December 2019 Semi-Annual Progress Report, Selecting and Designing of Groundwater Corrective Action Remedy

Intermountain Generating Facility
Delta, Utah

Prepared for:
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Project No.: 203709098

December 19, 2019

Sign-off Sheet and Signatures of Environmental Professionals

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1.0 EXECUTIVE SUMMARY

1.1 BACKGROUND

On behalf of Intermountain Power Service Corporation ("IPSC"), Stantec Consulting Services Inc. ("Stantec") has prepared this progress report to summarize recent investigative activities designed to further assess corrective measures required by the United States Environmental Protection Agency's 2015 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")). The activities summarized herein were proposed and 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 2019 *Semi-Annual Progress Report, Selecting and Designing of Groundwater Corrective Action Remedy* report.

The historical reports presented IPSC's approach for addressing requirements specified by the State and 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, under which DWMRC will be issuing a separate permit for the CCR Units. 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.

As reported in IPSC's historical reports, groundwater in localized, down-gradient directions in relation to the Bottom Ash Basin and the Waste Water Basin (surface impoundments) contains Total Dissolved Solids (TDS). IPSC is implementing a groundwater monitoring and recovery program, currently. Supplemental monitoring wells have been installed in sequential phases during April-May 2019 and November-December 2019 to help define more definitively the down-gradient, leading edges and centers of mass of the two TDS plumes. The 2019 monitoring and analytical data are being evaluated to expand IPSC's current groundwater recovery well network in pursuit of TDS plume control.

As reported within IPSC's January 2019 *Assessment of Corrective Measures and Amended Corrective Action Plan* report, three metal constituents (arsenic, lithium, and molybdenum) were also quantified at localized areas within wells located immediately adjacent to the two surface

impoundment boundaries. Statistical analyses to date indicate that the metals are localized at the boundaries of the two surface impoundments.

Although it is documented throughout Utah and in close proximity to the site that arsenic and lithium can be present naturally at elevated concentrations, IPSC will continue monitoring metal concentrations in groundwater as part of its routine groundwater monitoring program. As supplemental water quality data is generated, potential contaminants such as metals will be evaluated through statistical analysis, in accordance with CCR Rule requisites.

Groundwater quality data to date indicate that TDS has migrated farther down-gradient of the two surface impoundments than the metal constituents located near the impoundment boundaries. TDS is expected to continue to migrate at a faster rate than dissolved metals in the clay-rich aquifer that underlies the property. TDS is being used as the leading indicator parameter of impacted groundwater quality for fashioning a suitable groundwater remediation approach, as the recovery of TDS-impacted groundwater at select recovery wells will also intercept metal constituents that might be present.

1.2 PURPOSE OF THIS REPORT

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. Six wells were installed and sampled during the Spring of 2019, the analytical results of which were then used to help locate 10 additional wells that were installed during the Fall of 2019. The sequenced, investigative approach helped delineate more definitively the physical characteristics and footprints of the TDS groundwater plumes located down-gradient (generally southwest) of the surface impoundments.

In summary, 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, down-gradient, leading edges. Other wells were located within outer edges and/or middle areas within the two TDS plumes to provide more definition regarding the plumes' centers of TDS mass.

Summary 2019 activities included:

1) During April and May 2019, IPSC expanded the network of monitoring/recovery wells intended to monitor and control the down-gradient (predominantly southwest), leading edge of the TDS plume associated with historical releases from the Bottom Ash Basin, through installation of supplemental monitoring (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 down-gradient 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 (remediation, if needed) wells WWC-8, WWC-9, and WWC-10.
   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*. At the time of preparation of the June 2019 report; however, laboratory result reports had not been received by IPSC. Reference Figures 3 and 5 for a groundwater flow map and a TDS iso-concentration map, based on results of the May 2019 monitoring/sampling event. Monitoring and analytical results are tabulated in Attachment 1 herein.

3) The April/May 2019 results associated with sampling and monitoring of all CCR Rule 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 (10) supplemental monitoring/recovering wells (wells BAC-11 through BAC-17 and wells WWC-11 through WWC-13) were drilled and installed during November and December 2019 (reference Figure 4 for an October 2019 groundwater flow map).

   The ten new wells are being developed presently at the time of preparation of this report and will be sampled in early 2020. Figure 6 presents TDS iso-concentration data associated with all other wells that were sampled during the October 2019 groundwater sampling event.

4) Currently, Stantec is conducting conceptual design of a network of groundwater recovery wells, designed to focus recovery of groundwater near the down-gradient, leading edges of the two TDS plumes, thereby enhancing current groundwater recovery operations. Following IPSC review and comment on the conceptual design, the project will be advanced to a Pre-Final (90-percent) level design.

Although the TDS plumes pose little to no risk to human health or the environment at the present and foreseeable time, IPSC anticipates initiating construction of the expanded groundwater recovery network as soon as practicable, such that installation of the expanded system might be initiated sometime during mid-2020. It is anticipated that the analytical results associated with IPSC's proposed-Spring 2020 sampling of all CCR Rule 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 necessary in pursuit of TDS plume delineation and control.

DECEMBER 2019 SEMI-ANNUAL PROGRESS REPORT, SELECTING AND DESIGNING OF GROUNDWATER CORRECTIVE ACTION REMEDY

EXECUTIVE SUMMARY

December 19, 2019

IPSC has prepared this report to "provide a semi-annual summary describing the progress in selecting and designing a (groundwater) remedy," as specified by UDEQ Rule R315-319-97(a). IPSC and Stantec have been reviewing historical groundwater quality data to delineate the two TDS plumes and decide how best to enhance groundwater recovery and TDS plume control through expanding the existing groundwater recovery well network. In summary, a total of 16 groundwater monitoring/recovery wells were installed during 2019 toward refinement of IPSC's CSM and better delineation of the two TDS plumes.

This report provides summary details regarding investigative activities conducted subsequent to activities reported within IPSC's June 2019 *Semi-Annual Progress Report*. This report details IPSC's November-December 2019 installation of monitoring/recovery wells BAC-11 through BAC-17 and WWC-11 through WWC-13, including drilling logs and well schematic diagrams. The report includes updated TDS iso-concentration maps and groundwater flow maps associated with all available 2019 water level measurement data, as of the May 2019 and October 2019 monitoring events.

2.0 NOVEMBER AND DECEMBER 2019 GROUNDWATER MONITORING/RECOVERY WELL INSTALLATIONS

Figure 5 presents a TDS iso-concentration map superimposed atop a groundwater potentiometric/flow map, based on the May 2019 groundwater monitoring well network. Analysis of the analytical results and groundwater flow patterns was used to help locate the BAC-11 through BAC-17 and WWC-11 through WWC-13 monitoring/recovery wells that were installed and developed during November and December 2019.

Stantec oversaw the drilling, soil screening, 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.

The 10 new wells were drilled by the sonic drilling method, whereby soil samples were collected continuously in 10-feet, 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 ground water 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 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.

During December 2019, the ground surface and the top of each wellhead will be 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 10 new wells are presented in Appendix A.

3.0 ONGOING CORRECTIVE ACTIONS AND PROGRESS TOWARD SELECTING ADDITIONAL GROUNDWATER CORRECTIVE ACTION REMEDY

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

IPSC intends to continue operation of 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 down-gradient/southwesterly direction in relation to the Bottom Ash Basin.

3.2 SUMMARY OF ONGOING ACTIONS ASSOCIATED WITH SELECTION OF FINAL GROUNDWATER REMEDY

Currently, Stantec is providing advisory services to IPSC, related to alternative, conceptual design options for enhanced TDS plume control and associated groundwater recovery. Conceptual design elements include, for instance:

- Finalizing basis of design;
- Process flow diagram supported by a hydraulic pumping and conveyance model;
- Preliminary piping and instrumentation (P&ID) drawings;
- Typical recovery well completion detail; and
- Finalized location of wells.

Following IPSC review and comment on the preliminary design, the project will be advanced to a Pre-Final (90-percent) level design. The Pre-Final Design (PFD) will build upon the deliverables associated with the preliminary design and will include the following:

- Finalized PFD of the system;
- Finalized P&IDs;
- Finalized hydraulic model of the pumping and conveyance system;

- Typical design details for the recovery wells and surface completions;
- Underground yard piping;
- Control philosophy for the system;
- Electrical single-line and termination drawings; and
- Equipment and construction specifications.

Following evaluation of the forthcoming remedial design, IPSC intends to initiate groundwater recovery to control the migration of the TDS plumes down-gradient of the surface impoundments. Upon implementation of the enhanced groundwater recovery and monitoring program proposed in this report, IPSC will evaluate the degree to which groundwater recovery and natural attenuation processes control the down-gradient leading edges of the two TDS plumes. IPSC also intends to evaluate potential, alternative means for ongoing enhancement of remediating TDS mass from the uppermost aquifer beneath the site. 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

IPSC PROPERTY BOUNDARY

Combustion By-Products Landfill

Non-CCR Regulated, Evaporation Basins

Bottom Ash Basin

Waste Water Basin

Flowing Wells

North Sugarville Reservoir

Flowing Well

Sugarville

Woodrow

4WD

BASE FROM USGS 1:100,000 SCALE METRIC TOPOGRAPHIC MAPS: LYNNDAL, UTAH, 1979 AND DELTA, UTAH, 1989.

1 0 1 2 3 4 KILOMETERS

1 0 1 2 MILES

N

CCR-Regulated Units
DELTA, UTAH

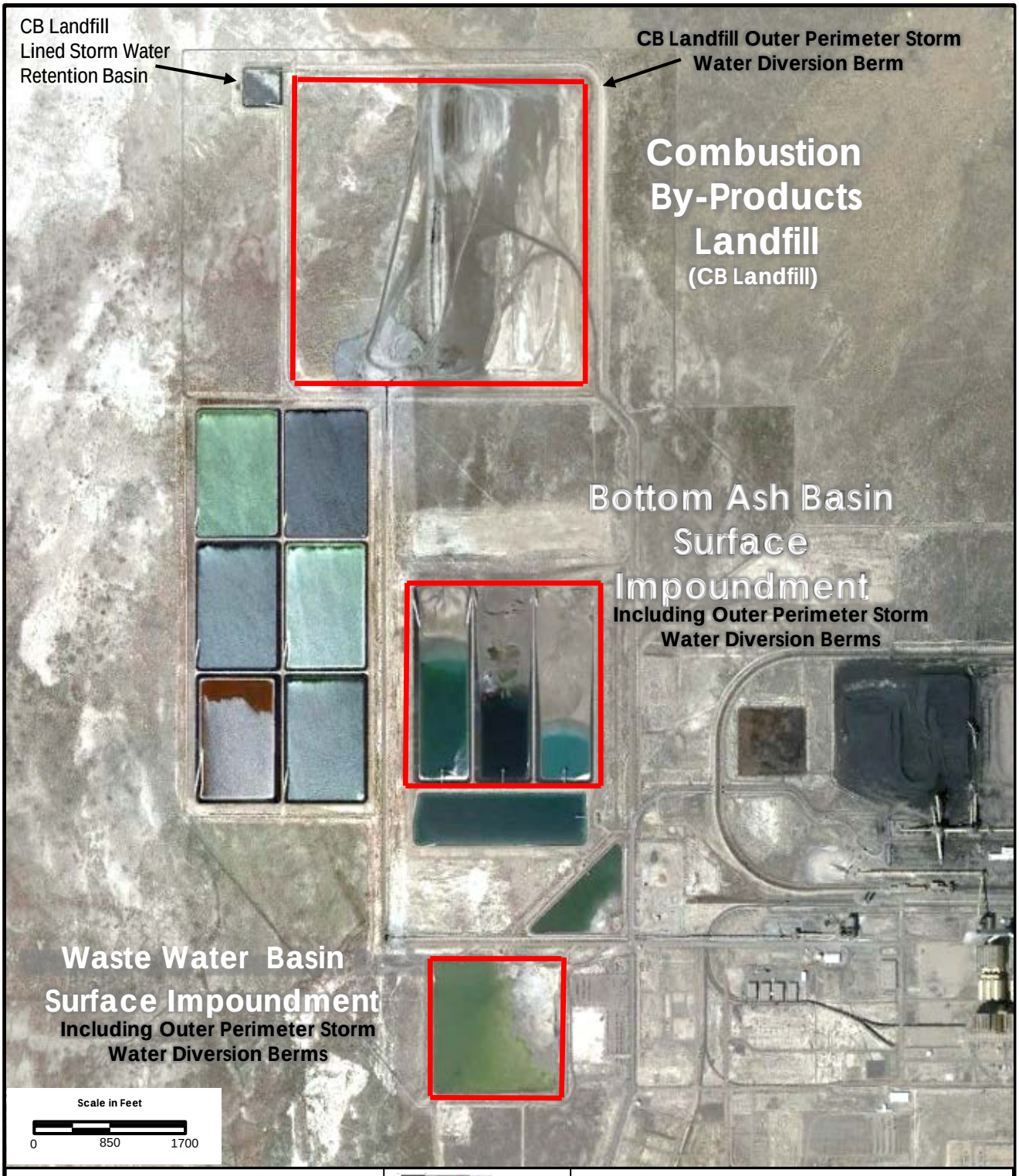
FIGURE 1
SITE TOPOGRAHIC MAP

Stantec

DESIGN BY	DRAWN BY	CH'D BY	SCALE	DATE DRAWN	REVISION
JR	CP		1"=1000'	1-26-17	

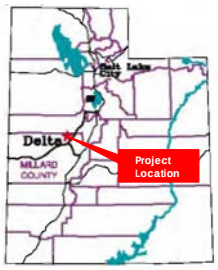
drawings\ipsc-04\Fig2 Site Topographic Map.dwg

Figure 2. CCR Units Location Map



Legend

CCR Unit



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		

Figure 3 May 2019 Groundwater Flow Map

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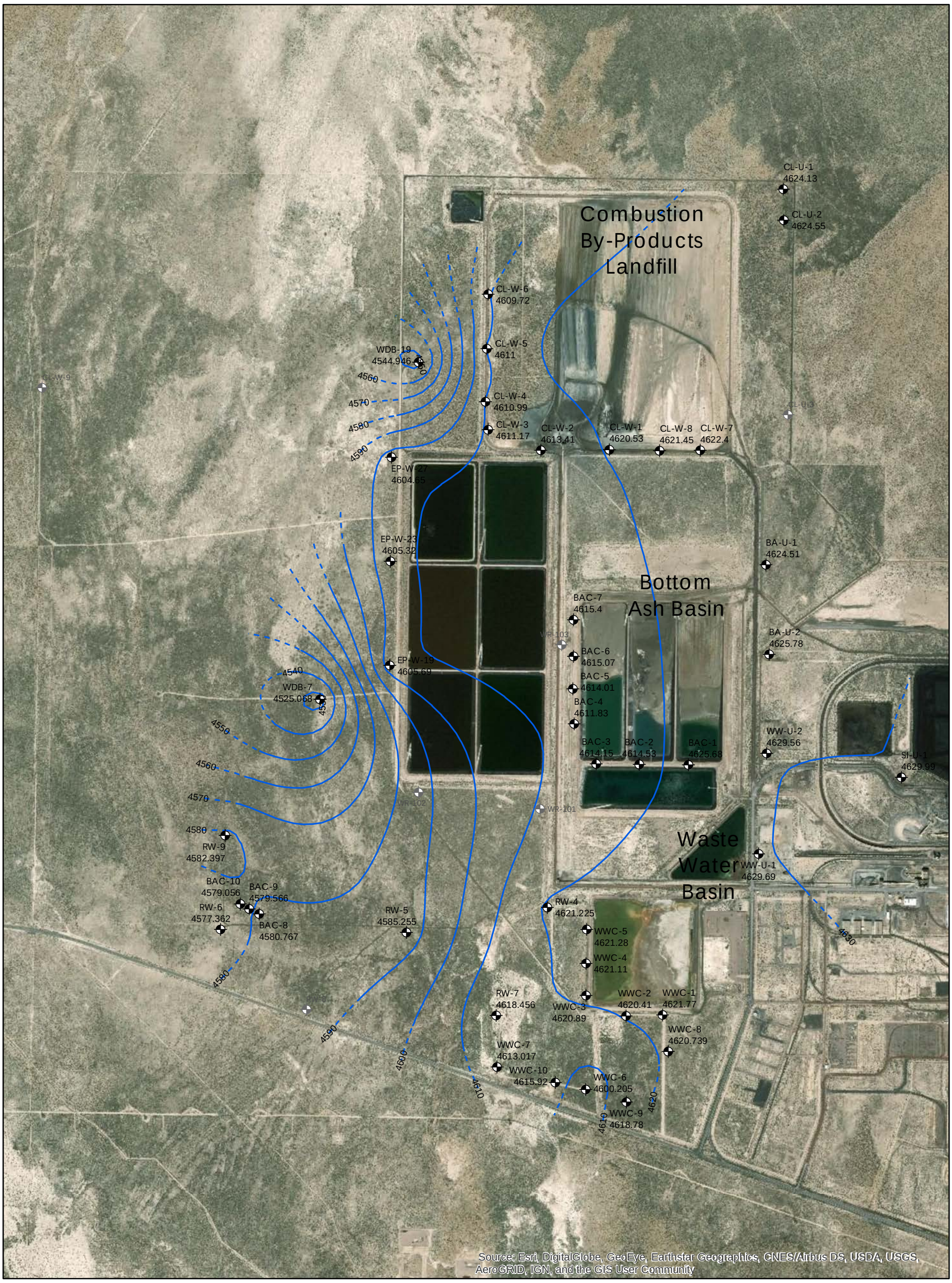

LEGEND:

- 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:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
203709098	CK	ALL		07/24/19

Figure 4 October 2019 Groundwater Flow Map

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Combustion By-Products Landfill

Bottom Ash Basin

Waste Water Basin

CL-U-1 4622.96
CL-U-2 4623.40
CL-U-3 4563.52
BA-U-1 4623.64
BA-U-2 4624.91
WW-U-1 4629.12
WW-U-2 4628.82
SI-U-1 4629.24
CL-W-1 4619.65
CL-W-2 4612.47
CL-W-3 4610.18
CL-W-4 4609.98
CL-W-5 4609.97
CL-W-6 4608.64
CL-W-7 4621.36
CL-W-8 4620.52
CL-W-9 4519.01
WDB-19 4543.84
WDB-7 4524.24
EP-W-19 4604.78
EP-W-23 4604.37
EP-W-27 4603.68
BAC-1 4624.99
BAC-2 4614.10
BAC-3 4613.83
BAC-4 4611.31
BAC-5 4613.66
BAC-6 4615.14
BAC-7 4615.03
BAC-8 4580.35
BAC-9 4579.09
BAC-10 4578.47
BAC-11
BAC-12
BAC-13
BAC-14
BAC-15
BAC-16
BAC-17
RW-4 4620.39
RW-5 4584.36
RW-6 4576.84
RW-7 4617.52
RW-9 4582.15
WR-101
WR-102
WR-103
WWC-1
WWC-2 4620.50
WWC-3 4620.00
WWC-4 4620.21
WWC-5 4620.38
WWC-6 4616.38
WWC-7 4611.29
WWC-8 4619.65
WWC-9 4617.72
WWC-10 4614.32
WWC-13
WWC-14
4520
4530
4540
4550
4560
4570
4580
4590
4600
4610
4620

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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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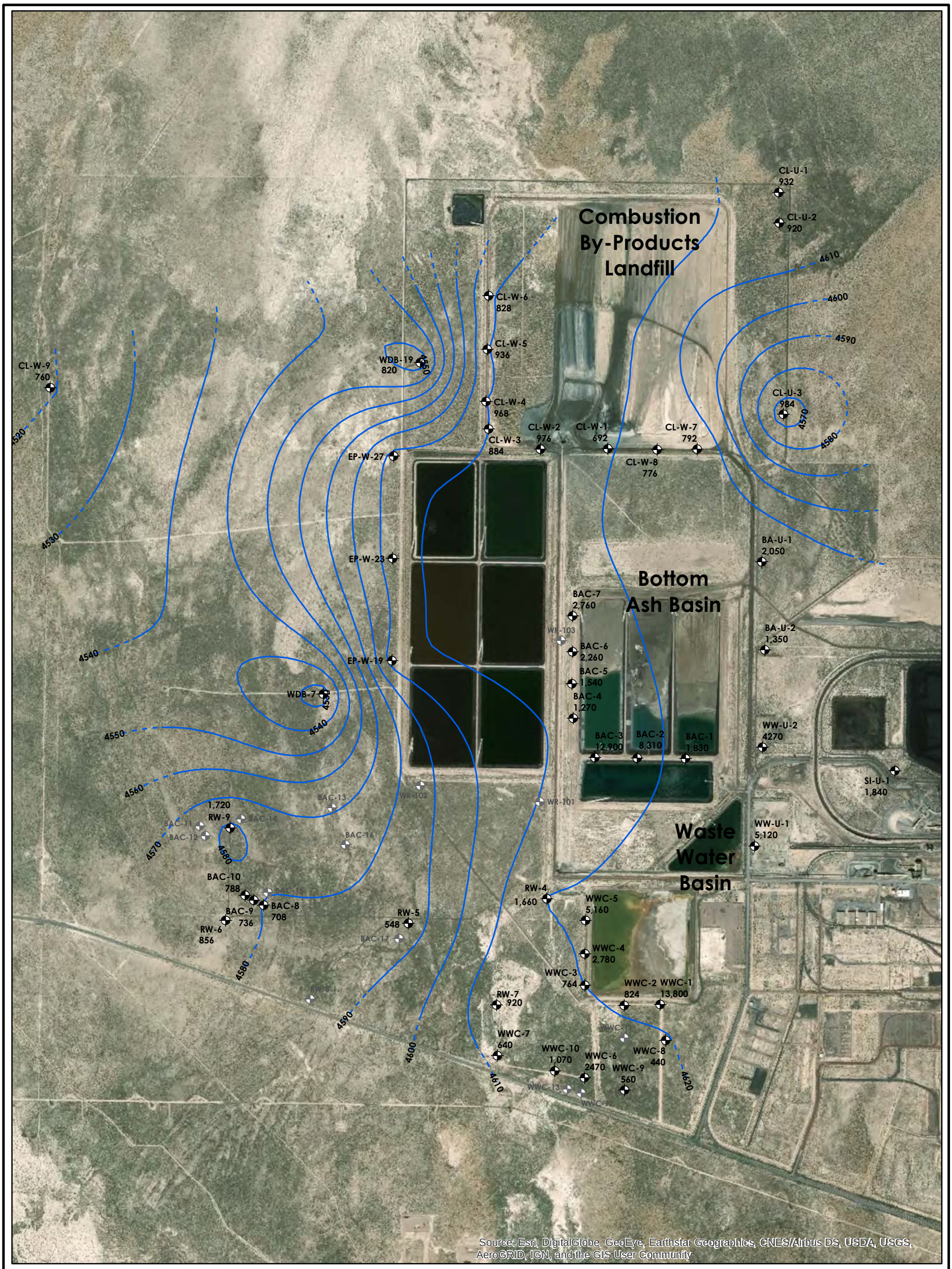

LEGEND:

- 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

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

SPRING 2019 TDS RESULTS

FIGURE: 5

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203709098	CK	ALL		12/18/19

Figure 6 October TDS Results

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Combustion By-Products Landfill

Bottom Ash Basin

Waste Water Basin

CL-U-1 976
CL-U-2 968
CL-U-3 596
CL-W-1 852
CL-W-2 924
CL-W-3 828
CL-W-4 768
CL-W-5 1,060
CL-W-6 1,110
CL-W-7 796
CL-W-8 836
CL-W-9 792
EP-W-19
EP-W-23
EP-W-27
WDB-7
WDB-19 **824**
BA-U-1 2,290
BA-U-2 972
BAC-1 2,730
BAC-2 7,240
BAC-3 13,900
BAC-4 1,820
BAC-5 1,410
BAC-6 1,870
BAC-7 2,320
BAC-8 784
BAC-9 788
BAC-10 808
BAC-11
BAC-12
BAC-13
BAC-14
BAC-15
BAC-16
BAC-17
RW-4 **2,280**
RW-5 **592**
RW-6 **864**
RW-7 **832**
RW-8
RW-9 **1,860**
SI-U-1 1,850
WR-101
WR-102
WR-103
WW-U-1 5,720
WW-U-2 4,400
WWC-1 14,900
WWC-2 876
WWC-3 776
WWC-4 3,080
WWC-5 4,740
WWC-6 2,340
WWC-7 652
WWC-8 3,670
WWC-9 780
WWC-10 988
WWC-11
WWC-12
WWC-13

4520 4530 4540 4550 4560 4570 4580 4590 4600 4610 4620

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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

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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

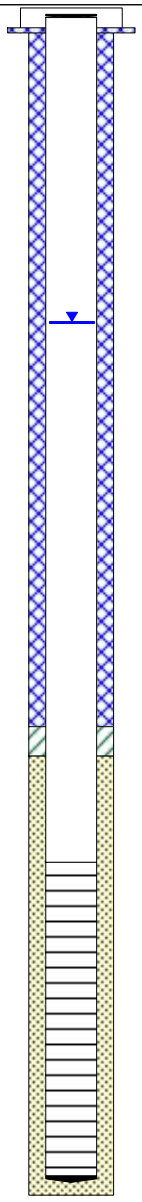
INTERMOUNTAIN POWER SERVICE CORP.

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

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.): 91	GROUNDWATER LEVEL (ft. btoc.): 22.82
		DATE STARTED: 11/15/2019	DATE FINISHED: 11/16/2019
		LOGGED BY: Michael Ward	

DEPTH (feet)	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

- Above ground monument with well cap
- Grout 0 to 54.4 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 54.4 to 56.7 ft bgs.
- Filter pack sand 56.7 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

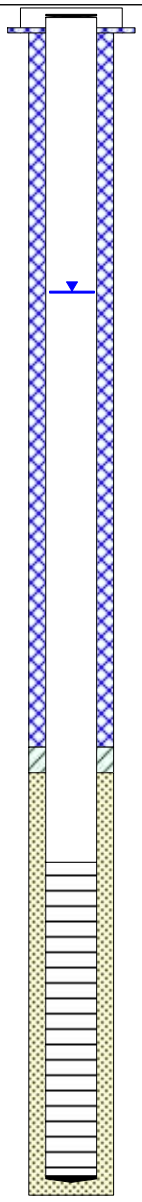
INTERMOUNTAIN POWER SERVICE CORP.

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

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.): 91	GROUNDWATER LEVEL (ft. btoc.): 20.46
		DATE STARTED: 11/11/2019	DATE FINISHED: 11/12/2019
		LOGGED BY: Michael Ward	

DEPTH (feet)	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).
15	Poorly Graded Sand with Silt (SP-SM), 95% fine grained sand, 5% silts, loose, soft, moist, brown (10 YR 4/3), trace gravel.
	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%.
50	Poorly Graded Sand (SP), fined grained sand 100%, loose, moist, brown (10YR 4/3). Sharp contact.
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

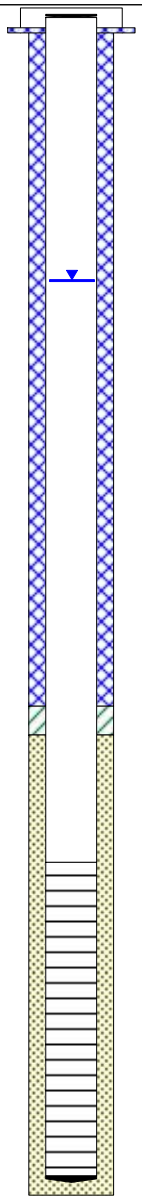
INTERMOUNTAIN POWER SERVICE CORP.

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

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.): 91	GROUNDWATER LEVEL (ft. btoc.): 19.55
		DATE STARTED: 11/13/2019	DATE FINISHED: 11/15/2019
		LOGGED BY: Michael Ward	

DEPTH (feet)	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.
	Same as above, with clay, increase gravel 10%, wet.
10	Clay with Sand (CL), low to medium plasticity, moist, cohesive, very pale brown (10 YR 7/4).
	Well Graded Sand (SW), fine to medium grained sand 95%, soft, loose, , moist, pale brown (10 YR 6/3), trace gravel 5%, subrounded.
15	
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.
	Same as above, trace clay.
50	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	
	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).
60	
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).
	Clay (CL), medium to high plasticity, wet, cohesive, pale brown (10 YR 6/3), interfingering clay reddish yellow (5 YR 6/6), trace sand.
85	
90	Same as above, becoming medium plasticity.
	End of borehole to 91 ft bgs., per scope of work.
95	



Above ground monument with well cap

Grout 0 to 52.8 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 52.8 to 55 ft bgs.

Filter pack sand 55 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

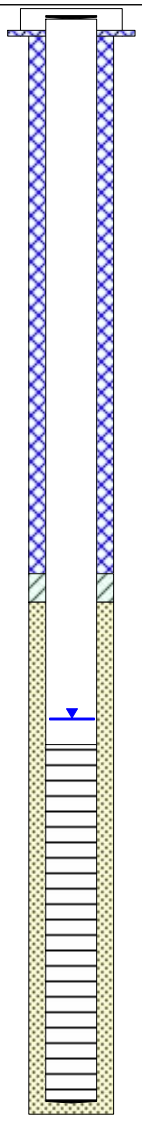
INTERMOUNTAIN POWER SERVICE CORP.

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

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 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	
10	Clay with Sand (CL), low plasticity, soft to medium density, moist, light brownish gray (10 YR 6/2). 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	
20	Clay (CL), medium plasticity, medium dense, cohesive, moist, light brownish gray (10 YR 6/2), mottled with brownish yellow (10 YR 6/8).
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).
60	Clay with Sand (CL), low plasticity, soft, wet, pale brown (10 YR 6/3). 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	
85	End of borehole at 81 ft bgs. Installed monitoring well per scope of work.



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

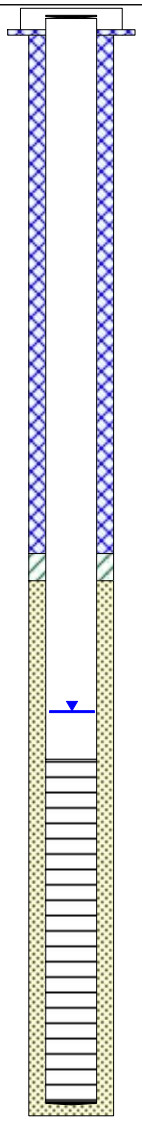
INTERMOUNTAIN POWER SERVICE CORP.

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

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.): 49.55
		DATE STARTED: 12/4/2019	DATE FINISHED: 12/6/2019
		LOGGED BY: Michael Ward	

DEPTH (feet)	LITHOLOGICAL GRAPHIC	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).
30		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).
60		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.
65		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).
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 78 ft bgs., and 4 inches from 79 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 78ft 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

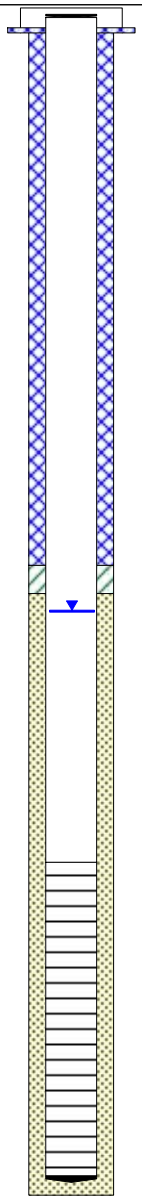
INTERMOUNTAIN POWER SERVICE CORP.

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

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.): 91	GROUNDWATER LEVEL (ft. btoc.): 45.38
		DATE STARTED: 11/16/2019	DATE FINISHED: 11/18/2019
		LOGGED BY: Michael Ward	

DEPTH (feet)	LITHOLOGICAL DESCRIPTION
0	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).
5	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.
10	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).
15	Same as above, moist.
	Same as above, medium plasticity.
20	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).
25	
30	
35	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).
40	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).
45	Clay (CL), medium plasticity, medium dense, moist, cohesive, brownish yellow (10 YR 6/6), with mottled clay, brownish yellow (10 YR 6/8).
50	
55	Clay with Sand (CL), low to medium plasticity, soft to medium dense, wet, non cohesive, brown (10 YR 6/3).
60	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).
65	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).
70	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.
75	
80	
85	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).
90	End of borehole to 91 ft bgs., per scope of work.
95	



WELL CONSTUCTION DIAGRAM

- Above ground monument with well cap
- Grout 0 to 42 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 42 to 44 ft bgs.
- Filter pack sand 44 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

INTERMOUNTAIN POWER SERVICE CORP.

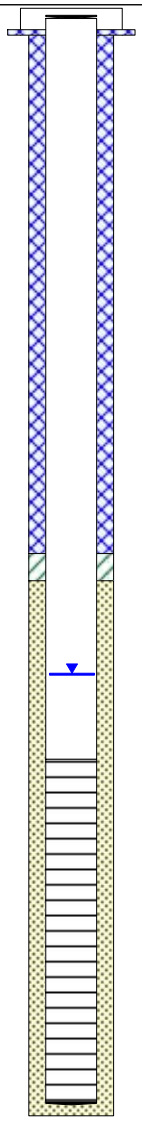
MONITORNG WELL ID:	**BAC-14**
CLIENT	Intermountain Power Service Corporation
PROJECT	Monitoring Well Installation
SITE LOCATION	Southwest of Bottom Ash Basin Surface Impoundment

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 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 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	
30	Poorly Graded Sand (SP), fine sand 100%, loose, soft, light brownish gray (10 YR 6/2). 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	
40	Clay (CL), medium plasticity, medium dense, moist, cohesive, yellowish brown (10 YR 5/4).
45	Poorly Graded Sand (SP), fine sand 100%, loose, soft, moist to wet, brown (10 YR 5/4).
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).
55	Poorly Graded Sand with Clay (SP-SC), fine sand 90%, loose, soft, moist, brown (10 YR 5/3); clay 10% low plasticity. 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).
70	Clay (CL), medium plasticity, medium dense, wet, cohesive, light yellowish brown (10 YR 6/4). 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).
85	End of borehole at 81 ft bgs. Installed monitoring well per scope of work.

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

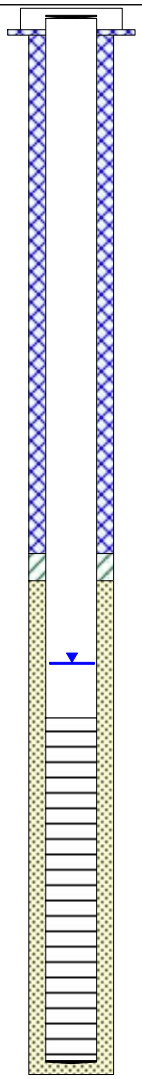
INTERMOUNTAIN POWER SERVICE CORP.

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

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.): 46.03
		DATE STARTED: 12/7/2019	DATE FINISHED: 12/9/2019
		LOGGED BY: Michael Ward	

DEPTH (feet)	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).
40	Clay (CL), medium plasticity, medium dense, cohesive, moist, light yellowish brown (10 YR 6/4).
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

- 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

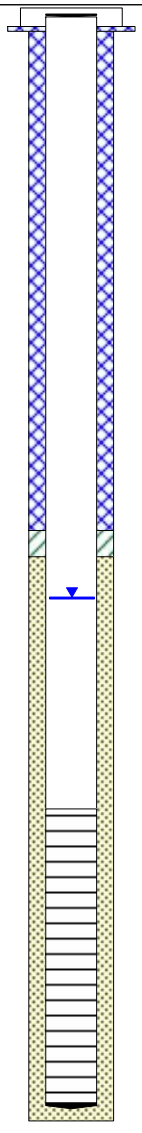
INTERMOUNTAIN POWER SERVICE CORP.

MONITORNG WELL ID:	**BAC-16**
CLIENT	Intermountain Power Service Corporation
PROJECT	Monitoring Well Installation
SITE LOCATION	Southwest of Bottom Ash Basin Surface Impoundment

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.): 91	GROUNDWATER LEVEL (ft. btoc.): 47.45
		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).
5	
	No core retrieved from sonic core barrel.
10	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.
15	Clay with Sand (CL), low plasticity, soft to medium dense, dry, light gray (10 YR 7/1).
20	
25	
	Clay (CL).
30	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).
35	
40	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).
45	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).
50	Poorly Graded Sand with clay (SP-SC), fine sand 90%, clay 10%, soft, loose, moist to wet, light yellowish brown (10 YR 6/4).
55	Clay (CL), medium plasticity, medium dense, cohesive, moist, light yellowish brown (10 YR 6/4).
60	
	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).
65	Well Graded Sand (SW), fine to coarse sand 98%, loose, soft, wet, brown (10 YR 5/3), 2% gravel, small, subrounded.
70	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).
75	Poorly Graded Sand with Clay (SP-SC), fine grained sand 85%, clay 15% loose, soft, wet, brown (10 YR 5/3).
80	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).
85	Clay (CL), same as 73 ft bgs.
	Poorly Graded Sand (SP), same as 82 ft bgs.
	Clay (CL), same as 73 ft bgs.
90	Poorly Graded Sand with Clay (SP-SC), fine grained sand 85%, clay 15% loose, soft, wet, brown (10 YR 5/3).
95	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

- Above ground monument with well cap
- Grout 0 to 42 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 42 to 44 ft bgs.
- Filter Pack Sand 44 to 91 ft bgs.
- 64 to 89 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-17**

CLIENT: Intermountain Power Service Corporation

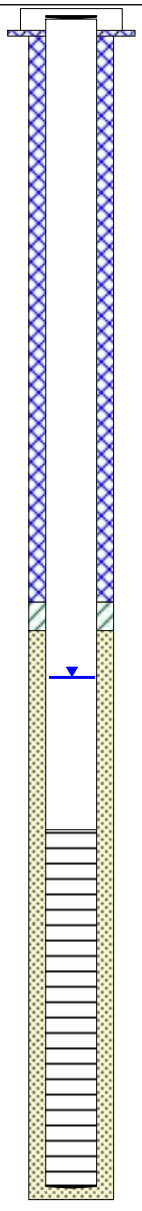
PROJECT: Monitoring Well Installation

SITE LOCATION: Southwest of Bottom Ash Basin Surface Impoundment

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.): 82	GROUNDWATER LEVEL (ft. btoc.): 45.3
		DATE STARTED: 12/12/9/2019	DATE FINISHED: 12/10/2019
		LOGGED BY: Michael Ward	

DEPTH (feet)	LITHOLOGICAL GRAPHIC	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).
10		
15		
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.
25		
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).
35		
40		Clay (CL), medium plasticity, medium dense, cohesive, brown (10 YR 5/3), mottled with some reddish yellow (5 YR 6/6).
45		
50		
55		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.
65		
70		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).
75		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

- Above ground monument with well cap
- Borehole diameter 10 inches from 0 to 81 ft bgs.
- Grout 0 to 40 ft bgs.
- 0 to 56 ft bgs., 6 in dia., Sch. 40 PVC riser
- Bentonite 40 to 42 ft bgs.
- Filter Pack Sand 42 to 81 ft bgs.
- 56 to 81 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

Attachment 1 TABULATED GROUND WATER MONITORING DATA

Sampling Round 13 (all results ppm)

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

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	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

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	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

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