

History of Construction

Intermountain Power Bottom Ash Basin (UT00463) CCR Surface Impoundment

October 17, 2016

**History of Construction for Intermountain Power Bottom Ash Basin (UT00463)
40 CFR Part 257.73(c) and R315-319.73(c)**

Owner/Operator Name and Address

Intermountain Power Service Corporation (Operator)
850 West Brush Wellman Rd.
Delta, UT 84624

Name and Identification Number

Intermountain Power Bottom Ash Basin (UT00463), hereafter referred to in this report as "Bottom Ash Basin".

Location of CCR Unit

The Bottom Ash Basin is located in parts of the following: NE¼, E½ of NW¼, NE¼ of SW¼, and N½ of SE¼, all in Section 14, Township 15 South, Range 7 West, Salt Lake Base and Meridian. [USGS Rain Lake 7½ minute topographic quad map (see Exhibit #1)]

Statement of the purpose for which the CCR Unit is being used

The Bottom Ash Basin has the following purpose: receive sluiced bottom ash from the ash handling system, the ash hopper overflow, and boiler wash down from boiler sump. Water that accumulates in the Bottom Ash Basin is decanted and conveyed to the Ash Water Recycle Basin, where it can be pumped back to the plant for use as make-up water for the ash water system and the sulfur dioxide removal system.

Name and Size in acres of the watershed within which the CCR Unit is located

This CCR unit (Bottom Ash Basin (UT00463) is situated in the Sevier River Watershed, more specifically USGS hydrologic unit (HUC) 16030005, Lower Sevier. Per the National Resource Conservation Service (NRCS), the Lower Sevier hydrologic unit comprises approximately 4,094 square miles, or about 2,620,563 acres. This CCR unit is not located on a waterway, it is located off- channel and has a perimeter dike. The contributing drainage area to Intermountain Bottom Ash Basin is limited to this basin's total impoundment area (approximately 105 acres) because the perimeter dike prevents surface water run-on from adjacent land.

Physical and Engineering properties of the foundation and abutment materials on which the CCR Unit is constructed

Construction records for this CCR unit are sparse. Construction of the Intermountain Power Project (IPP) started in about 1981. Available drawings for IPP's impoundment/ponds and embankments are dated 1983. The IPP was commissioned in 1986. There are no records which could be found of the original geotechnical design or material properties for the foundation and abutments on which the Bottom Ash Basin was constructed. However, several site-specific geotechnical investigations and studies for the plant site and CCR surface impoundments were available for review. From these studies, it appears that the CCR surface impoundment embankments were constructed of on-site natural soils. The on-site soils consist primarily of silty sand and sandy silts, but may also contain clean sands and lean clay.

Type, size, range, and physical, and engineering properties of materials used in constructing each zone or stage of CCR Unit

A review of the very limited material available indicates that the upper CCR surface impoundment embankments appear to be constructed of compacted fill (local borrow) material derived from on-site native soils, which, based on test holes drilled in the embankment generally consist of Clayey Sand (SC, SP-SC) and poorly graded sand (SP). The lower portion of the embankment consists of compacted native, in-place (non-fill) soils, which based on test holes drilled in the embankment, generally classify as poorly graded sand (SP) and silty sand (SM). At a depth below the floor of the basin there are various strata including a fairly continuous layer of sandy lean clay (CL). Other than the fill and natural portions of the embankment, there appears to be no explicit zonation of materials or special foundation treatments. The embankments were constructed in horizontal layers not exceeding 8 inches in uncompacted thickness. Each layer had a compacted density of at 90% of the maximum density within a range of $\pm 2\%$ of the optimum moisture content as determined by ASTM 1557.

Detailed Dimension Drawings of CCR Unit

- Drawings of CCR unit - See Exhibit #2.
- Foundation improvements- There have not been any changes in the foundation since initial construction.
- Drainage provisions- There are no drainage provisions present since off-channel surface impoundment.
- Spillways - There are no spillways since off-channel impoundment.
- Diversion ditches - There are no diversion ditches since off-channel impoundment.
- Outlets - See Exhibit #3.
- Instrumentation locations - See Exhibit #4.

- Slope Protection- Slopes have been seeded with a grass seed mixture
- Operating Pool surface elevation following peak discharge from the inflow design flood - about 2 inches above the maximum water surface since this is an off channel impoundment and the only water that would come in would be from a 100 year storm event which would be about 2 inches. Since there is 3 feet nominal of free board, this should not be an issue.
- Expected maximum depth of CCR within the CCR surface impoundment- CCR material can be as high as the maximum water surface in this CCR unit.
- Identifiable natural or manmade features that could adversely affect operation of the CCR Unit - There are no Identifiable features that could affect operation.

Description of the type, purpose, and location of existing instrumentation

Instrumentation for the Bottom Ash Basin consists of staff gauges and monitoring wells. The monitoring wells are located around the perimeter of the Bottom Ash Basin at the toe of the embankment. The wells are measured manually with a level indicator frequently to indicate any leakage from the Bottom Ash Basin. Staff Gauges are manually read to monitor levels.

Area Capacity Curves

Area Capacity Table - See Exhibit #5.

Description of each spillway and diversion design features

The Bottom Ash Basin does not have a spillway because of controlled inflow/outflow operation. It is not located on a waterway, it is located off-channel.

Construction specifications and provisions for surveillance, maintenance, and repair of the CCR Unit

Manual inspections of the Bottom Ash Basin are conducted regularly. As required by the CCR rule, the Bottom Ash Basin is inspected by a qualified person at intervals not exceeding 7 days. The Bottom Ash Basin's instrumentation is monitored by a qualified person at intervals not exceeding 30 days. In addition, the Bottom Ash Basin is inspected by a professional engineer on an annual basis. Any maintenance or repair items are reported and submitted by personnel conducting inspections. Any needed repairs are done as quickly as reasonably possible. It is also inspected by the Utah State Engineer's office every five years.

Any record or knowledge of structural instability of the CCR Unit

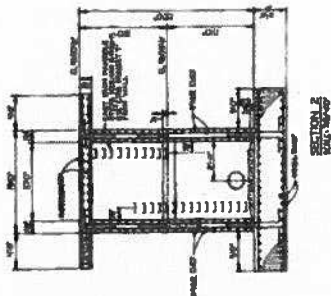
No known record or knowledge of structural instability for the Bottom Ash Basin. All of the inspections have indicated that the Bottom Ash Basin is structurally stable.

Exhibit #1

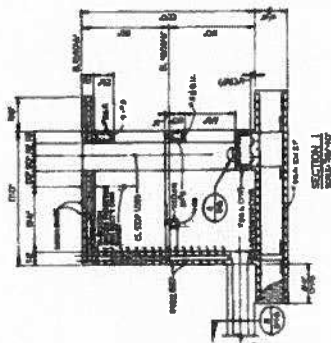
Location of CCR Unit

Exhibit #2

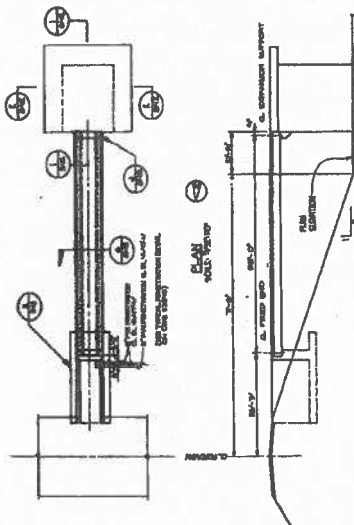
Drawings of CCR Unit



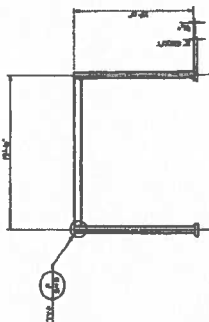
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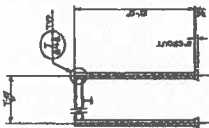
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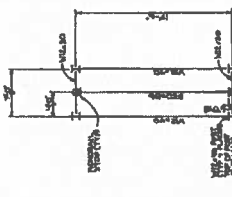
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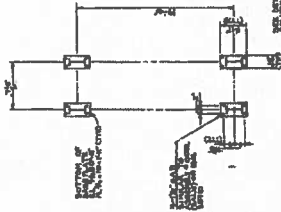
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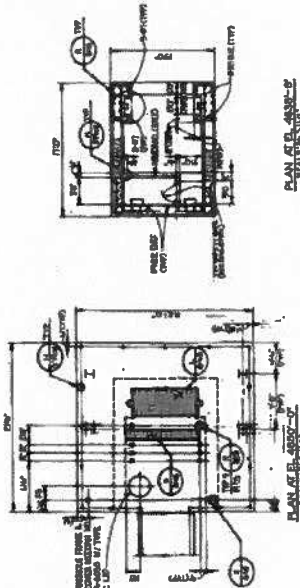
ELEVATION LOOKING EAST AND WEST
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PLAN AT EL. 4850-27
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BASE PLATE PLAN
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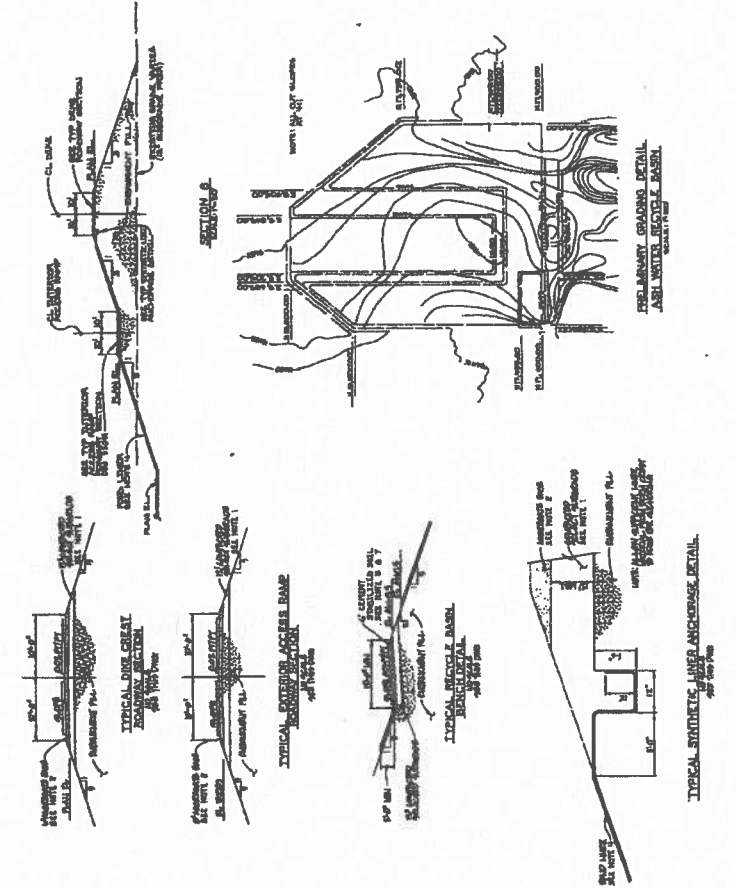


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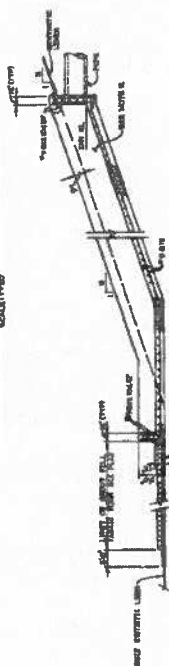
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1. ALL DIMENSIONS ARE IN FEET AND INCHES.
2. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.
3. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE NOTED.
4. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE NOTED.
5. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE NOTED.
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PROJECT NO.	9250 - 9850 - 53042
PROJECT NAME	CONCRETE - WATERWAY FLOOD GATE FLAP BLOC
CONTRACT NO.	CONCRETE - WATERWAY FLOOD GATE FLAP BLOC
CONTRACT DESCRIPTION	CONCRETE - WATERWAY FLOOD GATE FLAP BLOC
CONTRACT DATE	CONCRETE - WATERWAY FLOOD GATE FLAP BLOC
CONTRACT LOCATION	CONCRETE - WATERWAY FLOOD GATE FLAP BLOC
CONTRACT OWNER	CONCRETE - WATERWAY FLOOD GATE FLAP BLOC
CONTRACT ENGINEER	CONCRETE - WATERWAY FLOOD GATE FLAP BLOC
CONTRACT ARCHITECT	CONCRETE - WATERWAY FLOOD GATE FLAP BLOC
CONTRACT CONTRACTOR	CONCRETE - WATERWAY FLOOD GATE FLAP BLOC
CONTRACT SUBCONTRACTOR	CONCRETE - WATERWAY FLOOD GATE FLAP BLOC
CONTRACT SCHEDULE	CONCRETE - WATERWAY FLOOD GATE FLAP BLOC
CONTRACT BUDGET	CONCRETE - WATERWAY FLOOD GATE FLAP BLOC
CONTRACT STATUS	CONCRETE - WATERWAY FLOOD GATE FLAP BLOC
CONTRACT COMMENTS	CONCRETE - WATERWAY FLOOD GATE FLAP BLOC

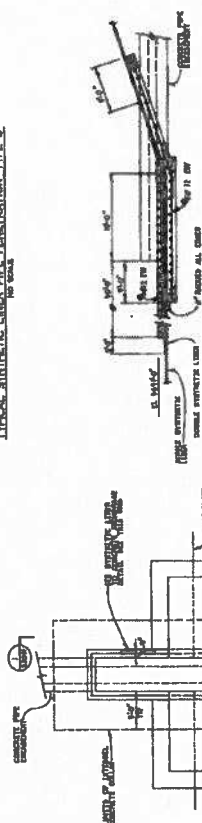


GENERAL NOTES

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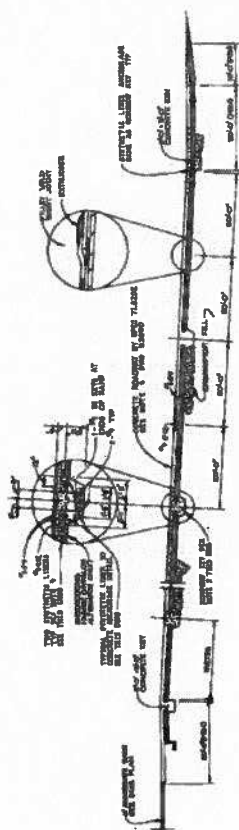
TYPICAL SYNTHETIC LINER PIPE PENETRATION TYPE 3



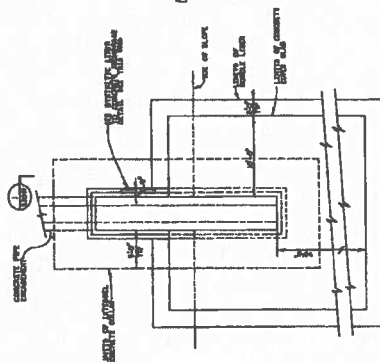
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TYPICAL HYDRAULIC LINED DETAIL



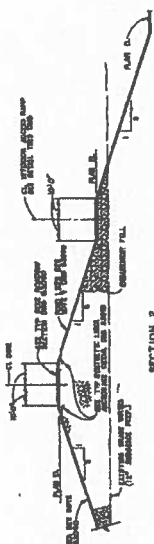
TYPICAL INTERIOR ACCESS RAMP DETAIL (SYNTHETIC LINER OPTION)



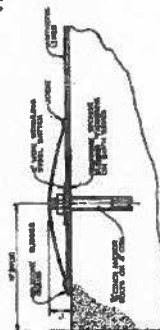
TYPE 4 SYNTHETIC LINER PIPE PENETRATION



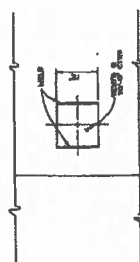
TYPICAL EVAPORATION POND OVERFLOW STRUCTURE.



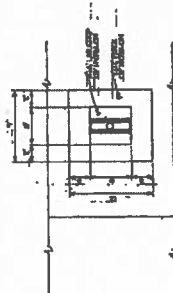
SECTION 2



CONCRETE ANCHORAGE DETAIL



~~INDEX GAS VENT DETAIL~~



REMARKS:



STRENGTHS

• A clear focus on the business case for sustainability
• A strong emphasis on stakeholder engagement
• A commitment to transparency and accountability

NOTES



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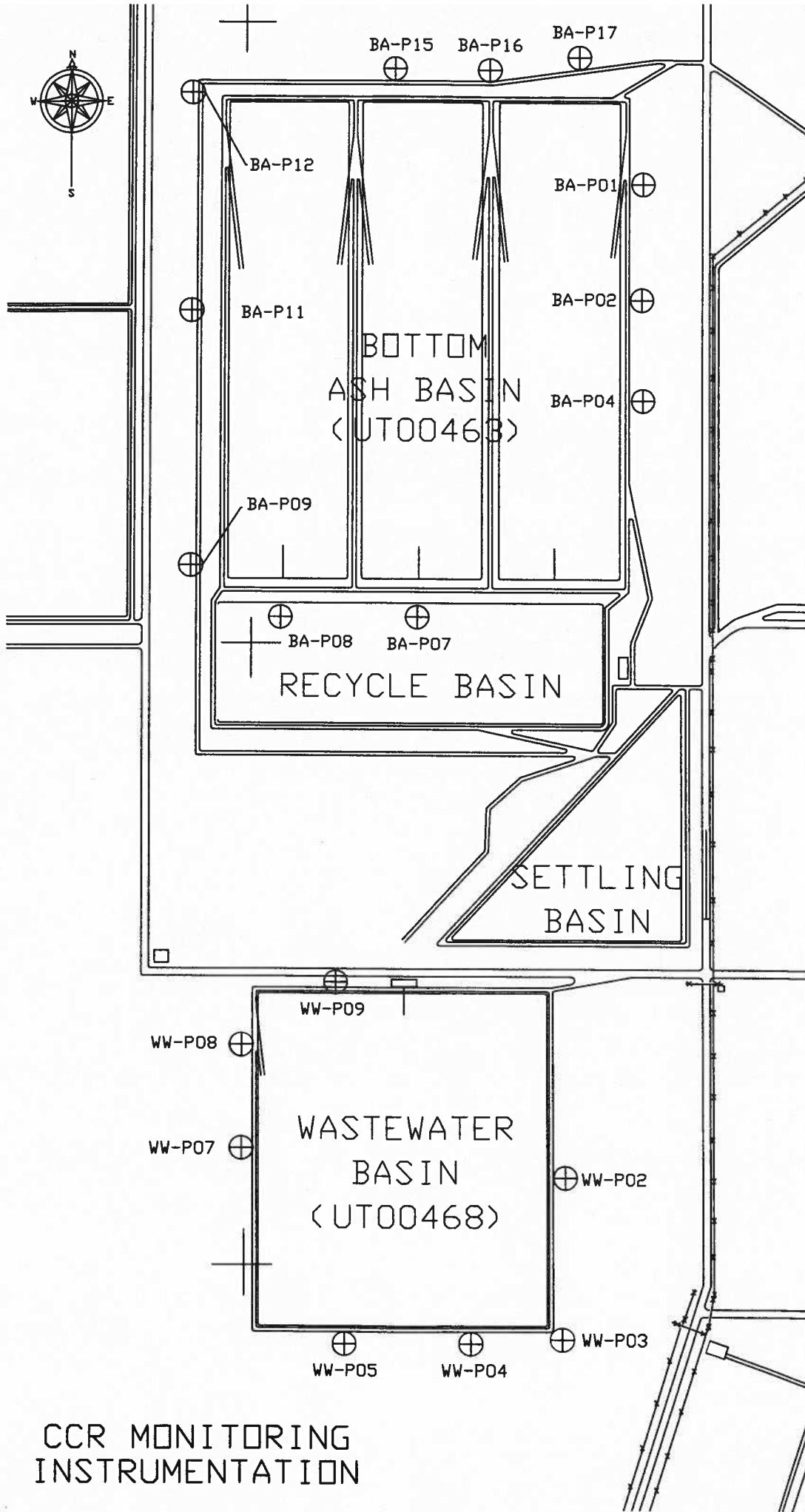
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80																				

Exhibit #3

Drawing of Outlets

Exhibit #4

Instrumentation Locations



CCR MONITORING
INSTRUMENTATION

Exhibit #5

Area Capacity Table

Grimshaw Surveying, Inc.

LAND SURVEYING & MAPPING

546 East Midvalley Road

Enoch, Utah 84721

phone (435) 586-9130

cell (435) 559-9130

January 14, 2016

Intermountain Power Service Corporation

850 W. Brush Wellman Rd.

Delta, Utah 84624-9546

Bottom Ash Basin Capacity Table

Contour Elevation	Water Depth	Volume in Acre Feet
4684	47	3421
4682	45	3124
4680	43	2929
4678	41	2744
4676	39	2561
4674	37	2383
4672	35	2210
4670	33	2041
4668	31	1877
4666	29	1718
4664	27	1564
4662	25	1414
4660	23	1268
4658	21	1127
4656	19	990
4654	17	858
4652	15	729
4650	13	606
4648	11	486
4646	9	371
4644	7	260
4642	5	153
4640	3	50
4637	0	0

Douglas B. Grimshaw, PLS

