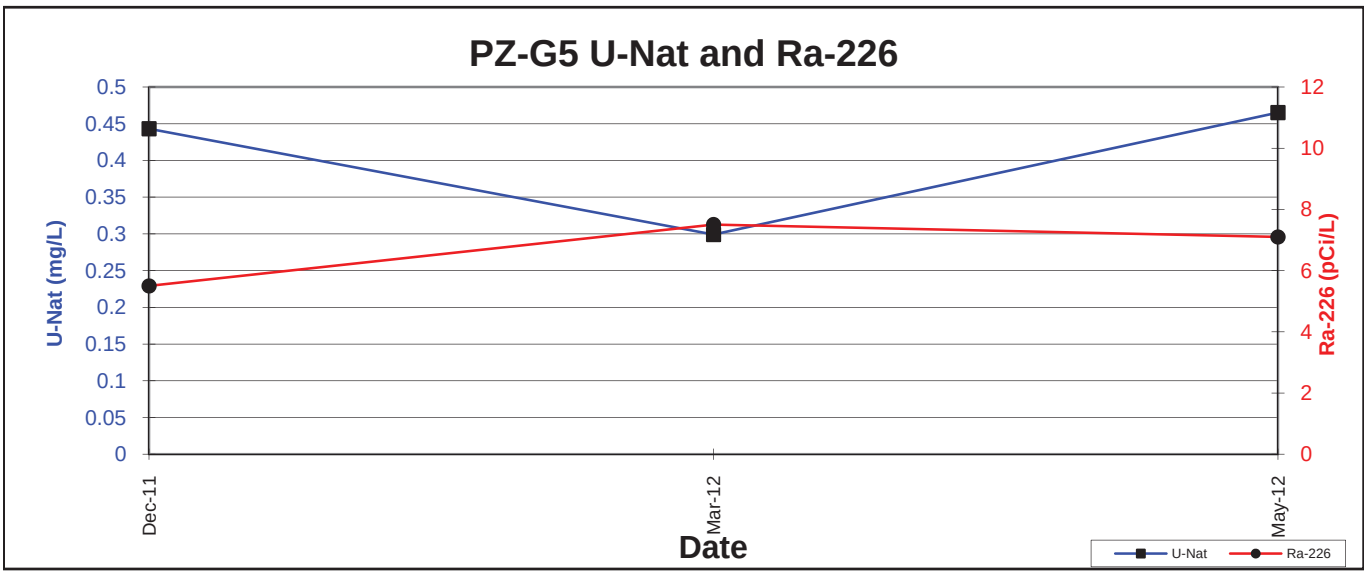

PZ-G4 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
260
255
250
245
240
235
230
225
220
215
210
Total Dissolved Solids (mg/L)
450
400
350
300
250
200
150
100
50
0
Dec-11
Mar-12
May-12
Date
Bicarbonate
TDS

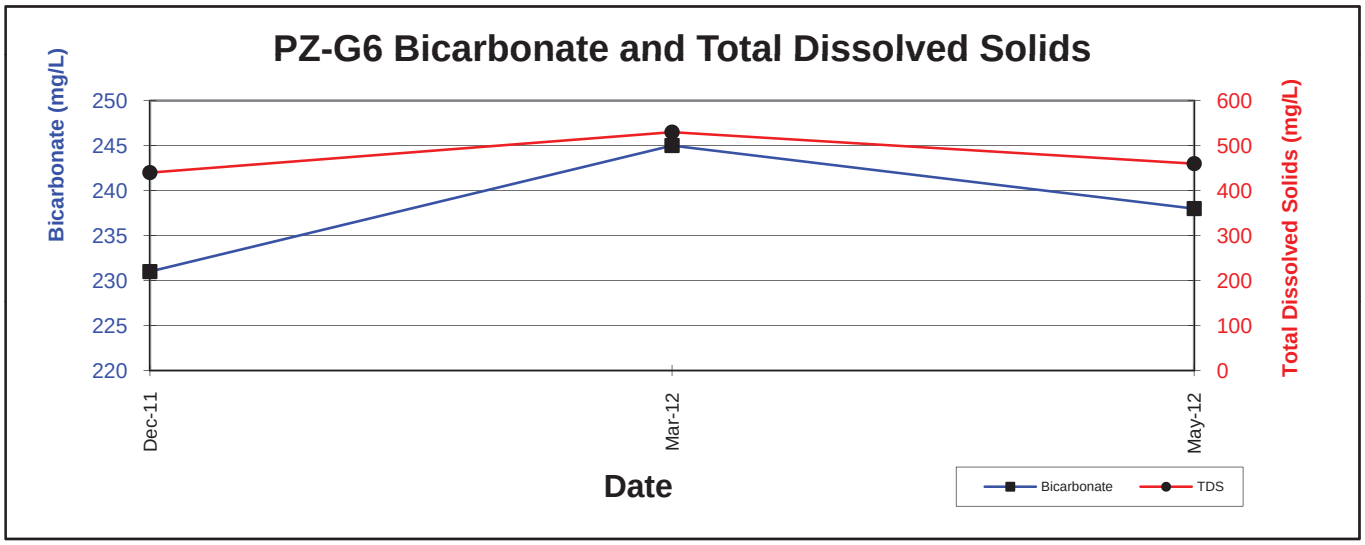

PZ-G4 Sulfate and pH
Sulfate (mg/L)
140
138
136
134
132
130
128
126
124
pH (S.U.)
10
8
6
4
2
0
Dec-11
Mar-12
May-12
Date
Sulfate
pH

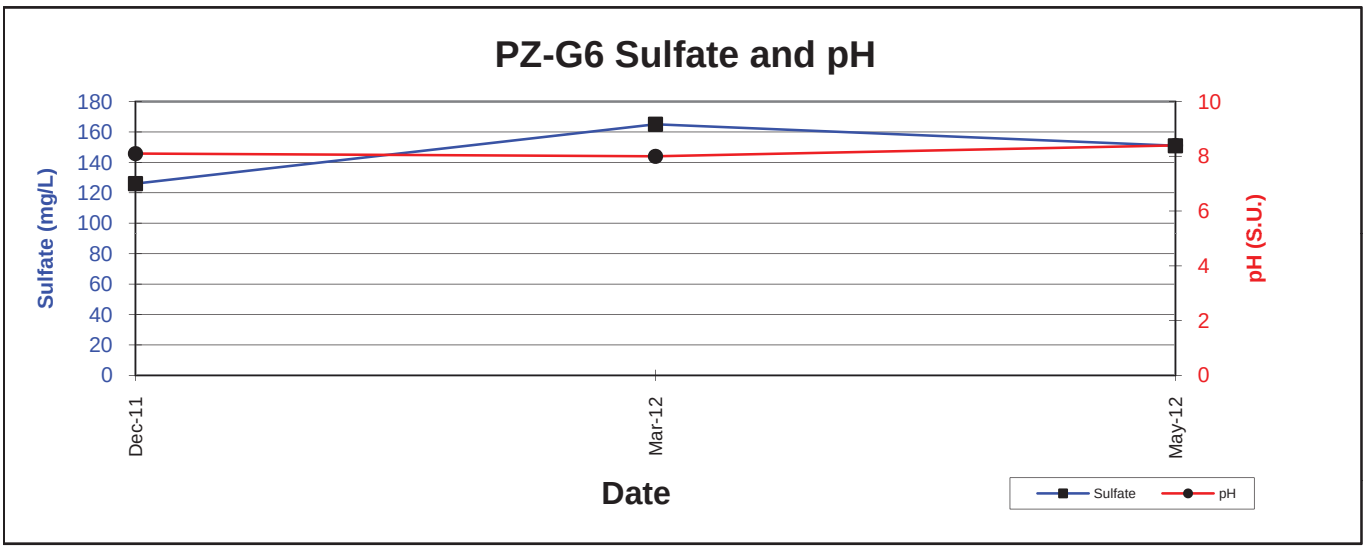

PZ-G4 U-Nat and Ra-226
U-Nat (mg/L)
0.04
0.039
0.038
0.037
0.036
0.035
0.034
0.033
Ra-226 (pCi/L)
26
24
22
20
18
16
14
12
10
8
6
4
2
0
Dec-11
Mar-12
May-12
Date
U-Nat
Ra-226

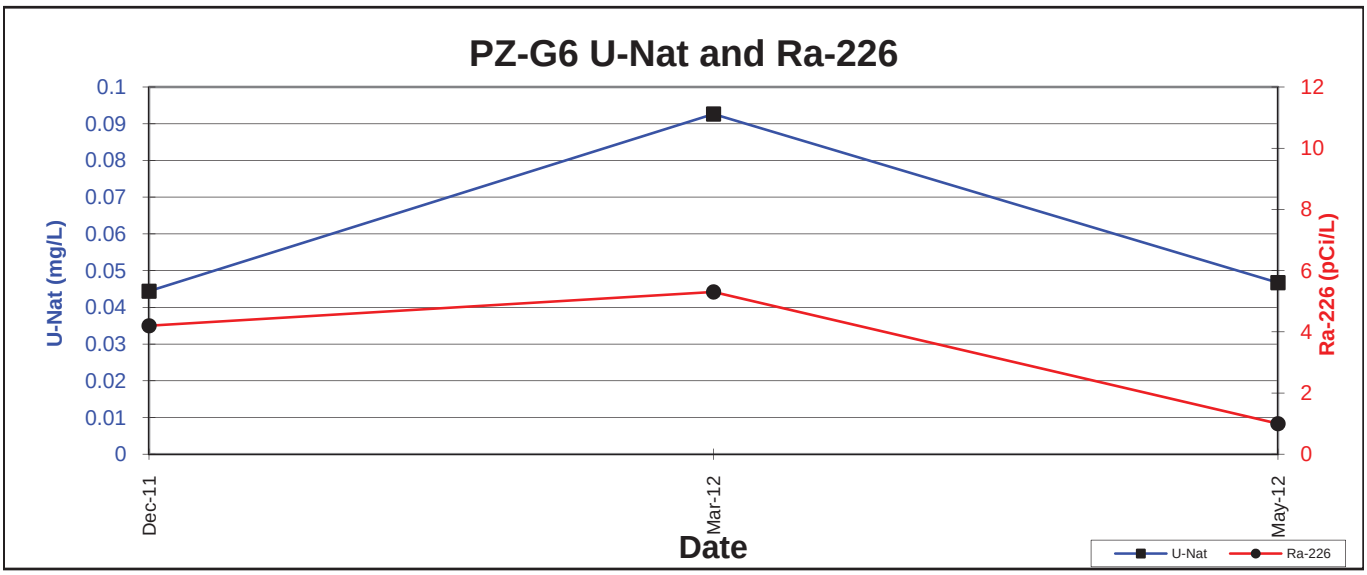

PZ-G5 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
200
180
160
140
120
100
80
60
40
20
0
820
800
780
760
740
720
700
680
660
Total Dissolved Solids (mg/L)
Dec-11
Mar-12
May-12
Date
Bicarbonate
TDS


PZ-G5 Sulfate and pH
Sulfate (mg/L)
420
410
400
390
380
370
360
350
340
10
8
6
4
2
0
pH (S.U.)
Dec-11
Mar-12
May-12
Date
Sulfate
pH


PZ-G5 U-Nat and Ra-226
U-Nat (mg/L)
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
12
10
8
6
4
2
0
Ra-226 (pCi/L)
Dec-11
Mar-12
May-12
Date
U-Nat
Ra-226

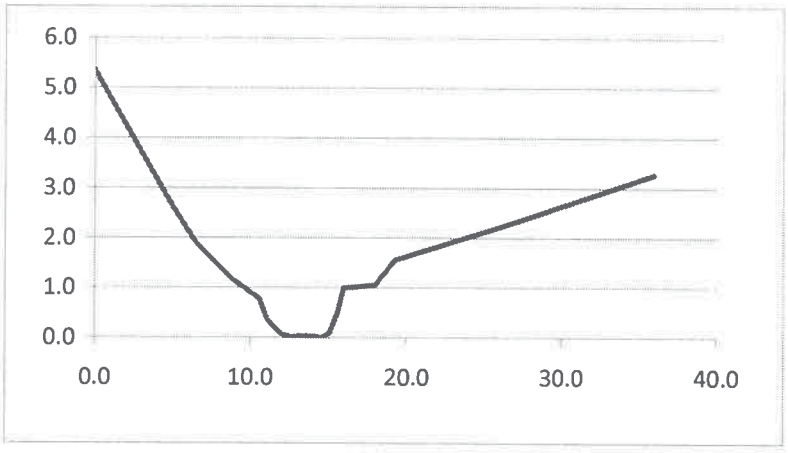

PZ-G6 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
250
245
240
235
230
225
220
Total Dissolved Solids (mg/L)
600
500
400
300
200
100
0
Dec-11
Mar-12
May-12
Date
Bicarbonate
TDS


PZ-G6 Sulfate and pH
Sulfate (mg/L)
180
160
140
120
100
80
60
40
20
0
pH (S.U.)
10
8
6
4
2
0
Dec-11
Mar-12
May-12
Date
Sulfate
pH


PZ-G6 U-Nat and Ra-226
U-Nat (mg/L)
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
Ra-226 (pCi/L)
12
10
8
6
4
2
0
Dec-11
Mar-12
May-12
Date
U-Nat
Ra-226

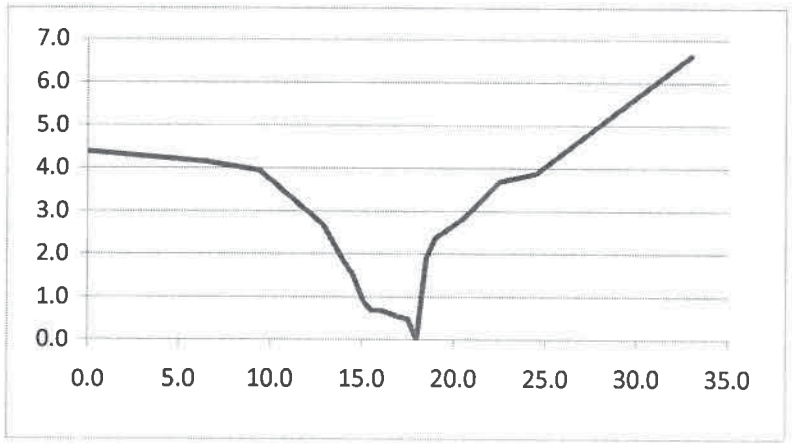
Attachment C1
Crooks Creek Cross Sections

CROOKS US
GPS: 118 Date: 6/16/10



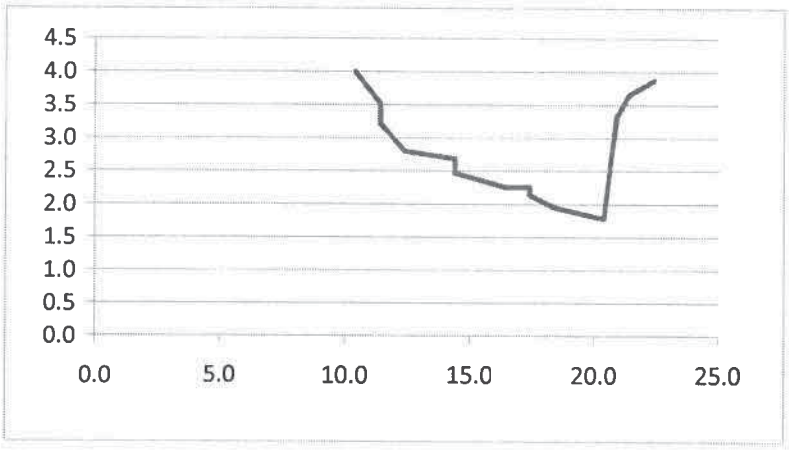
Station	Elevation
0.0	5.34
5.0	2.64
6.5	1.92
8.9	1.16
10.6	0.78
11.1	0.38
11.6	0.20
12.1	0.06
12.6	0.02
13.1	0.04
13.6	0.04
14.1	0.03
14.6	0.00
15.1	0.10
15.6	0.50
16.0	1.00
18.0	1.06
19.3	1.56
27.0	2.32
36.0	3.27

CROOKS DS
GPS: 144 Date: 6/16/10



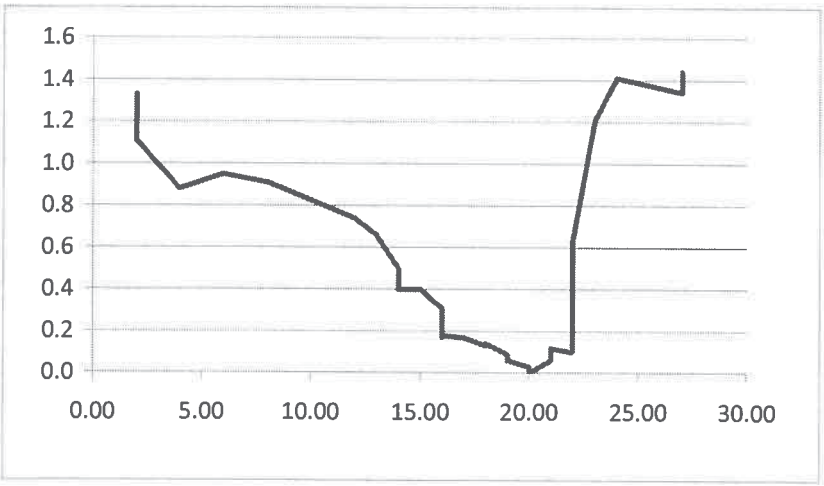
Station	Elevation
0.0	4.39
6.5	4.15
9.4	3.95
12.9	2.68
13.9	1.92
14.5	1.51
15.1	0.91
15.5	0.69
16.0	0.68
16.5	0.61
17.0	0.53
17.5	0.48
18.0	0.00
18.5	1.91
19.0	2.36
20.5	2.82
22.5	3.69
24.5	3.87
33.0	6.62

CROOKS DS - RESURVEY
Date: 5/18/11



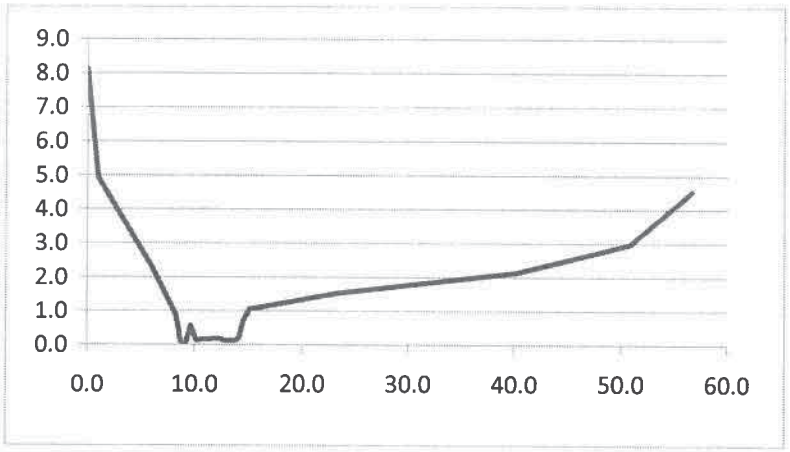
Station	Elevation
10.4	4.00
11.4	3.52
11.4	3.21
12.4	2.80
14.4	2.69
14.4	2.47
16.4	2.26
17.4	2.26
17.4	2.14
18.4	1.95
20.4	1.78
20.9	3.32
21.4	3.65
22.4	3.87

CROOKS MU (MACINTOSH UPSTREAM)



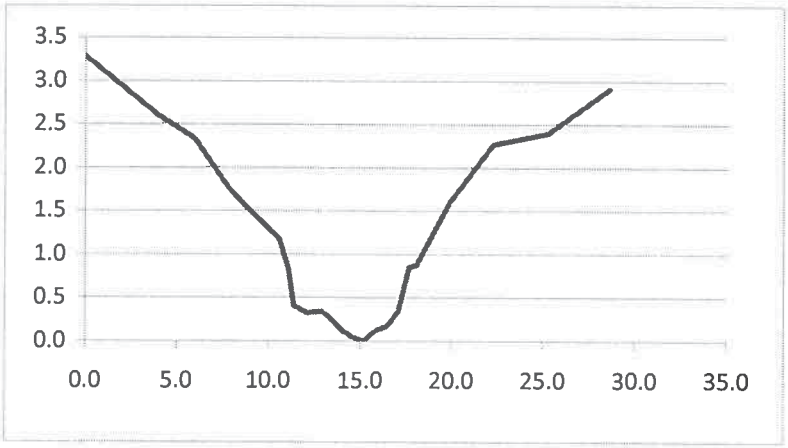
Station	Elevation
2.00	1.33
2.00	1.11
4.00	0.88
6.00	0.95
8.00	0.91
12.00	0.74
13.00	0.66
14.00	0.50
14.00	0.40
15.00	0.40
16.00	0.31
16.00	0.23
16.00	0.17
16.00	0.18
17.00	0.17
18.00	0.13
18.00	0.14
19.00	0.09
19.00	0.06
20.00	0.03
20.00	0.00
21.00	0.06
21.00	0.12
22.00	0.10
22.00	0.63
23.00	1.21
24.00	1.41
27.00	1.34
27.00	1.44

XSCC3
GPS: 137 Date: 6/18/10



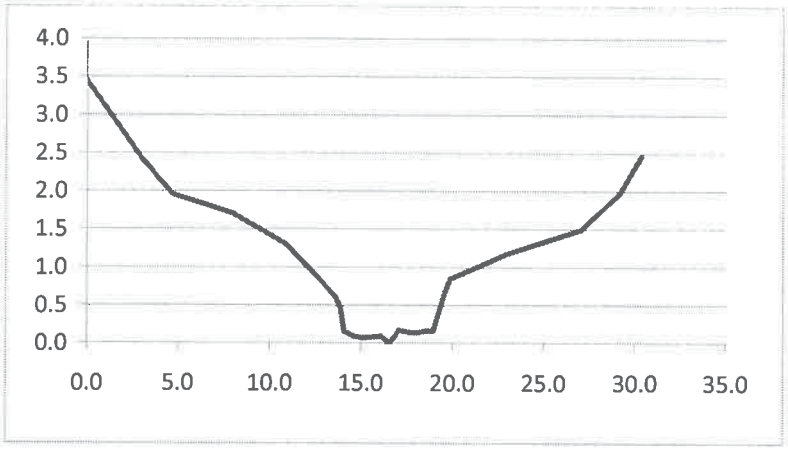
Station	Elevation
0.0	8.12
1.0	4.94
6.0	2.33
8.3	0.90
8.5	0.57
8.7	0.11
9.2	0.00
9.7	0.55
10.2	0.14
10.8	0.16
11.3	0.16
11.8	0.18
12.3	0.19
12.8	0.12
13.3	0.11
13.8	0.12
14.2	0.20
14.6	0.72
15.2	1.06
23.4	1.53
40.4	2.14
50.9	2.98
56.7	4.52

XSCC4
GPS: 138 Date: 6/18/10



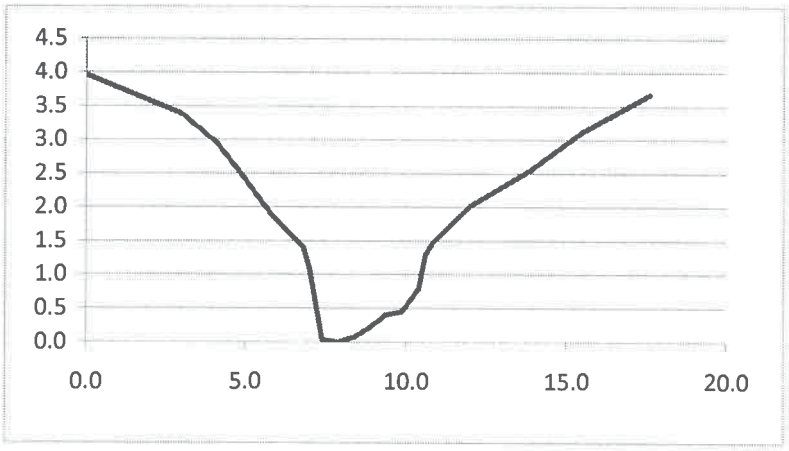
Station	Elevation
0.0	3.28
4.0	2.59
6.0	2.32
7.8	1.77
8.9	1.52
10.6	1.18
11.1	0.85
11.4	0.40
12.1	0.32
12.9	0.34
13.5	0.23
14.0	0.12
14.6	0.04
15.2	0.00
15.9	0.12
16.5	0.17
17.1	0.33
17.7	0.84
18.1	0.87
19.9	1.59
22.3	2.26
25.3	2.39
28.6	2.9

XSCC5
GPS: 141 Date: 6/18/10



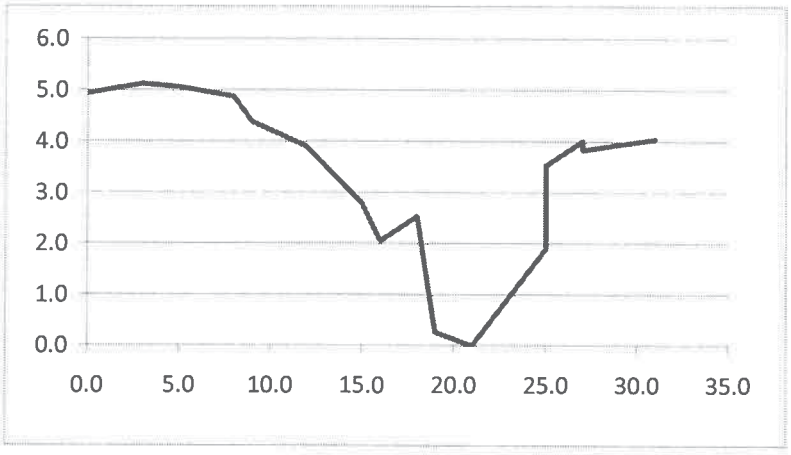
Station	Elevation
0.0	3.45
3.0	2.43
4.7	1.96
8.0	1.71
11.0	1.29
13.6	0.63
13.9	0.49
14.1	0.16
14.6	0.10
15.1	0.08
15.6	0.09
16.1	0.10
16.6	0.00
17.1	0.18
17.6	0.15
18.1	0.14
18.6	0.17
19.0	0.17
19.6	0.67
19.9	0.85
23.0	1.18
27.1	1.50
29.2	1.98
30.4	2.47

XSCC6
GPS: 143 Date: 6/18/10



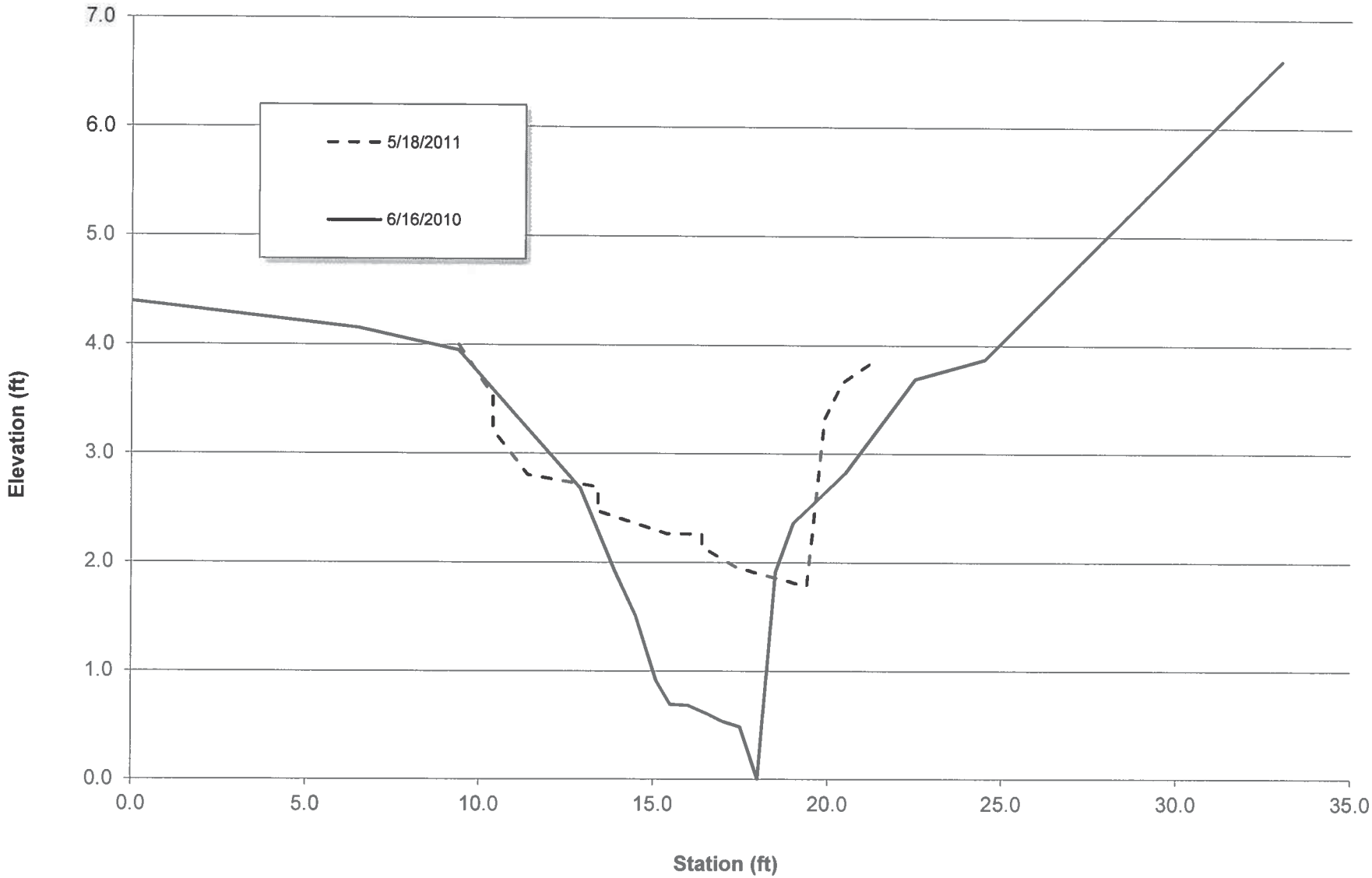
Station	Elevation
0.0	3.96
3.0	3.38
4.1	2.95
4.9	2.47
5.9	1.82
6.8	1.4
7.0	1.09
7.4	0.03
7.9	0
8.4	0.07
8.9	0.22
9.4	0.4
9.9	0.45
10.4	0.78
10.6	1.28
10.8	1.45
12.0	2.02
13.9	2.56
15.5	3.12
17.6	3.67

XSCC7
GPS: 143



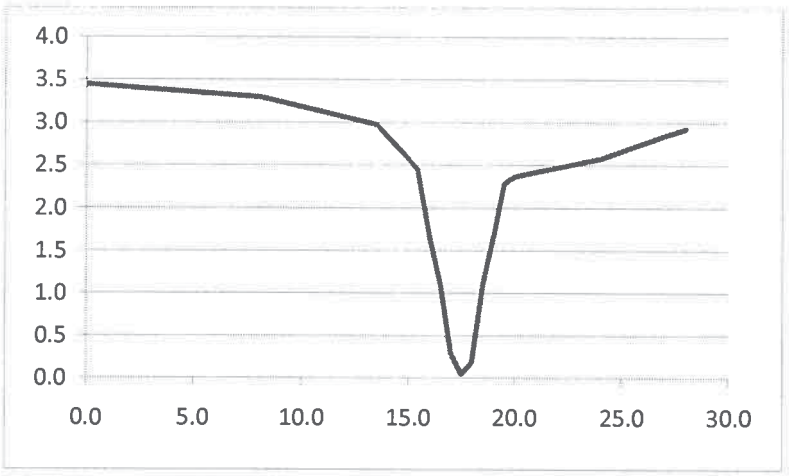
Station	Elevation
0.0	4.94
3.0	5.13
5.0	5.07
8.0	4.89
9.0	4.39
12.0	3.90
15.0	2.80
16.0	2.06
18.0	2.54
19.0	0.27
20.0	0.14
21.0	0.00
25.0	1.90
25.0	3.54
27.0	4.01
27.0	3.84
31.0	4.05

Attachment C2
Comparison – Channel Development Crooks DS 2010-2011


7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Elevation (ft)
5/18/2011
6/16/2010
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
Station (ft)

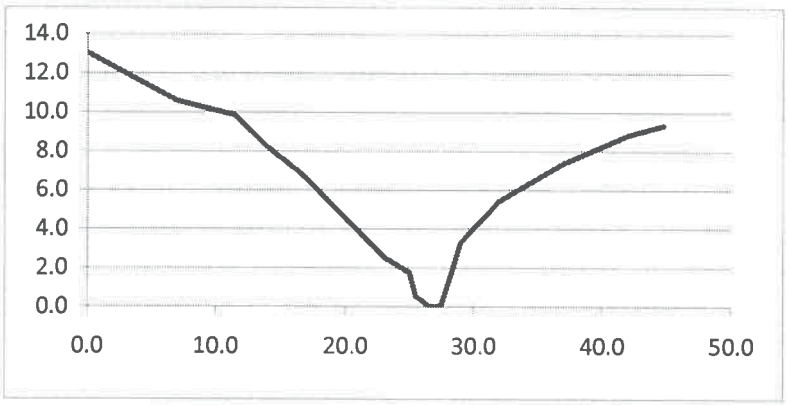
Attachment D
Ephemeral Tributary Cross Section

XSET1
GPS: 121 Date: 6/17/10



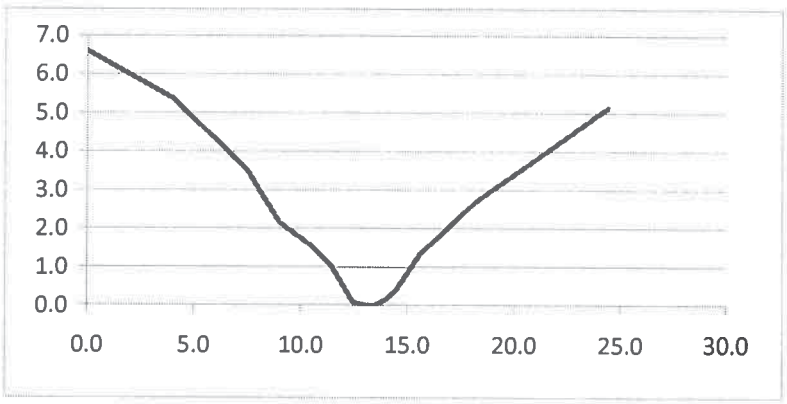
Station	Elevation
0.0	3.45
8.0	3.30
13.5	2.98
15.4	2.46
16.0	1.67
16.5	1.12
17.0	0.31
17.5	0.05
18.0	0.19
18.5	1.09
19.0	1.67
19.5	2.29
20.0	2.37
24.0	2.58
27.0	2.85
28.0	2.93

XSET2
GPS: 123 Date: 6/17/10



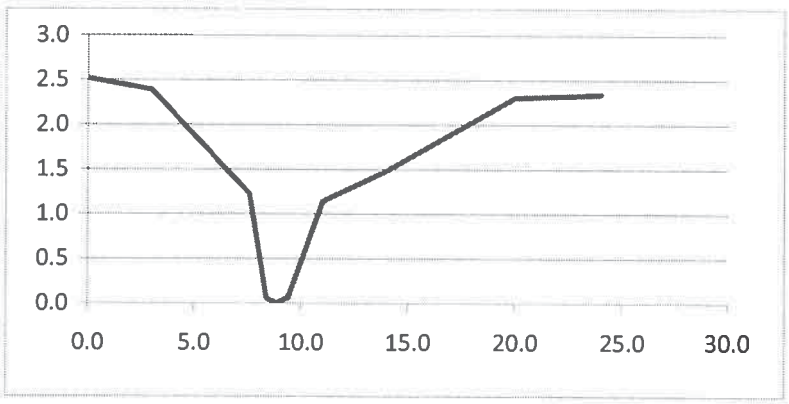
Station	Elevation
0.0	13.01
7.0	10.55
11.5	9.80
14.0	8.17
17.0	6.58
20.0	4.55
23.0	2.54
25.0	1.74
25.5	0.54
26.0	0.30
26.5	0.05
27.0	0.00
27.5	0.08
28.0	1.13
29.0	3.28
32.0	5.43
37	7.35
42	8.8
44.8	9.29

XSET3
GPS: 124 Date: 6/17/10



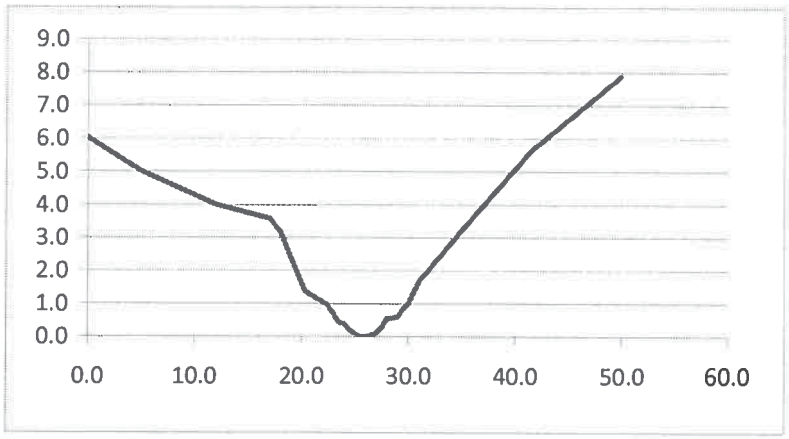
Station	Elevation
0.0	6.60
4.0	5.37
7.5	3.53
9.0	2.16
10.5	1.56
11.5	1.00
12.0	0.55
12.5	0.09
13.0	0.02
13.5	0.00
14.0	0.15
14.5	0.41
15.6	1.34
18.2	2.69
24.4	5.13

XSET4
GPS: 127 Date: 6/17/10



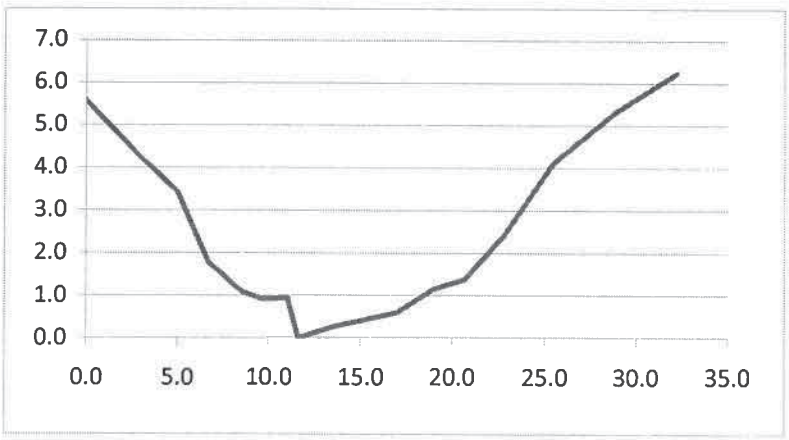
Station	Elevation
0.0	2.52
3.0	2.39
7.6	1.22
8.4	0.05
8.9	0.00
9.4	0.06
10.0	0.45
11.0	1.14
14.0	1.48
20.0	2.30
24.0	2.34

XSET5
GPS: 128 Date: 6/17/10



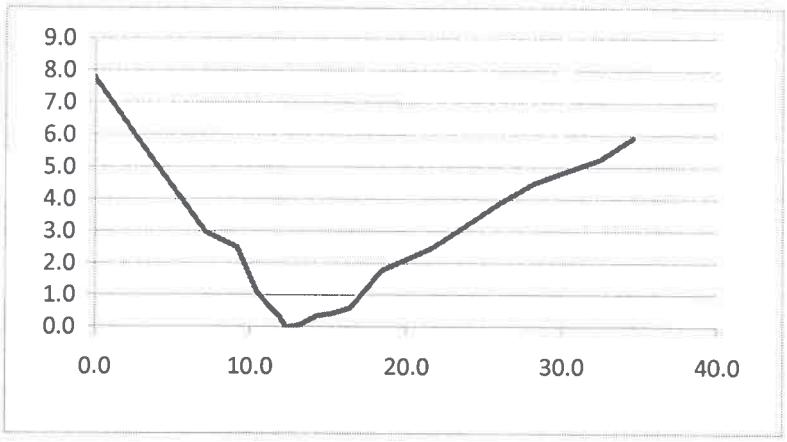
Station	Elevation
0.0	6.04
5.0	5.02
12.0	4.01
17.0	3.59
18.0	3.19
19.0	2.42
20.4	1.37
22.4	0.98
23.0	0.71
23.5	0.45
24.0	0.39
24.5	0.21
25.0	0.11
25.5	0.00
26.0	0.00
26.5	0.05
27.0	0.11
27.5	0.27
28.0	0.55
28.5	0.58
29.0	0.61
29.5	0.82
30.0	1.01
31.0	1.68
35.0	3.23
41.5	5.67
49.9	7.89

XSET6
GPS: 131 Date: 6/17/10



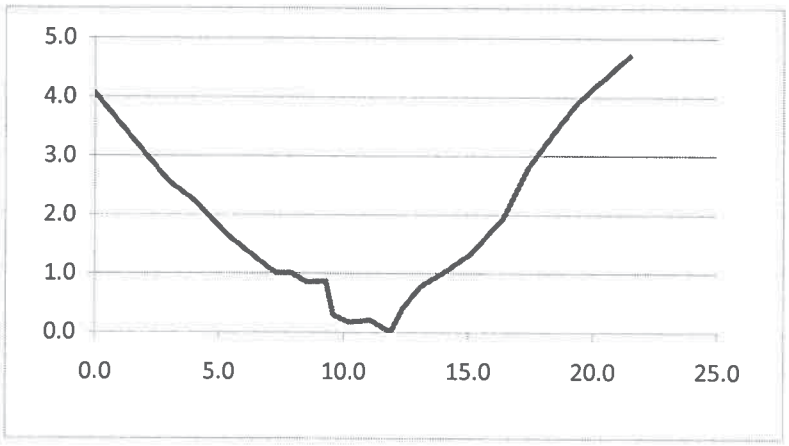
Station	Elevation
0.0	5.58
3.0	4.23
5.0	3.44
6.7	1.78
8.5	1.10
9.6	0.92
11.0	0.94
11.6	0.00
13.4	0.26
17.0	0.60
19.0	1.15
20.7	1.38
22.8	2.40
25.5	4.12
28.9	5.33
32.2	6.23

XSET7
GPS: 133 Date: 6/17/10



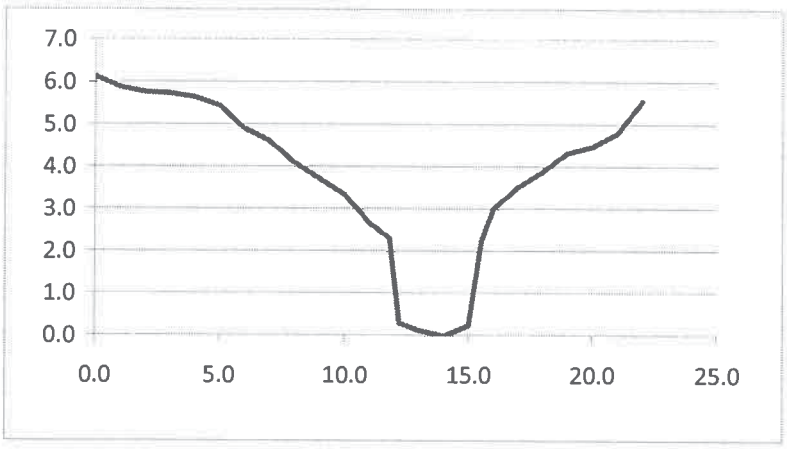
Station	Elevation
0.0	7.77
4.0	5.06
7.2	2.96
9.2	2.50
10.5	1.08
11.9	0.32
12.3	0.00
13.2	0.09
14.3	0.37
15.3	0.43
16.4	0.61
17.4	1.16
18.4	1.78
21.6	2.47
23.5	3.08
25.9	3.86
28.2	4.51
32.5	5.26
34.6	5.91

XSET8
GPS: 134 Date: 6/17/10



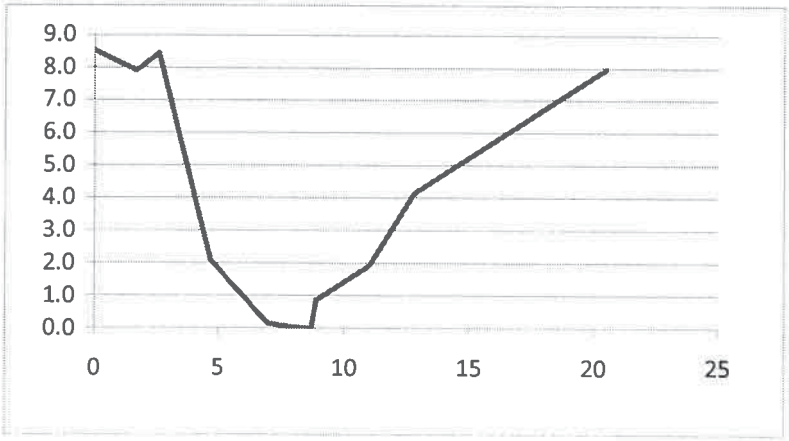
Station	Elevation
0.0	4.05
3.0	2.55
4.1	2.21
5.3	1.67
6.6	1.23
7.3	1.01
7.9	1.00
8.5	0.85
9.3	0.87
9.6	0.29
10.2	0.17
11.1	0.21
11.9	0.00
12.4	0.40
13.1	0.78
14.1	1.04
15.1	1.33
16.4	1.94
17.4	2.79
18.5	3.43
19.4	3.91
21.5	4.69

XSET9
GPS: 341 Date: 8/16/10



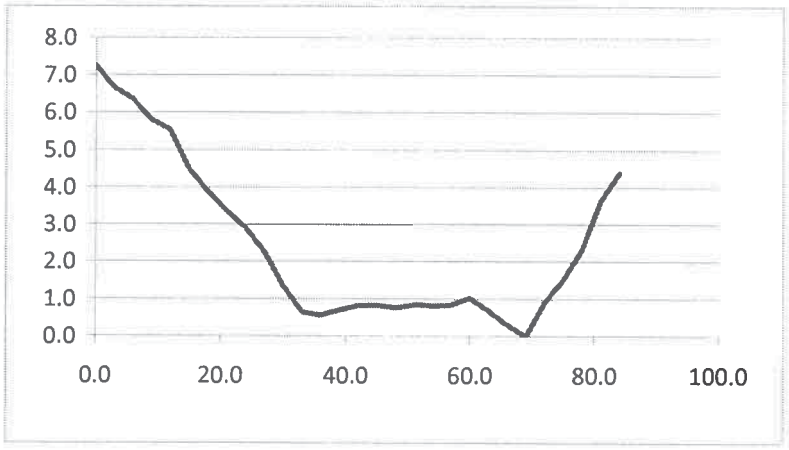
Station	Elevation
0.0	6.14
1.0	5.88
2.0	5.77
3.0	5.74
4.0	5.65
5.0	5.44
6.0	4.9
7.0	4.61
8.0	4.09
9.0	3.71
10.0	3.34
11.0	2.67
11.8	2.31
12.2	0.31
13.0	0.13
14.0	0
15.0	0.24
15.5	2.25
16.0	3.02
17.0	3.53
18.0	3.9
19.0	4.33
20.0	4.49
21.0	4.81
22.0	5.56

XSET10
GPS: 342 Date: 8/16/10



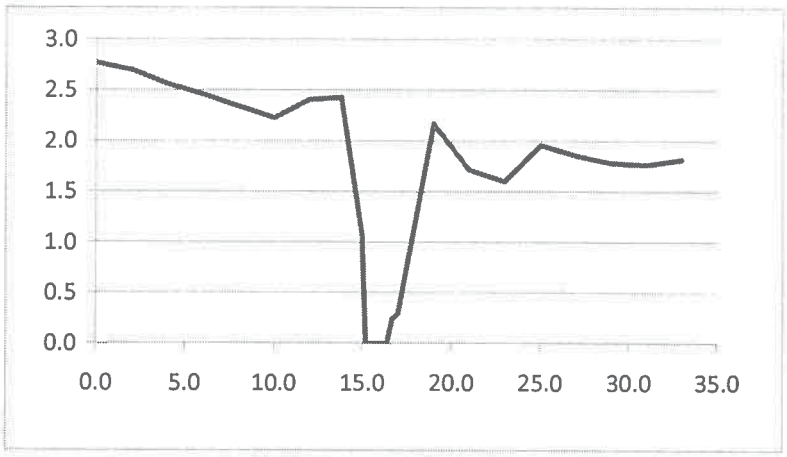
Station	Elevation
0	8.51
1.7	7.88
2.6	8.42
4.7	2.07
7	0.15
8	0.04
8.7	0
8.9	0.86
11	1.91
12.8	4.14
20.5	7.93

XSET11
GPS: 344 Date: 8/16/10



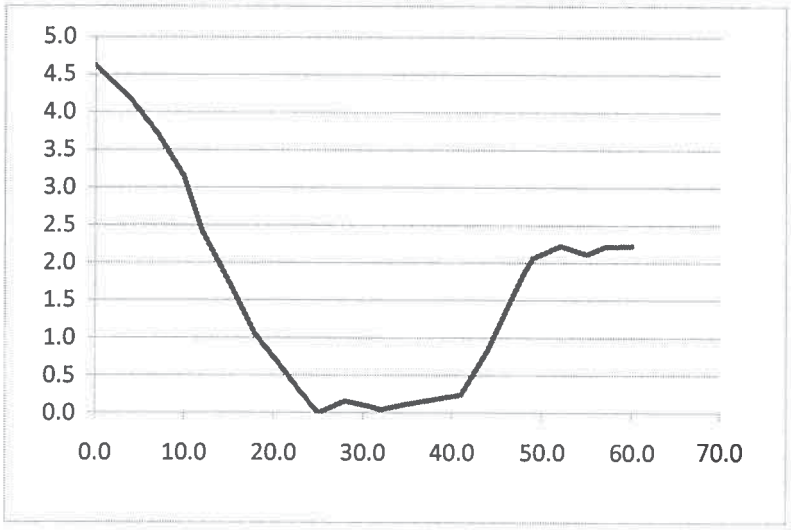
Station	Elevation
0.0	7.26
3.0	6.67
6.0	6.37
9.0	5.82
12.0	5.54
15.0	4.50
18.0	3.89
21.0	3.37
24.0	2.93
27.0	2.28
30.0	1.35
33.0	0.65
36.0	0.57
39.0	0.70
42.0	0.83
45.0	0.84
48.0	0.78
51.5	0.86
54.0	0.83
57.0	0.85
60.0	1.03
63.0	0.69
66.0	0.31
69.0	0.00
72.0	0.91
75.0	1.52
78.0	2.34
81.0	3.65
84.0	4.39

XSET12
GPS: 345 Date: 8/16/10



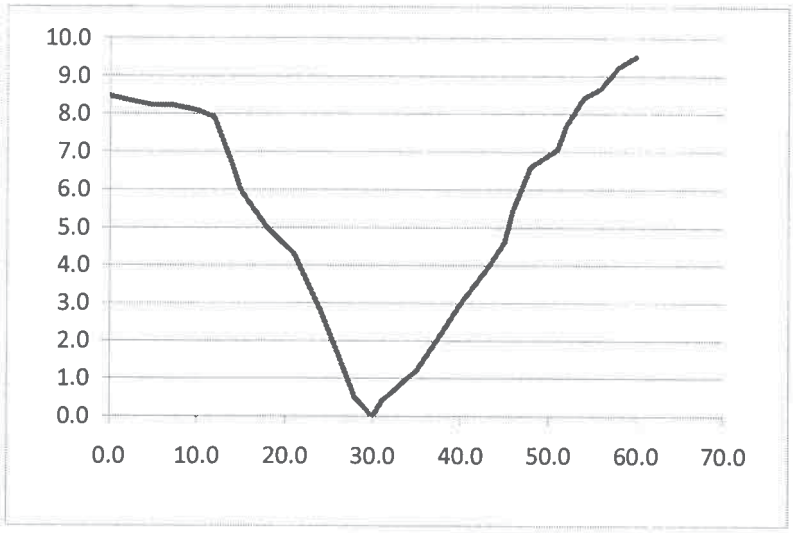
Station	Elevation
0.0	2.77
2.0	2.7
4.0	2.56
6.0	2.46
8.0	2.34
10.0	2.23
12.0	2.41
13.8	2.43
15.0	1.07
15.2	0
16.4	0
16.7	0.24
17.0	0.29
19.0	2.17
21.0	1.72
23.0	1.6
25.0	1.96
27.0	1.86
29.0	1.79
31.0	1.77
33.0	1.82

XSET13
GPS: 147 Date: 5/17/11



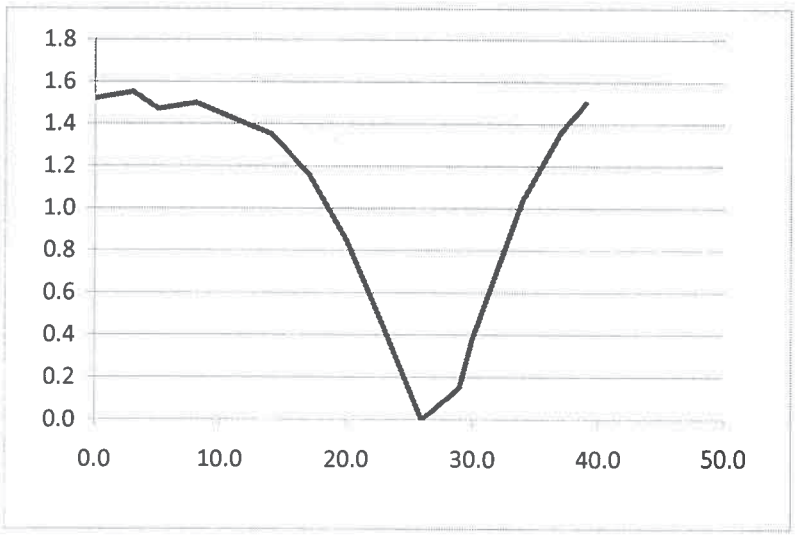
Station	Elevation
0.0	4.62
2.0	4.39
4.0	4.16
7.0	3.70
10.0	3.14
12.0	2.42
15.0	1.75
18.0	1.05
21.0	0.59
23.0	0.28
25.0	0.00
28.0	0.16
31.0	0.08
32.0	0.04
35.0	0.12
36.0	0.14
41.0	0.24
44.0	0.84
46.0	1.35
48.0	1.86
49.0	2.06
52.0	2.22
55.0	2.11
57.0	2.21
60.0	2.22

XSET14
GPS: 150 Date: 5/17/11



Station	Elevation
0.0	8.47
2.0	8.37
5.0	8.23
7.0	8.24
10.0	8.10
12.0	7.91
14.0	6.70
15.0	5.98
18.0	4.98
21.0	4.33
24.0	2.82
26.0	1.67
28.0	0.49
30.0	0.00
31.0	0.39
35.0	1.22
37.0	1.90
40.0	2.99
43.0	3.90
45.0	4.62
46.0	5.48
48.0	6.61
51.0	7.07
52.0	7.69
54.0	8.43
56.0	8.67
58.0	9.23
60.0	9.51

XSET15
GPS:151 Date: 5/17/11



Station	Elevation
0.0	1.52
3.0	1.55
5.0	1.47
8.0	1.50
14.0	1.35
17.0	1.16
20.0	0.85
23.0	0.43
26.0	0.00
29.0	0.15
30.0	0.38
32.0	0.71
34.0	1.04
37.0	1.36
39.0	1.50