January 2020 Annual Groundwater Monitoring and Corrective Action Summary Report

Intermountain Generating Facility
Delta, Utah

Prepared for:
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Project No.: 203709098

January 24, 2020

Sign-off Sheet and Signatures of Environmental Professionals

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1.0 EXECUTIVE SUMMARY

1.1 PURPOSE OF REPORT

On behalf of Intermountain Power Service Corporation ("IPSC"), Stantec Consulting Services Inc. ("Stantec") has prepared this report to summarize IPSC's 2019 groundwater monitoring and recovery program pursuant to the United States Environmental Protection Agency's ("US EPA") Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals (CCR) from Electric Utilities, 40 CFR 257 Subpart D (the "Federal CCR Rule")(and the corresponding Utah CCR Rule at Utah Admin. Code R315-319 (the "State CCR Rule")(collectively, the "CCR Rules")) at IPSC's Intermountain Generating Facility ("IGF") located approximately ten miles north of Delta, Millard County, Utah. IPSC's compliance program addresses elements prescribed by CCR Rule Parts §257.90 (R315-319-90) Applicability; §257.91 (R315-319-91) Groundwater Monitoring Systems; §257.93 (R315-319-93) Groundwater Sampling and Analysis Requirements; §257.95 (R315-319-95) Assessment Monitoring Program; and §257.96 (R315-319-96) Assessment of Corrective Measures.

This report is formatted in general accordance with reporting requisites prescribed within §257.90(e) (R315-319-90(e)). The report provides a summary of investigative and ongoing remedial activities that were proposed and/or outlined in detail within IPSC's *January 2019 Annual Groundwater Monitoring and Corrective Action Summary Report*; IPSC's January 2019 *Assessment of Corrective Measures and Amended Corrective Action Plan* report; and IPSC's June and December 2019 *Semi-Annual Progress Reports*.

The historical reports presented IPSC's approach for addressing requirements specified by the Federal CCR Rule as well as the facility's Utah Department of Environmental Quality ("UDEQ"), Division of Water Quality ("DWQ") Groundwater Discharge Permit No. UGW270004. The most recent permit renewal was issued by the UDEQ to IPSC's Intermountain Generating Facility ("IGF"), effective May 24, 2016.

The DWQ has regulatory oversight for IPSC's compliance with its Groundwater Discharge Permit. The UDEQ Division of Waste Management and Radiation Control ("DWMRC") also has regulatory oversight pursuant to the State CCR Rule. The CCR Rules apply to each of IPSC's three (3) CCR units (reference Figures 1 and 2 for regional and site-specific, location maps):

- Combustion By-Products Landfill ("CB Landfill");
- Bottom Ash Basin; and
- Waste Water Basin.

This annual summary report provides an overview of groundwater monitoring and recovery activities conducted at the site during 2019 in compliance with the CCR Rules. The report summarizes activities detailed within IPSC's June and December 2019 Semi-Annual Progress Reports and outlines ongoing and 'next-step' actions associated with enhancement of IPSC's existing groundwater monitoring and corrective action program. IPSC intends to utilize several additional wells for groundwater recovery in addition to existing recovery wells WR-101, WR-102, and WR-103, as discussed in detail herein.

1.2 SUMMARY OF 2019 ACTIVITIES

IPSC implemented a sequential, groundwater quality investigative program during 2019 to refine IPSC's current Conceptual Site Model (CSM) and understanding of hydraulic conditions characterizing localized portions of the uppermost aquifer beneath the site. The sequenced, investigative approach helped delineate more definitively the physical characteristics and footprints of two different Total Dissolved Solids (TDS) groundwater plumes located downgradient (generally southwest) of the Bottom Ash and Waste Water Basins (surface impoundments), respectively. Six (6) wells were installed and sampled during the Spring of 2019, the analytical results of which were then used to help locate ten additional wells that were installed during the Fall of 2019.

A total of 16 new, 6-inch diameter, groundwater monitoring/recovery wells were installed during 2019, such that each well might be used as a groundwater recovery well if needed. Some wells were located to provide better identification of the two TDS plumes' respective, downgradient, leading edges. Other wells were located to provide more definition regarding the locations of the plumes' centers of TDS mass.

Pump-tests of specific wells were used to help gain a better understanding of yields of localized wells and lateral extent of groundwater capture zones, which in turn were evaluated using Stantec's site-specific, groundwater model. The groundwater model helped IPSC/Stantec identify wells that could be used for groundwater recovery to intercept the downgradient, leading edges of the TDS plumes. The 2019 data are also being evaluated currently to investigate if, and where, additional groundwater monitoring/recovery wells might be needed for more comprehensive TDS plume identification/delineation and control.

Summary 2019 activities included:

1) During April and May 2019, IPSC expanded the network of monitoring/recovery wells intended to monitor and control the downgradient (predominantly southwest), leading edge of the TDS plume associated with historical releases from the Bottom Ash Basin, through installation of supplemental monitoring (and remediation, if needed) wells BAC-8, BAC-9, and BAC-10 (reference Figure 3).

2) During April and May 2019, IPSC expanded the network of monitoring/recovery wells in apparent downgradient directions (predominantly southwest) in relation to recently discovered, apparent release areas (west and south sides) at the Waste Water Basin, through installation of supplemental monitoring (and remediation, if needed) wells WWC-8, WWC-9, and WWC-10 (reference Figure 3).

   The drilling and installation activities associated with the six wells installed during April-May 2019 were discussed in detail, including drilling logs and well schematic diagrams, within

IPSC's *June 2019 Semi-Annual Progress Report*. However, at the time of preparation of the June 2019 report, laboratory result reports associated with the May sampling event had not been received by IPSC. Reference Figure 3 herein for a May 2019 groundwater flow map and Figure 5 for a map noting May 2019 TDS concentrations. Monitoring and analytical results are tabulated in Attachment 1 herein.

3) The May 2019 results associated with sampling and monitoring of all CCR Rules monitoring wells at the site, including the six wells installed during April-May 2019, were reviewed and used to help identify data-gap areas where supplemental TDS plume delineation was deemed warranted. Ten supplemental monitoring/recovery wells (wells BAC-11 through BAC-17 located downgradient of the Bottom Ash Basin and wells WWC-11 through WWC-13 located downgradient of the Waste Water Basin) were drilled and installed during November and December 2019 (reference Figure 4 for an October 2019 groundwater flow map).

   The ten new wells were being developed at the time of preparation of IPSC's *December 2019 Semi-Annual Progress Report* and will be sampled during IPSC's next semi-annual, groundwater quality sampling event, scheduled tentatively for April 2020. Figure 6 presents TDS concentrations associated with all other wells that were sampled during the October 2019 groundwater sampling event.

4) Stantec has identified several existing wells that will be used as supplemental groundwater recovery wells, designed to focus recovery of groundwater near the downgradient, leading edges and generalized centers of mass associated with the two TDS plumes. Currently, Stantec is designing well-specific, submersible pumps, water level and electrical controls, pump-houses, water conveyance piping, appurtenances, and supervisory control and data acquisition [SCADA] instrumentations, etc. For the foreseeable future, recovered groundwater will be discharged for evaporation within the Recycling Basin, into which existing recovery wells WR-101, WR-102, and WR-103 currently discharge recovered groundwater. Final design is expected to be completed during early-2020.

Although the TDS plumes pose little to no risk to human health or the environment at the present and foreseeable time, IPSC anticipates that the expanded groundwater recovery network will be installed as soon as practicable, likely sometime during mid-2020. It is anticipated that the analytical results associated with IPSC's proposed-Spring 2020 sampling of all CCR Rules compliance wells, including the ten wells that were installed during November-December 2019, may also influence what, if any, additional monitoring wells and recovery wells might be warranted in pursuit of TDS plume delineation and control.

2.0 BACKGROUND

As summarized in IPSC's January 2019 Annual Summary Report, the quantitative analytical results from the Detection and Assessment Monitoring programs under the CCR Rule indicated the following Appendix IV constituent-specific Lower Confidence Limit (LCL) exceedances above corollary Groundwater Protection Standards (GWPSs) at groundwater monitoring wells located at two of the three CCR-regulated units (all concentrations in mg/L):

CCR Unit	Well	Appendix IV Constituent	LCL Concentration	GWPS Concentration
CB Landfill		NONE	------	-----
Bottom Ash Basin	BAC-2	Molybdenum	0.1506	0.1
	BAC-3	Lithium	0.812	0.7415
Waste Water Basin	WWC-1	Arsenic	0.01496	0.01275
	WWC-2	Arsenic	0.01415	0.01275
	WWC-3	Arsenic	0.02045	0.01275

Individual sample results of Appendix IV constituents above the GWPS during Assessment Monitoring are not necessarily a demonstration of statistically significant exceedances of the GWPS. The LCL must exceed the GWPS to demonstrate a statistically significant increase (SSI). If individual constituent concentrations exceed GWPSs, then Assessment Monitoring is to continue at that specific CCR unit, as was conducted by IPSC during 2019.

Statistical analyses to date indicate that the above-listed metals are present at localized boundaries of the two surface impoundments. As additional groundwater quality data are generated at the site, water quality data and analyte-specific GWPSs will be evaluated per statistical analyses performed in accordance with CCR Rule §257.95(d)(2) and §257.95(h) [R315-319-95(d)(2) and R315-319-95(h)] and the following general guidance sources:

- US EPA "Unified Guidance" document (*Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance,* March 2009, *EPA 530/R-09-007*);
- the Interstate Technology and Regulatory Council's ("ITRC") 2013, *Groundwater Statistics for Monitoring and Compliance, Statistical Tools for the Project Lifecycle*, Online Guidance; and
- Ofungwu, J. (2014) *Statistical Applications for Environmental Analysis and Risk Assessment*. Hoboken, New Jersey: John Wiley and Sons, Inc.

Although it is documented throughout Utah and in proximity to the site that Arsenic and Lithium can be present naturally at elevated concentrations, IPSC will continue monitoring these and other CCR Rule metal constituents in groundwater as part of its routine groundwater monitoring program. As additional groundwater quality data is generated, metal concentrations will be evaluated through statistical analysis for potential SSI, in accordance with CCR Rule requisites. Ongoing/future metal water quality data will be evaluated in terms of whether additional monitoring and/or recovery wells might be warranted.

In light of the clay-rich nature of the uppermost aquifer beneath the site, and as indicated by groundwater quality data to date, Appendix IV constituents, such as Arsenic, Molybdenum, and Lithium, are not anticipated to migrate at the same velocity as natural groundwater. Natural attenuation processes, such as adsorption, cationic exchange, dispersion, dilution, and biological degradation, tend to slow the movement of metals in clay-rich aquifers.

As reported in IPSC's historical reports, groundwater in localized, downgradient directions in relation to the Bottom Ash Basin and the Waste Water Basin contains elevated concentrations of TDS. Groundwater quality data to date indicate that TDS has migrated farther downgradient of the two surface impoundments than the metal constituents located near the impoundment boundaries.

TDS is being used as the leading indicator parameter of impacted groundwater quality for fashioning a suitable groundwater remediation approach. TDS is expected to continue to migrate at a faster rate than dissolved metals in the clay-rich aquifer that underlies the property and the recovery of TDS-impacted groundwater at select recovery wells will also intercept any metal constituent that might be present.

As detailed in historical reports, Stantec constructed and calibrated a three-dimensional, numerical model to simulate groundwater flow and fate and transport of TDS in groundwater beneath the Site, based on pump-testing of existing, groundwater recovery wells. The model was developed generally in accordance with ASTM International's (American Standard for Testing and Materials) *Standard Guide for Application of Groundwater Model to a Site-Specific Problem* and the current version of United States Geological Survey (USGS) *Modular Three-Dimensional Finite Difference Groundwater Flow Model* (MODFLOW-2005).

Stantec extrapolated that the downgradient leading edge of the TDS plume located downgradient of the Bottom Ash Basin appears to be migrating naturally toward the southwest at an approximate rate of 150 to 180 feet per year. However, this is a generalized plume migration rate estimate, considering the relatively large, lateral distances between water quality monitoring well locations and the highly varied lithologic characteristics of the uppermost aquifer underlying the site. The TDS plume associated with the Bottom Ash Basin remains within IPSC property boundaries and currently poses no significant risk to human health or the environment.

Currently, and for the foreseeable future, IPSC operates existing groundwater recovery wells WR-101, WR-102, and WR-103 identified on Figure 3 to help reduce total mass of TDS in groundwater in relatively close proximity to the Bottom Ash Basin. The three wells are recovering groundwater that contains elevated concentrations of TDS, located in relatively close proximity to the apparent historical TDS release areas associated with the Bottom Ash Basin. Continued removal of TDS-elevated groundwater from each of these three wells is helping reduce the total mass of TDS within the uppermost aquifer beneath the site in a generalized downgradient/southwesterly direction in relation to the Bottom Ash Basin.

2.1 ESTIMATED TDS PLUME LOCATIONS

2.1.1 Bottom Ash Basin

As demonstrated in Attachment 1 and summarized on Figures 5 and 6 (2019 data), groundwater quality data to date indicate that elevated concentrations of TDS extend from the western and southern perimeter boundaries of the Bottom Ash Basin toward the southwest. The downgradient, leading edge of the TDS plume appears to be located somewhere near monitoring well RW-9. During the two 2019 sampling events, downgradient monitoring wells RW-5, RW-6, RW-8, BAC-8, BAC-9, and BAC-10 did not contain any TDS concentration in excess of the Groundwater Discharge Permit GWPS for TDS of 1,100 ppm.

It is anticipated that the downgradient, leading edge of the TDS plume is located generally southwest of well RW-9; northeast of wells BAC-8, BAC-9, and BAC-10; and northwest of well RW-5. Spring 2020 sampling of the six (6), newly installed wells BAC-11 through BAC-16 will provide additional delineation of the TDS plume.

2.1.2 Waste Water Basin

As may be noted by review of historical water quality data presented in Attachment 1 and summarized on Figures 5 and 6 (2019 data), groundwater quality data to date indicate that elevated concentrations of TDS have been identified within monitoring wells WWC-4 and WWC-5 located near the generalized, northwestern-most corner of the surface impoundment. Data to date indicate a generally southwesterly/westerly component of groundwater flow in this area of the site. Downgradient monitoring wells RW-7, WWC-7, and WWC-10 have not contained elevated concentrations of TDS, to date.

Based on data to date, it is unknown whether the elevated TDS concentrations detected at well RW-4 might be attributable to TDS migration from the Bottom Ash Basin and/or the Waste Water Basin. Since well RW-4 is proposed for future groundwater recovery, it is anticipated that future monitoring of water quality in this general area will be used to investigate if additional recovery measures might be needed in this area.

Additionally, groundwater quality data to date indicate that elevated concentrations of TDS have been identified within wells WWC-1, WWC-6, and WWC-8, with an apparent TDS source possibly being in the vicinity of the southeastern-most corner of the surface impoundment. The apparent downgradient, leading edge of the TDS plume appears to be located somewhere near monitoring well WWC-6. During the two 2019 sampling events, downgradient monitoring wells RW-7, WWC-7, WWC-9, and WWC-10 did not contain elevated concentrations of TDS.

It is anticipated that the downgradient, leading edge of the TDS plume is located generally southwest of well WWC-6; northwest of WWC-9; and east of WWC-10 – along a generally, narrow, elongated TDS plume whose apparent source area appears to be the southeastern-most corner of the Waste Water Basin. Spring 2020 sampling of the three, newly installed wells

WWC-11, WWC-12, and WWC-13 will help investigate and provide additional delineation of the TDS plume in this general area of the site.

3.0 SPRING 2019 GROUNDWATER MONITORING/RECOVERY WELL INSTALLATIONS AND SAMPLING EVENT

This report section presents a summary overview of information presented within IPSC's June and December 2019 Semi-Annual Progress Reports. Copies of drilling logs and well schematic diagrams may be referenced by review of the previous reports.

During April and May 2019, Stantec oversaw the drilling, soil logging, installation, and development of groundwater monitoring wells BAC-8, BAC-9, BAC-10, WWC-8, WWC-9, and WWC-10 at the site by Cascade Drilling, LP of Salt Lake City, Utah, a Utah-certified, water well drilling firm. Each well was installed and developed in similar fashion as previous, historical wells at the site. Figure 4 identifies the locations of the six wells and historical groundwater monitoring wells, as well as groundwater flow patterns associated with those wells monitored during Spring 2019 as part of the CCR Rules compliance monitoring program.

The six new wells were drilled by the sonic drilling method, whereby soil samples were collected continuously in 10-foot, sampling intervals for continuous, real-time visual inspection and Drill Log recording of subsurface soil lithologic and moisture characteristics. Stantec's field geologists screened and logged all soil samples during drilling of each of the six well borings. All down-hole drilling and sampling equipment were decontaminated before use between well locations.

In turn, the subsurface soil data were used to help determine respective groundwater monitoring well construction details. Typically, once each boring was advanced approximately 20 to 25 feet into the uppermost saturated soils, a monitoring well was constructed within each respective borehole. Each groundwater monitoring well was comprised of 6-inch diameter, flush-threaded, Schedule 40 polyvinyl chloride (PVC) pipe with a solid, PVC end-cap. The bottom 25 feet of each well was comprised of 6-inch diameter, flush-threaded, 0.02-slotted, Schedule 40 PVC well screen.

Following installation of each well, 16/30 washed, silica sand was emplaced around the well screen from the bottom of the borehole to an approximate height of several feet above the top of the well screen interval. An approximate five to seven feet thick, bentonite pellet seal was added on top of the sand pack material. Then, a cement-bentonite (typically, 10:1 ratio) grout was tremie-slurried from the top of the bentonite pellet seal to an approximate height of two feet below grade. A 5-ft. long, 6-inch diameter, steel, protective casing/monument was emplaced in concrete around each wellhead, with an approximate 2.5-ft. stick-up above natural grade. Each PVC well was furnished with a locking, expandable well cap and lock.

Following well installations, the ground surface and the top of each wellhead were surveyed in relation to one another and the same on-site, mean sea level benchmark used for surveying the tops of other historical monitoring wells. Table 1 presents a summary of all groundwater monitoring well construction specific details. Copies of Stantec's drilling logs and schematic well diagrams are presented in Appendix A of IPSC's *June 2019 Semi-Annual Progress Report*.

Shortly after well installations, each well was developed by a dedicated, well development drill rig. Typically, the rig removed water from each well by means of bailing followed by air-lift. Well water was removed from each well, until return water was relatively clear and free of fine-grained, formational materials.

Following well development, wells were purged and then sampled in accordance with purging, sampling, and quality assurance/quality control (QA/QC) protocol detailed within IPSC's November 2015 *Groundwater Sampling and Analysis Plan*. TDS analytical results associated with the Spring 2019 sampling event are presented on Figure 5 herein. Only those wells associated with IPSC's CCR Rules compliance monitoring program were sampled. As detailed within following report section *4.0 Fall 2019 Groundwater Monitoring/Recovery Well Installations and Sampling Event*, the analytical results associated with the Spring 2019 sampling event were used to locate ten additional, groundwater monitoring wells that were installed and sampled during the Fall of 2019 to help ongoing TDS plume characterization and delineation.

4.0 FALL 2019 GROUNDWATER MONITORING/RECOVERY WELL INSTALLATIONS

This report section presents a summary overview of information presented within IPSC's June and December 2019 Semi-Annual Progress Reports. Copies of drilling logs and well schematic diagrams may be referenced by review of the previous reports.

During November and December 2019, Stantec oversaw the drilling, soil logging, installation, and development of groundwater monitoring/recovery wells BAC-11 through BAC-17 and wells WWC-11 through WWC-13 at the site by Cascade Drilling, LP of Salt Lake City, Utah, a Utah-certified, water well drilling firm. Each well was installed and developed in similar fashion as previous, historical wells at the site. Figure 5 identifies the locations of the ten new wells and historical groundwater monitoring wells, as well as groundwater flow patterns associated with those wells monitored during Fall 2019 as part of the CCR Rules compliance monitoring program.

The ten new wells were drilled by the sonic drilling method, whereby soil samples were collected continuously in 10-foot, sampling intervals for continuous, real-time visual inspection and Drill Log recording of subsurface soil lithologic and moisture characteristics. Stantec's field geologists screened and logged all soil samples during drilling of each of the ten well borings. All down-hole drilling and sampling equipment were decontaminated before use between well locations.

In turn, the subsurface soil data were used to help determine respective groundwater monitoring well construction details. Typically, once each boring was advanced approximately 20 to 25 feet into the uppermost saturated soils, a monitoring well was constructed within each respective borehole. Each groundwater monitoring/recovery well was comprised of 6-inch diameter, flush-threaded, Schedule 40 PVC pipe with a solid, PVC end-cap. The bottom 25 feet of each well was comprised of 6-inch diameter, flush-threaded, 0.02-slotted, Schedule 40 PVC well screen.

Following installation of each well, 16/30 washed, silica sand was emplaced around the well screen from the bottom of the borehole to an approximate height of several feet above the top of the well screen interval. An approximate five to seven feet thick, bentonite pellet seal was added on top of the sand pack material. Then, a cement-bentonite (typically, 10:1 ratio) grout was tremie-slurried from the top of the bentonite pellet seal to an approximate height of two feet below grade. A 5-ft. long, 6-inch diameter, steel, protective casing/monument was emplaced in concrete around each wellhead, with an approximate 2.5-ft. stick-up above natural grade. Each PVC well was furnished with a locking, expandable well cap and lock.

During December 2019, the ground surface and the top of each wellhead was surveyed in relation to one another and the same on-site, mean sea level benchmark used for surveying the tops of other historical monitoring wells. Table 1 presents a summary of all groundwater monitoring well construction specific details. Copies of Stantec's drilling logs and schematic well diagrams associated with the ten new wells are presented in Appendix A of IPSC's *December 2019 Semi-Annual Progress Report*.

Shortly after well installations, each well was developed by a dedicated, well development drill rig. Typically, the rig removed water from each well by means of bailing followed by air-lift. Well water was removed from each well, until return water was relatively clear and free of fine-grained, formational materials.

Prior to the installation of the ten new wells, IPSC sampled all other CCR Rules compliance monitoring wells in October of 2019. The TDS analytical results associated with this sampling event are presented on Figure 6 herein. The ten new wells will be sampled during IPSC's next semi-annual, groundwater quality sampling event, scheduled tentatively for April 2020.

As detailed within the following report section, IPSC and Stantec have initiated design of an expanded groundwater recovery network that will start recovering groundwater impacted by TDS at, and/or near, the apparent downgradient, leading edge of each of the two TDS plumes. The lateral extent of the downgradient, leading edge of each TDS plume has not been delineated completely, as yet; however, IPSC intends to install additional groundwater recovery equipment within select wells, as soon as practicable during mid-2020. It is anticipated that the analytical results associated with IPSC's proposed Spring 2020 sampling of all CCR Rules compliance wells will influence what additional monitoring wells and recovery wells might be warranted in pursuit of TDS plume delineation and control.

5.0 ONGOING CORRECTIVE ACTIONS AND PROGRESS TOWARD IMPLEMENTING ADDITIONAL GROUNDWATER CORRECTIVE ACTION REMEDY

5.1 ONGOING GROUNDWATER RECOVERY AT EXISTING RECOVERY WELLS WR-101, WR-102, AND WR-103

IPSC intends to continue operating existing groundwater recovery wells WR-101, WR-102, and WR-103 identified on Figure 3. The three wells are recovering groundwater that contains elevated concentrations of TDS, located in relatively close proximity to the apparent historical TDS release areas associated with the Bottom Ash Basin. Wells WR-102 and WR-103 are located generally along the apparent TDS plume centerline, as explained in detail in IPSC's 2016 *Updated Corrective Action Plan*. Continued removal of TDS-enriched groundwater from each of these three wells is helping reduce the total mass of TDS within the uppermost aquifer beneath the site in a generalized downgradient/southwesterly direction in relation to the Bottom Ash Basin.

5.2 SUMMARY OF ONGOING ACTIONS ASSOCIATED WITH DESIGN OF EXPANDED GROUNDWATER REMEDY

Currently, Stantec is designing an enhanced TDS plume control and associated groundwater recovery network. The groundwater recovery program will focus on two aspects of TDS plume control, namely: recovery of groundwater from the downgradient, leading edges of each TDS plume, as well as recovery of groundwater from the generalized center of TDS mass of each of the two TDS plumes.

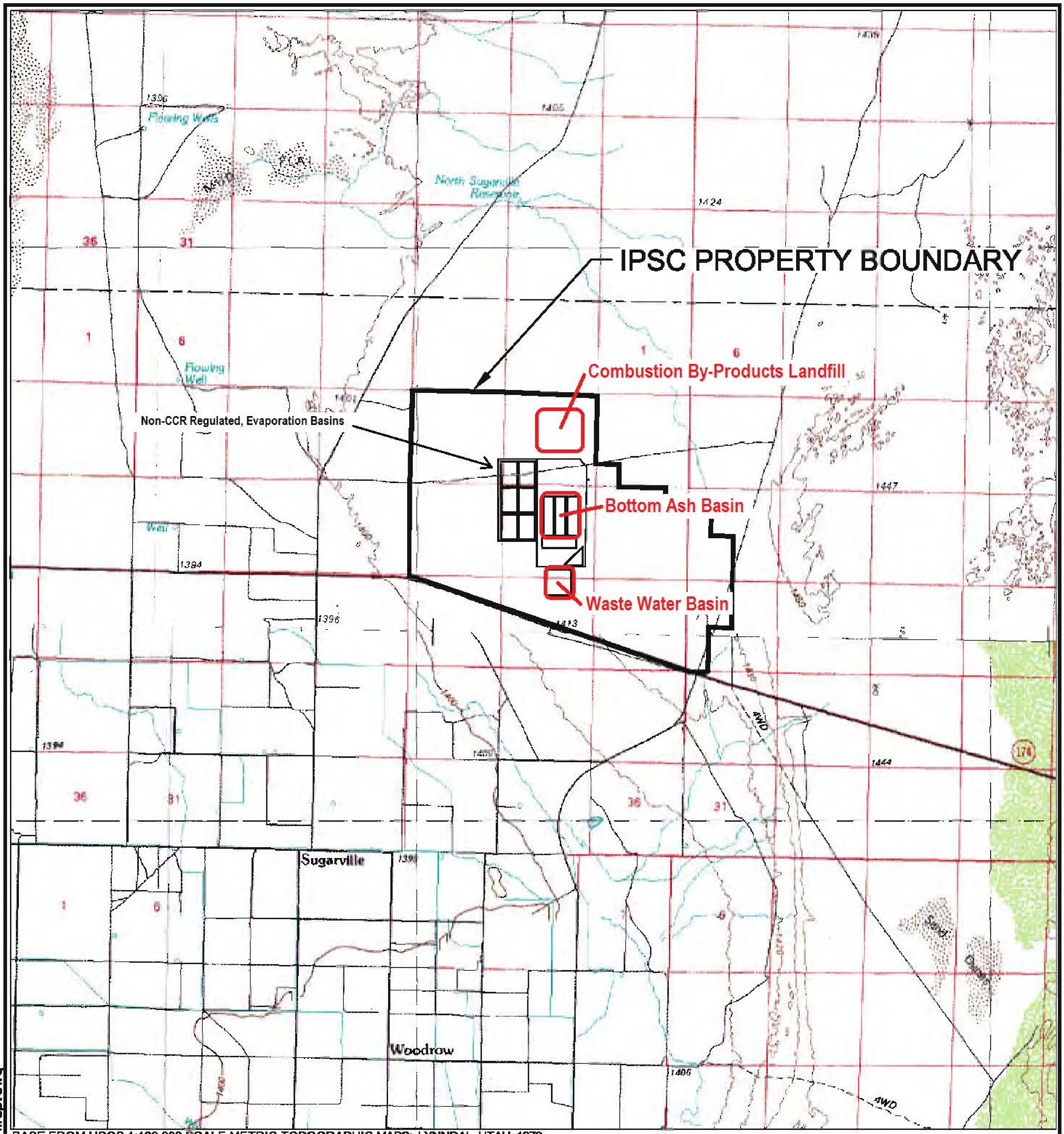
IPSC/Stantec have identified the following wells for *anticipated* groundwater recovery, based on data generated to date and anticipating that these specific wells *will most probably* be found to contain elevated concentrations of TDS during the upcoming, Spring 2020 sampling event – based on extrapolation of elevated TDS concentrations associated with wells that have been sampled historically. Future groundwater monitoring results will influence what additional monitoring and/or recovery wells might also be considered for groundwater monitoring and/or recovery, in addition to the following anticipated, groundwater recovery wells:

- Bottom Ash Basin TDS Plume Recovery Wells: BAC-13; BAC-14, BAC-16 (and possibly well BAC-15).
- Waste Water Basin Plume Recovery Wells: RW-4, WWC-8, and WWC-6.

Currently, Stantec is designing well-specific, submersible pumps, water level and electrical controls, pump-houses, water conveyance piping, appurtenances, and SCADA instrumentations for anticipated/possible use in each of the afore-listed wells. It is anticipated that installation and construction of the enhanced groundwater recovery network will be initiated during mid-2020. The Spring 2020 water quality data, which will include analytical results associated with newly-installed wells BAC-11 through BAC-17, as well as WWC-11, WWC-12, and WWC-13, will be evaluated to help investigate which of these specific wells might be used for groundwater recovery.

Upon completion of installation and start-up of the enhanced groundwater recovery network, IPSC will evaluate the degree to which groundwater recovery and natural attenuation processes control the downgradient leading edges of the two TDS plumes. IPSC will continue to conduct and report to the UDEQ its routine, semi-annual, groundwater monitoring and remediation program in formal Summary Reports.

Figure 1 General Site Location Map



CCR-Regulated Units
DELTA, UTAH

FIGURE 1
SITE TOPOGRAHIC MAP

Stantec

DESIGN BY	JR	DRAWN BY	CP	CH'D BY		SCALE	1"=1000'

DATE DRAWN 1-26-17

REVISION

drawings\ipsc-04\Fig2 Site Topographic Map.dwg

Figure 2. CCR Units Location Map

Legend

CCR Unit

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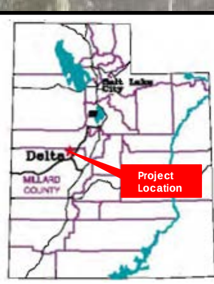

INTERMOUNTAIN GENERATING FACILITY

FIGURE 2
Site-Specific Location Map

Stantec

DRAWN BY JR	DATE DRAWN 9/30/2016
SCALE 1 in. approx. 1700 ft.	
PROJECT 203709098.409	

January 24, 2020

Figure 3 May 2019 Groundwater Flow Map

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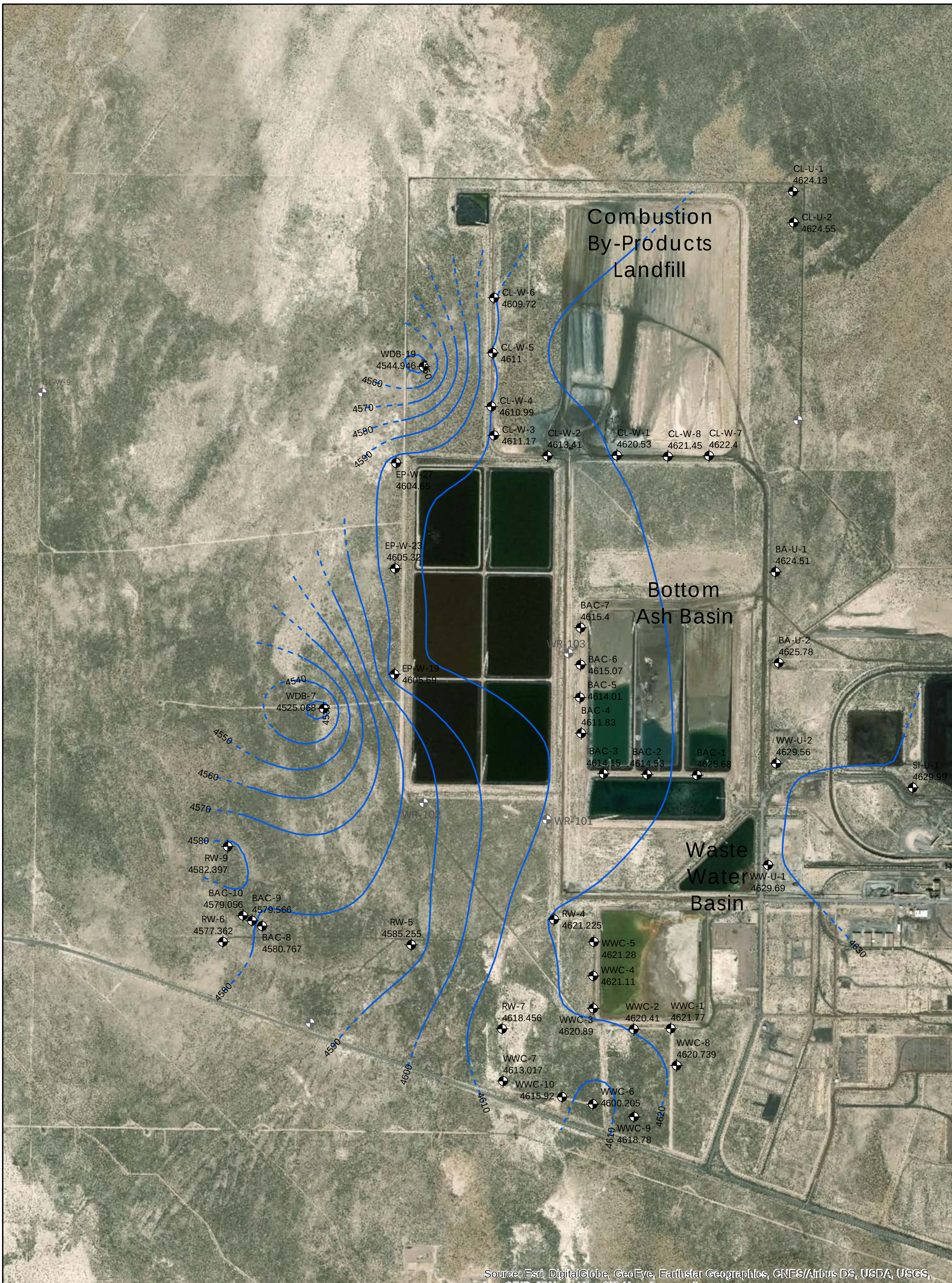

LEGEND:

- MONITORING WELL (GREYED WHEN NOT USED FOR CONTOURING)
- GROUNDWATER CONTOUR

NOTE:

1) DATA COLLECTED JUNE 2018
2) ALL ELEVATIONS ARE FEET ABOVE MEAN SEA LEVEL

0 1,300 2,600
Feet
1 in = 1,350 ft

Stantec

FOR: INTERMOUNTAIN POWER SERVICE CORP. INTERMOUNTAIN GENERATION FACILITY DELTA, UTAH		MAY 20, 2019 POTENTIOMETRIC MAP AND GROUNDWATER FLOW MAP		FIGURE: 3
JOB NUMBER: 203709098	DRAWN BY: CK	CHECKED BY: ALL	APPROVED BY:	DATE: 07/24/19

Figure 4 October 2019 Groundwater Flow Map

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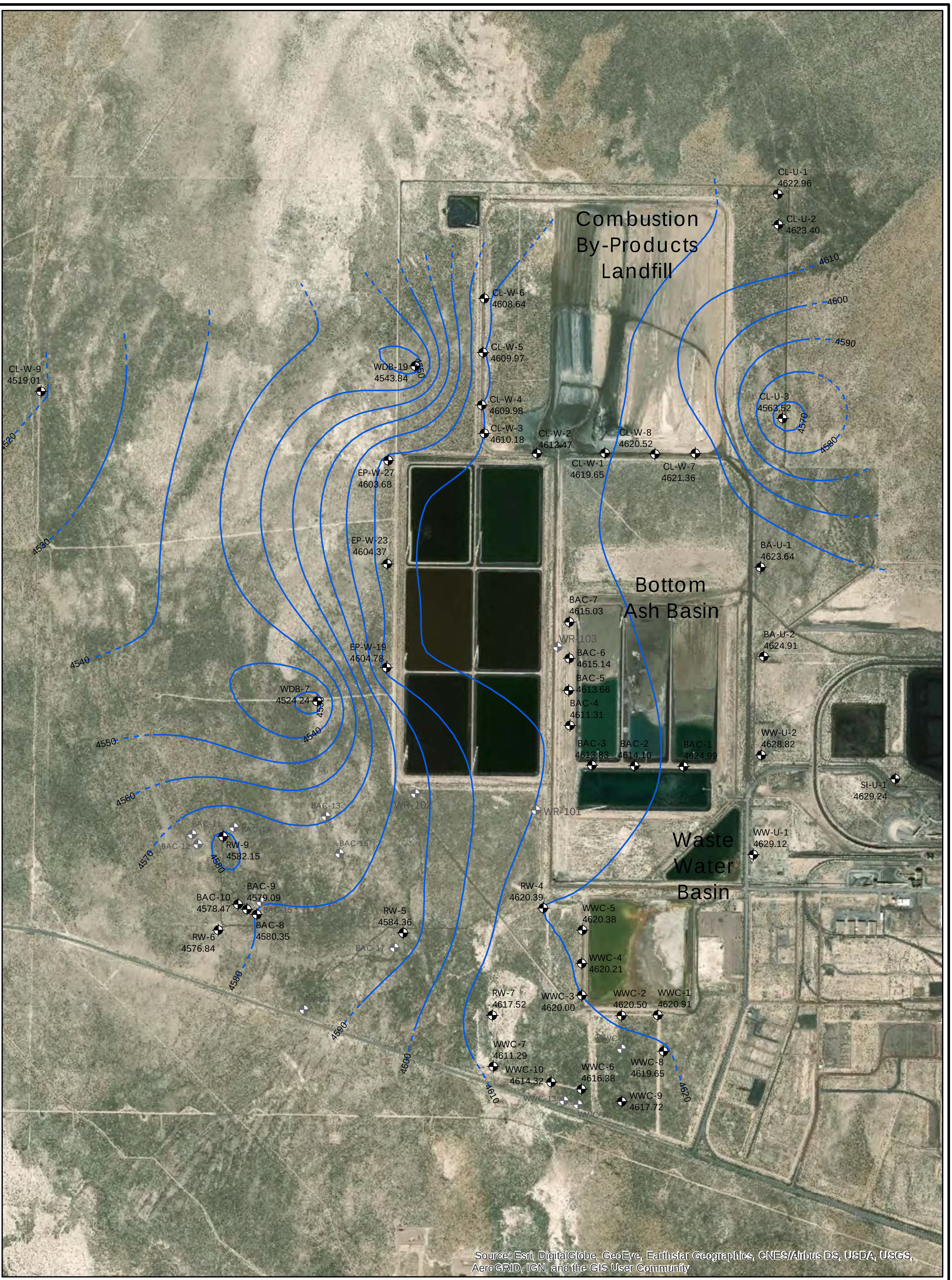

LEGEND:

- MONITORING WELL (GREYED WHEN NOT USED FOR CONTOURING)
- 4617.52 GROUNDWATER ELEVATION
- GROUNDWATER CONTOUR

NOTE:
1) DATA COLLECTED OCTOBER 2019
2) ALL ELEVATIONS ARE FEET ABOVE MEAN SEA LEVEL

0 1,300 2,600
Feet
1 in = 1,350 ft

Stantec

FOR:
INTERMOUNTAIN POWER SERVICE CORP.
INTERMOUNTAIN GENERATION FACILITY
DELTA, UTAH

OCTOBER 10, 2019 POTENTIOMETRIC MAP AND GROUNDWATER FLOW MAP

FIGURE: 4

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
203709098	CK	ALL		12/18/19

Figure 5 May 2019 TDS Results

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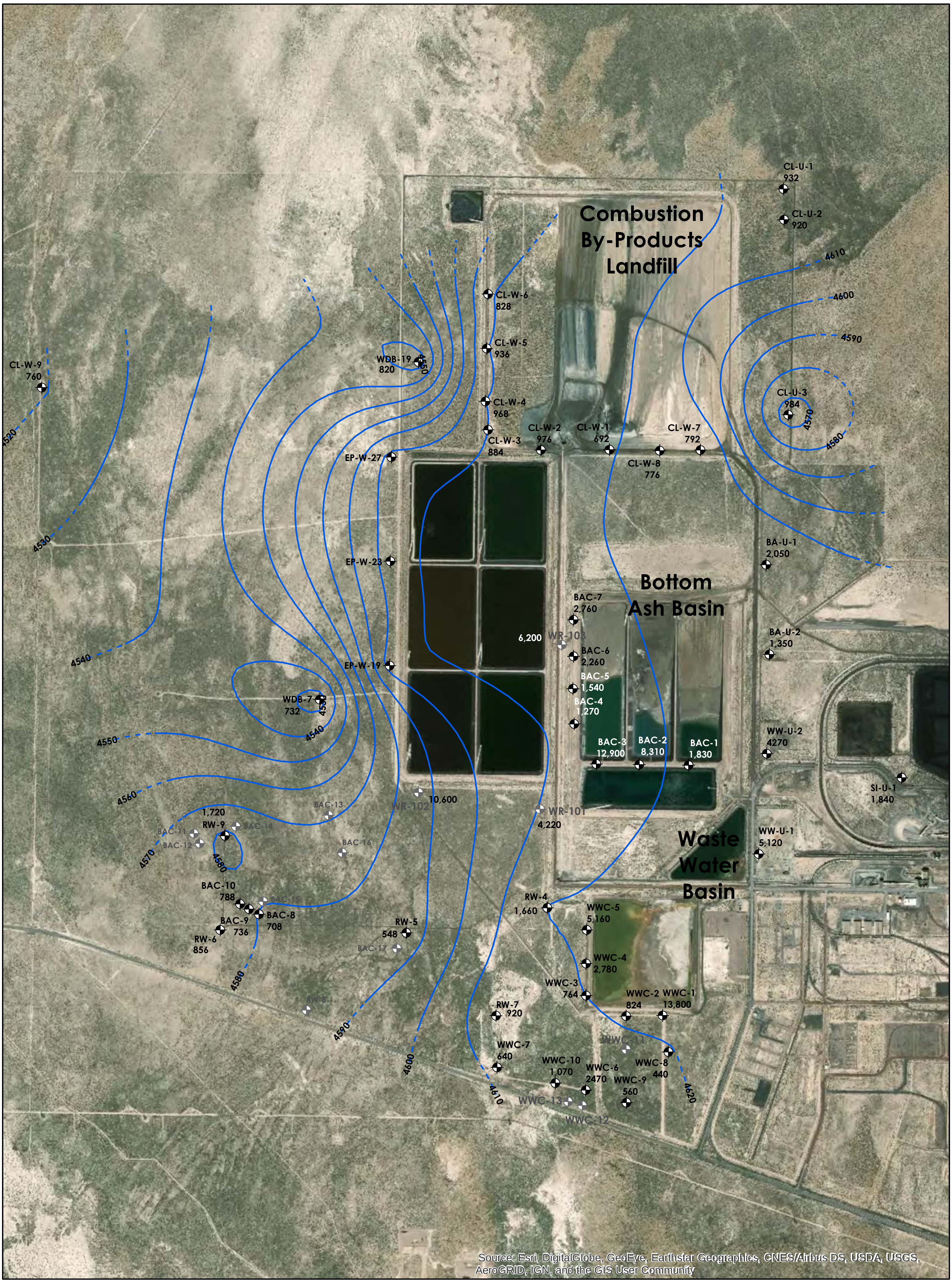

LEGEND:

- MONITORING WELL (GREYED WHEN NOT USED FOR CONTOURING)
- 718 TDS RESULT (parts per million-ppm)
- GROUNDWATER CONTOUR

NOTE:

1) DATA COLLECTED SPRING 2019
2) ALL ELEVATIONS ARE FEET ABOVE MEAN SEA LEVEL

0 1,300 2,600
Feet
1 in = 1,350 ft

Stantec

FOR: INTERMOUNTAIN POWER SERVICE CORP. INTERMOUNTAIN GENERATION FACILITY DELTA, UTAH		SPRING 2019 TDS RESULTS		FIGURE: 5
JOB NUMBER: 203709098	DRAWN BY: CK	CHECKED BY: ALL	APPROVED BY:	DATE: 12/18/19

Figure 6 October TDS Results

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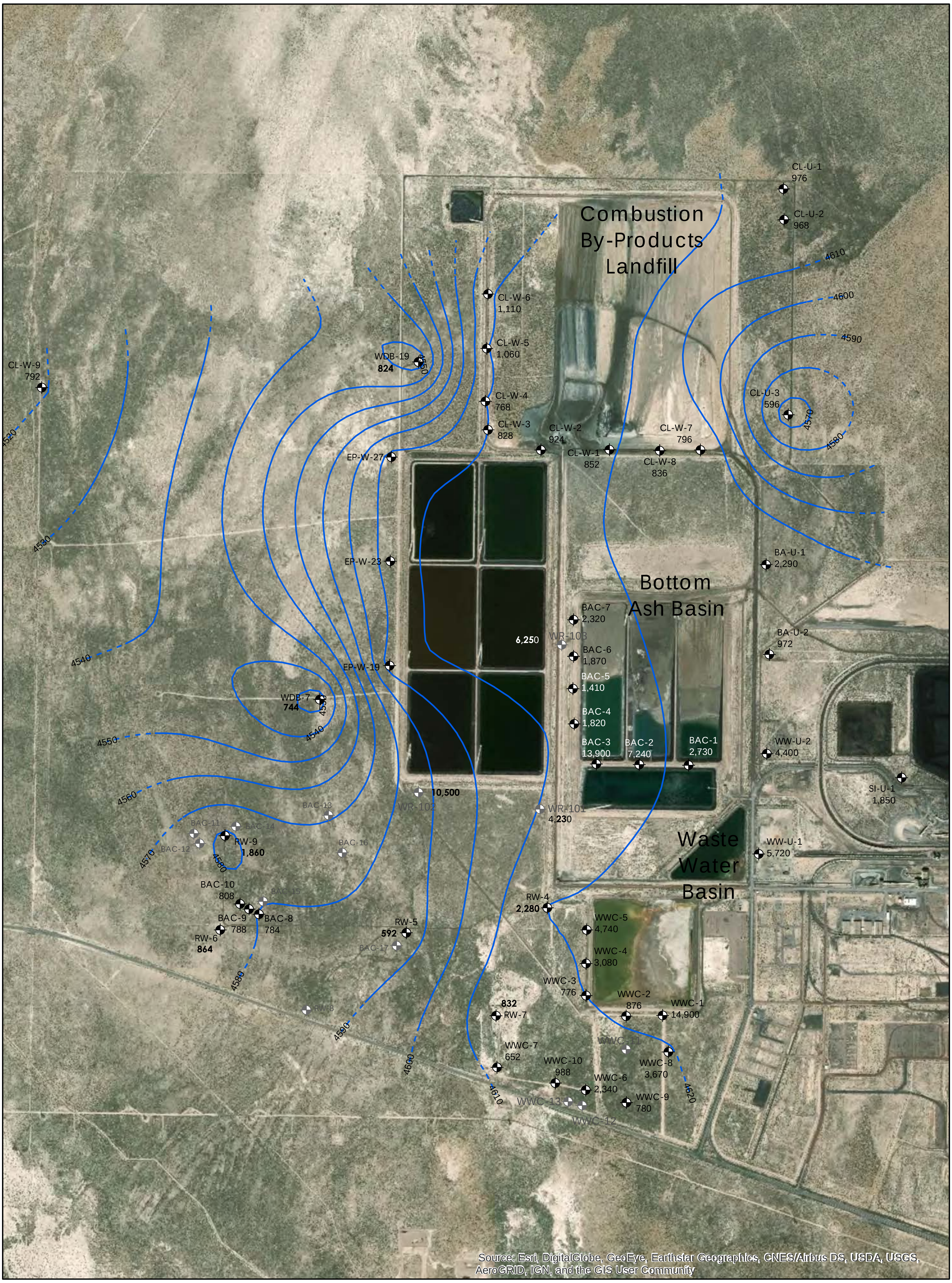


LEGEND:

- MONITORING WELL (GREYED WHEN NOT USED FOR CONTOURING)
- 718 TDS RESULT (parts per million-ppm)
- GROUNDWATER CONTOUR

NOTE:

1) DATA COLLECTED FALL 2019
2) ALL ELEVATIONS ARE FEET ABOVE MEAN SEA LEVEL

0 1,300 2,600
Feet
1 in = 1,350 ft

Stantec

FOR:
INTERMOUNTAIN POWER SERVICE CORP.
INTERMOUNTAIN GENERATION FACILITY
DELTA, UTAH

FALL 2019 TDS RESULTS

FIGURE: 6

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
203709098	CK	ALL		12/18/19

TABLE 1 GROUNDWATER MONITORING WELL CONSTRUCTION DETAILS

Table 1
WELL CONSTRUCTION SUMMARY
Intermountain Generating Facility
Delta, Utah

MONITOR WELL I.D.	DATE COMPLETED	WELL DIAMETER / MATERIAL	TOTAL DEPTH (feet BGS)	WELL SCREENING INTERVAL (feet BGS)	TOP OF PVC CASING ELEVATION (feet MSL*)
Combustion By-Products Landfill Wells					
CLW-1	5/12/2015	4-inch PVC	65	55-65	4653.46
CLW-2	5/14/2015	4-inch PVC	80	70-80	4648.17
CLW-3	5/13/2015	4-inch PVC	80	70-80	4644.03
CLW-4	5/26/2015	4-inch PVC	82	72-82	4642.88
CLW-5	7/27/2015	4-inch PVC	82	72-82	4640.99
CLW-6	7/26/2015	4-inch PVC	88	78-88	4639.63
CLW-7	7/24/2015	4-inch PVC	72	52-72	4659.34
CLW-8	7/24/2015	4-inch PVC	72	62-72	4655.63
CLW-9	3/25/2018	4-inch PVC	97	87-97	4555.98
CL-U-1	7/23/2015	4-inch PVC	80	68-78	4657.48
CL-U-2	7/22/2015	4-inch PVC	80	70-80	4663.48
CL-U-3	3/27/2018	4-inch PVC	77	67-77	4606.01
Bottom Ash Basin Wells					
BAC-1	7/31/2015	4-inch PVC	70	60-70	4668.70
BAC-2	7/29/2015	4-inch PVC	65	55-65	4668.72
BAC-3	7/28/2015	4-inch PVC	72	52-72	4668.84
BAC-4	8/10/2015	4-inch PVC	75	55-75	4649.45
BAC-5	8/9/2015	4-inch PVC	68	58-68	4649.67
BAC-6	8/8/2015	4-inch PVC	65	55-65	4648.15
BAC-7	8/7/2015	4-inch PVC	67	57-68	4650.09
BAC-8	4/29/2019	6-inch PVC	77	52-77	4626.42
BAC-9	5/1/2019	6-inch PVC	77	52-77	4626.27
BAC-10	5/3/2019	6-inch PVC	87	62-87	4626.27

Table 1
WELL CONSTRUCTION SUMMARY
Intermountain Generating Facility
Delta, Utah

MONITOR WELL I.D.	DATE COMPLETED	WELL DIAMETER / MATERIAL	TOTAL DEPTH (feet BGS)	WELL SCREENING INTERVAL (feet BGS)	TOP OF PVC CASING ELEVATION (feet MSL*)
BAC-11	12/7/2019	6-inch PVC	81	50-75	4624.96
BAC-12	12/6/2019	6-inch PVC	81	53-78	4625.055
BAC-13	11/18/2019	6-inch PVC	91	65-90	4629.834
BAC-14	12/4/2019	6-inch PVC	81	53-78	4627.506
BAC-15	12/9/2019	6-inch PVC	81	50-75	4626.494
BAC-16	11/21/2019	6-inch PVC	91	64-89	4630.426
BAC-17	12/10/2019	6-inch PVC	82	56-81	4629.648
BA-U-1	7/24/2015	4-inch PVC	55	45-55	4665.73
BA-U-2	7/25/2015	4-inch PVC	70	60-70	4661.33

Table 1
WELL CONSTRUCTION SUMMARY
Intermountain Generating Facility
Delta, Utah

MONITOR WELL I.D.	DATE COMPLETED	WELL DIAMETER / MATERIAL	TOTAL DEPTH (feet BGS)	WELL SCREENING INTERVAL (feet BGS)	TOP OF PVC CASING ELEVATION (feet MSL*)
Waste Water Basin Wells					
WWC-1	7/26/2015	4-inch PVC	60	48-58	4644.72
WWC-2	7/27/2015	4-inch PVC	70	60-70	4645.11
WWC-3	7/30/2015	4-inch PVC	65	55-65	4638.90
WWC-4	7/29/2015	4-inch PVC	75	65-75	4640.58
WWC-5	7/28/22015	4-inch PVC	74	64-74	4641.75
WWC-6	3/24/2018	4-inch PVC	87	67-77	4576.26
WWC-7	3/22/2018	4-inch PVC	87	77-87	4570.78
WWC-8	4/25/2019	6-inch PVC	96	71-96	4647.799
WWC-9	4/28/2019	6-inch PVC	89	62-87	4642.58
WWC-10	4/26/2019	6-inch PVC	90	62-87	4633.72
WWC-11	11/16/2019	6-inch PVC	91	65-90	4641.919
WWC-12	11/12/2019	6-inch PVC	91	65-90	4636.661
WWC-13	11/15/2019	6-inch PVC	91	65-90	4635.128
SI-U-1	8/12/2015	4-inch PVC	79	69-79	4664.59
WW-U-1	8/11/2015	4-inch PVC	70	60-70	4665.03
WW-U-2	8/11/2015	4-inch PVC	75	65-75	4665.46

BGS = Below Ground Surface

MSL = Mean Sea Level

Appendix A Drilling Logs and Well Schematic Diagrams

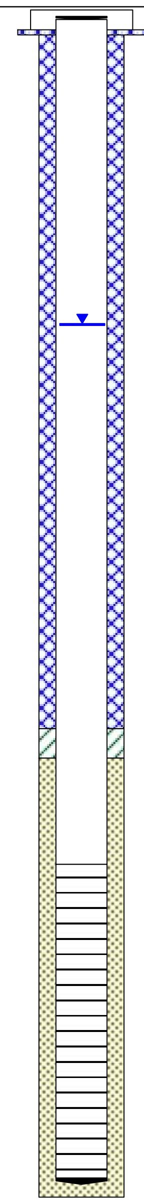
MONITORNG WELL ID:	**WWC-11**
CLIENT:	Intermountain Power Service Corporation
PROJECT:	Monitoring Well Installation
SITE LOCATION:	South of Waste Water Basin Surface Impoundment

INTERMOUNTAIN POWER SERVICE CORP. — Stantec

DRILLING CONTRACTOR:	Cascade Drilling	COORDINATE SYSTEM:	
DRILLING METHOD:	Sonic	EASTING:	NORTHING:
DRILLING EQUIPMENT:	Pro Sonic 600 11-77287	ELEVATION:	BOREHOLE ANGLE: 90 degrees
SAMPLING METHOD:	4 inch sonic core barrel 0 to 91 ft bgs.,	TOTAL DEPTH (ft.): 91	GROUNDWATER LEVEL (ft. btoc.): 22.82
	10 inch sonic core barrel 0 to 91 ft bgs.	DATE STARTED: 11/15/2019	DATE FINISHED: 11/16/2019
		LOGGED BY: Michael Ward	

DEPTH (feet)	LITHOLOGICAL GRAPHIC	LITHOLOGICAL DESCRIPTION
0		Poorly graded Sand with Silt (SP), fine sand 95%, loose, soft, dry, very pale brown (10 YR 7/4), trace gravel 5%.
5		
10		Clay (CL), medium plasticity, cohesive, moist, soft to medium density, light gray (10 YR 7/1), mottled with some trace interfingered clay, brownish yellow (10 YR 6/8).
		Well Graded Sand with Clay (SW-SC), medium grained sand 85%, gravel 10%, clay 5%, moist, loose, pale brown (10 YR 6/3).
15		Clay with Sand (CL), low to medium plasticity, soft to medium density, non cohesive, dry to moist, brown (10 YR 5/3).
		Same as above, Clay (CL), no sand.
20		Poorly Graded Sand (SP), fine sand 98%, loose soft, dry, pale brown (10 YR 6/3), 2% gravel, subrounded.
25		
30		
35		
		Well Graded Sand with Gravel (SW), fine to coarse sand 90%, small gravel 10%, loose, moist, brown (10 YR 5/3), gravel are subangular to subrounded, assorted gravel matrix.
40		
45		Clay (CL), medium plasticity, medium density, moist to wet, cohesive, pale brown (10 YR 6/3).
		Well Graded Sand with gravel (SW), fine to coarse sand 90%, gravel 10%, loose, soft, brown (10 YR 5/3).
50		
		Same as above, becoming wet.
55		Clay (CL), medium plasticity, medium density, wet, cohesive, pale brown (10 YR 6/3).
		Clay with Sand (CL), low to medium plasticity, soft to medium density, non cohesive, moist, pale brown (10 YR 6/3).
60		Same as above, fine grained sand, saturated, low plasticity, non cohesive.
65		Same as above, with trace interfingering clay, reddish yellow (5 YR 6/6).
70		
		Well Graded Sand with Gravel (SW), fine to coarse sand 90%, small gravel 10%, loose, wet, brown (10 YR 5/3), gravel are subrounded, assorted matrix.
75		
80		
85		
90		Clay with Sand (CL), medium plasticity, medium density, wet, cohesive, pale brown (10 YR 6/3).
95		End of borehole to 91 ft bgs., per scope of work.

WELL CONSTUCTION DIAGRAM



Notes: bgs. = below ground surface; dia. = diameter; ft = feet; Sch. = Schedule; YR = Yellow-Red

INTERMOUNTAIN POWER SERVICE CORP.

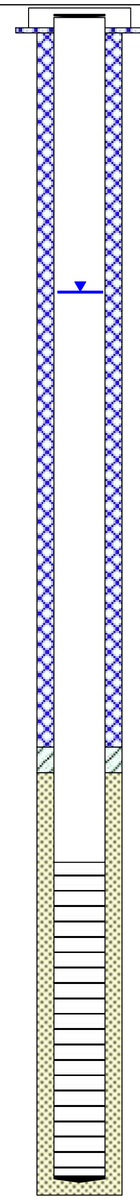
Stantec

MONITORNG WELL ID:	**WWC-12**
CLIENT:	Intermountain Power Service Corporation
PROJECT:	Monitoring Well Installation
SITE LOCATION:	South of Waste Water Basin Surface Impoundment

DRILLING CONTRACTOR:	Cascade Drilling	COORDINATE SYSTEM:			
DRILLING METHOD:	Sonic	EASTING:		NORTHING:	
DRILLING EQUIPMENT:	Pro Sonic 600 11-77287	ELEVATION:		BOREHOLE ANGLE:	90 degrees
SAMPLING METHOD:	4 inch sonic core barrel 0 to 91 ft bgs.,	TOTAL DEPTH (ft.):	91	GROUNDWATER LEVEL (ft. btoc.):	20.46
	10 inch sonic core barrel 0 to 91 ft bgs.	DATE STARTED:	11/11/2019	DATE FINISHED:	11/12/2019
		LOGGED BY:	Michael Ward		

DEPTH (feet)	LITHOLOGICAL GRAPHIC	LITHOLOGICAL DESCRIPTION
0		Poorly Graded Sand with Silt (SP-SM), 90% sand, 10% silts, light gray (7.5 YR 7/1), soft, loose, fine grained, dry, sand are mostly quartz, subangular quartz grains.
5		Same as above, becoming light yellowish brown (10 YR 6/4).
10		Same as above, becoming wet at 8.5 ft bgs., perched groundwater.
		Clay (CL), medium plasticity, medium stiff, cohesive, very pale brown (10 YR 7/4).
		Poorly Graded Sand with Silt (SP-SM), 95% fine grained sand, 5% silts, loose, soft, moist, brown (10 YR 4/3), trace gravel.
15		Well Graded Sand with Gravel (SW), 80% sand, 20% gravel, fine to coarse sand, moist, loose soft, dark yellowish brown (10YR 4/4), gravel are subrounded to rounded, small.
20		
25		Clay (CL), medium plasticity, medium density, moist, cohesive, light yellowish brown (10 YR 6/4), thickly bedded, sharp contact at 25 ft bgs.
30		Poorly Graded Sand (SP), fine grained sand 100%, loose, soft, moist, brown (10YR 5/3).
35		
40		Well Graded Sand with Gravel (SW), fine to coarse grained sand 90%, small gravel 10%, loose, soft, moist, dark yellowish brown (10 YR 4/4).
45		Same as above, increase in gravel to 30%.
		Same as above, decrease in gravel to 10%.
		Poorly Graded Sand (SP), fined grained sand 100%, loose, moist, brown (10YR 4/3). Sharp contact.
50		
55		Clay (CL), high plasticity, stiff, moist, cohesive, light yellowish brown (10 YR 6/4), sharp contact.
60		Lost core sample from sonic casing.
		Clay (CH), high plasticity, stiff, moist, cohesive, yellowish brown (10 YR 5/4).
65		
70		Well Graded Sand with Silt and Clay (SW-SM), fine or medium grained sand 100%, soft, loose, brown (10 YR 4/3).
75		Clay (CH), high plasticity, stiff, moist, cohesive, yellowish brown (10 YR 5/4).
80		Poorly Graded Sand with Silts and Clay (SP-SC), fine grained sand 95%s, soft, loose, wet, light yellowish brown (10 YR 6/4), trace clay.
85		Clay with Sand (CL), medium plasticity, soft to medium density, wet, pale brown (10YR 6/3), sand are fine grained.
		Same as above with gradational transition to clay.
90		Clay (CH), high plasticity, mottled, wet, cohesive, pale brown (10 YR 6/3), mottled color is reddish yellow (7.5 YR 7/6).
95		End of borehole to 91 ft bgs., per scope of work.

WELL CONSTUCTION DIAGRAM



Above ground monument with well cap

Grout 0 to 55 ft bgs.
Borehole diameter 10 inches from 0 to 91 ft bgs.

0 to 65 ft bgs., 6 in dia., Sch. 40 PVC riser

Bentonite 55 to 58 ft bgs.
Filter Pack Sand 58 to 91 ft bgs.

65 to 90 ft bgs., 6 in dia., Sch. 40 PVC screen with 0.02 inch slot aperture

End Cap

Notes: bgs. = below ground surface; dia. = diameter; ft = feet; Sch. = Schedule; YR = Yellow-Red

MONITORNG WELL ID:	**WWC-13**
CLIENT:	Intermountain Power Service Corporation
PROJECT:	Monitoring Well Installation
SITE LOCATION:	South of Waste Water Basin Surface Impoundment

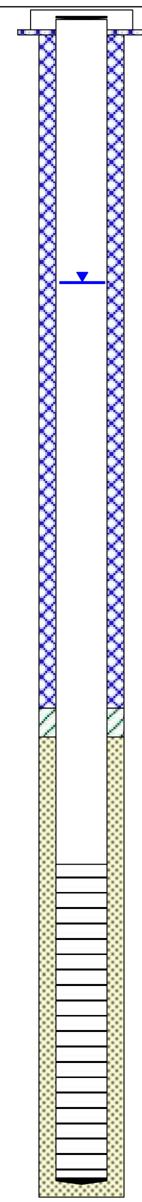
INTERMOUNTAIN POWER SERVICE CORP.

Stantec

DRILLING CONTRACTOR:	Cascade Drilling	COORDINATE SYSTEM:	
DRILLING METHOD:	Sonic	EASTING:	NORTHING:
DRILLING EQUIPMENT:	Pro Sonic 600 11-77287	ELEVATION:	BOREHOLE ANGLE: 90 degrees
SAMPLING METHOD:	4 inch sonic core barrel 0 to 91 ft bgs.,	TOTAL DEPTH (ft.): 91	GROUNDWATER LEVEL (ft. btoc.): 19.55
	10 inch sonic core barrel 0 to 91 ft bgs.	DATE STARTED: 11/13/2019	DATE FINISHED: 11/15/2019
		LOGGED BY: Michael Ward	

DEPTH (feet)	LITHOLOGICAL GRAPHIC	LITHOLOGICAL DESCRIPTION
0		Poorly Graded Sand with Silts (SP-SM), fine sand 95%, 5% silts, soft, loose, dry, light gray (7.5 YR 7/1).
5		Well Graded Sand (SW), fine to medium grained sand 95%, soft, loose, dry, pinkish gray (7.5 YR 7/2), trace gravel, small gravel, assorted matrix, subrounded.
10		Same as above, with clay, increase gravel 10%, wet.
		Clay with Sand (CL), low to medium plasticity, moist, cohesive, very pale brown (10 YR 7/4).
15		Well Graded Sand (SW), fine to medium grained sand 95%, soft, loose, , moist, pale brown (10 YR 6/3), trace gravel 5%, subrounded.
20		
		Same as above, with clay (SW-SC) at 10%, wet, soft, low plasticity clay.
25		Clay with Sand (CL), medium plasticity, moist cohesive, thick bedded, fine sand, sharp contact at 23 ft, bgs,
		Same as above, Clay (CL), trace black staining.
30		Clay with Sand (CL), medium plasticity, moist cohesive, fine sand.
		Poorly Graded Sand (SP), fine grained sand 100%, loose, soft, moist, brown (10 YR 5/3).
35		
40		
		Well Graded Sand with gravel (SW), fine to coarse sand 85%, 15% gravel, loose, soft, moist, brown (10 YR 5/3), gravel are small, subrounded, assorted matrix.
45		Poorly Graded Sand (SP), fine to medium grained sand 98%, loose, soft, moist, brown (10 YR 5/3), trace small gravel 2%, subrounded.
50		Same as above, trace clay.
		Clay with Sand (CL), low to medium plasticity, soft to medium density, moist, yellowish brown (10 YR 5/4), secondary sand are fine grained.
55		
60		Clay (CL), medium to high plasticity, medium to stiff density, moist, thickly bedded, cohesive, brown (10 YR 5/3), mottled, reddish yellow (5 YR 6/6).
65		
		Clay with Sand (CL) , medium plasticity, moist to wet, cohesive, brown (10 YR 5/3).
70		Clay (CL), medium plasticity, medium to stiff density, moist, cohesive, brown (10 YR 5/3), mottled, reddish yellow (5 YR 6/6).
75		
		Poorly Graded Sand with Clay (SP-SC), fine grained sand 95%, loose, soft, wet, brown (10 YR 5/3), some trace interfingering clay 5%, reddish yellow (5 YR 5/3).
80		Clay with Sand (CL), low plasticity, soft, wet, non cohesive, pale brown (10 YR 6/3).
85		Clay (CL), medium to high plasticity, wet, cohesive, pale brown (10 YR 6/3), interfingering clay reddish yellow (5 YR 6/6), trace sand.
90		Same as above, becoming medium plasticity.
		End of borehole to 91 ft bgs., per scope of work.
95		

WELL CONSTUCTION DIAGRAM



Notes: bgs. = below ground surface; dia. = diameter; ft = feet; Sch. = Schedule; YR = Yellow-Red

MONITORNG WELL ID:	**BAC-11**		
CLIENT:	Intermountain Power Service Corporation		
PROJECT:	Monitoring Well Installation		
SITE LOCATION:	Southwest of Bottom Ash Basin Surface Impoundment		

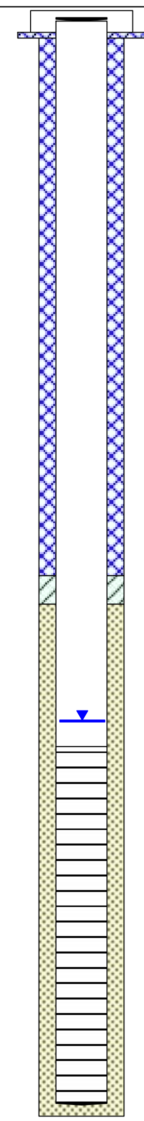
INTERMOUNTAIN POWER SERVICE CORP.

Stantec

DRILLING CONTRACTOR:	Cascade Drilling	COORDINATE SYSTEM:	
DRILLING METHOD:	Sonic	EASTING:	NORTHING:
DRILLING EQUIPMENT:	Pro Sonic 600 11-77287	ELEVATION:	BOREHOLE ANGLE: 90 degrees
SAMPLING METHOD:	4 inch sonic core barrel 0 to 91 ft bgs., 10 inch sonic core barrel 0 to 91 ft bgs.	TOTAL DEPTH (ft.): 81	GROUNDWATER LEVEL (ft. btoc.): 48.21
		DATE STARTED: 12/6/2019	DATE FINISHED: 12/7/2019
		LOGGED BY: Michael Ward	

DEPTH (feet)	LITHOLOGICAL GRAPHIC	LITHOLOGICAL DESCRIPTION
0		Fill
		Poorly Graded Sand with Silt (SP-SM), fine grained sand 100%, loose, soft, dry, very pale brown (10 YR 7/3).
5		
		Clay with Sand (CL), low plasticity, soft to medium density, moist, light brownish gray (10 YR 6/2).
10		Poorly Graded Sand with Clay (SP-SC), fine grained sand 85%, loose, medium dense, moist, light brownish gray (10 YR 6/2); clay are low plasticity, medium dense.
15		
		Clay (CL), medium plasticity, medium dense, cohesive, moist, light brownish gray (10 YR 6/2), mottled with brownish yellow (10 YR 6/8).
20		
25		
30		Poorly Graded Sand with Clay (SP-SC), fine grained sand 90%, loose, soft, moist, light yellowish brown (10 YR 6/4); clay low plasticity, soft, non cohesive.
		Same as above, becoming brown (10 YR 5/3).
35		
40		Clay (CL), medium plasticity, medium dense, cohesive, moist, light yellowish brown (10 YR 6/4).
45		
50		Poorly Graded Sand (SP), fine to medium grained sand 100%, loose, soft, wet, brown (10 YR 5/3).
55		Clay (CL), medium plasticity, medium dense, cohesive, moist, light yellowish brown (10 YR 6/4).
		Clay with Sand (CL), low plasticity, soft, wet, pale brown (10 YR 6/3).
60		Well Graded Sand (SW), fine to coarse Sand 95%, loose, soft, wet, brown (10 YR 5/3), trace gravel, subrounded.
65		Same as above, increase in coarse grained sand between 65.2 to 65.8 ft bgs.
		Same as 60 ft bgs.
70		
75		Clay (CL), medium plasticity, medium dense, moist, cohesive, light yellowish brown (10 YR 6/4).
80		End of borehole at 81 ft bgs. Installed monitoring well per scope of work.
85		

WELL CONSTUCTION DIAGRAM



Above ground monument with well cap

Borehole diameter 10 inches from 0 to 76 ft bgs., and 4 inches from 76 to 81 ft bgs.

Grout 0 to 38 ft bgs.

0 to 50 ft bgs., 6 in dia., Sch. 40 PVC riser

Bentonite 38 to 40 ft bgs.

Filter Pack Sand 40 to 76 ft bgs.

50 to 75 ft bgs., 6 in dia., Sch. 40 PVC screen with 0.02 inch slot aperture

End Cap

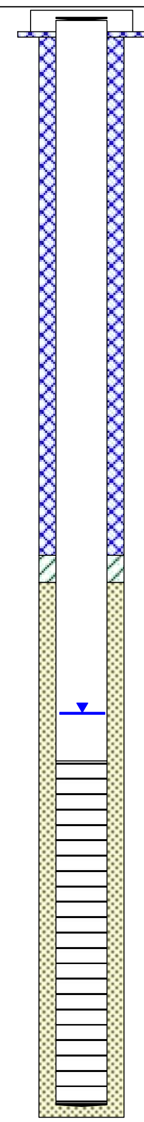
Notes: bgs. = below ground surface; dia. = diameter; ft = feet; Sch. = Schedule; YR = Yellow-Red

INTERMOUNTAIN POWER SERVICE CORP.	MONITORNG WELL ID:	**BAC-12**	Stantec
	CLIENT:	Intermountain Power Service Corporation	
	PROJECT:	Monitoring Well Installation	
	SITE LOCATION:	Southwest of Bottom Ash Basin Surface Impoundment	

DRILLING CONTRACTOR:	Cascade Drilling	COORDINATE SYSTEM:	
DRILLING METHOD:	Sonic	EASTING:	NORTHING:
DRILLING EQUIPMENT:	Pro Sonic 600 11-77287	ELEVATION:	BOREHOLE ANGLE: 90 degrees
SAMPLING METHOD:	4 inch sonic core barrel 0 to 91 ft bgs.,	TOTAL DEPTH (ft.): 81	GROUNDWATER LEVEL (ft. btoc.): 49.55
	10 inch sonic core barrel 0 to 91 ft bgs.	DATE STARTED: 12/4/2019	DATE FINISHED: 12/6/2019
		LOGGED BY: Michael Ward	

DEPTH (feet)	LITHOLOGICAL DESCRIPTION
0	Poorly Graded Sand with Silt (SP-SM), fine grained sand 95%, loose, soft, dry, pale brown (10 YR 6/3).
10	Clay (CL), medium plasticity, medium dense, moist, cohesive, light brownish gray (10 YR 6/2).
	Poorly Graded Sand with Clay (SP-SC), fine grained sand 90%, loose, soft, dry, light brownish gray (10 YR 6/2); clay 10%, low plasticity, soft.
20	Clay (CL), medium plasticity, medium dense, moist, cohesive, very pale brown (10 YR 7/3), mottled with brownish yellow (10 YR 6/8).
25	Poorly Graded Sand with Silt (SP-SM), loose, soft, dry, pale brown (10 YR 6/3).
	Well Graded Sand with Gravel (SW), fine to coarse sand 85%, loose, soft, dry, light brownish gray (10 YR 6/2), gravel 15%, small, subangular to subrounded, assorted matrix.
	Poorly Graded Sand (SP), fine grained sand 95%, loose, soft, moist, pale brown (10 YR 6/3), 5% clay.
40	Clay with Sand (CL), medium plasticity, medium dense, moist, light yellowish brown (10 YR 6/3).
	Clay (CL), medium plasticity, stiff, moist, cohesive, pale brown (10 YR 6/2).
45	Clay with Sand (CL), low plasticity, soft, non cohesive, wet, brown (10 YR 5/3).
	Clay (CL), Same as 39.5 ft bgs.
	Clay with Sand (CL), Same as 38.5 ft bgs.
50	Clay (CL), Same as 41.5 ft bgs.
	Clay with Sand (CL), low plasticity, soft, non cohesive, wet, brown (10 YR 5/3).
55	Clay (CL), medium plasticity, medium dense, cohesive , moist, brown (10 YR 5/3), mottled with yellowish brown (10 YR 5/6).
	Clay with Sand (CL), low plasticity, soft, non cohesive, wet, brown (10 YR 5/3).
	Well Graded Sand (SW) fine to coarse sand 98%, loose, soft, wet, brown (10 YR 5/3), trace gravel.
	Clay with Sand (CL), low to medium plasticity, medium dense, wet, non cohesive, brown (10 YR 5/3), mottled with light brownish gray (10 YR 6/2).
70	Well Graded Sand with Clay (SW-SC), fine grained sand 90%, loose, soft, wet, brown (10 YR 5/3): clay 10%, low plasticity, non cohesive.
75	Clay (CL), medium plasticity, medium dense, cohesive , moist, brown (10 YR 5/3).
	End of borehole at 81 ft bgs. Installed monitoring well per scope of work.
85	

WELL CONSTUCTION DIAGRAM



Notes: bgs. = below ground surface; dia. = diameter; ft = feet; Sch. = Schedule; YR = Yellow-Red

MONITORNG WELL ID:	**BAC-13**
CLIENT:	Intermountain Power Service Corporation
PROJECT:	Monitoring Well Installation
SITE LOCATION:	Southwest of Bottom Ash Basin Surface Impoundment

INTERMOUNTAIN POWER SERVICE CORP.

Stantec

DRILLING CONTRACTOR:	Cascade Drilling	COORDINATE SYSTEM:	
DRILLING METHOD:	Sonic	EASTING:	NORTHING:
DRILLING EQUIPMENT:	Pro Sonic 600 11-77287	ELEVATION:	BOREHOLE ANGLE: 90 degrees
SAMPLING METHOD:	4 inch sonic core barrel 0 to 91 ft bgs.,	TOTAL DEPTH (ft.): 91	GROUNDWATER LEVEL (ft. btoc.): 45.38
	10 inch sonic core barrel 0 to 91 ft bgs.	DATE STARTED: 11/16/2019	DATE FINISHED: 11/18/2019
		LOGGED BY: Michael Ward	

DEPTH (feet) | LITHOLOGICAL GRAPHIC | LITHOLOGICAL DESCRIPTION | WELL CONSTUCTION DIAGRAM

Poorly Graded Sand with Silt and Gravel (SP-SM), fine grained sand 85%, silts 10%, trace gravel 5%, loose, dry, light gray (10 YR 7/2).
Same as above, becoming dense, consolidated.
Well Graded Sand with Gravel (SW), sand fine to coarse 85%, gravel 15%, loose, soft, dry, pale brown (10 YR 6/3), gravel are subrounded.
Same as above, no gravel, sand 100%.
Clay with Sand (CL), low plasticity, dry to moist, non cohesive, brown (10 YR 5/3), with small clay interfingering, reddish yellow (5 YR 6/8).
Same as above, moist.
Same as above, medium plasticity.
Poorly Graded Sand (SP), fine grained sand 100%, loose, dry, dark brown (10 YR 3/3), thinly bedded.
Clay with Sand (CL), low plasticity, moist, non cohesive, brown (10 YR 5/3), with small clay interfingering, reddish yellow (5 YR 6/8).

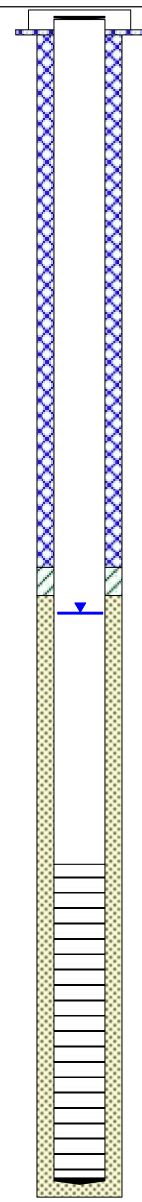
Well Graded Sand with Gravel (SW), sand fine to coarse 85%, gravel 15%, loose, soft, dry, pale brown (10 YR 6/3), gravel are subrounded.

Poorly Graded Sand (SP), medium grained sand 100%, loose, soft, moist, brown (10 YR 5/3).
Clay (CL), medium plasticity, medium dense, moist, brownish yellow (10 YR 6/6).
Clay with Sand (CL), low plasticity, soft density, wet, non cohesive, light yellowish brown (10 YR 6/4).
Clay (CL), medium plasticity, medium dense, moist, cohesive, brownish yellow (10 YR 6/6), with mottled clay, brownish yellow (10 YR 6/8).

Clay with Sand (CL), low to medium plasticity, soft to medium dense, wet, non cohesive, brown (10 YR 6/3).
Clay (CL), medium plasticity, medium dense, moist to wet, cohesive, light brownish gray (10 YR 6/2).
Clay with Sand (CL), low to medium plasticity, soft to medium dense, wet, brown (10 YR 6/3).
Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3).
Clay (CL), medium plasticity, medium dense, moist to wet, cohesive, light brownish gray (10 YR 6/2).
Clay (CL), high plasticity, stiff, moist, cohesive, pale brown (10 YR 6/3).
Poorly Graded Sand (SP), medium grained sand 95%, loose, soft, wet, brown (10 YR 5/3), trace gravel 5%, rounded to subrounded, assorted matrix.

Clay with Sand (CL), low plasticity, soft, wet, non cohesive, brown (10 YR 5/3).
Clay (CL), medium plasticity, medium dense, moist to wet, cohesive, brown gray (10 YR 5/3).

End of borehole to 91 ft bgs., per scope of work.



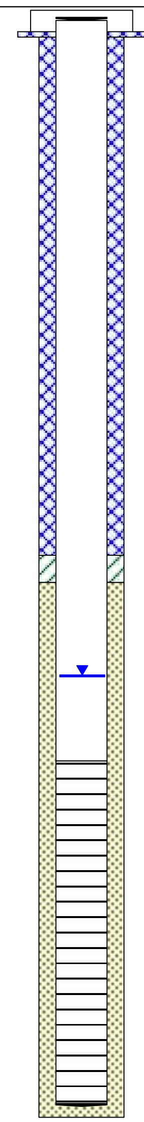
Notes: bgs. = below ground surface; Sch. = Schedule; dia. = diameter; YR = Yellow-Red; ft = feet

MONITORNG WELL ID:	**BAC-14**
CLIENT:	Intermountain Power Service Corporation
PROJECT:	Monitoring Well Installation
SITE LOCATION:	Southwest of Bottom Ash Basin Surface Impoundment

DRILLING CONTRACTOR:	Cascade Drilling	COORDINATE SYSTEM:	
DRILLING METHOD:	Sonic	EASTING:	NORTHING:
DRILLING EQUIPMENT:	Pro Sonic 600 11-77287	ELEVATION:	BOREHOLE ANGLE: 90 degrees
SAMPLING METHOD:	4 inch sonic core barrel 0 to 81 ft bgs., 10 inch sonic core barrel 0 to 78 ft bgs.	TOTAL DEPTH (ft.): 81	GROUNDWATER LEVEL (ft. btoc.): 46.81
		DATE STARTED: 11/21/2019	DATE FINISHED: 12/4/2019
		LOGGED BY: Michael Ward	

DEPTH (feet)	LITHOLOGICAL GRAPHIC	LITHOLOGICAL DESCRIPTION
0		Well Graded Sand (SW), fine to coarse sand 95%, loose, soft, dry, yellowish brown (10 YR 5/4); 5% gravel, subrounded, small.
5		Well Graded Sand with Clay (SW-SC), fine to coarse sand 95%, medium dense, dry, light gray (10 YR 7/4).
10		Clay with Sand (CL), low to medium plasticity, soft to medium dense, dry to moist, very pale brown (10 YR 7/3).
15		
20		Clay (CL), medium plasticity, medium dense, moist, cohesive, pale brown (10 YR 6/3), with trace mottled clay, brownish yellow (10 YR 6/8).
25		Poorly Graded Sand (SP), fine sand 100%, loose, soft, light brownish gray (10 YR 6/2).
30		Poorly Graded Sand with Clay (SP-SC), fine sand 90%, loose, soft, moist, light brownish gray (10 YR 6/2); clay 10% low plasticity, soft, non cohesive.
35		Clay (CL), medium plasticity, medium dense, moist, cohesive, yellowish brown (10 YR 5/4).
40		Poorly Graded Sand (SP), fine sand 100%, loose, soft, moist to wet, brown (10 YR 5/4).
45		
50		Clay (CL), medium plasticity, medium to stiff dense, moist, cohesive, light brownish red (5 YR 6/3), mottled with reddish yellow (5YR 6/6).
		Poorly Graded Sand with Clay (SP-SC), fine sand 90%, loose, soft, moist, brown (10 YR 5/3); clay 10% low plasticity.
55		Clay (CL), medium plasticity, medium to stiff dense, moist, cohesive, light brownish red (5 YR 6/3), mottled with reddish yellow (5YR 6/6).
60		Poorly Graded Sand (SP), fine grained, loose, soft, wet, brown (10 YR 5/3).
		Clay (CL), medium plasticity, medium dense, wet, cohesive, light yellowish brown (10 YR 6/4).
65		Poorly Graded Sand with Clay (SP-SC), fine sand 85%, loose medium dense, wet, brown (10 YR 5/3); clay 15% low plasticity, non cohesive, light yellowish brown (10 YR 6/4).
		Clay (CL), medium plasticity, medium dense, wet, cohesive, light yellowish brown (10 YR 6/4).
70		Poorly Graded Sand (SP), fine grained, loose, soft, wet, brown (10 YR 5/3).
		Clay with Sand (CL), low plasticity, soft, wet, non cohesive, brown (10 YR 5/3).
75		Poorly Graded Sand with Clay (SP-SC), fine sand 90%, loose, soft, wet, brown (10 YR 5/3); clay 10%, low plasticity, soft, non cohesive.
		Poorly Graded Sand (SP), fine grained, loose, soft, wet, brown (10 YR 5/3).
80		Clay (CL), medium plasticity, medium to stiff, moist, brown (10 YR 5/3).
		End of borehole at 81 ft bgs. Installed monitoring well per scope of work.
85		

WELL CONSTUCTION DIAGRAM



Above ground monument with well cap

Borehole diameter 10 inches from 0 to 79 ft bgs. 4 inch borehole to 81 ft bgs.

Grout 0 to 38 ft bgs.

0 to 53 ft bgs., 6 in dia., Sch. 40 PVC riser

Bentonite 38 to 40 ft bgs.

Filter Pack Sand 40 to 79 ft bgs.

53 to 78 ft bgs., 6 in dia., Sch. 40 PVC screen with 0.02 inch slot aperture

End Cap

Notes: bgs. = below ground surface; dia. = diameter; ft = feet; Sch. = Schedule; YR = Yellow-Red

MONITORNG WELL ID:	**BAC-15**
CLIENT:	Intermountain Power Service Corporation
PROJECT:	Monitoring Well Installation
SITE LOCATION:	Southwest of Bottom Ash Basin Surface Impoundment

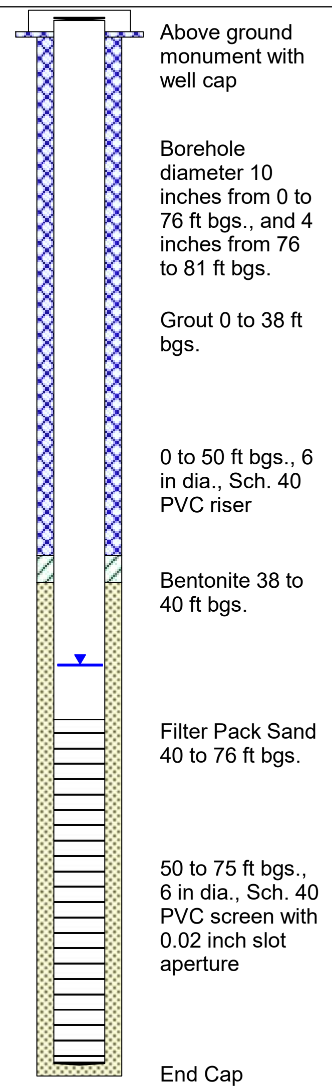
INTERMOUNTAIN POWER SERVICE CORP.

Stantec

DRILLING CONTRACTOR:	Cascade Drilling	COORDINATE SYSTEM:			
DRILLING METHOD:	Sonic	EASTING:		NORTHING:	
DRILLING EQUIPMENT:	Pro Sonic 600 11-77287	ELEVATION:		BOREHOLE ANGLE:	90 degrees
SAMPLING METHOD:	4 inch sonic core barrel 0 to 91 ft bgs.,	TOTAL DEPTH (ft.):	81	GROUNDWATER LEVEL (ft. btoc.):	46.03
	10 inch sonic core barrel 0 to 91 ft bgs.	DATE STARTED:	12/7/2019	DATE FINISHED:	12/9/2019
		LOGGED BY:	Michael Ward		

DEPTH (feet)	LITHOLOGICAL GRAPHIC	LITHOLOGICAL DESCRIPTION
0		Fill
		Poorly Graded Sand (SP), fine grained sand 98%, loose, soft, dry, very pale brown (10 YR 7/3), trace gravel, subrounded.
5		Clay (CL), medium plasticity, medium dense, cohesive, dry, light brownish gray (10 YR 6/2), trace white (10 YR 8/1), trace calcium carbonate between clay layering, effervesces with HCL.
10		
15		Poorly Graded Sand (SP), fine grained sand 98%, loose, soft, dry, light gray (10 YR 7/1), trace clay at depth.
20		Poorly Graded Sand with Clay (SP-SC), fine grained sand 90%, soft to medium dense, dry, pale brown (10 YR 6/3), clay low plasticity, medium dense.
25		
30		Clay (CL), medium plasticity, medium dense, cohesive, moist, pale brown (10 YR 6/3).
		Same as above, becoming light yellowish brown (10 YR 6/4).
35		Clay with Sand (CL), low plasticity, soft, non cohesive, light yellowish brown (10 YR 6/4).
		Clay (CL), medium plasticity, medium dense, cohesive, moist, light yellowish brown (10 YR 6/4).
40		
45		Well Graded Sand with Gravel (SW), fine to coarse sand 90%, loose, soft, wet, brown (10 YR 5/3), gravel 10%, subrounded.
50		
		Same as above, with trace black staining.
55		Clay with Sand (CL), low plasticity, soft, non cohesive, wet, light yellowish brown (10 YR 6/4).
		Clay (CL), medium plasticity, medium dense, cohesive, moist, yellowish brown (10 YR 5/6).
		Clay with Sand (CL), low plasticity, soft, non cohesive, wet, light yellowish brown (10 YR 6/4).
60		Poorly Graded Sand (SP), fine grained sand 100%, loose, soft, wet, brown (10 YR 5/3)
		Same as above, with some clay.
65		Poorly Graded Sand (SP), fine grained sand 100%, loose, soft, wet, brown (10 YR 5/3).
		Same as above, color change to yellowish brown (10 YR 6/4).
70		Clay (CL), medium plasticity, medium dense, cohesive, moist, yellowish brown (10 YR 5/4).
		Same as above, with mottled yellowish red (5 YR 5/6).
75		Clay with Sand (CL), low plasticity, soft, non cohesive, wet, brown (10 YR 5/3).
		Clay (CL), medium plasticity, medium dense, cohesive, moist, yellowish brown (10 YR 5/4).
80		Clay with Sand (CL), low plasticity, soft, non cohesive, wet, brown (10 YR 5/3).
		Poorly Graded Sand (SP), fine grained sand 98%, loose, soft, wet, brown (10 YR 5/3).
		End of borehole at 81 ft bgs. Installed monitoring well per scope of work.
85		

WELL CONSTUCTION DIAGRAM



Notes: bgs. = below ground surface; dia. = diameter; ft = feet; Sch. = Schedule; YR = Yellow-Red

MONITORNG WELL ID: **BAC-16**

CLIENT: Intermountain Power Service Corporation

PROJECT: Monitoring Well Installation

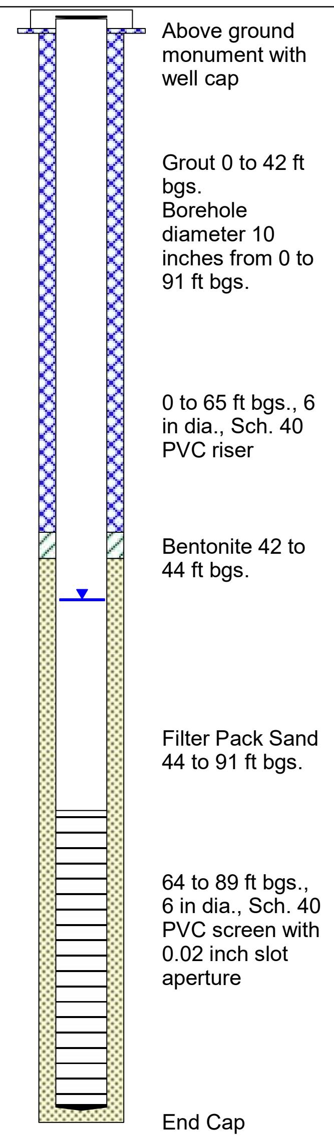
SITE LOCATION: Southwest of Bottom Ash Basin Surface Impoundment

INTERMOUNTAIN POWER SERVICE CORP. — Stantec

DRILLING CONTRACTOR:	Cascade Drilling	COORDINATE SYSTEM:	
DRILLING METHOD:	Sonic	EASTING:	NORTHING:
DRILLING EQUIPMENT:	Pro Sonic 600 11-77287	ELEVATION:	BOREHOLE ANGLE: 90 degrees
SAMPLING METHOD:	4 inch sonic core barrel 0 to 91 ft bgs.,	TOTAL DEPTH (ft.): 91	GROUNDWATER LEVEL (ft. btoc.): 47.45
	10 inch sonic core barrel 0 to 91 ft bgs.	DATE STARTED: 11/18/2019	DATE FINISHED: 11/21/2019
		LOGGED BY: Michael Ward	

DEPTH (feet)	LITHOLOGICAL DESCRIPTION
0	Fill.
	Clay with Sand (CL), low plasticity, soft to medium dense, dry, light gray (10 YR 7/1).
	No core retrieved from sonic core barrel.
	Clay with Sand (CL), low plasticity, soft to medium dense, dry, light gray (10 YR 7/1).
	Well Graded Sand (SW), fine to coarse grained sand 95%, loose, soft, light brownish gray (10 YR 6/2), trace gravel 5%, subrounded, small.
	Clay with Sand (CL), low plasticity, soft to medium dense, dry, light gray (10 YR 7/1).
	Clay (CL).
	Clay with Sand (CL), low to medium plasticity, soft to medium dense, dry, non cohesive, pale brown (10 YR 6/3).
	Poorly Graded Sand (SP), fine grained 100%, loose to medium dense, dry, light gray (10 YR 7/1).
	Clay (CL), medium plasticity, medium density, moist, light yellowish brown (10 YR 6/4), with some interfingering clay, brownish yellow (10 YR 6/8).
	Clay with Sand (CL).
	Poorly Graded Sand with clay (SP-SC), fine sand 90%, clay 10%, soft, loose, moist to wet, light yellowish brown (10 YR 6/4).
	Clay (CL), medium plasticity, medium dense, cohesive, moist, yellowish brown (10 YR 5/4).
	Poorly Graded Sand with clay (SP-SC), fine sand 90%, clay 10%, soft, loose, moist to wet, light yellowish brown (10 YR 6/4).
	Clay (CL), medium plasticity, medium dense, cohesive, moist, light yellowish brown (10 YR 6/4).
	Poorly Graded Sand (SP), fine grained sand 95%, loose, soft, brown (10 YR 5/3), with trace interfingering clay 5%, yellowish red (5 YR5/6).
	Well Graded Sand (SW), fine to coarse sand 98%, loose, soft, wet, brown (10 YR 5/3), 2% gravel, small, subrounded.
	Clay with Sand (CL), low to medium plasticity, soft to medium density, wet, light brownish gray (10 YR 6/2).
	Clay (CL), medium plasticity, medium to stiff, cohesive, moist, light yellowish gray (10 YR 6/2).
	Poorly Graded Sand with Clay (SP-SC), fine grained sand 85%, clay 15% loose, soft, wet, brown (10 YR 5/3).
	Clay (CL), medium plasticity, stiff, cohesive, moist to wet, brown (10 YR 5/3).
	Poorly Graded Sand (SP), fine grained sand 100%, loose, soft, wet, brown (10 YR 5/3).
	Clay (CL), same as 73 ft bgs.
	Poorly Graded Sand (SP), same as 82 ft bgs.
	Clay (CL), same as 73 ft bgs.
	Poorly Graded Sand with Clay (SP-SC), fine grained sand 85%, clay 15% loose, soft, wet, brown (10 YR 5/3).
	Clay (CL), same as 73 ft bgs., with mottled interbedded clay, yellowish red (5 YR 5/6).
	End of borehole at 91 ft bgs. Installed monitoring well per scope of work.
100	

WELL CONSTUCTION DIAGRAM



Notes: bgs. = below ground surface; dia. = diameter; ft = feet; Sch. = Schedule; YR = Yellow-Red

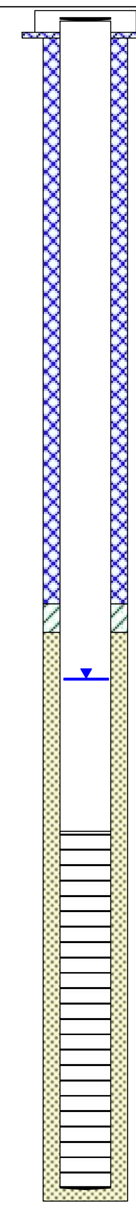
MONITORNG WELL ID:	**BAC-17**		
CLIENT:	Intermountain Power Service Corporation		
PROJECT:	Monitoring Well Installation		
SITE LOCATION:	Southwest of Bottom Ash Basin Surface Impoundment		

INTERMOUNTAIN POWER SERVICE CORP. — Stantec

DRILLING CONTRACTOR:	Cascade Drilling	COORDINATE SYSTEM:	
DRILLING METHOD:	Sonic	EASTING:	NORTHING:
DRILLING EQUIPMENT:	Pro Sonic 600 11-77287	ELEVATION:	BOREHOLE ANGLE: 90 degrees
SAMPLING METHOD:	4 inch sonic core barrel 0 to 91 ft bgs.,	TOTAL DEPTH (ft.): 82	GROUNDWATER LEVEL (ft. btoc.): 45.3
	10 inch sonic core barrel 0 to 91 ft bgs.	DATE STARTED: 12/12/9/2019	DATE FINISHED: 12/10/2019
		LOGGED BY: Michael Ward	

DEPTH (feet)	LITHOLOGICAL DESCRIPTION
0	Well Graded Sand with Silt (SW-SM), fine to coarse sand 90%, loose, soft, pale brown (10 YR 6/3), fine silts, trace calcium carbonate.
5	Well Graded Sand (SW), fine to coarse sand 100%, loose, soft, pale brown (10 YR 6/3).
20	Well Graded Sand with Gravel and Clay (SW-SC), loose, soft, fine to coarse sand 90%, loose, soft, pale brown (10 YR 6/3), clay low plasticity, soft, gravel, small, subrounded.
	Well Graded Sand (SW), fine to coarse 98%, loose, soft, light yellowish brown (10 YR 6/4), gravel 2%, small, subrounded.
30	Clay (CL), low plasticity, soft, wet, very pale brown (10 YR 7/3), perched groundwater.
	Clay with Sand (CL), low plasticity, soft, moist, light yellowish brown (10 YR 6/4).
40	Clay (CL), medium plasticity, medium dense, cohesive, brown (10 YR 5/3), mottled with some reddish yellow (5 YR 6/6).
58	Clay with Sand (CL), low plasticity, soft, wet non cohesive, brown (10 YR 5/3).
60	Poorly Graded Sand with Clay (SP), fine grained sand 98%, loose, soft, wet, brown (10 YR 5/3), with trace gravel 2%, subrounded, small.
68	Poorly Graded Sand with Clay (SP-SC), fine grained sand 98%, loose, soft, wet, brown (10 YR 5/3), clay, medium plasticity, soft to low density, non cohesive, light yellowish brown (10 YR 5/4).
	Clay (CL), medium plasticity, medium dense, moist, cohesive, yellowish brown (10 YR 5/4).
	Poorly Graded Sand with Clay (SP-SC), fine grained sand, loose, soft, wet, brown (10 YR 5/3), clay are low plasticity, soft.
	Clay with Sand (CL), low to medium plasticity, soft, wet, cohesive, brown (10 YR 5/3).
80	Poorly Graded Sand (SP), fine grained sand 100%, loose, soft, wet, brown (10 YR 5/3).
	End of borehole at 81 ft bgs. Installed monitoring well per scope of work.
85	

WELL CONSTUCTION DIAGRAM



Notes: bgs. = below ground surface; dia. = diameter; ft = feet; Sch. = Schedule; YR = Yellow-Red

Attachment 1 TABULATED GROUNDWATER MONITORING DATA

Round 12 (all results ppm) Assessment Monitoring - April 4 - May 15, 2019

Landfill Wells	Results																						
	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	TDS	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226	Radium 228	Radium 226 and 228 combined
CL-U-1	0	61.1	388	0.989	7.74	112	932	0	0.0279	0.0841	0	0	0	0	0	0.231	0	0.0036	0	0	0.13	0.4	0
CL-U-2	0	68.4	378	1.02	7.74	97.6	920	0	0.0254	0.0943	0	0	0	0	0	0.214	0	0.00405	0	0	0.31	0.94	1.25
CLW-1	0	39.4	303	1.12	7.88	64.5	692	0	0.002	0.0589	0	0	0.00742	0	0	0.203	0	0.00481	0	0	0	0.41	0
CLW-2	0	55.1	416	1.25	7.8	96.4	976	0	0.0259	0.0743	0	0	0	0	0	0.253	0	0.00423	0	0	0.21	0.75	0
CLW-3	0	44.5	351	1.34	7.83	98.4	884	0	0.0382	0.0970	0	0	0	0	0	0.243	0	0.00488	0	0	0.16	0.49	0
CLW-4	0	38.8	321	1.45	7.90	85.5	968	0	0.0376	0.0819	0	0	0	0	0	0.232	0	0.00425	0	0	0.47	0.54	0
CLW-5	0	38.5	340	1.85	7.93	85.6	936	0	0.0236	0.0707	0	0	0	0	0	0.226	0	0.00515	0	0	0.14	0.28	0
CLW-6	0	38.4	270	1.55	7.89	72.8	828	0	0.0271	0.0896	0	0	0	0	0	0.214	0	0.00478	0	0	0.2	0.78	0
CLW-7	0	51.3	336	1.07	7.76	68.9	792	0	0.0228	0.0511	0	0	0	0	0	0.205	0	0.00323	0	0	-0.09	0.54	0
CLW-8	0	44.3	317	1.11	7.81	67.2	776	0	0.0257	0.0621	0	0	0.00200	0	0	0.212	0	0.00358	0	0	0.27	0.22	0
CLW-9	0	26.2	298	2.02	7.91	86.4	760	0	0.0368	0.0462	0	0	0	0	0	0.168	0	0.00518	0	0	0.21	0.21	0
CL-U-3	0	59.6	390	0.872	7.83	114	984	0	0.0183	0.0495	0	0	0.00565	0	0	0.212	0	0.00372	0	0	0	0.48	0

Bottom Ash	Results																						
	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	TDS	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226	Radium 228	Radium 226 and 228 combined
BA-U-1	0	174	934	0.919	7.61	271	2050	0	0.002	0.0776	0	0	0	0	0	0.354	0	0.00312	0.00458	0	0	0.4	0
BA-U-2	0	91.8	718	0.844	7.68	102	1350	0	0.0211	0.1670	0	0	0	0	0	0.300	0	0.0022	0.00234	0	0.18	0.62	0
BAC-1	1.31	72.4	431	0.197	8.42	404	1830	0	0.0121	0.0567	0	0	0.00359	0	0	0.172	0	0.142	0.00278	0	0.28	0.09	0
BAC-2	10.3	233	1700	1.11	7.2	2590	8310	0	0.0519	0.0180	0	0	0.00556	0	0	0.491	0	0.163	0.0145	0	0.17	0.48	0
BAC-3	8.64	417	3400	1.3	7.24	4090	12900	0	0.0472	0.0272	0	0	0.00593	0	0	1.030	0.000105	0.0388	0.0206	0	0.17	0.77	0
BAC-4	0.553	72.4	488	1.22	7.76	269	1270	0	0.0319	0.0641	0	0	0	0	0	0.281	0	0.0196	0	0	0.16	0.58	0
BAC-5	0	91.8	585	1.07	7.73	393	1540	0	0.0294	0.0594	0	0	0	0	0	0.334	0	0.0168	0	0	-0.1	0.27	0
BAC-6	4.4	137	536	0.866	7.84	963	2260	0	0.0248	0.0206	0	0	0	0	0	0.283	0	0.0923	0	0	-0.09	-0.38	0
BAC-7	5.17	142	529	1.34	7.72	985	2760	0	0.0298	0.0184	0	0	0	0	0	0.284	0	0.0908	0.00388	0	0.09	0.34	0
BAC-8	0	27.8	266	1.61	7.92	81.1	708	0	0.0519	0.0732	0	0	0	0	0	0.165	0	0.0055	0	0	0.31	0.41	0
BAC-9	0	28.4	283	1.7	7.91	82.6	736	0	0.583	0.051	0	0	0	0	0	0.167	0	0.00451	0	0	0.06	0.53	0
BAC-10	0	31.1	273	1.66	7.91	85	788	0	0.0527	0.0612	0	0	0	0	0	0.171	0	0.00567	0	0	0.15	0.5	0

Waste Water	Results																						
	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	TDS	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226	Radium 228	Radium 226 and 228 combined
SI-U-1	0	147	744	0.519	7.59	263	1840	0	0.00927	0.0634	0	0	0	0	0	0.271	0	0.00206	0	0	0.27	0.59	0
WW-U-1	1.39	323	1820	0.416	7.27	1140	5120	0	0.00592	0.0442	0	0	0.00432	0	0	0.431	0	0.00702	0.00748	0	0.38	0.89	1.27
WW-U-2	1.16	347	1170	0.633	7.45	872	4270	0	0.0114	0.0473	0	0	0.00237	0	0	0.484	0	0.00411	0.0113	0	0.19	0.54	0
WWC-1	12.9	584	4600	0.245	7.1	3190	13800	0	0.0215	0.0183	0	0	0	0	0	1.000	0.00018	0.00794	0.0146	0	0.13	0.82	0
WWC-2	0	54.2	316	0.534	7.75	128	824	0	0.0161	0.0296	0	0	0	0	0	0.128	0	0.00348	0	0	-0.06	0.5	0
WWC-3	0	35.3	244	1.14	7.79	86	764	0	0.0226	0.0306	0	0	0	0	0	0.151	0	0.00471	0	0	0.06	0.38	0
WWC-4	1.34	240	1030	0.449	7.97	673	2780	0	0.0133	0.0412	0	0	0	0	0	0.388	0	0	0	0	-0.03	0.56	0

Round 12

Landfill Wells	Field Results						
	Temp	pH	REDOX	Conductance	Turbidity (NTUs)	DO	TDS
CL-U-1	15.92	7.84	-138	1880	1.6	0.42	1.2
CL-U-2	15.68	7.81	-119	1820	4.7	0.6	1.17
CLW-1	15.59	7.68	-68	1540	0.9	2.06	0.984
CLW-2	15.77	7.86	-187	1870	1.7	1.5	1.2
CLW-3	15.45	7.93	-201	1720	2.1	1.37	1.1
CLW-4	15.51	7.97	-203	1610	12.7	1.55	1.03
CLW-5	15.07	7.94	-214	1.69	3.8	3.03	1.08
CLW-6	16.62	8.04	-225	1570	1.1	1.54	1
CLW-7	16.75	7.76	-79	1630	0.5	0.91	1.05
CLW-8	16.41	7.82	-99	1570	0.07	1.7	1.01
CLW-9	15.39	7.98	-184	1550	3.6	0.83	0.993
CL-U-3	15.07	7.55	-197	1830	0.3	2.51	1.17

Bottom Ash	Field Results						
	Temp	pH	REDOX	Conductance	Turbidity (NTUs)	DO	TDS
BA-U-1	18.39	7.67	-60	3720	1.1	0.31	2.38
BA-U-2	16.57	7.81	-97	2710	2	0.38	1.74
BAC-1	19.56	8.75	-282	1340	22.8	1.17	0.852
BAC-2	18.83	7.25	-39	5370	2.2	1.1	3.38
BAC-3	17.57	7.34	-11	8.95	1.1	1.61	5.64
BAC-4	15.14	7.6	-57	2600	0	1.94	1.66
BAC-5	15.26	7.68	-62	2960	0	2.03	1.9
BAC-6	15.21	7.63	-44	3880	0	1.48	2.48
BAC-7	15.95	7.74	-71	4210	0	1.37	2.7
BAC-8	17.34	7.98	-91	1490	3.9	1.21	0.954
BAC-9	16.49	8.02	-69	1460	1.6	0.96	0.937
BAC-10	17.35	8	-80	1500	2.9	0.94	0.963

Waste Water	Field Results						
	Temp	pH	REDOX	Conductance	Turbidity (NTUs)	DO	TDS
SI-U-1	16.23	7.68	-37	3470	1.9	0.36	2.22
WW-U-1	16.64	7.24	-17	8020	0	0.41	5.05
WW-U-2	17.11	7.41	-8	7650	1.1	0.51	4.82
WWC-1	16.68	7.13	2	9830	0	1.37	6.19
WWC-2	15.94	8.03	-95	1550	2.9	1.56	0.989
WWC-3	16.07	8.01	-144	1310	0	2.09	0.841
WWC-4	15.29	7.38	-19	4910	0	1.4	3.14

Round 13 (all results ppm) Assessment Monitoring - September 23 - October 15, 2019

Landfill Wells	Results																					
	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	TDS	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226	Radium 228	Radium 226 and 228 combined
CL-U-1	0	58.9	432	0.753	7.94	109	976	0	0.0289	0.0799	0	0	0	0	0	0.239	0	0.0035	0	0	0.03	0.75	0.75
CL-U-2	0	60.6	424	0.792	7.87	112	968	0	0.0251	0.0935	0	0	0	0	0	0.229	0	0.00412	0	0	0.03	0.57	0
CLW-1	0	36	328	1.11	8.03	69.1	852	0	0.0295	0.0612	0	0	0	0	0	0.187	0	0.00357	0	0	0.29	0.38	0
CLW-2	0	50.8	438	1.13	8.15	88.1	924	0	0.0283	0.1510	0	0	0	0	0	0.253	0	0.0102	0	0	0.08	0.56	0
CLW-3	0	47	363	1.24	7.99	90.8	828	0	0.039	0.0976	0	0	0	0	0	0.242	0	0.00504	0	0	0.6	0.43	0
CLW-4	0	34.6	332	1.55	7.97	75.6	768	0	0.0387	0.0797	0	0	0	0	0	0.235	0	0.00441	0	0	0.22	1.06	1.06
CLW-5	0	37.5	351	1.89	8	76.9	1060	0	0.0231	0.0685	0	0	0	0	0	0.237	0	0.00479	0	0	0.25	0.44	0
CLW-6	0	34.5	330	1.7	7.98	74.4	1110	0	0.0145	0.0936	0	0	0	0	0	0.239	0	0.00607	0	0	0.42	1.05	1.47
CLW-7	0	43.7	362	1	7.89	71.4	796	0	0.0238	0.0523	0	0	0	0	0	0.192	0	0.00402	0	0	0.12	-0.03	0
CLW-8	0	39.9	337	1.04	7.98	70.7	836	0	0.0266	0.0521	0	0	0.00000	0	0	0.196	0	0.00449	0	0	-0.05	0.32	0
CLW-9	0	26.9	288	1.94	8.12	88.7	792	0	0.0398	0.0469	0	0	0.00287	0	0	0.181	0	0.00573	0	0	0.36	0.02	0
CL-U-3	0	64.6	304	0.429	8.85	168	596	0	0	0.0342	0	0	0.0738	0	0	0.152	0	0.00964	0	0	2.13	0.21	2.13

Bottom Ash	Results																					
	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	TDS	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226	Radium 228	Radium 226 and 228 combined
BA-U-1	0	173	1140	0.587	7.71	314	2290	0	0.0223	0.0770	0	0	0	0	0	0.385	0	0.00302	0.00502	0	0.16	0.73	0.73
BA-U-2	0	47.1	400	0.893	8.18	56.6	972	0	0.0283	0.1270	0	0	0	0	0	0.247	0	0.00332	0	0	0.26	0.7	0
BAC-1	1.43	93.7	801	0.307	8.16	701	2730	0	0.0126	0.0460	0	0	0.00163	0	0	0.259	0	0.128	0.00436	0	0	0.14	0
BAC-2	9.49	208	1730	1.07	7.45	2760	7240	0	0.0647	0.0192	0	0	0.0058	0	0	0.466	0.00028	0.19	0.0145	0	0.12	0.39	0
BAC-3	7.32	441	3500	0.675	7.49	4310	13900	0.0027	0.0356	0.0321	0	0	0.00449	0	0	0.957	0	0.0255	0.0236	0	0	0.45	0
BAC-4	0.606	66.7	573	1.13	7.95	330	1820	0	0.0322	0.0637	0	0	0	0	0	0.279	0	0.0218	0	0	0.15	0.16	0
BAC-5	0	66.2	568	1.11	8.07	250	1410	0	0.0321	0.0814	0	0	0	0	0	0.289	0	0.00941	0	0	0.25	0.36	0
BAC-6	2.66	119	625	0.796	7.86	646	1870	0	0.0223	0.0338	0	0	0	0	0	0.288	0	0.0651	0.00273	0	0.31	0.83	1.14
BAC-7	5.06	107	566	1.31	7.96	1170	2320	0	0.0314	0.0174	0	0	0	0	0	0.248	0	0.0887	0.00276	0	0.04	0.22	0
BAC-8	0	23.2	280	1.53	8.05	95.5	784	0	0.0639	0.0389	0	0	0	0	0	0.156	0	0.00545	0	0	0.03	1.21	1.21
BAC-9	0	27.1	299	1.45	8.06	87.6	788	0	0.0593	0.0388	0	0	0	0	0	0.16	0	0.00483	0	0	0.09	0	0.53
BAC-10	0	25.7	280	1.51	8.09	87.4	808	0	0.0595	0.045	0	0	0	0	0	0.16	0	0.00584	0	0	0.8	1	1.8

Waste Water	Results																					
	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	TDS	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226	Radium 228	Radium 226 and 228 combined
SI-U-1	0	136	824	0.38	7.71	281	1850	0	0.00981	0.0599	0	0	0	0	0	0.277	0	0	0	0	0.19	1.61	1.61
WW-U-1	1.41	311	1010	0	7.37	588	5720	0	0.00594	0.0419	0	0	0.00166	0	0	0.485	0	0.00689	0.0077	0	-0.08	1.42	1.42
WW-U-2	1.02	346	2020	0	7.3	855	4400	0	0.00735	0.0499	0	0	0	0	0	0.54	0	0.00317	0.011	0	-0.2	1.36	1.36
WWC-1	13.2	473	4940	0.292	7.42	3570	14900	0	0.0264	0.0205	0	0	0	0	0	0.974	0.000278	0.0113	0.016	0	0.23	0.9	0.9
WWC-2	0	57.6	349	0.427	7.99	141	876	0	0.0166	0.0336	0	0	0	0	0	0.126	0	0.00327	0	0	-0.15	0.81	0.81
WWC-3	0	33.3	262	0.986	8.13	95.3	776	0	0.0236	0.0331	0	0	0	0	0	0.151	0	0.00477	0	0	3.1	0.58	3.1
WWC-4	1.06	176	968	0.453	7.61	594	3080	0	0.0154	0.0456	0	0	0	0	0	0.329	0	0	0.00177	0	0.72	0.57	0

Round 13

Landfill Wells	Field Results						
	Temp	pH	REDOX	Conductance	Turbidity (NTUs)	DO	TDS
CL-U-1	15.85	7.75	-159	777	0	1.62	0.497
CL-U-2	15.96	7.7	-158	743	0	1.01	0.476
CLW-1	15.83	7.73	-48	1480	1.3	2.01	0.948
CLW-2	16.6	7.79	-191	760	0	2	0.488
CLW-3	17.14	7.84	-215	1730	0.5	1.43	1.11
CLW-4	16.47	7.88	-233	1600	2.7	1.61	1.03
CLW-5	17.05	7.83	-220	1700	1.9	1.84	1.09
CLW-6	16.65	7.7	-229	1590	1.6	2.69	1.02
CLW-7	17.74	7.76	-57	1580	0.6	1.24	1.01
CLW-8	16.37	7.81	-36	1520	1	1.51	0.969
CLW-9	16.03	7.72	-299	1610	0.2	7.56	1.03
CL-U-3	16.1	9.08	-76	503	0	1.84	0.322

Bottom Ash	Field Results						
	Temp	pH	REDOX	Conductance	Turbidity (NTUs)	DO	TDS
BA-U-1	16.68	7.47	-58	1610	0	1.29	1.03
BA-U-2	16.37	8.94	-255	1550	1.4	0.8	0.99
BAC-1	17.09	7.98	-50	3950	1.32	3.4	2.53
BAC-2	16.92	7.19	28	10600	3.3	2.45	6.59
BAC-3	17.34	7.1	20	16700	2	0.61	10.4
BAC-4	16.73	7.81	-57	2570	0.6	1.18	1.64
BAC-5	17.52	7.84	-50	2540	0.4	1.33	1.63
BAC-6	16.78	7.74	-52	2670	0.7	0.87	1.71
BAC-7	17.16	7.83	-156	4000	3.1	0.86	2.56
BAC-8	15.03	7.65	-41	1540	0.2	5.45	0.989
BAC-9	15.03	7.68	-23	1560	0.3	1.2	0.993
BAC-10	14.98	7.65	-31	1560	0.1	1.15	0.999

Waste Water	Field Results						
	Temp	pH	REDOX	Conductance	Turbidity (NTUs)	DO	TDS
SI-U-1	16.51	7.63	-12	3290	0.1	0.78	2.11
WW-U-1	16.11	7.19	14	8000	2.8	1.93	5.04
WW-U-2	16.06	7.38	22	7390	0.6	1.32	4.66
WWC-1	15.13	6.79	36	1910	0	3.67	11.8
WWC-2	14.82	7.31	-29	1720	0.3	0.47	1.1
WWC-3	15.96	7.72	-244	1420	0	0.2	0.909
WWC-4	14.38	7.21	-34	4460	0	2.35	2.86