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REPORT

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Annual Groundwater Monitoring and Corrective Action Report for Cholla Power Plant Coal Combustion Residuals Program, November 2015 - December 2017 Navajo County, Arizona

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ARIZONA PUBLIC SERVICE, NAVAJO COUNTY, ARIZONA

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1 INTRODUCTION

1.1 Site Background and Regulatory Requirements

On April 17, 2015, the U.S. Environmental Protection Agency (EPA) released the Rule regarding disposal of coal combustion residuals (CCR) from power production facilities. The Rule defines CCR landfills and surface impoundments (units) and establishes minimum criteria for the following: (1) CCR unit design and operation, (2) groundwater monitoring and corrective action, (3) closure requirements, (4) post-closure care, (5) recordkeeping, (6) notifications, and (7) internet posting requirements.

Design, installation, and evaluation of the completeness of the groundwater monitoring networks for each of the Arizona Public Service (APS) Cholla Power Plant (Cholla) CCR units are documented and certified in a report submitted by Montgomery & Associates (M&A) to Arizona Public Service (APS) on September 19, 2017 (Well Field Report). M&A presented and certified the statistical approach that will be used to evaluate Cholla CCR program groundwater monitoring results in a separate report, also submitted to APS on September 19, 2017 (Statistical Approach Report). These two reports include background information critical to understanding the Cholla CCR groundwater monitoring program.

The purpose of the Annual Groundwater Monitoring and Corrective Action Report (Annual Report) is to fulfill the CCR Rule requirement for submittal of an annual summary of activities and data relevant to all CCR units by no later than January 31st of each year. Pursuant to the Rule, this Annual Report "document[s] the status of the groundwater monitoring and corrective action program for [each] CCR unit, summarize[s] key actions completed, describe[s] any problems encountered, discuss[es] actions to resolve problems, and project[s] key activities for the coming year" (Rule, p. 21483) for the Cholla Power Plant.

1.1.1 Facility and CCR Unit Description

The Cholla facility is located north of the Little Colorado River (LCR) between the City of Winslow and the City of Holbrook in Navajo County, Arizona, as shown on **Figure 1**. **Figure 2** shows the four CCR units at Cholla, which include: the Fly Ash Pond (FAP), Bottom Ash Pond (BAP), Bottom Ash Monofill (BAM), and Sedimentation Pond (SEDI). The SEDI was the first of the CCR Units placed into service (1976). The FAP and BAP dams were completed in 1978, and the BAM came into operation in the late 1990s. It should be noted that Cholla Reservoir, the large pond located just southwest of the power plant, is used for cooling water recirculation and does not constitute a CCR unit **(Figure 2)**.

Fly Ash Pond

The FAP is the largest CCR impoundment at the site, with a surface area of 430 acres **(Figure 2)**. The FAP was largely constructed on Moenkopi bedrock, although a veneer of alluvial sediments from the historic drainage was reported to be present at the base during construction. These alluvial sediments are up to 44 feet thick at the toe of the impoundment, where they merge with sediments of the LCR alluvial aquifer, and are thin to absent near the edges of the FAP, as shown on **Figure 3**. The LCR alluvial aquifer is the uppermost aquifer for the FAP. **Figure 4** shows that groundwater near the FAP waste boundary flows west-southwest through the shallow alluvial system adjacent to the dam and then to the west in the LCR Alluvium.

Sedimentation Pond

The SEDI is a small CCR surface impoundment comprising roughly 1.3 acres **(Figure 2)**. The SEDI is constructed on LCR Alluvium, which is considered the uppermost aquifer for this unit. Groundwater in the LCR Alluvium beneath the SEDI flows from southeast to northwest, approximately parallel to the direction of LCR surface water flows **(Figure 4)**.

Bottom Ash Pond

The BAP is a 105 acre CCR surface impoundment located in the Tanner Wash watershed. Tanner Wash is an ephemeral tributary to the LCR **(Figure 2)**. The northern and western boundaries of the BAP rest directly on the Moenkopi Formation, a fine-grained unit that is generally greater than 200 feet thick in this area, as shown on **Figure 5**. The southern boundary of the BAP rests primarily on Tanner Wash Alluvium, which is considered the uppermost aquifer for the BAP. Groundwater in the Tanner Wash alluvial aquifer flows south-southwest along Tanner Wash to its confluence with the LCR alluvial aquifer **(Figure 4)**.

Bottom Ash Monofill

The BAM is a 41 acre CCR landfill constructed in the Tanner Wash watershed **(Figure 2).** Tanner Wash Alluvium is thin to absent beneath and adjacent to the BAM **(Figure 3)**. While lithologic logs for BAM monitor wells, provided in the 2017 CCR Groundwater Monitoring Network Report (M&A, 2017a) , describe alluvial sediments at the surface, these sediments are dry, localized, and represent an erosional surface that is not connected with the Tanner Wash Alluvium. The BAM is constructed on rocks of the Moqui member of the Moenkopi Formation, an aquitard that is between about 250 and 350 feet thick and separates the BAM from the Coconino Sandstone Aquifer **(Figure 5)**. Data obtained during drilling of BAM monitor wells confirmed that the upper part of the Moenkopi is unsaturated beneath the BAM. As such, the Coconino Aquifer is considered the uppermost aquifer for the BAM. Groundwater in the Coconino Aquifer beneath the BAM flows to the north-northwest, as shown on **Figure 6**.

1.1.2 Hydrogeologic Conditions

The primary hydrogeologic units encountered at Cholla, from shallowest to deepest, include the alluvial sediments associated with the LCR and Tanner Wash Aquifers, the Moenkopi Formation, which is a regional aquitard, and the regional Coconino Sandstone Aquifer. For context in interpreting monitoring data, a general overview of geologic, hydrologic, and water quality conditions in the aquifers relevant to the Cholla CCR program – the LCR and Tanner Wash alluvial aquifers and the Coconino Sandstone aquifer – is provided below.

LCR and Tanner Wash Alluvial Aquifers

The LCR and Tanner Wash alluvial units are present in localized areas at the Cholla site. Tanner Wash Alluvium occurs along Tanner Wash in an area that extends up and downstream from the BAP, as shown on **Table 3**. These alluvial deposits are fairly heterogeneous and include gravels, sands, silts, and clays. While both alluvial units are unconsolidated, Tanner Wash Alluvium is generally more fine-grained than LCR Alluvium in the Cholla area. This is due to differences in the nature of source rocks and the depositional environment. Lithologic logs from wells adjacent to the FAP dam show that alluvial sediments in this area are also more fine-grained when compared with other portions of the LCR Alluvium. Similar to the BAP, this is due to nature of the source rocks that contribute to the drainage where the FAP was constructed. LCR and Tanner Wash alluvial sediments range in thickness from non-existent to nearly 200 feet thick at the site.

Depth to water level in the LCR and Tanner Wash Alluvium ranges from several feet to several tens of feet below land surface in the Cholla area, varying spatially based on proximity to recharge sources and topography and seasonally based on rainfall-runoff patterns. Direction of groundwater movement generally parallels the stream channels, flowing generally from east to west in the LCR Alluvium and from northeast to southwest in the Tanner Wash Alluvium **(Figure 4)**. Groundwater movement in the LCR

Alluvium is influenced by the presence of deeper paleochannels that do not coincide with the present river channel.

Background water quality in the alluvial aquifers is known to vary widely based on geologic factors. Groundwater in the Tanner Wash alluvial aquifer moves through sediments derived from erosion of the Moenkopi and Chinle Formations, which occur at the surface in the Tanner Wash watershed. Both of these formations include evaporitic sediments, which would be anticipated to produce groundwater with high total dissolved solids (TDS) concentrations. A data set from 1990 obtained during an evaluation of the BAP area reported TDS concentrations ranging from 4,800 to 30,000 milligrams per liter (mg/L) in the Tanner Wash Alluvium (Woodward-Clyde, 1992). Early data from the site also suggests that background water quality in the LCR Alluvium is variable and poor in some areas. A 1950s-vintage report mentions the limited use of “highly mineralized” water in the LCR Alluvium in the Holbrook area (upstream from Cholla) (Guyton, 1957). The FAP was constructed in the late 1970s in a drainage that historically flowed into the LCR Alluvium. Groundwater sampling at an alluvial boring installed in 1973 beneath what is now the FAP indicated a TDS concentration of 34,300 mg/L (SHB, 1973). Early data from LCR Alluvium monitor wells constructed near the plant showed a wide range in TDS concentrations, with 1970s concentrations reported to range from about 600 to 4,500 mg/L (APS database). Due to elevated TDS concentrations, limited saturated thickness, and recharge reliability constraints, groundwater in the LCR and Tanner Wash Alluvium is not used to a significant extent for water supplies. Outside of the Cholla area, the alluvium is reported to supply groundwater to stock wells along LCR tributaries and to a few domestic wells along the LCR. The LCR and Tanner Wash Alluvium are considered to be the uppermost aquifer for three of the four CCR units at the Cholla facility, as described in **Section 1.2**.

Coconino Sandstone Aquifer

The Coconino Sandstone is a very fine- to fine-grained, cross-bedded, aeolian sandstone that has an average thickness of 375 to 400 feet in the Cholla area. Regionally, permeability of the Coconino Sandstone is highly variable and dependent on the degree of fracturing and cementation. Particularly where fractures are present, the Coconino Sandstone can be very permeable and yield significant quantities of water. The Coconino Aquifer provides the water supply for operations at the Cholla facility and comprises the principal regional aquifer in the LCR basin.

The Coconino Aquifer is confined across much of the Cholla Power Plant area, although unconfined conditions occur south of the LCR in portions of the Cholla production well field. Pumping of Cholla water supply wells has created a cone of depression south of the LCR that results in localized convergent flow patterns, as shown on **Figure 6**. In the area along and south of the LCR, the direction of groundwater movement is generally westward. North of Cholla, direction of movement in the Coconino Aquifer is generally to the northwest.

Background water quality in the Coconino Aquifer is variable and known to deteriorate significantly north of the LCR (Mann, 1976, and McGavock and others, 1986). Results of decades of Coconino Aquifer monitoring associated with the Cholla water supply wellfield indicate that TDS concentrations can vary over almost an order of magnitude in the Cholla area. Regional studies show that groundwater in the Coconino Aquifer generally contains less than 500 mg/L TDS in the area south of the LCR; however, TDS concentrations as high as 64,000 mg/L have been reported in the area north of the LCR (Mann, 1976, and McGavock and others, 1986). Background water quality in the Coconino Aquifer is also brackish in some areas south of the LCR due to upward leakage of saline groundwater from the underlying Supai Formation. The Holbrook anticline, located south of the Cholla water supply wellfield, represents an area of upward leakage from the Supai, which contains halite and gypsum beds (Mann, 1976). Other areas of suspected upward leakage occur along an inferred graben or syncline structure in the Coconino that coincides with the deeper ancestral channel of the LCR **(Figure 3)**. This structural feature is suspected of providing an avenue for poor quality Supai Formation water to migrate upward into the Coconino and may be responsible for poor quality water in several Coconino production and monitor wells located near the current and ancestral channel of the LCR. Since the Coconino Aquifer historically discharged to the LCR on a consistent basis and continues be a source of water to the LCR Alluvium in some areas, upward leakage from the Supai may also be a source of high TDS concentrations in the LCR Alluvium.

Hydraulic Parameters

Estimates of hydraulic conductivity for the Tanner Wash Alluvium, alluvial materials immediately adjacent to the FAP (FAP alluvium), LCR Alluvium, and Coconino Sandstone Aquifers are summarized below in **Table 1**. Hydraulic conductivity values were used in the Cholla Wellfield Report (M&A, 2017a) for travel time calculations to justify placement of background LCR Alluvium monitor well M-64A. Hydraulic conductivity values are also used for groundwater flow rate calculations that are required for each monitoring round at each CCR unit, in accordance with the Rule. Results of these groundwater flow rate calculations are presented in Section 2.2.1.

With respect to the LCR Alluvium, a slug test conducted following installation of background monitor well M-64A yielded an average hydraulic conductivity of 66 feet per day. This value is anticipated to be typical for the LCR Alluvium and was used for the portion of the flow path through the LCR Alluvium for the travel time analysis. A hydraulic conductivity of 66 feet per day was also used for groundwater flow rate calculations for the SEDI.

For the Tanner Wash Alluvium, test results indicate hydraulic conductivity values that reportedly range from 0.06 to 0.44 feet per day (APS, 1984). Additional information on hydraulic parameters for the Tanner Wash Alluvium comes from a calibrated numerical groundwater model for the BAP area, which used hydraulic conductivities ranging between 0.32 and 0.96 feet per day (Woodward-Clyde, 1992). A hydraulic conductivity value of 0.96 feet per day was used both for the portion of the flow path through the Tanner Wash Alluvium for the travel time analysis and for groundwater flow rate calculations beneath the BAP.

Alluvial sediments in the area immediately downgradient of the FAP are fairly fine-grained in comparison to the general LCR Alluvium. A pumping test conducted at alluvium monitor well W-123, located immediately downgradient from the FAP in the FAP alluvium, indicated a hydraulic conductivity of 0.03 feet per day (compared with an estimate of 66 feet per day for the LCR Alluvium). A hydraulic conductivity value of 0.03 feet per day was used both for the portion of the flow path through the FAP alluvium for the travel time analysis and for groundwater flow rate calculations beneath the FAP.

With respect to the Coconino Aquifer, hydraulic properties can vary widely, depending on the nature and density of fractures encountered. In fact, test results presented in a draft modeling report estimated hydraulic conductivity values ranging from 2 to about 170 feet/day (M&A, 2010) for a large set of Cholla Coconino Aquifer monitor and production wells; these values provided the basis for assigning hydraulic parameters across the model domain. As shown on **Table 1** below, the median hydraulic conductivity value from these pumping tests was 31 feet/day. This value was used to estimate groundwater flow rates beneath the BAM.

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Table 1. Hydraulic Conductivity Estimates for Cholla-Area Alluvium and the Coconino Aquifer

Unit	Date of Test	Method	Well Name	Hydraulic Conductivity (feet/day)
LCR Alluvium	13-Feb-17	Slug Test[a]	M-64A	66
Tanner Wash Alluvium	28-Feb-84	Pumping Test[b]	W-301[b]	3.10E-01
Tanner Wash Alluvium	28-Feb-84	Pumping Test[c]	W-303[c]	7.50E-02
Tanner Wash Alluvium	1-Mar-84	Pumping Test[c]	W-304[c]	1.60E-01
Tanner Wash Alluvium	29-Feb-84	Pumping Test[c]	W-306[c]	6.20E-02
Tanner Wash Alluvium	2-Mar-84	Pumping Test[b]	W-307[b]	1.50E-01
Tanner Wash Alluvium	1-Mar-84	Pumping Test[b]	W-308[b]	4.40E-01
Tanner Wash Alluvium	27-Feb-84	Pumping Test[b]	W-309[b]	3.80E-01
Tanner Wash Alluvium	N/A	Calibrated Flow Model[d]	N/A	3.2E-01
Tanner Wash Alluvium	N/A	Calibrated Flow Model[d]	N/A	9.6E-01
FAP Alluvium	2-Mar-84	Pumping Test[c]	W-123	3.20E-02
Coconino Aquifer	Various	Pumping Tests[e]	Various	31

[a] Average of results of rising- and falling-head slug tests conducted after installation of monitoring well M-64A.
[b] Reported in APS, 1984. Pumping test analyzed using Jacob straight-line method.
[c] Reported in APS, 1984. Pumping test analyzed using Bouwer-Rice slug test method; the pumping rate exceeded the well capacity and could not be lowered due to equipment limitations, so these were treated as slug tests.
[d] Reported in Woodward-Clyde, 1992. Differing values represent the range of cases for the calibrated groundwater flow model.
[e] Median of various pumping tests conducted at Cholla Coconino monitor and production wells. Individual test values reported in M&A, 2010.
N/A = Not applicable

1.2 CCR Groundwater Monitoring System

Monitoring networks for each CCR unit were designed to characterize the uppermost aquifer at each unit, as required by the Rule. Significant hydrogeologic and water quality data were reviewed and interpreted in an effort to design comprehensive and responsive monitoring networks for each of the units (M&A, 2017a). Locations for monitor wells associated with each CCR unit are shown on **Figure 2**. Monitor well details are summarized on **Table 2**.

Fly Ash Pond

The uppermost aquifer for the FAP is the LCR Alluvium and the FAP monitoring network includes four wells completed in the LCR Alluvium. Downgradient wells M-50A, M-51A, and W-123 are well positioned to monitor water quality at the FAP downgradient waste boundary. The location for background alluvial well M-64A, which is downstream along the LCR, was selected for several reasons: (1) the FAP is constructed on Moenkopi bedrock, covered by a veneer of alluvium, and alluvial sediments are generally absent and, where present, anticipated to be unsaturated, in the area hydraulically upgradient from the FAP; (2) saturated thickness is limited and there are alluvial wells that are dry in the LCR Alluvium upstream from the FAP; and, (3) conservative travel time estimates indicate that it would take at least 91 years for FAP seepage to reach the vicinity of M-64A in the alluvium, which greatly exceeds the 40 year timeframe from FAP construction through sampling to establish background water quality conditions in the LCR Alluvium.

Sedimentation Pond

The uppermost aquifer for the SEDI is the LCR alluvial aquifer and the SEDI CCR monitoring network includes four alluvial wells. LCR alluvial wells M-56A, M-57A, and M-58A are distributed along the downgradient waste boundary and are well positioned to monitor constituents in groundwater potentially passing the SEDI boundary. The upgradient well for the SEDI is alluvial well M-62A. M-62A was installed to determine background water quality in the LCR Alluvium upgradient from the SEDI.

Bottom Ash Pond

The uppermost aquifer for the BAP is the Tanner Wash alluvial aquifer, which flows into the LCR Alluvium to the southeast. The BAP monitoring network includes six wells. Tanner Wash alluvial wells M-52A, M-53A, W-305, W-306, and W-314 are distributed along the downgradient waste boundary. The location for background alluvial well M-64A, which is downstream along the LCR, was selected for several reasons: (1) the BAP is constructed on Moenkopi bedrock and alluvial sediments are absent in the area hydraulically upgradient from the BAP; (2) data from monitor wells in the Tanner Wash Alluvium upstream from the BAP indicate that saturated thickness is limited and that hydraulic gradients are influenced by the pond, making this area unsuitable for determining background water quality; and, (3) conservative travel time estimates indicate that it would take at least 85 years for BAP seepage to reach the vicinity of M-64A in the alluvium, which greatly exceeds the 40-year timeframe from BAP construction through sampling to establish background water quality conditions in the LCR Alluvium.

Bottom Ash Monofill

The uppermost aquifer for the BAM is the Coconino Aquifer and the BAM monitoring network includes four wells. Coconino Aquifer wells M-59, M-60, and M-61 are distributed along the downgradient waste boundary. The upgradient well for the BAM is Coconino well M-54.

1.2.1 Changes to Groundwater Monitoring System

The completeness of the groundwater monitoring networks for each of the Cholla CCR units was recently documented and certified (M&A, 2017a). While no changes to the groundwater monitoring system are being recommended at this time, monitoring data will be evaluated on an on-going basis and future changes will be evaluated and implemented as appropriate.

2 GROUNDWATER MONITORING PROGRAM

The goal of the CCR groundwater monitoring program is to establish background water quality and the quality of groundwater passing the waste boundaries at each CCR unit. Parameters requiring analysis in samples obtained from CCR unit monitoring wells are divided into two categories in the Rule – Appendix III and Appendix IV monitoring parameters. Appendix III parameters are indicators that are used to determine whether groundwater is potentially being contaminated in the area downgradient from a CCR unit. Appendix IV monitoring parameters are CCR constituents of concern that must be sampled for and tracked once detection monitoring has indicated that a statistically significant increase in one or more of the Appendix III parameters over background has occurred in an aquifer downgradient of a CCR unit. Appendix III and Appendix IV compounds are summarized in **Table 3** below.

Table 3. Summary of CCR Monitoring Program Appendix III and Appendix IV Compounds

Appendix III Compounds	Appendix IV Compounds
Boron	Antimony
Calcium	Barium
Chloride	Beryllium
Fluoride	Cadmium
pH	Chromium
Sulfate	Cobalt
Total Dissolved Solids	Fluoride
	Lead
	Lithium
	Mercury
	Molybdenum
	Selenium
	Thallium
	Radium 226 and 228 combined

The Rule requires that a minimum of eight (8) statistically independent and spatially invariant samples be collected from each background and downgradient well for each Appendix III and Appendix IV monitoring parameter during the 30-month baseline monitoring period. During each sampling event, groundwater elevations must be measured in each well prior to sampling and the rate and direction of groundwater flow in the uppermost aquifer must be estimated.

2.1 Program Status

M&A submitted a sampling and analysis plan (SAP) to APS on November 30, 2015 (M&A, 2015). The SAP presents procedures for water level measurement, groundwater sampling, sample control, and laboratory analysis. The SAP also describes methods for data evaluation, including analysis of groundwater conditions, establishing background concentrations, evaluation of monitoring data, and establishing groundwater protection standards. The general APS Quality Assurance Project Plan (QAPP) was adopted for the Cholla CCR program. This document describes the personnel involved with data collection and establishes the sampling and analytical protocols and documentation requirements to ensure the groundwater monitoring data are collected, reviewed, and analyzed in a consistent manner. M&A prepared an update to the APS general QAPP to add provisions for low-flow sampling and other CCR well monitoring protocols.

At Cholla, most of the monitoring network was in place by late 2015 **(Table 2)**, and an initial monitoring round was conducted in November-December 2015. However, because an additional monitor well (M-64A) was installed in February 2017 **(Table 2)**, after a total of five CCR monitoring rounds had already been completed at the remainder of the wells, samples were obtained from the entire network of Cholla CCR monitor wells during each of the eight remaining rounds. As such, most of the CCR monitor wells were sampled a total of 13 times during the baseline monitoring period. Laboratory data validation was conducted for each of the samples; results are detailed in **Section 2.2.4**. An evaluation of the samples for statistical independence and spatial invariance is currently in progress and results will be reported under a separate cover. Only samples deemed to be valid are included in the statistical evaluation of background and downgradient water quality.

2.1.1 Summary of Key Actions Completed

During the November 2015 through December 2017 reporting period, groundwater monitoring activities were conducted in accordance with the Cholla SAP and QAPP. Details for Cholla CCR monitoring rounds included in this reporting period, including the number of wells sampled during each round and the type of sampling suite that was collected, are summarized below in **Table 4**. A total of 14 monitoring rounds were conducted at Cholla during the monitoring period, with most of the wells being included in all 14 rounds and the most recent addition to the monitoring network, M-64A, being monitored a total of 9 times. Of the 14 rounds, 13 rounds comprised the baseline monitoring program, with samples being analyzed for both Appendix III and Appendix IV compounds, and 1 was the initial round for the detection monitoring program. The principal information obtained at each well during each monitoring round includes: (1) field parameters (pH, specific conductance, temperature, oxidation-reduction potential [ORP], dissolved oxygen [DO], and turbidity), (2) measurements of depth to groundwater level, and (3) samples for laboratory analysis of Appendix III and Appendix IV compounds or just Appendix III compounds. More detailed information on monitoring data collected during the reporting period is provided in Section 2.2 below.

Table 4. Coal Combustion Residual Groundwater Monitoring Program Summary November 2015 – December 2017

Monitoring Round	Monitoring Program	Number of CCR Wells Sampled	Sampling Suite
November 30 – December 3, 2015	Baseline	16	Appendix III & Appendix IV
March 8 – March 10, 2016	Baseline	16	Appendix III & Appendix IV
May 5 – May 22, 2016	Baseline	16	Appendix III & Appendix IV
August 24 – August 29, 2016	Baseline	16	Appendix III & Appendix IV
September 21 – September 23, 2016	Baseline	16	Appendix III & Appendix IV
February 20 – February 22, 2017	Baseline	17	Appendix III & Appendix IV
April 11– April 13, 2017	Baseline	17	Appendix III & Appendix IV
April 24 – April 26, 2017	Baseline	17	Appendix III & Appendix IV
May 18 – May 22, 2017	Baseline	17	Appendix III & Appendix IV
May 24 – May 25, 2017	Baseline	17	Appendix III & Appendix IV
June 29 – July 1, 2017	Baseline	17	Appendix III & Appendix IV
July 26 – July 29, 2017	Baseline	17	Appendix III & Appendix IV
September 5 – September 8, 2017	Baseline	17	Appendix III & Appendix IV
December 7 – December 8, 2017	Detection	17	Appendix III

2.1.2 Problems Encountered and Resolutions to Problems

No significant problems were encountered during the November 2015 – December 2017 reporting period. Issues with field data collection were noted, communicated to the field team through data validation memoranda prepared following each round, and generally addressed during subsequent monitoring rounds. Results of the field data validation process are provided in **Section 2.2.1**. Issues with laboratory data were identified and remedied to the extent possible during the laboratory data QA/QC process. Sample results with issues that could not be resolved through reanalysis were rejected. If available, rejected primary sample results were replaced with results for duplicate samples. Results of the laboratory data validation process are provided in **Section 2.2.2**.

2.1.3 Groundwater Monitoring Program Transitions

As shown on **Table 4**, the baseline monitoring period at Cholla extended from November 2015 through September 2017, and the detection monitoring program was initiated with the December 2017 round. Following completion of the statistical evaluation currently in progress, an evaluation will be made for each CCR unit to determine if there has been a statistically significant increase of one or more of the Appendix III parameters over background in one of more of the downgradient monitor wells. At that time, a determination will made as to any need for a transition from detection to assessment monitoring.

2.1.4 Alternate Source Demonstrations

Alternate sources are not being identified in relation to the Cholla CCR units at this stage of the monitoring and evaluation process.

2.2 Monitoring Data Collected

Below is a summary of data collected from the monitor well networks for each CCR unit during the November 2015 – December 2017 reporting period. It should be noted that during CCR monitoring rounds, water level and water quality data were sometimes obtained from monitor wells not included in the CCR network and samples were sometimes analyzed for constituents not included in the CCR monitoring suites. These data provide supplemental information for interpretation of hydrogeologic conditions in the vicinity of the CCR units.

2.2.1 Water Level Monitoring

Water Level Monitoring Protocols

During each monitoring event, manual depth-to-water measurements were obtained from CRR monitor wells using a decontaminated electronic water level indicator. Water levels were measured to the nearest 0.01-foot from the designated measuring point and documented on field data sheets. Static water levels obtained prior to purging were used for evaluation of groundwater gradients. Water levels obtained during the purging process were used to evaluate achievement of the QAPP protocol to limit drawdown to no more than 0.3 feet from static conditions. As needed, flow rate was adjusted until drawdown stabilized at this desired level. Results of the verification process to evaluate field data sheets relative to SAP protocols are summarized on **Table 5**.

Groundwater Level Data

Figures 7 to 10 comprise hydrographs showing groundwater levels for background and downgradient monitor wells associated with each CCR unit, for each monitoring round. When comparing hydrographs, it is important to note differences in the scale of the vertical groundwater elevation axis.

Groundwater levels in FAP monitor wells show a generally consistent groundwater gradient throughout the 14 monitoring rounds (November 2015 through December 2017), as shown on **Figure 7**. Water level change in any given FAP monitor well did not exceed 1.5 feet over the 14 monitoring rounds. The groundwater elevation in the three downgradient monitor wells for the FAP ranged from 5,018.81 feet above mean sea level (feet, amsl) at M-50A to 5,038.11 feet, amsl at W-123; depth to water measurements ranged from 1.73 feet below land surface (feet, bls) at W-123 to 19.37 feet, bls at M-50A. In background well M-64A, groundwater elevation ranged from 4,966.20 feet, amsl to 4,967.51 feet, amsl; depth to water was between 24.39 feet, bls and 25.70 feet, bls. Water levels measured in December 2017 are consistently lower than those measured in November 2015 (by approximately 0.1 to 0.5 feet) indicating a possible declining trend in water levels. Additionally, seasonal variability is apparent in the downgradient wells, with water levels being slightly higher from March through May relative to the remainder of the year. The monitoring period at background well M-64A is not sufficient to support a conclusion of whether slight fluctuations in water levels over the period of record are due to seasonality.

Groundwater levels in SEDI monitor wells show a generally consistent groundwater gradient throughout the 14 monitoring rounds (November 2015 through December 2017), as shown on **Figure 8**. The SEDI monitor wells are located in close proximity to each other compared to the other CCR unit monitoring networks **(Figure 2)**, which explains the very similar water level elevations at the four wells. Water level change in any given SEDI monitor well did not exceed 1.7 feet over the 14 monitoring rounds. Additionally, water level elevations at the four wells are within 2 feet of each other, ranging from 4,979.58 feet, amsl at M-57A to 4,981.38 feet, amsl at M-58A; depth to water measurements ranged from 39.49 feet, bls at M-62A to 44.25 feet, bls at M-58A. Water levels measured in December 2017 are consistently higher than those measured in December 2016 (by approximately 1.0 to 2.0 feet), and a small increasing trend is apparent from November 2015 through May 2017 **(Figure 8)**. The SEDI monitor wells also appear to have some seasonal variability, with slightly higher water levels being observed from March through May than in the remainder of the year.

Groundwater levels in BAP monitor wells show a generally consistent groundwater gradient throughout the 14 monitoring rounds (November 2015 through December 2017), as shown on **Figure 9**. The groundwater elevation in the five downgradient monitor wells for the BAP ranged from 5,025.88 feet, amsl at W-305 to 5,044.13 feet, amsl at W-314; depth to water measurements ranged from 4.23 feet below land surface (feet, bls) at M-53A to 20.92 feet, bls at W-305. In background well M-64A, groundwater elevation ranged from 4,966.20 feet, amsl to 4,967.51 feet amsl; depth to water was between 24.39 feet, bls and 25.70 feet, bls. Water level change in any given BAP monitor well did not exceed 4.0 feet over the 14 monitoring rounds. Water levels measured in December 2017 are consistently lower than those measured in November 2015 (by approximately 0.2 to 2.5 feet), indicating a possible declining trend in water levels. Additionally, there appears to be some seasonal variability in the downgradient wells; water levels are slightly higher from March through May relative to the remainder of the year. The monitoring period at background well M-64A is not sufficient to support a conclusion of whether slight fluctuations in water levels over the period of record are due to seasonality.

Groundwater levels in BAM monitor wells show a consistent groundwater gradient throughout the 14 monitoring rounds (November 2015 through December 2017), as shown on **Figure10**. Groundwater elevation in the four monitoring wells for the BAM ranged from 4,923.57 feet, amsl at M-60 to 4,946.58 feet, amsl at M-54; depth to water measurements ranged from 124.13 feet, bls at M-54 to 227.61 feet, bls at M-58A. Water level change was between 4.2 feet and 4.6 feet over the 14 monitoring rounds in individual BAM monitor wells. There do not appear to be any significant increasing or decreasing trend in BAM wells during the November 2015 through December 2017 monitoring period. However, seasonal fluctuations in water levels (as much as 4 to 5 feet) are apparent, with the highest water levels being observed around March.

Groundwater Flow Rates

During each monitoring round, the Rule requires that a calculation be made for groundwater flow rates beneath each CCR unit. To meet this requirement, water levels from three CCR monitor wells associated with each unit were used to determine both the direction and magnitude of the hydraulic gradient in the vicinity of the unit using a spreadsheet tool available on the EPA website (EPA, 2014). For the FAP and BAP, three wells located along the downgradient edge of unit were used in the calculations, since the background well for these units (M-64A) is located fairly distant from the CCR ponds. For the SEDI and BAM, the background well and two downgradient wells were used for groundwater flow rate calculations. Well coordinates and groundwater elevations measured during each monitoring round were used to calculate hydraulic gradient and groundwater flow direction for each unit for each monitoring round. Computed hydraulic gradients were then used in conjunction with hydraulic conductivity and effective porosity estimates to calculate groundwater flow rates for each monitoring round at the CCR units. Estimates of hydraulic conductivity and effective porosity for sediments comprising the uppermost aquifer at each of the CCR units that were used in groundwater flow rate calculations are shown below in **Table 6**.

Table 6. Estimated Hydraulic Parameters for Uppermost Aquifers Associated with Cholla CCR Units

CCR Unit	Aquifer	Estimated Hydraulic Conductivity (feet/day)	Estimated Effective Porosity
Fly Ash Pond	Fly Ash Pond Alluvium	0.032	0.13
Sedimentation Pond	Little Colorado River Alluvium	66	0.13
Bottom Ash Pond	Tanner Wash Alluvium	0.96	0.13
Bottom Ash Monofill	Coconino Sandstone	31	0.15

Results of groundwater flow rate calculations are summarized in **Table 7**. Review of these calculations indicates the hydraulic gradient, direction of groundwater flow, and groundwater flow rate were generally consistent for each of the CCR units across all monitoring rounds, as described below.

For the FAP, the hydraulic gradient and groundwater flow direction were consistent throughout the 14 monitoring rounds. The magnitude of the hydraulic gradient is relatively steep, ranging from 0.564 to 0.589, and the direction was consistently to the southwest (226 degrees from north). A consistent groundwater flow rate of 0.14 feet per day was computed for the monitoring period at the FAP.

The SEDI wells are in close proximity to one another and therefore showed a relatively shallow hydraulic gradient of approximately 0.001. The direction of flow was predominantly to the west with some variability, ranging between 220 and 303 degrees from north. Groundwater flow rate ranged from 0.14 to 0.49 feet per day at the SEDI.

The magnitude of the hydraulic gradient at the BAP ranged from 0.090 to 0.102 and the direction of flow was consistently to the south (181 to 182 degrees from north). Groundwater flow rate ranged from 0.67 to 0.75 feet per day at the BAP.

At the BAM, the magnitude of the hydraulic gradient ranged from 0.008 to 0.009 and the general direction of flow was to the north-northwest (ranging from 357 to 359 degrees from north). Groundwater flow rate ranged from 1.70 to 1.80 feet per day at the BAM.

2.2.2 Sample Collection

Sampling Protocols

Sampling protocols are detailed in the CCR program SAP (M&A, 2015). Results of the verification process to evaluate field data sheets relative to SAP protocols are summarized -in **Table 5**. Relevant details of the sampling protocol are summarized below.

Groundwater Sample Methods

The primary method for groundwater sample collection for the CCR program at Cholla is the low-flow method, which is being conducted in accordance with the *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures* (EPA, 1996). A submersible pump is placed at the midpoint of the well screen interval. Wells are purged through dedicated tubing at rates less than 500 milliliters per minute to minimize water level drawdown; drawdown should not exceed 0.3 feet from static (if possible). During purging, field parameters (pH, specific conductance, temperature, oxidation-reduction potential [ORP], dissolved oxygen [DO], and turbidity) are monitored through a flow-through cell and recorded on field sampling data sheets. Typically three measurements are taken and compared to one another to determine whether or not field parameters are stable. Field parameter stabilization is considered to be achieved when three sequential measurements are within ±0.1 standard units for pH, ±3 percent for specific conductance and temperature, ±10 millivolts (mv) for ORP, and ±10 percent for turbidity (if greater than 5 Nephelometric Turbidity Units [NTUs]) and DO. Field parameter measurements are recorded on field sampling data sheets. Field parameter measurements taken at each well immediately prior to sampling, static depth to water and drawdown after well purging, and an evaluation of achievement of SAP stability criteria for each well during each monitoring round, are shown on **Table 5**.

Duplicate Sampling

In accordance with the SAP, duplicate groundwater samples were collected at a frequency of 10 percent of the total number of groundwater samples collected during each monitoring event. The duplicate samples were collected at the same locations as the corresponding primary samples, immediately following collection of primary samples, using identical sampling techniques. Duplicate samples were treated in an identical manner as the primary samples during storage, transportation, and analysis. Duplicate sample containers were assigned an identification number in the field so that they could not be identified (blind duplicate) as duplicate samples by laboratory personnel performing the analysis.

Equipment Decontamination Procedures

Before use at each location, the submersible pumps and depth to water sensors were washed using a solution of water and Liqui-Nox™ (or other laboratory-grade cleaner) and water, then rinsed with potable water, and finally rinsed a second time with distilled/deionized water, in accordance with the SAP. If dedicated tubing was not used, disposable polyethylene tubing was discarded after each well was sampled and replaced with new tubing.

Sample Containers/Sample Handling

Sample containers were prepared and provided by the analytical laboratory, preserved in a manner that is consistent with requirements of each analytical method. Sample containers were placed in an iced cooler immediately after sample collection, and sample containers were kept tightly closed, maintained under custody, and continuously chilled until analysis was completed. Specified maximum holding times from the time of sample collection until sample analysis were followed.

Sample Custody

At the end of each sampling day and before samples were transferred off site, sample information was documented on chain-of-custody/laboratory analysis request forms. Samples remained in the custody of the sampler or other authorized personnel until they were shipped to the laboratory. Upon transfer of sample possession to subsequent custodians, persons transferring custody signed the chain-of-custody form. Upon receipt of the samples, the laboratory completed the chain-of-custody record and noted the condition of sample containers, as appropriate.

Packaging and Shipping

Samples were either delivered to the analytical laboratory by the sampler or shipped by overnight delivery. Sample shipments were accompanied by chain-of-custody/laboratory analysis request forms, which were sealed in a plastic bag and placed inside each cooler.

2.2.3 Sample Analysis and Data Validation

Sample analysis protocols are detailed in the CCR program SAP (M&A, 2015). Results of the data validation process to evaluate laboratory results relative to SAP protocols are summarized on **Table 8**. Relevant details of the sampling protocol are summarized below.

Groundwater samples were submitted for hydrochemical analysis to analytical laboratories certified by the State of Arizona. Laboratory analyses are performed using EPA approved methods. Consistent with requirements of the Rule, groundwater samples for Appendix III constituents are analyzed using the following specified methodologies:

- Total recoverable metals by EPA Method 200.7: boron and calcium
- Chloride, fluoride, and sulfate by EPA Method 300.0
- TDS by Standard Method 2540C
- pH by Standard Method 4500-HB

Consistent with requirements of the Rule, groundwater samples for Appendix IV constituents are analyzed using the following specified methodologies:

- Total recoverable metals by EPA Method 200.7: beryllium and lithium
- Total recoverable metals by EPA Method 200.8 with collision cell: antimony, barium, cadmium, chromium, cobalt, lead, molybdenum, selenium, and thallium
- Total recoverable metals by EPA Method 245.1: mercury
- Radium 226/228 by EPA Method 9320

Laboratory reports were provided as Level II data deliverables with information and documentation required in the QAPP. Reports documented consistency with laboratory QA/QC procedures specified in the QAPP and achievement of laboratory performance criteria, including: sample holding times, matrix spike/matrix spike duplicate recoveries, and laboratory method blank analysis.

Once laboratory reports were received, M&A personnel validated results by verifying that all internal performance standards and measures established by the laboratory had been achieved. Duplicate samples were checked and results were compared with previous monitoring data for consistency with historic values or observed trends at specific wells. Questions that arose during the validation process were addressed to the laboratory and reanalysis was conducted if warranted. Once verified, sample results were incorporated into the Cholla CCR water quality database.

2.2.4 Sample Results

Laboratory reports for samples obtained as part of the Cholla CCR monitoring program for the November 2015 – December 2017 reporting period, along with selected supplemental data, are provided in **Appendix A**.

2.3 Statistical Analysis of Monitoring Data

The statistical approach being used to evaluate Cholla CCR program groundwater monitoring data was presented and certified in the Statistical Approach Report (M&A, 2017b). Statistical analyses of baseline data sets for each CCR unit are in progress. Results of the baseline statistical analyses, which will include determination of background for each of the Appendix III compounds at each of the CCR units and identification of statistically significant increases over background in associated downgradient monitor wells, will be completed by or before the Rule deadline of January 15, 2018.

3 CORRECTIVE ACTION PROGRAM

All CCR units at Cholla are currently in the detection monitoring phase of the CCR monitoring program. The need for corrective actions has not been identified and, as such, discussion of corrective actions is not relevant at this stage of the evaluation process.

4 KEY ACTIVITIES FOR UPCOMING YEAR

Detection monitoring, which began in December 2017 at the Cholla CCR units, will continue into 2018. Should results of the statistical analysis of baseline data sets for down-gradient monitor wells show a statistically significant increase in any Appendix III compound over background for that CCR unit, notifications will be made and assessment monitoring will be initiated in accordance with timeframes outlined in the Rule.

5 REFERENCES

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TABLE 2. SUMMARY OF CCR UNITS AND ASSOCIATED MONITOR WELLS
FOR CCR MONITORING NETWORK WELLS, APS CHOLLA POWER PLANT, NAVAJO COUNTY, ARIZONA

CCR Unit	Well Identifier	Hydrogeologic Unit	Well Type	ADWR ID (55-)	Date Completed	Well Location Data[a]				Hydrogeologic Contacts	
						Northing	Easting	Land Surface Elevation (feet, amsl[b])	Measurement Point Elevation (feet, amsl)	Moenkopi Contact (feet, bls[c])	Coconino Contact (feet, bls)
Fly Ash Pond	M-50A	[d]LCR Alluvium	Downgradient	918641	9/18/2015	1429799.42	669243.76	5035.65	5038.18	28	N/A
Fly Ash Pond	M-51A	LCR Alluvium	Downgradient	918640	9/19/2015	1430360.14	668733.14	5039.10	5041.77	9	N/A
Fly Ash Pond	W-123	LCR Alluvium	Downgradient	506587	11/4/1983	1429140.92	669925.02	5038.14	5039.84	>40	N/A
Sedimentation Pond	M-56A	LCR Alluvium	Downgradient	918661	10/7/2015	1434257.73	658887.35	5020.63	5023.17	>100	N/A
Sedimentation Pond	M-57A	LCR Alluvium	Downgradient	918660	10/8/2015	1434198.68	658767.25	5021.16	5023.82	>100	N/A
Sedimentation Pond	M-58A	LCR Alluvium	Downgradient	918659	10/13/2015	1434165.11	658698.92	5021.24	5023.84	>100	N/A
Sedimentation Pond	M-62A	LCR Alluvium	Background	918658	11/17/2015	1434008.67	659268.05	5021.01	5020.87	97	N/A
Bottom Ash Pond	M-52A	Tanner Wash Alluvium	Downgradient	918657	9/22/2015	1437475.71	663614.27	5047.08	5049.36	79	N/A
Bottom Ash Pond	M-53A	Tanner Wash Alluvium	Downgradient	918651	9/22/2015	1437605.11	662529.37	5042.09	5044.68	34	N/A
Bottom Ash Pond	W-305	Tanner Wash Alluvium	Downgradient	506364	10/7/1983	1437484.17	662998.76	5044.65	5046.80	>110	N/A
Bottom Ash Pond	W-306	Tanner Wash Alluvium	Downgradient	506365	10/11/1983	1437482.84	663008.29	5044.78	5046.74	>55	N/A
Bottom Ash Pond	W-314	Tanner Wash Alluvium	Downgradient	533814	1/27/1992	1438507.58	664796.73	5051.32	5051.10	>63	N/A
Fly Ash Pond & Bottom Ash Pond	M-64A	LCR Alluvium	Background	920353	2/9/2017	1434030.01	647702.04	4988.90	4991.90	63	N/A
Bottom Ash Monofill	M-54	Coconino Sandstone	Background	918646	10/2/2015	1440088.61	665508.13	5068.21	5070.71	19	302
Bottom Ash Monofill	M-59	Coconino Sandstone	Downgradient	918647	10/21/2015	1440604.73	664161.36	5133.86	5136.00	13	360
Bottom Ash Monofill	M-60	Coconino Sandstone	Downgradient	918649	11/1/2015	1441947.89	664249.99	5148.69	5151.18	14	380
Bottom Ash Monofill	M-61	Coconino Sandstone	Downgradient	918648	11/13/2015	1441383.55	664047.00	5124.95	5127.58	5	355

[a] Well coordinates are in Arizona State Plane, Central zone, NAD83, Int. Feet; vertical NAVD88, Int. Feet

[b] amsl = above mean sea level

[c] bls = below land surface

[d] LCR = Little Colorado River

N/A = data not available

> means that exact depth of contact is not known but is greater than value given

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TABLE 5. RESULTS OF FIELD DATA COLLECTION VERIFICATION PROCESS
NOVEMBER 2015 - DECEMBER 2017

Monitor Round	*CCR Unit	Well Identifier	Field Sample Identifier	Static Depth to Water (ft, bls)[ab]	Drawdown (ft)	**Field Parameter Value Immediately Prior to Sample Collection					
						Temp (°C)[c]	pH (s.u.)[d]	SC (µS/cm)[e]	Turb (NTU)[f]	DO (mg/L)[g]	ORP (mV)[h]
November 30 – December 3, 2015	FAP	M-50A	7792	18.95	0.09	16.3	7.23	9,748	2.2	0.5	167
		M-51A	7880	9.47	0.01	15.1	7.10	17,126	1.8	1.1	183.8
		W-123	7800	1.97	**B**	**B**	**B**	**B**	**B**	**B**	**B**
	SEDI	M-56A	7873	43.52	0.05	16.5	7.55	5,691	14.1	0.4	-131.9
		M-57A	7874	44.24	0.00	16.8	7.31	5,336	15.8	0.4	-26.8
		M-58A	7876	44.25	0.04	16.7	7.58	5,349	12.7	0.3	-133.8
		M-62A	7872	41.13	0.06	16.2	7.64	6,236	**6.2**	0.4	-129.4
	BAP	M-52A	7879	19.13	0.06	16.3	6.99	11,374	20.1	3.3	72.4
		M-53A	7878	4.49	0.11	14.5	7.47	9,310	8.0	0.7	32.7
		W-305	7796	19.69	**B**	**B**	**B**	**B**	**B**	**B**	**B**
		W-306	7797	17.50	**B**	**B**	**B**	**B**	**B**	**B**	**B**
		W-314	7798	8.39	**B**	**B**	**B**	**B**	**B**	**B**	**B**
	BAM	M-54	7799	127.99	**0.33**	**12.0**	7.21	4,570	2.7	0.5	-109.9
		M-59	7803	197.78	0.18	**16.0**	7.49	**4,184**	1.5	0.5	-129.9
		M-60	7801	226.92	0.04	16.7	7.50	4,293	1.7	0.9	-101.6
		M-61	7802	195.93	**0.33**	17.7	7.41	4,299	1.8	0.4	-86.9
March 8 – March 10, 2016	FAP	M-50A	CH-M50A-0316	18.47	0.16	15.7	7.27	11,661	2.2	0.7	85.1
		M-51A	CH-M51A-0316	9.23	0.04	14.1	7.38	21,053	3.6	0.5	149.3
		W-123	CH-W123-0316	1.73	**0.33**	15.7	7.61	21,252	6.1	3.8	95
	SEDI	M-56A	CH-M56A-0316	43.09	0.00	17.3	7.69	6,226	**75.0**	**5.7**	-44.1
		M-57A	CH-M57A-0316	43.84	0.00	17.1	7.49	6,597	67.2	0.5	6.9
		M-58A	CH-M58A-0316	43.88	0.00	17.0	7.17	6,144	82.6	4.6	-97
		M-62A	CH-M62A-0316	40.65	0.07	17.7	7.46	8,354	**168.3**	0.8	-90.8
	BAP	M-52A	CH-M52A-0316	18.49	0.14	17.6	6.49	14,381	141.2	**50.7**	-65
		M-53A	CH-M53A-0316	4.32	0.19	14.3	7.19	11,072	8.9	0.6	221.3
		W-305	CH-W305-0316	19.15	0.16	16.5	7.40	10,243	20.2	**0.8**	121.1
		W-306	CH-W306-0316	16.53	**1.61**	16.9	8.09	17,265	**179.2**	4.9	150.2
		W-314	CH-W314-0316	7.32	**2.16**	17.1	7.20	11,091	41.9	1.0	185.1
	BAM	M-54	CH-M54-0316	125.69	**0.45**	17.4	7.51	5,608	**20.3**	**0.9**	-115.8
		M-59	CH-M59-0316	195.67	**0.30**	18.2	7.55	5,079	**16.2**	87.1	196.49
		M-60	CH-M60-0316	224.78	**-0.19**	18.4	2.31	5,005	**23.7**	**6.6**	**-126.6**
		M-61	CH-M61-0316	193.88	**0.50**	18.0	7.54	5,237	**13.7**	1.1	-83.9
May 5 – May 22, 2016	FAP	M-50A	CH-CCR-M50A-0516	18.46	0.03	**19.7**	7.05	10,576	130.9	12.0	135.2
		M-51A	CH-CCR-M51A-0516	9.37	0.05	***18.5***	***6.93***	***19,500***	***60.8***	***0.7***	***128.5***
		W-123	CH-CCR-W123-0516	1.90	**0.40**	17.7	7.36	19,367	**205.0**	36.4	138.7
	SEDI	M-56A	CH-CCR-M56A-05102016	43.06	0.22	19.1	7.39	6,026	8.2	**0.2**	**-2.5**
		M-57A	CH-CCR-M57A-05112016	43.75	0.05	18.1	6.98	6,517	22.0	0.3	91.2
		M-58A	CH-CCR-M58A-05112016	43.82	0.00	18.6	7.41	6,056	76.2	0.2	-114.4
		M-62A	CH-CCR-M62A-05052016	40.56	0.06	21.0	7.31	8,091	**31.5**	0.3	-104.1
	BAP	M-52A	CH-CCR-M52A-0516	18.28	**0.33**	18.7	**6.78**	17,249	297.6	**16.0**	**103.3**
		M-53A	CH-CCR-M53A-0516	4.27	0.13	**16.7**	**7.26**	10,824	**52.8**	**3.1**	**50.2**
		W-305	CH-CCR-W305-516	18.97	0.19	***19.8***	***7.01***	***9,902***	***9.4***	***8.7***	***126.7***
		W-306	CH-CCR-W306-0516	16.53	**0.32**	17.2	7.68	19,300	**161.7**	35.7	141.7
		W-314	CH-CCR-W314-0516	6.97	**0.31**	17.7	7.05	10,689	**26.1**	**8.5**	176.1
	BAM	M-54	CH-CCR-M54-0516	127.73	0.24	***17.4***	***7.48***	***5,437***	***3.0***	***1.8***	***-85.7***
		M-59	CH-CCR-M59-0516	197.83	0.04	**18.0**	**7.71**	4,884	**24.8**	**19.8**	**-160.0**
		M-60	CH-CCR-M60-0516	226.71	**0.32**	***19.4***	***7.50***	***5,076***	***2.0***	***8.3***	***-229.7***
		M-61	CH-CCR-M61-0516	196.05	0.21	***17.9***	***7.46***	***5,071***	***8.2***	***6.7***	***-259.8***

*CCR Unit: **FAP** = Fly Ash Pond **SEDI** = Sedimentary Pond **BAP** = Bottom Ash Pond
FAP/BAP = Fly Ash Pond & Bottom Ash Pond **BAM** = Bottom Ash Monofill

Field Parameter Units: [a]**(ft)** = feet [b]**(bls)** = below land surface [c]**Temp (°C)** = temperature in degrees celcius [d]**pH (s.u.)** = potential of hydrogen in standard units
[e]**SC (µS/cm)** = Specific Conductance in microSeimens per centimeter [f]**Turb(NTU)** = turbidity in Nephelometric Turbidity Units
[g]**DO(mg/L)** = Dissolved Oxygen in miligrams per liter [h]**ORP(mV)** = Oxygen Reduction Potential in millivolts

Formatting: **Bold = Minimal drawdown criteria was exceeded (drawdown was > 0.3 feet) or the field parameter was not within Sampling and Analysis Plan specified stabilization criteria for the three parameter measurements prior to sample collection (pH ± 1 s.u. difference, temperature and specific conductance > ± 3% difference, turbidity and DO > ± 10% difference, and ORP ± 10 mV difference).
Bold and Italic = Only two field parameters were measured and therefore stabilization criteria was not met in accordance with the Sampling and Analysis Plan stability criteria.

Other: **B** = Bailed Sample (well dewatered during purging so bailed sample was needed, therefore no field parameters measured)

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TABLE 5. RESULTS OF FIELD DATA COLLECTION VERIFICATION PROCESS
NOVEMBER 2015 - DECEMBER 2017

Monitor Round	*CCR Unit	Well Identifier	Field Sample Identifier	Static Depth to Water (ft, bls)[ab]	Drawdown (ft)	**Field Parameter Value Immediately Prior to Sample Collection					
						Temp (°C)[c]	pH (s.u.)[d]	SC (µS/cm)[e]	Turb (NTU)[f]	DO (mg/L)[g]	ORP (mV)[h]
August 24 – August 2629, 2016	FAP	M-50A	CH-CCR-M50A-082516	19.32	0.00	18.8	7.05	11,495	3.3	**3.0**	156.7
		M-51A	CH-CCR-M51A-082516	9.62	**-0.01**	23.2	7.02	20,958	4.1	**2.2**	168.4
		W-123	CH-CCR-W123-082516	2.02	**1.12**	22.2	7.54	21,267	1.7	32.8	136.3
	SEDI	M-56A	CH-CCR-M56A-08292016	43.12	0.01	18.4	7.13	6,128	4.3	5.5	**87.9**
		M-57A	CH-CCR-M57A-08252016	43.89	0.00	20.9	7.22	6,756	6.6	**20.8**	92.2
		M-58A	CH-CCR-M58A-08252016	43.95	0.00	20.1	7.49	6,346	18.3	**4.0**	**-142.6**
		M-62A	CH-CCR-M62A-08292016	40.69	0.00	19.3	7.15	8,231	**34.9**	3.7	**-121.2**
	BAP	M-52A	CH-CCR-M52A-816	19.80	0.21	19.1	6.70	14,339	**14.7**	**4.7**	-9.4
		M-53A	CH-CCR-M53A-816	4.99	0.07	19.7	7.06	10,648	4.9	**3.2**	146.8
		W-305	CH-CCR-W305-816	20.25	**0.38**	16.9	6.87	9,660	9.5	3.7	94.6
		W-306	CH-CCR-W306-816	17.94	**0.66**	18.0	7.42	21,302	3.3	11.8	142.9
		W-314	CH-CCR-W314-816	8.79	**0.48**	20.1	6.99	10,512	4.0	**9.8**	156.4
	BAM	M-54	CH-CCR-M54-816	128.52	0.23	18.1	7.40	5,287	5.3	2.1	**-166.3**
		M-59	CH-CCR-M59-816	198.71	0.21	19.1	7.59	4,816	2.1	21.7	199.09
		M-60	CH-CCR-M60-816	227.51	0.12	19.0	7.24	4,938	0.6	**3.9**	227.9
		M-61	CH-CCR-M61-816	196.84	0.20	18.6	7.28	4,962	1.0	3.2	**-146.4**
September 21 – September 23, 2016	FAP	M-50A	CH-CCR-M50A-916	19.33	0.03	18.0	7.04	10,774	**10.8**	**2.3**	-81.8
		M-51A	CH-CCR-M51A-916	9.63	0.07	22.8	6.91	19,705	**5.8**	3.1	**84.3**
		W-123	CH-CCR-W123-916	2.35	**0.32**	19.8	7.53	20,081	**14.7**	**25.4**	-103.5
	SEDI	M-56A	CH-CCR-M56A-0916	43.21	0.00	19.1	7.27	6,344	2.7	**3.6**	**-29.2**
		M-57A	CH-CCR-M57A-0916	43.90	0.02	**18.8**	6.92	**6,774**	**3.7**	**11.9**	**48.9**
		M-58A	CH-CCR-M58A-0916	43.94	0.00	19.6	7.29	6,422	2.6	**3.1**	-81.3
		M-62A	CH-CCR-M62A-0916	40.69	0.03	19.0	7.12	8,577	1.9	**3.0**	**-70.4**
	BAP	M-52A	CH-CCR-M52A-916	20.02	0.27	19.4	6.55	13,444	4.2	**1.9**	**4.9**
		M-53A	CH-CCR-M53A-916	5.19	0.11	**19.8**	7.10	10,617	2.6	**1.6**	**57.3**
		W-305	CH-CCR-W305-916	20.53	**0.46**	19.5	6.92	9,670	**12.9**	**5.3**	**5.2**
		W-306	CH-CCR-W306-916	18.27	**0.55**	19.0	7.54	21,336	**41.4**	**8.1**	107.5
		W-314	CH-CCR-W314-916	9.23	0.27	19.9	6.99	10,475	2.4	**2.7**	**93.7**
	BAM	M-54	CH-CCR-M54-916	128.46	0.23	17.8	7.31	5,275	1.6	**2.7**	-124.3
		M-59	CH-CCR-M59-916	198.62	0.25	18.7	7.35	4,789	0.9	**2.5**	**198.61**
		M-60	CH-CCR-M60-916	227.61	0.21	19.0	7.43	4,932	1.7	**3.1**	**-61.2**
		M-61	CH-CCR-M61-916	196.87	0.24	18.6	7.36	4,931	0.6	**3.1**	-90.4
February 20 – February 22, 2017	FAP	M-50A	CH-CCR-M50A-217	18.81	0.12	15.7	7.02	10,989	**9.6**	0.4	**45.9**
		M-51A	CH-CCR-M51A-217	9.29	0.00	11.9	**6.79**	19,521	3.2	**0.5**	**-9.3**
		W-123	CH-CCR-W123-217	1.74	0.09	15.2	7.26	20,580	13.2	3.9	**-64.9**
	SEDI	M-56A	CH-CCR-M56A-217	42.58	**-0.01**	16.3	7.57	6,433	3.6	0.4	**-13.6**
		M-57A	CH-CCR-M57A-217	43.31	0.06	16.6	6.80	6,901	**8.2**	**0.3**	-13.2
		M-58A	CH-CCR-M58A-217	43.39	0.00	16.3	7.20	6,345	7.1	**0.5**	-81.4
		M-62A	CH-CCR-M62A-217	40.09	0.03	16.3	7.22	**8,358**	3.7	0.2	-160.9
	BAP	M-52A	CH-CCR-M52A-217	19.05	0.20	17.4	6.33	14,189	**8.7**	0.7	1.4
		M-53A	CH-CCR-M53A-217	4.33	0.06	15.9	7.19	10,613	3.3	0.1	**-32.3**
		W-305	CH-CCR-W305-217	19.83	**-0.72**	**17.4**	7.03	9,766	**41.0**	0.2	**-54.7**
		W-306	CH-CCR-W306-217	17.32	0.22	17.4	7.65	21,839	**13.7**	0.3	51
		W-314	CH-CCR-W314-217	8.69	**0.41**	17.0	7.12	10,512	2.7	0.2	-15.3
	FAP/BAP	M-64A	CH-CCR-M64A-217	25.18	0.03	15.2	7.20	17,406	22.7	0.4	-91
	BAM	M-54	CH-CCR-M54-217	124.13	**NI**	17.2	7.39	5,307	1.7	0.2	**-164.9**
		M-59	CH-CCR-M59-217	194.12	**NI**	17.6	**7.47**	4,824	2.4	0.4	**-177.3**
		M-60	CH-CCR-M60-217	223.39	0.05	17.5	7.32	4,914	1.3	0.4	-147
		M-61	CH-CCR-M61-217	192.34	0.27	17.1	7.33	4,955	1.7	0.4	**-149.9**

*CCR Unit: **FAP** = Fly Ash Pond **SEDI** = Sedimentary Pond **BAP** = Bottom Ash Pond
FAP/BAP = Fly Ash Pond & Bottom Ash Pond **BAM** = Bottom Ash Monofill

Field Parameter Units: [a]**(ft)** = feet [b]**(bls)** = below land surface [c]**Temp (°C)** = temperature in degrees celcius [d]**pH (s.u.)** = potential of hydrogen in standard units
[e]**SC (µS/cm)** = Specific Conductance in microSeimens per centimeter [f]**Turb(NTU)** = turbidity in Nephelometric Turbidity Units
[g]**DO(mg/L)** = Dissolved Oxygen in miligrams per liter [h]**ORP(mV)** = Oxygen Reduction Potential in millivolts

Formatting: **Bold = Minimal drawdown criteria was exceeded (drawdown was > 0.3 feet) or the field parameter was not within Sampling and Analysis Plan specified stabilization criteria for the three parameter measurements prior to sample collection (pH ± 1 s.u. difference, temperature and specific conductance > ± 3% difference, turbidity and DO > ± 10% difference, and ORP ± 10 mV difference).

Other: **NI** = Not Indicated on Field Forms

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TABLE 5. RESULTS OF FIELD DATA COLLECTION VERIFICATION PROCESS
NOVEMBER 2015 - DECEMBER 2017

Monitor Round	*CCR Unit	Well Identifier	Field Sample Identifier	Static Depth to Water (ft, bls)[ab]	Drawdown (ft)	**Field Parameter Value Immediately Prior to Sample Collection					
						Temp (°C)[c]	pH (s.u.)[d]	SC (µS/cm)[e]	Turb (NTU)[f]	DO (mg/L)[g]	ORP (mV)[h]
April 11– April 13, 2017	FAP	M-50A	CH-CCR-M50A-41317	18.66	0.10	17.4	7.01	**11,756**	37.1	4.4	22
		M-51A	CH-CCR-M51A-41317	9.42	0.01	16.0	6.93	21,013	4.1	**3.7**	-6.4
		W-123	CH-CCR-W123-41317	1.86	0.20	17.3	7.41	21,821	17.3	42.6	-126
	SEDI	M-56A	CH-CCR-M56A-41317	42.09	0.01	16.5	7.20	7,008	4.3	**3.2**	37.7
		M-57A	CH-CCR-M57A-41217	42.86	0.02	18.0	6.79	7,483	**7.8**	**3.1**	15.1
		M-58A	CH-CCR-M58A-41217	42.91	0.01	18.3	7.20	6,519	**8.0**	**2.0**	-104.6
		M-62A	CH-CCR-M62A-41317	39.62	0.01	16.4	7.18	9,265	3.8	**3.9**	-115.6
	BAP	M-52A	CH-CCR-M52A-41117	18.81	0.22	18.1	6.64	15,738	**41.7**	**6.9**	5.7
		M-53A	CH-CCR-M53A-41217	4.23	0.07	17.4	6.84	11,421	9.6	**3.5**	65.5
		W-305	CH-CCR-W305-41117	19.61	0.12	17.9	7.11	10,472	3.0	4.0	-67
		W-306	CH-CCR-W306-41217	17.03	0.27	17.4	7.61	23,496	4.9	**6.8**	**40.7**
		W-314	CH-CCR-W314-41117	8.52	**0.40**	18.4	7.03	11,369	3.0	**3.1**	25.9
	FAP/BAP	M-64A	CH-CCR-M64A-41217	24.99	0.02	16.6	6.96	18,971	**14.4**	**2.2**	-87.9
	BAM	M-54	CH-CCR-M54-41117	124.72	0.28	17.4	7.31	5,711	1.7	**2.0**	-125.12
		M-59	CH-CCR-M59-41117	194.83	0.26	18.1	7.41	5,193	2.3	**3.8**	-154.4
		M-60	CH-CCR-M60-41117	224.02	0.20	17.6	7.31	5,328	1.5	**2.6**	-128.2
		M-61	CH-CCR-M61-41117	193.07	0.11	17.1	7.30	5,335	2.9	10.7	-38.2
April 24 – April 26, 2017	FAP	M-50A	CH-CCR-M50A-42617	18.62	0.12	16.3	6.99	10,935	1.5	**3.1**	10.1
		M-51A	CH-CCR-M51A-42617	9.48	0.05	16.3	6.88	19,581	14.5	4.3	25.8
		W-123	CH-CCR-W123-42617	1.85	**0.33**	16.9	7.40	20,254	5.0	39.8	136
	SEDI	M-56A	CH-CCR-M56A-42517	42.01	0.00	17.3	7.19	6,553	1.7	**3.1**	9.8
		M-57A	CH-CCR-M57A-42517	42.78	0.00	17.2	6.75	6,967	4.1	**3.1**	11.3
		M-58A	CH-CCR-M58A-42517	42.80	0.00	16.8	7.17	5,983	2.1	**1.4**	-104.4
		M-62A	CH-CCR-M62A-42517	39.53	0.02	17.1	7.10	8,883	1.5	**3.0**	-102
	BAP	M-52A	CH-CCR-M52A-42517	18.78	0.23	18.1	6.64	146	**14.5**	**3.5**	66.3
		M-53A	CH-CCR-M53A-42517	4.28	0.10	16.6	6.99	10,623	2.2	**1.9**	114.9
		W-305	CH-CCR-W305-42417	19.53	0.27	16.3	7.00	9,740	**6.6**	**1.9**	-66.3
		W-306	CH-CCR-W306-42517	16.83	0.28	17.5	7.62	21,904	2.8	**4.9**	124.9
		W-314	CH-CCR-W314-42517	8.38	0.21	17.3	7.07	10,476	2.8	**3.8**	103.4
	FAP/BAP	M-64A	CH-CCR-M64A-42517	24.97	0.00	15.3	7.03	17,680	11.8	**3.3**	-79.5
	BAM	M-54	CH-CCR-M54-42417	125.37	0.24	17.4	7.29	5,277	1.2	**3.0**	-160.9
		M-59	CH-CCR-M59-42417	195.54	0.21	18.5	7.56	4,792	1.3	**3.9**	-172.8
		M-60	CH-CCR-M60-42417	224.64	0.15	18.4	7.30	4,948	0.3	**15.0**	-132.3
		M-61	CH-CCR-M61-42417	193.75	0.28	18.0	7.30	4,943	1.9	**4.6**	-124.7
May 18 – May 22, 2017	FAP	M-50A	CH-CCR-M50A-51817	18.77	0.01	16.9	7.03	10,010	1.3	4.0	62.3
		M-51A	CH-CCR-M51A-51817	9.57	0.10	18.3	6.95	18,044	4.1	5.0	58.9
		W-123	CH-CCR-W123-52217	1.87	0.19	18.5	7.46	18,889	1.4	32.5	-35.6
	SEDI	M-56A	CH-CCR-M56A-51817	42.02	0.04	16.8	7.20	6,020	1.9	**2.8**	36.3
		M-57A	CH-CCR-M57A-51817	42.79	0.02	17.0	6.81	6,384	**6.0**	**4.7**	63
		M-58A	CH-CCR-M58A-51817	42.81	0.03	17.3	7.29	5,609	1.5	**3.1**	-43.3
		M-62A	CH-CCR-M62A-51817	39.56	0.02	17.1	7.17	8,179	1.7	**4.1**	-74.5
	BAP	M-52A	CH-CCR-M52A-51817	18.88	0.25	17.4	6.67	13,392	11.1	**3.9**	66.4
		M-53A	CH-CCR-M53A-51817	4.49	0.13	16.7	7.24	9,579	1.6	**3.2**	132.3
		W-305	CH-CCR-W305-52217	19.68	0.30	19.5	7.13	9,032	1.6	4.9	-77.1
		W-306	CH-CCR-W306-52217	17.07	0.25	18.0	7.67	20,281	7.2	**4.4**	113.9
		W-314	CH-CCR-W314-52217	8.75	**0.33**	**18.9**	7.25	9,764	1.7	**4.9**	122.8
	FAP/BAP	M-64A	CH-CCR-M64A-51817	24.98	0.04	15.5	7.08	16,123	15.1	**3.6**	-61.8
	BAM	M-54	CH-CCR-M54-51817	126.04	0.20	17.2	7.39	4,902	1.4	**4.6**	-126.6
		M-59	CH-CCR-M59-51917	196.28	0.23	18.3	7.43	4,323	**400.0**	**2.5**	-65.6
		M-60	CH-CCR-M60-51917	225.28	0.18	18.1	7.41	4,575	0.3	**4.3**	-104.4
		M-61	CH-CCR-M61-51917	194.46	0.19	17.7	7.39	4,584	0.6	**4.5**	-110.15

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[g]**DO(mg/L)** = Dissolved Oxygen in miligrams per liter [h]**ORP(mV)** = Oxygen Reduction Potential in millivolts

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Monitor Round	*CCR Unit	Well Identifier	Field Sample Identifier	Static Depth to Water (ft, bls)[ab]	Drawdown (ft)	**Field Parameter Value Immediately Prior to Sample Collection					
						Temp (°C)[c]	pH (s.u.)[d]	SC (µS/cm)[e]	Turb (NTU)[f]	DO (mg/L)[g]	ORP (mV)[h]
May 24 – May 25, 2017	FAP	M-50A	CH-CCR-M50A-52417	18.81	0.14	17.9	7.07	10,175	1.4	**3.1**	45.9
		M-51A	CH-CCR-M51A-52417	9.66	0.10	19.4	6.99	18,408	1.4	4.7	-16.9
		W-123	CH-CCR-W123-52417	1.88	0.29	18.7	7.48	18,880	1.3	30.7	-37.9
	SEDI	M-56A	CH-CCR-M56A-52517	41.97	0.03	18.9	7.25	6,462	1.4	**4.5**	-50.1
		M-57A	CH-CCR-M57A-52517	42.86	0.06	18.6	6.84	6,495	2.1	4.7	17.1
		M-58A	CH-CCR-M58A-52517	42.78	0.03	18.3	7.24	5,621	1.7	**3.6**	-97
		M-62A	CH-CCR-M62A-52517	39.49	0.04	19.1	7.22	8,395	1.9	**4.9**	-97.7
	BAP	M-52A	CH-CCR-M52A-52417	18.99	0.21	19.8	6.70	13,637	**12.2**	**4.0**	-0.4
		M-53A	CH-CCR-M53A-52417	4.57	0.18	17.9	7.25	9,732	1.4	**3.2**	102.9
		W-305	CH-CCR-W305-52417	19.77	0.26	18.9	7.12	9,084	1.5	12.3	-31.3
		W-306	CH-CCR-W306-52417	17.08	0.26	18.9	7.68	20,208	6.3	**4.4**	110
		W-314	CH-CCR-W314-52417	8.92	0.20	19.9	7.13	9,755	1.4	**5.3**	97.5
	FAP/BAP	M-64A	CH-CCR-M64A-52417	25.02	0.00	17.1	7.07	16,213	19.2	**4.8**	-84
	BAM	M-54	CH-CCR-M54-52517	126.10	0.30	17.7	7.39	4,914	1.4	4.7	-138.4
		M-59	CH-CCR-M59-52517	196.28	**0.41**	19.3	7.56	4,458	4.4	**4.9**	-130.5
		M-60	CH-CCR-M60-52517	225.28	0.13	19.6	7.42	4,598	3.0	4.4	-117.1
		M-61	CH-CCR-M61-52517	194.31	0.26	18.3	7.40	4,589	1.2	**3.8**	-108.7
June 29 – July 1, 2017	FAP	M-50A	CH-CCR-M50A-63017	19.13	0.08	18.5	7.02	10,980	2.6	**2.5**	101
		M-51A	CH-CCR-M51A-563017	9.91	0.02	23.6	6.87	19,488	1.4	4.6	-73.5
		W-123	CH-CCR-W123-63017	2.11	0.26	22.6	7.40	20,551	6.3	22.5	10
	SEDI	M-56A	CH-CCR-M56A-7117	42.09	0.03	20.4	7.23	6,664	4.3	**4.4**	38.6
		M-57A	CH-CCR-M57A-7117	42.86	0.01	21.2	6.83	6,955	8.2	**4.5**	-13.8
		M-58A	CH-CCR-M58A-7117	42.88	0.07	20.4	7.29	6,243	18.1	**3.1**	-123.2
		M-62A	CH-CCR-M62A-7117	39.61	0.03	20.1	7.17	8,903	11.1	**4.4**	-111.5
	BAP	M-52A	CH-CCR-M52A-63017	19.91	**0.32**	19.1	6.71	13,372	14.1	4.8	30.3
		M-53A	CH-CCR-M53A-7117	5.21	0.12	20.5	7.21	10,494	1.4	4.3	101.8
		W-305	CH-CCR-W305-62917	20.47	0.15	18.9	7.06	9,790	17.2	3.9	-45.6
		W-306	CH-CCR-W306-70117	17.58	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**
		W-314	CH-CCR-W314-63017	9.84	**0.31**	20.1	7.08	10,576	**6.4**	**4.1**	101.5
	FAP/BAP	M-64A	CH-CCR-M64A-63017	24.39	0.04	18.3	7.02	17,712	**8.2**	**3.1**	-118.5
	BAM	M-54	CH-CCR-M54-62917	126.42	0.20	17.9	7.32	5,297	1.1	**3.2**	-144.9
		M-59	CH-CCR-M59-62917	196.72	0.16	20.7	7.35	4,837	2.6	8.3	-121.9
		M-60	CH-CCR-M60-62917	225.73	0.15	19.3	7.31	4,985	0.2	**4.1**	-119.1
		M-61	CH-CCR-M61-62917	194.89	0.22	19.2	7.33	4,971	1.0	**3.6**	-131.9
July 26 – July 29, 2017	FAP	M-50A	CH-CCR-M50A-72717	19.33	0.07	18.5	7.24	11,547	1.4	2.5	18.9
		M-51A	CH-CCR-M51A-72717	9.68	0.10	24.5	7.09	20,968	7.6	**3.5**	-118.3
		W-123	CH-CCR-W123-72717	2.12	0.24	20.9	7.60	**51,568**	5.3	9.1	-107.6
	SEDI	M-56A	CH-CCR-M56A-72617	42.16	0.00	20.3	7.35	6,940	2.1	**2.8**	-48
		M-57A	CH-CCR-M57A-72617	42.93	0.02	21.0	6.91	7,437	5.3	**7.2**	-24.1
		M-58A	CH-CCR-M58A-72617	42.97	0.02	19.8	7.44	6,617	**46.9**	**2.0**	-126
		M-62A	CH-CCR-M62A-72617	39.71	**NI**	19.5	7.36	9,276	4.2	**3.0**	-132
	BAP	M-52A	CH-CCR-M52A-72817	20.12	0.23	19.7	6.96	13,050	3.4	**4.3**	3
		M-53A	CH-CCR-M53A-72817	4.99	0.08	19.5	7.45	10,961	1.8	**2.7**	58
		W-305	CH-CCR-W305-72817	20.74	0.22	18.8	7.27	10,269	1.5	**3.1**	-67.8
		W-306	CH-CCR-W306-72817	17.92	0.17	**20.9**	7.89	22,809	5.3	4.7	72.5
		W-314	CH-CCR-W314-72817	10.36	0.29	21.9	7.31	11,073	1.4	4.7	83
	FAP/BAP	M-64A	CH-CCR-M64A-72717	24.57	0.03	17.4	7.23	18,736	6.6	**3.2**	-113.8
	BAM	M-54	CH-CCR-M54-72917	127.53	0.12	17.7	7.49	5,536	1.4	**4.4**	-170.2
		M-59	CH-CCR-M59-72917	197.75	**0.32**	18.7	7.67	5,046	1.5	4.7	-165.6
		M-60	CH-CCR-M60-72917	226.69	0.20	18.5	7.60	5,189	1.1	4.0	-112.7
		M-61	CH-CCR-M61-72917	195.91	0.16	18.1	7.58	5,188	1.5	4.2	-134.7

*CCR Unit: **FAP** = Fly Ash Pond **SEDI** = Sedimentary Pond **BAP** = Bottom Ash Pond
FAP/BAP = Fly Ash Pond & Bottom Ash Pond **BAM** = Bottom Ash Monofill

Field Parameter Units: [a]**(ft)** = feet [b]**(bls)** = below land surface [c]**Temp (°C)** = temperature in degrees celcius [d]**pH (s.u.)** = potential of hydrogen in standard units
[e]**SC (µS/cm)** = Specific Conductance in microSeimens per centimeter [f]**Turb(NTU)** = turbidity in Nephelometric Turbidity Units
[g]**DO(mg/L)** = Dissolved Oxygen in miligrams per liter [h]**ORP(mV)** = Oxygen Reduction Potential in millivolts

Formatting: **Bold = Minimal drawdown criteria was exceeded (drawdown was > 0.3 feet) or the field parameter was not within Sampling and Analysis Plan specified stabilization criteria for the three parameter measurements prior to sample collection (pH ± 1 s.u. difference, temperature and specific conductance > ± 3% difference, turbidity and DO > ± 10% difference, and ORP ± 10 mV difference).

Other: **NI** = Not Indicated on Field Forms

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TABLE 5. RESULTS OF FIELD DATA COLLECTION VERIFICATION PROCESS
NOVEMBER 2015 - DECEMBER 2017

Monitor Round	*CCR Unit	Well Identifier	Field Sample Identifier	Static Depth to Water (ft, bls)[ab]	Drawdown (ft)	**Field Parameter Value Immediately Prior to Sample Collection					
						Temp (°C)[c]	pH (s.u.)[d]	SC (µS/cm)[e]	Turb (NTU)[f]	DO (mg/L)[g]	ORP (mV)[h]
September 5 – September 8, 2017	FAP	M-50A	CH-CCR-M50A-90717	19.37	0.05	19.7	6.94	11,650	1.4	3.8	20.6
		M-51A	CH-CCR-M51A-90717	9.70	0.05	24.4	6.81	20,989	1.9	3.8	-87.8
		W-123	CH-CCR-W123-90717	2.25	0.23	22.2	7.25	22,016	2.2	**4.3**	-152.3
	SEDI	M-56A	CH-CCR-M56A-90817	42.18	0.00	18.3	7.04	7,055	1.8	4.7	-35.9
		M-57A	CH-CCR-M57A-90817	42.97	0.00	18.3	6.54	7,496	**5.1**	4.0	-4.9
		M-58A	CH-CCR-M58A-90817	42.95	0.00	18.2	6.81	6,843	1.8	**3.2**	-112.3
		M-62A	CH-CCR-M62A-90717	39.62	0.06	21.0	7.15	9,457	2.1	**4.1**	-130.8
	BAP	M-52A	CH-CCR-M52A-90717	20.41	0.15	20.3	6.75	12,940	**5.2**	4.7	16.4
		M-53A	CH-CCR-M53A-90717	5.28	0.15	21.6	7.16	11,100	1.6	**4.0**	11.5
		W-305	CH-CCR-W305-90617	20.92	0.21	18.4	6.93	10,558	**6.6**	**2.0**	-57
		W-306	CH-CCR-W306-90617	18.22	0.26	19.8	7.54	22,504	11.7	**4.0**	29.9
		W-314	CH-CCR-W314-90717	10.37	0.24	21.1	7.03	11,253	1.7	4.6	48.3
	FAP/BAP	M-64A	CH-CCR-M64A-90717	25.70	0.01	18.9	6.99	19,001	**7.4**	**4.1**	-107.9
	BAM	M-54	CH-CCR-M54-90517	127.89	0.26	18.6	7.33	5,205	1.3	**4.2**	-159.9
		M-59	CH-CCR-M59-90517	198.15	0.30	18.7	7.37	4,719	1.0	**4.1**	-145.5
		M-60	CH-CCR-M60-90517	227.09	0.24	19.0	7.16	4,860	0.4	**3.6**	-131.6
		M-61	CH-CCR-M61-90517	196.31	0.23	18.8	7.31	4,880	0.7	**6.5**	-159.8
December 7 – December 8, 2017	FAP	M-50A	CH-CCR-M50A-12817	19.36	0.08	17.1	7.01	10,700	0.9	**3.2**	20.6
		M-51A	CH-CCR-M51A-12817	9.58	0.00	15.9	6.89	18,645	2.1	**4.6**	6.2
		W-123	CH-CCR-W123-12817	2.43	0.24	14.8	7.44	20,227	11.3	4.0	-83
	SEDI	M-56A	CH-CCR-M56A-12817	42.32	0.00	16.8	7.14	6,497	0.8	3.9	-62.9
		M-57A	CH-CCR-M57A-12817	43.08	0.01	16.9	6.73	7,108	2.3	3.9	9.4
		M-58A	CH-CCR-M58A-12817	43.18	0.00	16.3	7.15	6,406	2.1	**3.6**	-99.2
		M-62A	CH-CCR-M62A-12817	39.98	0.00	16.1	7.13	8,699	3.7	3.8	-112.9
	BAP	M-52A	CH-CCR-M52A-12717	19.88	0.26	16.3	6.68	12,997	1.9	4.3	35.9
		M-53A	CH-CCR-M53A-12717	4.72	0.21	16.5	7.18	10,262	1.0	3.1	15.1
		W-305	CH-CCR-W305-12717	20.61	0.28	15.8	7.24	9,689	3.3	**2.8**	-46.2
		W-306	CH-CCR-W306-12717	18.06	0.26	15.5	7.71	20,855	1.4	**4.1**	-10
		W-314	CH-CCR-W314-12717	10.86	**0.31**	16.7	7.04	10,420	0.9	**3.0**	20.6
	FAP/BAP	M-64A	CH-CCR-M64A-12817	25.66	0.01	14.7	7.14	15,001	2.1	4.5	-107.9
	BAM	M-54	CH-CCR-M54-120717	124.96	0.25	16.7	7.31	5,198	0.8	**3.4**	-148.5
		M-59	CH-CCR-M59-120717	195.11	0.28	17.6	7.38	4,732	0.4	**4.0**	-144.6
		M-60	CH-CCR-M60-120717	224.58	**1.18**	16.9	7.34	4,826	0.3	**4.1**	-122.7
		M-61	CH-CCR-M61-120717	193.48	0.23	17.0	7.34	4,848	0.6	4.7	-149.1

*CCR Unit: **FAP** = Fly Ash Pond **SEDI** = Sedimentary Pond **BAP** = Bottom Ash Pond
FAP/BAP = Fly Ash Pond & Bottom Ash Pond **BAM** = Bottom Ash Monofill

Field Parameter Units: [a]**(ft)** = feet [b]**(bls)** = below land surface [c]**Temp (°C)** = temperature in degrees celcius [d]**pH (s.u.)** = potential of hydrogen in standard units
[e]**SC (µS/cm)** = Specific Conductance in microSeimens per centimeter [f]**Turb(NTU)** = turbidity in Nephelometric Turbidity Units
[g]**DO(mg/L)** = Dissolved Oxygen in miligrams per liter [h]**ORP(mV)** = Oxygen Reduction Potential in millivolts

Formattinc **Bold = Minimal drawdown criteria was exceeded (drawdown was > 0.3 feet) or the field parameter was not within Sampling and Analysis Plan specified stabilization criteria for the three parameter measurements prior to sample collection (pH ± 1 s.u. difference, temperature and specific conductance > ± 3% difference, turbidity and DO > ± 10% difference, and ORP ± 10 mV difference).

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TABLE 7. ESTIMATED GROUNDWATER FLOW RATES FOR EACH UNIT FOR EACH SAMPLING ROUND

NOVEMBER 2015 - DECEMBER 2017

Fly Ash Pond

Monitoring Round	Water Level Elevations (ft, amsl)[ab] M-50A	M-51A	W-123	Hydraulic Gradient (ft/ft)	Groundwater Direction (deg)[c]	Estimated Groundwater Flow Rate (ft/day)
November 30 – December 3, 2015	5019.23	5032.30	5037.87	0.579	226	**0.14**
March 8 – March 10, 2016	5019.71	5032.54	5038.11	0.570	226	**0.14**
May 5 – May 22, 2016	5019.72	5032.40	5037.94	0.564	226	**0.14**
August 24 – August 29, 2016	5018.86	5032.15	5037.82	0.589	226	**0.14**
September 21 – September 23, 2016	5018.85	5032.14	5037.49	0.584	226	**0.14**
February 20 – February 22, 2017	5019.37	5032.48	5038.10	0.582	226	**0.14**
April 11– April 13, 2017	5019.52	5032.35	5037.98	0.571	226	**0.14**
April 24 – April 26, 2017	5019.56	5032.29	5037.99	0.569	226	**0.14**
May 18 – May 22, 2017	5019.41	5032.20	5037.97	0.572	226	**0.14**
May 24 – May 25, 2017	5019.37	5032.11	5037.96	0.572	226	**0.14**
June 29 – July 1, 2017	5019.05	5031.86	5037.73	0.574	226	**0.14**
July 26 – July 29, 2017	5018.85	5032.09	5037.72	0.587	226	**0.14**
September 5 – September 8, 2017	5018.81	5032.07	5037.59	0.585	226	**0.14**
December 7 – December 8, 2017	5018.82	5032.19	5037.41	0.585	226	**0.14**

Sedimentation Pond

Monitoring Round	Water Level Elevations (ft, amsl)[ab] M-56A	M-62A	M-58A	Hydraulic Gradient (ft/ft)	Groundwater Direction (deg)[c]	Estimated Groundwater Flow Rate (ft/day)
November 30 – December 3, 2015	4979.65	4979.74	4979.59	0.000	265	**0.14**
March 8 – March 10, 2016	4980.08	4980.22	4979.96	0.001	250	**0.28**
May 5 – May 22, 2016	4980.11	4980.31	4980.02	0.000	280	**0.25**
August 24 – August 29, 2016	4980.05	4980.18	4979.89	0.001	238	**0.37**
September 21 – September 23, 2016	4979.96	4980.18	4979.90	0.001	303	**0.26**
February 20 – February 22, 2017	4980.59	4980.79	4980.45	0.001	258	**0.33**
April 11– April 13, 2017	4981.08	4981.25	4980.93	0.001	248	**0.35**
April 24 – April 26, 2017	4981.16	4981.34	4981.04	0.001	260	**0.29**
May 18 – May 22, 2017	4981.15	4981.31	4981.03	0.001	255	**0.28**
May 24 – May 25, 2017	4981.20	4981.38	4981.06	0.001	253	**0.33**
June 29 – July 1, 2017	4981.08	4981.26	4980.96	0.001	260	**0.29**
July 26 – July 29, 2017	4981.01	4981.16	4980.87	0.001	246	**0.32**
September 5 – September 8, 2017	4980.99	4981.25	4980.89	0.001	287	**0.31**
December 7 – December 8, 2017	4980.85	4980.89	4980.66	0.001	220	**0.49**

[a] ft = feet

[b] amsl = above mean sea level

[c] deg = degrees from the North (North = 0 degrees, East = 90 degrees, South = 180 degrees, West = 270 degrees)

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TABLE 7. ESTIMATED GROUNDWATER FLOW RATES FOR EACH UNIT FOR EACH SAMPLING ROUND

NOVEMBER 2015 - DECEMBER 2017

Bottom Ash Pond						
Monitoring Round	Water Level Elevations (ft, amsl)[ab] M-52A	M-53A	W-306	Hydraulic Gradient (ft/ft)	Groundwater Direction (deg)[c]	Estimated Groundwater Flow Rate (ft/day)
November 30 – December 3, 2015	5030.23	5040.19	5029.24	0.101	182	**0.74**
March 8 – March 10, 2016	5030.87	5040.36	5030.21	0.092	181	**0.68**
May 5 – May 22, 2016	5031.08	5040.41	5030.21	0.093	182	**0.69**
August 24 – August 29, 2016	5029.56	5039.69	5028.80	0.099	181	**0.73**
September 21 – September 23, 2016	5029.34	5039.49	5028.47	0.100	181	**0.74**
February 20 – February 22, 2017	5030.31	5040.35	5029.42	0.100	182	**0.74**
April 11– April 13, 2017	5030.55	5040.45	5029.71	0.098	181	**0.72**
April 24 – April 26, 2017	5030.58	5040.40	5029.91	0.094	181	**0.70**
May 18 – May 22, 2017	5030.48	5040.19	5029.67	0.096	181	**0.71**
May 24 – May 25, 2017	5030.37	5040.11	5029.66	0.094	181	**0.70**
June 29 – July 1, 2017	5029.45	5039.47	5029.16	0.090	181	**0.67**
July 26 – July 29, 2017	5029.24	5039.69	5028.82	0.096	181	**0.71**
September 5 – September 8, 2017	5028.95	5039.40	5028.52	0.096	181	**0.71**
December 7 – December 8, 2017	5029.48	5039.96	5028.68	0.102	181	**0.75**

Bottom Ash Monofill						
Monitoring Round	Water Level Elevations (ft, amsl)[ab] M-59	M-61	M-54	Hydraulic Gradient (ft/ft)	Groundwater Direction (deg)[c]	Estimated Groundwater Flow Rate (ft/day)
November 30 – December 3, 2015	4938.22	4931.65	4942.72	0.008	359	**1.74**
March 8 – March 10, 2016	4940.33	4933.70	4945.02	0.008	358	**1.75**
May 5 – May 22, 2016	4938.17	4931.53	4942.98	0.008	358	**1.75**
August 24 – August 29, 2016	4937.29	4930.74	4942.19	0.008	357	**1.73**
September 21 – September 23, 2016	4937.38	4930.71	4942.25	0.009	358	**1.76**
February 20 – February 22, 2017	4941.88	4935.24	4946.58	0.009	358	**1.76**
April 11– April 13, 2017	4941.17	4934.51	4945.99	0.009	358	**1.76**
April 24 – April 26, 2017	4940.46	4933.83	4945.34	0.008	357	**1.75**
May 18 – May 22, 2017	4939.72	4933.12	4944.67	0.008	357	**1.74**
May 24 – May 25, 2017	4939.72	4933.27	4944.61	0.008	357	**1.70**
June 29 – July 1, 2017	4939.28	4932.69	4944.29	0.008	357	**1.74**
July 26 – July 29, 2017	4938.25	4931.67	4943.18	0.008	357	**1.74**
September 5 – September 8, 2017	4937.85	4931.27	4942.82	0.008	357	**1.74**
December 7 – December 8, 2017	4940.89	4934.10	4945.75	0.009	358	**1.80**

[a] ft = feet

[b] amsl = above mean sea level

[c] deg = degrees from the North (North = 0 degrees, East = 90 degrees, South = 180 degrees, West = 270 degrees)

TABLE 8. RESULTS OF LABORATORY REPORT DATA VALIDATION PROCESS, NOVEMBER 2015 - DECEMBER 2017

Monitor Round	Site[a]	Well Identifier	Sample Date	Field Sample ID	Sample Type	Laboratory Reports[c] A3	A4 Metals	A4 Radium	Issues Found[d]		Issue Type[e] MB	RPD	HDC	Laboratory Action Requested[f] RA	RA Conf	RR	RR Conf	REC	REC Conf	No Action Reason	Result[g]	Notes
November 30 – December 3, 2015	FAP	M-50A	02-Dec-15	7792	O	55311	55311	55310	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				7793	DUP				---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-51A	02-Dec-15	7880	O	55311	55311	55310	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-123	03-Dec-15	7800	O	55311	55311	55310	$F_{(A3)}$	HRL	---	---	---	X	NO	---	---	---	---	---	CORR	Re-analyzed past hold time; lab replaced $F_{(A3)}$ value and flagged.
	SEDI	M-56A	30-Nov-15	7873	O	55256	55256	55310	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-57A	30-Nov-15	7874	O	55256	55256	55310	Cl	RPD=122.4	---	X	---	X	NO	---	---	---	---	---	CORR	Original and duplicate sample results for
									$F_{(A3)}$	RPD=28	---	X	---	X	NO	---	---	---	---	---	CORR	Cl, $F_{(A3)}$, and SO_4 were rejected by lab;
				7875	DUP				SO_4	RPD=107.7	---	X	---	X	NO	---	---	---	---	---	CORR	lab replaced with re-analysis values.
		M-58A	30-Nov-15	7876	O	55256	55256	55310	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-62A	30-Nov-15	7872	O	55256	55256	55310	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAP	M-52A	01-Dec-15	7879	O	55256	55256	55310	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-53A	01-Dec-15	7878	O	55256	55256	55310	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-305	02-Dec-15	7796	O	55311	55311	55310	$F_{(A3)}$	HRL	---	---	---	X	NO	---	---	---	---	---	CORR	Re-analyzed past hold time; lab replaced $F_{(A3)}$ value and flagged.
		W-306	02-Dec-15	7797	O	55311	55311	55310	$F_{(A3)}$	HRL	---	---	---	X	NO	---	---	---	---	---	CORR	Re-analyzed past hold time; lab replaced $F_{(A3)}$ value and flagged.
		W-314	02-Dec-15	7798	O	55311	55311	55310	$F_{(A3)}$	HRL	---	---	---	X	NO	---	---	---	---	---	CORR	Re-analyzed past hold time; lab replaced $F_{(A3)}$ value and flagged.
	BAM	M-54	03-Dec-15	7799	O	55311	55311	55310	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-59	03-Dec-15	7803	O	55311	55311	55310	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-60	03-Dec-15	7801	O	55311	55311	55310	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-61	03-Dec-15	7802	O	55311	55311	55310	---	---	---	---	---	---	---	---	---	---	---	---	---	---
March 8 – March 10, 2016	FAP	M-50A	08-Mar-16	CH-M-50A-0316	O	60183	60184	60184	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-51A	09-Mar-16	CH-M-51A-0316	O	60183	60184	60184	$F_{(A3)}$	RPD=32.7	---	X	---	---	---	---	---	---	---	PHT	KOV	QA/QC contracted to M&A past holding time; no data rejected;
				CH-DUP02-0316	DUP																	$F_{(A3)}$ value for original sample of 4.6 mg/L is primary value to use.
		W-123	08-Mar-16	CH-W-123-0316	O	60183	60184	60184	$F_{(A3/A4)}$	RPD=28.6	---	X	---	---	---	---	---	---	---	PHT	KOV	RPD for $F_{(A3/A4)}$ was not evaluated or resolved in early program.
	SEDI	M-56A	08-Mar-16	CH-M-56A-0316	O	60183	60184	60184	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-57A	08-Mar-16	CH-M-57A-0316	O	60183	60184	60184	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-58A	08-Mar-16	CH-M-58A-0316	O	60183	60184	60184	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-62A	08-Mar-16	CH-M-62A-0316	O	60183	60184	60184	Th	RPD=56.4	---	X	---	---	---	---	---	---	---	PHT	KOV	QA/QC contracted to M&A past holding time; no action taken;
				CH-DUP01-0316	DUP																	concentrations are extremely low; RPD not a significant issue.
	BAP	M-52A	09-Mar-16	CH-M-52A-0316	O	60183	60184	60184	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-53A	09-Mar-16	CH-M-53A-0316	O	60183	60184	60184	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-305	09-Mar-16	CH-W-305-0316	O	60183	60184	60184	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-306	09-Mar-16	CH-W-306-0316	O	60183	60184	60184	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-314	10-Mar-16	CH-W-314-0316	O	60183	60184	60184	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAM	M-54	10-Mar-16	CH-M-54-0316	O	60183	60184	60184	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-59	10-Mar-16	CH-M-59-0316	O	60183	60184	60184	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-60	09-Mar-16	CH-M-60A-0316	O	60183	60184	60184	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-61	10-Mar-16	CH-M-61-0316	O	60183	60184	60184	---	---	---	---	---	---	---	---	---	---	---	---	---	---
May 5 – May 22, 2016	FAP	M-50A	05-May-16	CH-CCR-M50A-516	O	63113	63113	63113	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-51A	05-May-16	CH-CCR-M51A-0516	O	63113	63113	63113	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-123	06-May-16	CH-CCR-W123-0516	O	63113	63113	63113	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	SEDI	M-56A	10-May-16	CH-CCR-M56A-05102016	O	63327	63327	63327	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-57A	11-May-16	CH-CCR-M57A-05112016	O	63327	63327	63327	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-58A	11-May-16	CH-CCR-M58A-05112016	O	63327	63327	63327	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-62A	05-May-16	CH-CCR-MW62A-50516	O	63113	63113	63113	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAP	M-52A	10-May-16	CH-CCR-M52A-516	O	63327	63327	63327	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-53A	10-May-16	CH-CCR-M53A-516	O	63327	63327	63327	Cr	RPD=40	---	X	---	---	---	---	---	---	---	PHT	KOV	QA/QC contracted to M&A past holding time; no action taken;
																						both values consistent with subsequent data;
				CH-CCR-DUP1-516	DUP																	concentrations are extremely low; RPD not a significant issue.
		W-305	11-May-16	CH-CCR-W305-516	O	63327	63327	63327	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-306	11-May-16	CH-CCR-W306-516	O	63327	63327	63327	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-314	11-May-16	CH-CCR-W314-516	O	63327	63327	63327	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAM	M-54	20-May-16	CH-CCR-M54-516	O	63774	63774	63774	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-59	20-May-16	CH-CCR-M59-516	O	63774	63774	63774	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-60	20-May-16	CH-CCR-M60-516	O	63774	63774	63774	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-61	20-May-16	CH-CCR-M61-516	O	63774	63774	63774	---	---	---	---	---	---	---	---	---	---	---	---	---	---

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TABLE 8. RESULTS OF LABORATORY REPORT DATA VALIDATION PROCESS, NOVEMBER 2015 - DECEMBER 2017

Monitor Round	Site[a]	Well Identifier	Sample Date	Field Sample ID	Sample Type	Laboratory Reports[c] A3	A4 Metals	A4 Radium	Issues Found[d]		Issue Type[e] MB	RPD	HDC	Laboratory Action Requested[f] RA	RA Conf	RR	RR Conf	REC	REC Conf	No Action Reason	Result[g]	Notes
August 24 – August 29, 2016	FAP	M-50A	25-Aug-16	CH-CCR-M50A-816	O	68740	68741	68742	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	FAP	M-51A	25-Aug-16	CH-CCR-M51A-816	O	68740	68741	68742	As Cr Co Se	RMDL RMDL RMDL RMDL	--- --- --- ---	--- --- --- ---	X X X X	--- --- --- ---	--- --- --- ---	X X X X	NO NO NO NO	--- --- --- ---	--- --- --- ---	--- --- --- ---	CORR CORR CORR CORR	All constituents originally reported to RL; lab re-reported to MDL.
	FAP	W-123	25-Aug-16	CH-CCR-W123-816	O	68740	68741	68742	$F_{(A3/A4)}$	RPD=21.6	---	X	---	---	---	---	---	---	---	PHT	KOV	RPD for $F_{(A3/A4)}$ was not evaluated or resolved in early program.
	SEDI	M-56A	29-Aug-16	CH-CCR-M56A-816	O	68740	68741	68742	$F_{(A3/A4)}$ $F_{(A4)}$ Total Rad Ra-228	RPD=45.4 HIGH HIGH HIGH	--- --- --- ---	X --- --- ---	--- X X X	--- --- --- ---	--- --- --- ---	--- --- --- ---	--- --- --- ---	--- --- --- ---	--- --- --- ---	PHT PHT NED NED	REJ REJ KOV KOV	RPD between $F_{(A3)}$ and $F_{(A4)}$ samples (not a field duplicate RPD); M&A rejected $F_{(A4)}$ value of 0.73 mg/L; use $F_{(A3)}$ value of 0.46 mg/L; Total Rad and Ra-228 consistent with subsequent data.
	SEDI	M-57A	25-Aug-16	CH-CCR-M57A-816	O	68740	68741	68742	Mo	HIGH	---	---	X	X	X	---	---	---	---	---	KOV	---
	SEDI	M-58A	25-Aug-16	CH-CCR-M58A-816	O	68740	68741	68742	Mo Total Rad	HIGH HIGH	--- ---	--- ---	X X	X ---	X ---	--- ---	--- ---	--- ---	--- ---	--- NED	KOV KOV	Total Rad value consistent with subsequent data.
	SEDI	M-62A	29-Aug-16	CH-CCR-M62A-816	O	68740	68741	68742	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAP	M-52A	26-Aug-16	CH-CCR-M52A-816	O	68740	68741	68742	Mo	HIGH	---	---	X	X	X	---	---	---	---	---	KOV	Value consistent with subsequent data.
	BAP	M-53A	26-Aug-16	CH-CCR-M53A-816 CH-CCR-M101-816	O DUP	68740	68741	68742	Mo Mo	HIGH HIGH	--- ---	--- ---	X X	X ---	X ---	--- ---	--- ---	--- ---	--- ---	--- ---	KOV ---	COC and lab report corrected for date typo on 68741; all Mo values consistent with subsequent data.
	BAP	W-305	27-Aug-16	CH-CCR-W305-816	O	68740	68741	68742	Mo Total Rad Ra-228	HIGH HIGH HIGH	--- --- ---	--- --- ---	X X X	X --- ---	NO --- ---	--- --- ---	--- --- ---	--- --- ---	--- --- ---	--- NED NED	BVC/KOV KOV KOV	Both original and re-analysis Mo are consistent with subsequent data; Total Rad and Ra-228 are consistent with subsequent data.
	BAP	W-306	26-Aug-16	CH-CCR-W306-816	O	68740	68741	68742	Mo	HIGH	---	---	X	X	X	---	---	---	---	---	KOV	---
	BAP	W-314	26-Aug-16	CH-CCR-W314-816	O	68740	68741	68742	Mo	HIGH	---	---	X	X	X	---	---	---	---	---	KOV	---
	BAM	M-54	27-Aug-16	CH-CCR-M54-816	O	68740	68741	68742	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAM	M-59	27-Aug-16	CH-CCR-M59-816	O	68740	68741	68742	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAM	M-60	27-Aug-16	CH-CCR-M60-816	O	68740	68741	68742	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAM	M-61	27-Aug-16	CH-CCR-M61-816	O	68740	68741	68742	---	---	---	---	---	---	---	---	---	---	---	---	---	---
September 21 – September 23, 2016	FAP	M-50A	23-Sep-16	CH-CCR-M50A-916	O	70152	70151	70153	Cr	HIGH	---	---	X	X	X	---	---	---	---	---	KOV	Cr value consistent with subsequent data.
	FAP	M-51A	23-Sep-16	CH-CCR-M51A-916	O	70152	70151	70153	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	FAP	W-123	22-Sep-16	CH-CCR-W123-916	O	70152	70151	70153	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	SEDI	M-56A	21-Sep-16	CH-CCR-M56A-916 CH-CCR-M100-916	O DUP	70152	70151	70153	Ra-228 Total Rad	RPD=60 RPD=47.6	--- ---	X X	--- ---	--- ---	--- ---	--- ---	--- ---	X X	NO NO	--- ---	NR/KOV NR/KOV	Sample mislabeled on report 70153; Radium constituent recounts not reliable.
	SEDI	M-57A	21-Sep-16	CH-CCR-M57A-916 CH-CCR-M101-916	O DUP	70152	70151	70153	Cr Cr TDS TDS	RPD=60.9 HIGH RPD=50 HIGH	--- --- --- ---	X --- X ---	--- X --- X	X X --- ---	X X --- ---	--- --- X X	--- --- YES YES	--- --- --- ---	--- --- --- ---	--- --- --- ---	KOV KOV REJ REJ	Very low Cr concentrations; both Cr values consistent with subsequent data; TDS issue discovered past hold time; lab confirmed duplicate TDS value after report review; reject duplicate TDS.
	SEDI	M-58A	21-Sep-16	CH-CCR-M58A-916	O	70152	70151	70153	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	SEDI	M-62A	21-Sep-16	CH-CCR-M62A-916	O	70152	70151	70153	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAP	M-52A	22-Sep-16	CH-CCR-M52A-916	O	70152	70151	70153	$F_{(A3/A4)}$ $F_{(A4)}$	RPD=88.4 HIGH	--- ---	X ---	--- X	--- ---	--- ---	--- ---	--- ---	--- ---	--- ---	PHT PHT	REJ-REP REJ	RPD between $F_{(A3)}$ and $F_{(A4)}$ samples (not a field duplicate RPD); M&A rejected $F_{(A4)}$ value of 2.3 mg/L; use $F_{(A3)}$ value of 0.89 mg/L.
	BAP	M-53A	22-Sep-16	CH-CCR-M53A-916	O	70152	70151	70153	$F_{(A3/A4)}$ $F_{(A3)}$	RPD=76.7 LOW	--- ---	X ---	--- X	--- ---	--- ---	--- ---	--- ---	--- ---	--- ---	PHT PHT	REJ-REP REJ	RPD between $F_{(A3)}$ and $F_{(A4)}$ samples (not a field duplicate RPD); M&A rejected $F_{(A3)}$ value of 0.98 mg/L; use $F_{(A4)}$ value of 2.2 mg/L.
	BAP	W-305	22-Sep-16	CH-CCR-W305-916	O	70152	70151	70153	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on 70153.
	BAP	W-306	22-Sep-16	CH-CCR-W306-916	O	70152	70151	70153	Cl	HIGH	---	---	X	---	---	X	NO	---	---	---	CORR	Sample mislabeled on report 70153; lab found report error and replaced original Cl value of 4,900 with 2,000 mg/L.
	BAP	W-314	22-Sep-16	CH-CCR-W314-916	O	70152	70151	70153	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on report 70153.
	BAM	M-54	22-Sep-16	CH-CCR-M54-916	O	70152	70151	70153	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAM	M-59	22-Sep-16	CH-CCR-M59-916	O	70152	70151	70153	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAM	M-60	22-Sep-16	CH-CCR-M60-916	O	70152	70151	70153	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAM	M-61	22-Sep-16	CH-CCR-M61-916	O	70152	70151	70153	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 8. RESULTS OF LABORATORY REPORT DATA VALIDATION PROCESS, NOVEMBER 2015 - DECEMBER 2017

Monitor Round	Site[a]	Well Identifier	Sample Date	Field Sample ID	Sample Type	Laboratory Reports[c]			Issues Found[d]		Issue Type[e]			Laboratory Action Requested[f]							Result[g]	Notes
						A3	A4 Metals	A4 Radium			MB	RPD	HDC	RA	RA Conf	RR	RR Conf	REC	REC Conf	No Action Reason		
February 20 – February 22, 2017	FAP	M-50A	21-Feb-17	CH-CCR-M50A-217	O	78105	78108	78104	Cr	HIGH	---	---	X	X	X	---	---	---	---	---	KOV	Sample mislabeled on report 78104; value consistent with subsequent data.
		M-51A	21-Feb-17	CH-CCR-M51A-217	O	78105	78108	78104	Cr	HIGH	---	---	X	X	X	---	---	---	---	---	KOV	Value consistent with subsequent data.
		W-123	20-Feb-17	CH-CCR-W123-217	O	77919	77920	77924	F(A3) Cr	RMDL HIGH	--- ---	--- ---	X X	--- X	--- X	--- ---	--- ---	--- ---	--- ---	NA/PHT ---	REP KOV	Replace F(A3) value of <8.0 mg/L with F(A4) value of 4.1 mg/L.
	SEDI	M-56A	20-Feb-17	CH-CCR-M56A-217	O	77919	77920	77924	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-57A	20-Feb-17	CH-CCR-M57A-217	O	77919	77920	77924	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-58A	20-Feb-17	CH-CCR-M58A-217	O	77919	77920	77924	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-62A	20-Feb-17	CH-CCR-M62A-217	O	77919	77920	77924	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAP	M-52A	21-Feb-17	CH-CCR-M52A-217 CH-CCR-M101-217	O DUP	78105 78101	78108 78102	78104 78099	Cr F(A3) F(A3)	RPD=32 RPD=84.1 LOW	--- --- ---	X X ---	--- --- X	X --- ---	NO --- ---	--- --- ---	--- --- ---	--- --- ---	--- --- ---	--- PHT PHT	KOV REJ-REP REJ	Cr re-analysis differs from original for duplicate M101; re-analysis considered unreliable; M&A rejected F(A3) value of <0.40 mg/L; use F(A4) value of 0.98 mg/L for duplicate M-101.
		M-53A	21-Feb-17	CH-CCR-M53A-217	O	78105	78108	78104	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-305	21-Feb-17	CH-CCR-W305-217	O	78105	78108	78104	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-306	21-Feb-17	CH-CCR-W306-217	O	78105	78108	78104	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-314	21-Feb-17	CH-CCR-W314-217	O	78105	78108	78104	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	FAP/BAP	M-64A	20-Feb-17	CH-CCR-M64A-217 CH-CCR-M100-217	O DUP	77919	77920	77924	F(A3) Co Ra-226	RMDL RPD=46.2 RPD=40	--- --- ---	--- X X	X --- ---	--- X ---	--- X ---	--- --- ---	--- --- ---	--- --- ---	--- --- ---	NA/PHT --- T-RAD	REP KOV KOV	Replace F(A3) value of <8.0 mg/L with F(A4) value of <2.0 mg/L for duplicate M-100; Co and Ra-226 concentrations are extremely low; RPD not a significant issue.
	BAM	M-54	21-Feb-17	CH-CCR-M54-217	O	78105	78108	78104	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-59	22-Feb-17	CH-CCR-M59-217	O	78105	78108	78104	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-60	22-Feb-17	CH-CCR-M60-217	O	78105	78108	78104	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on report 78104.
		M-61	22-Feb-17	CH-CCR-M61-217	O	78105	78108	78104	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on reports 78104 and 78108.
April 11 – April 13, 2017	FAP	M-50A	13-Apr-17	CH-CCR-M50A-41317	O	81085	81087	81088	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-51A	13-Apr-17	CH-CCR-M51A-41317	O	81085	81087	81088	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-123	13-Apr-17	CH-CCR-W123-41317	O	81085	81087	81088	F(A3/A4) F(A4)	RPD=80.7 LOW	--- ---	X ---	--- X	--- ---	--- ---	X X	NO NO	--- ---	--- ---	--- ---	CORR CORR	RPD between F(A3) and F(A4) samples (not a field duplicate RPD); lab found report error and changed F(A4) value of 1.7 to 4.2 mg/L; revised RPD = 4.9%.
	SEDI	M-56A	13-Apr-17	CH-CCR-M56A-41317	O	81085	81087	81088	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-57A	12-Apr-17	CH-CCR-M57A-41217	O	81085	81087	81088	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-58A	12-Apr-17	CH-CCR-M58A-41217	O	81085	81087	81088	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-62A	13-Apr-17	CH-CCR-M62A-41317	O	81085	81087	81088	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAP	M-52A	11-Apr-17	CH-CCR-M52A-41117	O	81085	81087	81088	Cr	HIGH	---	---	X	X	X	---	---	---	---	---	KOV	Value consistent with subsequent data.
		M-53A	12-Apr-17	CH-CCR-M53A-41217	O	81085	81087	81088	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on report 81088.
		W-305	11-Apr-17	CH-CCR-W305-41117	O	81085	81087	81088	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-306	12-Apr-17	CH-CCR-W306-41217	O	81085	81087	81088	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-314	11-Apr-17	CH-CCR-W314-41117	O	81085	81087	81088	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	FAP/BAP	M-64A	12-Apr-17	CH-CCR-M64A-41217 CH-CCR-FD02-41217	O DUP	81085	81087	81088	Cr Pb	RPD=63.2 RPD=34.7	--- ---	X X	--- ---	X ---	X ---	--- ---	--- ---	--- ---	--- ---	--- LC	KOV KOV	Cr concentrations are extremely low; RPD not a significant issue; both Cr values are consistent with past or subsequent data; low Pb concentrations; no re-analysis recommended.
	BAM	M-54	11-Apr-17	CH-CCR-M54-41117	O	81085	81087	81088	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-59	11-Apr-17	CH-CCR-M59-41117	O	81085	81087	81088	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-60	11-Apr-17	CH-CCR-M60-41117 CH-CCR-FD01-41117	O DUP	81085	81087	81088	Ra-228	RPD=25	---	X	---	---	---	---	---	X	NO	---	NR/KOV	Radium constituent recount not reliable; Total Rad (constituent of concern) value was acceptable.
		M-61	11-Apr-17	CH-CCR-M61-41117	O	81085	81087	81088	As MB Cl SO_4	HIGH MB=13 HIGH HIGH	--- X --- ---	--- --- --- ---	X --- X X	X --- --- ---	X --- --- ---	--- X X X	--- YES YES YES	--- --- --- ---	--- --- --- ---	--- PHT PHT PHT	KOV KOV KOV KOV	Mass balance = 13% (criteria originally 15%); Cl and SO_4 slightly high but acceptable; no re-analysis requested; requested lab report review much later; no issues found by lab with reporting.

MONTGOMERY & ASSOCIATES

TABLE 8. RESULTS OF LABORATORY REPORT DATA VALIDATION PROCESS, NOVEMBER 2015 - DECEMBER 2017

Monitor Round	Site[a]	Well Identifier	Sample Date	Field Sample ID	Sample Type	Laboratory Reports[c]			Issues Found[d]		Issue Type[e]			Laboratory Action Requested[f]							Result[g]	Notes
						A3	A4 Metals	A4 Radium			MB	RPD	HDC	RA	RA Conf	RR	RR Conf	REC	REC Conf	No Action Reason		
April 24 – April 26, 2017	FAP	M-50A	26-Apr-17	CH-CCR-M50A-42617	O	81769	81770	81771	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on reports 81770 and 81771.
	FAP	M-51A	26-Apr-17	CH-CCR-M51A-42617	O	81769	81770	81771	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on reports 81770 and 81771.
	FAP	W-123	26-Apr-17	CH-CCR-W123-42617	O	81769	81770	81771	Cl SO_4 MB	HIGH HIGH MB=39.35	--- --- X	--- --- ---	X X ---	--- --- ---	--- --- ---	X X X	NO NO NO	--- --- ---	--- --- ---	--- --- ---	CORR CORR CORR	Sample mislabeled on reports 81770 and 81771; lab found reporting error and replaced Cl value of 13,000 with 6,300 mg/L and SO_4 value of 7,200 with 3,600 mg/L; revised MB = 6%.
	SEDI	M-56A	25-Apr-17	CH-CCR-M56A-42517	O	81769	81770	81771	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on reports 81770 and 81771.
	SEDI	M-57A	25-Apr-17	CH-CCR-M57A-42517	O	81769	81770	81771	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on reports 81770 and 81771.
	SEDI	M-58A	25-Apr-17	CH-CCR-M58A-42517	O	81769	81770	81771	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on reports 81770 and 81771.
	SEDI	M-62A	25-Apr-17	CH-CCR-M62A-42517 CH-CCR-FD02-42517	O DUP	81769	81770	81771	Cr Ra-226 Total Rad	RPD=51.9 RPD=66.7 RPD=58.8	--- --- ---	X X X	--- --- ---	X --- ---	X --- ---	--- --- ---	--- --- ---	--- X X	--- NO NO	--- --- ---	KOV NR/KOV NR/KOV	Sample mislabeled on reports 81770 and 81771; Cr concentrations are extremely low and both values are historically consistent; RPD not a significant issue; Radium constituent recounts not reliable.
	BAP	M-52A	25-Apr-17	CH-CCR-M52A-42517	O	81769	81770	81771	Cr	HIGH	---	---	X	X	X	---	---	---	---	---	KOV	Sample mislabeled on reports 81770 and 81771; Cr value consistent with subsequent data.
	BAP	M-53A	25-Apr-17	CH-CCR-M53A-42517	O	81769	81770	81771	F(A3/A4) F(A4)	RPD=70.8 LOW	--- ---	X ---	--- X	--- ---	--- ---	X X	NO NO	--- ---	--- ---	--- ---	CORR CORR	Sample mislabeled on reports 81770 and 81771; RPD between F (A3) and F(A4) samples (not a field duplicate RPD); lab found reporting error and changed F(A4) value from 0.62 mg/L to 1.2 mg/L; revised RPD = 8%.
	BAP	W-305	24-Apr-17	CH-CCR-W305-42417	O	81769	81770	81771	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on reports 81770 and 81771.
	BAP	W-306	25-Apr-17	CH-CCR-W306-42517	O	81769	81770	81771	F(A3/A4)	RPD=22.2	---	X	---	X	X	---	---	---	---	---	KOV	Sample mislabeled on reports 81770 and 81771; RPD between F (A3) and F(A4) samples (not a field duplicate RPD) is just over acceptable; F(A4) re-analyzed twice; results confirmed.
	BAP	W-314	25-Apr-17	CH-CCR-W314-42517	O	81769	81770	81771	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on reports 81770 and 81771.
	FAP/BAP	M-64A	25-Apr-17	CH-CCR-M64A-42517	O	81769	81770	81771	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on reports 81770 and 81771.
	BAM	M-54	24-Apr-17	CH-CCR-M54-42417	O	81769	81770	81771	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on reports 81770 and 81771.
	BAM	M-59	24-Apr-17	CH-CCR-M59-42417	O	81769	81770	81771	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on reports 81770 and 81771.
	BAM	M-60	24-Apr-17	CH-CCR-M60-42417	O	81769	81770	81771	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on reports 81770 and 81771.
	BAM	M-61	24-Apr-17	CH-CCR-M61-42417	O	81769	81770	81771	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on reports 81770 and 81771.
May 18 – May 22, 2017	FAP	M-50A	18-May-17	CH-CCR-M50A-51817	O	83229	83233	83236	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on report 83236.
	FAP	M-51A	18-May-17	CH-CCR-M51A-51817	O	83229	83233	83236	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on report 83236.
	FAP	W-123	22-May-17	CH-CCR-W123-52217	O	83229	83233	83236	TDS F(A4) F(A3/A4)	HIGH LOW RPD=130.4	--- --- ---	--- --- X	X X ---	--- --- ---	--- --- ---	X X X	NO NO NO	--- --- ---	--- --- ---	--- --- ---	CORR CORR CORR	Lab found reporting error; re-reported TDS value of 30,000 as 14,000 mg/L; RPD between F(A3) and F(A4) samples (not a field duplicate RPD); lab re-reported F(A4) value of 0.80 as 4.0 mg/L; revised RPD = 5.1%.
	SEDI	M-56A	18-May-17	CH-CCR-M56A-51817 CH-CCR-FD01-51817	O DUP	83229	83233	83236	Total Rad	RPD=8	---	X	---	---	---	---	---	X	NO	---	NR/KOV	Recount originally requested based on uncorrected RPD of 34.5%; RPD = 8% after correction; no recount needed.
	SEDI	M-57A	18-May-17	CH-CCR-M57A-51817	O	83229	83233	83236	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	SEDI	M-58A	18-May-17	CH-CCR-M58A-51817	O	83229	83233	83236	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	SEDI	M-62A	18-May-17	CH-CCR-M62A-51817	O	83229	83233	83236	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAP	M-52A	18-May-17	CH-CCR-M52A-51817	O	83229	83233	83236	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAP	M-53A	18-May-17	CH-CCR-M53A-51817	O	83229	83233	83236	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAP	W-305	22-May-17	CH-CCR-W305-52217	O	83229	83233	83236	---	---	---	---	---	---	---	X	NO	---	---	---	CORR	Lab found reporting error on F(A4); lab re-reported F(A4) value of <0.40 as <0.80 mg/L.
	BAP	W-306	22-May-17	CH-CCR-W306-52217	O	83229	83233	83236	F(A4) F(A3/A4)	LOW RPD=52.9	--- ---	--- X	X ---	--- ---	--- ---	X X	NO NO	--- ---	--- ---	--- ---	CORR CORR	Lab found reporting error; RPD between F(A3) and F(A4) samples (not a field duplicate RPD); lab re-reported F(A4) value of 0.64 as 1.3 mg/L; revised RPD = 16.7%.
	BAP	W-314	22-May-17	CH-CCR-W314-52217	O	83229	83233	83236	F(A4) F(A3/A4)	LOW RPD=64.7	--- ---	--- X	X ---	--- ---	--- ---	X X	NO NO	--- ---	--- ---	--- ---	CORR CORR	Lab found reporting error; RPD between F(A3) and F(A4) samples (not a field duplicate RPD); lab re-reported F(A4) value of 0.46 as 0.93 mg/L; revised RPD = 3.3%.
	FAP/BAP	M-64A	18-May-17	CH-CCR-M64A-51817	O	83229	83233	83236	---	---	---	---	---	---	---	X	NO	---	---	---	CORR	Lab found reporting error on F(AM); lab re-reported F(A4) value of <0.40 as <0.80 mg/L.
	BAM	M-54	19-May-17	CH-CCR-M54-51917	O	83229	83233	83236	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAM	M-59	19-May-17	CH-CCR-M59-51917	O	83229	83233	83236	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAM	M-60	19-May-17	CH-CCR-M60-51917	O	83229	83233	83236	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAM	M-61	19-May-17	CH-CCR-M61-51917	O	83229	83233	83236	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 8. RESULTS OF LABORATORY REPORT DATA VALIDATION PROCESS, NOVEMBER 2015 - DECEMBER 2017

Monitor Round	Site[a]	Well Identifier	Sample Date	Field Sample ID	Sample Type	Laboratory Reports[c] A3	A4 Metals	A4 Radium	Issues Found[d]		Issue Type[e] MB	RPD	HDC	Laboratory Action Requested[f] RA	RA Conf	RR	RR Conf	REC	REC Conf	No Action Reason	Result[g]	Notes
May 24 – May 25, 2017	FAP	M-50A	24-May-17	CH-CCR-M50A-52417	O	83455	83450	83449	All Rad	HRL	---	---	X	---	---	X	NO	---	---	---	CORR	Lab found reporting error upon review; reported radium values were corrected based on report review.
	FAP	M-51A	24-May-17	CH-CCR-M51A-52417	O	83455	83450	83449	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	FAP	W-123	24-May-17	CH-CCR-W123-52417	O	83455	83450	83449	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	SEDI	M-56A	25-May-17	CH-CCR-M56A-52517	O	83455	83450	83449	Cr	HIGH	---	---	X	X	X	---	---	---	---	---	KOV	---
	SEDI	M-57A	25-May-17	CH-CCR-M57A-52517	O	83455	83450	83449	TDS	LOW	---	---	X	X	NO	---	---	---	---	---	REJ/REP	M&A rejected original TDS value of 2,800 mg/L; replaced with re-analysis value of 4,900 mg/L.
	SEDI	M-58A	25-May-17	CH-CCR-M58A-52517 CH-CCR-FD02-52517	O DUP	83455	83450	83449	Ra-228 Total Rad	RPD=73.7 RPD=100	--- ---	X X	--- ---	--- ---	--- ---	--- ---	--- ---	X X	NO NO	--- ---	NR/KOV NR/KOV	Radium constituent recounts not reliable.
	SEDI	M-62A	25-May-17	CH-CCR-M62A-52517	O	83455	83450	83449	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAP	M-52A	24-May-17	CH-CCR-M52A-52417	O	83455	83450	83449	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAP	M-53A	24-May-17	CH-CCR-M53A-52417	O	83455	83450	83449	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAP	W-305	24-May-17	CH-CCR-W305-52417	O	83455	83450	83449	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAP	W-306	24-May-17	CH-CCR-W306-52417	O	83455	83450	83449	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAP	W-314	24-May-17	CH-CCR-W314-52417	O	83455	83450	83449	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	FAP/BAP	M-64A	24-May-17	CH-CCR-M64A-52417 CH-CCR-FD01-52417	O DUP	83455	83450	83449	Ra-228 Total Rad Cr	RPD=28.6 RPD=46.2 RPD=23	--- --- ---	X X X	--- --- ---	--- --- ---	--- --- ---	--- --- ---	--- --- ---	X X ---	NO NO ---	--- --- LC	NR/KOV NR/KOV KOV	Sample mislabeled on 83450 (duplicate FD-01) and 83449 (original); Radium constituent recounts not reliable; Cr concentrations are extremely low; RPD not a significant issue.
	BAM	M-54	25-May-17	CH-CCR-M54-52517	O	83455	83450	83449	All Rad	HRL	---	---	X	---	---	X	NO	---	---	---	CORR	Lab found report error upon review; reported Radium values were corrected based on report review.
	BAM	M-59	25-May-17	CH-CCR-M59-52517	O	83455	83450	83449	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAM	M-60	25-May-17	CH-CCR-M60-52517	O	83455	83450	83449	Total Rad	HIGH	---	---	X	---	---	---	---	X	NO	---	NR/KOV	Radium constituent recount not reliable.
	BAM	M-61	25-May-17	CH-CCR-M61-52517	O	83455	83450	83449	---	---	---	---	---	---	---	---	---	---	---	---	---	---
June 29 – July 1, 2017	FAP	M-50A	30-Jun-17	CH-CCR-M50A-63017	O	85320-1	85320-2	85320-3	Co Mo	HIGH HIGH	--- ---	--- ---	X X	X X	X X	--- ---	--- ---	--- ---	--- ---	--- ---	KOV KOV	--- ---
	FAP	M-51A	30-Jun-17	CH-CCR-M51A-63017 CH-CCR-FD02-63017	O DUP	85320-1	85320-2	85320-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	FAP	W-123	30-Jun-17	CH-CCR-W123-63017	O	85320-1	85320-2	85320-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	SEDI	M-56A	01-Jul-17	CH-CCR-M56A-70117	O	85320-1	85320-2	85320-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	SEDI	M-57A	01-Jul-17	CH-CCR-M57A-70117	O	85320-1	85320-2	85320-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	SEDI	M-58A	01-Jul-17	CH-CCR-M58A-70117	O	85320-1	85320-2	85320-3	---	---	---	---	---	---	---	---	---	---	---	---	---	Time corrected on chain of custody for 85320-1 and 85320-2.
	SEDI	M-62A	01-Jul-17	CH-CCR-M62A-70117	O	85320-1	85320-2	85320-3	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample was missing on COC for 85320-1 and 85320-2.
	BAP	M-52A	30-Jun-17	CH-CCR-M52A-63017	O	85320-1	85320-2	85320-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAP	M-53A	01-Jul-17	CH-CCR-M53A-70117	O	85320-1	85320-2	85320-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAP	W-305	29-Jun-17	CH-CCR-W305-62917	O	85262-1	85262-2	85262-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAP	W-306	01-Jul-17	CH-CCR-W306-70117	O	85320-1	85320-2	85320-3	Cl SO_4	HIGH HIGH	--- ---	--- ---	X X	X X	NO NO	--- ---	--- ---	--- ---	--- ---	--- ---	REJ/REP REJ/REP	M&A rejected and replaced original Cl value of 2,700 with re-analysis value of 2,100 mg/L; rejected and replaced original SO_4 value of 16,000 with re-analysis value of 13,000 mg/L.
	BAP	W-314	30-Jun-17	CH-CCR-W314-63017	O	85320-1	85320-2	85320-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	FAP/BAP	M-64A	30-Jun-17	CH-CCR-M64A-63017	O	85320-1	85320-2	85320-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAM	M-54	29-Jun-17	CH-CCR-M54-62917	O	85262-1	85262-2	85262-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAM	M-59	29-Jun-17	CH-CCR-M59-62917	O	85262-1	85262-2	85262-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAM	M-60	29-Jun-17	CH-CCR-M60-62917 CH-CCR-FD01-62917	O DUP	85262-1	85262-2	85262-3	Pb Pb	RPD=57.1 HIGH	--- ---	X ---	--- X	X X	X X	--- ---	--- ---	--- ---	--- ---	--- ---	KOV KOV	Pb concentrations are extremely low; RPD not a significant issue; re-analyses were non-detect; lab considers duplicate detection confirmed by non-detect result (within lab criteria).
	BAM	M-61	29-Jun-17	CH-CCR-M61-62917	O	85262-1	85262-2	85262-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---

MONTGOMERY & ASSOCIATES

TABLE 8. RESULTS OF LABORATORY REPORT DATA VALIDATION PROCESS, NOVEMBER 2015 - DECEMBER 2017

Monitor Round	Site[a]	Well Identifier	Sample Date	Field Sample ID	Sample Type	Laboratory Reports[c]			Issues Found[d]		Issue Type[e]			Laboratory Action Requested[f]							Result[g]	Notes
						A3	A4 Metals	A4 Radium			MB	RPD	HDC	RA	RA Conf	RR	RR Conf	REC	REC Conf	No Action Reason		
July 26 – July 29, 2017	FAP	M-50A	27-Jul-17	CH-CCR-M50A-72717	O	87026-1	87026-2	87026-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-51A	27-Jul-17	CH-CCR-M51A-72717	O	87026-1	87026-2	87026-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-123	27-Jul-17	CH-CCR-W123-72717	O	87026-1	87026-2	87026-3	Na	LOW	---	---	X	---	---	X	NO	---	---	---	CORR	Lab found report error upon review of Na; lab re-analyzed Na due to missing component for revision; lab replaced original value of 970 with re-analysis value of 3,900 mg/L.
	SEDI	M-56A	26-Jul-17	CH-CCR-M56A-72617	O	87026-1	87026-2	87026-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-57A	26-Jul-17	CH-CCR-M57A-72617	O	87026-1	87026-2	87026-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-58A	26-Jul-17	CH-CCR-M58A-72617	O	87026-1	87026-2	87026-3	Pb	HIGH	---	---	X	X	X	---	---	---	---	---	KOV	---
		M-62A	26-Jul-17	CH-CCR-M62A-72617	O	87026-1	87026-2	87026-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAP	M-52A	28-Jul-17	CH-CCR-M52A-72817	O	87026-1	87026-2	87026-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-53A	28-Jul-17	CH-CCR-M53A-72817	O	87026-1	87026-2	87026-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-305	28-Jul-17	CH-CCR-W305-72817	O	87026-1	87026-2	87026-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-306	28-Jul-17	CH-CCR-W306-72817	O	87026-1	87026-2	87026-3	Na Ra-228 Total Rad	LOW HIGH HIGH	--- --- ---	--- --- ---	X X X	--- --- ---	--- --- ---	X --- ---	NO --- ---	--- X X	--- X X	--- --- ---	CORR KOV KOV	Lab found report error upon review of Na; lab re-analyzed Na due to missing component for revision; lab replaced original value of 1,400 with re-analysis value of 5,400 mg/L; Radium values confirmed.
		W-314	28-Jul-17	CH-CCR-W314-72817	O	87026-1	87026-2	87026-3	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on report 87026-1.
	FAP/BAP	M-64A	27-Jul-17	CH-CCR-M64A-72717 CH-CCR-FD01-72717	O DUP	87026-1	87026-2	87026-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAM	M-54	29-Jul-17	CH-CCR-M54-72917	O	87026-1	87026-2	87026-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-59	29-Jul-17	CH-CCR-M59-72917	O	87026-1	87026-2	87026-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-60	29-Jul-17	CH-CCR-M60-72917	O	87026-1	87026-2	87026-3	Cd	HIGH	---	---	X	X	X	---	---	---	---	---	KOV	---
		M-61	29-Jul-17	CH-CCR-M61-72917	O	87026-1	87026-2	87026-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
September 5 – September 8, 2017	FAP	M-50A	07-Sep-17	CH-CCR-M50A-90717	O	89422-1	89422-2	89422-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-51A	07-Sep-17	CH-CCR-M51A-90717	O	89422-1	89422-2	89422-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-123	07-Sep-17	CH-CCR-W123-90717	O	89422-1	89422-2	89422-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	SEDI	M-56A	08-Sep-17	CH-CCR-M56A-90817	O	89422-1	89422-2	89422-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-57A	08-Sep-17	CH-CCR-M57A-90817	O	89422-1	89422-2	89422-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-58A	08-Sep-17	CH-CCR-M58A-90817	O	89422-1	89422-2	89422-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-62A	07-Sep-17	CH-CCR-M62A-90717	O	89422-1	89422-2	89422-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAP	M-52A	07-Sep-17	CH-CCR-M52A-90717	O	89422-1	89422-2	89422-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-53A	07-Sep-17	CH-CCR-M53A-90717	O	89422-1	89422-2	89422-3	TDS All Rad HCO3 ALK	LOW HIGH HIGH HIGH	--- --- --- ---	--- --- --- ---	X X X X	--- --- --- ---	--- --- --- ---	X X X X	NO NO NO NO	--- --- --- ---	--- --- --- ---	--- --- --- ---	CORR CORR CORR CORR	Sample switched with M-54 by lab on report 89422-1 (TDS) and on report 89422-3 (Radium); lab replaced switched values; lab found report error upon review of HCO_3 and ALK; replaced original value of 220 mg/L with re-analysis value of 170 mg/L for both HCO_3 and ALK.
		W-305	06-Sep-17	CH-CCR-W305-90617	O	89422-1	89422-2	89422-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-306	06-Sep-17	CH-CCR-W306-90617	O	89422-1	89422-2	89422-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-314	07-Sep-17	CH-CCR-W314-90717	O	89422-1	89422-2	89422-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	FAP/BAP	M-64A	07-Sep-17	CH-CCR-M64A-90717	O	89422-1	89422-2	89422-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAM	M-54	05-Sep-17	CH-CCR-M54-90517	O	89422-1	89422-2	89422-3	TDS All Rad	HIGH LOW	--- ---	--- ---	X X	--- ---	--- ---	X X	NO NO	--- ---	--- ---	--- ---	CORR CORR	Sample switched with M-53 by lab on 89422-1 (TDS); sample switched with M-53 by lab on 89422-3 (Radium); lab replaced switched values.
		M-59	05-Sep-17	CH-CCR-M59-90517	O	89422-1	89422-2	89422-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-60	05-Sep-17	CH-CCR-M60-90517 CH-CCR-FD01-90517	O DUP	89422-1	89422-2	89422-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-61	05-Sep-17	CH-CCR-M61-90517	O	89422-1	89422-2	89422-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 8. RESULTS OF LABORATORY REPORT DATA VALIDATION PROCESS, NOVEMBER 2015 - DECEMBER 2017

Monitor Round	Site[a]	Well Identifier	Sample Date	Field Sample ID	Sample Type	Laboratory Reports[c]			Issues Found[d]		Issue Type[e]			Laboratory Action Requested[f]							Result[g]	Notes
						A3	A4 Metals	A4 Radium			MB	RPD	HDC	RA	RA Conf	RR	RR Conf	REC	REC Conf	No Action Reason		
December 7 – December 8, 2017	FAP	M-50A	08-Dec-17	CH-CCR-MW50A-120817	O	94509	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on report 94509.
		M-51A	08-Dec-17	CH-CCR-MW51A-120817	O	94509	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Sample mislabeled on report 94509.
		W-123	08-Dec-17	CH-CCR-W123-120817	O	94509	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	SEDI	M-56A	08-Dec-17	CH-CCR-M56A-120817	O	94509	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-57A	08-Dec-17	CH-CCR-M57A-120817	O	94509	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-58A	08-Dec-17	CH-CCR-M58A-120817	O	94509	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
			08-Dec-17	CH-CCR-FD02-120817	DUP	94509	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-62A	08-Dec-17	CH-CCR-M62A-120817	O	94509	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	BAP	M-52A	07-Dec-17	CH-CCR-M52A-120717	O	94509	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-53A	07-Dec-17	CH-CCR-M53A-120717	O	94509	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-305	07-Dec-17	CH-CCR-W305-120717	O	94509	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-306	07-Dec-17	CH-CCR-W306-120717	O	94509	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		W-314	07-Dec-17	CH-CCR-W314-120717	O	94509	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	FAP/BAP	M-64A	08-Dec-17	CH-CCR-M64A-120817	O	94509	---	---	Cl	LOW	---	---	X	X	X	---	---	---	---	---	KOV	---
									Na	LOW	---	---	X	X	X	---	---	---	---	---	KOV	---
	BAM	M-54	07-Dec-17	CH-CCR-M54-120717	O	94509	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-59	07-Dec-17	CH-CCR-M59-120717	O	94509	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		M-60	07-Dec-17	CH-CCR-M60-120717	O	94509	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
			07-Dec-17	CH-CCR-FD01-120717	DUP	94509																
		M-61	07-Dec-17	CH-CCR-M61-120717	O	94509	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

[a] Site
FAP = Fly Ash Pond   SEDI = Sedimentation Pond   BAP = Bottom Ash Pond   FAP/BAP = Fly Ash Pond and Bottom Ash Pond   BAM = Bottom Ash Monofill

[b] Sample Type
O = Original   DUP = Field duplicate sample

[c] Laboratory Reports *(All report numbers are preceded by "550-" in the report name)*
A3 = CCR Rule Appendix III Parameters   A4 = CCR Rule Appendix IV Parameters

[d] Issues Found
ALK = Alkalinity as $CaCO_3$ Cd = Cadmium   Cr = Chromium $F_{(A3)}$ = Fluoride (A3 sample only)   Na = Sodium   Ra-228 = Radium 228   TDS = Total Dissolved Solids
All Rad = All radium parameters   Cl = Chloride $F_{(A4)}$ = Fluoride (A4 sample only)   HCO3 = Bicarbonate Alkalinity, as CaCO3   Pb = Lead   Se = Selenium   Th = Thallium
As = Arsenic   Co = Cobalt $F_{(A3/A4)}$ = Fluoride RPD between A3 & A4   Mo = Molybdenum   Ra-226 = Radium 226 SO_4 = Sulfate   Total Rad = Total Radium

MB = Anion/Cation Mass Balance was checked and found to be greater than 10%. *(Original M&A Criteria was 15% due to water quality and missing parameters for full ion mass balance calculation)*

Description of Issue:
HIGH = Parameter found to be high compared to historical data at the time of review.   LOW = Parameter found to be low compared to historical data at the time of review.   RMDL = Data reported to RL. RL very high (at or above EPA MCL). Request lab report to MDL.
HRL = Reporting limit is at or above the EPA MCL. Request report review or re-analysis.   MB = Mass balance (calculated percentage)   RPD = Relative Percent Difference for duplicate samples should be <20% for all parameters.

[e] Issue Type
MB = Mass Balance   RPD = Relative Percent Difference   HDC = Historical data comparison

[f] Laboratory Action Requested
RA = Re-analysis requested by M&A
RA Conf = Did re-analysis confirm original reported result? (YES/NO)
RR = Reported lab result believed to be in error (incorrect reporting by lab) due to sample dilution and large concentrations. M&A requested internal lab review of reporting on this constituent (not re-analysis).
RR Conf = Did report review confirm original reported result? (YES/NO)
REC = Lab recount requested by M&A on Radium constituent
REC Conf = Did recount confirm original reported result? (YES/NO)
Note - Radium data recounts generally did not yield resolution on RPD or historical inconsistency issues. Since the reported value is an interpretation of a Gaussian distribution, any results within 3-sigma deviation from the mean is considered a valid recount. This leads to RPD issues that cannot be rectified, since the acceptable value range may be large. Not enough sample is collected to do a true re-analysis. Original values were kept in these instances.
No Action Reason = No action was requested from the lab. Most issues discovered long past hold time. See notes for decision on data.
PHT = No re-analysis requested. Issue was discovered past holding time.
NA/PHT = Reporting limit was very high. M&A requested review and re-reporting to lower limit. Lab indicated data is not available. Sample past hold time. See notes for action on analyte.
T-RAD = Total radium value was within acceptable limits, and is the constituent of concern. Concentrations are both consistent with subsequent data.
LC = RPD is biased high due to very low concentrations involved. No re-analysis was recommended.
NED = Not enough historical data to determine if value was poor at time of review. Subsequent data confirms that value is within reason.

[g] Result (outcome of lab action and QA/QC decision on the data):
KOV = Keep original value   BVC/KOV = Original and re-analysis both consistent with subsequent data. Keep original value.   NR/KOV = Recount not reliable. Keep original values.   REJ-REP = M&A rejected and replaced data as described.
CORR = Lab corrected results in a revised report.   REJ = M&A rejected laboratory result. See notes for additional actions.   REP = M&A replaced value as described.

Definitions and Acronyms
'--- = None or not applicable   RL = Reporting Limit   EPA = Environmental Protection Agency
QA/QC = Quality Assurance/Quality Control   MDL = Method Detection Limit   MCL = EPA Maximum Contaminant Level for drinking water

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FIGURE 1. SITE LOCATION, ARIZONA

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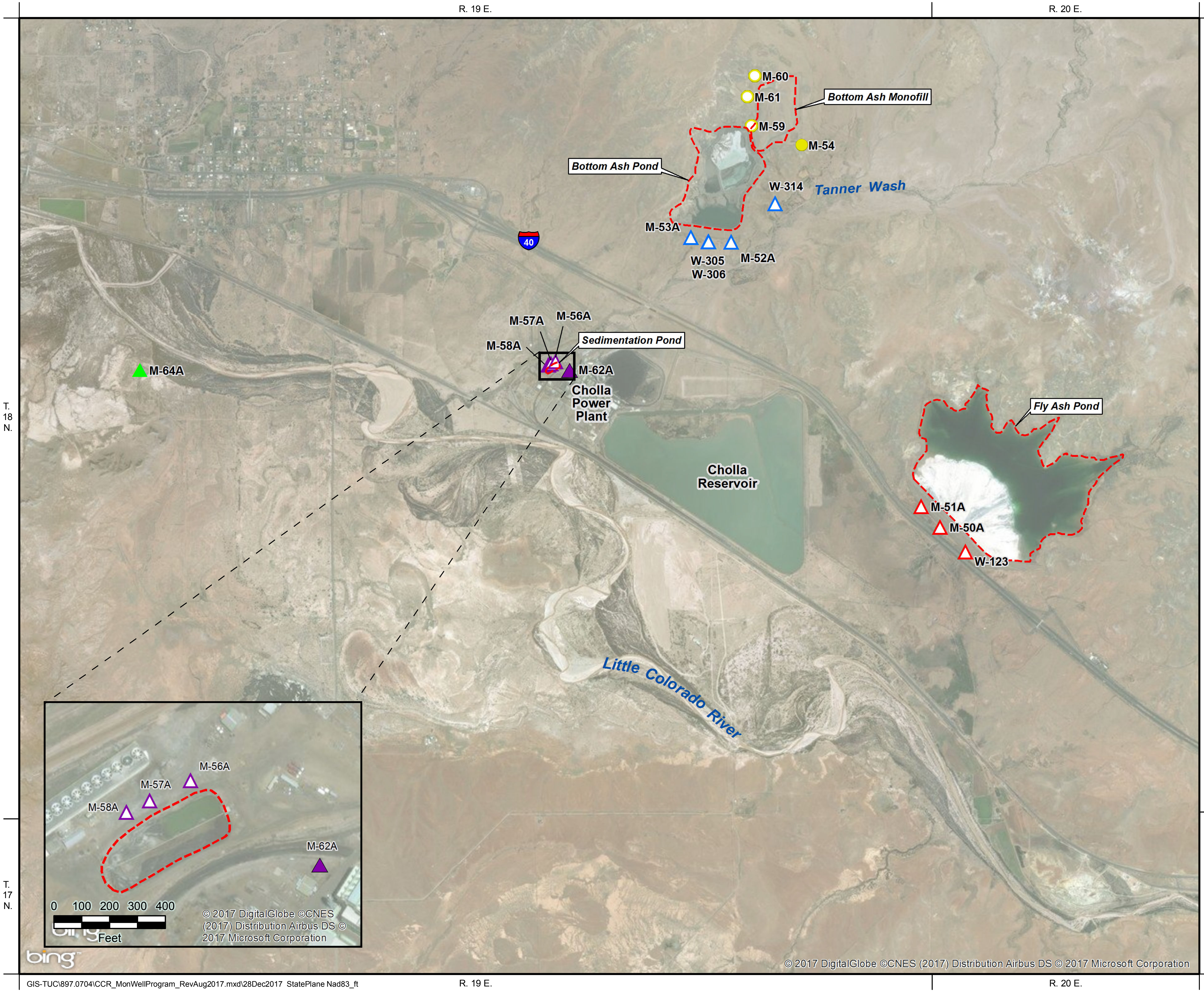
GIS\897\897.0704\Figure1_GeneralSiteMapAZ_Basemap\28Dec2017



EXPLANATION

Approximate Extent of Coal Combustion Residual Unit

M-51A Monitor Well Location and Identifier

CCR WELLS:

- Alluvium, Background, Fly Ash Pond and Bottom Ash Pond
- Alluvium, Downgradient, Bottom Ash Pond
- Alluvium, Downgradient, Fly Ash Pond
- Alluvium, Upgradient, Sedimentation Pond
- Alluvium, Downgradient, Sedimentation Pond
- Coconino, Upgradient, Bottom Ash Monofill
- Coconino, Downgradient, Bottom Ash Monofill

0 1,000 2,000 3,000 4,000
Feet

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CHOLLA POWER PLANT
NAVAJO COUNTY, ARIZONA

CCR UNITS AND GROUNDWATER MONITORING WELL LOCATIONS

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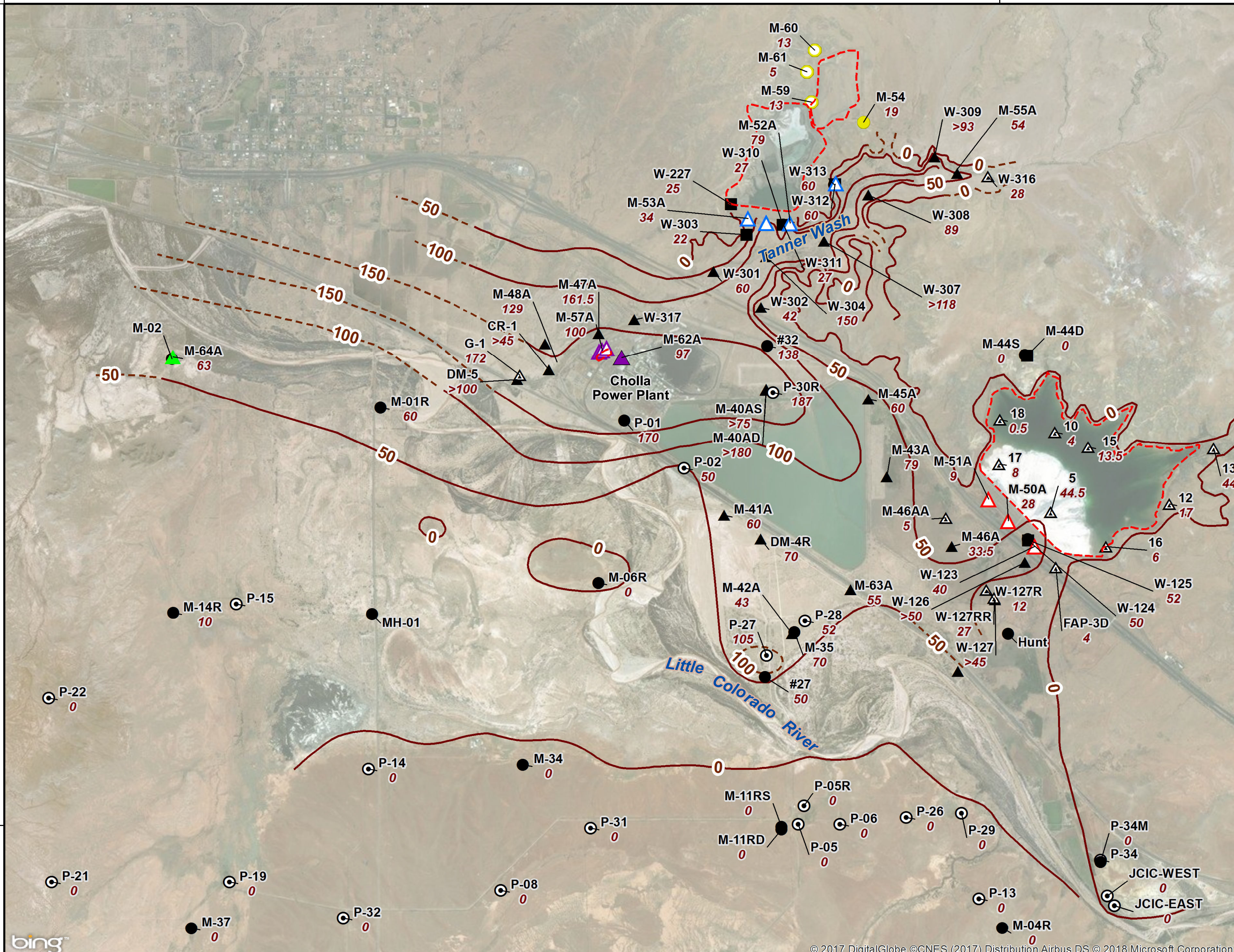
FIGURE 2

GIS-TUC\897.0704\CCR_MonWellProgram_RevAug2017.mxd\28Dec2017 StatePlane Nad83_ft



EXPLANATION

Approximate Extent of Coal Combustion Residual Unit

50 — Contour of Alluvium Thickness, in feet (dashed where inferred)

M-51A / 9 — Well Location and Identifier; Thickness of Alluvium, in feet

CCR WELLS:
- Alluvium, Background, Fly Ash Pond and Bottom Ash Pond
- Alluvium, Downgradient, Bottom Ash Pond
- Alluvium, Downgradient, Fly Ash Pond
- Alluvium, Downgradient, Sedimentation Pond
- Alluvium, Upgradient, Sedimentation Pond
- Coconino, Downgradient, Bottom Ash Monofill
- Coconino, Upgradient, Bottom Ash Monofill

OTHER WELLS:
- Alluvium, Boring
- Alluvium, Monitor
- Moenkopi, Monitor
- Coconino, Monitor
- Coconino, Production

N

0 1,000 2,000 3,000 4,000
Feet

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NAVAJO COUNTY, ARIZONA

ALLUVIUM THICKNESS

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Water Resource Consultants

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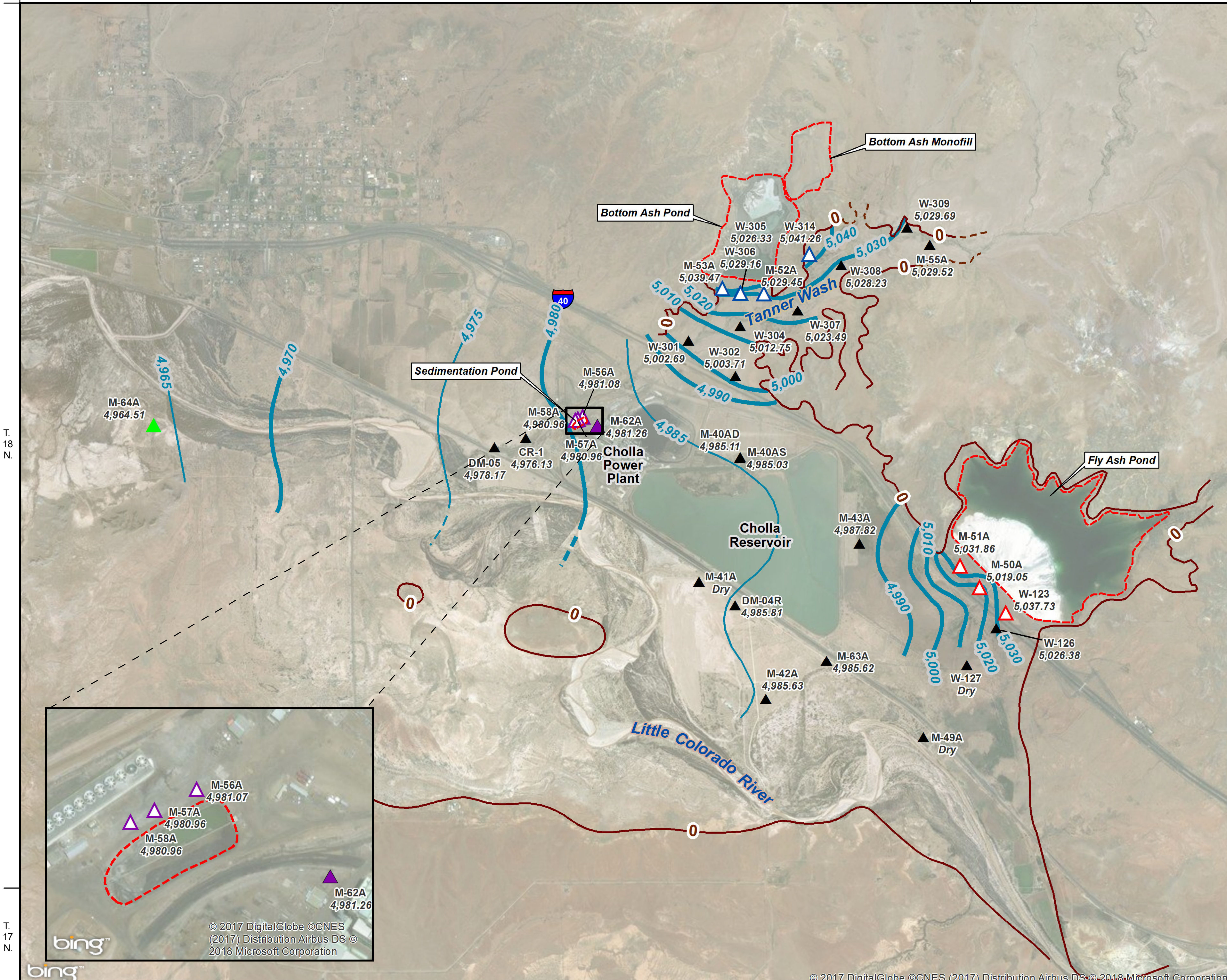
FIGURE 3

GIS-TUC\897.0704\AlluvThickCont2017UPD\29Nov2017 StatePlane Nad83_ft



EXPLANATION

Approximate Extent of Coal Combustion Residual Unit

0 Estimated Extent of Alluvium (dashed where inferred)

5,030 10-Foot Contour of Water Level Elevation in Alluvial Aquifer, in feet above mean sea level (dashed where inferred)

4,985 5-Foot Contour of Water Level Elevation in Alluvial Aquifer, in feet above mean sea level (dashed where inferred)

M-51A Alluvium Monitor Well Location and Identifier

5,031.85 Elevation of Water Level, June - July 2017, in feet above mean sea level

CCR WELLS:

Background, Fly Ash Pond and Bottom Ash Pond Well

Downgradient, Bottom Ash Pond

Downgradient, Fly Ash Pond

Upgradient, Sedimentation Pond

Downgradient, Sedimentation Pond

OTHER WELLS:

Monitor Well

0 1,000 2,000 3,000 4,000

Feet

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ALLUVIAL AQUIFER WATER LEVEL ELEVATION JUNE - JULY 2017

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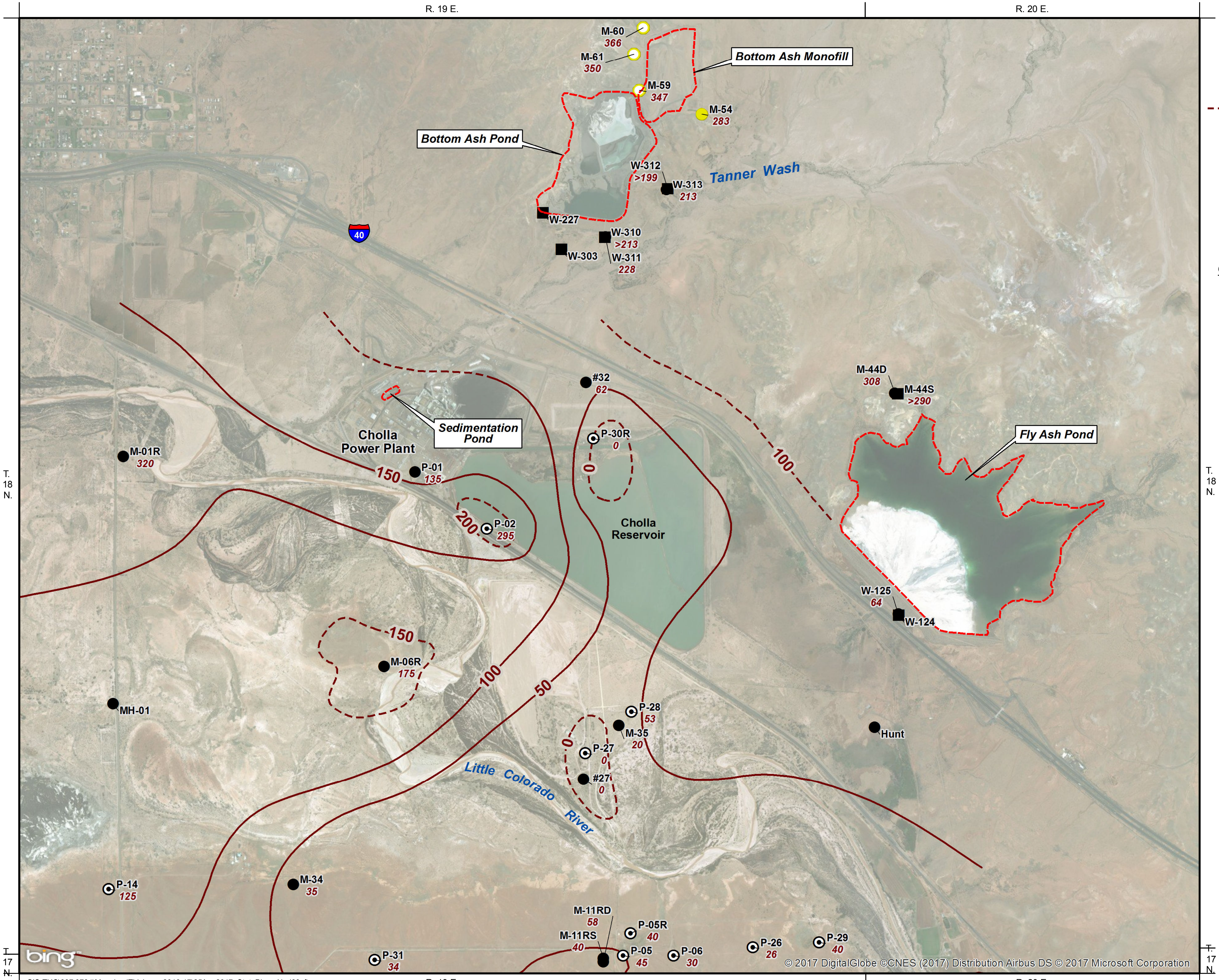
FIGURE 4

GIS-TUC\897.0704\AlluvThickness_GWelevation_June-July2017upd \29Nov2017 StatePlane Nad83_ft



EXPLANATION

- Approximate Extent of Coal Combustion Residual Unit
- 50 — Contour of Moenkopi Thickness, in feet (dashed where inferred)
- M-59 347 — Well Location and Identifier; Thickness of Moenkopi, in feet

CCR WELLS:

- Coconino, Downgradient, Bottom Ash Monofill
- Coconino, Upgradient, Bottom Ash Monofill

OTHER WELLS:

- Moenkopi, Monitor
- Coconino, Monitor
- Coconino, Production

0 1,000 2,000 3,000 4,000
Feet

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NAVAJO COUNTY, ARIZONA

MOENKOPI THICKNESS

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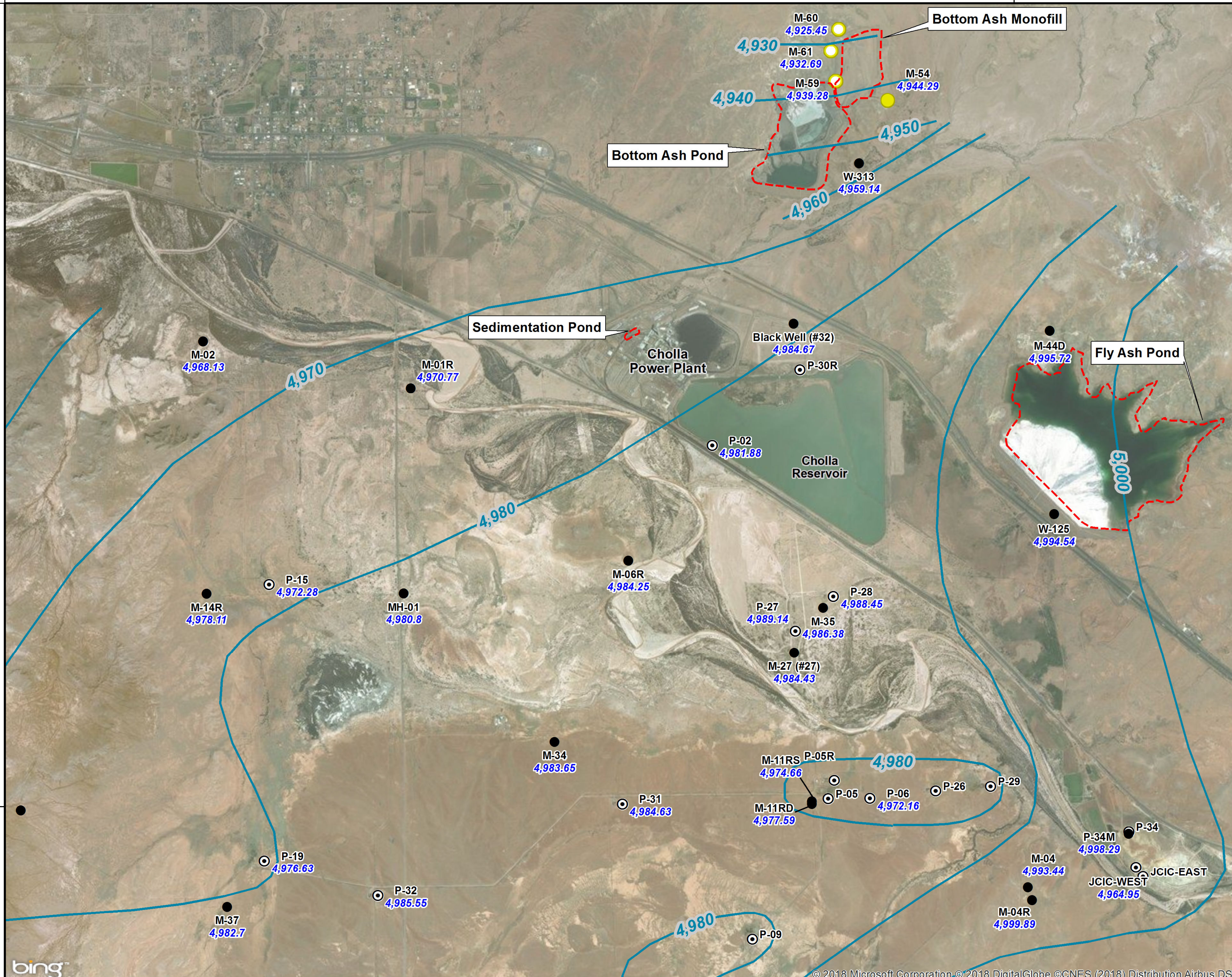
FIGURE 5

GIS-TUC\897.0704\MoenkopiThickness2016-17\25Aug2017 StatePlane Nad83_ft



EXPLANATION

Approximate Extent of Coal Combustion Residual Unit

5,000 — 10-Foot Contour of Water Level Elevation in Coconino Sandstone Aquifer, in feet above mean sea level

M-44D — Coconino Monitor Well Location and Identifier

4,995.72 — Elevation of Water Level, June - July 2017, in feet above mean sea level

CCR WELLS:

- Downgradient, Bottom Ash Monofill
- Upgradient, Bottom Ash Monofill

OTHER WELLS:

- Monitor
- Production

N

0 4,000

Feet

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NAVAJO COUNTY, ARIZONA

COCONINO AQUIFER WATER LEVEL ELEVATION JUNE - JULY 2017

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2017

FIGURE 6

GIS\897.0704\Coco_WaterLevelAlt_June-July2017\19Sept2017 UTM NAD27

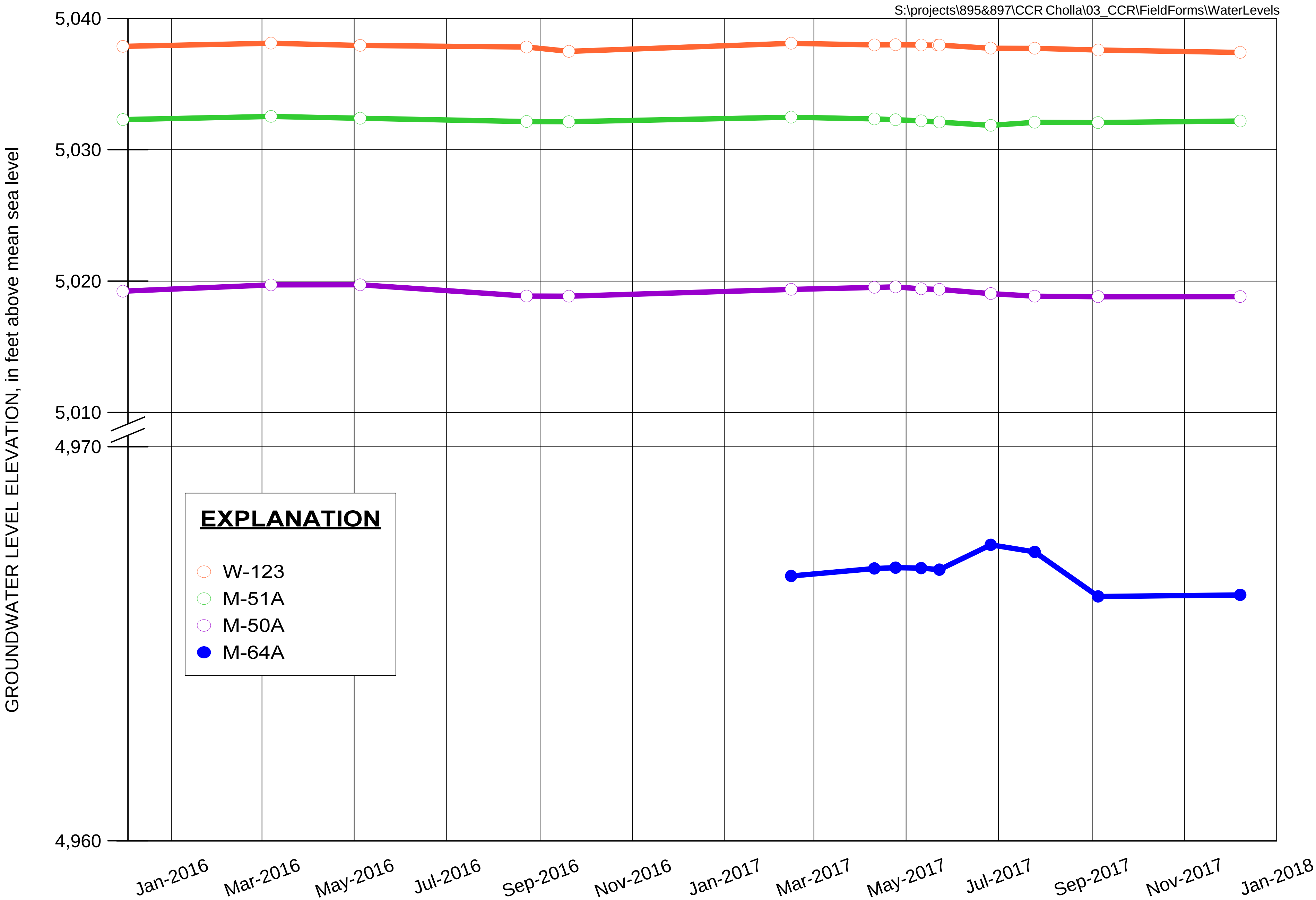

FIGURE 7. GROUNDWATER LEVEL HYDROGRAPH FOR FLY ASH POND MONITOR WELLS

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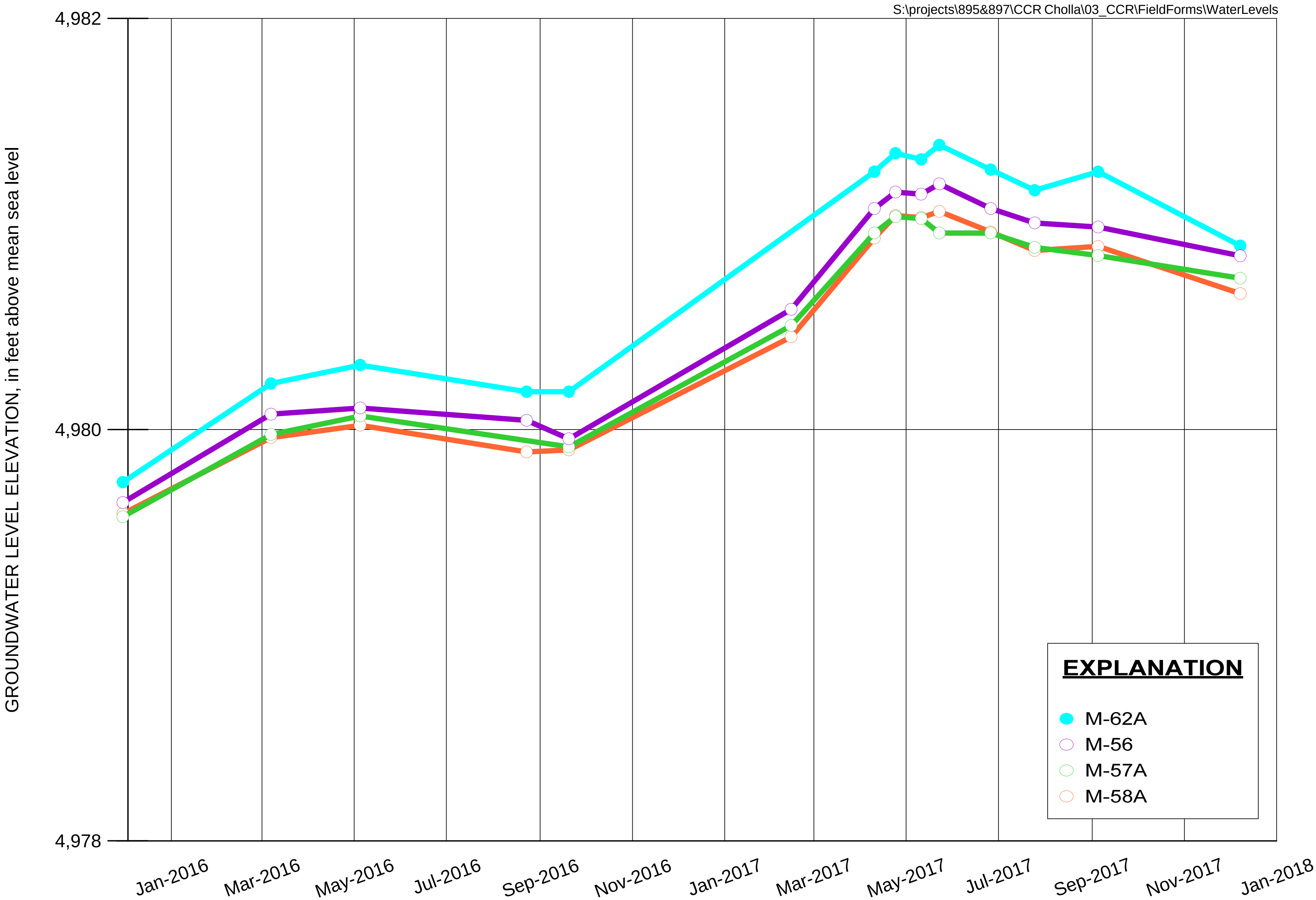

FIGURE 8. GROUNDWATER LEVEL HYDROGRAPH FOR SEDIMENTATION POND MONITOR WELLS

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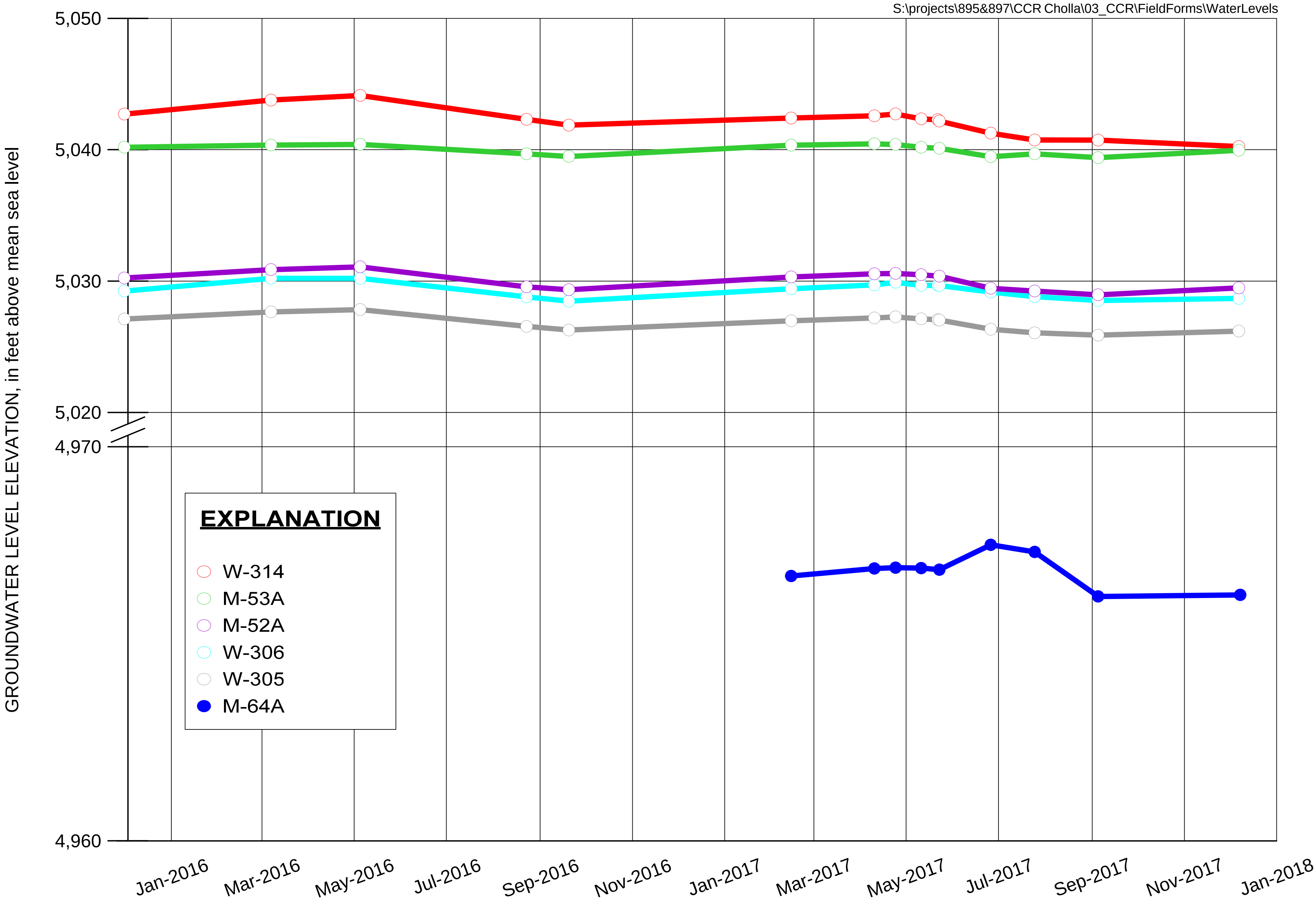

FIGURE 9. GROUNDWATER LEVEL HYDROGRAPH FOR BOTTOM ASH POND MONITOR WELLS

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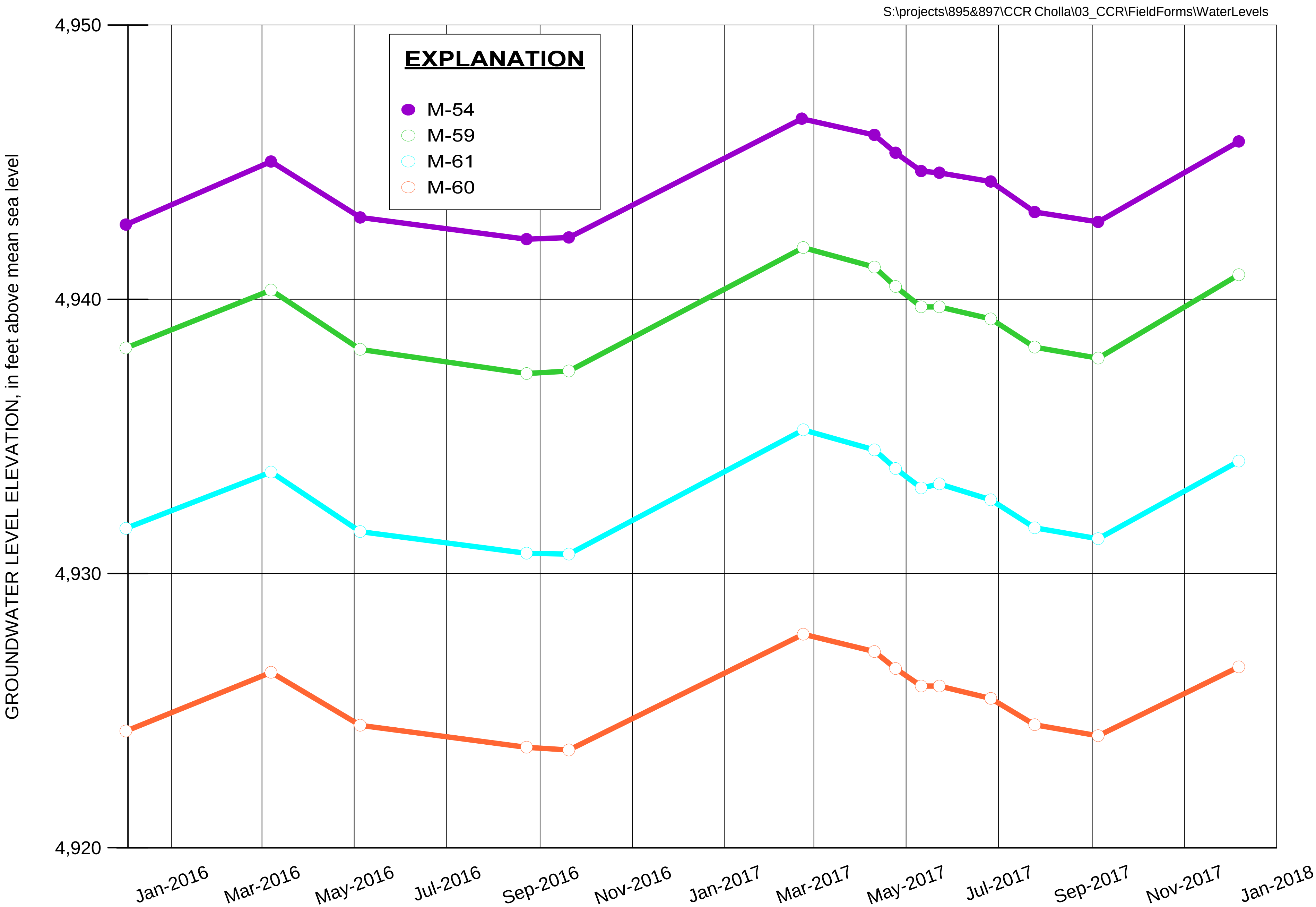

FIGURE 10. GROUNDWATER LEVEL HYDROGRAPH FOR BOTTOM ASH MONOFILL MONITOR WELLS

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