2020 King I & II Mines Annual Hydrology Report

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GCC Energy, LLC

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RESOURCE HYDROGEOLOGIC SERVICES

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INTRODUCTION

The Annual Hydrology Report is completed at the conclusion of each year to compile and interpret hydrologic data related to GCC Energy's King I and II Mine operations. This satisfies a requirement of the Colorado Department of Reclamation, Mining and Safety (CDRMS) Mining Permit C-1981-035. To best support these efforts, GCC Energy (GCC) maintains a quality assurance/quality control (QA/QC) program to:

- Conduct GCC compliance staff training on water quality sampling for all GCC monitoring locations, equipment and methodologies, with detailed written procedures for each monitoring location provided.
- Collect all water quality field data with an industry-standard multi-parameter device with electronic data deliverable (EDD) output for all field and calibration data.
- Enter and document all water quality field monitoring data by mobile (digital/paperless) field sampling logs specific to surface water, groundwater and spring/seep sampling locations which are automatically distributed to a third party, Resource Hydrogeologic Services (RHS) for same-day review following sampling.
- Implement industry-standard, 10% random QA/QC lab sample submittals for duplicate and field blank water quality samples.
- Utilize EDDs produced by the contract environmental analytical laboratory for all data analyses.
- Compile and manage all water quality data in a geo-referenced Microsoft Access database.

HYDROLOGIC MONITORING

HYDROLOGIC MONITORING LOCATIONS

GCC monitored twenty-seven (27) hydrologic compliance locations in 2020. Additionally, three wells are monitored under an agreement between GCC and the Ute Mountain Ute Tribe (UMUT) and so are discussed here bringing the total number of monitored locations to thirty (30). Three (3) seeps are also monitored voluntarily twice annually, which is during spring runoff and again during late fall baseflow. These locations are represented by two types of water sources: surface water, seeps and groundwater. Groundwater is monitored through sample collection from dedicated monitoring wells and surface water and seeps are monitored by grab samples at designated locations.

Table 1 lists and **Figure 1** shows the total of thirty (30) 2020 routine quarterly hydrologic monitoring locations and their spatial relation to the King I and II Mines.

HYDROLOGIC MONITORING DATA COLLECTION

Hydrologic monitoring data collection was expanded in December 2018 in number of locations and continued through 2020. Protocols for establishment of new hydrologic monitoring locations, as initiated in 2016, were also applied to these locations. The frequency of field parameter monitoring for new

locations is monthly for a one-year period, following the CDRMS "Guidelines for the Collection of Baseline Water Quality and Overburden Geochemistry Data" (1984). The initial monthly field parameter monitoring schedule is intended to more fully characterize any potential seasonal variation in the hydrologic system. Field parameters are collected with an In-Situ AquaTroll multi-parameter sonde at all location types, utilizing an industry-standard low-flow cell system for the monitoring wells. The specific field parameters monitored during each event are listed in **Tables 2, 3 and 4.** The purpose of the expanded analytical suite was to collect water quality data in line with the CDRMS "Guidelines for the Collection of Baseline Water Quality and Overburden Geochemistry Data" (1984), which were adopted in the Mining Permit Technical Revision-26. Water samples are collected quarterly at compliance monitoring locations for laboratory analysis. Depth to water measurements are also documented for wells, whereas flow rates are measured as applicable for surface water monitoring locations. This baseline data collection period is intended to characterize the pre-mining environmental conditions in order to shape the long-term monitoring plan appropriately to evaluate potential mining effects on the hydrologic system. This was intended as a one-year, four-quarter period to evaluate seasonal changes that may occur over a typical year; however, the baseline laboratory analytical suite analyses have continued through 2020 for all compliance monitoring locations per the mine permit. These laboratory analytical suites are approved by CDRMS in TR-26 and are presented in **Tables 2, 3 and 4,** by water source type. The red-highlighted parameters identify those that were added to the pre-2016 compliance to become the current compliance suite.

Most wet bedrock cluster monitoring wells are instrumented with dedicated industry-standard low-flow bladder pump groundwater sampling systems. The pumps are set to the approximate depth of the well screen mid-points for the A, MI, LM and PL wells, and set to near bottom of the C wells to allow for micro-purge sampling methodology. The exception is for wells MW-8-MI, MW-8-LM, which have relatively high static and pumping water levels, allowing use of dedicated stainless steel 12-volt electric submersible pumps with the pump or extended pump intake set to the approximate depth of well screen mid-points. The dry bedrock cluster wells (MW-2-C, MW-2-A, MW-2-MI, MW-6-C) are not instrumented with any groundwater sampling pumps and are monitored for water level only. MW-1-MI was instrumented with a bladder pump, however after the initial several sample events this well dried up and remained dry (or effectively dry for purposes of obtaining a water sample) for two years. Prior to the 2019 quarter four monitoring event the pump system was removed to make the well easier to access as a water level-only monitoring location. Similarly, MW-6-MI is also currently instrumented with a bladder pump, however the well dried up after several initial monitoring events following installation. This well will continue to be monitored quarterly for water level and if water is detected, the pump will be operated to attempt to collect a sample for field parameters and laboratory analysis if adequate volume can be collected.

HYDROLOGIC MONITORING DATA ANALYSIS

Analytical and field parameter data from all 2016-2020 sampling is presented in summary tables in the **Attachment**. Full laboratory reports are not included here as they have been submitted to CDRMS

quarterly following each sampling event. The quarterly-updated analytical summary tables found in the **Attachment** are also available in PDF format at:

http://www.gccenergy.net/water_monitoring_results.php

A graphical analysis of water quality results from surface water, alluvial aquifer, and bedrock groundwater monitoring stations, is provided below in Stiff diagrams for major ions and in time series plots for selected trace constituents. The natural variability of water quality in bedrock and surface water units is demonstrated in these plots. Although the King Mines have operated for many years, the monitoring data presented within this report are believed to represent natural "baseline" water quality.

Figures 2 through 4 and 8 through 18 show major ion concentrations at each monitoring site for the last four quarters of monitoring data. Concentrations are given in milli-equivalents (milligrams of solute mass divided by ionic weight and multiplied by ionic charge) per liter so the ionic balance between positive and negative ions can be seen in each analysis.

SURFACE WATER

The Hay Gulch Ditch is a year-round diversion from the La Plata River to the north of approximately 0.5 to 1.5 cubic feet per second (cfs) into the gulch, which is otherwise an intermittent drainage that would flow only during storms or major thaw events. Water infiltrates from spreader dikes and infiltrates the alluvium, and return flows in the ditch are collected in Mormon Reservoir approximately nine miles downstream of the King II Mine, near the confluence with the lower La Plata River. The Huntington Ditch and Pipeline also divert water from the upper La Plata River to a collection point above Hay Gulch for use by the King II Mine, from which water is consumed by the mine principally for underground dust control with no waste or return flow. This water has been accounted for entirely as moisture in ventilation air. (CDS Environmental Services LLC, 2014, Water Balance Study for the King II Mine)

Figure 2 shows major ion compositions in Stiff diagrams for the Hay Gulch Ditch Upgradient and Downgradient locations. The location of each sample site is shown on **Figure 1**. The units of concentration are milli-equivalents per liter, at the same scale in the plots. In general, the water type in the ditch is calcium-magnesium-bicarbonate type. The ditch picks up some salinity from the Hay Gulch valley floor in this reach, but the reservoir has significantly greater concentrations of most constituents except bicarbonate (alkalinity).

Measured pH of surface water in Hay Gulch Ditch is neutral to alkaline (pH 7.6 to 8.7), with concentrations of nitrate, total organic carbon (TOC), and trace metals all below the applicable drinking water standards.

ALLUVIAL GROUNDWATER

Alluvial groundwater monitoring, previously limited to Hay Gulch, was expanded to include East Alkali Gulch beginning in quarter four of 2018. The purpose of this expansion is for baseline data collection upgradient (MW-7-EAA) and downgradient (MW-8-EAA) of the proposed low cover crossing which would allow access from the existing King II Mine underground workings to the coal reserves within the proposed Dunn Ranch lease extension on the west side of East Alkali Gulch.

Four alluvial wells in Hay Gulch monitor the level and quality of groundwater in the alluvial aquifer. The Wiltse well, near the King I portal and waste rock site, has been monitored for thirty-eight years, and was once used for water supply in the King I Mine; Well #1 Upgradient was a former water well for a Ute Mountain Ute Tribe homestead of unknown installation date. The other two wells were installed by GCC for King II operational monitoring. Wells #1 Upgradient and #2 Downgradient are above and below the intermittent drainage where the King II portal is located, and MW-HGA-4 is adjacent to the upstream ditch sampling point, as shown in **Figure 1**.

Alluvial Groundwater Quality

Alluvial groundwater quality in the Hay Gulch and East Alkali Gulch is spatially and temporally variable. The unconsolidated alluvial sediments in each of these areas are a heterogeneous composition of fine sand, silt, clay, and coal fragments with lenses of channel gravel, resulting in the variable water quality observed. **Figure 3** shows the major ion concentrations at four Hay Gulch and two East Alkali Gulch alluvial wells in Stiff diagrams, in which the spatial variation is evident.

MW-HGA-4 at the confluence of Roberts Gulch and has similar water chemistry as the Hay Gulch ditch water (**Figure 2).** Well #1 Upgradient and Well #2 Downgradient are also in Hay Gulch below the King I portal and King II portal, respectively. Alluvial groundwater chemistry in these locations is similar to the chemistry observed in MW-HGA-4, with some minor differences resulting from localized variation in lithology. The low observed calcium concentrations at Well #1 Upgradient are likely from cation exchange occurring from bentonite hydrolysis from the well collar. The alluvial groundwater in the Wiltse well likely results from similar processes, such as the dissolution of gypsum, contributing to the overall dissolved constituent load. Factors influencing the alluvial groundwater chemistry likely include variable alluvium matrix materials (sand-silt-coal fines with coarser channel fill stringers), proximity of coal, and uneven application of irrigation. Because of the potential for greater sulfate concentrations in the Hay Gulch alluvium, as evidenced in the Wiltse well, alluvial groundwater is not widely used for consumption.

Alluvial groundwater chemistry in East Alkali Gulch is monitored at MW-7-EAA and MW-8-EAA. In this area, the sulfate and dissolved solids component in groundwater is greater, similar to observed water quality in the Wiltse well. These observed differences in groundwater quality reflect the

heterogeneity of the alluvial sediments and the contributions of localized evaporative salts (e.g., gypsum) to groundwater quality.

Measured pH of alluvial groundwater in Hay Gulch and East Alkali Gulch is neutral (pH 6.9-7.6), with concentrations of nitrate, total organic carbon (TOC), and trace constituents below the applicable drinking water standards. Exceptions include iron and manganese exceedances of secondary water quality standards, 0.3 mg/L and 0.05 mg/L, respectively. Time series plots of iron and manganese concentrations for the alluvial groundwater monitoring locations are shown in **Figure 4**. In Hay Gulch, upgradient locations MW-HGA-4 and MW #1 Upgradient contain the greatest concentrations of iron, and all locations have elevated manganese. Elevated iron and manganese concentrations are also observed in East Alkali Gulch alluvium, and generally reflect the interaction of groundwater with the marine shales and sandstone deposits.

Seep-2 and Seep-3 were identified and established as monitoring locations in East Alkali Gulch in 2017 and 2020, respectively. Details of the spring and seep monitoring program are documented in the 2020 Spring & Seep Survey report (RHS 2020). Water chemistry results from Seep-2 and Seep-3 trend with the water quality observed at alluvial groundwater monitoring locations MW-7-EAA and MW-8-EAA (**Figure 3).** Concentrations of iron and manganese observed in the seeps is similar to other downgradient locations (**Figure 4**), in which some exceedances of secondary standards occur, but concentrations are less than observed in the upgradient alluvial groundwater locations, indicating decreasing concentrations of trace constituents along flow paths.

Alluvial Groundwater Level

Static groundwater levels at all alluvial monitoring wells were measured and documented per CDRMS compliance requirements at the time of each sampling event. The groundwater hydrograph for the Hay Gulch wells over the entire period of historical record in **Figure 5** shows fairly substantial seasonal variability at all four wells over time which is not only related to variability in precipitation but also subject to the variability in flood irrigation cycles of Hay Gulch irrigated pasture. Water levels show distinct increase with the extreme precipitation of the winter of 2018-2019 with peak levels near ground surface in the spring of 2019. The groundwater hydrograph for East Alkali Gulch in **Figure 6** represents the first two years of monitoring; the fluctuation of the water table measured in both MW-7-EAA and MW-8-EAA was within one foot. The exception was the August 2020 measured level at MW-8-EAA, which showed an increase of approximately six feet. Given the timing of this report preparation, a subsequent 2020Q4 monitoring event in November has already occurred with measured level at MW-8-EAA found to be in line with the typical consistent level documented since its construction in December 2018. This suggests measurement error by misreading the water level tape during the 2020Q3 monitoring event. Aside from the anomalous measured water level at the last water year 2020 MW-8-EAA monitoring event, based on the monitoring period, this indicates that East Alkali

Gulch does not appear to be subject to the same magnitude of seasonal water table fluctuation as the irrigated Hay Gulch alluvium.

A water table elevation contour map for the alluvium in the vicinity of the King Mines is presented as **Figure 7**. This figure compiles water levels reported on CDWR Well Construction and Test Reports, converted to elevation for the associated water wells. Some of these measurements are several decades in the past, with a subset of the wells utilized in a 1983 USGS Level Survey. A significant portion of these data points are in a separate but adjacent La Plata River watershed, however several alluvial wells in the more relevant Hay Gulch and Alkali Gulch watersheds provide general water table elevation infill data to compliment the GCC compliance wells in these watersheds. The GCC monitoring well level data utilized in this figure is from August 2020. As **Figures 5** demonstrates with the long record of the Wiltse well, the Hay Gulch alluvial aquifer does not show long-term sustained decrease or increase in level, only seasonal fluctuation. As previously discussed, Hay Gulch is subject to fairly consistent irrigation water infiltration, which may buffer longer-term drought effects. These values also suggest that the decades-old water level measurements may still be useful for the purpose of estimating alluvial groundwater flow gradient. Continued observations in East Alkali Gulch alluvial GCC monitoring wells will build the water table elevation data set to determine if this non-irrigated alluvial aquifer water table level trends differently than the irrigated Hay Gulch alluvium over time.

BEDROCK GROUNDWATER

Several monitoring sites with wells completed in the mined “A” coal seam, the overlying Cliff House Sandstone, and the immediately underlying strata of the Menefee Formation to which the “A” coal seam belongs, have been maintained by GCC to provide baseline and compliance water quality information for the operation and extension of the King II mine since 2017. In quarter four of 2018 bedrock monitoring was extended in hydrostratigraphic depth to include the next two deeper water-bearing intervals, the lower Menefee Formation and the underlying Point Lookout Formation. The locations of these wells are shown in **Figure 1**. These wells were named with suffixes as follows:

- “C” for Cliff House
- “A” for mined “A” seam coal
- “MI” for Menefee Interburden denoting the floor rock to the “A” coal seam and interburden between the sometimes present “B” coal seam approximately 90 feet below the “A” seam)
- “LM” for the Lower Menefee which includes water-bearing lesser coal seams including the “B” coal seam where present
- “PL” for the Point Lookout Formation, specifically the uppermost approximate 25 feet.

Several of these wells are dry, because groundwater flow in these formations is driven by low infiltration rates on ridges between gulches, and the formations have long been eroded from those gulches. The formations are also intrinsically of low permeability. Thus, the mine workings have been largely dry, except where large joints have allowed minor draining of perched lenses of water in the roof. It is precisely this lack of groundwater in the higher coal and overlying strata that led domestic water well drillers to over-drill wells into deeper strata in the surrounding area. And it is the carbonate cement supporting the sandstone

cliffs that host the Anasazi cliff houses in Mesa Verde that reduce the permeability and cause pockets of low quality “old” water in shallower wells.

The Lower Menefee and Point Lookout hydrostratigraphic intervals were targeted for baseline monitoring in the 2018 monitoring well installation program as these are intervals included in domestic water wells in and around the Vista de Oro subdivision downgradient from the proposed King II Mine Dunn Ranch lease area. Of specific interest is the characterization of the East Alkali Gulch alluvial groundwater recharge to the underlying Menefee bedrock, as this is likely the most significant recharge area for the neighboring water wells. The MW-8 location is approximately 400 feet directly downgradient from the proposed low cover crossing in the bottom of East Alkali Gulch to monitor groundwater level and quality in all significant water-bearing intervals from surface (alluvium) to 310 feet depth (upper Point Lookout) for potential effects of King II Mine operations.

Bedrock Groundwater Quality – Major Ions

Water quality from four Cliff House Formation wells and one seep that emanates from the Cliff House Formation (Seep-1) is represented in Stiff diagrams presented in **Figure 8.** When comparing plots between the Cliff House Formation and alluvial wells, it is important to note the difference in the scale of concentrations (in milli-equivalents per liter) presented, as constituent concentrations are much greater in the Cliff House Formation wells.

Seep-1 was first identified near during the initial spring and seep survey conducted in December 2015 and water quality samples collected during monitoring events when apparent flow was observed. Although flow is periodically observed at this location, measured flows are minimal (approximately 1 gallon per hour) and contributions from this seep are not considered a significant component of surface water flow.

Water quality results in the Cliff House Formation are variable, with cation exchange occurring along flow paths. Sulfate concentrations are also variable, with Seep-1 containing greater concentrations than observed in the monitoring wells. These variations in water chemistry suggest the groundwater in the Cliff House Formation is laterally discontinuous. pH in Cliff House Formation wells and Seep-1 is generally near-neutral to alkaline (6.7 – 8.5). Wells completed in the Cliff House Formation show the greatest concentrations and most variation in major ion makeup. MW-1-C and Seep-1 are dominated by calcium-magnesium and sulfate, MW-2-C is dry, and MW-3-C, MW-4-C, and MW-5-C are dominated by sodium and bicarbonate. This variability and the elevated concentrations in the Cliff House wells indicate slow-moving (long residence time) water, and some water with variable dissolved oxygen content, leading to the non-uniform oxidation of pyrite in some rock types. In the MW-3-C and MW-4-C wells the sodium, sulfate and chloride may be residual solutes from the marine barrier sand bars in a tightly cemented, low permeability formation. While there may be differences in the Cliff House rock geochemistry that contribute to these observed water type differences, it is also likely to be related to recharge of a different source or at least a significant difference in distance from the

source. It may be that saturated alluvium in the upper reach of East Alkali Gulch is directly overlying and recharging the Cliff House formation in the vicinity of the MW-1 location.

The Menefee Formation is monitored in three distinct intervals in the proposed mine extension area, namely the upper "A" coal seam, interburden between "A" and "B" coal seams, and the sandstone, coal, and siltstone underburden (lower Menefee). Major ion chemistry for groundwater wells completed in each of these intervals are shown in Stiff diagrams presented as **Figures 9 through 11**, respectively. Menefee Formation groundwater is characterized by neutral to alkaline pH (7.0-9.0) and generally of sodium-bicarbonate type. Water quality in the "A" coal seam and Menefee Formation interburden are similar in composition, with the exception of MW-6-A, discussed below.

Monitoring wells completed in the mined "A" coal seam show dominant sodium or magnesium, and sulfate with lesser bicarbonate (**Figure 9**). Calcium is replaced by sodium and magnesium through cation exchange on clay minerals in shales. Total dissolved concentrations in "A" wells are less than half those in overlying Cliff House wells. The MW-1 location at the upgradient north end of the ridge overlying the King II workings has a Cliff House and a coal well with some limited water, and a dry sub-coal Menefee Interburden well. The "C" and "A" wells have similar chemical makeup with calcium, sulfate-bicarbonate type, but the "A" well concentrations vary widely, indicating recharge by local infiltration.

Groundwater quality at MW-6-A has much greater sulfate concentrations than observed in the other "A" seam or interburden locations. Similarly, sulfate concentrations in the interburden (December 2018) and lower Menefee Formation at the MW-6 cluster are greater than in other well locations. This observed difference in sulfate concentrations at the MW-6 cluster likely reflects a source of recharge to the Menefee Formation that is unique to that location possibly along West Alkali Gulch and has a composition most similar to the alluvial groundwater noted in East Alkali Gulch. Additionally, these observed outlier sulfate conditions may be related to what are only partially saturated screen intervals at MW-6-A, MW-6-MI, and MW-6-LM. MW-6-MI has been dry since May 2019.

Menefee Formation interburden wells completed in the mined "A" seam floor strata have total dissolved solids concentrations that are less than in the "A" coal seam, and are dominated by sodium and bicarbonate. This suggests that either the lower Menefee is recharged in different areas, or that sulfate is reduced and calcium and magnesium are exchanged for sodium along the flow path. The most likely mechanism for the reduction of sulfate is microbial metabolism of sulfate and coal methane, which can yield hydrogen sulfide and also precipitate calcium carbonate. Hydrogen sulfide is commonly observed in regional domestic water wells. Major ion concentrations of the Menefee Interburden wells are shown as Stiff plots in **Figure 10**. Of the newest "MI" wells, MW-6-MI drilled dry through the Menefee Interburden section and water only came in over the following couple days, the majority of which was likely produced from the exposed "A" coal seam before the well was completed. MW-8-MI is completed

in East Alkali Gulch just downgradient from significant alluvial recharge; the well is screened across the first bedrock water encountered.

Groundwater monitoring of the lower Menefee Formation is limited to MW-6-LM, located on a ridge top above and cross-gradient of East Alkali Gulch, and MW-8-LM, which is completed in East Alkali Gulch. These wells yield little water and total salinity has dropped and major ions shifted in successive sampling events. Sulfate and chloride have also decreased in recent samples. Cation ratios (sodium and calcium) are also variable in these low-yielding wells, illustrating the chemical discontinuity in these low permeability groundwater lenses located in minor coal seams and minor fractured intervals. The major ion concentration comparison plots are presented as **Figure 11**.

The Point Lookout Formation water quality in the vicinity of the King II Mine is represented by the recently-installed monitoring well MW-8-PL. **Figure 12** shows the major ion chemistry from the last 4 quarters of monitoring on a Stiff diagram. Point lookout groundwater in this location is neutral (pH of 7.5) and bicarbonate dominant.

Bedrock Groundwater Quality – Trace Elements

Concentrations of selected trace constituents are discussed in this section and shown as time-series plots in **Figures 13 through 18**. Detections for the following constituents were observed in bedrock groundwater monitoring wells: arsenic, copper, iron, manganese, molybdenum, selenium, uranium, and zinc. These constituents occur in natural waters, and can be elevated in groundwater associated with marine sandstones and shales.

Arsenic is present as minor constituent in bedrock and is sometimes associated with pyrite. During pyrite oxidation, arsenic is typically absorbed, at least in part, and immobilized with iron oxide/hydroxide precipitation. As shown in in **Figure 13**, arsenic in “A” seam coal wells is at very low concentrations. In contrast, the majority of the Lower Menefee and Menefee Interburden wells contain arsenic at levels exceeding the MCL of 0.01 mg/L; the reported concentrations in each well show wide variability over time. The widespread occurrence of arsenic in these wells may suggest it is disseminated throughout in the Menefee Formation and may be associated with mineral phases in addition to pyrite.

The standard for arsenic in water for cattle and poultry is 0.2 mg/L, or 20 times the human MCL. No samples concentrations exceeded 0.025 mg/L.

Copper is likely to be present as a trace constituent and is sometimes associated with pyrite in bedrock. Concentrations of copper in all bedrock groundwater units was low, and no exceedances of the MCL were observed over the period of record.

Iron and manganese are common trace metals observed in the regional rock types near the mine. Iron is commonly sourced from pyrite in the Mesaverde strata which oxidizes in the weathering zone. Generally, the oxidized iron will precipitate in the oxidation zone and dissolved concentrations of trace constituents under neutral pH conditions are low. Concentrations of iron in bedrock groundwater through time are plotted in **Figure 14**. In general, the greatest concentrations of iron are observed in MW-6-A and MW-1-C. Increased iron in these locations may be associated with increased sulfate, as these locations contained greater sulfate content than other "A" seam and Cliff House Formation wells, respectively. These observations are consistent with the weathering of pyrite in localized areas. Iron concentrations appear to be decreasing through time, at MW-6-A, which may suggest favorable conditions for precipitation of iron oxides/hydroxides.

Manganese is typically derived from similar processes of pyrite oxidation as a minor constituent in groundwater. Greater concentrations of manganese are often associated with greater iron concentrations, as observed in MW-6-A and MW-1-C (**Figure 15**). In addition, elevated concentrations of manganese were also observed in the lower Menefee Formation wells (MW-6-LM and MW-8-LM) and the Point Lookout Formation well (MW-8-PL).

There is no drinking water standard for molybdenum, although the EPA has set a health-based advisory limit of 0.04 mg/L. No exceedances of the health-based advisory have occurred in any well since December of 2018 at MW-6-LM (**Figure 16**). Similarly, exceedances of selenium were not observed in any monitoring in recent years (**Figure 17**). A single exceedance of the selenium MCL of 0.05 mg/L occurred at MW-3-A in March of 2017. However, subsequent samples collected at this location contained very low selenium, often below detection.

Concentrations of uranium are presented in **Figure 18** and compared to the MCL of 0.03 mg/L. Uranium is a trace constituent commonly present in groundwater of the Four Corners regional area, an area known for elevated levels of naturally-present uranium and thus where historical uranium mining has occurred since the 1950s. Uranium is typically mobilized under oxic groundwater conditions and is immobilized as conditions become more reducing. Concentrations of uranium have exceeded the MCL in Cliff House Formation wells MW-4-C, and to a lesser extent, MW-1-C. In both locations, concentrations have continued to decrease through time and no exceedances are currently observed.

Zinc is present as a trace constituent and is sometimes associated with pyrite in marine deposits. Zinc concentrations measured in GCC groundwater monitoring wells was low, with no exceedances of the MCL at any well.

Bedrock Groundwater Quality – MW-3-C Organics

The 2019 King I & II Mines Annual Hydrology Report to CDRMS (RHS 2019) included discussion of elevated total organic carbon (TOC) and detections of benzene, toluene, ethylbenzene and total xylenes (BTEX) in water samples collected from monitoring well MW-3-C. MW-3-C was investigated per MR-48 to address elevated TOC in monitoring wells and a report has been prepared by RHS in a technical memorandum format titled "MW-3-C Groundwater Organics Evaluation."

The conclusion of the evaluation is that elevated TOC and presence of BTEX in groundwater samples at MW-3-C is due to influence from a natural methane gas source. A gas sample collected from the wellhead quantified the methane content at 79%, indicating it is the dominant gas in the MW-3-C wellbore. Review of well completion information indicated a thin coal seam or fracture is the likely conduit for this methane to flow to MW-3-C, which then acts as a vent to atmosphere. Well rehabilitation efforts, per MR-48, appeared to stimulate methane gas production, albeit minor increases, as would be expected with development of a coal seam aquifer or other methane reservoir rock. This has been corroborated by the GCC compliance water sampling team noticing that the bladder pump environmental sampling system is producing more gas-entrained purge water during sample events in the latter half of 2020. This is to be expected as the wellbore water column decreases with purge water production allowing more methane to migrate to the well. Measurement of free methane as lower explosive limit (LEL) on a four-gas meter during sample events has also increased in % LEL at the wellhead in this time period. It is noted that this gas is documented as very low pressure and low volume at the wellhead and does not present any explosive risk to the sampling team, the public or the well. In fact, when the MW-3-C wellhead lid is in place, LEL remains at 0% when monitored around the well with a four-gas meter.

A BTEX water sample added to the 2020Q2 compliance sampling effort at MW-3-C was collected on May 26, 2020. Given the conclusions presented in the MW-3-C Groundwater Organics Evaluation, it was known at that time that BTEX would likely be detected. The results were benzene reported at 0.026 mg/ L, toluene reported at 0.007 mg/L, ethylbenzene reported at 0.001 mg/L, and total xylenes reported at 0.005 mg/L. This represented a minor increase in these compounds from the previous monitoring event on March 13, 2020, as to be expected per the previous discussion, however the results were in the same general range as has been previously detected. TOC concentrations have continued to decrease with time and are beginning to approach trend levels documented at other GCC Cliff House monitoring wells. It should be expected that nuisance levels of BTEX will persist at MW-3-C and following investigation, are concluded to represent baseline conditions. Presence of methane in water samples collected from MW-3-C does not impact its performance as a King II monitoring well

Bedrock Groundwater Level

Groundwater potentiometric surface contour maps utilizing August 2020 measured levels have been prepared for each monitored hydrostratigraphic interval and are presented as **Figures 19-23**. Contouring is only possible for intervals that include three or more monitoring locations, so the "LM" and "PL" figures do not include contours to indicate groundwater flow direction or gradient. Regardless, it is expected that regional flow direction in these intervals is south-southwest in the direction of strata dip, as documented in the overlying three hydrostratigraphic intervals. Groundwater flow gradient appears to be approximately 100 feet per mile (1.9% or 1.1°) for all intervals, which is about 1/3 to 1/2 of the strata dip. The King II Mine permit area is an excellent demonstration of the natural hydraulics in play to create and sustain a multiple bedrock aquifer system in an arid basin. Dry unsaturated (vadose) rock is present at the upland outcrop basin margin areas; water infiltration must pass through initially unconfined fractured networks filling fractures and pore space while displacing gases, and then finally into fully confined conditions with increased depth towards the central part of the basin. When the head pressure observed at any given point in the aquifer is greater than the equivalent distance from ground surface to the top of that aquifer then the aquifer is defined as confined. Significant recharge areas, inferred by buried bedrock exposure to overlying saturated alluvium, are also displayed in these figures.

Groundwater levels, as measured from wellheads during routine compliance monitoring, are converted to measured depth below ground surface and given in the GCC Hydrologic Monitoring Summary Tables, provided in this report as the **Attachment**.

TABLES

Table 1. GCC Quarterly Hydrologic Monitoring Locations

Monitoring Location ID	Water Resource Monitored	UTM NAD 83 Zone 13N Easting (meters)	UTM NAD 83 Zone 13N Northing (meters)	Surface Elevation (ft amsl)
Wiltse Well	Groundwater - Alluvial Hay Gulch	757024.673	4126948.393	7372.0
Well #1 Upgradient	Groundwater - Alluvial Hay Gulch	755543.611	4126352.130	7254.0
Well # 2 Downgradient	Groundwater - Alluvial Hay Gulch	754164.863	4125282.984	7174.8
MW-HGA-4	Groundwater - Alluvial Hay Gulch	757641.447	4127453.016	7410.5
MW-1-C	Groundwater - Bedrock Cliff House overburden	757690.096	4131037.627	8519.8
MW-1-A	Groundwater - Bedrock "A" coal seam	757693.395	4131042.883	8520.4
MW-1-MI	Groundwater - Bedrock Menefee interburden	757696.625	4131048.193	8520.8
MW-2-C	Groundwater - Bedrock Cliff House overburden	755125.962	4126776.758	7711.7
MW-2-A	Groundwater - Bedrock "A" coal seam	755128.957	4126781.777	7713.0
MW-2-MI	Groundwater - Bedrock Menefee interburden	755132.894	4126786.834	7713.5
MW-3-C	Groundwater - Bedrock Cliff House overburden	752333.836	4124416.003	7416.6
MW-3-A	Groundwater - Bedrock "A" coal seam	752337.515	4124420.823	7416.6
MW-3-MI	Groundwater - Bedrock Menefee interburden	752341.458	4124425.586	7416.3
MW-4-C	Groundwater - Bedrock Cliff House overburden	752098.476	4125629.241	7568.8
MW-4-A	Groundwater - Bedrock "A" coal seam	752101.678	4125634.068	7569.5
MW-4-MI	Groundwater - Bedrock Menefee interburden	752105.037	4125639.328	7569.7
MW-5-A	Groundwater - Bedrock "A" coal seam	757132.319	4130205.100	8407.4
MW-5-C	Groundwater - Bedrock Cliff House overburden	757128.949	4130200.072	8407.1
MW-5-MI	Groundwater - Bedrock Menefee interburden	757135.778	4130210.290	8407.7
MW-6-C	Groundwater - Bedrock Cliff House overburden	752322.705	4127770.537	7879.0
MW-6-A	Groundwater - Bedrock "A" coal seam	752319.364	4127765.472	7879.0
MW-6-MI	Groundwater - Bedrock Menefee interburden	752315.858	4127760.196	7878.0
MW-6-LM	Groundwater - Bedrock Lower Menefee	752312.834	4127755.333	7878.0
MW-7-EAA	Groundwater - Alluvial East Alkali Gulch	753001.888	4127319.951	7460.0
MW-8-EAA	Groundwater - Alluvial East Alkali Gulch	752916.895	4127107.544	7440.0
MW-8-MI	Groundwater - Bedrock Menefee interburden	752912.969	4127110.290	7447.0
MW-8-LM	Groundwater - Bedrock Lower Menefee	752908.636	4127106.081	7446.0
MW-8-PL	Groundwater - Bedrock Point Lookout	752904.413	4127101.783	7445.0
Hay Gulch Ditch Downgradient	Surface Water - Irrigation ditch	754376.015	4125623.299	7210.0
Hay Gulch Ditch Upgradient	Surface Water - Irrigation ditch	757636.698	4127606.813	7430.0

Table 2.

GCC Surface Water Baseline Water Quality Parameter Suite (GCC SW Baseline)

Parameter	Units	Justification for Addition	Comments
Potassium (K)	***mg/L***	***Rounding out major ion constituents with K, Cl will allow for better interpretation with trilinear plotting***	
Chloride (Cl^-)	***mg/L***		
Calcium (Ca^{+2})	mg/L		
Magnesium (Mg^{+2})	mg/L		
Sodium (Na^+)	mg/L		
Sulfate (SO_4)	mg/L		
Alkalinity, as $CaCO_3$	mg/L		
Silica (SiO_2)	***mg/L***	***Allows comparison of TDS vs. sum of major ions***	
Manganese (Mn)	mg/L		
Fluoride (F)	***mg/L***	***Secondary ion that has been identified with minor potential nuisance value***	
Iron (Fe)	mg/L		
Aluminum (Al)	***mg/L***	***Trace metals commonly associated with coal mining impacts***	
Arsenic (As)			
Cadmium (Cd)			
Copper (Cu)			
Lead (Pb)			
Mercury (Hg)			
Molybdenum (Mo)			
Selenium (Se)			
Zinc (Zn)			
Uranium (U)	***mg/L***	***DRMS request via HGCAP***	
Hardness, as $CaCO_3$	mg/L		
Bicarbonate, as $CaCO_3$	mg/L		
Carbonate, as $CaCO_3$	mg/L		
Hydroxide, as $CaCO_3$	mg/L		
Total Nitrogen as Nitrate-Nitrite	***mg/L***	***Distinguish fertilizer and/or stock impacts***	
Ammonia (NH_3)	***mg/L***	***Distinguish fertilizer and/or stock impacts***	***1-time only with field kit to establish absence, SW and Alluvial GW only in 2016Q4***
Phosphate (PO_4 as P)	***mg/L***	***Distinguish fertilizer and/or stock impacts***	***1-time only to establish absence, SW and Alluvial GW only in 2016Q4***
Sodium Adsorption Ratio (SAR)	***mg/L***	***Measure of suitability for agricultural irrigation***	
Oil & Grease	***mg/L***	***Indication of background/upstream impacts***	
pH (lab)	SU		
Total Dissolved Solids (TDS)	mg/L		
Total Suspended Solids (TSS)	***mg/L***	***Provides mass of particulates causing turbidity***	
Total Organic Carbon (TOC)	***mg/L***	***Surrogate parameter for coal mining impacts***	
Temperature (field)	°C		
pH (field)	***SU***	***Allows comparison of field vs. lab measurements, key for proper Bicarb, Carb, Hydroxide calculations***	
Specific Conductivity (field)	mS/cm		
Oxygen Reduction Potential (ORP) (field)	***mV***	***To predict states of chemical speciation of water, i.e. dissolved metals***	
Dissolved Oxygen (DO) (field)	***mg/L***	***General water quality parameter to document available oxygen***	
Flow Rate (field, ditch only)	cfs		

Notes:

New analytes in bold, italicized red text
mg/L = milligrams per liter
SU = standard units
mS/cm millisiemens per centimeter
cfs = cubic feet per second
mV = milivolt

Table 3.

GCC Groundwater Baseline Water Quality Parameter Suite (GCC GW Baseline)

Parameter	Units	Justification for Addition	Comments
Potassium (K)	***mg/L***	***Rounding out major ion constituents with K, Cl will allow for better interpretation with trilinear plotting***	
Chloride (Cl^-)	***mg/L***		
Calcium (Ca^{+2})	mg/L		
Magnesium (Mg^{+2})	mg/L		
Sodium (Na^+)	mg/L		
Sulfate (SO_4)	mg/L		
Alkalinity, as $CaCO_3$	mg/L		
Silica (SiO_2)	***mg/L***	***Allows comparison of TDS vs. sum of major ions***	
Manganese (Mn)	mg/L		
Fluoride (F)	***mg/L***	***Secondary ion that has been identified with minor potential nuisance value***	
Iron (Fe)	mg/L		
Aluminum (Al)	***mg/L***	***Trace metals commonly associated with coal mining impacts***	
Arsenic (As)			
Cadmium (Cd)			
Copper (Cu)			
Lead (Pb)			
Mercury (Hg)			
Molybdenum (Mo)			
Selenium (Se)			
Zinc (Zn)			
Uranium (U)	***mg/L***	***DRMS request via HGCAP***	
Hardness, as $CaCO_3$	mg/L		
Bicarbonate, as $CaCO_3$	mg/L		
Carbonate, as $CaCO_3$	mg/L		
Hydroxide, as $CaCO_3$	mg/L		
Total Nitrogen as Nitrate-Nitrite	***mg/L***	***Distinguish fertilizer and/or stock impacts***	
Ammonia (NH_3)	***mg/L***	***Distinguish fertilizer and/or stock impacts***	***1-time only to establish absence, SW and Alluvial GW only in 2016Q4***
Phosphate (PO_4 as P)	***mg/L***	***Distinguish fertilizer and/or stock impacts***	***1-time only to establish absence, SW and Alluvial GW only in 2016Q4***
pH (lab)	SU		
Total Dissolved Solids (TDS)	mg/L		
Total Organic Carbon (TOC)	***mg/L***	***Surrogate parameter for coal mining impacts***	
Temperature (field)	°C		
pH (field)	***SU***	***Allows comparison of field vs. lab measurements, key for proper Bicarb, Carb, Hydroxide calculations***	
Specific Conductivity (field)	mS/cm		
Oxygen Reduction Potential (ORP) (field)	***mV***	***To predict states of chemical speciation of water, i.e. dissolved metals***	
Depth to Water (field, wells only)	ft		

Notes:

New analytes in bold, italicized red text
mg/L = milligrams per liter
SU = standard units
mS/cm millisiemens per centimeter
ft = feet
mV = milivolt

Table 4.

GCC Spring & Seep Baseline Water Quality Parameter Suite (GCC S&S Baseline)

Parameter	Units	Justification for Addition	Comments
Potassium (K)	***mg/L***	***Rounding out major ion constituents with K, Cl will allow for better interpretation with trilinear plotting***	
Chloride (Cl^-)	***mg/L***		
Calcium (Ca^{+2})	mg/L		
Magnesium (Mg^{+2})	mg/L		
Sodium (Na^+)	mg/L		
Sulfate (SO_4)	mg/L		
Alkalinity, as $CaCO_3$	mg/L		
Silica (SiO_2)	***mg/L***	***Allows comparison of TDS vs. sum of major ions***	
Manganese (Mn)	mg/L		
Fluoride (F)	***mg/L***	***Secondary ion that has been identified with minor potential nuisance value***	
Iron (Fe)	mg/L		
Aluminum (Al)	***mg/L***	***Trace metals commonly associated with coal mining impacts***	
Arsenic (As)			
Cadmium (Cd)			
Copper (Cu)			
Lead (Pb)			
Mercury (Hg)			
Molybdenum (Mo)			
Selenium (Se)			
Zinc (Zn)			
Uranium (U)	***mg/L***	***DRMS request via HGCAP***	
Hardness, as $CaCO_3$	mg/L		
Bicarbonate, as $CaCO_3$	mg/L		
Carbonate, as $CaCO_3$	mg/L		
Hydroxide, as $CaCO_3$	mg/L		
Total Nitrogen as Nitrate-Nitrite	***mg/L***	***Distinguish fertilizer and/or stock impacts***	
Ammonia (NH_3)	***mg/L***	***Distinguish fertilizer and/or stock impacts***	***1-time only with field kit to establish absence, SW and Alluvial GW only in 2016Q4***
Phosphate (PO_4 as P)	***mg/L***	***Distinguish fertilizer and/or stock impacts***	***1-time only to establish absence, SW and Alluvial GW only in 2016Q4***
Sodium Adsorption Ratio (SAR)	***mg/L***	***Measure of suitability for agricultural irrigation***	
pH (lab)	SU		
Total Dissolved Solids (TDS)	mg/L		
Total Organic Carbon (TOC)	***mg/L***	***Surrogate parameter for coal mining impacts***	
Temperature (field)	℃		
pH (field)	***SU***	***Allows comparison of field vs. lab measurements, key for proper Bicarb, Carb, Hydroxide calculations***	
Specific Conductivity (field)	mS/cm		
Oxygen Reduction Potential (ORP) (field)	***mV***	***To predict states of chemical speciation of water, i.e. dissolved metals***	
Flow Rate (field, spring/seep only)	gpm		

Notes:

New analytes in bold, italicized red text
mg/L = milligrams per liter
SU = standard units
mS/cm millisiemens per centimeter
gpm = gallons per minute
mV = milivolt

FIGURES

Figure 1. GCC 2020 hydrologic monitoring locations.

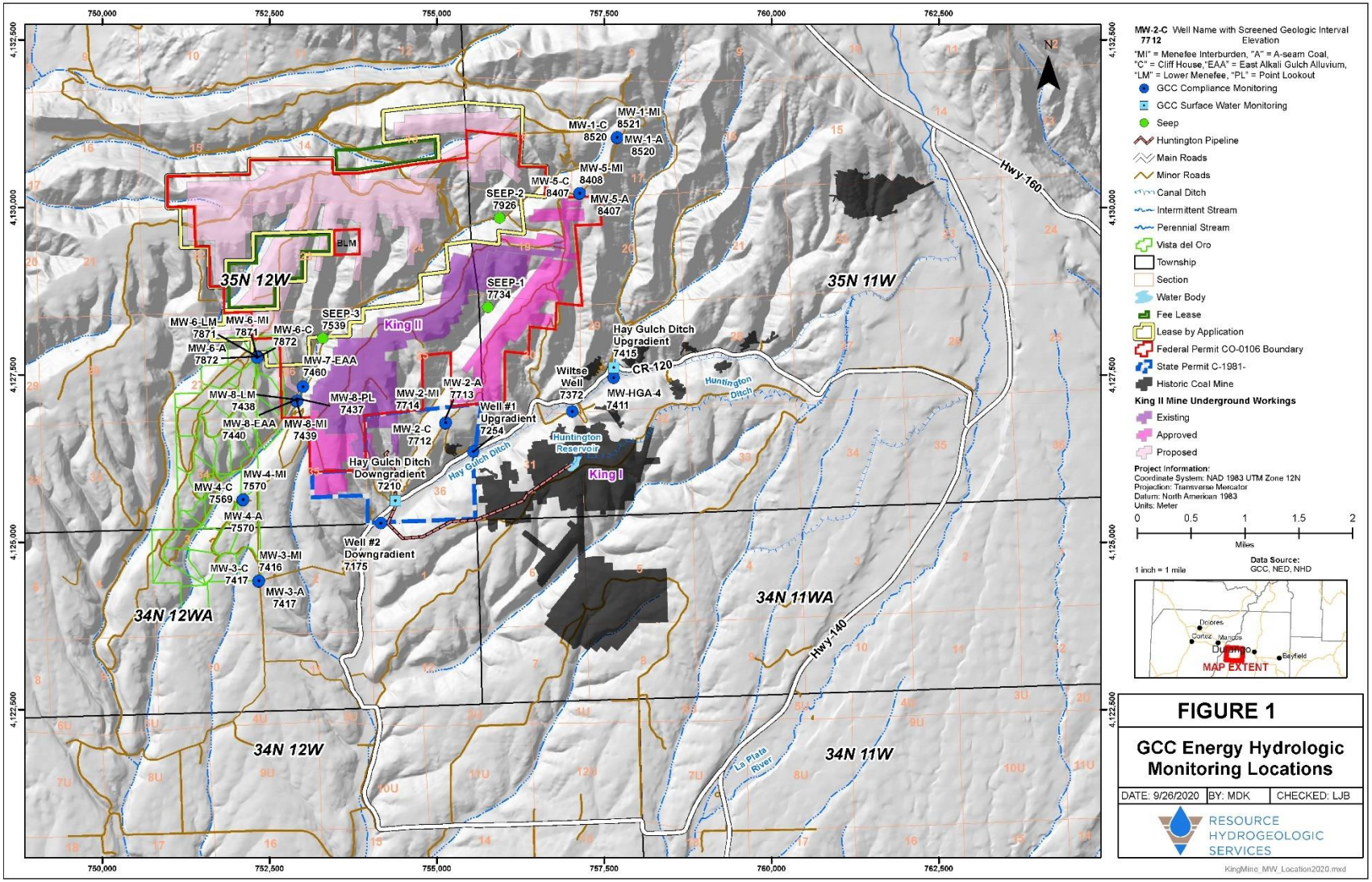


Figure 2. Major ions in Hay Gulch Ditch Upgradient and Downgradient samples from water year 2020.

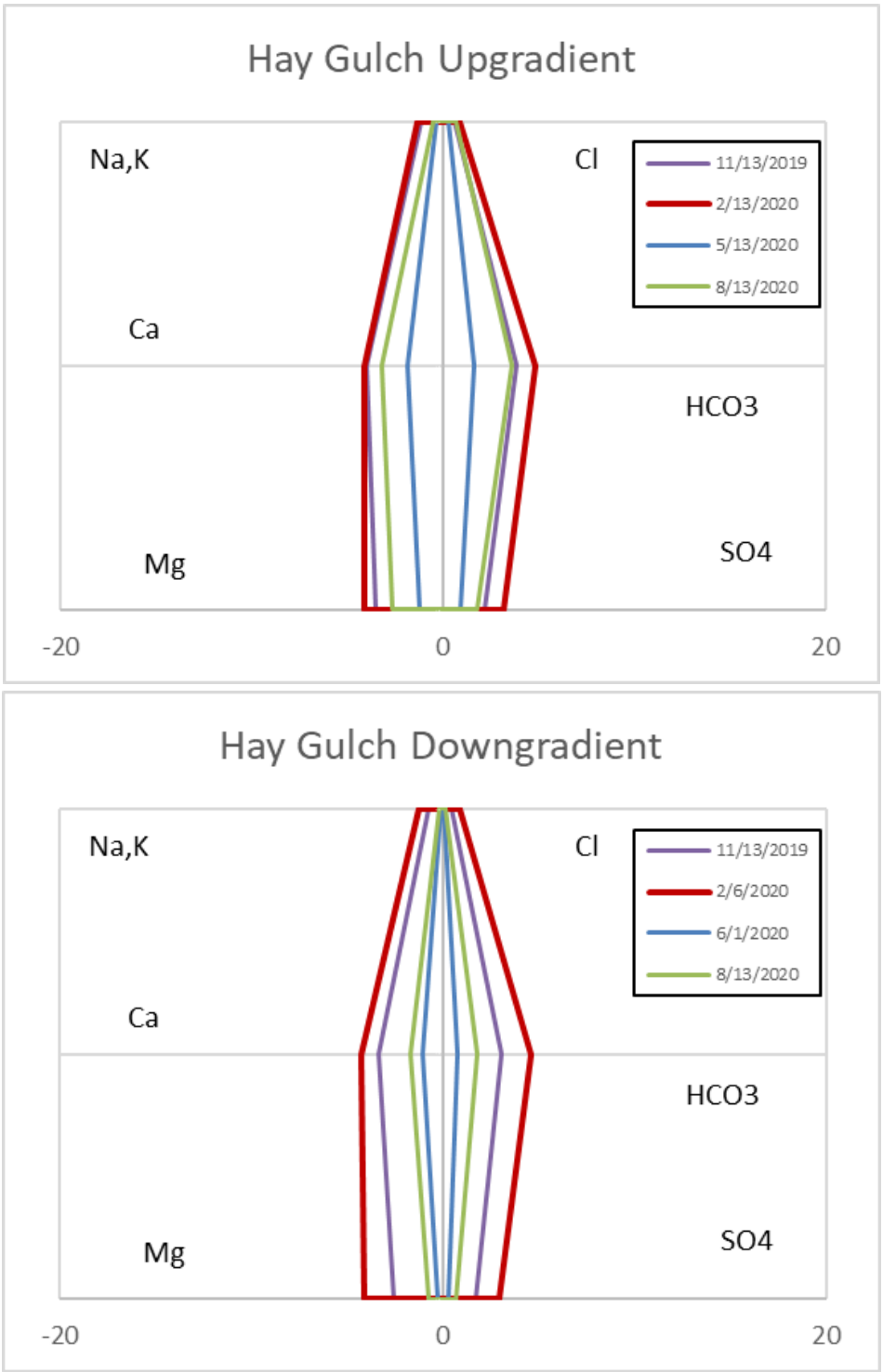


Figure 3. Major ions in Hay Gulch alluvial groundwater up and downgradient of the King I portal (left), up and downgradient of the King II portal (center left), in East Alkali Gulch alluvial groundwater up and downgradient of the proposed King II low cover crossing (center right), and from two seeps upgradient of the proposed low cover crossing in East Alkali Gulch (right).

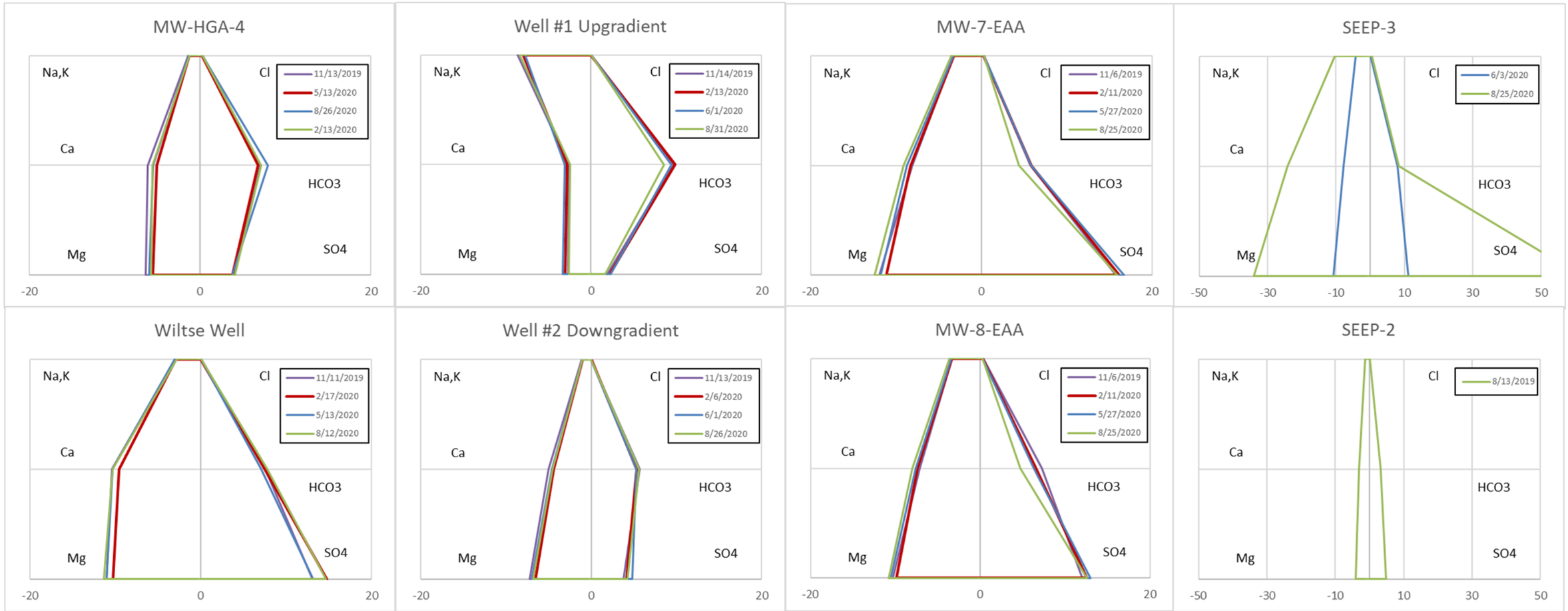
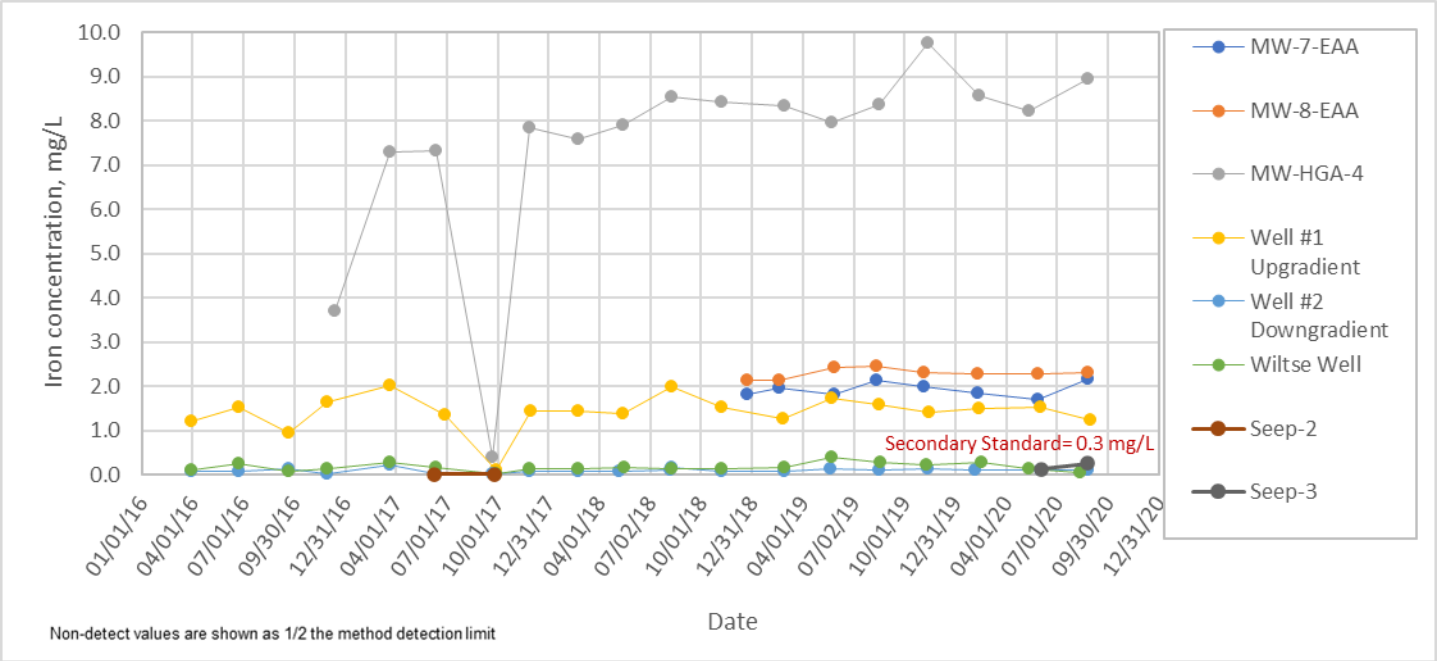


Figure 4. Concentrations of iron and manganese in alluvial groundwater (2016-2020).



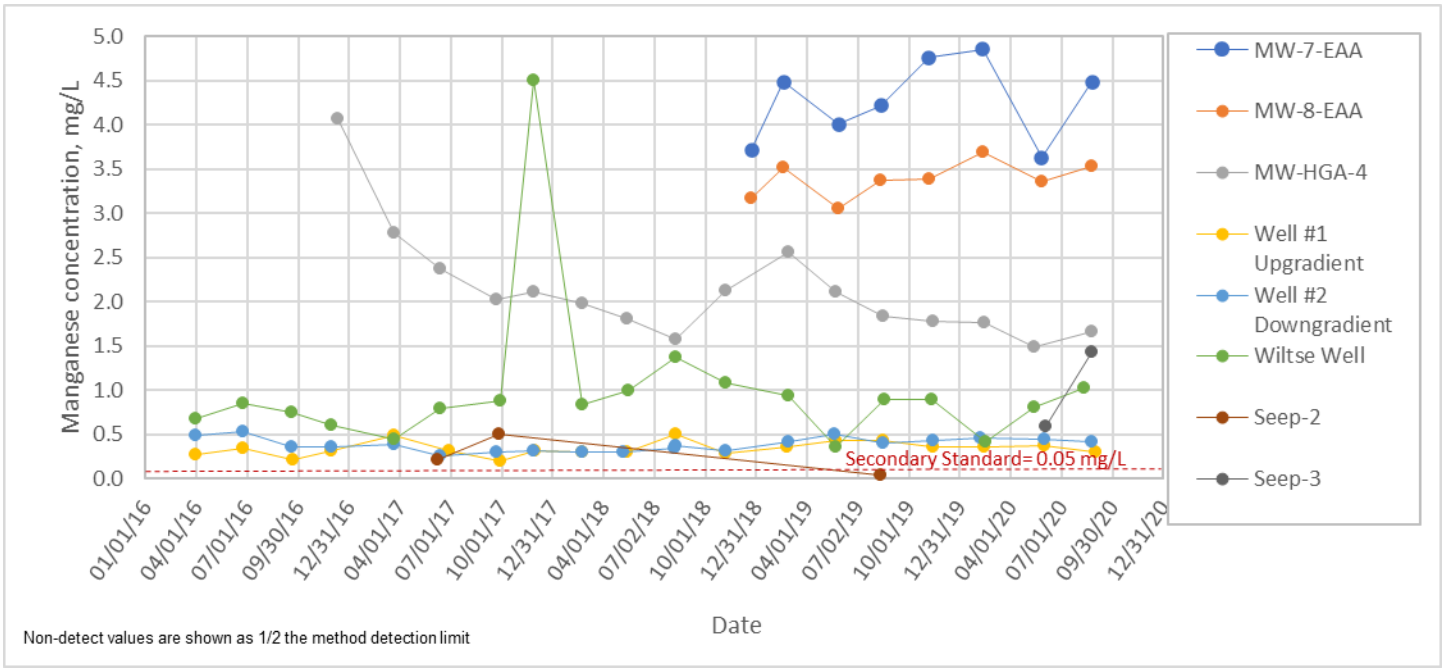


Figure 5. Hay Gulch alluvial groundwater hydrograph.

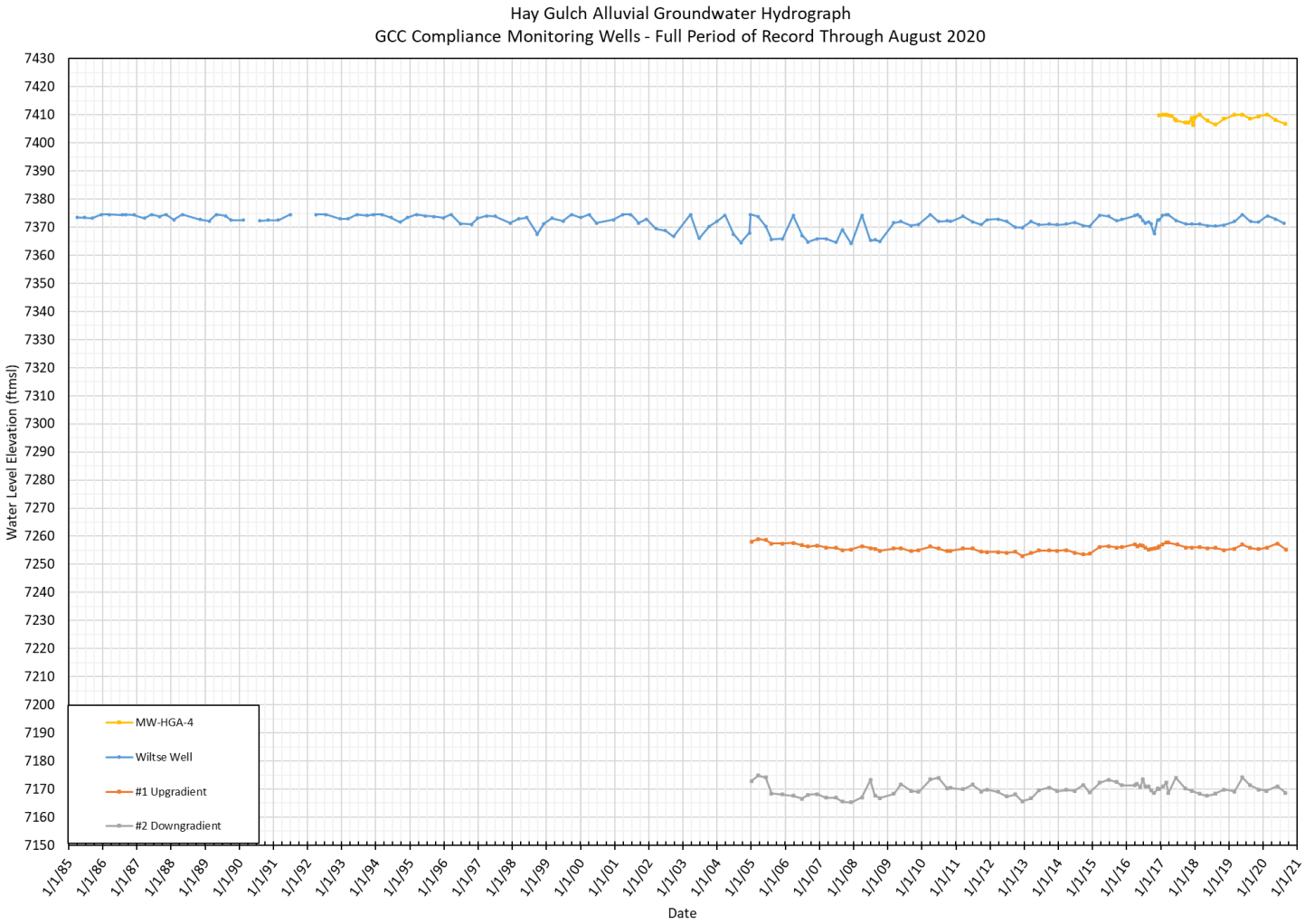


Figure 6. East Alkali Gulch alluvial groundwater hydrograph.

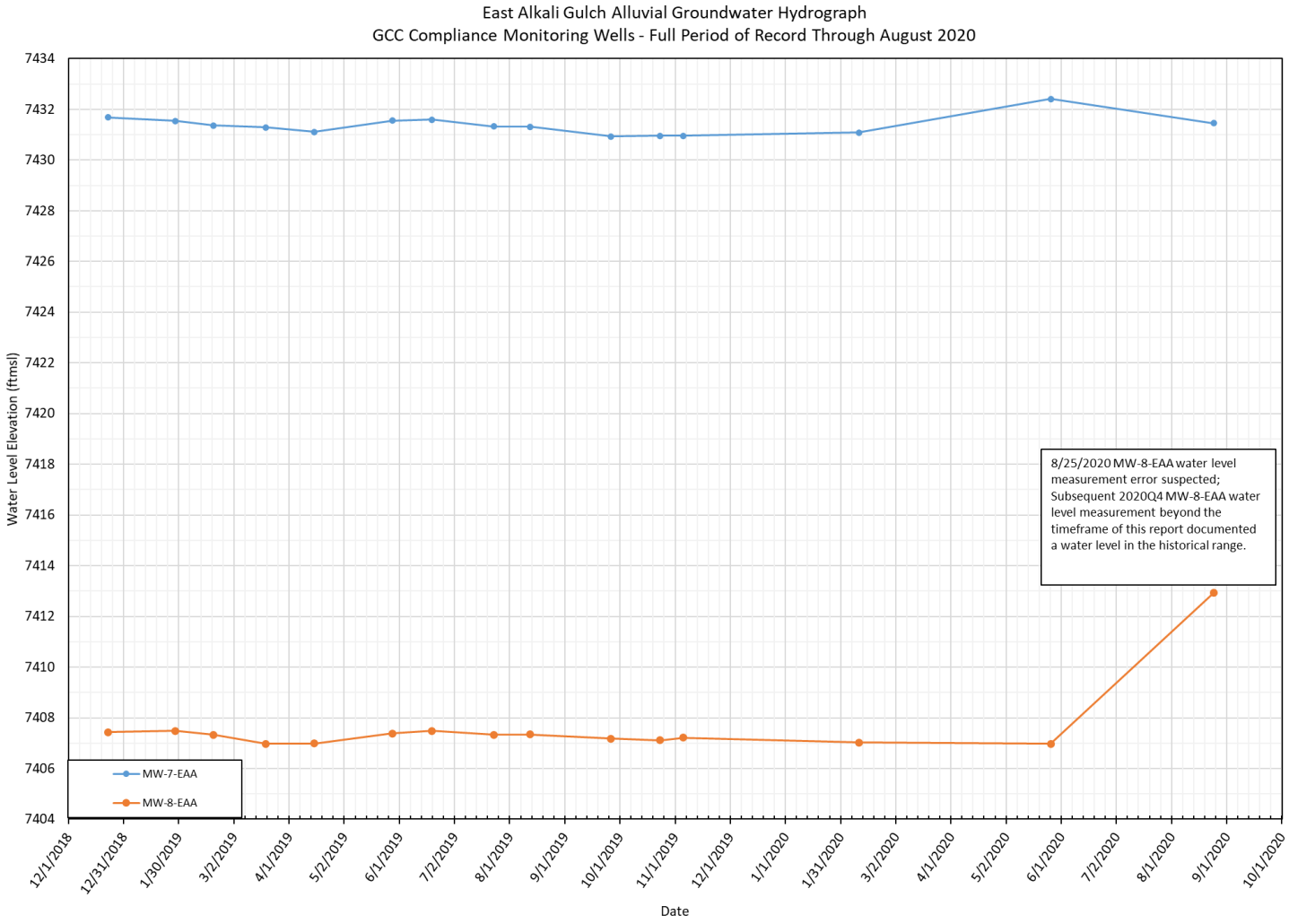


Figure 7. Alluvial groundwater table contour map.

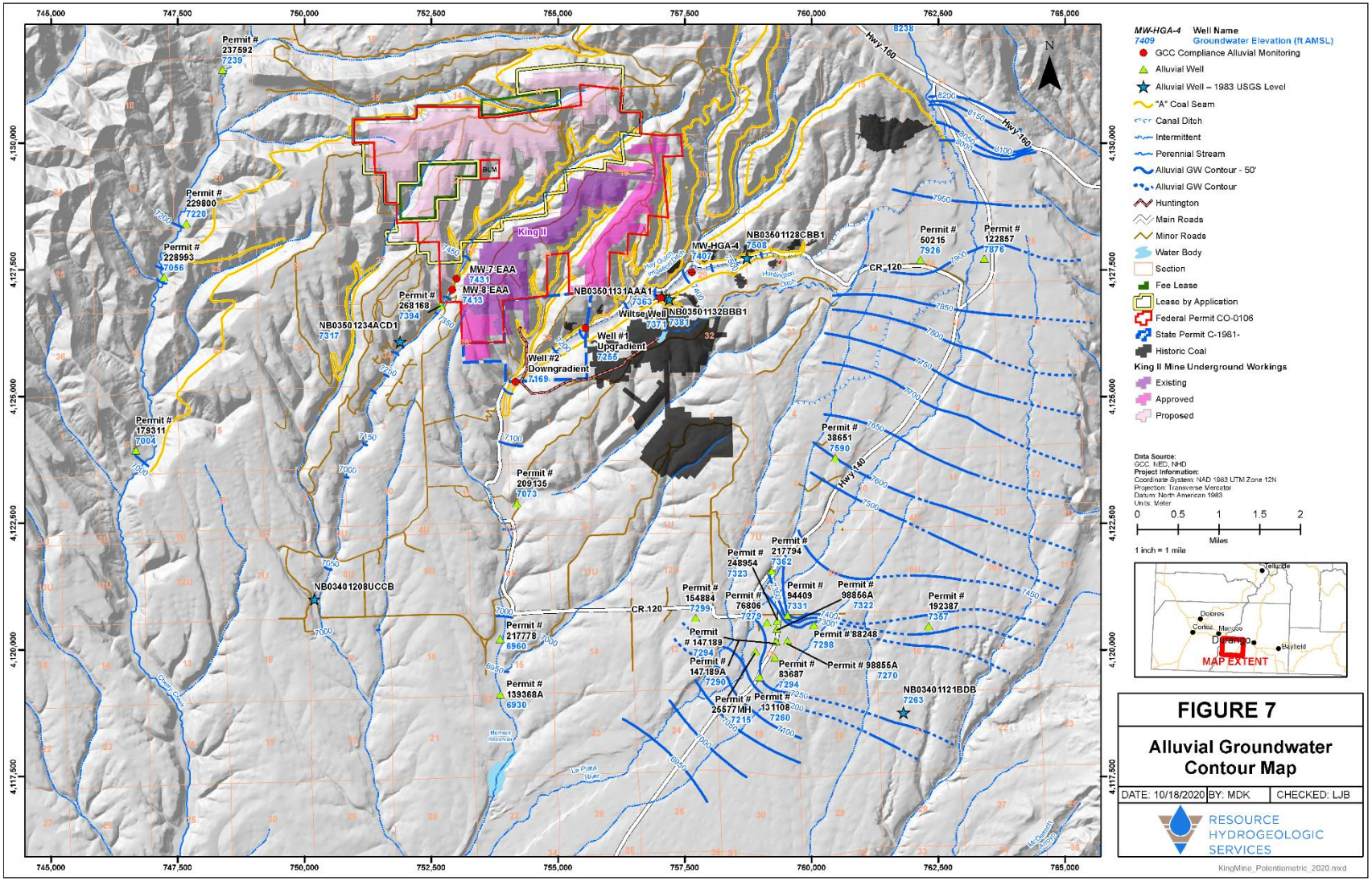


Figure 8. Comparison of major ion concentrations in Cliff House ("A" seam overburden) bedrock monitoring wells, and a seep (Seep-1).

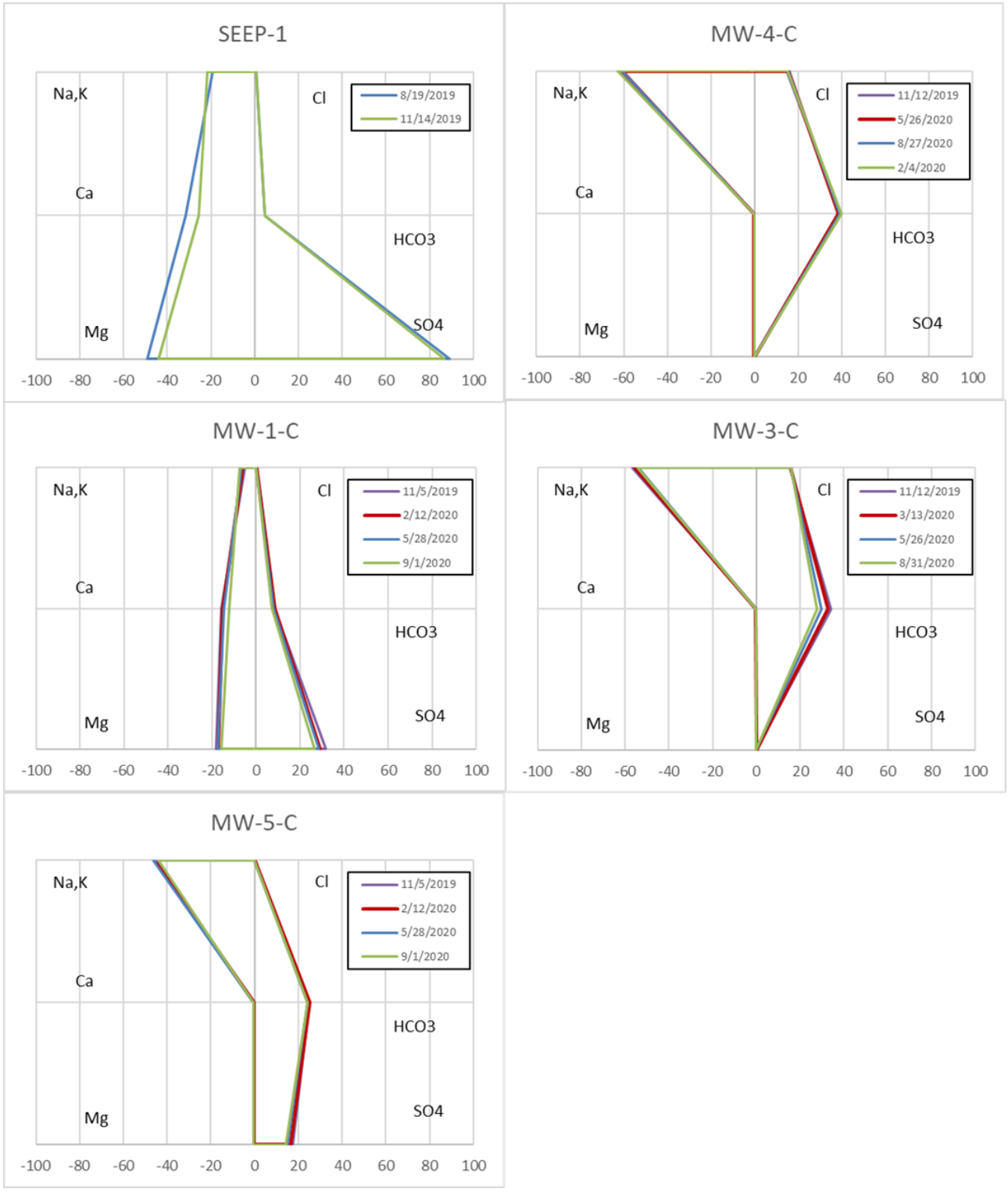


Figure 9. Stiff diagrams of the four wet wells completed in the "A" coal seam of the Menefee Formation

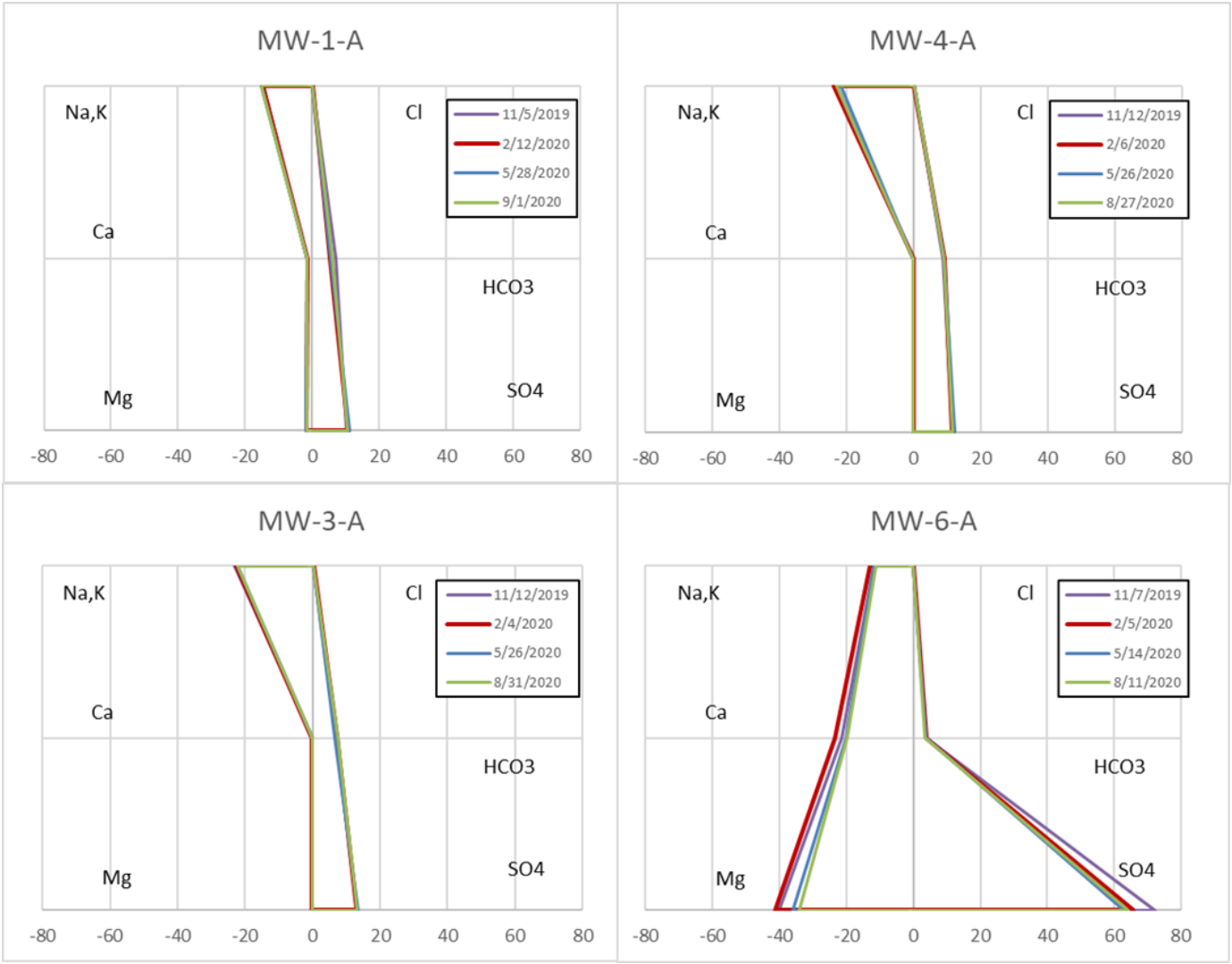


Figure 10. Stiff diagrams of wells completed in the Menefee Interburden immediately below the "A" seam.

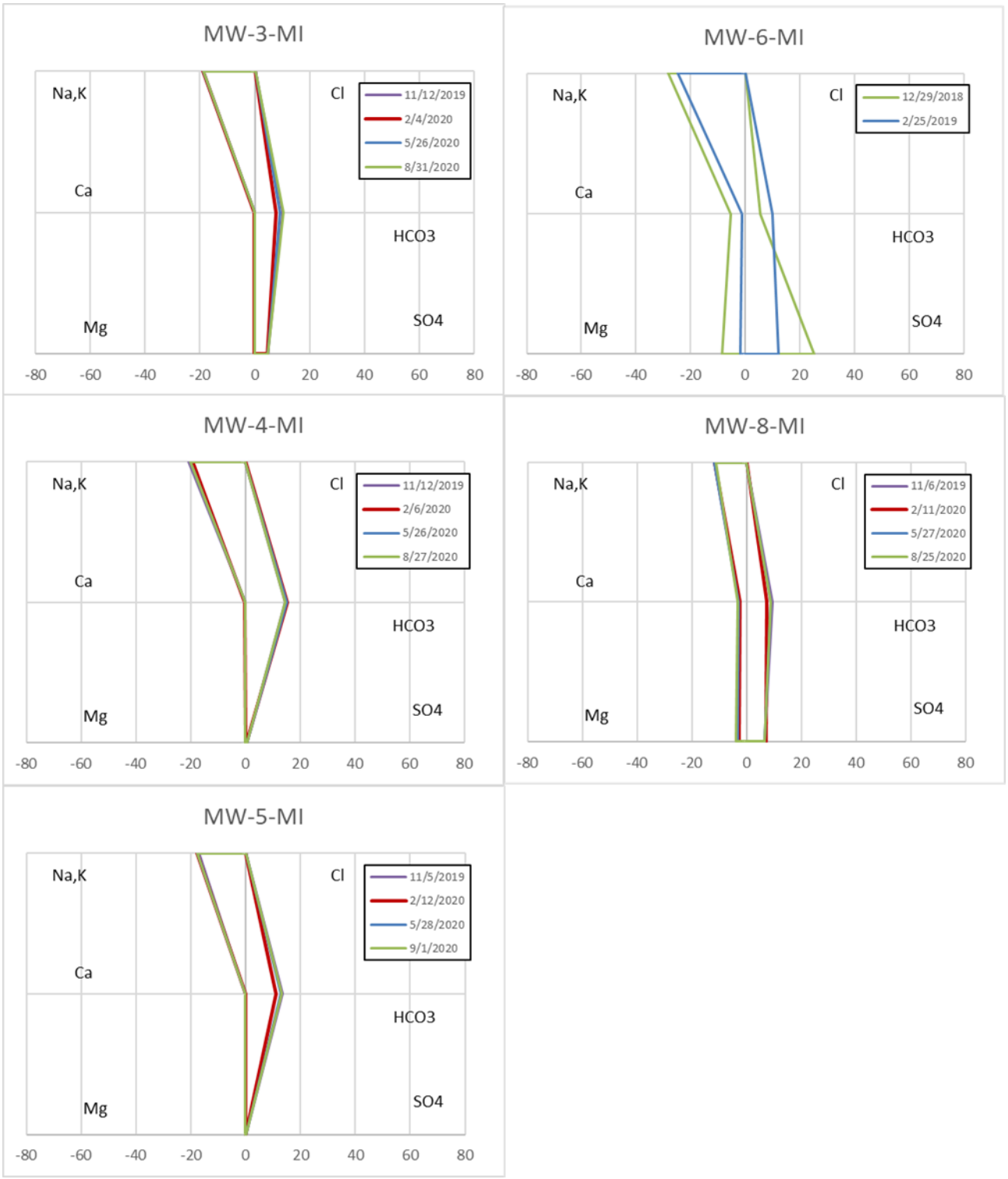


Figure 11. Stiff diagrams of wells completed in the Lower Menefee.

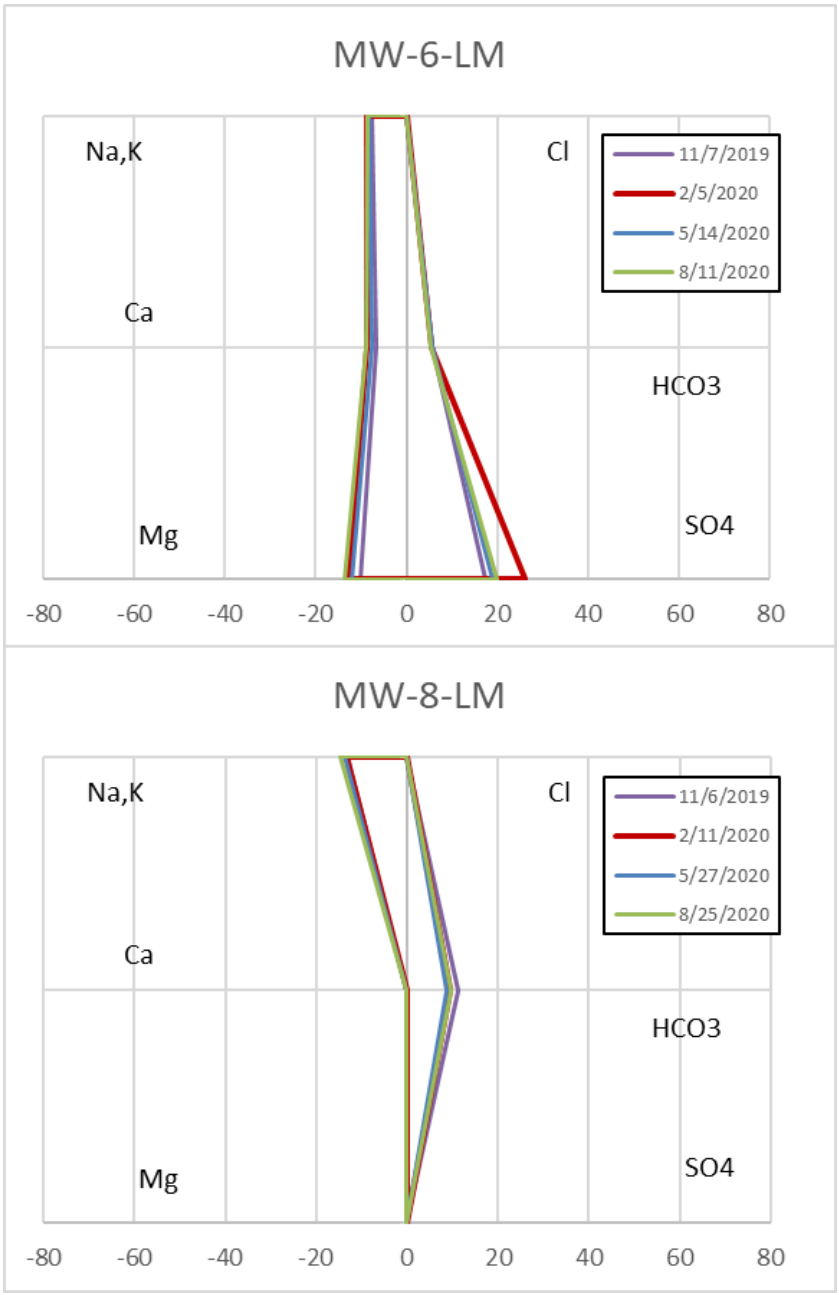


Figure 12. Stiff diagram of the single well completed in the Point Lookout.

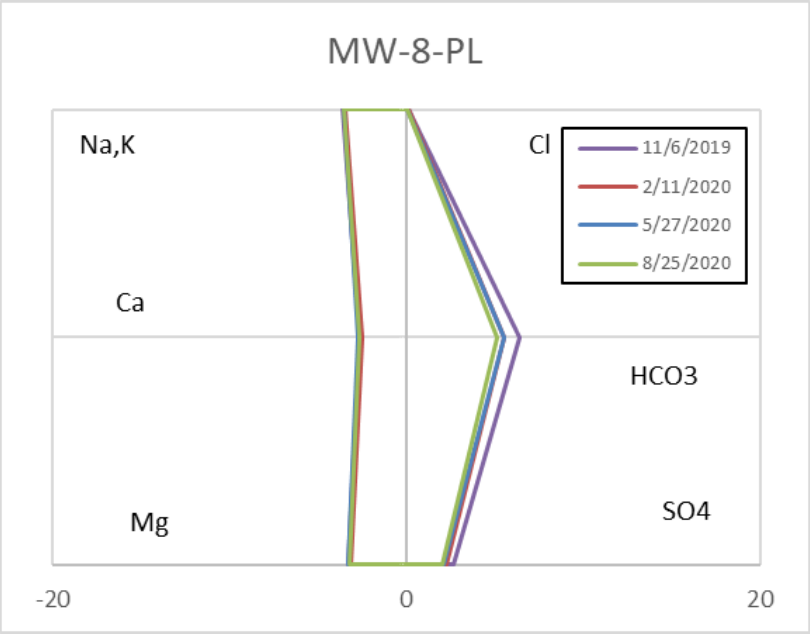


Figure 13. Concentrations of arsenic in bedrock groundwater (2016-2020).

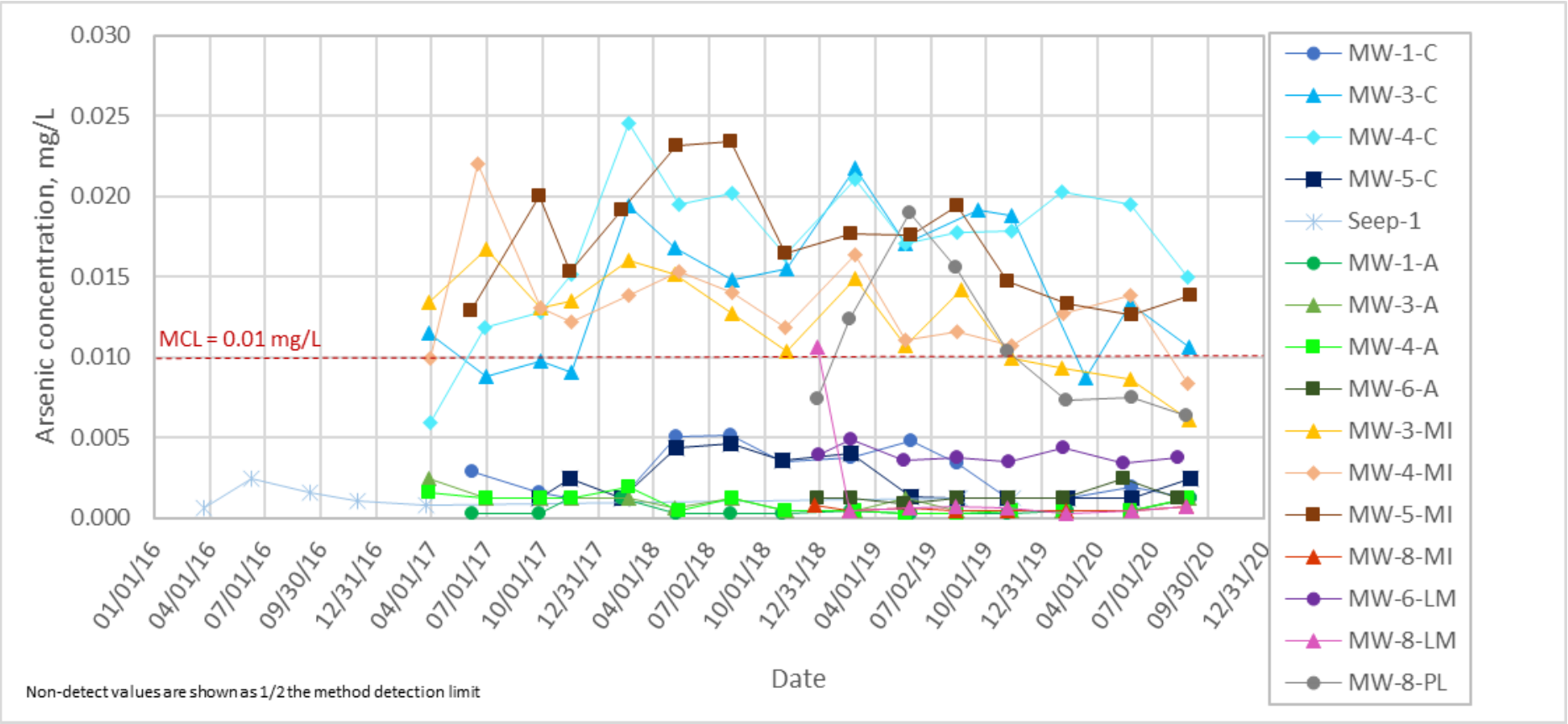


Figure 14. Concentrations of iron in bedrock groundwater (2016-2020).

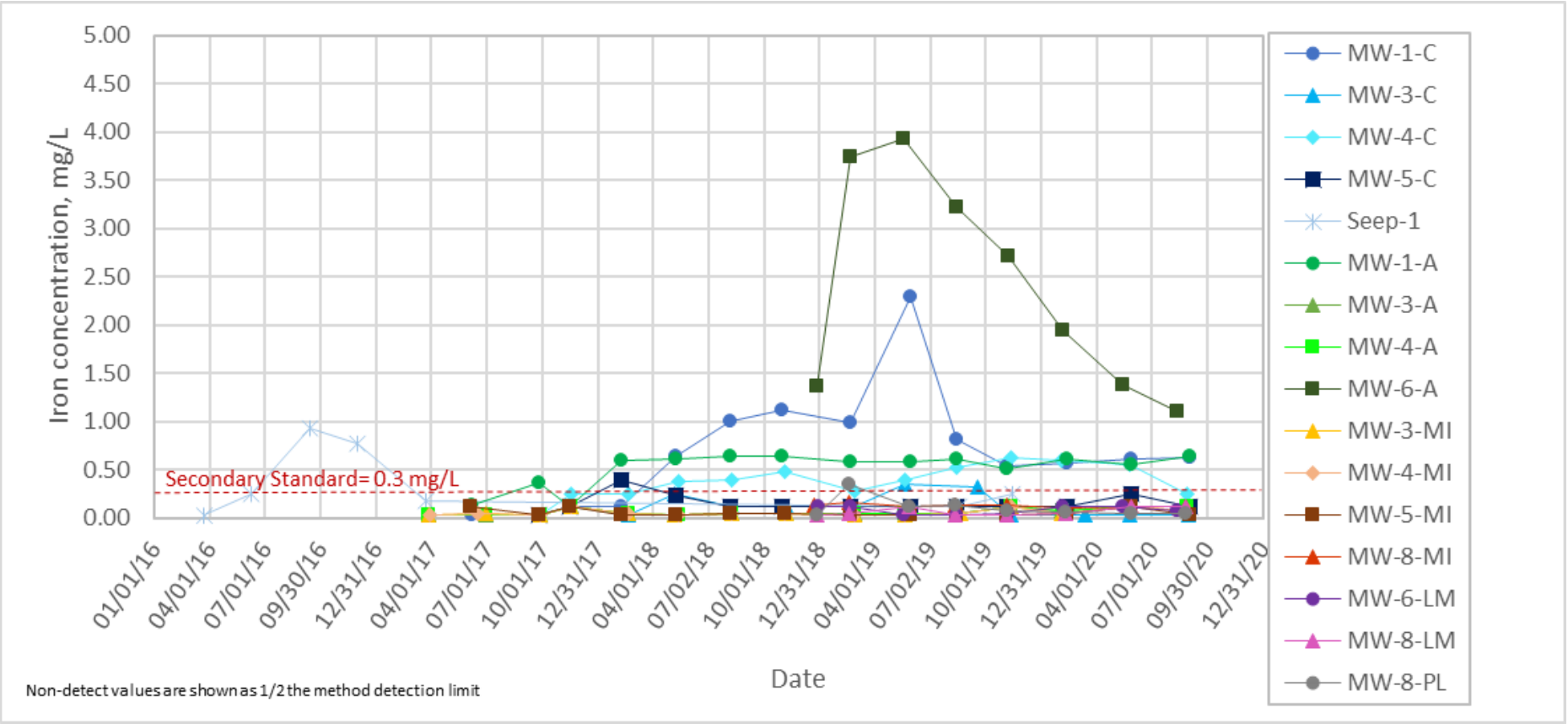


Figure 15. Concentrations of manganese in bedrock groundwater (2016-2020).

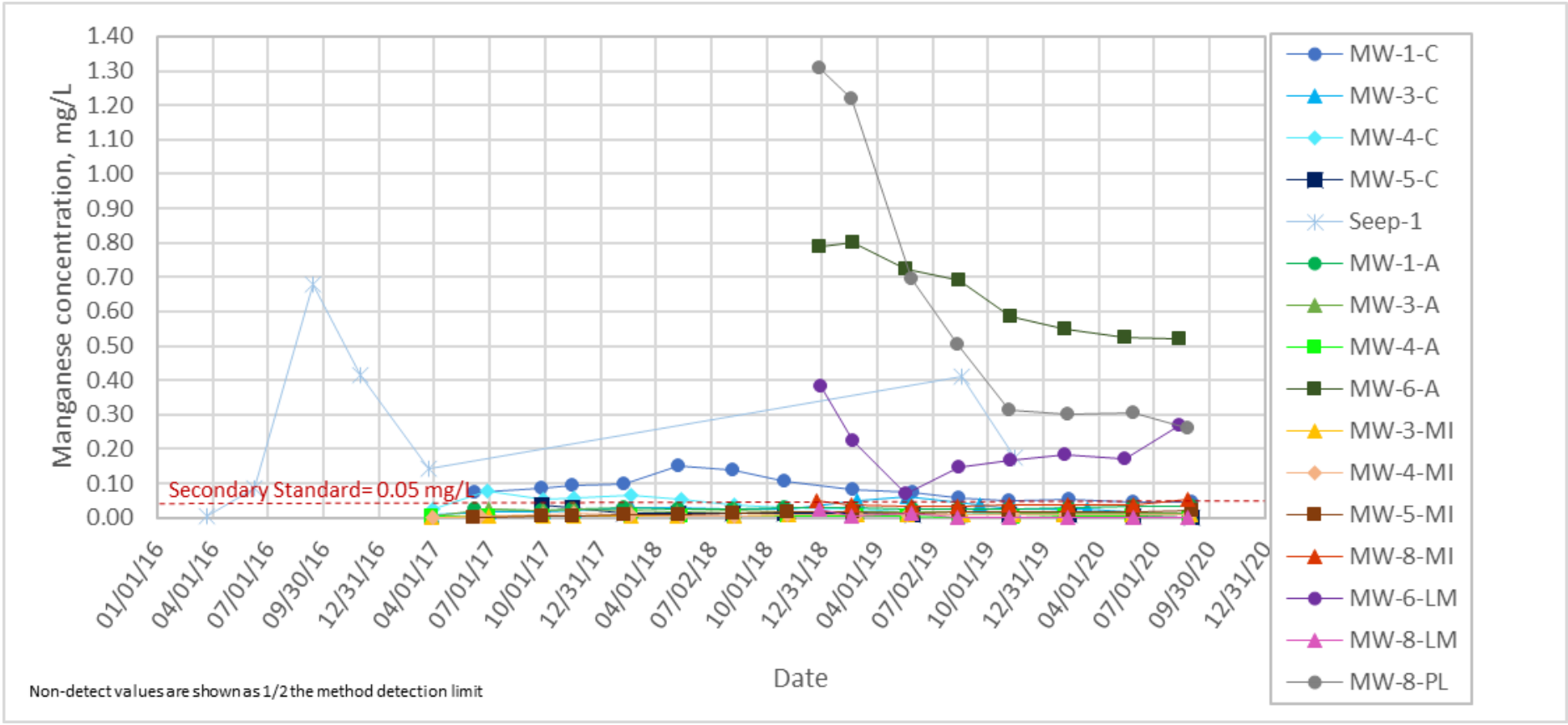


Figure 16. Concentrations of molybdenum in bedrock groundwater (2016-2020).

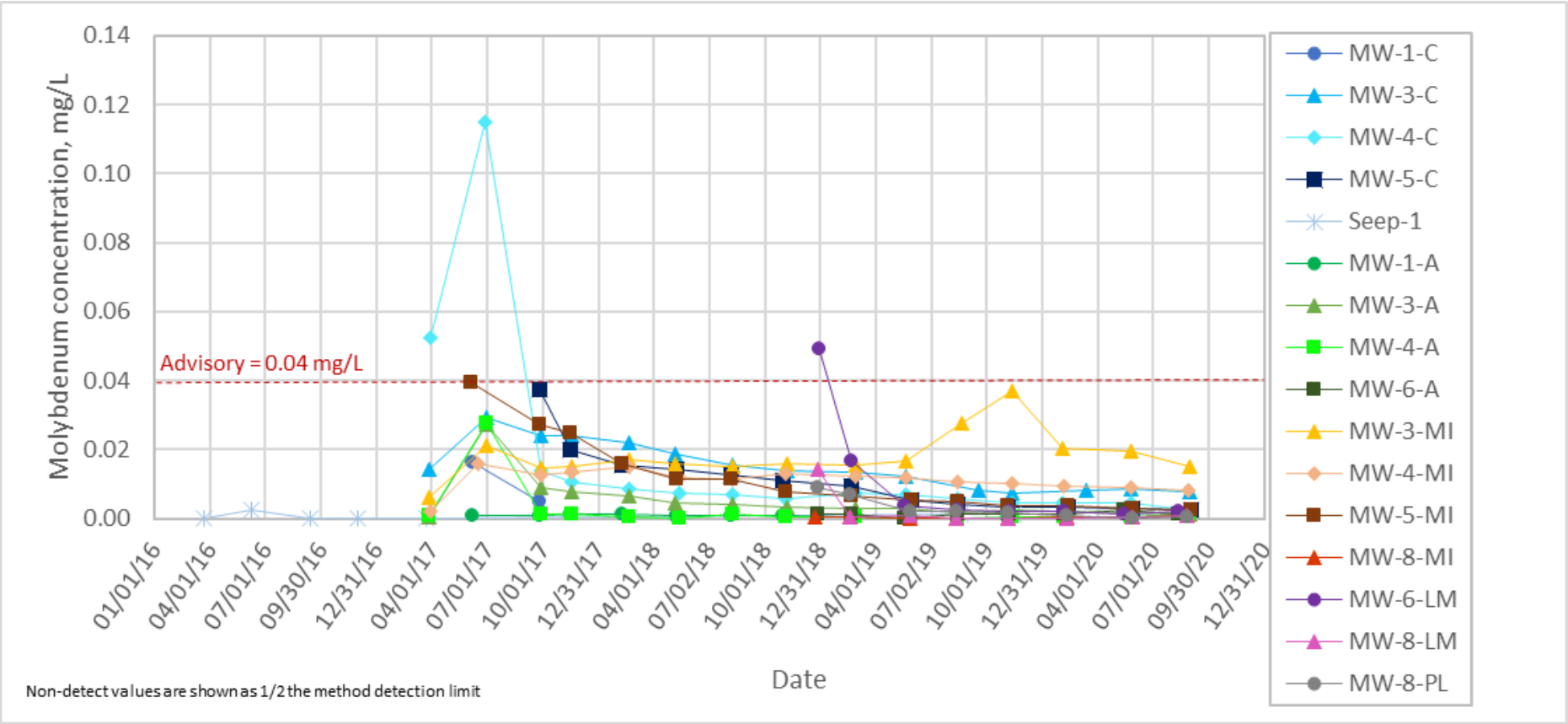


Figure 17. Concentrations of selenium in bedrock groundwater (2016-2020).

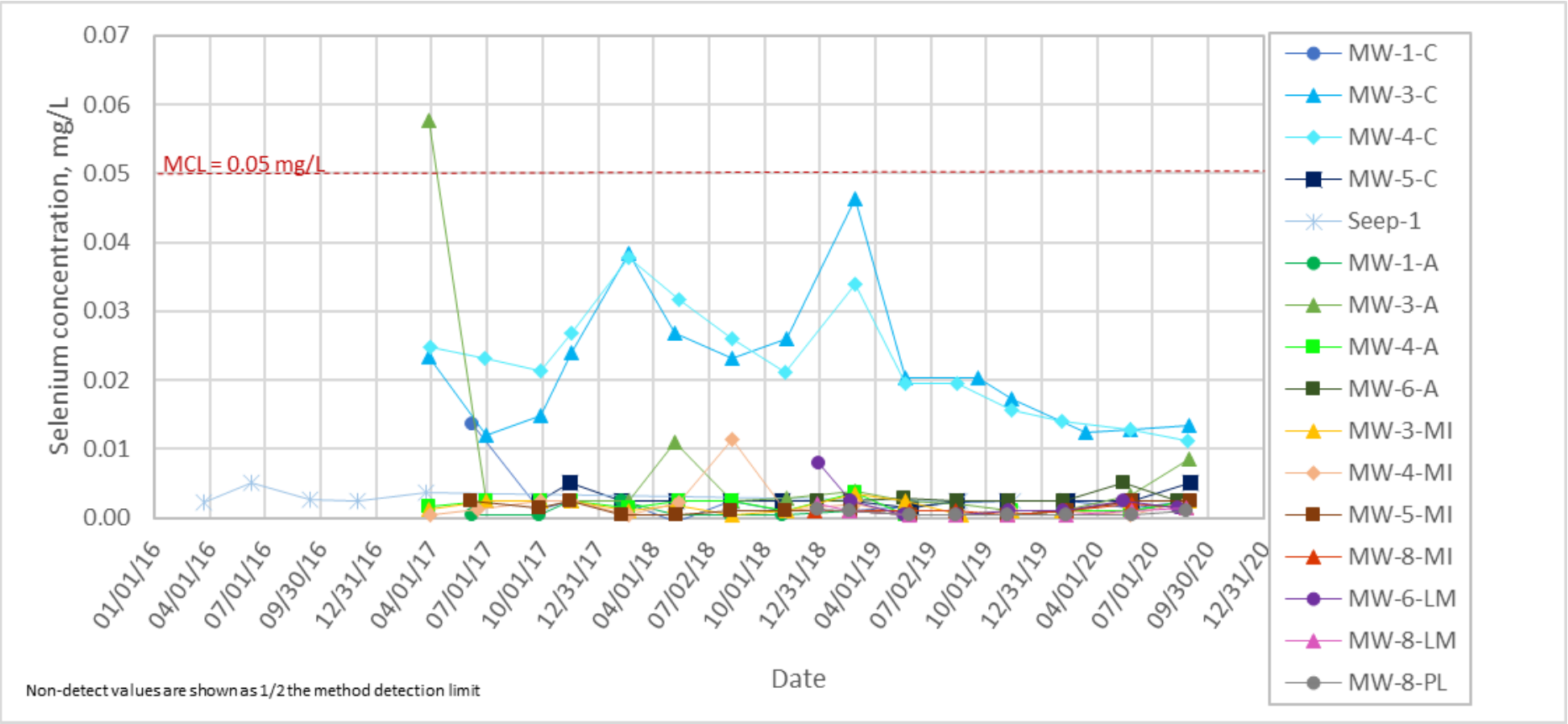


Figure 18. Concentrations of uranium in bedrock groundwater (2016-2020).

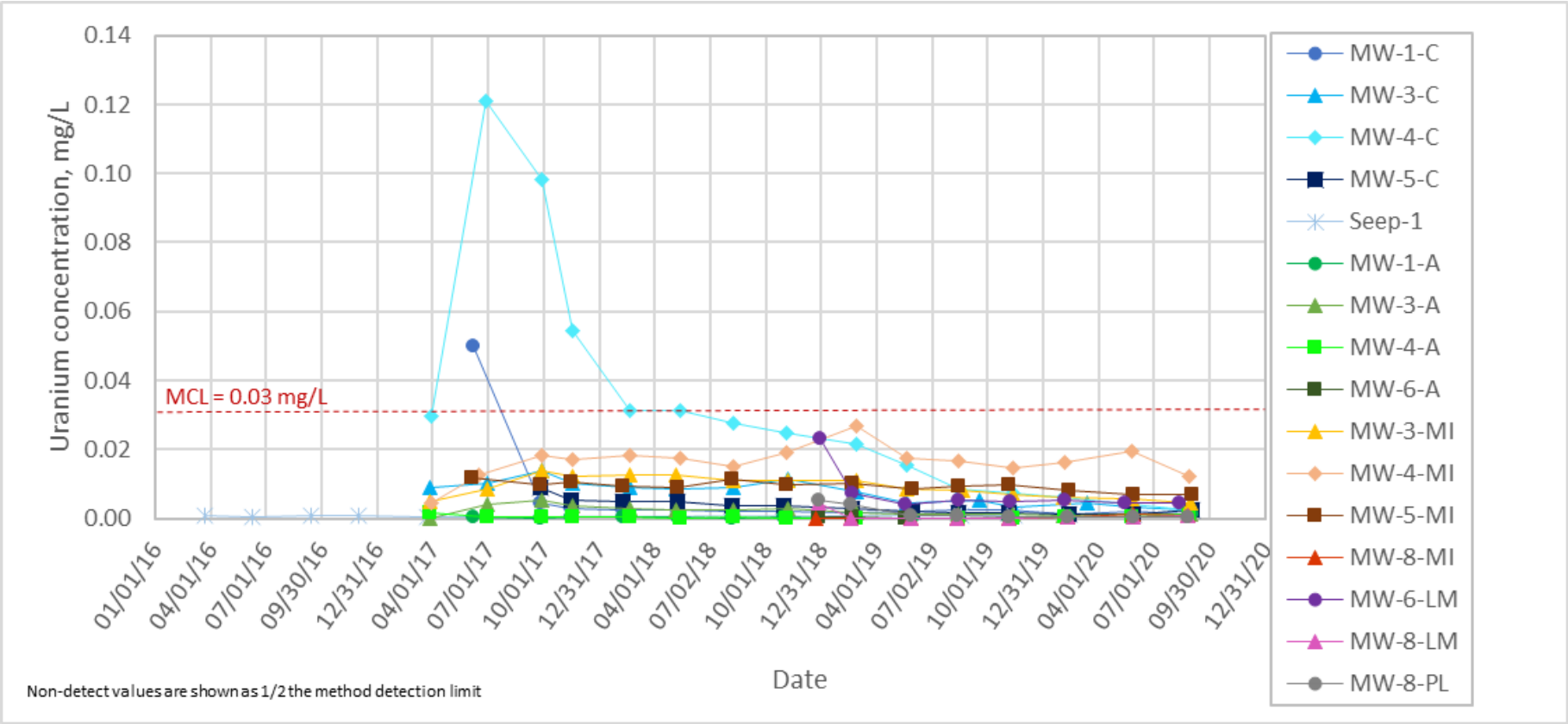


Figure 19. Cliff House groundwater potentiometric map, August 2020.

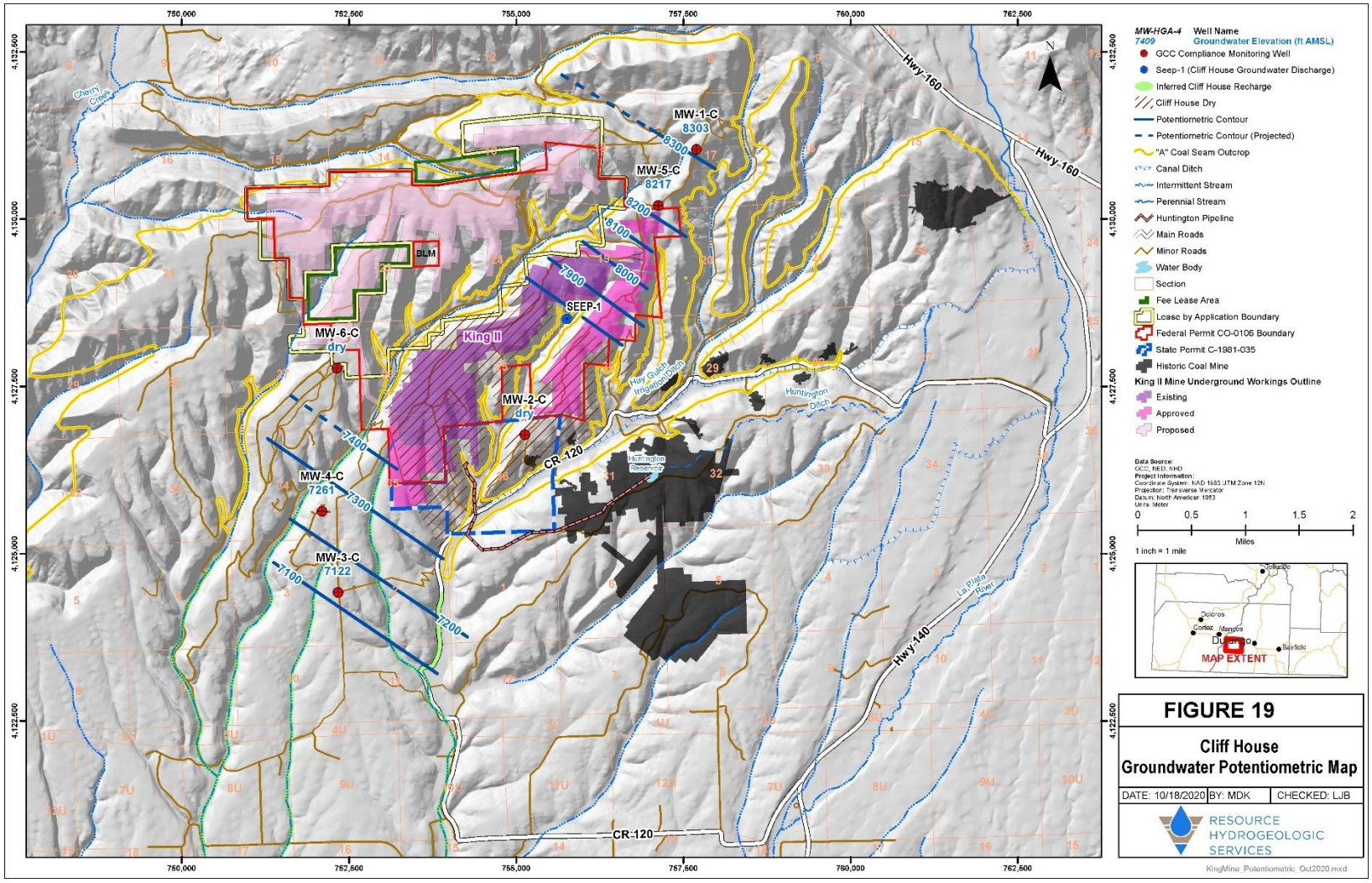


Figure 20. "A" seam coal groundwater potentiometric map, August 2020.

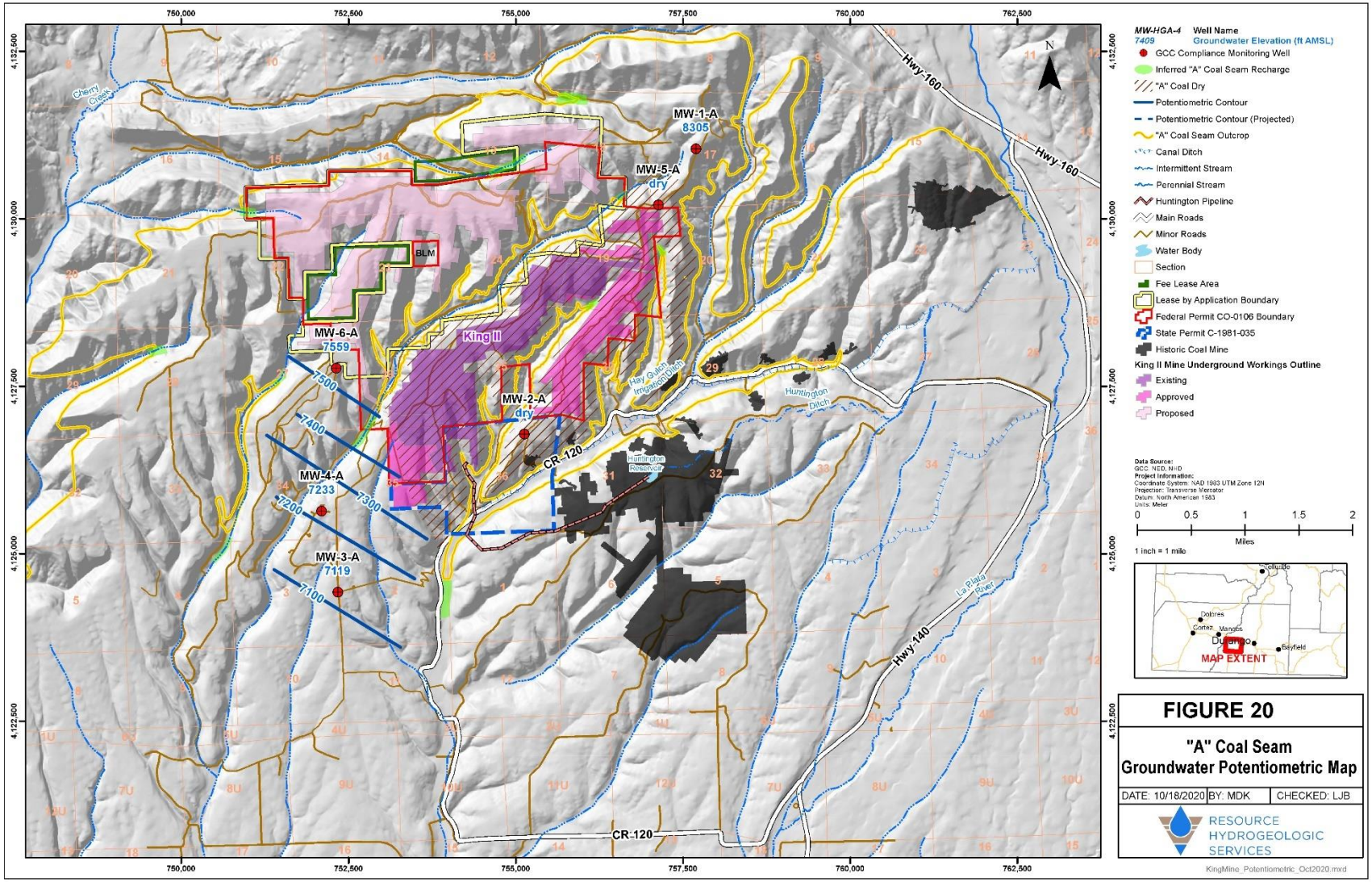


Figure 21. Menefee Interburden groundwater potentiometric map, August 2020.

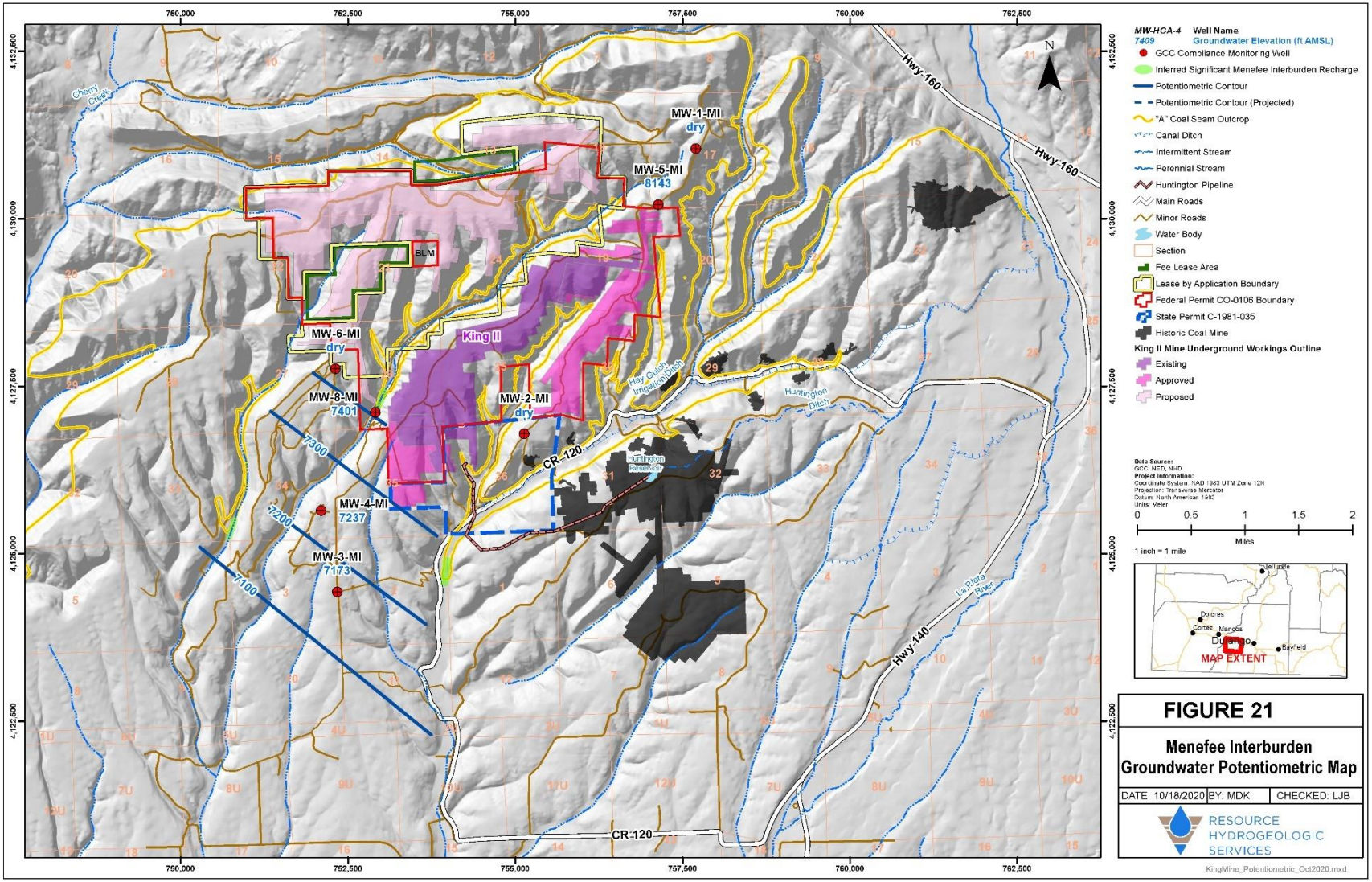


Figure 22. Lower Menefee groundwater potentiometric map, August 2020.

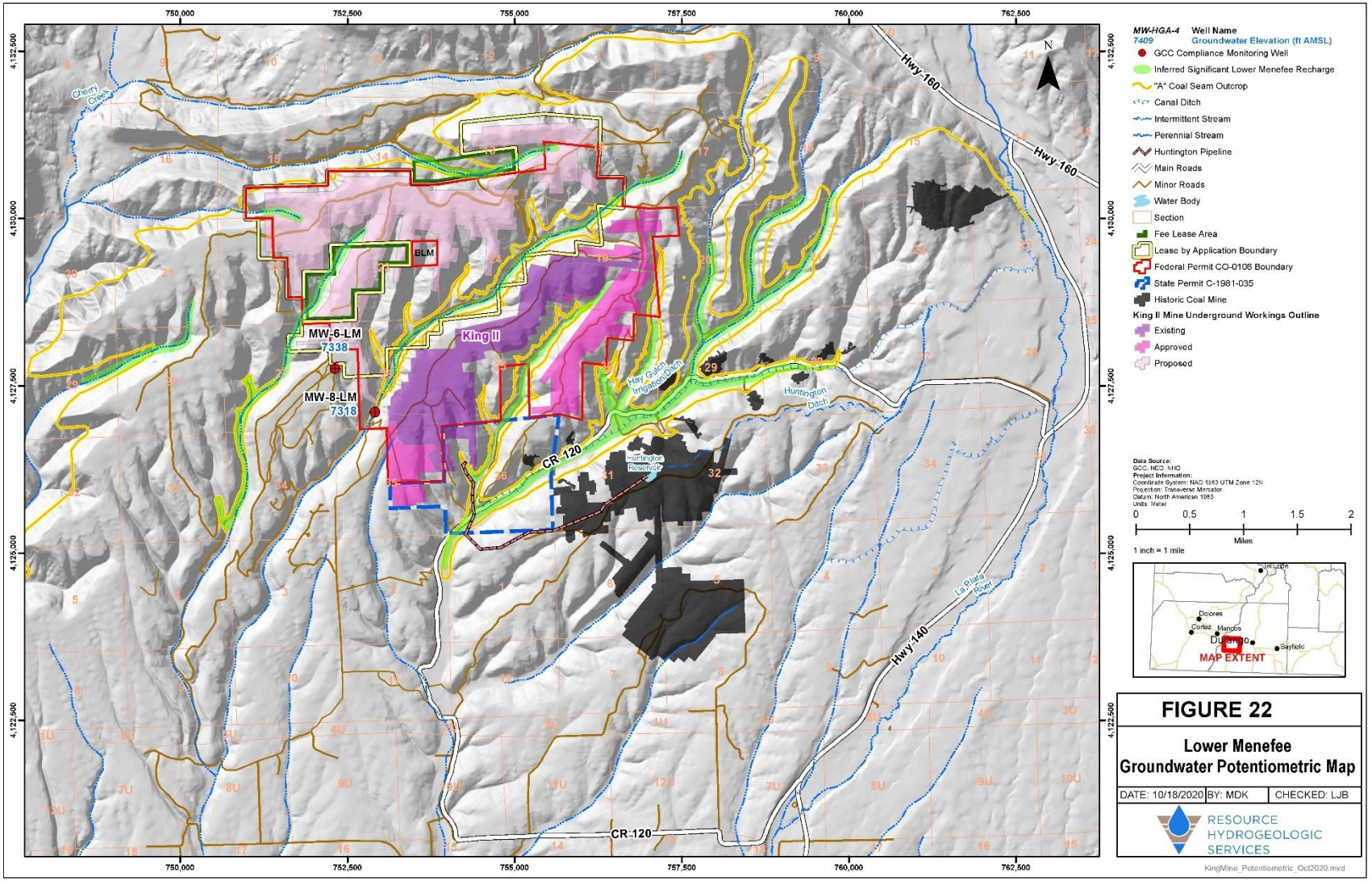
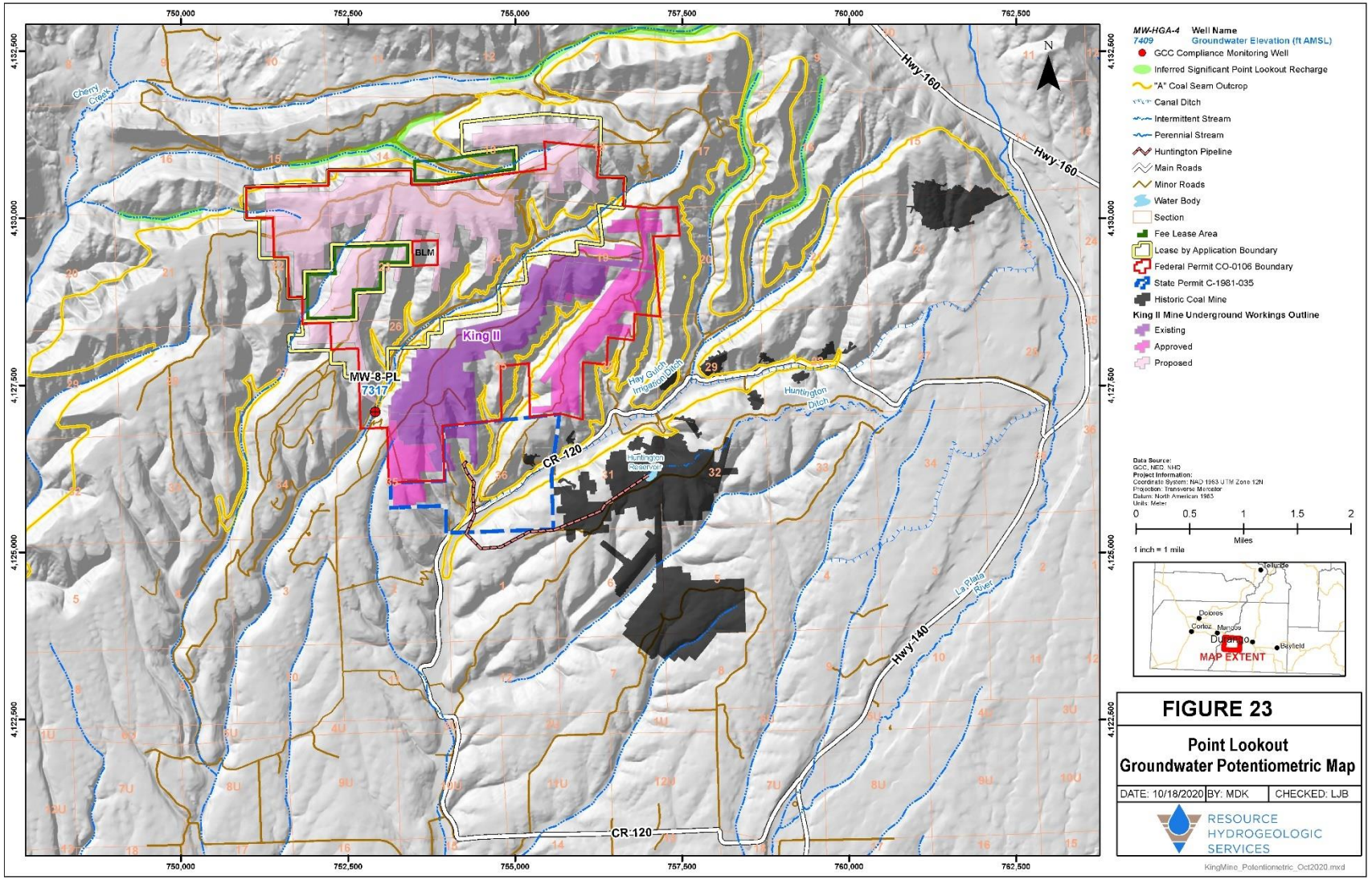


Figure 23. Point Lookout groundwater potentiometric map, August 2020.



ATTACHMENT - GCC Hydrologic Monitoring Data Summary Tables

GCC Energy Hydrologic Monitoring Data

Hay Gulch Ditch Upgradient																													
Year		2016										2017						2018				2019				2020			
Quarter		Q1	Q2			Q3			Q4			Q1			Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
Month		3	4	5	6	7	8	9	10	11	12	1	2	3	6	9	11	2	5	8	11	2	5	8	11	2	5	8	
Sample Date		3/31	4/22	5/26	6/23	7/20	8/25	9/21	10/19	11/29	12/13	1/26	2/27	3/22	6/28	9/21	11/28	2/22	5/14	8/9	11/8	2/28	5/23	8/16	11/13	2/13	5/13	8/13	
Lab Analysis (Y/N)		Y	N	N	Y	N	N	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Field Parameters:																													
Flow Rate	cfs	0.7	1.0	1.2	1.6	1.0	1.0	1.1	1.0	NM	1.0	NM	0.8	0.3	2.7	NM	NM	NM	0.6	0.7	0.7	0.3	3.6	1.2	NM	NM	0.9	0.1	
Temperature	deg C	9.8	20.9	11.3	21.1	20.8	16.8	14.9	16.4	5.9	7.0	1.5	4.7	10.7	20.2	19.7	8.8	4.7	11.3	22.1	1.1	5.9	5.9	16.9	5.7	1.5	16.5	18.1	
pH	SU	7.75	8.27	7.95	8.15	8.24	8.26	8.47	8.19	8.79	8.58	8.2	8.69	8.77	8.88	8.39	7.60	7.9	7.58	9.07	7.16	6.4	7.53	8.03	7.33	7.75	8.39	8.65	
Specific Conductance	µS/cm	247	323	197	141	189	207	233	210	258	234	687	455	454	106	549	868	1041	304	307	307	752	306	275	682	902	314	528	
Oxygen Reduction Potential	mV	76.4	114.7	97.2	51.6	53.6	82.8	72.5	105.9	92.4	116.3	66.3	-12	-10.6	23.8	86.1	95.10	-164.1	111.4	-181.3	13.9	103.7	-24.0	24.4	-22.4	-4.5	81.7	118.9	
Dissolved Oxygen	mg/L	8.1	6.4	8.0	6.0	6.5	6.9	7.2	4.7	6.7	6.1	10.6	9.0	6.9	4.8	6.7	9.3	9.4	8.5	6.4	10.2	8.0	8.9	7.8	7.9	7.0	7.5	8.4	
Lab Analytical Results:																													
Hardness as CaCO3	mg/L	128			80.9			119		152				257	69.2	316	456	489	101	153	149	393	136	125	372	405	150	287	
pH (Lab)	SU	8.17			8.04			8.16		8.19				8.06	8.06	8.22	8.31	8.39	7.99	9.07	7.86	7.45	7.69	7.83	7.40	7.22	7.60	8.01	
Total Dissolved Solids (Lab)	mg/L	170			75			165		180				285	65.0	390	650	700	140	215	175	535	205	225	635	587	255	340	
Total Suspended Solids	mg/L	30.0			117			17.0		4.8				2.50	63.5	2.00	5.75	6.01	106	6.25	14.8	22.0	113	20.0	5.38	<4	140	19.5	
Calcium	mg/L	33.5			24			33.0		38.4				53.6	20.8	64.9	86.6	87.3	26.3	39.1	40.3	79.8	34.6	32.4	79.3	81.5	36.1	63.2	
Magnesium	mg/L	10.9			5.08			9.01		13.7				29.8	4.21	37.5	58.3	65.9	8.61	13.5	11.9	47.0	12.1	10.8	42.2	49	14.5	31.3	
Sodium	mg/L	4.46			2.19			3.90		6				10.9	1.97	13.8	27.1	34.6	3.31	5.33	5.00	19.1	7.24	5.81	25.4	30.9	7.67	10.9	
Potassium	mg/L	<1			<1			1.35		<1.00				<1.00	1.75	2.15	3.05	3.52	1.18	1.24	<1.00	3.89	1.57	1.07	3.25	3.65	1.86	1.85	
Alkalinity, Total	mg/L	160			65			98.0		118				185	55.0	177	305	244	67	111	120	260	390	103	233	315	102	220	
Alkalinity, Bicarbonate	mg/L	160			65			94.0		118				185	55.0	161	285	244	67	107	120	260	390	103	233	295	102	220	
Alkalinity, Carbonate	mg/L	<10			<10			<10		<10.0				<10.0	<10.0	16.0	20.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10	<10.0	<10.0	
Alkalinity, Hydroxide	mg/L	<10			<10			<10		<10.0				<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10	<10.0	<10.0	
Chloride	mg/L	5.77			2.07			4.32		7.92				22.7	1.76	30.8	48.2	46.7	3.12	6.70	5.58	48.1	7.75	6.04	22.8	31.6	9.64	24.5	
Fluoride	mg/L	0.213			0.208			0.223		0.208				0.215	0.195	0.265	0.283	0.285	0.224	0.272	0.224	0.252	0.208	0.214	<0.500	0.239	<0.500	0.226	
Sulfate as SO4	mg/L	42.1			17.7			29.0		45.3				87.7	15.0	99.0	179	229	34	49.7	45.0	128	47.2	35.6	107	151	44.0	86.3	
Total Organic Carbon (TOC)	mg/L	1.41			1.6			2.21		1.14				2.49	1.15	1.90	1.99	1.81	2.31	1.61	1.09	4.94	3.08	1.84	4.54	5.45	2.93	1.65	
Oil & Grease	mg/L	<5			<5			<5		<5.00				<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5	<5.00	<5.00	
Nitrate/Nitrite as N	mg/L	<0.02			0.028			<0.020		<0.020				0.053	<0.020	0.045	0.088	0.105	0.026	<0.020	<0.020	0.263	0.050	0.072	0.104	0.044	0.302	0.042	
Sodium Adsorption Ratio (SAR)	no unit	0.17			0.1			0.16		0.21				0.30	0.10	0.34	0.55	0.68	0.14	0.18	0.16	0.42	0.26	0.22	0.55	0.65	0.26	0.29	
Ammonia as N ^	mg/L																								<0.100				
Ortho-Phosphate as P ^	mg/L																								<0.0500				
Aluminum	mg/L	<0.05			<0.05			<0.05		<0.050				<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.05	<0.050	<0.050	
Arsenic	mg/L	<0.0005			<0.0005			<0.0005		<0.0005				0.0005	<0.0005	0.0009	0.0007	<0.0025	<0.0005	0.0009	<0.0005	0.0007	0.0006	0.0007	0.0005	0.0006	<0.0005	0.0007	
Cadmium	mg/L	<0.0001			<0.0001			<0.0001		<0.0001				<0.0001	<0.0001	<0.0001	<0.0001	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Copper	mg/L	0.0006			0.0011			0.0011		0.0005				0.0008	0.0013	0.0006	0.0005	0.0007	0.0011	0.0011	0.0013	0.0026	0.0013	0.0012	0.0005	0.0005	0.0010	0.0006	
Iron	mg/L	<0.05			<0.05			<0.05		<0.050				<0.050	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	0.255	0.055	<0.050	0.316	0.551	<0.050	<0.050	
Lead	mg/L	<0.0005			<0.0005			<0.0005		<0.0005				<0.0005	<0.0005	<0.0005	<0.0005	<0.0025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Manganese	mg/L	0.0059			0.0035			0.0043		0.0047				0.0070	0.0024	0.0098	0.0049	0.0049	0.0093	0.0016	0.0043	0.127	0.0349	0.0096	0.113	0.368	0.0297	0.0087	
Mercury	mg/L	<0.0002			<0.0002			<0.0002		<0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	
Molybdenum	mg/L	<0.0005			0.0009			0.0007		0.0008				0.0006	0.0009	0.0012	0.0008	<0.0025	0.001	0.0012	0.0009	0.0011	0.0009	0.0011	0.0007	0.0005	0.0009	0.0009	
Selenium	mg/L	<0.001			<0.001			<0.001		<0.0010				0.0023	<0.0010	<0.0010	0.0010	<0.0050	<0.001	<0.001	<0.001	0.0017	<0.0010	<0.0010	<0.0010	<0.001	<0.0010	<0.0010	
Silica (Si02)	mg/L	7.78			8.23			10.5		9.71				9.04	7.71	9.45	10.1	11.0	8.4	8.64	8.31	11.3	8.55	9.17	13.4	13	7.57	7.36	
Silicon	mg/L	3.64			3.85			4.89		4.54				4.23	3.60	4.42	4.71	5.14	3.93	4.04	3.88	5.29	3.99	4.29	6.25	6.06	3.54	3.44	
Uranium	mg/L	0.0002			0.0001			0.0002		0.0003				0.0003	0.0001	0.0006	0.0009	0.0013	0.0001	0.0002	0.0003	0.0009	0.0003	0.0004	0.0007	<0.0005	<0.0005	0.0006	
Zinc	mg/L	<0.001			<0.001			<0.001		<0.0010				0.0022	<0.0020	<0.0040	<0.0020	<0.0100	<0.002	0.0033	<0.002	0.0044	<0.0020	<0.0020	0.0033	0.0087	<0.0020	<0.0020	
Radium 226	pCi/L	<0.4			NA			NA		NA				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Radium 228	pCi/L	<0.8			NA			NA		NA				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Notes & Definitions:

^ one-time analysis
Y/N yes or no
gpm gallons per minute
deg C degrees Celsius
SU standard pH units
µS/cm microsiemens per centimeter
mV millivolts
mg/L milligram per liter
pCi/L picocuries per liter
NM not measured (field)
NA not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*

2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*

3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

Hay Gulch Ditch Downgradient																												
Year		2016										2017						2018				2019				2020		
Quarter		Q1	Q2			Q3			Q4			Q1		Q2	Q3	Q4		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Month		3	4	5	6	7	8	9	10	11	12	1	2	3	6	9	11	2	5	8	11	2	5	8	11	2	6	8
Sample Date		3/31	4/22	5/26	6/23	7/20	8/25	9/21	10/19	11/29	12/13	1/26	2/27	3/22	6/28	9/21	11/28	2/22	5/7	8/9	11/7	2/28	5/23	8/16	11/13	2/6	6/1	8/13
Lab Analysis (Y/N)		Y	N	N	Y	N	N	Y	N	Y	N	N	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Field Parameters:																												
Flow Rate	cfs	1.1	1.2	1.1	NM	1.1	1.1	NM	0.8	NM	NM	NM	0.8	0.3	0.3	NM	dry	NM	NM	NM	0.5	0.25	0.3	1.05	NM	NM	1.5	0.1
Temperature	deg C	11.8	17.6	10.9	21.9	21.3	18.8	16.1	11.8	7.0	6.6	7.2	5.0	12.7	17.6	18.7		6.3	11.3	20.6	4.7	6.88	8.23	15.15	3.51	3.73	14.21	20.4
pH	SU	8.57	8.55	8.14	8.14	8.55	8.37	8.3	8.36	8.64	8.06	7.28	8.06	9.00	8.53	8.66		8.33	7.58	7.43	7.48	6.42	7.77	7.61	8.38	7.94	8.24	8.00
Specific Conductance	µS/cm	429	530	297	116	308	257	1183	420	421	728	678	987	17	114	164		742	304	356	309	577	202	295	554	882	137	237
Oxygen Reduction Potential	mV	57.5	105.9	33.2	32.5	68.6	38.4	18.7	88.6	117.5	155.2	147.6	-15.5	137.8	185.3	48		51.6	111.4	-10	-88.9	125.6	50.6	111.6	-108.1	124.2	104.8	103.0
Dissolved Oxygen	mg/L	7.9	7.7	8.7	6.0	6.7	5.6	6.8	7.1	6.5	7.2	7.6	9.8	5.6	6.4	7.1		9.8	8.5	6.3	9.1	7.6	8.8	7.2	9.6	9.5	8.0	6.4
Lab Analytical Results:																												
Hardness as CaCO3	mg/L	226			67.8			480		267				503	59.1	91.4		329	140	182	167	281	91.9	137	295	416	63.6	120
pH (Lab)	SU	8.42			8.13			8.25		8.24				8.15	7.98	7.98		8.17	8.05	8.09	7.95	7.84	7.68	7.73	7.73	7.80	7.49	7.59
Total Dissolved Solids (Lab)	mg/L	270			55			630		320				615	65.0	80.0		420	220	260	185	390	185	195	355	573	120	135
Total Suspended Solids	mg/L	27.3			18			4.20		12.4				12.7	3.00	<0.500		49.5	<2	5.67	4.40	18.4	153	22.5	<4.00	4.20	17.5	28.6
Calcium	mg/L	55.5			21.9			94.7		65.5				112	19.0	29.5		75.4	37.5	49.0	44.7	61.6	26.0	34.5	67.2	85.6	20.3	34.2
Magnesium	mg/L	21.1			3.15			59.1		25.2				54.6	2.86	4.31		34.2	11.2	14.4	13.4	31	6.54	12.3	30.8	49.0	3.15	8.38
Sodium	mg/L	8.69			1.57			16.8		10.7				22.5	1.49	2.37		18.1	5.42	6.49	5.15	16.5	5.03	6.62	17.0	28.5	1.90	3.68
Potassium	mg/L	1.49			<1			4.48		1.46				2.33	<1.00	<1.00		2.84	1.14	1.58	1.34	3.13	1.31	1.27	2.60	3.81	<1.00	1.36
Alkalinity, Total	mg/L	220			59			220		225				320	47.0	85.0		265	112	170	140	150	340	140	194	297	48	110
Alkalinity, Bicarbonate	mg/L	220			59			140		155				320	47.0	85.0		259	104	170	140	150	340	140	188	283	48	110
Alkalinity, Carbonate	mg/L	<10			<10			80.0		70				<10.0	<10.0	<10.0		<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	14.0	<10.0	<10.0
Alkalinity, Hydroxide	mg/L	<10			<10			<10		<10.0				<10.0	<10.0	<10.0		<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Chloride	mg/L	9.40			1.26			97.9		12				31.9	<1.00	1.54		23.1	7.54	7.47	5.69	40.2	16.9	7.65	14.8	30.7	1.87	4.42
Fluoride	mg/L	0.244			0.195			0.244		0.227				0.224	0.290	0.227		0.308	0.228	0.295	0.228	0.232	0.205	0.218	0.252	0.272	0.185	0.224
Sulfate as SO4	mg/L	68.1			13.5			144		89.5				204	11.3	17.9		86.5	40.2	46.8	45.0	91.4	18.5	42.7	83.3	143	14.2	32.4
Total Organic Carbon (TOC)	mg/L	1.53			1.4			3.48		1.65				2.31	2.16	0.932		1.56	1.28	1.33	1.76	2.90	2.37	2.10	3.26	4.53	1.39	1.47
Oil & Grease	mg/L	<5			<5			<5		<5.00				<5.00	<5.00	<5.00		<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Nitrate/Nitrite as N	mg/L	<0.02			0.026			0.027		<0.020				<0.020	<0.020	<0.020		<0.020	<0.020	<0.020	<0.020	0.17	0.146	0.090	<0.020	0.056	0.031	0.053
Sodium Adsorption Ratio (SAR)	no unit	0.25			0.03			0.33		0.28				0.44	0.08	0.11		0.43	0.2	0.20	0.17	0.43	0.22	0.24	0.41	0.61	0.10	0.14
Ammonia as N ^	mg/L																								<0.100			
Ortho-Phosphate as P ^	mg/L																								<0.0500			
Aluminum	mg/L	<0.05			<0.05			<0.05		<0.050				<0.050	<0.050	<0.050		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Arsenic	mg/L	0.0005			<0.0005			0.0015		0.0006				0.0006	0.0005	0.0006		0.0005	0.0005	0.0008	<0.0005	0.0006	0.0006	0.0006	0.0005	0.0006	<0.0005	0.0007
Cadmium	mg/L	<0.0001			<0.0001			<0.0001		<0.0001				<0.0001	<0.0001	<0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Copper	mg/L	0.0004			0.0016			0.0012		0.0005				0.0004	0.0020	0.0013		0.0005	0.0008	0.0008	0.0008	<0.0010	0.0021	0.0009	0.0007	0.0006	0.0014	0.0009
Iron	mg/L	<0.05			<0.05			<0.05		<0.050				<0.050	<0.050	<0.050		<0.050	<0.050	<0.050	<0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Lead	mg/L	<0.0005			<0.0005			<0.0005		<0.0005				<0.0005	<0.0005	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Manganese	mg/L	0.0039			0.0044			0.0059		0.0063				0.0112	0.0009	0.0010		0.0962	0.0038	0.0445	0.0102	0.048	0.0125	0.0033	0.0102	0.0286	0.0012	0.0046
Mercury	mg/L	<0.0002			<0.0002			<0.0002		<0.0002				<0.0002	<0.0002	<0.0002		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	<0.0005			0.0008			0.0013		0.0007				<0.0005	0.0009	0.0011		0.0010	0.0011	0.0012	0.0010	0.001	0.0011	0.0012	0.0007	0.0006	0.0008	0.0012
Selenium	mg/L	<0.001			<0.001			0.0026		<0.0010				0.0022	<0.0010	<0.0010		0.0011	<0.0010	<0.0010	<0.001	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Silica (Si02)	mg/L	8.96			7.48			11.8		10.9				12.2	6.80	8.53		10.7	8.41	8.77	8.66	8.46	5.70	8.86	11.8	12.3	6.38	7.14
Silicon	mg/L	4.19			3.5			5.51		5.11				5.70	3.18	3.99		5.01	3.93	4.10	4.05	3.95	2.67	4.14	5.50	5.75	2.98	3.34
Uranium	mg/L	0.0004			0.0001			0.0006		0.0006				0.0009	0.0001	0.0002		0.0012	0.0004	0.0005	0.0003	0.0009	0.0002	0.0004	0.0007	0.0006	<0.0005	<0.0005
Zinc	mg/L	<0.001			0.0021			0.0013		0.0012				<0.0020	<0.0020	<0.0040		<0.0020	0.0074	0.0048	0.0035	0.0022	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Radium 226	pCi/L	<0.4			NA			NA		NA				NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Radium 228	pCi/L	<0.8			NA			NA		NA				NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes & Definitions:

^ one-time analysis
Y/N yes or no
gpm gallons per minute
deg C degrees Celsius
SU standard pH units
µS/cm microsiemens per centimeter
mV millivolts
mg/L milligram per liter
pCi/L picocuries per liter
NM not measured (field)
NA not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*

2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*

3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

Well #1 Upgradient

Year		2016										2017						2018				2019				2020		
Quarter		Q1	Q2			Q3			Q4			Q1		Q2	Q3	Q4		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Month		3	4	5	6	7	8	9	10	11	12	1	2	3	6	9	11	2	5	8	11	2	5	8	11	2	6	8
Sample Date		3/30	4/27	5/26	6/23	7/19	8/24	9/21	10/24	11/30	12/14	1/18	2/27	3/22	6/28	9/28	11/29	2/22	5/14	8/9	11/7	2/25	5/23	8/16	11/14	2/13	6/1	8/31
Lab Analysis (Y/N)		Y	N	N	Y	N	N	Y	N	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Field Parameters:																												
Purge Flow Rate	gpm	1.5	7.9	7.1	5.8	7.1	7.4	6.8	7.5	9.3	7.5	7.7	7.5	8.2	7.0	7.1	7.5	7.2	7.2	10	7.2	10.0	8.3	11.0	6.5	8.0	10.0	8.0
Total Purged	gal	306	522	870	297	280	284	288	300	280	295	298	297	291	286	259	287	268	280	267	305	300	321	327	293	314	300	291
Depth to Water	ft bgs	4.40	5.07	4.60	4.95	5.55	6.30	6.03	5.73	5.69	5.08	4.30	3.80	3.82	4.50	5.51	5.50	5.40	5.77	5.65	6.50	5.98	4.50	5.68	6.08	5.55	4.17	6.25
Temperature	deg C	8.8	13.1	11.9	14.2	14.1	12.7	12.5	12.6	10.6	11.3	10.9	10.4	11.2	11.9	11.8	11.6	11.5	11.7	12.0	12.5	11.7	11.5	11.8	12.9	11.6	12.1	12.3
pH	SU	7.77	7.57	7.46	7.6	7.69	7.59	7.67	7.77	7.72	7.68	7.6	7.67	7.67	7.59	7.6	7.58	7.56	7.49	7.35	7.34	7.44	7.39	7.37	7.32	7.37	7.38	7.57
Specific Conductance	µS/cm	1224	1199	1284	1246	1226	1143	1176	1223	1280	1305	1392	1415	1351	1159	1162	1241	1278	1218	1289	1204	1235	1308	1253	1232	1277	1268	1067
Oxygen Reduction Potential	mV	-123.1	-162.2	-142.5	-185.4	-156.6	-196.8	-140.6	-148.9	-152.9	-141.0	-143.6	-125.6	-132.2	-201	-176.9	-213.20	-185.3	-219.3	-251.6	-273.0	-232.0	-194.0	-192.0	-159.9	-193.0	-221.7	-187.2
Lab Analytical Results:																												
Hardness as CaCO3	mg/L	230			306			216		271				391	277	215	280	274	275	369	287	252	350	303	263	290	319	255
pH (Lab)	SU	7.73			7.57			7.58		7.59				7.46	7.74	7.66	7.56	7.75	7.95	7.48	7.50	7.77	7.56	7.23	7.35	7.12	7.26	7.53
Total Dissolved Solids (Lab)	mg/L	760			745			735		725				775	725	705	790	745	770	835	730	735	860	780	705	700	775	710
Calcium	mg/L	44.0			59.7			42.4		51.7				75.7	54.0	41.6	55.6	53.4	53.8	71.5	56.7	49.1	67.8	58.2	51.5	56.5	61.6	49.6
Magnesium	mg/L	29.1			38.2			26.7		34.5				49.1	34.6	27.1	34.4	34.2	34.1	46.4	35.4	31.4	43.8	38.3	32.7	36.1	40.0	31.7
Sodium	mg/L	199			196			210		189				167	189	203	195	183	191	154	212	196	172	167	198	183	178	193
Potassium	mg/L	3.00			3.15			3.01		3.01				3.30	3.00	3.09	2.99	3.09	3.03	3.16	3.15	3.01	3.32	3.01	3.01	<5	3.05	3.05
Alkalinity, Total	mg/L	610			660			620		615				640	585	670	625	620	595	630	640	610	615	615	590	600	576	520
Alkalinity, Bicarbonate	mg/L	570			660			620		615				640	585	670	625	620	595	630	640	610	615	615	590	600	576	520
Alkalinity, Carbonate	mg/L	40.0			<10			<10		<10.0				<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10	<10.0	<10.0
Alkalinity, Hydroxide	mg/L	<10			<10			<10		<10.0				<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10	<10.0	<10.0
Chloride	mg/L	4.33			6.12			4.30		4.44				4.53	4.32	6.21	4.39	4.30	4.35	4.34	4.23	4.35	4.59	4.36	6.19	4.76	4.76	4.62
Fluoride	mg/L	0.347			<0.5			0.353		0.337				0.337	0.362	<0.500	0.358	0.354	0.335	0.390	0.359	0.355	0.349	0.335	<0.500	0.348	0.366	0.356
Sulfate as SO4	mg/L	90.1			108			83.8		117				156	97.4	74.0	101	106	97.2	147	89.9	91.4	131	112	92.1	104	110	79.6
Total Organic Carbon (TOC)	mg/L	2.54			3.3			2.80		3.18				3.84	5.82	2.84	3.33	3.37	3.5	3.94	3.35	3.31	3.70	3.53	3.14	3.29	3.37	3.32
Nitrate/Nitrite as N	mg/L	<0.02			<0.02			<0.02		<0.200				<0.020	<0.400	<0.400	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ammonia as N ^	mg/L																								0.931			
Ortho-Phosphate as P ^	mg/L																								0.0590			
Aluminum	mg/L	<0.05			<0.05			<0.05		<0.050				<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.100	<0.25	<0.050	<0.150
Arsenic	mg/L	<0.0005			<0.0005			<0.0005		<0.0005				0.0009	<0.0005	<0.0005	<0.0005	0.0005	0.0005	0.0005	<0.0005	0.0005	0.0005	<0.0005	<0.0010	<0.0005	<0.0005	<0.0010
Cadmium	mg/L	<0.0001			<0.0001			<0.0001		<0.0001				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0002
Copper	mg/L	0.0035			0.003			0.0021		0.0041				0.0020	0.0020	0.0030	0.0027	0.0035	0.003	0.0022	0.0025	0.0042	0.0015	0.0019	0.0012	0.0017	0.0017	0.0021
Iron	mg/L	1.20			1.51			0.946		1.64				2.01	1.34	0.101	1.44	1.44	1.39	1.98	1.52	1.26	1.74	1.58	1.41	1.49	1.53	1.24
Lead	mg/L	<0.0005			<0.0005			<0.0005		<0.0005				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0010	<0.0005	<0.0005	<0.0010
Manganese	mg/L	0.267			0.344			0.221		0.312				0.491	0.315	0.202	0.311	0.307	0.306	0.498	0.286	0.355	0.439	0.428	0.354	0.366	0.369	0.297
Mercury	mg/L	<0.0002			<0.0002			<0.0002		<0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0050	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	<0.0005			<0.0005			<0.0005		0.0005				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0006	<0.0005	0.0005	<0.0005	<0.0005	<0.0010	<0.0005	<0.0005	<0.0010
Selenium	mg/L	<0.001			<0.001			<0.001		<0.0010				0.0245	<0.0010	<0.0010	<0.0010	<0.0010	0.0171	0.0120	0.0022	0.0032	0.0024	<0.0010	<0.0020	<0.001	<0.0010	0.0095
Silica (Si02)	mg/L	13.8			15.2			14.8		12.9				14.2	14.9	14.3	14.7	13.4	14.6	13.8	13.7	13.5	13.1	13.1	14.3	13.1	13.1	13.6
Silicon	mg/L	6.45			7.12			6.94		6.05				6.64	6.94	6.68	6.86	6.27	6.81	6.45	6.41	6.3	6.13	6.11	6.68	6.13	6.14	6.37
Uranium	mg/L	<0.0001			0.0021			<0.0001		0.0002				0.0002	0.0001	0.0001	0.0001	0.0002	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	<0.0002	<0.0005	<0.0005	<0.0010
Zinc	mg/L	<0.001			<0.001			0.0023		0.0301				<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.002	<0.002	<0.002	<0.0020	<0.0020	<0.0020	<0.0040	<0.002	<0.0020	<0.0040
Radium 226	pCi/L	<0.4			NA			NA		NA				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Radium 228	pCi/L	<0.8			NA			NA		NA				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes & Definitions:

^	one-time analysis
Y/N	yes or no
gpm	gallons per minute
deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
mV	millivolts
mg/L	milligram per liter
pCi/L	picocuries per liter
NM	not measured (field)
NA	not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*
2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*
3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

Well #2 Downgradient																													
Year		2016										2017						2018					2019				2020		
Quarter		Q1	Q2			Q3			Q4			Q1		Q2	Q3	Q4		Q1	Q2	Q3	Q4	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Month		3	4	5	6	7	8	9	10	11	12	1	2	3	6	9	11	2	5	8	8	11	2	5	8	11	2	6	8
Sample Date		3/30	4/21	5/25	6/23	7/19	8/24	9/20	10/19	11/30	12/14	1/26	2/27	3/22	6/13	9/21	11/28	2/22	5/7	8/8	8/9	11/7	2/27	5/22	8/16	11/13	2/6	6/1	8/26
Lab Analysis (Y/N)		Y	N	N	Y	N	N	Y	N	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Field Parameters:																													
Purge Flow Rate	gpm	0.5	0.5	0.5	0.5	0.5	0.5	0.5	NM	7.2	2	NM	NM	NM	NM	NM	NM	0.1	1	0.1	1	0.5	0.3	0.5	0.3	0.5	0.3	0.3	0.3
Total Purged	gal	7	6	7	7	6	6	6	6	6	6	8	8	6	8	8	6	6	11	2	6.5	7.5	13	10	9	8	12	8	7
Depth to Water	ft bgs	3.69	3.17	4.25	1.42	4.17	4.17	5.50	6.4	4.7	5	3.95	2.74	6.35	0.95	4.85	5.68	6.68	7.4	6.65	6.59	5.17	5.85	0.92	3.60	5.20	5.60	4.00	6.29
Temperature	deg C	6.3	10.1	13.5	18.4	19.8	14.0	14.1	13.3	10.4	12.4	7.0	4.4	8.4	17.1	12.1	11.7	9.8	8.9	14.0	11.1	11.9	9.1	8.1	10.5	11.5	10.4	9.1	11.5
pH	SU	7.58	7.6	7.6	7.64	7.68	7.73	7.53	7.66	7.66	7.71	7.57	7.68	7.78	7.56	7.66	7.52	7.59	7.48	7.84	7.20	7.15	7.41	7.34	7.23	7.19	7.32	7.41	7.44
Specific Conductance	µS/cm	899	867	804	600	369	815	877	881	904	872	908	1193	921	633	852	879	887	847	828	895	955	960	1091	1051	1083	1083	1134	1017
Oxygen Reduction Potential	mV	-9.4	-13.7	-35.7	-66.9	-112.1	-76.3	-88.3	-82	-72.7	-81.1	-66.8	-55.7	-67	-54.3	-53.7	-63.70	-44.9	-34	-75.6	-127	-91.9	48.4	-57.8	-30.1	-5.5	25.3	-51.3	19.9
Lab Analytical Results:																													
Hardness as CaCO3	mg/L	444			314			452		432				485	352	378	449	412	415	422	415	465	488	537	513	603	540	575	560
pH (Lab)	SU	7.63			7.66			7.48		7.55				7.72	7.6	7.51	7.51	7.62	7.6	7.61	7.45	7.50	7.5	7.4	7.04	7.12	7.20	7.09	7.30
Total Dissolved Solids (Lab)	mg/L	685			470			525		495				635	415	525	540	515	545	545	575	550	575	695	655	690	695	730	665
Calcium	mg/L	72.2			54.9			75.9		72.7				81.0	60.9	64.8	78.0	70.1	70.2	72.7	70.4	78.7	81.3	87.1	83.3	99.4	87.2	92.2	90.1
Magnesium	mg/L	63.9			43.1			63.8		60.8				68.7	48.5	52.6	61.8	57.4	58.2	58.4	58.2	65.2	69.2	77.6	74.0	86.3	78.2	83.7	81.3
Sodium	mg/L	22.2			16.5			19.8		20.7				21.8	16.1	17.0	20.1	19.4	19.2	19.6	19.1	21.3	22.1	23.4	21.4	25.5	23.3	24.5	23.8
Potassium	mg/L	2.04			2.1			2.16		2.05				1.94	2.22	1.64	2.19	1.76	1.68	2.00	1.82	2.08	1.97	1.94	2.06	2.40	2.04	2.00	2.06
Alkalinity, Total	mg/L	342			280			380		380				375	285	395	375	333	350	380	328	340	395	460	365	348	324	324	345
Alkalinity, Bicarbonate	mg/L	338			280			380		380				375	285	395	375	333	350	380	328	340	395	460	365	348	324	324	345
Alkalinity, Carbonate	mg/L	<10			<10			<10		<10.0				<10.0	<10	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10
Alkalinity, Hydroxide	mg/L	<10			<10			<10		<10.0				<10.0	<10	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10
Chloride	mg/L	35.8			6.8			27.4		26.2				23.3	7.11	19.0	23.4	24.7	27.2	34.5	34.1	39.3	40.1	42.9	45.2	47.2	48.9	50.3	44.8
Fluoride	mg/L	0.230			0.298			0.272		0.256				0.228	0.313	0.263	0.246	0.244	0.224	0.259	0.281	0.263	0.244	0.246	0.221	<0.500	<0.500	<0.500	0.254
Sulfate as SO4	mg/L	129			70			114		117				153	75.2	98.4	94.7	104	102	112	111	137	138	196	189	182	199	230	204
Total Organic Carbon (TOC)	mg/L	3.34			14			2.64		3.4				3.52	3.56	2.61	2.25	2.10	2.02	2.06	1.93	2.08	1.87	2.69	2.28	1.99	1.80	1.84	1.87
Nitrate/Nitrite as N	mg/L	0.042			<0.02			<0.02		0.089				<0.020	<0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ammonia as N ^	mg/L																									<0.100			
Ortho-Phosphate as P ^	mg/L																									<0.0500			
Aluminum	mg/L	0.156			<0.05			<0.05		<0.050				<0.050	<0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.10
Arsenic	mg/L	0.0008			0.0015			0.0010		0.0013				0.0009	0.0017	0.0006	0.0011	0.0010	0.0009	0.0012	0.0012	0.0010	0.0012	0.0011	0.0012	0.0012	0.0011	0.0009	<0.001
Cadmium	mg/L	<0.0001			<0.0001			<0.0001		<0.0001				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002
Copper	mg/L	0.0004			0.0005			0.0003		0.0051				0.0007	0.0002	0.0004	0.0001	0.0056	0.0002	0.0006	0.0004	0.0003	0.001	0.0016	0.0003	0.0002	<0.0005	<0.0005	<0.0010
Iron	mg/L	0.081			0.085			0.118		<0.050				0.213	<0.05	<0.050	0.074	0.060	0.073	0.089	0.163	0.082	0.062	0.116	0.105	0.119	0.094	0.107	0.109
Lead	mg/L	<0.0005			<0.0005			<0.0005		0.0078				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0010
Manganese	mg/L	0.497			0.54			0.354		0.359				0.384	0.259	0.307	0.309	0.304	0.306	0.349	0.375	0.320	0.423	0.504	0.404	0.427	0.454	0.444	0.412
Mercury	mg/L	<0.0002			<0.0002			<0.0002		<0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0050	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	0.0014			0.0022			0.0024		0.0025				0.0021	0.0025	0.0021	0.0020	0.0024	0.0022	0.0024	0.0029	0.0024	0.0029	0.0026	0.0019	0.0024	0.0021	0.0023	0.0024
Selenium	mg/L	<0.001			<0.001			<0.001		0.0011				0.0045	<0.001	<0.0010	<0.0010	0.0012	<0.001	0.0012	0.0015	0.0013	0.0021	0.001	0.0011	0.0011	<0.0010	0.0012	<0.002
Silica (Si02)	mg/L	11.6			14.7			12.8		11.9				10.9	15.5	13.0	13.3	11.1	11.5	11.4	11.5	11.0	11.2	10.5	11.6	12.8	11.2	10.6	11.5
Silicon	mg/L	5.42			6.89			5.97		5.55				5.12	7.23	6.08	6.20	5.19	5.39	5.34	5.38	5.15	5.26	4.93	5.44	5.99	5.22	4.98	5.39
Uranium	mg/L	0.0013			0.0007			0.0015		0.0016				0.0014	0.0008	0.0013	0.0013	0.0013	0.0013	0.0013	0.0015	0.0014	0.0019	0.0016	0.0012	0.0015	0.0016	0.0016	0.0013
Zinc	mg/L	0.0034			<0.001			0.0010		0.0311				<0.0020	<0.002	<0.0040	<0.0020	0.0053	0.0022	0.0028	<0.0020	<0.0020	0.0025	<0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0040
Radium 226	pCi/L	<0.4			NA			NA		NA				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Radium 228	pCi/L	<0.8			NA			NA		NA				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes & Definitions:

^	one-time analysis
Y/N	yes or no
gpm	gallons per minute
deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
mV	millivolts
mg/L	milligram per liter
pCi/L	picocuries per liter
NM	not measured (field)
NA	not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*
2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*
3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

Wiltse Well

Year		2016										2017						2018				2019				2020		
Quarter		Q1	Q2			Q3			Q4			Q1			Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Month		3	4	5	6	7	8	9	10	11	12	1	2	3	6	9	11	2	5	8	11	2	5	8	11	2	5	8
Sample Date		3/31	4/27	5/25	6/23	7/19	8/24	9/20	10/24	11/29	12/13	1/18	2/27	3/21	6/13	9/28	11/28	2/22	5/16	8/9	11/8	2/28	5/23	8/19	11/11	2/17	5/13	8/12
Lab Analysis (Y/N)		Y	N	N	Y	N	N	Y	N	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Field Parameters:																												
Purge Flow Rate	gpm	150.0	38.5	23.4	18.6	19.9	17.3	15.8	17.0	10.6	18.1	39.5	39.6	39.6	NM	18.3	23.5	11.9	12.0	18.5	12.3	28.0	38.0	18.0	17.0	35.0	24.4	16.0
Total Purged	gal	5850	4228	4229	3686	2844	2979	2637	2724	2992	2916	3595	3580	3560	2980	2712	2423	2700	2890	2783	2747	3017	3200	3010	3058	3825	3495	3200
Depth to Water	ft bgs	0.35	0.00	0.85	2.15	2.99	2.60	3.32	6.85	1.90	1.95	0.30	0.00	0.00	2.05	3.40	3.40	3.35	3.93	4.13	3.78	2.40	0.05	2.47	2.68	0.43	1.60	3.18
Temperature	deg C	6.7	8.8	10.4	10.7	11.5	12.1	11.5	11.0	9.1	8.8	7.6	7.2	7.5	10.3	11.3	9.7	8.0	10.2	11.7	10.4	8.0	9.3	10.7	9.9	6.7	9.8	11.7
pH	SU	7.22	7.32	7.34	7.26	7.26	7.24	7.22	7.22	7.32	7.29	7.2	7.17	7.12	7.41	7.27	7.30	7.26	7.13	7.04	7.07	7.17	7.08	7.09	7.09	7.01	7.12	7.22
Specific Conductance	µS/cm	2043	1633	1805	1768	1478	1602	1941	1937	2014	2036	2262	2276	2085	1869	2074	2190	2232	2144	2072	2167	2170	2151	1964	1970	2171	2017	1450
Oxygen Reduction Potential	mV	105.6	17.9	20.1	38.5	26.9	20.0	28.6	21.6	13.7	20.9	3.2	18.3	6.0	13.3	19.5	19.2	14.3	29.9	-52.7	-18.8	22.7	-10.6	-23.7	51.9	49.33	71.9	72.2
Lab Analytical Results:																												
Hardness as CaCO3	mg/L	990			1050			1030		963				1040	1060	1140	1150	1090	1160	1130	1180	1150	1080	1080	1060	982	1060	1070
pH (Lab)	SU	7.22			7.34			7.29		7.36				7.22	7.46	7.30	7.33	7.70	8.35	7.22	7.42	7.38	7.35	7.11	7.09	7.12	7.09	7.29
Total Dissolved Solids (Lab)	mg/L	1580			1480			1520		1520				1480	1510	1680	1740	1740	1740	1750	1720	1710	1670	1520	1480	1600	1560	1580
Calcium	mg/L	197			208			206		186				205	211	219	226	211	216	221	230	226	214	214	208	191	206	206
Magnesium	mg/L	121			128			126		121				128	129	143	142	136	150	139	147	143	132	132	132	123	132	136
Sodium	mg/L	95.9			75.2			80.7		82.4				110	87.5	80.7	83.4	80.4	82.3	79.1	81.2	83.2	89.4	72.4	67.3	68.1	69.1	64
Potassium	mg/L	4.64			4.56			4.90		4.42				4.61	4.79	4.62	<5.00	4.73	4.98	5.01	5.00	5.01	4.77	4.92	4.85	4.33	<5.00	4.48
Alkalinity, Total	mg/L	460			500			470		450				410	445	510	475	445	435	463	505	515	469	474	460	460	431	475
Alkalinity, Bicarbonate	mg/L	440			500			470		450				410	445	510	475	445	435	463	505	515	469	474	460	460	431	475
Alkalinity, Carbonate	mg/L	20.0			<10			<10		<10.0				<10.0	<10	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10
Alkalinity, Hydroxide	mg/L	<10			<10			<10		<10.0				<10.0	<10	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10
Chloride	mg/L	81.0			76.3			62.3		70.1				72.5	72.5	68.7	68.9	66.7	60	57.2	57.5	67.2	67.8	49.9	48.2	57.7	51.8	58.1
Fluoride	mg/L	0.285			<0.5			<0.5		0.3				<0.500	0.332	<0.500	<0.500	<0.500	<0.500	<0.500	0.298	0.324	0.306	<0.500	<0.500	<0.500	<0.500	0.304
Sulfate as SO4	mg/L	671			595			656		676				731	702	779	772	832	714	733	741	801	709	627	627	711	633	704
Total Organic Carbon (TOC)	mg/L	3.54			4.1			3.15		3.02				3.40	3.54	3.34	3.26	3.37	3.5	3.51	3.63	3.82	4.87	4.27	3.30	4.22	3.80	3.69
Nitrate/Nitrite as N	mg/L	0.456			0.891			1.08		0.965				0.492	1.07	1.80	1.94	2.26	2.48	2.26	1.99	1.95	0.651	0.896	1.31	1.05	0.865	1.25
Ammonia as N ^	mg/L																								<0.100			
Ortho-Phosphate as P ^	mg/L																								<0.0500			
Aluminum	mg/L	<0.05			<0.05			<0.05		<0.050				<0.050	<0.1	<0.050	<0.250	<0.100	<0.05	<0.05	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.250	<0.1
Arsenic	mg/L	<0.0025			<0.0025			0.0005		0.0008				0.0009	0.0006	0.0005	0.0029	0.0009	0.0006	<0.0025	<0.001	<0.0010	0.0006	<0.0010	<0.0010	<0.0010	<0.0025	<0.001
Cadmium	mg/L	<0.0005			<0.0005			<0.0005		<0.0001				<0.0001	<0.0001	<0.0001	<0.0005	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002
Copper	mg/L	0.0018			0.0024			0.0020		0.0038				0.0023	0.0019	0.0025	0.0097	0.0020	0.0019	0.0018	0.0030	0.002	0.0021	0.0021	0.0012	0.0020	<0.0025	0.0013
Iron	mg/L	0.100			<0.05			0.060		0.136				0.286	0.161	<0.050	<0.250	0.132	0.151	0.125	0.121	0.151	0.379	0.287	0.209	0.285	<0.250	<0.1
Lead	mg/L	<0.0025			<0.0025			<0.0025		<0.0005				<0.0005	<0.0005	<0.0005	<0.0025	<0.0005	<0.0005	<0.0005	<0.001	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0025	<0.001
Manganese	mg/L	0.673			0.857			0.756		0.608				0.440	0.797	0.881	4.50	0.845	0.997	1.37	1.08	0.937	0.357	0.902	0.892	0.419	0.816	1.03
Mercury	mg/L	<0.0002			<0.0002			<0.0002		<0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	<0.0025			<0.0025			0.0017		0.0016				0.0016	0.0021	0.0021	0.0093	0.0020	0.002	0.002	0.0019	0.0017	0.0014	0.0020	0.0017	0.0013	<0.0025	0.0018
Selenium	mg/L	<0.005			<0.005			0.0013		0.0023				0.0027	0.0019	0.0016	0.0087	0.0027	0.0025	0.0025	<0.002	0.0025	0.0016	<0.0020	<0.0020	<0.0020	<0.0050	<0.002
Silica (Si02)	mg/L	13.9			16.1			16.4		14.3				14.7	15.5	16.1	13.4	14.1	15.9	16.2	15.9	14.1	13.2	15.4	14.9	12.2	12.9	13.8
Silicon	mg/L	6.51			7.53			7.67		6.69				6.85	7.22	7.54	6.29	6.58	7.42	7.58	7.44	6.6	6.19	7.20	6.96	5.72	6.05	6.43
Uranium	mg/L	0.0029			0.0021			0.0023		0.0026				0.0024	0.0021	0.0021	0.0110	0.0025	0.0024	0.0024	0.0032	0.0036	0.0044	0.0029	0.0023	0.0039	0.0032	0.0024
Zinc	mg/L	0.0156			0.0364			0.0301		0.0269				0.0194	0.026	0.0208	0.0855	0.0216	0.0225	0.0214	0.0172	0.0175	0.0128	0.0138	0.0108	0.0122	0.0132	0.0118
Radium 226	pCi/L	0.7 +/- 0.1			NA			NA		NA				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Radium 228	pCi/L	<0.8			NA			NA		NA				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes & Definitions:

^	one-time analysis
Y/N	yes or no
gpm	gallons per minute
deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
mV	millivolts
mg/L	milligram per liter
pCi/L	picocuries per liter
NM	not measured (field)
NA	not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*

2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*

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GCC Energy Hydrologic Monitoring Data

MW-HGA-4																											
Year		2016	2017												2018					2019					2020		
Quarter		Q4	Q1			Q2			Q3			Q4			Q1		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Month		12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	5	8	11	2	5	8	11	2	5	8
Sample Date		12/12	1/26	2/28	3/22	4/27	5/31	6/13	7/27	8/16	9/21	10/27	11/28	12/12	1/3	2/22	5/15	8/9	11/8	2/28	5/23	8/16	11/13	2/13	5/13	8/26
Lab Analysis (Y/N)		Y	N	N	Y	N	N	Y	N	N	Y	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Field Parameters:																											
Purge Flow Rate	gpm	0.5	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	9.4	NM	0.1	1.5	2.0	1.0	1.1	1.0	1.0	0.3	1.0	0.3	0.3
Total Purged	gal	21	21	21	21	21	21	19.5	20	20	21	21	21	24	19	21	21	19	21	24	22	21	21	22	21	20
Depth to Water	ft bgs	0.73	0.57	0.60	0.83	0.94	2.06	2.53	3.25	2.65	3.31	3.31	1.76	4.31	1.37	0.55	2.60	3.98	1.90	0.49	0.42	1.95	1.15	0.38	2.36	3.80
Temperature	deg C	7.3	4.8	6.4	8.1	7.2	9.9	8.4	8.6	8.8	9.0	9.2	9.0	9.3	8.8	7.8	8.1	8.7	8.8	7.6	7.7	8.5	8.8	7.9	7.4	9.2
pH	SU	7.29	7.36	7.40	7.41	7.33	7.36	7.40	7.36	7.35	7.33	7.31	7.27	7.27	7.33	7.30	7.18	7.27	7.05	7.15	7.18	7.16	7.09	7.12	7.23	7.28
Specific Conductance	µS/cm	1284	1257	1201	1155	1153	1113	1055	1099	1050	1124	1072	1171	1160	1141	1154	1098	1057	1167	1183	1102	1083	1127	1122	1093	1022
Oxygen Reduction Potential	mV	-72.1	-86.6	-105.1	-104.4	-74.5	-91.3	-134.7	-137.6	-131.0	-139.5	-77.3	-157.9	-70.1	-96.6	-157.3	-130.9	-230.8	-190.9	-128.3	-140.7	-130.9	-104.9	-107.8	-86.7	-61.1
Lab Analytical Results:																											
Hardness as CaCO3	mg/L	724			611			616			522		595			561	555	524	625	613	563	544	624	563	528	571
pH (Lab)	SU	7.30			7.17			7.31			7.25		7.21			7.58	8.15	7.33	7.12	7.2	8.17	6.95	6.88	6.78	6.89	7.07
Total Dissolved Solids (Lab)	mg/L	855			710			715			750		775			740	730	695	770	795	695	695	715	705	685	700
Calcium	mg/L	147			118			121			102		118			110	108	102	124	122	110	106	123	112	101	111
Magnesium	mg/L	86.7			76.7			76.6			64.9		72.8			69.3	69	65.4	76.5	74.7	70.3	67.9	76.8	68.9	67.0	71.7
Sodium	mg/L	19.5			27.4			28.6			24.9		27.2			26.5	30.4	29.9	27.6	27	28.6	28.3	31.9	27.9	30.3	30.5
Potassium	mg/L	2.02			2.13			2.11			1.75		2.21			2.17	2.22	2.33	2.13	2.16	2.00	2.10	2.38	2.05	2.06	2.08
Alkalinity, Total	mg/L	545			465			415			465		475			460	425	410	460	455	445	455	432	435	416	485
Alkalinity, Bicarbonate	mg/L	545			465			415			465		475			460	425	410	460	455	445	455	432	435	416	485
Alkalinity, Carbonate	mg/L	ND			<10.0			<10			<10.0		<10.0			<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Alkalinity, Hydroxide	mg/L	ND			<10.0			<10			<10.0		<10.0			<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Chloride	mg/L	10.9			8.75			7.95			8.96		8.74			8.43	7.57	6.47	9.40	10.5	8.06	8.44	9.46	8.39	7.64	8.78
Fluoride	mg/L	0.577			0.485			0.506			0.517		0.495			0.496	0.459	0.482	0.487	0.484	0.456	0.443	0.520	0.447	0.449	0.431
Sulfate as SO4	mg/L	240			229			192			205		204			222	190	169	201	221	186	212	190	193	181	179
Total Organic Carbon (TOC)	mg/L	NA			4.54			4.35			4.69		4.79			4.56	4.57	4.30	4.72	4.82	4.45	4.58	4.35	4.8	4.30	4.56
Nitrate/Nitrite as N	mg/L	<0.020			<0.020			<0.02			<0.020		<0.100			<0.020	<0.020	<0.020	<0.020	0.173	<0.020	<0.020	<0.020	<0.02	<0.100	<0.020
Ammonia as N ^	mg/L																						0.528			
Ortho-Phosphate as P ^	mg/L																						<0.0500			
Aluminum	mg/L	0.423			<0.050			<0.05			<0.050		<0.050			<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.1	<0.100	<0.1
Arsenic	mg/L	0.0030			0.0029			0.0028			<0.0005		0.0035			0.0037	0.0034	0.0036	0.0032	0.0031	0.0029	0.0028	0.0033	0.0022	0.0025	0.0026
Cadmium	mg/L	<0.0001			<0.0001			<0.0001			<0.0001		<0.0001			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002
Copper	mg/L	0.0006			0.0008			0.0002			0.0004		0.0002			0.0006	0.0008	0.0004	0.0008	<0.0010	0.0003	0.0004	0.0002	0.0005	<0.0010	<0.0010
Iron	mg/L	3.71			7.29			7.32			0.378		7.84			7.60	7.92	8.55	8.44	8.35	7.98	8.38	9.76	8.59	8.22	8.95
Lead	mg/L	<0.0005			<0.0005			<0.0005			<0.0005		<0.0005			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0010	<0.0010
Manganese	mg/L	4.07			2.78			2.37			2.03		2.11			1.99	1.81	1.58	2.13	2.56	2.12	1.84	1.78	1.77	1.49	1.66
Mercury	mg/L	ND			<0.0002			<0.0002			<0.0002		<0.0002			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0050	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	0.0013			0.0024			0.0027			0.0028		0.0027			0.0030	0.0031	0.0038	0.0029	0.0026	0.0027	0.0029	0.0031	0.0025	0.0030	0.0032
Selenium	mg/L	<0.001			0.0030			<0.001			<0.0010		<0.0010			<0.0010	0.002	0.0016	<0.001	0.001	<0.0010	<0.0010	<0.0010	<0.001	<0.0020	<0.0020
Silica (Si02)	mg/L	22.3			16.8			18			16.5		17.9			15.8	16.4	15.7	17.3	15.9	14.9	14.9	16.5	15.2	13.9	15.4
Silicon	mg/L	10.4			7.86			8.41			7.72		8.35			7.37	7.67	7.34	8.10	7.46	6.96	6.96	7.69	7.09	6.48	7.21
Uranium	mg/L	0.0010			0.0004			0.0004			0.0004		0.0004			0.0004	0.0004	0.0003	0.0005	0.0005	0.0004	0.0004	0.0003	<0.0005	<0.0010	<0.0010
Zinc	mg/L	0.0039			0.0046			<0.002			<0.0040		<0.0020			<0.002	<0.002	<0.002	<0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.002	<0.0040	<0.0040

Notes & Definitions:

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Y/N	yes or no
gpm	gallons per minute
deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
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mg/L	milligram per liter
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3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

MW-1-A																										
Year		2017								2018									2019				2020			
Quarter		Q2	Q3				Q4			Q1			Q2			Q3		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Month		6	7	8	9	9	10	11	12	1	2	3	4	5	6	7	8	11	2	5	8	11	2	5	9
Sample Date		6/7	7/18	8/23	9/7	9/26	10/26	11/16	12/5	1/2	2/9	3/22	4/11	5/10	--	7/23	8/7	11/1	2/20	5/30	8/14	11/5	2/12	5/28	9/1
Lab Analysis (Y/N)		Y	N	N	N	Y	N	Y	N	N	Y	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Field Parameters:																										
Purge Flow Rate	gpm	NM	NM*	NM*	NM	NM	NM	NM	NM	NM	0.1	NM	0.1	0.1	***	0.1	0.1	0.1	0.12	0.1	0.1	0.3	0.25	0.3	0.1
Total Purged	gal	12.8	NM*	NM*	NM	NM	2	2	1	1.5	2	1.5	1	1.3		1.5	1.5	1.6	1.0	1.5	1.12	1.5	1.0	1.0	1.0
Depth to Water	ft bgs	215.42	NM*	215.92	215.54	216.33	216.31	216.47	216.58	216.21	216.47	216.47	216.54	216.54		216.63	216.63	216.65	216.55	216.43	216.33	216.13	216.05	215.85	215.56
Temperature	deg C	17.7	NM*	NM*	10.7	9.7	9.1	9.1	8.7	9.5	9.0	8.7	9.6	9.2		9.9	10.0	8.9	7.5	10.3	9.6	9.7	8.1	9.1	9.6
pH	SU	7.78	NM*	NM*	7.35	7.38	7.29	7.28	7.25	7.19	7.37	7.28	6.8	6.97		6.99	7.05	7.01	7.13	6.96	7.05	7.00	7.13	7.18	7.22
Specific Conductance	µS/cm	1362	NM*	NM*	1555	1563	1616	1650	1693	1700	1723	1735	1647	1761		1734	1815	1781	1776	1681	1757	1737	1797	1855	1664
Oxygen Reduction Potential	mV	-34.6	NM*	NM*	-54.7	-46.5	-50	-48.3	-49.6	-44.6	-52.8	-37.5	142.4	0.4		-26.4	-33.2	101.4	-11.8	25.4	-18.71	3.59	12.7	4.24	-20.08
Lab Analytical Results:																										
Hardness as CaCO3	mg/L	124				133		130			159			156			160	174	159	153	148	150	159	165	161
pH (Lab)	SU	7.74				7.35		7.33			7.22			7.45			7.17	7.27	7.13	7.03	7.14	6.92	7.19	6.91	7.23
Total Dissolved Solids (Lab)	mg/L	975				1080		1120			1100			1150			1040	1130	1160	1150	1150	1140	1190	1150	1150
Calcium	mg/L	24.7				25.8		24.9			30.5			29.7			30.9	34.0	31.2	29.8	27.9	29.0	30.9	31.6	30.6
Magnesium	mg/L	15.1				16.7		16.6			20.1			19.9			20.1	21.5	19.7	19.1	18.9	18.8	19.9	20.8	20.6
Sodium	mg/L	324				329		325			348			327			333	358	357	319	348	333	337	349	348
Potassium	mg/L	1.98				2.02		<5.00			<5.00			2.12			2.23	2.47	2.34	2.18	2.29	2.12	2.13	<5.00	2.29
Alkalinity, Total	mg/L	375				450		380			415			353			385	395	375	355	368	420	360	340	325
Alkalinity, Bicarbonate	mg/L	375				450		380			415			353			385	395	375	355	368	420	360	340	325
Alkalinity, Carbonate	mg/L	<10.0				<10.0		<10.0			<10.0			<10.0			<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Alkalinity, Hydroxide	mg/L	<10.0				<10.0		<10.0			<10.0			<10.0			<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Chloride	mg/L	2.75				2.16		<5.00			2.19			<5			2.12	2.20	2.74	2.33	2.72	2.66	2.74	2.71	2.74
Fluoride	mg/L	0.268				0.245		<0.500			0.240			<0.5			0.260	0.240	0.266	0.242	0.252	0.246	0.234	0.228	0.24
Sulfate as SO4	mg/L	427				432		511			518			522			515	511	508	494	537	495	506	532	510
Total Organic Carbon (TOC)	mg/L	5.03				1.36		1.58			1.51			1.54			1.60	1.75	1.61	1.67	1.59	1.50	1.55	1.55	1.49
Nitrate/Nitrite as N	mg/L	<0.200				<0.400		<0.100			<0.020			<0.02			<0.02	0.028	<0.020	<0.02	<0.020	0.020	<0.020	0.046	<0.020
Ammonia as N ^	mg/L																					0.387			
Ortho-Phosphate as P ^	mg/L																					<0.0500			
Aluminum	mg/L	<0.050				<0.050		<0.250			<0.250			<0.05			<0.05	<0.1	<0.100	<0.05	<0.050	<0.050	<0.100	<0.250	<0.050
Arsenic	mg/L	<0.0005				<0.0005		<0.0025			<0.0025			<0.0005			<0.0005	<0.0005	<0.0010	<0.0005	<0.0005	<0.0005	<0.0010	<0.0010	<0.0025
Cadmium	mg/L	<0.0001				<0.0001		<0.0005			<0.0005			<0.0001			<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0005
Copper	mg/L	0.0043				0.0057		0.0045			0.0066			0.0041			0.0048	0.0048	0.0075	0.0064	0.0040	0.0147	0.0034	0.0012	0.004
Iron	mg/L	0.128				0.367		<0.250			0.590			0.614			0.644	0.647	0.581	0.589	0.613	0.510	0.614	0.559	0.637
Lead	mg/L	<0.0005				<0.0005		<0.0025			<0.0025			<0.0005			<0.0005	<0.0005	<0.0010	<0.0005	<0.0005	<0.0005	<0.0010	<0.0010	<0.0025
Manganese	mg/L	0.0260				0.0218		0.0259			0.0279			0.026			0.0242	0.0282	0.0281	0.0235	0.0270	0.0248	0.0303	0.0329	0.032
Mercury	mg/L	<0.0002				<0.0002		<0.0002			<0.0002			<0.0002			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	0.0007				0.0010		<0.0025			<0.0025			0.0009			0.0008	0.0007	<0.0010	<0.0005	<0.0005	<0.0005	<0.0010	<0.0010	<0.0025
Selenium	mg/L	<0.0010				<0.0010		<0.0050			<0.0050			<0.001			<0.001	<0.001	<0.0020	<0.001	<0.0010	<0.0010	<0.0020	<0.0020	<0.0050
Silica (Si02)	mg/L	12.3				11.9		8.27			11.2			11.2			11.4	12.0	11.1	11.2	11.6	11.0	11.1	10.4	11.1
Silicon	mg/L	5.74				5.56		3.87			5.24			5.25			5.31	5.62	5.2	5.23	5.43	5.13	5.19	4.85	5.17
Uranium	mg/L	0.0004				0.0002		<0.0005			<0.0005			0.0003			0.0002	0.0003	0.0002	0.0001	0.0001	0.0001	<0.0010	<0.0010	<0.0025
Zinc	mg/L	0.0270				0.0088		<0.0100			<0.0100			0.0051			<0.0100	<0.002	<0.0040	0.0022	<0.0040	0.0020	<0.0040	<0.0040	<0.0100

Notes & Definitions:

*** *La Plata County stage 3 fire restrictions prevented sampling activity*

^ one-time analysis

Y/N yes or no

gpm gallons per minute

deg C degrees Celsius

SU standard pH units

µS/cm microsiemens per centimeter

mV millivolts

mg/L milligram per liter

pCi/L picocuries per liter

NM not measured (field)

NA not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*

2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*

3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

MW-1-MI																										
Year		2017							2018										2019				2020		
Quarter		Q2	Q3			Q4			Q1			Q2			Q3			Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Month		6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	11	2	5	8	11	2	5	9
Sample Date		6/7	7/18	8/23	9/26	10/26	11/16	12/5	1/2	2/9	3/22	4/11	5/10	--	7/23	8/7	11/1	2/20	5/30	8/14	11/5	2/12	5/28	9/1
Lab Analysis (Y/N)		Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N
Field Parameters:																										
Purge Flow Rate	gpm	NM	NM*	NM	NM	dry	dry	dry	dry	dry	dry	dry	dry	***	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
Total Purged	gal	19.5	NM*	<0.5	NM																			
Depth to Water	ft bgs	259.99	NM*	258.29	258.34																			
Temperature	deg C	15.8	NM*	11.8	21.7																			
pH	SU	8	NM*	7.94	7.86																			
Specific Conductance	µS/cm	2032	NM*	2137	2119																			
Oxygen Reduction Potential	mV	160.5	NM*	65.7	61.4																			
Lab Analytical Results:																										
Hardness as CaCO3	mg/L	231																								
pH (Lab)	SU	8.14																								
Total Dissolved Solids (Lab)	mg/L	1520																								
Calcium	mg/L	46.7																								
Magnesium	mg/L	27.9																								
Sodium	mg/L	470																								
Potassium	mg/L	2.55																								
Alkalinity, Total	mg/L	600																								
Alkalinity, Bicarbonate	mg/L	600																								
Alkalinity, Carbonate	mg/L	<10.0																								
Alkalinity, Hydroxide	mg/L	<10.0																								
Chloride	mg/L	7.69																								
Fluoride	mg/L	1.14																								
Sulfate as SO4	mg/L	739																								
Total Organic Carbon (TOC)	mg/L	5.14																								
Nitrate/Nitrite as N	mg/L	0.103																								
Aluminum	mg/L	<0.050																								
Arsenic	mg/L	0.0029																								
Cadmium	mg/L	<0.0001																								
Copper	mg/L	0.0067																								
Iron	mg/L	<0.050																								
Lead	mg/L	0.0010																								
Manganese	mg/L	0.0445																								
Mercury	mg/L	<0.0002																								
Molybdenum	mg/L	0.0796																								
Selenium	mg/L	0.0028																								
Silica (Si02)	mg/L	11.6																								
Silicon	mg/L	5.44																								
Uranium	mg/L	0.0505																								
Zinc	mg/L	1.52																								

Notes & Definitions:

*** *La Plata County stage 3 fire restrictions prevented sampling activity*

Y/N	yes or no
gpm	gallons per minute
deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
mV	millivolts
mg/L	milligram per liter
pCi/L	picocuries per liter
NM	not measured (field)
NA	not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*
2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*
3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

MW-1-C																									
Year		2017								2018									2019				2020		
Quarter		Q2	Q3			Q4				Q1			Q2		Q3			Q4	Q1	Q2	Q3		Q1	Q2	Q3
Month		6	7	8	9	9	10	11	12	1	2	3	4	5	6	7	8	11	2	5	8	11	2	5	9
Sample Date		6/7	7/18	8/23	9/7	9/26	10/26	11/16	12/5	1/2	2/9	3/22	4/11	5/10	--	7/23	8/7	11/18	2/20	5/30	8/14	11/5	2/12	5/28	9/1
Lab Analysis (Y/N)		Y	N	N	N	Y	N	Y	N	N	Y	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Field Parameters:																									
Purge Flow Rate	gpm	NM	NM*	NM*	NM	NM	NM	NM	NM	MM	0.1	NM	0.1	0.1	***	0.05	0.1	0.1	0.06	0.02	0.03	0.01	0.01	0.10	0.05
Total Purged	gal	5	NM*	NM*	NM	NM	1.00	1.00	1.00	1	1	1	1	1.25		1	1	1.10	1.00	1.10	1.00	1.00	1.00	0.75	0.80
Depth to Water	ft bgs	216.5	NM*	216.91	216.95	216.59	216.52	216.48	216.52	216.38	216.38	216.37	216.35	216.41		216.41	216.05	216.04	216.41	216.20	216.02	216.04	216.12	216.10	216.41
Temperature	deg C	16.0	NM*	NM*	NM	12.9	11.7	10.6	7.0	9.7	9.6	6.7	9.2	10.5		20.0	14.1	9.7	5.4	9.8	10.4	11.1	6.4	9.5	11.2
pH	SU	7.52	NM*	NM*	NM	7.17	7.16	7.15	7.17	7.11	7.19	7.32	7.03	7.05		6.91	6.97	6.93	7.09	6.80	6.65	6.70	6.79	6.85	6.93
Specific Conductance	µS/cm	2446	NM*	NM*	NM	2725	2738	2739	2778	2778	2738	2751	2700	2749		2693	2675	2751	2621	3139	3172	3080	3005	3002	2653
Oxygen Reduction Potential	mV	74.3	NM*	NM*	NM	77.4	31.7	23.9	13.0	6.2	-4.3	-29.6	-15.3	-42.3		-41.8	-32.5	-110.0	-23.4	27.6	10.5	51.0	50.7	-57.7	21.8
Lab Analytical Results:																									
Hardness as CaCO3	mg/L	498				1290		1180			1190			1130			1120	1180	1010	1820	1840	1700	1600	1590	1400
pH (Lab)	SU	8.35				7.36		7.34			7.22			7.2			7.20	7.02	7.24	6.93	6.67	6.63	6.80	6.62	6.83
Total Dissolved Solids (Lab)	mg/L	2020				2440		2360			2360			2340			2170	2200	1960	2880	2890	2750	2610	2460	2420
Calcium	mg/L	96.0				234		216			219			203			203	219	188	340	342	318	301	294	248
Magnesium	mg/L	62.8				172		155			156			150			148	154	131	237	240	219	207	207	189
Sodium	mg/L	506				242		253			260			239			239	255	265	146	119	119	143	155	168
Potassium	mg/L	11.4				3.81		<5.00			<5.00			3.07			3.04	2.65	3.13	<5	<5.00	<5.00	3.05	<5.00	2.82
Alkalinity, Total	mg/L	530				700		540			570			580			560	410	525	530	518	505	515	490	445
Alkalinity, Bicarbonate	mg/L	530				700		540			570			580			560	410	525	530	518	505	515	490	445
Alkalinity, Carbonate	mg/L	<10.0				<10.0		<10.0			<10.0			<10.0			<10.0	<10.0	<10.0	<10	<10.0	<10.0	<10.0	<10.0	<10.0
Alkalinity, Hydroxide	mg/L	<10.0				<10.0		<10.0			<10.0			<10.0			<10.0	<10.0	<10.0	<10	<10.0	<10.0	<10.0	<10.0	<10.0
Chloride	mg/L	24.2				6.97		8.03			7.78			7.75			5.97	6.22	6.36	10.2	9.31	8.78	8.54	8.20	8.15
Fluoride	mg/L	1.59				0.864		0.955			1.03			0.96			0.888	0.924	0.975	0.67	0.525	0.565	0.615	0.695	0.705
Sulfate as SO4	mg/L	1090				1350		1230			1160			1210			1090	1080	1070	1630	1730	1520	1400	1370	1280
Total Organic Carbon (TOC)	mg/L	4.56				2.84		2.12			2.21			2.2			2.35	2.37	2.32	2.62	2.52	2.30	2.30	2.32	2.2
Nitrate/Nitrite as N	mg/L	<2.00				<0.400		<0.100			<0.020			<0.02			0.036	<0.02	<0.020	<0.02	<0.020	<0.020	<0.020	<0.020	<0.020
Ammonia as N ^	mg/L																					0.140			
Ortho-Phosphate as P ^	mg/L																					<0.100			
Aluminum	mg/L	<0.050				<0.050		<0.250			<0.250			<0.05			<0.05	<0.10	<0.100	<0.25	<0.250	<0.250	<0.150	<0.250	<0.050
Arsenic	mg/L	0.0029				0.0016		<0.0025			<0.0025			0.0051			0.0052	0.0035	0.0038	0.0048	0.0034	<0.0025	<0.0025	0.0019	<0.0025
Cadmium	mg/L	<0.0001				<0.0001		<0.0005			<0.0005			<0.0001			<0.0001	<0.0001	<0.0002	<0.0001	<0.0002	<0.0005	<0.0005	<0.0003	<0.0005
Copper	mg/L	0.0088				0.0085		0.0036			0.0052			0.003			0.0049	0.0033	0.0054	0.0057	0.0014	0.0096	<0.0025	<0.0015	<0.0025
Iron	mg/L	<0.050				<0.050		<0.250			<0.250			0.643			1.01	1.12	0.988	2.3	0.819	0.543	0.570	0.606	0.619
Lead	mg/L	<0.0005				<0.0005		<0.0025			<0.0025			<0.0005			<0.0005	<0.0005	<0.0010	<0.0005	<0.0010	<0.0025	<0.0025	<0.0015	<0.0025
Manganese	mg/L	0.0744				0.0853		0.0959			0.0989			0.153			0.140	0.106	0.0807	0.075	0.0562	0.0512	0.0537	0.0473	0.0445
Mercury	mg/L	<0.0002				<0.0002		<0.0002			<0.0002			<0.0002			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	0.0164				0.0049		<0.0025			<0.0025			0.0006			<0.0025	<0.0005	<0.0010	<0.0005	<0.0010	<0.0025	<0.0025	<0.0015	<0.0025
Selenium	mg/L	0.0136				0.0012		<0.0050			<0.0050			<0.001			<0.0050	0.0011	<0.0020	0.0016	0.0023	<0.0050	<0.0050	<0.0030	<0.0050
Silica (Si02)	mg/L	10.6				16.6		13.2			14.8			15.2			14.7	14.5	14	16.6	17.3	16.4	15.7	13.8	14.1
Silicon	mg/L	4.94				7.77		6.16			6.94			7.09			6.87	6.78	6.55	7.75	8.07	7.65	7.35	6.47	6.6
Uranium	mg/L	0.0500				0.0044		0.0028			0.0024			0.0025			0.0022	0.0021	0.0016	0.002	0.0025	0.0023	<0.0025	0.0020	<0.0025
Zinc	mg/L	0.0293				0.0294		<0.0100			<0.0100			0.0062			<0.0100	0.0055	<0.0040	0.0085	0.0077	<0.0100	<0.0100	<0.0060	<0.0100

Notes & Definitions:

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^ one-time analysis

Y/N yes or no

gpm gallons per minute

deg C degrees Celsius

SU standard pH units

µS/cm microsiemens per centimeter

mV millivolts

mg/L milligram per liter

pCi/L picocuries per liter

NM not measured (field)

NA not analyzed (lab)

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GCC Energy Hydrologic Monitoring Data

MW-2-A																							
Year		2017							2018							2019				2020		
Quarter		Q1	Q2	Q3		Q4			Q1			Q2		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Month		3	6	7	8	10	11	12	1	2	3	4	5	8	11	2	5	8	11	2	5	9
Sample Date		3/30	6/7	7/18	8/23	10/30	11/16	12/5	1/2	2/9	3/22	4/11	5/10	8/7	11/1	2/20	5/29	8/14	11/6	2/11	5/27	9/1
Lab Analysis (Y/N)		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Field Parameters:																						
Purge Flow Rate	gpm	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
Total Purged	gal																					
Depth to Water	ft bgs																					
Temperature	deg C																					
pH	SU																					
Specific Conductance	µS/cm																					
Oxygen Reduction Potential	mV																					
Lab Analytical Results:																						
Hardness as CaCO3	mg/L																					
pH (Lab)	SU																					
Total Dissolved Solids (Lab)	mg/L																					
Calcium	mg/L																					
Magnesium	mg/L																					
Sodium	mg/L																					
Potassium	mg/L																					
Alkalinity, Total	mg/L																					
Alkalinity, Bicarbonate	mg/L																					
Alkalinity, Carbonate	mg/L																					
Alkalinity, Hydroxide	mg/L																					
Chloride	mg/L																					
Fluoride	mg/L																					
Sulfate as SO4	mg/L																					
Total Organic Carbon (TOC)	mg/L																					
Nitrate/Nitrite as N	mg/L																					
Aluminum	mg/L																					
Arsenic	mg/L																					
Cadmium	mg/L																					
Copper	mg/L																					
Iron	mg/L																					
Lead	mg/L																					
Manganese	mg/L																					
Mercury	mg/L																					
Molybdenum	mg/L																					
Selenium	mg/L																					
Silica (Si02)	mg/L																					
Silicon	mg/L																					
Uranium	mg/L																					
Zinc	mg/L																					

Notes & Definitions:

Y/N	yes or no
gpm	gallons per minute
deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
mV	millivolts
mg/L	milligram per liter
pCi/L	picocuries per liter
NM	not measured (field)
NA	not analyzed (lab)

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GCC Energy Hydrologic Monitoring Data

MW-2-MI																							
Year		2017							2018							2019				2020			
Quarter		Q1	Q2	Q3		Q4			Q1			Q2		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
Month		3	6	7	8	10	11	12	1	2	3	4	5	8	11	2	5	8	11	2	5	9	
Sample Date		3/30	6/7	7/18	8/23	10/30	11/16	12/5	1/2	2/9	3/22	4/11	5/10	8/7	11/1	2/20	5/29	8/14	11/6	2/11	5/27	9/1	
Lab Analysis (Y/N)		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
Field Parameters:																							
Purge Flow Rate	gpm	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	
Total Purged	gal																						
Depth to Water	ft bgs																						
Temperature	deg C																						
pH	SU																						
Specific Conductance	µS/cm																						
Oxygen Reduction Potential	mV																						
Lab Analytical Results:																							
Hardness as CaCO3	mg/L																						
pH (Lab)	SU																						
Total Dissolved Solids (Lab)	mg/L																						
Calcium	mg/L																						
Magnesium	mg/L																						
Sodium	mg/L																						
Potassium	mg/L																						
Alkalinity, Total	mg/L																						
Alkalinity, Bicarbonate	mg/L																						
Alkalinity, Carbonate	mg/L																						
Alkalinity, Hydroxide	mg/L																						
Chloride	mg/L																						
Fluoride	mg/L																						
Sulfate as SO4	mg/L																						
Total Organic Carbon (TOC)	mg/L																						
Nitrate/Nitrite as N	mg/L																						
Aluminum	mg/L																						
Arsenic	mg/L																						
Cadmium	mg/L																						
Copper	mg/L																						
Iron	mg/L																						
Lead	mg/L																						
Manganese	mg/L																						
Mercury	mg/L																						
Molybdenum	mg/L																						
Selenium	mg/L																						
Silica (Si02)	mg/L																						
Silicon	mg/L																						
Uranium	mg/L																						
Zinc	mg/L																						

Notes & Definitions:

Y/N	yes or no
gpm	gallons per minute
deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
mV	millivolts
mg/L	milligram per liter
pCi/L	picocuries per liter
NM	not measured (field)
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GCC Energy Hydrologic Monitoring Data

MW-2-C																							
Year		2017							2018							2019				2020			
Quarter		Q1	Q2	Q3		Q4			Q1			Q2		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
Month		3	6	7	8	10	11	12	1	2	3	4	5	8	11	2	5	8	11	2	5	9	
Sample Date		3/30	6/7	7/18	8/23	10/30	11/16	12/5	1/2	2/9	3/22	4/11	5/10	8/7	11/1	2/20	5/29	8/14	11/6	2/11	5/27	9/1	
Lab Analysis (Y/N)		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
Field Parameters:																							
Purge Flow Rate	gpm	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	
Total Purged	gal																						
Depth to Water	ft bgs																						
Temperature	deg C																						
pH	SU																						
Specific Conductance	µS/cm																						
Oxygen Reduction Potential	mV																						
Lab Analytical Results:																							
Hardness as CaCO3	mg/L																						
pH (Lab)	SU																						
Total Dissolved Solids (Lab)	mg/L																						
Calcium	mg/L																						
Magnesium	mg/L																						
Sodium	mg/L																						
Potassium	mg/L																						
Alkalinity, Total	mg/L																						
Alkalinity, Bicarbonate	mg/L																						
Alkalinity, Carbonate	mg/L																						
Alkalinity, Hydroxide	mg/L																						
Chloride	mg/L																						
Fluoride	mg/L																						
Sulfate as SO4	mg/L																						
Total Organic Carbon (TOC)	mg/L																						
Nitrate/Nitrite as N	mg/L																						
Aluminum	mg/L																						
Arsenic	mg/L																						
Cadmium	mg/L																						
Copper	mg/L																						
Iron	mg/L																						
Lead	mg/L																						
Manganese	mg/L																						
Mercury	mg/L																						
Molybdenum	mg/L																						
Selenium	mg/L																						
Silica (Si02)	mg/L																						
Silicon	mg/L																						
Uranium	mg/L																						
Zinc	mg/L																						

Notes & Definitions:

Y/N	yes or no
gpm	gallons per minute
deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
mV	millivolts
mg/L	milligram per liter
pCi/L	picocuries per liter
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GCC Energy Hydrologic Monitoring Data

MW-3-A																								
Year		2017								2018							2019				2020			
Quarter		Q1	Q2	Q3			Q4			Q1			Q2		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
Month		3	6	7	8	9	10	11	12	1	2	3	4	5	8	11	2	5	8	11	2	5	8	
Sample Date		3/27	6/30	7/18	8/24	9/28	10/27	11/17	12/7	1/3	2/21	3/23	4/12	5/7	8/8	11/6	2/27	5/21	8/14	11/12	2/4	5/26	8/31	
Lab Analysis (Y/N)		Y	Y	N	N	Y	N	Y	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Field Parameters:																								
Purge Flow Rate	gpm	0.5	NM	NM	NM	NM	NM	NM	NM	NM	0.1	NM	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.3	0.1	0.1	0.1	
Total Purged	gal	30	2.0	NM	NM	NM	1.0	1.0	1.0	1.3	1.5	1.5	1	1.25	1	1.1	1.5	1.3	1.3	1.5	1.1	1.2	1.5	
Depth to Water	ft bgs	297.35	298.24	297.45	298.24	298.11	298.12	298.01	298.05	298.37	298.04	297.86	297.76	298.17	298.55	298.27	297.85	296.79	297.27	297.33	296.47	296.87	297.21	
Temperature	deg C	11.7	13.2	19.5	12.6	12.3	12.5	11.7	12.0	11.8	11.7	12.2	11.9	13.5	13.5	11.9	11.8	12.1	NM	13.1	11.5	13.2	13.1	
pH	SU	8.82	8.75	8.56	8.67	8.72	8.64	8.61	8.57	8.54	8.52	8.61	8.21	8.38	8.30	8.31	8.28	8.31	8.13	8.51	8.11	8.26	8.23	
Specific Conductance	µS/cm	2535	2446	2115	2524	2470	2430	2483	2494	2528	2506	2458	2415	2253	2336	2391	2355	2309	NM	2204	2211	2249	2112	
Oxygen Reduction Potential	mV	-269.0	-101.5	-55.3	-87.4	-142.3	-124.5	-125.6	-146.8	-120.3	-125.2	-181.6	-135.8	-138.2	-155.8	-164.6	-145.9	-132.3	-138.6	-120.1	-65.7	-156.8	-98.8	
Lab Analytical Results:																								
Hardness as CaCO3	mg/L	7.53	12.6			12.6		10.4			11.5			11.2	12.6	14.1	11.9	10.7	10.4	11.1	10.8	10.3	11.1	
pH (Lab)	SU	8.63	8.69			8.53		8.29			8.45			8.36	8.37	8.24	8.28	8.29	8.27	8.39	8.09	7.68	8.16	
Total Dissolved Solids (Lab)	mg/L	1630	1670			1630		1690			1680			1670	1600	1540	1500	1530	1520	1510	1500	1460	1380	
Calcium	mg/L	2.00	3.67			3.63		3.27			3.33			3.2	3.71	4.15	3.55	3.16	3.08	3.34	3.14	3.07	3.02	
Magnesium	mg/L	0.616	0.823			0.859		0.550			0.776			0.774	0.811	0.913	0.739	0.692	0.655	0.680	0.723	0.645	0.866	
Sodium	mg/L	566	585			589		551			562			542	562	605	543	525	553	528	520	507	510	
Potassium	mg/L	1.72	2.02			2.04		<5.00			<2.00			1.8	<2.00	2.17	<2.00	1.92	<2.00	<5.00	<3.00	<5.00	<5.00	
Alkalinity, Total	mg/L	530	470			500		490			430			480	480	475	540	450	459	420	460	430	440	
Alkalinity, Bicarbonate	mg/L	380	470			440		460			360			480	420	385	330	430	423	420	460	400	440	
Alkalinity, Carbonate	mg/L	150	<10.0			60.0		30.0			70.0			<10.0	60.0	90.0	210	20	36.0	<10.0	<10.0	30.0	<10.0	
Alkalinity, Hydroxide	mg/L	<10.0	<10.0			<10.0		<10.0			<10.0			<10.0	<10.0	<10.0	<10.0	<10	<10.0	<10.0	<10.0	<10.0	<10.0	
Chloride	mg/L	16.1	17.4			18.5		16.9			16.4			16.1	15.1	16.0	15.2	15	15.0	14.7	13.9	13.9	13.5	
Fluoride	mg/L	0.464	0.488			0.535		<0.500			<0.500			<0.5	NA	0.383	0.406	0.404	0.396	<0.500	0.370	0.374	0.366	
Sulfate as SO4	mg/L	729	802			840		730			812			756	706	682	716	699	724	633	637	656	624	
Total Organic Carbon (TOC)	mg/L	3.52	10.0			7.26		6.07			5.32			4.7	4.62	4.52	4.15	4.10	3.84	3.81	3.42	3.48	3.39	
Nitrate/Nitrite as N	mg/L	<0.100	<0.100			<0.020		<0.020			<0.020			<0.02	<0.02	<0.02	0.266	<0.02	<0.020	<0.020	0.024	0.026	0.039	
Ammonia as N ^	mg/L																			0.354				
Ortho-Phosphate as P ^	mg/L																			0.0730				
Aluminum	mg/L	<0.050	<0.050			<0.050		<0.250			<0.100			<0.05	<0.05	<0.10	<0.100	<0.05	<0.100	<0.250	<0.150	<0.250	<0.250	
Arsenic	mg/L	0.0025	<0.0025			<0.0025		<0.0025			<0.0025			0.0006	<0.0025	<0.0010	<0.0010	<0.0025	<0.0010	<0.0010	<0.0010	<0.0010	<0.0025	
Cadmium	mg/L	<0.0001	<0.0005			<0.0005		<0.0005			<0.0005			<0.0001	<0.0001	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	
Copper	mg/L	0.0061	0.0081			0.0080		0.0079			0.0236			0.0063	0.0117	0.0086	0.0137	0.0078	0.0067	0.0039	0.0037	0.0021	0.0051	
Iron	mg/L	<0.050	<0.050			<0.050		<0.250			<0.100			<0.05	<0.05	<0.100	<0.100	<0.05	<0.100	<0.250	<0.150	<0.250	<0.250	
Lead	mg/L	<0.0005	<0.0025			<0.0025		<0.0025			<0.0025			<0.0005	<0.0005	<0.0010	<0.0010	<0.0025	<0.0010	<0.0010	<0.0010	<0.0025	<0.0025	
Manganese	mg/L	0.0042	0.0251			0.0194		0.0269			0.0232			0.018	0.0222	0.0187	0.0172	0.0185	0.0166	0.0140	0.0162	0.0136	0.0120	
Mercury	mg/L	<0.0002	<0.0002			<0.0002		<0.0002			<0.0002			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0050	<0.0002	<0.0002	<0.0002	
Molybdenum	mg/L	0.0005	0.0274			0.0091		0.0078			0.0065			0.0046	0.0043	0.0033	0.003	0.003	0.0018	0.0027	0.0022	0.0015	<0.0025	
Selenium	mg/L	0.0577	<0.0050			<0.0050		<0.0050			<0.0050			0.0109	<0.0050	0.0028	0.0039	<0.005	0.0020	<0.0020	<0.0020	0.0033	0.0086	
Silica (Si02)	mg/L	10.1	10.9			11.6		7.66			11.1			11	12.0	12.8	11.7	11	12.7	11.8	11.6	10.5	11.0	
Silicon	mg/L	4.70	5.10			5.41		3.58			5.18			5.17	5.62	5.97	5.46	5.16	5.95	5.53	5.43	4.92	5.14	
Uranium	mg/L	0.0002	0.0040			0.0051		0.0036			0.0030			0.0026	0.0026	0.0027	0.0018	0.0014	0.0012	0.0011	0.0010	<0.0025	<0.0025	
Zinc	mg/L	0.0031	<0.0100			<0.0100		<0.0100			<0.0100			<0.002	<0.002	<0.0040	<0.0040	<0.01	<0.0080	<0.0040	<0.0040	<0.0040	<0.0100	

Notes & Definitions:

^	one-time analysis
Y/N	yes or no
gpm	gallons per minute
deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
mV	millivolts
mg/L	milligram per liter
pCi/L	picocuries per liter
NM	not measured (field)
NA	not analyzed (lab)

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GCC Energy Hydrologic Monitoring Data

MW-3-MI																								
Year		2017								2018							2019				2020			
Quarter		Q1	Q2	Q3			Q4			Q1			Q2		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
Month		3	6	7	8	9	10	11	12	1	2	3	4	5	8	11	2	5	8	11	2	5	8	
Sample Date		3/27	6/30	7/18	8/16	9/28	10/27	11/17	12/7	1/3	2/21	3/23	4/12	5/7	8/8	11/6	2/27	5/21	8/21	11/12	2/4	5/26	8/31	
Lab Analysis (Y/N)		Y	Y	N	N	Y	N	Y	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Field Parameters:																								
Purge Flow Rate	gpm	0.5	NM	NM	NM	NM	NM	NM	NM	NM	0.1	NM	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	0.3	0.1	
Total Purged	gal	19.0	2.0	NM	NM	NM	1.0	1.0	1.0	1.3	1.5	1.5	1.0	1.3	1.0	1.1	1.5	1.3	2.0	1.0	1.5	1.3	1.8	
Depth to Water	ft bgs	304.49	241.15	240.46	240.53	240.46	240.44	240.44	240.58	240.73	240.55	240.65	240.84	241.04	241.97	242.13	242.15	242.32	246.55	243.07	242.85	243.05	243.6	
Temperature	deg C	10.0	12.6	22.0	12.9	11.0	12.1	11.7	11.7	11.9	11.3	11.9	11.8	12.6	13.0	12.4	11.6	11.3	13.2	12.3	11.6	12.6	12.8	
pH	SU	9.34	8.94	8.46	8.90	8.74	8.90	8.86	8.86	8.84	8.83	8.84	8.51	8.48	8.49	8.46	8.51	8.55	8.71	8.75	8.71	8.92	9.01	
Specific Conductance	µS/cm	1907	1699	1402	1598	1737	1729	1745	1786	1790	1810	1771	1772	1727	1709	1746	1753	1739	1691	1739	1758	1737	1560	
Oxygen Reduction Potential	mV	-87.0	-54.5	-26.4	-108.2	-107.3	-113.8	-124.2	-163.1	-136.0	-131.4	-160.7	-99.9	-103.9	-127.8	-176.5	-113.0	-84.5	43.9	-130.8	-104.3	-174.5	-111.0	
Lab Analytical Results:																								
Hardness as CaCO3	mg/L	4.85	8.73			9.02		7.75			9.92			8.65	8.63	8.88	7.63	6.84	7.98	6.64	6.50	7.25	6.39	
pH (Lab)	SU	8.95	8.75			8.72		8.72			8.66			8.56	8.58	8.34	8.5	8.45	8.58	8.62	8.61	8.59	8.87	
Total Dissolved Solids (Lab)	mg/L	1550	1120			1140		1080			1170			1210	1110	1120	1120	1170	1010	1130	1130	1130	1060	
Calcium	mg/L	1.32	2.32			2.34		2.06			2.22			1.91	1.95	2.03	1.87	1.7	2.04	1.73	1.63	1.76	1.62	
Magnesium	mg/L	0.374	0.714			0.775		0.632			1.07			0.945	0.911	0.926	0.715	0.629	0.703	0.561	0.591	0.694	0.570	
Sodium	mg/L	420	430			440		411			459			417	446	476	434	419	454	437	437	427	431	
Potassium	mg/L	2.15	2.21			1.93		<5.00			<2.00			1.63	<2.00	<2.00	1.39	1.65	<2.00	<5.00	<2.00	<5.00	<3.00	
Alkalinity, Total	mg/L	740	675			700		660			700			680	730	720	685	755	720	690	705	680	625	
Alkalinity, Bicarbonate	mg/L	510	555			600		570			600			500	630	610	485	605	590	610	645	550	465	
Alkalinity, Carbonate	mg/L	230	120			100		90.0			100			180	100	110	200	150	130	80.0	60.0	130	160	
Alkalinity, Hydroxide	mg/L	<10.0	<10.0			<10.0		<10.0			<10.0			<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
Chloride	mg/L	8.66	10.1			10.7		10.6			10.7			10.7	8.54	8.83	9.21	9.25	10.2	9.13	9.21	9.61	9.45	
Fluoride	mg/L	0.952	1.34			1.26		1.26			1.30			1.2	1.16	1.19	1.21	1.22	1.19	1.19	1.13	1.13	1.09	
Sulfate as SO4	mg/L	165	241			247		254			245			250	226	230	232	229	236	224	227	231	222	
Total Organic Carbon (TOC)	mg/L	8.34	14.8			10.9		10.3			9.24			8.67	7.83	7.28	6.73	6.56	6.17	5.78	5.58	6.07	5.79	
Nitrate/Nitrite as N	mg/L	<0.020	<0.020			<0.020		<0.020			<0.020			<0.02	<0.02	<0.02	<0.020	<0.020	<0.020	<0.020	0.034	<0.020	<0.020	
Ammonia as N ^	mg/L																			0.317				
Ortho-Phosphate as P ^	mg/L																			0.348				
Aluminum	mg/L	<0.050	0.102			<0.050		<0.250			<0.100			<0.05	<0.05	<0.10	<0.050	<0.050	0.167	<0.250	<0.100	<0.250	<0.150	
Arsenic	mg/L	0.0134	0.0167			0.0131		0.0135			0.0160			0.0152	0.0127	0.0104	0.0149	0.0107	0.0142	0.0099	0.0093	0.0086	0.0061	
Cadmium	mg/L	<0.0001	<0.0005			<0.0005		<0.0005			<0.0001			<0.0001	<0.0001	<0.0002	<0.0001	<0.0005	<0.0001	<0.0002	<0.0002	<0.0005	<0.0005	
Copper	mg/L	0.0055	0.0058			0.0065		0.0059			0.0122			0.0048	0.0071	0.0073	0.0068	0.0063	0.0049	0.0037	0.0024	<0.0025	0.0046	
Iron	mg/L	<0.050	<0.100			<0.050		<0.250			<0.100			<0.05	<0.05	<0.1	<0.050	<0.050	<0.100	<0.250	<0.100	<0.250	<0.150	
Lead	mg/L	0.0024	<0.0025			<0.0025		<0.0025			<0.0005			<0.0005	<0.0005	<0.001	<0.0005	<0.0025	<0.0005	<0.0010	<0.0010	<0.0025	<0.0025	
Manganese	mg/L	0.0022	0.0058			0.0033		0.0045			0.0049			0.006	0.0054	0.0072	0.0078	0.0082	0.0079	0.0099	0.0095	0.0102	0.0072	
Mercury	mg/L	<0.0002	<0.0002			<0.0002		<0.0002			<0.0002			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0050	<0.0002	<0.0002	<0.0002	
Molybdenum	mg/L	0.0061	0.0211			0.0148		0.0152			0.0170			0.016	0.0149	0.0158	0.0157	0.0167	0.0277	0.0372	0.0204	0.0195	0.0149	
Selenium	mg/L	0.0013	<0.0050			<0.0050		<0.0050			0.0010			0.0019	<0.0050	<0.002	0.0034	<0.005	<0.0010	<0.0020	<0.0020	<0.0050	<0.0050	
Silica (Si02)	mg/L	7.97	8.18			9.05		5.35			9.33			8.83	9.49	10.2	8.95	8.85	9.73	9.46	8.80	8.24	8.84	
Silicon	mg/L	3.73	3.82			4.23		2.50			4.36			4.13	4.44	4.76	4.18	4.14	4.55	4.42	4.11	3.85	4.13	
Uranium	mg/L	0.0049	0.0084			0.0140		0.0124			0.0125			0.0126	0.0111	0.0110	0.011	0.0085	0.0080	0.0070	0.0063	0.0059	0.0043	
Zinc	mg/L	0.0405	<0.0100			<0.0100		<0.0100			<0.0020			0.0023	0.0023	<0.0040	0.0028	<0.01	0.0070	<0.0040	<0.0040	<0.0100	<0.0100	

Notes & Definitions:

^	one-time analysis
Y/N	yes or no
gpm	gallons per minute
deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
mV	millivolts
mg/L	milligram per liter
pCi/L	picocuries per liter
NM	not measured (field)
NA	not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*
2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*
3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

MW-3-C																								
Year		2017								2018							2019				2020			
Quarter		Q1	Q2	Q3			Q4			Q1			Q2		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
Month		3	6	7	8	9	10	11	12	1	2	3	4	5	8	11	2	5	9	11	3	5	8	
Sample Date		3/27	6/30	7/27	8/24	9/28	10/27	11/17	12/7	1/3	2/21	3/23	4/12	5/7	8/8	11/6	2/27	5/21	9/17	11/12	3/13	5/26	8/31	
Lab Analysis (Y/N)		Y	Y	N	N	Y	N	Y	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Field Parameters:																								
Purge Flow Rate	gpm	0.5	NM	NM	NM	NM	NM	NM	NM	NM	0.1	NM	0.1	0.1	0.1	0.10	0.06	0.06	0.13	0.13	0.10	0.03	0.08	
Total Purged	gal	20	2	NM	NM	NM	1	1	1	1.5	1.5	1.5	1	1.3	1.3	1.1	1.25	1.5	10	1.5	11	1.1	1.25	
Depth to Water	ft bgs	304.21	296.3	296.93	296.87	297.43	297.46	297.43	297.35	297.01	296.66	296.57	296.62	296.78	297.12	296.80	296.39	295.56	295.70	295.50	299.35	294.99	294.60	
Temperature	deg C	10.5	12.9	13.1	12.5	11.8	12.7	11.5	11.7	11.7	11.4	11.6	12.2	13.0	13.3	11.5	11.0	11.4	13.5	12.5	11.3	13.4	15.0	
pH	SU	8.61	8.57	8.51	8.46	8.44	8.48	8.41	8.48	8.43	8.43	8.45	8.25	8.28	8.26	8.17	8.28	8.29	8.31	8.20	7.98	8.44	8.45	
Specific Conductance	µS/cm	3549	3588	3815	4112	4351	4412	4659	4596	4923	4864	5063	5019	4916	4953	5127	5155	5184	5144	5144	4921	3143	5039	
Oxygen Reduction Potential	mV	-129.0	-87.2	-137.5	-128.8	-149.9	-198.3	-200.7	-222.2	-187.9	-183.5	-155.4	-154.7	-161.4	-180.5	-217.6	-185.4	-188.5	-151.8	-184.4	-155.0	-240.5	-174.4	
Lab Analytical Results:																								
Hardness as CaCO3	mg/L	14.4	11.8			15.1		14.9			16.1			40.3	17.9	21.7	17.3	16.8	18.6	18.6	18.3	16.0	18.1	
pH (Lab)	SU	8.5	8.48			8.35		8.28			8.35			8.34	8.31	8.24	8.2	8.23	8.31	8.12	7.98	8.41	8.36	
Total Dissolved Solids (Lab)	mg/L	2130	2360			3070		3310			3540			3610	3520	3360	3300	3440	3500	3390	3220	3180	3170	
Calcium	mg/L	3.60	2.87			3.50		3.58			3.81			7.28	4.01	4.70	4.05	3.74	4.30	4.23	4.26	3.81	3.97	
Magnesium	mg/L	1.31	1.12			1.55		1.44			1.59			5.38	1.92	2.41	1.75	1.8	1.91	1.94	1.86	1.58	1.98	
Sodium	mg/L	796	890			1100		1130			1200			1350	1220	1460	1270	1100	1360	1300	1280	1240	1250	
Potassium	mg/L	3.47	3.24			4.01		<5.00			<10.0			<5.00	<5.00	<5.00	<5.00	5.24	<5.00	<10.0	<10.0	<10.0	<10.0	
Alkalinity, Total	mg/L	1490	1570			1690		1880			1910			1760	1730	2050	2000	2110	2190	2130	2160	2050	1820	
Alkalinity, Bicarbonate	mg/L	1360	1480			1650		1830			1810			1600	1670	1900	1830	2000	2020	2070	2000	1800	1690	
Alkalinity, Carbonate	mg/L	130	90.0			40.0		50.0			100			160	60.0	150	170	110	170	60.0	160	250	130	
Alkalinity, Hydroxide	mg/L	<10.0	<10.0			<10.0		<10.0			<10.0			<10	NA	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
Chloride	mg/L	182	330			477		506			549			544	524	561	577	575	620	542	549	555	552	
Fluoride	mg/L	4.89	4.94			4.52		4.34			4.15			3.52	3.84	4.04	4.04	3.91	3.78	3.66	3.61	3.51	3.47	
Sulfate as SO4	mg/L	73.4	73.5			46.4		24.5			<10.0			<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	
Total Organic Carbon (TOC)	mg/L	10.6	58.5			219		251			337			343	306	141	122	129	132	107	81.9	23.4	17.1	
Nitrate/Nitrite as N	mg/L	<0.020	<0.400			<0.400		<0.020			<0.020			<0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	
Ammonia as N ^	mg/L																			0.500				
Ortho-Phosphate as P ^	mg/L																			0.212				
Aluminum	mg/L	<0.050	<0.100			<0.050		<0.250			<0.500			1.47	<0.500	<0.250	<0.250	<0.500	<0.250	<0.500	<0.500	<0.500	<0.500	
Arsenic	mg/L	0.0115	0.0088			0.0098		0.0091			0.0194			0.0168	0.0148	0.0155	0.0218	0.0171	0.0192	0.0188	0.0087	0.0133	0.0106	
Cadmium	mg/L	<0.0001	<0.0010			<0.0010		<0.0005			<0.0005			<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0010	
Copper	mg/L	0.0109	0.0147			0.0174		0.0160			0.0409			0.0183	0.0257	0.0227	0.0223	0.0168	0.0102	0.0109	0.0069	0.0064	0.0136	
Iron	mg/L	<0.050	<0.050			<0.050		<0.250			<0.500			0.252	<0.500	<0.250	<0.250	0.344	0.328	<0.500	<0.500	<0.500	<0.500	
Lead	mg/L	0.0085	<0.0050			<0.0050		<0.0025			<0.0025			<0.0025	<0.0025	<0.0025	<0.0025	<0.005	<0.0025	<0.0025	<0.0025	<0.0025	<0.0050	
Manganese	mg/L	0.0091	0.0188			0.0178		0.0202			0.0307			0.0275	0.0243	0.0252	0.0483	0.063	0.0378	0.0266	0.0245	0.0175	0.0102	
Mercury	mg/L	<0.0002	<0.0002			<0.0002		<0.0002			<0.0002			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0050	<0.0002	<0.0002	<0.0002	
Molybdenum	mg/L	0.0143	0.0291			0.0241		0.0241			0.0221			0.0189	0.0155	0.0140	0.0134	0.0121	0.0081	0.0075	0.0082	0.0085	0.0076	
Selenium	mg/L	0.0233	0.0121			0.0149		0.0240			0.0383			0.0268	0.0232	0.0261	0.0464	0.0203	0.0203	0.0173	0.0125	0.0129	0.0135	
Silica (Si02)	mg/L	7.82	8.86			9.16		6.01			<10.7			9.69	8.68	10.7	8.24	8.35	9.06	<10.7	<10.7	<10.7	<10.7	
Silicon	mg/L	3.66	4.14			4.28		2.81			<5.00			4.53	4.06	5.01	3.85	3.9	4.24	<5.00	<5.00	<5.00	<5.00	
Uranium	mg/L	0.0091	0.0102			0.0137		0.0100			0.0091			0.0087	0.0089	0.0113	0.0077	0.0046	0.0053	0.0034	0.0045	0.0033	<0.0050	
Zinc	mg/L	0.375	<0.0200			<0.0200		<0.0100			<0.0100			<0.0100	0.0664	0.0814	0.123	0.128	0.0567	0.0886	<0.0100	<0.0100	<0.0200	

Notes & Definitions:

^	one-time analysis
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gpm	gallons per minute
deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
mV	millivolts
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2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*

3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

MW-4-A																								
Year		2017								2018							2019				2020			
Quarter		Q1	Q2	Q3			Q4			Q1			Q2		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
Month		3	6	7	8	9	10	11	12	1	2	3	4	5	8	11	2	5	8	11	2	5	8	
Sample Date		3/29	6/30	7/19	8/23	9/28	10/27	11/17	12/7	1/3	2/21	3/23	4/12	5/14	8/8	11/5	2/27	5/22	8/15	11/12	2/6	5/26	8/27	
Lab Analysis (Y/N)		Y	Y	N	N	Y	N	Y	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Field Parameters:																								
Purge Flow Rate	gpm	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.10	NM	0.1	0.1	0.1	0.1	0.06	0.06	0.06	0.13	0.03	0.03	0.13	
Total Purged	gal	19.0	2.0	1.5	0.5	1.0	1.0	1.0	1.0	1.3	1.5	1.5	1	1.5	1.5	1.1	1.5	1.3	1.1	1.0	1.5	1.2	1.3	
Depth to Water	ft bgs	338.6	334.96	335.59	334.79	334.81	334.86	332.29	334.09	334.31	334.73	334.81	335.07	335.58	336.06	336.73	335.6	335.07	335.21	335.16	336.35	337.16	336.88	
Temperature	deg C	15.6	16.8	25.5	17.6	11.9	11.6	10.8	10.1	10.9	9.8	11.4	10.9	17.8	12.9	11.6	11.1	10.4	13.6	11.6	10.3	12.5	14.0	
pH	SU	8.61	8.29	8.55	7.98	8.41	8.32	8.38	8.32	8.33	8.37	8.41	8.19	8.20	8.10	8.12	8.15	8.08	8.02	8.11	8.07	8.19	8.27	
Specific Conductance	µS/cm	2163	2053	1876	2096	2180	2165	2186	2261	2259	2267	2207	2214	2183	2192	2246	2205	2237	2201	2211	2271	2273	2165	
Oxygen Reduction Potential	mV	28.6	54.0	60.2	61.7	-8.6	-27.0	-12.3	-51.8	-35.2	-75.9	-117.3	-77.9	-81.8	-137.5	-157.6	-92.3	-89.3	-54.3	-19.8	15.3	-71.3	-11.5	
Lab Analytical Results:																								
Hardness as CaCO3	mg/L	9.16	9.85			7.77		7.11			7.73			7.84	7.69	8.81	7.76	7.31	8.62	8.00	8.19	7.46	7.87	
pH (Lab)	SU	8.2	8.40			8.36		8.40			8.28			8.31	8.21	8.24	8.05	8.08	8.15	8.02	8.11	7.90	8.19	
Total Dissolved Solids (Lab)	mg/L	1470	1470			1450		1500			1490			1470	1430	1350	1450	1410	1540	1490	1500	1480	1460	
Calcium	mg/L	2.23	2.43			1.76		1.87			1.81			1.75	1.71	1.92	1.77	1.68	1.94	1.82	1.88	1.67	1.79	
Magnesium	mg/L	0.871	0.916			0.823		0.591			0.778			0.846	0.832	0.973	0.809	0.756	0.914	0.837	0.850	0.798	0.826	
Sodium	mg/L	515	537			513		511			507			528	531	568	535	515	548	529	551	498	533	
Potassium	mg/L	1.57	1.75			1.63		<5.00			<2.00			1.5	<2.00	<2.00	<2.00	<2.00	4.75	<5.00	<3.00	<5.00	<5.00	
Alkalinity, Total	mg/L	635	560			630		590			530			560	575	575	545	565	575	544	560	585	605	
Alkalinity, Bicarbonate	mg/L	635	560			590		560			490			560	555	575	505	544	535	528	560	545	565	
Alkalinity, Carbonate	mg/L	<10.0	<10.0			40.0		30.0			40.0			<10.0	20.0	<10.0	40	32	40.0	16.0	<10.0	40.0	40	
Alkalinity, Hydroxide	mg/L	<10.0	<10.0			<10.0		<10.0			<10.0			<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
Chloride	mg/L	9.56	9.66			10.3		10.3			10.0			9.94	9.55	8.60	8.93	8.99	8.91	8.76	8.83	8.89	10.1	
Fluoride	mg/L	<0.400	<0.400			<0.500		<0.500			<0.500			<0.5	<0.5	0.143	<0.200	<0.2	<0.200	<0.200	<0.200	<0.200	<0.5	
Sulfate as SO4	mg/L	594	588			783		594			579			561	522	450	567	584	615	559	557	580	542	
Total Organic Carbon (TOC)	mg/L	6.63	11.7			3.52		3.27			3.46			3.59	3.60	3.59	3.47	3.40	3.33	3.25	3.10	3.49	3.48	
Nitrate/Nitrite as N	mg/L	0.035	<0.020			<0.020		<0.020			<0.020			<0.02	<0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	
Ammonia as N ^	mg/L																			0.312				
Ortho-Phosphate as P ^	mg/L																			<0.0500				
Aluminum	mg/L	<0.050	<0.050			<0.050		<0.250			<0.100			<0.05	<0.05	<0.100	<0.100	<0.100	<0.100	<0.250	<0.150	<0.250	<0.250	
Arsenic	mg/L	0.0016	<0.0025			<0.0025		<0.0025			0.0019			0.0005	<0.0025	<0.0010	<0.0010	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010	<0.0025	
Cadmium	mg/L	<0.0001	<0.0005			<0.0005		<0.0005			<0.0001			<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	
Copper	mg/L	0.0053	0.0093			0.0076		0.0073			0.0124			0.0077	0.0105	0.0084	0.0081	0.0061	0.0120	0.0037	0.0034	0.0020	0.0056	
Iron	mg/L	<0.050	<0.050			<0.050		<0.250			<0.100			<0.05	<0.05	<0.100	<0.100	<0.100	<0.100	<0.250	<0.150	<0.250	<0.250	
Lead	mg/L	0.0014	<0.0025			<0.0025		<0.0025			<0.0005			<0.0005	<0.0005	<0.0010	<0.0010	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0025	
Manganese	mg/L	0.0044	0.0063			0.0044		0.0040			0.0035			0.0033	<0.0075	0.0034	0.0032	0.0031	0.0026	0.0016	0.0033	0.0031	0.0029	
Mercury	mg/L	<0.0002	<0.0002			<0.0002		<0.0002			<0.0002			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0050	<0.0002	<0.0002	<0.0002	
Molybdenum	mg/L	0.0009	0.0275			<0.0025		<0.0025			0.0005			<0.0005	<0.0005	<0.0010	<0.0010	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010	<0.0025	
Selenium	mg/L	0.0016	<0.0050			<0.0050		<0.0050			0.0014			0.0025	<0.0050	<0.0020	0.0036	<0.001	<0.0010	<0.0020	<0.0020	<0.0020	<0.0050	
Silica (Si02)	mg/L	10.2	10.6			9.99		6.85			9.47			10	10.2	11.2	9.65	9.81	11.0	10.5	10.3	8.55	9.44	
Silicon	mg/L	4.75	4.97			4.67		3.20			4.43			4.7	4.77	5.22	4.51	4.59	5.14	4.89	4.79	4.00	4.42	
Uranium	mg/L	0.0016	<0.0005			<0.0005		0.0005			0.0003			<0.0001	<0.0005	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0010	<0.0010	<0.0025	
Zinc	mg/L	0.269	0.0319			<0.0100		<0.0100			0.0022			0.0024	<0.0100	<0.0040	<0.0040	0.0033	<0.0020	<0.0040	<0.0040	<0.0040	<0.0100	

Notes & Definitions:

^	one-time analysis
Y/N	yes or no
gpm	gallons per minute
deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
mV	millivolts
mg/L	milligram per liter
pCi/L	picocuries per liter
NM	not measured (field)
NA	not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*
2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*
3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

MW-4-MI																								
Year		2017								2018							2019				2020			
Quarter		Q1	Q2	Q3			Q4			Q1			Q2		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
Month		3	6	7	8	9	10	11	12	1	2	3	4	5	8	11	2	5	8	11	2	5	8	
Sample Date		3/30	6/16	7/27	8/23	9/28	10/27	11/17	12/7	1/3	2/21	3/23	4/12	5/14	8/8	11/5	2/27	5/22	8/15	11/12	2/6	5/26	8/27	
Lab Analysis (Y/N)		Y	Y	N	N	Y	N	Y	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Field Parameters:																								
Purge Flow Rate	gpm	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.1	NM	0.1	0.1	0.1	0.10	0.06	0.06	0.13	0.25	0.13	0.13	0.13	
Total Purged	gal	0.5	6.5	NM	NM	1.0	1.0	1.0	1.0	1.3	1.5	1.5	1	1.3	1.8	1.6	2.0	1.3	1.1	1.0	1.3	1.2	1.3	
Depth to Water	ft bgs	378.2	330.15	330.94	330.85	330.81	330.80	330.74	330.67	330.52	330.42	330.53	330.5	329.62	331.1	336.57	331.1	331.06	331.92	332.1	332.5	332.87	332.45	
Temperature	deg C	15.0	14.6	12.9	12.5	11.4	10.7	11.3	11.4	11.2	11.0	10.5	10.9	10.1	11.8	11.3	11.1	10.8	13.3	11.6	11.8	12.2	12.9	
pH	SU	9.08	8.91	8.78	8.79	8.76	8.76	8.73	8.67	8.62	8.48	8.53	8.01	8.50	8.14	8.25	8.38	8.23	8.14	8.26	8.18	8.42	8.45	
Specific Conductance	µS/cm	1581	1668	1731	1708	1784	1794	1804	1833	1848	1856	1841	1816	1739	1756	1808	1716	1800	1830	1776	1795	1794	1730	
Oxygen Reduction Potential	mV	155.2	64.7	9.8	35.2	-29.6	-37.3	-111.5	-89.2	-112.5	-151.3	-145.7	-117.7	-130.0	-178.2	-202.3	-140.4	-154.7	-127.3	-76.8	-50.6	-131.2	-92.0	
Lab Analytical Results:																								
Hardness as CaCO3	mg/L	5.43	8.71			7.07		4.20			6.01			5.88	6.06	6.39	5.35	4.93	5.65	3.31	4.70	<3.31	5.19	
pH (Lab)	SU	8.83	8.59			8.63		8.51			8.47			8.48	8.31	8.47	8.35	8.3	8.44	8.08	8.33	8.02	8.28	
Total Dissolved Solids (Lab)	mg/L	1160	1170			1180		1180			1220			1140	1120	1100	1130	1130	1140	1120	1110	1110	1070	
Calcium	mg/L	1.53	2.32			1.88		1.68			1.64			1.55	1.56	1.60	1.44	1.3	1.51	1.32	1.21	1.22	1.32	
Magnesium	mg/L	0.392	0.707			0.579		<0.500			0.465			0.49	0.524	0.580	0.428	0.408	0.458	<0.500	0.406	<0.500	0.459	
Sodium	mg/L	408	458			449		452			447			471	470	500	462	458	496	477	441	460	459	
Potassium	mg/L	1.46	<2.00			1.73		<5.00			<2.00			1.39	<2.00	<2.00	1.43	1.77	2.03	<5.00	<2.00	<5.00	<3.00	
Alkalinity, Total	mg/L	965	915			1100		985			965			955	968	995	510	890	970	978	985	1030	1020	
Alkalinity, Bicarbonate	mg/L	775	825			880		885			875			865	896	885	420	650	880	886	895	935	940	
Alkalinity, Carbonate	mg/L	190	90.0			220		100			90.0			90	72.0	110	90	240	90.0	92.0	90.0	90.0	80	
Alkalinity, Hydroxide	mg/L	<10.0	<10.0			<10.0		<10.0			<10.0			<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
Chloride	mg/L	2.18	7.50			8.78		9.11			8.74			7.99	5.68	5.38	5.98	5.98	5.83	5.47	5.37	5.11	5.02	
Fluoride	mg/L	4.72	5.02			5.09		5.10			5.02			4.82	4.84	4.94	5.49	5.44	5.38	5.31	5.11	5.16	5	
Sulfate as SO4	mg/L	17.4	64.7			76.6		77.5			68.6			54.4	48.3	47.6	38.7	34.4	31.9	28.2	24.6	21.9	20	
Total Organic Carbon (TOC)	mg/L	2.64	6.49			8.58		9.53			9.54			9.25	8.94	8.48	8.37	8.25	7.81	6.42	6.63	6.55	5.93	
Nitrate/Nitrite as N	mg/L	<0.020	<0.020			<0.020		<0.020			<0.020			<0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.040	<0.020	<0.020	
Ammonia as N ^	mg/L																			0.240				
Ortho-Phosphate as P ^	mg/L																			0.280				
Aluminum	mg/L	<0.050	<0.100			<0.050		<0.250			<0.100			<0.05	<0.100	<0.100	<0.050	<0.050	<0.100	<0.250	<0.100	<0.250	<0.15	
Arsenic	mg/L	0.0099	0.0220			0.0131		0.0122			0.0139			0.0153	0.014	0.0119	0.0164	0.0111	0.0116	0.0107	0.0127	0.0139	0.0084	
Cadmium	mg/L	<0.0001	<0.0001			<0.0005		<0.0005			<0.0001			<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0005	
Copper	mg/L	0.0059	0.0058			0.0071		0.0070			0.0079			0.0063	0.0071	0.0078	0.0087	0.0153	0.0051	0.0027	0.0028	0.0020	0.0052	
Iron	mg/L	<0.050	<0.100			<0.050		<0.250			<0.100			<0.05	<0.100	<0.100	<0.050	<0.050	<0.100	<0.250	<0.100	<0.250	<0.15	
Lead	mg/L	0.0010	<0.0005			<0.0025		<0.0025			<0.0005			<0.0005	<0.0005	<0.0010	<0.0005	<0.0005	<0.0005	<0.0010	<0.0010	<0.0005	<0.0025	
Manganese	mg/L	0.0020	0.0066			0.0081		0.0124			0.0080			0.007	0.0068	0.0084	0.0091	0.0084	0.0084	0.0073	0.0085	0.0086	0.0086	
Mercury	mg/L	<0.0002	<0.0002			<0.0002		<0.0002			<0.0002			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0050	<0.0002	<0.0002	<0.0002	
Molybdenum	mg/L	0.0020	0.0160			0.0127		0.0134			0.0151			0.0119	0.0115	0.0129	0.0121	0.0119	0.0108	0.0101	0.0096	0.0091	0.0081	
Selenium	mg/L	<0.0010	0.0012			<0.0050		<0.0050			<0.0010			0.0022	0.0113	<0.0020	0.002	<0.001	<0.0010	<0.0020	<0.0020	<0.0010	<0.005	
Silica (Si02)	mg/L	7.27	8.01			8.80		<5.35			8.30			8.9	9.29	10.3	8.86	9.06	10.2	9.51	8.21	7.81	8.39	
Silicon	mg/L	3.40	3.75			4.11		2.50			3.88			4.16	4.34	4.81	4.14	4.24	4.76	4.45	3.84	3.65	3.92	
Uranium	mg/L	0.0043	0.0126			0.0184		0.0169			0.0183			0.0173	0.0151	0.0191	0.0269	0.0176	0.0168	0.0145	0.0163	0.0195	0.0121	
Zinc	mg/L	0.113	0.0697			<0.0100		<0.0100			<0.0020			<0.002	<0.002	<0.0040	<0.0020	<0.002	<0.0100	<0.0040	<0.0040	<0.0040	<0.0100	

Notes & Definitions:

^	one-time analysis
Y/N	yes or no
gpm	gallons per minute
deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
mV	millivolts
mg/L	milligram per liter
pCi/L	picocuries per liter
NM	not measured (field)
NA	not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*
2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*
3. *Industry*

GCC Energy Hydrologic Monitoring Data

MW-4-C																								
Year		2017								2018							2019				2020			
Quarter		Q1	Q2	Q3			Q4			Q1			Q2		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
Month		3	6	7	8	9	10	11	12	1	2	3	4	5	8	11	2	5	8	11	2	5	8	
Sample Date		3/30	6/16	7/27	8/23	9/28	10/27	11/17	12/7	1/3	2/21	3/23	4/12	5/14	8/8	11/5	2/27	5/22	8/15	11/12	2/4	5/26	8/27	
Lab Analysis (Y/N)		Y	Y	N	N	Y	N	Y	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Field Parameters:																								
Purge Flow Rate	gpm	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.1	NM	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Total Purged	gal	7.0	1.5	NM	NM	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1	1.5	1	1.3	1.5	1.3	1.1	1.0	1.5	1.2	1.5	
Depth to Water	ft bgs	328.33	314.05	309.87	306.86	303.96	303.80	302.47	304.80	282.35	281.30	303.30	304.05	NM	302.55	302.17	302.45	303.93	304.93	305.73	306.44	304.90	307.80	
Temperature	deg C	13.3	17.4	12.7	12.0	13.9	11.8	11.2	11.0	11.7	10.8	12.5	11.4	12.4	12.9	11.5	11.3	11.2	12.5	11.7	11.2	12.7	13.0	
pH	SU	8.33	7.62	7.68	7.70	7.69	7.75	7.72	7.79	7.80	7.88	7.94	7.75	7.79	7.76	7.79	7.87	7.86	7.81	7.85	7.87	7.97	8.00	
Specific Conductance	µS/cm	3792	5944	5997	5885	5813	5721	5782	5604	5834	5903	5628	5792	5592	5583	5775	5710	5712	5930	5636	5729	5636	5429	
Oxygen Reduction Potential	mV	57.3	20.3	-101.5	-111.2	-103.7	-117.4	-109.0	-120.1	-123.8	-154.3	-131.3	-134.9	-129.3	-157.6	-209.0	-160.1	-180.1	-156.8	-148.7	-135.9	-147.7	-132.1	
Lab Analytical Results:																								
Hardness as CaCO3	mg/L	46.3	55.9			38.9		30.0			26.5			26.2	25.9	28.6	23.6	22.5	25.2	24.4	24.0	22.7	23	
pH (Lab)	SU	7.61	7.77			7.79		7.98			7.84			7.97	7.96	8.27	7.9	7.92	7.95	7.85	7.95	7.76	7.92	
Total Dissolved Solids (Lab)	mg/L	3230	4050			3750		3780			3730			3660	3650	3590	3580	3590	3610	3610	3580	3570	3510	
Calcium	mg/L	13.6	13.7			9.15		7.45			6.32			6.15	5.90	6.60	5.5	5.21	5.83	5.61	5.57	5.31	5.3	
Magnesium	mg/L	2.99	5.26			3.90		2.76			2.61			2.62	2.72	2.94	2.39	2.3	2.57	2.53	2.44	2.30	2.36	
Sodium	mg/L	908	1510			1490		1400			1410			1400	1410	1590	1410	1370	1440	1430	1440	1390	1400	
Potassium	mg/L	4.38	5.71			6.07		<10.0			<10.0			<5.00	<5.00	5.36	<5.00	<5.00	5.42	<10.0	<5.00	<10.0	<10.0	
Alkalinity, Total	mg/L	1250	2360			2780		2680			2600			2410	2480	2450	2470	2550	2500	2470	2480	2460	2500	
Alkalinity, Bicarbonate	mg/L	1250	2360			2780		2640			2600			2330	2480	2450	2470	2350	2390	2410	2420	2340	2390	
Alkalinity, Carbonate	mg/L	<10.0	<10.0			<10.0		40.0			<10.0			80	<10.0	<10.0	<10.0	200	110	60.0	60.0	120	110	
Alkalinity, Hydroxide	mg/L	<10.0	<10.0			<10.0		<10.0			<10.0			<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
Chloride	mg/L	181	550			587		608			592			573	533	590	575	554	580	525	528	555	543	
Fluoride	mg/L	1.29	2.04			2.17		2.43			2.53			2.52	2.48	2.54	2.64	2.62	2.59	2.51	2.41	2.36	2.34	
Sulfate as SO4	mg/L	534	487			70.2		26.0			34.5			27	18.7	11.2	5.07	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	
Total Organic Carbon (TOC)	mg/L	30	6.42			5.08		3.64			3.23			3.23	2.80	3.46	3.24	2.62	2.63	4.18	2.23	2.50	2.31	
Nitrate/Nitrite as N	mg/L	<2.00	<0.500			<0.400		<0.100			<0.020			<0.02	<0.02	<0.020	0.061	<0.020	<0.020	<0.020	<0.020	<0.020	<0.02	
Ammonia as N ^	mg/L																			0.424				
Ortho-Phosphate as P ^	mg/L																			0.182				
Aluminum	mg/L	<0.050	<0.050			<0.050		<0.500			<0.500			<0.25	<0.25	<0.250	<0.250	<0.250	<0.250	<0.500	<0.250	<0.500	<0.500	
Arsenic	mg/L	0.0059	0.0119			0.0128		0.0152			0.0246			0.0195	0.0202	0.0164	0.0211	0.0171	0.0178	0.0179	0.0203	0.0195	0.015	
Cadmium	mg/L	<0.0001	<0.0010			<0.0010		<0.0010			<0.0005			<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	
Copper	mg/L	0.0125	0.0243			0.0221		0.0208			0.0482			0.0389	0.0280	0.0230	0.0249	0.0382	0.0198	0.0107	0.0111	0.0069	0.0151	
Iron	mg/L	<0.050	<0.050			<0.050		<0.500			<0.500			0.373	0.397	0.474	0.279	0.391	0.522	0.619	0.591	0.551	<0.500	
Lead	mg/L	<0.0005	<0.0050			<0.0050		<0.0050			<0.0025			<0.0025	<0.0025	<0.0025	<0.0025	<0.0005	<0.0025	<0.0025	<0.0025	<0.0025	<0.005	
Manganese	mg/L	0.0269	0.0772			0.0554		0.0571			0.0647			0.0529	0.0381	0.0283	0.0268	0.0174	0.0162	0.0096	0.0209	0.0103	0.008	
Mercury	mg/L	<0.0002	<0.0002			<0.0002		<0.0002			<0.0002			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0050	<0.0002	<0.0002	<0.0002	
Molybdenum	mg/L	0.0526	0.115			0.0138		0.0106			0.0086			0.0072	0.0071	0.0057	0.0074	0.007	0.0056	0.0047	0.0045	0.0044	<0.005	
Selenium	mg/L	0.0248	0.0231			0.0214		0.0269			0.0378			0.0317	0.0260	0.0211	0.0339	0.0195	0.0195	0.0156	0.0140	0.0129	0.0112	
Silica (Si02)	mg/L	9.85	12.6			12.9		<10.7			<10.7			11	11.2	12.8	10.1	10.5	11.3	11.0	9.88	<10.7	<10.7	
Silicon	mg/L	4.61	5.88			6.02		<5.00			<5.00			5.16	5.24	6.00	4.7	4.89	5.29	5.14	4.62	<5.00	<5.00	
Uranium	mg/L	0.0297	0.121			0.0984		0.0545			0.0311			0.0311	0.0277	0.0246	0.0215	0.0154	0.0086	0.0073	0.0063	0.0039	<0.005	
Zinc	mg/L	0.0156	0.0265			<0.0200		<0.0200			<0.0100			<0.01	<0.01	<0.0100	<0.0100	0.0038	<0.0100	<0.0100	<0.0100	<0.0100	<0.02	

Notes & Definitions:

^	one-time analysis
Y/N	yes or no
gpm	gallons per minute
deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
mV	millivolts
mg/L	milligram per liter
pCi/L	picocuries per liter
NM	not measured (field)
NA	not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*
2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*
3. *Industry*

GCC Energy Hydrologic Monitoring Data

MW-5-A																										
Year		2017							2018									2019				2020		
Quarter		Q2	Q3			Q4			Q1			Q2		Q3			Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Month		6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	11	2	5	8	11	2	5	9
Sample Date		6/7	7/18	8/23	9/26	10/26	11/16	12/5	1/2	2/9	3/22	4/11	5/10	--	7/23	8/7	11/26	2/20	5/30	8/14	11/5	2/12	5/28	9/1
Lab Analysis (Y/N)		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Field Parameters:																								
Purge Flow Rate	gpm	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	***	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
Total Purged	gal																							
Depth to Water	ft bgs																							
Temperature	deg C																							
pH	SU																							
Specific Conductance	µS/cm																							
Oxygen Reduction Potential	mV																							
Lab Analytical Results:																								
Hardness as CaCO3	mg/L																							
pH (Lab)	SU																							
Total Dissolved Solids (Lab)	mg/L																							
Calcium	mg/L																							
Magnesium	mg/L																							
Sodium	mg/L																							
Potassium	mg/L																							
Alkalinity, Total	mg/L																							
Alkalinity, Bicarbonate	mg/L																							
Alkalinity, Carbonate	mg/L																							
Alkalinity, Hydroxide	mg/L																							
Chloride	mg/L																							
Fluoride	mg/L																							
Sulfate as SO4	mg/L																							
Total Organic Carbon (TOC)	mg/L																							
Nitrate/Nitrite as N	mg/L																							
Ammonia as N ^	mg/L																							
Ortho-Phosphate as P ^	mg/L																							
Aluminum	mg/L																							
Arsenic	mg/L																							
Cadmium	mg/L																							
Copper	mg/L																							
Iron	mg/L																							
Lead	mg/L																							
Manganese	mg/L																							
Mercury	mg/L																							
Molybdenum	mg/L																							
Selenium	mg/L																							
Silica (Si02)	mg/L																							
Silicon	mg/L																							
Uranium	mg/L																							
Zinc	mg/L																							

Notes & Definitions:

*** *La Plata County stage 3 fire restrictions prevented sampling activity*

^ one-time analysis

Y/N yes or no

gpm gallons per minute

deg C degrees Celsius

SU standard pH units

µS/cm microsiemens per centimeter

mV millivolts

mg/L milligram per liter

pCi/L picocuries per liter

NM not measured (field)

NA not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*
2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*
3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

MW-5-MI

Year		2017							2018									2019				2020		
Quarter		Q2	Q3			Q4			Q1			Q2			Q3		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Month		6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	11	2	5	8	11	2	5	9
Sample Date		6/7	7/18	8/23	9/26	10/26	11/16	12/5	1/2	2/9	3/22	4/11	5/10	--	7/23	8/7	11/5-6	2/20	5/30	8/14	11/5	2/12	5/28	9/1
Lab Analysis (Y/N)		Y	N	N	Y	N	Y	N	N	Y	NM	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Field Parameters:																								
Purge Flow Rate	gpm	NM	NM	NM	NM	NM	NM	NM	NM	0.1	NM	0.1	0.1	***	0.1	0.1	0.1	0.12	0.1	0.1	0.1	0.1	0.1	0.1
Total Purged	gal	7.5	NM	NM	NM	1.3	1.0	1.0	1.0	1.5	1.5	1.0	1.3		1.3	1.0	1.1	1.3	1.3	1.1	1.0	1.0	1.0	1.0
Depth to Water	ft bgs	276.48	264.03	236.52	268.98	263.77	262.82	263.78	263.77	263.67	263.65	263.69	263.74		263.9	263.92	264.68	263.45	263.70	263.92	263.93	263.82	262.72	264.31
Temperature	deg C	22.5	NM	NM	11.1	10.4	9.9	8.8	9.3	9.9	9.5	9.5	10.1		12.5	11.7	9.6	6.66	10.2	11.1	10.6	9.2	10.6	11.8
pH	SU	8.38	NM	NM	8.81	8.81	8.86	8.84	8.84	8.83	8.87	8.59	8.55		8.56	8.61	8.54	8.62	8.36	8.45	8.42	8.30	8.55	8.62
Specific Conductance	µS/cm	1355	NM	NM	1621	1647	1637	1670	1664	1622	1610	1592	1596		1553	1558	1570	1606.9	1527	1572	1572	1546	1592	1518
Oxygen Reduction Potential	mV	77.1	NM	NM	47.8	50.6	53.3	41.5	12.6	12	-33.8	5.7	-21.3		-44.7	14.5	-38.2	-39.7	-12.1	-16.0	10.5	39.0	-90.5	-25.4
Lab Analytical Results:																								
Hardness as CaCO3	mg/L	13.6			14.0		10.2			10.5			9.11			9.34	9.48	8.79	8.47	8.74	7.97	8.89	8.72	9.18
pH (Lab)	SU	8.80			8.66		8.58			8.62			8.67			8.60	8.50	8.54	8.14	8.37	8.35	8.28	8.17	8.34
Total Dissolved Solids (Lab)	mg/L	1160			1120		1070			1030			1010			990	975	1050	975	1010	945	980	950	980
Calcium	mg/L	3.89			3.69		2.87			2.74			2.36			2.37	2.39	2.25	2.16	2.20	2.00	2.17	2.24	2.3
Magnesium	mg/L	0.943			1.16		0.750			0.880			0.78			0.829	0.854	0.769	0.748	0.787	0.724	0.842	0.758	0.837
Sodium	mg/L	428			433		411			416			398			404	417	416	384	392	392	405	407	405
Potassium	mg/L	<5.00			1.70		<5.00			1.68			1.25			<2.00	<2.00	1.9	1.29	1.35	1.05	<2	<5.00	1.21
Alkalinity, Total	mg/L	940			985		945			1000			900			940	900	860	945	905	935	885	865	760
Alkalinity, Bicarbonate	mg/L	730			815		855			820			780			760	810	720	805	775	825	805	775	680
Alkalinity, Carbonate	mg/L	210			170		140			180			120			180	90.0	140	140	130	110	80	90.0	80
Alkalinity, Hydroxide	mg/L	<10.0			<10.0		<10.0			<10.0			<10			<10.0	<10.0	<10.0	<10	<10.0	<10.0	<10	<10.0	<10
Chloride	mg/L	11.4			6.32		8.60			5.93			7.48			5.23	4.98	5.17	5.3	5.11	5.43	5.47	5.30	5.4
Fluoride	mg/L	0.954			0.606		0.815			0.535			0.565			0.536	0.340	0.367	0.404	0.327	0.440	0.34	0.308	0.278
Sulfate as SO4	mg/L	32.6			38.1		32.3			21.6			17.3			13.3	9.01	7.39	7.62	6.48	6.36	6.47	5.99	5.86
Total Organic Carbon (TOC)	mg/L	6.32			3.42		3.69			3.65			3.82			3.78	3.68	3.46	3.46	3.24	2.78	2.73	2.72	2.78
Nitrate/Nitrite as N	mg/L	0.599			<0.400		<0.020			<0.020			<0.02			<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.02	<0.020	<0.02
Ammonia as N ^	mg/L																				<0.100			
Ortho-Phosphate as P ^	mg/L																				<0.0500			
Aluminum	mg/L	<0.250			<0.050		<0.250			<0.050			<0.05			<0.100	<0.100	<0.050	<0.050	<0.050	<0.050	<0.1	<0.250	<0.05
Arsenic	mg/L	0.0129			0.0200		0.0151			0.0192			0.0232			0.0234	0.0165	0.0177	0.0176	0.0194	0.0147	0.0133	0.0126	0.0139
Cadmium	mg/L	<0.0005			<0.0001		<0.0005			<0.0001			<0.0001			<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0002	<0.0005	<0.0005
Copper	mg/L	0.0229			0.0074		0.0060			0.0076			0.0049			0.0072	0.0074	0.0103	0.0148	0.0054	0.0056	0.0041	<0.0025	0.0048
Iron	mg/L	<0.250			<0.050		<0.250			<0.050			<0.05			<0.100	<0.100	<0.050	<0.050	<0.050	<0.050	<0.1	<0.250	<0.05
Lead	mg/L	<0.0025			<0.0005		<0.0025			<0.0005			<0.0005			<0.0005	<0.001	<0.0010	<0.0005	<0.0005	<0.0010	<0.001	<0.0025	<0.0025
Manganese	mg/L	<0.0025			0.0036		0.0066			0.0082			0.0104			0.0121	0.0155	0.017	0.0146	0.0158	0.0156	0.019	0.0169	0.0203
Mercury	mg/L	<0.0002			<0.0002		<0.0002			<0.0002			<0.0002			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	0.0395			0.0274		0.0247			0.0158			0.0113			0.0114	0.0078	0.0066	0.0053	0.0051	0.0038	0.0038	0.0031	0.0027
Selenium	mg/L	<0.0050			0.0014		<0.0050			<0.0010			<0.001			0.0010	<0.002	<0.0020	<0.001	<0.0010	<0.0010	<0.002	<0.0050	<0.005
Silica (Si02)	mg/L	<5.35			9.07		<5.35			8.66			8.17			8.28	9.20	8.37	8.4	9.18	7.76	8.07	7.36	8.54
Silicon	mg/L	<2.50			4.24		<2.50			4.05			3.82			3.87	4.30	3.91	3.93	4.29	3.63	3.77	3.44	3.99
Uranium	mg/L	0.0117			0.0098		0.0104			0.0095			0.0089			0.0112	0.0099	0.0103	0.0085	0.0093	0.0098	0.0082	0.0068	0.0068
Zinc	mg/L	0.204			0.138		0.109			0.0933			0.0816			0.0801	0.0919	0.115	0.0576	0.0567	0.0561	0.0698	0.0641	0.0746

Notes & Definitions:

*** *La Plata County stage 3 fire restrictions prevented sampling activity*

^ one-time analysis

Y/N yes or no

gpm gallons per minute

deg C degrees Celsius

SU standard pH units

µS/cm microsiemens per centimeter

mV millivolts

mg/L milligram per liter

pCi/L picocuries per liter

NM not measured (field)

NA not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*

2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components*

3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

MW-5-C																											
Year		2017									2018									2019				2020		
Quarter		Q2	Q3				Q4				Q1			Q2			Q3		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Month		6	7	8	9	9	10	11	11	12	1	2	3	4	5	6	7	8	11	2	5	8	11	2	5	9
Sample Date		6/7	7/18	8/23	9/7	9/26	10/26	11/2	11/16	12/5	1/2	2/9	3/22	4/11	5/10	--	7/23	8/7	11/1	2/20	5/30	8/14	11/5	2/12	5/28	9/1
Lab Analysis (Y/N)		N	N	N	N	Y	N	N	Y	N	N	Y	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Field Parameters:																										
Purge Flow Rate	gpm	NM	NM	NM	NM	NM	NM	0.10	NM	NM	NM	0.1	NM	0.1	0.1	***	0.10	0.1	0.10	0.12	0.12	0.06	0.25	0.13	0.25	0.13
Total Purged	gal	NM	NM	NM	NM	NM	NM	3.0	1.0	1.0	1.5	2.0	1.5	1.0	1.3		1.3	1.5	1.6	1.3	1.5	1.3	1.1	1.0	1.0	1.0
Depth to Water	ft bgs	248.15	240.80	235.02	233.2	230.75	229.44	228.45	227.43	227.64	225.4	222.46	219.31	218.22	216.04		210.87	210.5	205.1	198.44	193.20	191.11	189.20	187.50	187.70	189.72
Temperature	deg C	NM	NM	NM	35.32	11.29	NM	9.46	9.70	9.04	9.33	9.37	9.56	9.7	10.08		10.66	10.7	9.37	8.63	10.14	10.89	10.28	8.82	10.93	10.85
pH	SU	NM	NM	NM	8.75	7.58	NM	7.59	7.63	7.64	7.65	7.68	7.77	7.56	7.6		7.52	7.61	7.55	7.72	7.72	7.74	7.77	7.87	7.83	7.93
Specific Conductance	µS/cm	NM	NM	NM	0.1	4903	NM	4905	4827	4977	4974	4958	4285	4787	4772		4674	4687	4768	4623	4418	4355	4359	4230	4152	3677
Oxygen Reduction Potential	mV	NM	NM	NM	48.2	-24.8	NM	7.60	-74.20	-110.50	-99.8	-90.5	-84.6	-49.6	-51.3		-59.5	-66.4	-138	-56.2	-29.9	-88.24	-58.69	-45.49	-128.24	-88.61
Lab Analytical Results:																										
Hardness as CaCO3	mg/L					80.3			67.7			61.3			50.3			51.2	51.4	43	41.1	38.8	34.9	34.8	33.2	30.8
pH (Lab)	SU					7.57			8.11			7.74			7.79			7.64	7.69	7.72	7.46	7.75	7.66	7.74	7.73	7.8
Total Dissolved Solids (Lab)	mg/L					3470			3540			3480			3430			3290	3260	3160	3090	3130	3010	2970	2800	2750
Calcium	mg/L					18.3			15.4			13.7			11.1			11.4	11.5	9.78	9.34	8.69	7.70	7.73	7.50	6.78
Magnesium	mg/L					8.40			7.11			6.57			5.46			5.52	5.50	4.51	4.32	4.14	3.81	3.78	3.51	3.37
Sodium	mg/L					1280			1220			1250			1200			1230	1250	1220	1070	1120	1050	1050	1060	1010
Potassium	mg/L					4.57			<5.00			<5.00			3.6			<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<10.0	2.75
Alkalinity, Total	mg/L					1480			1540			1590			1490			1520	1540	1560	1630	1620	1580	1550	1520	1590
Alkalinity, Bicarbonate	mg/L					1480			1540			1590			1490			1520	1540	1560	1630	1620	1520	1550	1470	1480
Alkalinity, Carbonate	mg/L					<10.0			<10.0			<10.0			<10			<10.0	<10.0	<10.0	<10.0	<10.0	60.0	<10.0	50.0	110
Alkalinity, Hydroxide	mg/L					<10.0			<10.0			<10.0			<10			<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Chloride	mg/L					8.66			10.6			10.1			<10			7.15	7.08	7.1	7.02	6.62	6.32	6.58	6.12	6.02
Fluoride	mg/L					1.90			1.93			1.89			1.79			1.74	1.80	1.95	2.01	1.95	1.98	1.96	2.01	2.01
Sulfate as SO4	mg/L					1470			1600			1190			1220			1130	1070	1040	975	948	836	799	721	679
Total Organic Carbon (TOC)	mg/L					2.86			2.94			3.24			3.06			3.28	3.64	3.05	3.00	3.03	2.62	2.7	2.73	2.87
Nitrate/Nitrite as N	mg/L					<0.100			<0.020			<0.020			<0.02			0.026	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ammonia as N ^	mg/L																						0.369			
Ortho-Phosphate as P ^	mg/L																						<0.250			
Aluminum	mg/L					<0.050			<0.250			<0.250			<0.05			<0.250	<0.250	<0.250	<0.25	<0.250	<0.250	<0.25	<0.500	<0.050
Arsenic	mg/L					<0.0025			<0.0050			<0.0025			0.0044			0.0046	0.0036	0.004	0.0013	<0.0025	<0.0025	<0.0025	<0.0025	<0.0050
Cadmium	mg/L					<0.0005			<0.0010			<0.0005			<0.0005			<0.0005	<0.0005	<0.0005	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Copper	mg/L					0.0272			0.0161			0.0342			0.0171			0.0226	0.0178	0.0294	0.01	0.0138	0.0303	0.0165	0.0040	0.0101
Iron	mg/L					<0.050			<0.250			0.399			0.237			<0.250	<0.250	<0.250	<0.25	<0.250	<0.250	<0.250	<0.500	0.113
Lead	mg/L					<0.0025			<0.0050			<0.0025			<0.0025			<0.0025	<0.0025	<0.0025	<0.0005	<0.0025	<0.0025	<0.0025	<0.0025	<0.005
Manganese	mg/L					0.0367			0.0283			0.0138			0.0128			0.0131	0.0117	0.0115	0.0079	0.0078	0.0076	0.0081	0.0059	<0.0050
Mercury	mg/L					<0.0002			<0.0002			<0.0002			<0.0002			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L					0.0376			0.0201			0.0154			0.0142			0.0127	0.0109	0.0096	0.0054	0.0041	0.0035	0.0033	0.0031	<0.0050
Selenium	mg/L					<0.0050			<0.0100			<0.0050			<0.005			<0.0050	<0.0050	<0.0050	0.0015	<0.0050	<0.0050	<0.005	<0.0050	<0.0100
Silica (SiO2)	mg/L					6.57			<5.35			7.64			7.65			8.18	8.94	7.84	8.00	8.00	7.33	7.01	<10.7	7.44
Silicon	mg/L					3.07			<2.50			3.57			3.58			3.83	4.18	3.67	3.74	3.74	3.43	3.28	<5.00	3.48
Uranium	mg/L					0.0088			0.0054			0.0048			0.0047			0.0036	0.0035	0.0029	0.0021	0.0018	0.0017	<0.0025	<0.0025	<0.005
Zinc	mg/L					<0.010			<0.020			<0.010			<0.01			<0.0100	<0.0100	<0.0100	<0.002	<0.0100	<0.0100	<0.0100	<0.0100	<0.0200

Notes & Definitions:

*** *La Plata County stage 3 fire restrictions prevented sampling activity*

^ one-time analysis

Y/N yes or no

gpm gallons per minute

deg C degrees Celsius

SU standard pH units

µS/cm microsiemens per centimeter

mV millivolts

mg/L milligram per liter

pCi/L picocuries per liter

NM not measured (field)

NA not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*

2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*

3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

MW-6-A															
Year		2018	2019										2020		
Quarter		Q4	Q1			Q2			Q3			Q4	Q1	Q2	Q3
Month		12	1	2	3	4	5	6	7	8	9	11	2	5	8
Sample Date		12/28	1/31	2/21	3/21	4/23	5/20	6/19	7/23	8/15	9/24	11/7	2/5	5/14	8/11
Lab Analysis (Y/N)		Y	N	Y	N	N	Y	N	N	Y	N	Y	Y	Y	Y
Field Parameters:															
Purge Flow Rate	gpm	NM	NM	0.10	2.00	0.03	0.03	0.03	0.06	0.03	0.02	0.01	0.05	0.13	0.05
Total Purged	gal	36.3	0.5	0.5	2.0	2.0	1.3	1.0	1.3	1.1	1.3	1.5	1.1	1.0	1.3
Depth to Water	ft bgs	304.33	306.41	307.40	309.60	311.05	312.50	314.20	315.75	316.43	NM	318.70	315.46	319.63	319.64
Temperature	deg C	7.4	10.7	8.1	7.5	9.6	7.3	12.5	12.3	11.9	10.4	10.4	7.8	9.8	19.5
pH	SU	7.32	6.64	6.66	6.74	6.65	6.73	6.76	6.75	6.76	6.80	6.79	6.89	6.95	6.97
Specific Conductance	µS/cm	6573	6053	6072	6107	6012	6057	5725	5598	5562	5451	5108	5043	4779	4339
Oxygen Reduction Potential	mV	-22.8	19.4	24.6	12.6	11.8	34.8	86.6	25.8	6.5	29.2	20.5	36.7	51.7	62.3
Lab Analytical Results:															
Hardness as CaCO3	mg/L	4360		4190			3920			3540		3070	3200	2780	2690
pH (Lab)	SU	7.10		6.85			6.77			6.85		6.87	6.9	6.93	6.66
Total Dissolved Solids (Lab)	mg/L	6520		6520			120*			6080		5210	4980	4670	4490
Calcium	mg/L	615		559			553			492		431	467	400	398
Magnesium	mg/L	687		678			617			560		484	495	431	411
Sodium	mg/L	294		283			296			304		276	296	274	261
Potassium	mg/L	15.0		14.4			12.4			12.8		11.1	<20	10.6	10.3
Alkalinity, Total	mg/L	160		160			143			183		220	215	233	236
Alkalinity, Bicarbonate	mg/L	160		160			143			183		220	215	233	236
Alkalinity, Carbonate	mg/L	<10.0		<10.0			<10.0			<10.0		<10.0	<10	<10.0	<10.0
Alkalinity, Hydroxide	mg/L	<10.0		<10.0			<10.0			<10.0		<10.0	<10	<10.0	<10.0
Chloride	mg/L	97.4		28.6			27.3			29.9		29.6	28.4	29.0	26.0
Fluoride	mg/L	2.83		<0.500			<0.500			<0.500		<0.500	<0.5	<0.500	<0.500
Sulfate as SO4	mg/L	205		4300			4280			4260		3460	3080	3020	3160
Total Organic Carbon (TOC)	mg/L	3.45		3.08			2.91			3.57		3.10	3.16	3.39	3.31
Nitrate/Nitrite as N	mg/L	<0.020		<0.020			<0.020			<0.020		<0.020	0.049	0.154	0.117
Ammonia as N ^	mg/L											2.72			
Ortho-Phosphate as P ^	mg/L											<0.0500			
Aluminum	mg/L	<0.500		<0.250			<0.250			<0.250		<0.250	<1.00	<0.500	<0.250
Arsenic	mg/L	<0.0025		<0.0025			0.0009			<0.0025		<0.0025	<0.0025	<0.0050	<0.0025
Cadmium	mg/L	<0.0005		<0.0005			0.0001			<0.0005		<0.0005	<0.0005	<0.0010	<0.0005
Copper	mg/L	0.0116		0.0081			0.0035			0.0039		0.0017	0.0028	<0.0050	<0.0025
Iron	mg/L	1.37		3.75			3.93			3.22		2.72	1.95	1.38	1.10
Lead	mg/L	<0.0025		<0.0025			<0.0005			<0.0025		<0.0025	<0.0025	<0.0050	<0.0025
Manganese	mg/L	0.788		0.802			0.724			0.690		0.585	0.551	0.526	0.520
Mercury	mg/L	<0.0002		<0.0002			<0.0002			<0.0002		<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	<0.0025		<0.0025			<0.0005			<0.0025		<0.0025	<0.0025	<0.0050	<0.0025
Selenium	mg/L	<0.0050		<0.0050			0.0028			<0.0050		<0.0050	<0.005	<0.0100	<0.0050
Silica (Si02)	mg/L	12.3		11.9			14.3			13.4		12.5	<21.4	11.0	11.4
Silicon	mg/L	5.77		5.57			6.69			6.28		5.83	<10	5.17	5.35
Uranium	mg/L	<0.0005		<0.0005			<0.0001			<0.0005		<0.0005	<0.0025	<0.0050	<0.0025
Zinc	mg/L	0.0689		<0.0100			0.0082			0.0108		0.0117	0.0107	<0.0200	0.0159

Notes & Definitions:

*	Anomalous value under review
^	one-time analysis
Y/N	yes or no
gpm	gallons per minute
deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
mV	millivolts
mg/L	milligram per liter
pCi/L	picocuries per liter
NM	not measured (field)
NA	not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*
2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*
3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

MW-6-MI																
Year		2018	2019											2020		
Quarter		Q4	Q1			Q2				Q3			Q4	Q1	Q2	Q3
Month		12	1	2	3	4	5	5	6	7	8	9	11	2	5	8
Sample Date		12/29	1/31	2/25	3/21	4/19	5/20	5/30	6/19	7/23	8/15	9/24	11/7	2/5	5/14	8/11
Lab Analysis (Y/N)		Y	N	Y	N	N	N#	N	N	N	N	N	N	N	N	N
Field Parameters:																
Purge Flow Rate	gpm	NM	NM	NM	0.5	0.1	0.015	dry	dry	dry	dry	dry	dry	dry	dry	dry
Total Purged	gal	11.3	0.5	1.5	0.5	1.0	0.9									
Depth to Water	ft bgs	374.49	368.09	367.92	370.49	369.50	371.00									
Temperature	deg C	14.3	13.6	10.8	9.7	16.7	3.9									
pH	SU	8.26	7.43	7.21	7.55	7.97	7.84									
Specific Conductance	µS/cm	3390	3620	3132	2619	2202	2527									
Oxygen Reduction Potential	mV	103.0	-80.2	77.6	59.8	38.3	64.9									
Lab Analytical Results:																
Hardness as CaCO3	mg/L	679		147												
pH (Lab)	SU	8.18		8.35												
Total Dissolved Solids (Lab)	mg/L	2480		1880												
Calcium	mg/L	104		23.4												
Magnesium	mg/L	102		21.6												
Sodium	mg/L	646		565												
Potassium	mg/L	12.0		5.30												
Alkalinity, Total	mg/L	395		615												
Alkalinity, Bicarbonate	mg/L	345		615												
Alkalinity, Carbonate	mg/L	50.0		<10.0												
Alkalinity, Hydroxide	mg/L	<10.0		<10.0												
Chloride	mg/L	175		178												
Fluoride	mg/L	2.06		2.46												
Sulfate as SO4	mg/L	1210		585												
Total Organic Carbon (TOC)	mg/L	3.63		4.55												
Nitrate/Nitrite as N	mg/L	0.023		<0.020												
Aluminum	mg/L	<0.100		<0.100												
Arsenic	mg/L	0.0084		0.0144												
Cadmium	mg/L	<0.0001		<0.0002												
Copper	mg/L	0.0113		0.0112												
Iron	mg/L	<0.100		<0.100												
Lead	mg/L	<0.0005		<0.0010												
Manganese	mg/L	0.0500		0.0224												
Mercury	mg/L	<0.0002		<0.0002												
Molybdenum	mg/L	0.0558		0.0690												
Selenium	mg/L	0.0098		0.0127												
Silica (Si02)	mg/L	9.93		9.05												
Silicon	mg/L	4.64		4.23												
Uranium	mg/L	0.0200		0.0118												
Zinc	mg/L	0.0092		0.0143												

Notes & Definitions:

#	No sample collected, due to low yield, insufficient volume for lab sample after field parameters we measured
Y/N	yes or no
gpm	gallons per minute
deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
mV	millivolts
mg/L	milligram per liter
pCi/L	picocuries per liter
NM	not measured (field)
NA	not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*
2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*
3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

MW-6-C															
Year		2018	2019										2020		
Quarter		Q4	Q1			Q2			Q3			Q4	Q1	Q2	Q3
Month		12	1	2	3	4	5	6	7	8	9	11	2	5	8
Sample Date		12/24	1/30	2/21	3/21	4/23	5/20	6/19	7/23	8/15	9/24	11/7	2/5	5/12	8/11
Lab Analysis (Y/N)		N	N	N	N	N	N	N	N	N	N	N	N	N	N
Field Parameters:															
Purge Flow Rate	gpm	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
Total Purged	gal														
Depth to Water	ft bgs														
Temperature	deg C														
pH	SU														
Specific Conductance	µS/cm														
Oxygen Reduction Potential	mV														
Lab Analytical Results:															
Hardness as CaCO3	mg/L														
pH (Lab)	SU														
Total Dissolved Solids (Lab)	mg/L														
Calcium	mg/L														
Magnesium	mg/L														
Sodium	mg/L														
Potassium	mg/L														
Alkalinity, Total	mg/L														
Alkalinity, Bicarbonate	mg/L														
Alkalinity, Carbonate	mg/L														
Alkalinity, Hydroxide	mg/L														
Chloride	mg/L														
Fluoride	mg/L														
Sulfate as SO4	mg/L														
Total Organic Carbon (TOC)	mg/L														
Nitrate/Nitrite as N	mg/L														
Aluminum	mg/L														
Arsenic	mg/L														
Cadmium	mg/L														
Copper	mg/L														
Iron	mg/L														
Lead	mg/L														
Manganese	mg/L														
Mercury	mg/L														
Molybdenum	mg/L														
Selenium	mg/L														
Silica (Si02)	mg/L														
Silicon	mg/L														
Uranium	mg/L														
Zinc	mg/L														

Notes & Definitions:

Y/N	yes or no
gpm	gallons per minute
deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
mV	millivolts
mg/L	milligram per liter
pCi/L	picocuries per liter
NM	not measured (field)
NA	not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*
2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*
3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

MW-6-LM																
Year		2018	2019											2020		
Quarter		Q4	Q1			Q2			Q3			Q4		Q1	Q2	Q3
Month		12	1	2	3	4	5	6	7	8	9	10	11	2	5	8
Sample Date		12/30	1/31	2/25	3/21	4/23	5/20	6/19	7/23	8/15	9/24	10/28	11/7	2/5	5/14	8/11
Lab Analysis (Y/N)		Y	N	Y	N	N	Y	N	N	Y	N	N	Y	Y	Y	Y
Field Parameters:																
Purge Flow Rate	gpm	NM	NM	0.06	2.00	0.03	0.03	0.10	0.06	0.03	0.02	0.01	0.03	0.01	0.13	0.01
Total Purged	gal	0.5	0.5	1.5	2.0	2.0	2.3	1.3	1.3	1.8	2.0	1.5	2.0	2.0	2.0	2.0
Depth to Water	ft bgs	535.72	538.73	539.34	540.64	539.98	537.58	540.00	540.35	540.24	540.17	539.80	540.18	539.70	539.45	539.98
Temperature	deg C	7.9	14.3	7.8	8.1	9.1	9.3	11.7	14.0	13.4	11.6	10.1	12.4	10.5	11.3	14.8
pH	SU	7.64	7.38	7.51	7.54	7.49	7.54	7.67	7.80	7.65	7.43	7.45	7.37	7.39	7.54	7.44
Specific Conductance	µS/cm	6011	3784	3503	1461	1164	1296	1400	1272	1532	2104	2267	2113	2283	2287	2442
Oxygen Reduction Potential	mV	185.3	10.7	40.9	-32.8	-35.8	-111.0	-194.5	-163.6	-67.2	6.4	-48.0	19.9	-128.9	-222.9	32.1
Lab Analytical Results:																
Hardness as CaCO3	mg/L	2260		1270			431			621			843	1060	965	1130
pH (Lab)	SU	7.60		7.52			7.47			7.59			7.32	7.43	7.18	6.95
Total Dissolved Solids (Lab)	mg/L	5100		2840			875			1150			1630	1840	1840	2040
Calcium	mg/L	367		216			75.9			103			136	173	150	179
Magnesium	mg/L	325		177			58.7			88.3			122	153	143	165
Sodium	mg/L	459		248			129			153			172	203	188	194
Potassium	mg/L	173		64.5			14.0			13.7			11.3	11	7.82	7.20
Alkalinity, Total	mg/L	205		315			371			381			355	320	353	335
Alkalinity, Bicarbonate	mg/L	205		315			371			381			355	320	353	335
Alkalinity, Carbonate	mg/L	<10.0		<10.0			<10.0			<10.0			<10.0	<10	<10.0	<10.0
Alkalinity, Hydroxide	mg/L	<10.0		<10.0			<10.0			<10.0			<10.0	<10	<10.0	<10.0
Chloride	mg/L	256		43.7			5.73			8.70			11.4	11	11.7	12.2
Fluoride	mg/L	0.530		<0.500			0.324			<0.500			<0.500	0.352	<0.500	0.346
Sulfate as SO4	mg/L	3050		1790			338			492			830	951	904	1260
Total Organic Carbon (TOC)	mg/L	3.46		2.61			1.57			1.78			1.85	1.76	1.84	1.87
Nitrate/Nitrite as N	mg/L	<0.020		<0.020			<0.020			<0.020			<0.020	<0.02	<0.020	<0.020
Ammonia as N ^	mg/L												1.99			
Ortho-Phosphate as P ^	mg/L												<0.0500			
Aluminum	mg/L	<0.250		<0.250			<0.050			<0.050			<0.100	<0.25	<0.250	<0.150
Arsenic	mg/L	0.0039		0.0049			0.0036			0.0038			0.0035	0.0044	0.0034	0.0038
Cadmium	mg/L	<0.0005		<0.0005			<0.0001			<0.0001			<0.0002	<0.0002	<0.0005	<0.0003
Copper	mg/L	0.0135		0.0064			0.0017			0.0018			0.0069	0.0014	<0.0025	<0.0015
Iron	mg/L	<0.250		<0.250			<0.050			<0.050			<0.100	<0.25	<0.250	<0.150
Lead	mg/L	<0.0025		<0.0025			<0.0005			<0.0005			<0.0010	<0.001	<0.0025	<0.0015
Manganese	mg/L	0.383		0.223			0.0692			0.148			0.166	0.184	0.171	0.267
Mercury	mg/L	<0.0002		<0.0002			<0.0002			<0.0002			<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	0.0490		0.0169			0.0037			0.0025			0.0022	0.002	<0.0025	0.0023
Selenium	mg/L	0.0080		<0.0050			<0.0010			<0.0010			<0.0020	<0.002	<0.0050	<0.0030
Silica (SiO2)	mg/L	10.5		13.5			17.0			17.4			15.9	17.1	15.1	14.7
Silicon	mg/L	4.91		6.29			7.96			8.12			7.43	7.97	7.07	6.88
Uranium	mg/L	0.0230		0.0075			0.0039			0.0054			0.0047	0.0055	0.0043	0.0046
Zinc	mg/L	0.0323		<0.0100			<0.0020			<0.0040			<0.0040	<0.004	<0.0100	0.0069

Notes & Definitions:

^ one-time analysis
Y/N yes or no
gpm gallons per minute
deg C degrees Celsius
SU standard pH units
µS/cm microsiemens per centimeter
mV millivolts
mg/L milligram per liter
pCi/L picocuries per liter
NM not measured (field)
NA not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*
2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*
3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

MW-7-EAA																
Year		2018	2019											2020		
Quarter		Q4	Q1			Q2			Q3			Q4		Q1	Q2	Q3
Month		12	1	2	3	4	5	6	7	8	9	10	11	2	5	8
Sample Date		12/23	1/29	2/19	3/20	4/16	5/29	6/20	7/24	8/13	9/27	10/24	11/6	2/11	5/27	8/25
Lab Analysis (Y/N)		Y	N	Y	N	N	Y	N	N	Y	N	N	Y	Y	Y	Y
Field Parameters:																
Purge Flow Rate	gpm	1.10	1.10	1.00	3.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.25	0.13
Total Purged	gal	15.0	18.0	15.0	3.0	15.0	16.0	15.3	15.3	17.0	15.0	15.0	15.0	36.5	15.0	16.0
Depth to Water	ft bgs	36.13	36.27	36.45	36.52	36.70	36.25	36.22	36.48	36.49	36.88	36.85	36.85	36.72	35.40	36.35
Temperature	deg C	10.0	10.0	10.0	9.9	10.1	10.4	10.4	10.6	10.5	10.3	10.4	10.6	10.4	12.1	10.3
pH	SU	6.99	7.01	7.04	6.93	7.00	7.06	7.07	6.28	6.95	7.06	7.03	7.06	6.91	7.17	7.09
Specific Conductance	µS/cm	2001	1910	1910	1926	1912	1767	1836	1885	1890	1913	1936	1922	1993	1890	1772
Oxygen Reduction Potential	mV	-68.0	-36.7	-41.4	-38.1	-48.8	14.1	-13.8	-33.9	-37.8	-29.5	-25.6	-21.3	0.9	-49.2	17.6
Lab Analytical Results:																
Hardness as CaCO3	mg/L	936		1030			982			997			1020	963	1020	1080
pH (Lab)	SU	7.2		7.37			7.17			7.09			6.99	6.92	6.89	7.23
Total Dissolved Solids (Lab)	mg/L	1460		1480			1490			1480			1530	1520	1430	1480
Calcium	mg/L	170		179			171			173			162	165	175	183
Magnesium	mg/L	124		142			135			137			144	134	142	150
Sodium	mg/L	75.3		81.3			75.0			75.2			74.9	73.7	76.0	80.9
Potassium	mg/L	3.87		3.9			<5.00			3.74			3.74	3.82	<5.00	<5.00
Alkalinity, Total	mg/L	380		367			405			392			350	357	355	268
Alkalinity, Bicarbonate	mg/L	380		367			405			392			425	357	355	268
Alkalinity, Carbonate	mg/L	<10.0		<10.0			<10.0			<10.0			<10.0	<10.0	<10.0	<10.0
Alkalinity, Hydroxide	mg/L	<10.0		<10.0			<10.0			<10.0			<10.0	<10.0	<10.0	<10.0
Chloride	mg/L	11.9		10.7			10.8			10.9			11.6	10.3	10.7	10.2
Fluoride	mg/L	<0.500		0.332			0.322			0.322			<0.500	0.354	0.330	0.322
Sulfate as SO4	mg/L	732		736			733			844			746	774	803	767
Total Organic Carbon (TOC)	mg/L	3.72		3.57			3.73			3.70			3.45	3.42	3.63	4.01
Nitrate/Nitrite as N	mg/L	<0.020		<0.020			<0.020			<0.020			<0.020	<0.02	<0.020	<0.02
Ammonia as N ^	mg/L												0.178			
Ortho-Phosphate as P ^	mg/L												<0.0500			
Aluminum	mg/L	<0.050		<0.100			<0.250			<0.100			<0.050	<0.1	<0.250	<0.25
Arsenic	mg/L	0.0014		0.0015			0.0013			0.0016			0.0013	0.0013	0.0011	<0.0015
Cadmium	mg/L	<0.0001		<0.0002			<0.0001			<0.0001			<0.0002	<0.0002	<0.0002	<0.0003
Copper	mg/L	0.0003		0.0018			0.0011			0.0008			0.0006	<0.001	<0.0010	<0.0015
Iron	mg/L	1.82		1.95			1.81			2.12			2.00	1.84	1.71	2.16
Lead	mg/L	<0.0005		<0.0010			<0.0005			<0.0005			<0.0010	<0.001	<0.0010	<0.0015
Manganese	mg/L	3.72		4.49			4.01			4.22			4.76	4.86	3.63	4.49
Mercury	mg/L	<0.0002		<0.0002			<0.0002			<0.0002			<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	0.0008		0.0011			0.0007			0.0009			<0.0010	0.001	<0.0010	<0.0015
Selenium	mg/L	<0.0020		<0.0020			<0.0010			0.0011			<0.0020	<0.002	<0.0020	<0.003
Silica (Si02)	mg/L	16.6		16.1			16.1			16.9			16.8	16.4	15.8	16.9
Silicon	mg/L	7.75		7.52			7.55			7.90			7.83	7.67	7.37	7.91
Uranium	mg/L	0.0021		0.0018			0.0017			0.0018			0.0020	0.0019	0.0016	0.0018
Zinc	mg/L	<0.0050		<0.0040			0.0021			0.0020			<0.0040	<0.004	<0.0040	<0.006

Notes & Definitions:

^	one-time analysis
Y/N	yes or no
gpm	gallons per minute
deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
mV	millivolts
mg/L	milligram per liter
pCi/L	picocuries per liter
NM	not measured (field)
NA	not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*

2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*

3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

MW-8-EAA																
Year		2018	2019											2020		
Quarter		Q4	Q1			Q2			Q3			Q4		Q1	Q2	Q3
Month		12	1	2	3	4	5	6	7	8	9	10	11	2	5	8
Sample Date		12/23	1/29	2/19	3/20	4/16	5/29	6/20	7/24	8/13	9/27	10/24	11/6	2/11	5/27	8/25
Lab Analysis (Y/N)		Y	N	Y	N	N	Y	N	N	Y	N	N	Y	Y	Y	Y
Field Parameters:																
Purge Flow Rate	gpm	0.85	1.10	0.50	3.00	0.50	0.75	1.00	1.00	0.75	0.50	1.00	0.25	1.00	0.25	0.13
Total Purged	gal	18.0	14.0	15.0	3.0	15.0	17.0	15.3	15.3	18.0	15.3	15.5	15.0	15.2	15.0	16.0
Depth to Water	ft bgs	40.00	39.95	40.10	43.45	40.44	40.05	39.94	40.10	40.08	40.25	40.31	40.22	40.40	40.45	34.50
Temperature	deg C	10.3	10.2	10.0	9.9	10.3	10.5	10.6	10.5	10.6	10.3	10.2	11.2	10.5	11.0	11.1
pH	SU	7.12	7.09	7.13	7.17	7.09	7.02	7.17	7.09	7.05	7.03	6.99	6.99	6.99	7.14	7.19
Specific Conductance	µS/cm	1781	1696	1720	1725	1729	1628	1676	1699	172	1739	1774	1739	1758	1760	1675
Oxygen Reduction Potential	mV	-65	-52.8	-51.8	-53.0	-59.7	11.0	-29.5	-46.6	-44.8	-33.5	-38.8	-39.2	-18.2	-72.4	1.4
Lab Analytical Results:																
Hardness as CaCO3	mg/L	870		861			864			883			867	861	907	937
pH (Lab)	SU	7.28		7.36			7.13			7.05			7.01	7.11	6.96	7.18
Total Dissolved Solids (Lab)	mg/L	1220		1290			1240			1280			1380	1290	1260	1280
Calcium	mg/L	152		151			148			154			143	149	153	160
Magnesium	mg/L	119		118			120			121			124	119	127	130
Sodium	mg/L	81.7		82.6			77.2			78.6			77.1	77.2	77.7	82.9
Potassium	mg/L	3.80		3.27			3.55			3.18			3.52	3.8	<5.00	<5
Alkalinity, Total	mg/L	400		435			450			431			445	404	385	288
Alkalinity, Bicarbonate	mg/L	400		435			450			431			445	404	385	288
Alkalinity, Carbonate	mg/L	<10.0		<10.0			<10.0			<10.0			<10.0	<10	<10.0	<10
Alkalinity, Hydroxide	mg/L	<10.0		<10.0			<10.0			<10.0			<10.0	<10	<10.0	<10
Chloride	mg/L	9.83		10.5			10.3			11.1			11.0	10.2	10.3	10.1
Fluoride	mg/L	0.380		0.370			0.338			0.342			<0.500	0.33	0.346	0.336
Sulfate as SO4	mg/L	533		559			606			643			577	602	625	605
Total Organic Carbon (TOC)	mg/L	3.77		3.59			3.77			3.68			3.52	3.49	3.56	3.82
Nitrate/Nitrite as N	mg/L	<0.020		<0.020			<0.020			<0.020			<0.020	<0.02	<0.020	<0.02
Ammonia as N ^	mg/L												0.216			
Ortho-Phosphate as P ^	mg/L												<0.0500			
Aluminum	mg/L	<0.100		<0.100			<0.050			<0.100			<0.050	<0.1	<0.250	<0.25
Arsenic	mg/L	0.0020		0.0018			0.0018			0.0021			0.0018	0.0017	0.0017	0.0018
Cadmium	mg/L	<0.0001		<0.0002			<0.0001			<0.0001			<0.0001	<0.0002	<0.0002	<0.0003
Copper	mg/L	0.0004		0.0024			0.0023			0.0008			0.0010	0.001	<0.0010	<0.0015
Iron	mg/L	2.12		2.13			2.42			2.46			2.30	2.28	2.29	2.31
Lead	mg/L	<0.0005		<0.0010			<0.0005			<0.0005			<0.0005	<0.001	<0.0010	<0.0015
Manganese	mg/L	3.17		3.52			3.06			3.37			3.39	3.7	3.36	3.54
Mercury	mg/L	<0.0002		<0.0002			<0.0002			<0.0002			<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	0.0009		0.0011			0.0008			0.0011			0.0008	<0.001	<0.0010	<0.0015
Selenium	mg/L	<0.0020		<0.0020			0.0010			0.0013			<0.0010	<0.002	<0.0020	<0.003
Silica (Si02)	mg/L	16.3		15.3			15.7			16.1			15.9	15.7	15.0	16.1
Silicon	mg/L	7.63		7.15			7.32			7.52			7.42	7.32	7.02	7.53
Uranium	mg/L	0.0021		0.0017			0.0016			0.0018			0.0019	0.0019	0.0017	0.0017
Zinc	mg/L	<0.0050		<0.0040			<0.0020			<0.0020			<0.0020	<0.004	<0.0040	<0.006

Notes & Definitions:

^	one-time analysis
Y/N	yes or no
gpm	gallons per minute
deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
mV	millivolts
mg/L	milligram per liter
pCi/L	picocuries per liter
NM	not measured (field)
NA	not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*
2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*
3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

MW-8-MI																
Year		2018	2019										2020			
Quarter		Q4	Q1			Q2			Q3			Q4	Q1	Q2	Q3	
Month		12	1	2	3	4	5	6	7	8	9	10	11	2	5	8	
Sample Date		12/23	1/29	2/19	3/20	4/16	5/29	6/20	7/24	8/13	9/27	10/24	11/6	2/11	5/27	8/25	
Lab Analysis (Y/N)		Y	N	Y	N	N	Y	N	N	Y	N	N	Y	Y	Y	Y	
Field Parameters:																	
Purge Flow Rate	gpm	1.10	1.00	0.50	3.00	0.50	0.50	0.25	0.50	0.75	0.50	1.00	0.25	0.25	0.13	0.10	
Total Purged	gal	27.5	18.0	1.0	3.0	1.5	2.5	2.5	2.3	3.0	2.0	2.5	1.0	1.0	1.0	2.0	
Depth to Water	ft bgs	45.75	43.48	43.50	44.30	44.47	44.10	44.24	44.45	44.59	44.90	45.12	45.10	45.20	45.42	45.84	
Temperature	deg C	10.8	10.8	10.6	11.2	10.4	11.1	11.4	11.0	11.4	10.9	10.3	11.4	10.2	11.3	13.1	
pH	SU	7.57	7.50	7.48	7.47	7.34	7.31	7.48	7.42	7.38	7.30	7.23	7.15	7.08	7.44	7.44	
Specific Conductance	µS/cm	1786	1667	1651	1658	1643	1595	1639	1645	1658	1637	1689	1642	1651	1659	1598	
Oxygen Reduction Potential	mV	-84.4	-177.1	-122.1	-113.3	-87.2	-54.4	-97.1	-116.4	-119.4	-88.4	-82.0	-59.3	-136.6	-184.9	-107.0	
Lab Analytical Results:																	
Hardness as CaCO3	mg/L	167		249			273			253			267	254	309	355	
pH (Lab)	SU	7.73		7.54			7.24			7.46			7.44	7.53	7.25	7.34	
Total Dissolved Solids (Lab)	mg/L	1050		1030			1100			1110			1050	1060	1040	1010	
Calcium	mg/L	34.0		48.5			52.4			49.7			51.3	48.7	58.5	65.9	
Magnesium	mg/L	19.9		31.0			34.5			31.4			33.8	32.1	39.6	46.2	
Sodium	mg/L	344		312			289			289			275	269	272	260	
Potassium	mg/L	4.47		5.25			<5.00			4.55			5.07	4.71	5.00	5.56	
Alkalinity, Total	mg/L	500		565			560			573			585	543	545	448	
Alkalinity, Bicarbonate	mg/L	500		565			560			573			585	543	545	448	
Alkalinity, Carbonate	mg/L	<10.0		<10.0			<10.0			<10.0			<10.0	<10.0	<10.0	<10.0	
Alkalinity, Hydroxide	mg/L	<10.0		<10.0			<10.0			<10.0			<10.0	<10.0	<10.0	<10.0	
Chloride	mg/L	12.7		10.0			9.33			9.06			9.66	8.19	8.23	8.12	
Fluoride	mg/L	<0.500		<0.200			<0.200			<0.200			<0.500	<0.2	<0.200	<0.2	
Sulfate as SO4	mg/L	347		353			343			366			317	314	316	335	
Total Organic Carbon (TOC)	mg/L	2.73		2.83			2.81			2.74			2.65	2.6	2.94	2.87	
Nitrate/Nitrite as N	mg/L	<0.020		<0.020			<0.020			<0.020			<0.020	<0.02	<0.020	<0.02	
Ammonia as N ^	mg/L												1.31				
Ortho-Phosphate as P ^	mg/L												<0.0500				
Aluminum	mg/L	<0.050		<0.100			<0.250			<0.100			<0.050	<0.1	<0.250	<0.25	
Arsenic	mg/L	0.0008		<0.0010			0.0006			0.0005			0.0005	<0.001	<0.0010	<0.0015	
Cadmium	mg/L	<0.0001		<0.0002			<0.0001			<0.0001			<0.0001	<0.0002	<0.0002	<0.0003	
Copper	mg/L	0.0031		0.0066			0.0036			0.0035			0.0037	0.0027	<0.0010	<0.0015	
Iron	mg/L	0.137		0.162			<0.250			0.129			0.130	0.108	<0.250	<0.250	
Lead	mg/L	<0.0005		<0.0010			<0.0005			<0.0005			<0.0005	<0.001	<0.0025	<0.0015	
Manganese	mg/L	0.0495		0.0383			0.0327			0.0351			0.0377	0.0391	0.0393	0.0551	
Mercury	mg/L	<0.0002		<0.0002			<0.0002			<0.0002			<0.0002	<0.0002	<0.0002	<0.0002	
Molybdenum	mg/L	0.0005		<0.0010			<0.0005			<0.0005			<0.0005	<0.001	<0.0010	<0.0015	
Selenium	mg/L	<0.0020		<0.0020			0.0010			0.0010			<0.0010	<0.002	0.0020	<0.003	
Silica (Si02)	mg/L	12.1		12.4			12.8			12.5			12.6	12.2	11.9	12.9	
Silicon	mg/L	5.65		5.78			5.99			5.83			5.88	5.71	5.55	6.05	
Uranium	mg/L	0.0002		0.0002			0.0002			0.0001			0.0001	<0.001	<0.0025	<0.0015	
Zinc	mg/L	<0.0050		<0.0040			<0.0020			<0.0020			<0.0020	<0.004	<0.0040	<0.0060	

Notes & Definitions:

^	one-time analysis
Y/N	yes or no
gpm	gallons per minute
deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
mV	millivolts
mg/L	milligram per liter
pCi/L	picocuries per liter
NM	not measured (field)
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2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*
3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

MW-8-LM																
Year		2018	2019											2020		
Quarter		Q4	Q1			Q2			Q3			Q4		Q1	Q2	Q3
Month		12	1	2	3	4	5	6	7	8	9	10	11	2	5	8
Sample Date		12/28	1/29	2/19	3/21	4/16	5/29	6/18	7/24	8/13	9/27	10/24	11/6	2/11	5/27	8/25
Lab Analysis (Y/N)		Y	N	Y	N	N	Y	N	N	Y	N	N	Y	Y	Y	Y
Field Parameters:																
Purge Flow Rate	gpm	NM	1.00	0.25	1.00	0.50	0.10	0.25	0.25	0.50	0.25	0.12	0.25	0.25	0.25	0.13
Total Purged	gal	30	4.0	1.5	1.0	2.0	1.3	6.8	2.0	2.0	1.0	1.0	1.5	1.0	1.0	2.0
Depth to Water	ft bgs	136.39	130.52	134.30	144.03	140.03	137.48	142.23	144.15	138.06	137.50	137.60	137.34	139.15	129.70	127.90
Temperature	deg C	4.1	13.9	13.2	8.7	13.6	13.9	12.8	13.7	13.4	13.0	11.7	13.3	11.4	13.4	13.6
pH	SU	8.37	8.70	8.71	8.41	8.70	8.50	8.66	8.64	8.58	8.44	8.44	8.47	7.98	8.76	8.83
Specific Conductance	µS/cm	2306	1274	1265	1310	1262	1234	1264	1226	1269	1252	1299	1255	1294	1282	1055
Oxygen Reduction Potential	mV	37.5	-114.3	112.8	77.0	-36.2	33.2	-63.9	-93.5	-103.0	-115.9	-94.4	-47.4	-106.6	-204.5	-106.9
Lab Analytical Results:																
Hardness as CaCO3	mg/L	45.0		7.29			16.9			6.67			6.38	6.79	7.76	7.53
pH (Lab)	SU	8.57		8.63			8.02			8.56			8.52	8.55	8.41	8.45
Total Dissolved Solids (Lab)	mg/L	1420		770			780			785			780	840	730	740
Calcium	mg/L	10.8		1.93			3.84			1.78			1.68	1.77	2.09	2.05
Magnesium	mg/L	4.39		0.600			1.77			0.541			0.528	0.574	0.620	0.587
Sodium	mg/L	382		341			317			306			305	309	315	337
Potassium	mg/L	45.7		3.49			<5.00			2.27			2.18	2.06	<5.00	<5.00
Alkalinity, Total	mg/L	615		720			745			731			745	685	630	675
Alkalinity, Bicarbonate	mg/L	535		610			645			645			685	595	530	585
Alkalinity, Carbonate	mg/L	80.0		110			100			86.0			60.0	90	100	90
Alkalinity, Hydroxide	mg/L	<10.0		<10.0			<10.0			<10.0			<10.0	<10.0	<10.0	<10.0
Chloride	mg/L	175		5.11			6.80			2.63			2.48	3.04	3.01	2.98
Fluoride	mg/L	2.06		3.91			3.95			3.97			3.88	3.61	3.63	3.53
Sulfate as SO4	mg/L	190		3.79			9.58			1.02			<1.00	<2.00	<2.00	<2.00
Total Organic Carbon (TOC)	mg/L	2.80		1.80			3.33			1.94			1.69	1.69	1.92	1.82
Nitrate/Nitrite as N	mg/L	<0.020		<0.020			<0.020			<0.020			<0.020	<0.020	<0.020	<0.020
Ammonia as N ^	mg/L												0.282			
Ortho-Phosphate as P ^	mg/L												<0.0500			
Aluminum	mg/L	<0.050		<0.100			<0.250			<0.050			<0.050	<0.100	<0.250	<0.250
Arsenic	mg/L	0.0106		<0.0010			0.0006			0.0007			0.0006	<0.0005	<0.0010	<0.0015
Cadmium	mg/L	<0.0001		<0.0002			<0.0001			<0.0001			<0.0001	<0.0001	<0.0002	<0.0003
Copper	mg/L	0.0337		0.0077			0.0047			0.0041			0.0051	0.0033	0.0012	0.0017
Iron	mg/L	<0.050		<0.100			<0.250			<0.050			<0.050	<0.100	<0.250	<0.250
Lead	mg/L	<0.0005		<0.0010			<0.0005			<0.0005			<0.0010	<0.0005	<0.0010	<0.0015
Manganese	mg/L	0.0258		0.0038			0.0150			0.0020			0.0026	0.0025	0.0029	0.0026
Mercury	mg/L	<0.0002		<0.0002			<0.0002			<0.0002			<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	0.0142		<0.0010			0.0009			<0.0005			<0.0005	<0.0005	<0.0010	<0.0015
Selenium	mg/L	0.0020		<0.0020			<0.0010			<0.0010			<0.0010	<0.001	<0.0020	<0.003
Silica (Si02)	mg/L	9.09		8.45			8.68			8.28			7.77	7.62	7.40	7.84
Silicon	mg/L	4.25		3.95			4.06			3.87			3.63	3.56	3.46	3.67
Uranium	mg/L	0.0044		<0.0002			0.0001			0.0001			<0.0002	<0.0005	<0.0010	<0.0015
Zinc	mg/L	0.0080		<0.0040			0.0023			<0.0020			<0.0020	<0.002	<0.0040	<0.0060

Notes & Definitions:

^ one-time analysis
Y/N yes or no
gpm gallons per minute
deg C degrees Celsius
SU standard pH units
µS/cm microsiemens per centimeter
mV millivolts
mg/L milligram per liter
pCi/L picocuries per liter
NM not measured (field)
NA not analyzed (lab)

1. *"<" values denote that the quantification of that analyte is below the reporting level for the analytical laboratory, acceptable by environmental water quality laboratory industry standards.*
2. *Total alkalinity is measured by titration with hydrochloric acid to a set pH point, reporting this value as an equivalent amount of calcium carbonate. This value is then partitioned into bicarbonate, carbonate and hydroxide depending on the initial pH of the sample solution, each components reported as equivalent CaCO3.*
3. *Industry standard Quality Assurance/Quality Control (QA/QC) protocol are followed for this hydrologic monitoring program by both GCC Energy and the contracted environmental water quality analytical laboratories. QA/QC results are not shown in this table.*

GCC Energy Hydrologic Monitoring Data

MW-8-PL																
Year		2018	2019											2020		
Quarter		Q4	Q1			Q2			Q3			Q4		Q1	Q2	Q3
Month		12	1	2	3	4	5	6	7	8	9	10	11	2	5	8
Sample Date		12/27	1/29	2/19	3/20	4/16	5/29	6/20	7/24	8/13	9/27	10/24	11/6	2/11	5/27	8/25
Lab Analysis (Y/N)		Y	N	Y	N	N	Y	N	N	Y	N	N	Y	Y	Y	Y
Field Parameters:																
Purge Flow Rate	gpm	0.25	1.00	0.50	3.00	0.50	0.25	0.50	1.00	0.50	0.50	0.75	0.25	0.25	0.25	0.25
Total Purged	gal	20.0	5.0	2.0	3.0	2.0	3.0	2.5	2.3	2.5	2.0	2.5	1.3	2.0	2.0	2.3
Depth to Water	ft bgs	125.97	126.29	126.40	127.10	126.98	126.70	126.82	127.25	127.38	127.42	127.48	127.59	127.32	127.34	128.00
Temperature	deg C	10.3	14.2	13.4	12.9	13.2	14.2	14.8	14.7	14.9	14.0	13.2	14.9	13.8	14.8	14.9
pH	SU	7.50	7.30	7.49	7.30	7.29	7.31	7.57	7.56	7.52	7.45	7.47	7.52	7.55	7.47	7.52
Specific Conductance	µS/cm	1690	1531	1571	1558	1554	1411	1326	1165	1083	947	940	900	862	844	792
Oxygen Reduction Potential	mV	30.2	-116.5	97.9	-108.7	-110.6	34.2	-57.6	-74.0	-79.5	-51.3	-52.5	-30.8	-59.9	-101.9	-38.0
Lab Analytical Results:																
Hardness as CaCO3	mg/L	617		644			596			411			294	278	298	292
pH (Lab)	SU	7.28		7.40			7.26			7.22			7.39	7.47	7.19	7.16
Total Dissolved Solids (Lab)	mg/L	1150		1090			995			705			620	500	490	525
Calcium	mg/L	112		120			105			73.1			52.1	49.3	53.8	53.3
Magnesium	mg/L	82.1		83.8			81.4			55.4			39.7	37.6	39.7	38.5
Sodium	mg/L	106		124			102			91.7			83.3	78.5	80.4	81.6
Potassium	mg/L	5.14		5.62			<5.00			2.80			2.35	2.32	2.11	<2.00
Alkalinity, Total	mg/L	370		415			435			393			390	339	340	315
Alkalinity, Bicarbonate	mg/L	370		415			435			393			390	339	340	315
Alkalinity, Carbonate	mg/L	<10.0		<10.0			<10.0			<10.0			<10.0	<10.0	<10.0	<10.0
Alkalinity, Hydroxide	mg/L	<10.0		<10.0			<10.0			<10.0			<10.0	<10.0	<10.0	<10.0
Chloride	mg/L	18.8		18.5			9.03			5.61			5.66	3.51	3.38	3.33
Fluoride	mg/L	0.505		0.474			0.290			0.291			<0.500	0.258	0.240	0.233
Sulfate as SO4	mg/L	478		471			390			232			127	109	103	99.2
Total Organic Carbon (TOC)	mg/L	4.17		4.02			2.92			2.21			1.75	1.63	1.63	1.61
Nitrate/Nitrite as N	mg/L	<0.020		<0.020			<0.020			<0.020			<0.020	<0.020	<0.020	<0.020
Ammonia as N ^	mg/L												0.199			
Ortho-Phosphate as P ^	mg/L												<0.0500			
Aluminum	mg/L	<0.050		<0.100			<0.250			<0.050			<0.050	<0.05	<0.100	<0.100
Arsenic	mg/L	0.0074		0.0124			0.0190			0.0156			0.0104	0.0073	0.0075	0.0064
Cadmium	mg/L	<0.0001		<0.0002			<0.0001			<0.0001			<0.0001	<0.0002	<0.0001	<0.0002
Copper	mg/L	0.0016		0.0025			0.0017			0.0011			0.0004	0.001	<0.0025	<0.001
Iron	mg/L	<0.050		0.352			<0.250			0.129			0.075	0.054	<0.100	<0.100
Lead	mg/L	<0.0005		<0.0010			<0.0005			<0.0005			<0.0005	<0.0005	<0.0005	<0.001
Manganese	mg/L	1.31		1.22			0.697			0.505			0.313	0.303	0.307	0.259
Mercury	mg/L	<0.0002		<0.0002			<0.0002			<0.0002			<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	mg/L	0.0090		0.0068			0.0020			0.0021			0.0017	0.0008	<0.0005	<0.001
Selenium	mg/L	0.0012		<0.0020			<0.0010			<0.0010			<0.0010	<0.001	<0.0010	<0.002
Silica (Si02)	mg/L	14.1		16.3			17.7			18.5			18.0	18.9	18.7	19.9
Silicon	mg/L	6.58		7.64			8.28			8.67			8.42	8.82	8.75	9.28
Uranium	mg/L	0.0052		0.0040			0.0010			0.0009			0.0004	<0.0005	<0.0005	<0.001
Zinc	mg/L	0.0344		<0.0040			<0.0020			<0.0080			<0.0020	<0.002	<0.0100	<0.004

Notes & Definitions:

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deg C	degrees Celsius
SU	standard pH units
µS/cm	microsiemens per centimeter
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