History of Construction

Intermountain Power Wastewater Basin (UT00468)
CCR Surface Impoundment

October 17, 2016

History of Construction for Intermountain Power Wastewater Basin (UT00468)
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 Wastewater Basin (UT00468), hereafter referred to in this report as "Wastewater Basin".

Location of CCR Unit

The Wastewater Basin is located in parts of the SW1/4 of SE1/4 of Section 14 and parts of the NWw1/4 of NE1/4 of Section 23, all 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 Wastewater Basin has the following purpose: receive flue gas emission control residuals and other process material including process water separated for re-use, wash down, coal pile fun-off, boiler blowdown, cooling tower blowdown, regenerant rinsate, blowdown, etc. Water that accumulates in the Wastewater Basin is decanted and pumped back to the units where it can be used as make-up water for the sulfur dioxide removal system, pumped to the Ash Water Recycle Basin where it can be used as make-up water for the ash water system, or pumped to the Evaporation Ponds.

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

This CCR unit (Wastewater Basin (UT00468) 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 Wastewater Basin is limited to this basin's total impoundment area (approximately 53 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 ±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 Wastewater Basin consists of staff gauges and monitoring wells. The monitoring wells are located around the perimeter of the Wastewater Basin at the toe of the embankment. The wells are measured manually with a level indicator frequently to indicate any leakage from the Wastewater 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 Waste Water 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 Wastewater Basin are conducted regularly. As required under the CCR rule, the Wastewater Basin is inspected by a qualified person at intervals not exceeding 7 days. The Wastewater Basin's instrumentation is monitored by a qualified person at intervals not exceeding 30 days. In addition, the Wastewater 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 Wastewater Basin. All of the inspections have indicated that the Wastewater Basin is structurally stable.

Exhibit #1

Location of CCR Unit

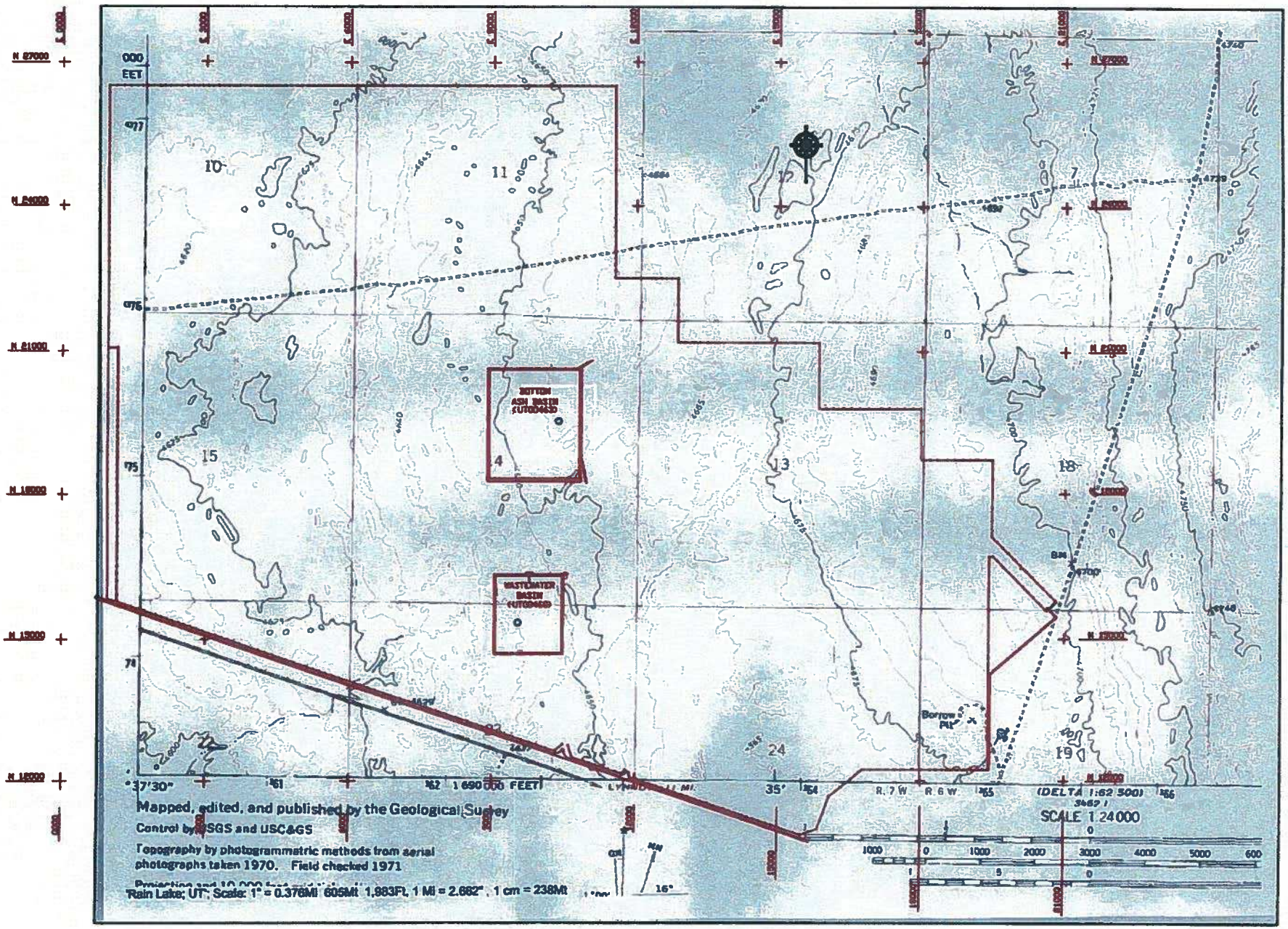
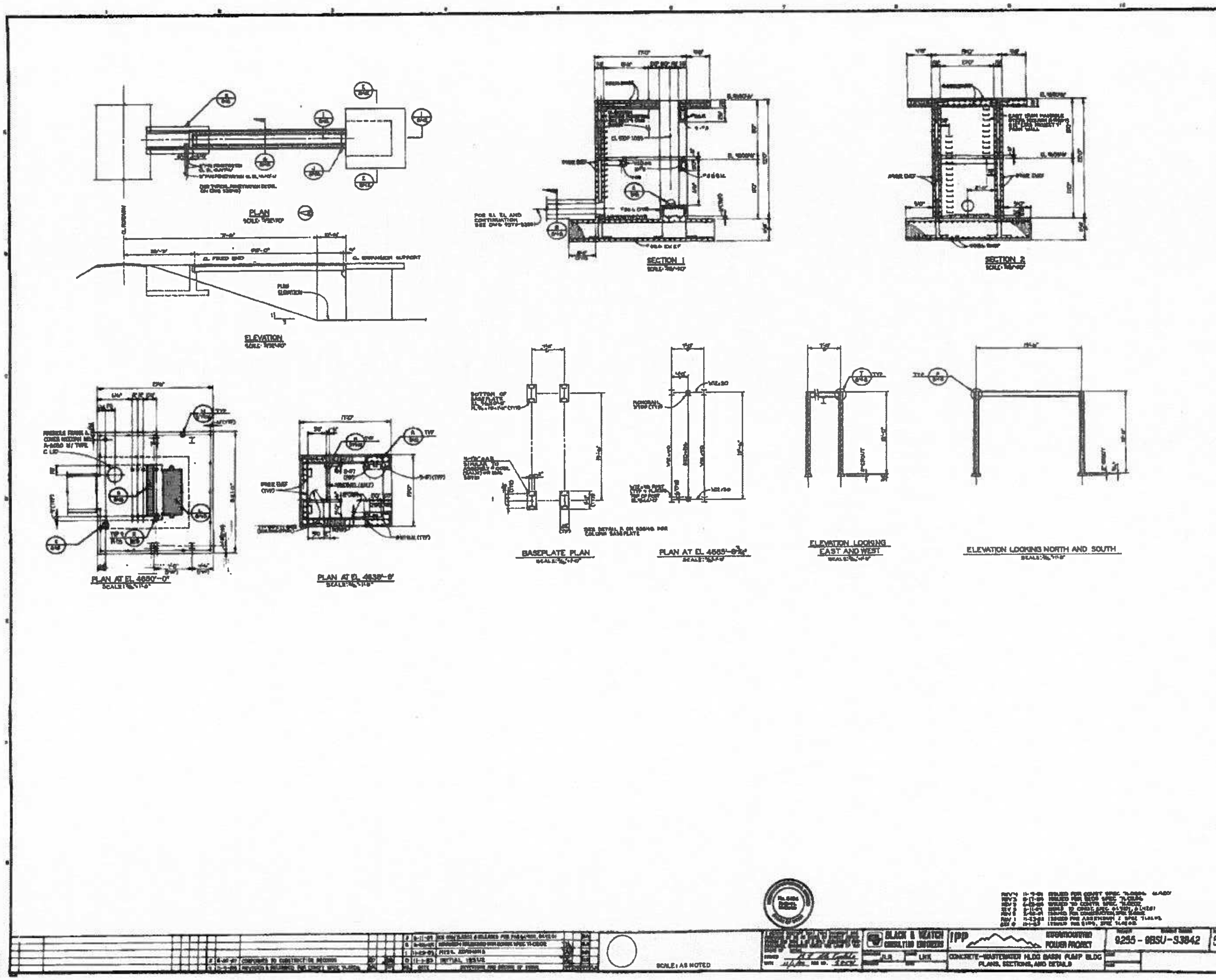
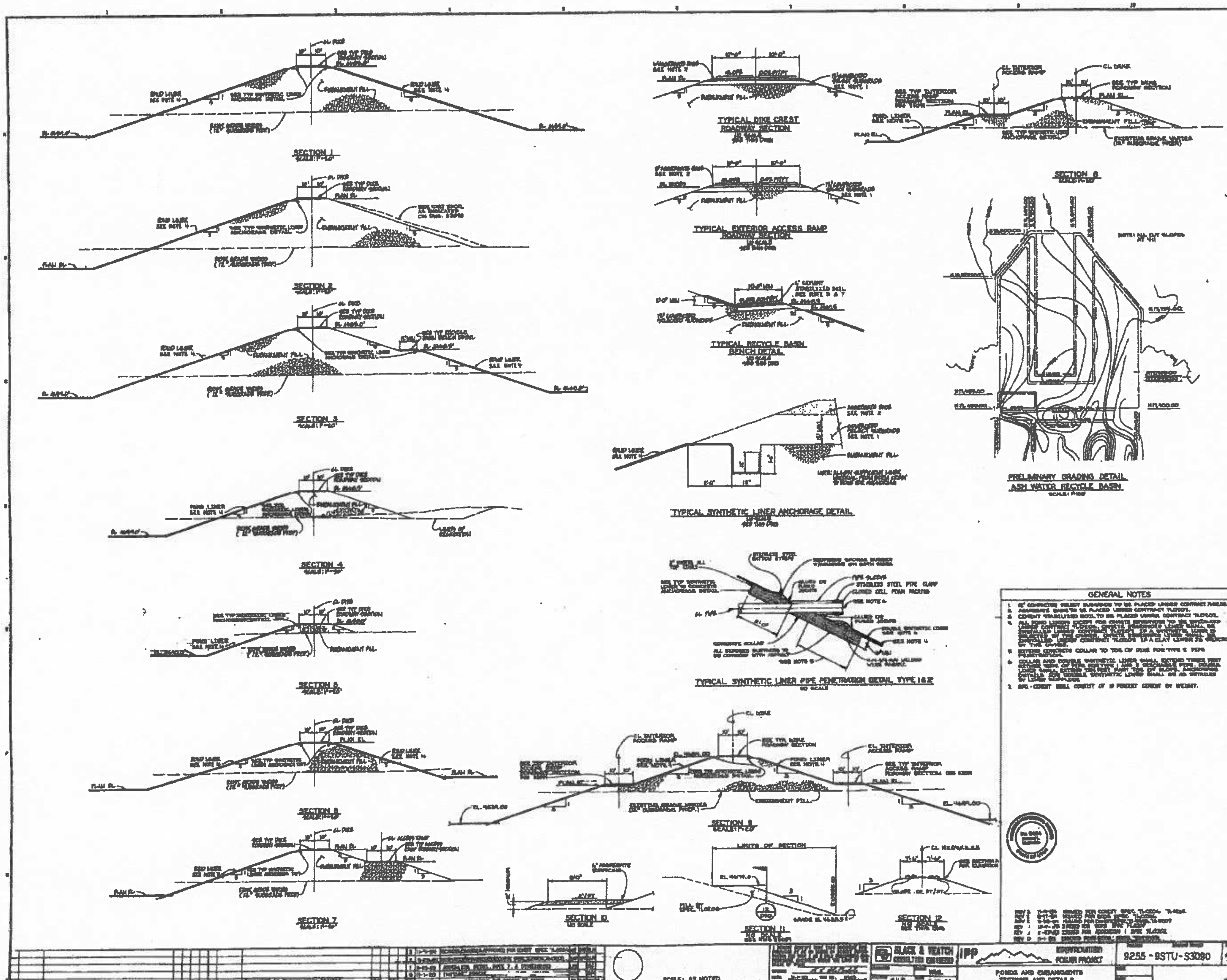

BOTTOM ASH BASIN (UTD0463)
WASTEWATER BASIN (UTD0462)
Borrow Pit
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography by photogrammetric methods from aerial photographs taken 1970. Field checked 1971
Rain Lake, UT. Scale: 1° = 0.376MI 605Mt 1,983Ft, 1 MI = 2.662", 1 cm = 238Mt
SCALE 1:24000
1 690 000 FEET
(DELTA 1:62 500)

Exhibit #2

Drawings of CCR Unit


PLAN
ELEVATION
SECTION 1
SECTION 2
PLAN AT EL 4650'-0"
PLAN AT EL 4638'-6"
BASEPLATE PLAN
ELEVATION LOOKING EAST AND WEST
ELEVATION LOOKING NORTH AND SOUTH
SCALE: AS NOTED
BLACK & VEATCH CONSULTING ENGINEERS
IPP
INTERMOUNTAIN POWER PROJECT
CONCRETE-WASTEWATER HLDG BASIN PUMP BLDG
PLANS, SECTIONS, AND DETAILS
9255-9BSU-S3842
5


SECTION 1
SECTION 2
SECTION 3
SECTION 4
SECTION 5
SECTION 6
SECTION 7
SECTION 8
SECTION 9
SECTION 10
SECTION 11
SECTION 12
TYPICAL DIKE CREST ROADWAY SECTION
TYPICAL EXTERIOR ACCESS RAMP ROADWAY SECTION
TYPICAL RECYCLE BASIN BENCH DETAIL
TYPICAL SYNTHETIC LINER ANCHORAGE DETAIL
TYPICAL SYNTHETIC LINER PIPE PENETRATION DETAIL, TYPE I & II
PRELIMINARY GRADING DETAIL
ASH WATER RECYCLE BASIN
GENERAL NOTES
EMBANKMENT FILL
LIMITS OF SECTION
SCALE: AS NOTED
BLACK & VEATCH
CONSULTING ENGINEERS
IPP
INTERMOUNTAIN
POWER PROJECT
PONDS AND EMBANKMENTS
SECTIONS AND DETAILS
9255-BSTU-S3080

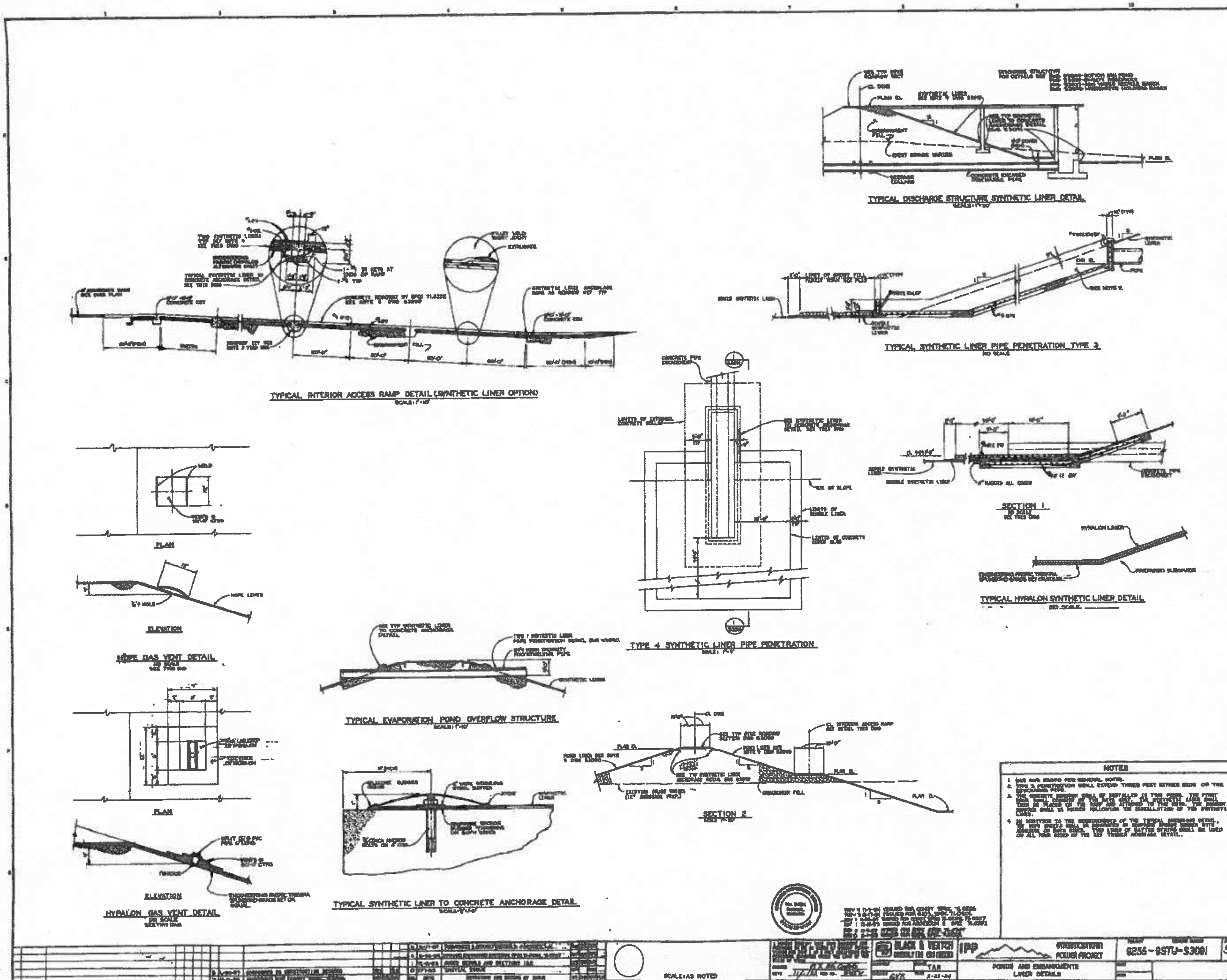

TYPICAL DISCHARGE STRUCTURE SYNTHETIC LINER DETAIL
TYPICAL SYNTHETIC LINER PIPE PENETRATION TYPE 3
NO SCALE
TYPICAL INTERIOR ACCESS RAMP DETAIL (SYNTHETIC LINER OPTION)
SECTION 1
HYPALON LINER
TYPICAL HYPALON SYNTHETIC LINER DETAIL
NO SCALE
TYPE 4 SYNTHETIC LINER PIPE PENETRATION
PLAN
ELEVATION
HDPE GAS VENT DETAIL
NO SCALE
TYPICAL EVAPORATION POND OVERFLOW STRUCTURE
SECTION 2
NOTES
TYPICAL SYNTHETIC LINER TO CONCRETE ANCHORAGE DETAIL
HYPALON GAS VENT DETAIL
NO SCALE
BLACK & VEATCH
CONSULTING ENGINEERS
IPP
INTERMOUNTAIN POWER PROJECT
PONDS AND EMBANKMENTS
LINER DETAILS
SCALE: AS NOTED
9255-9STU-S309I
5

Exhibit #3

Drawing of Outlets

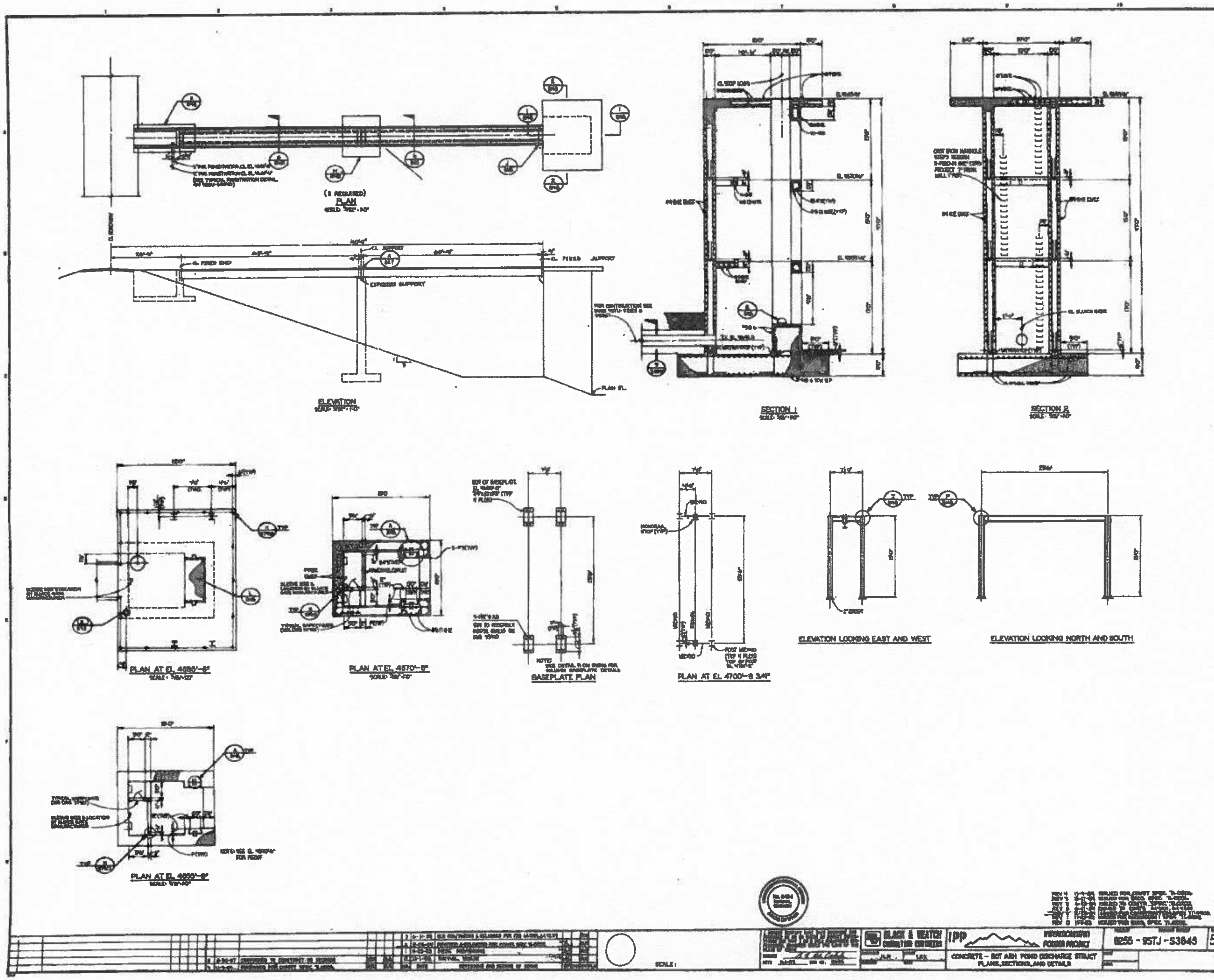
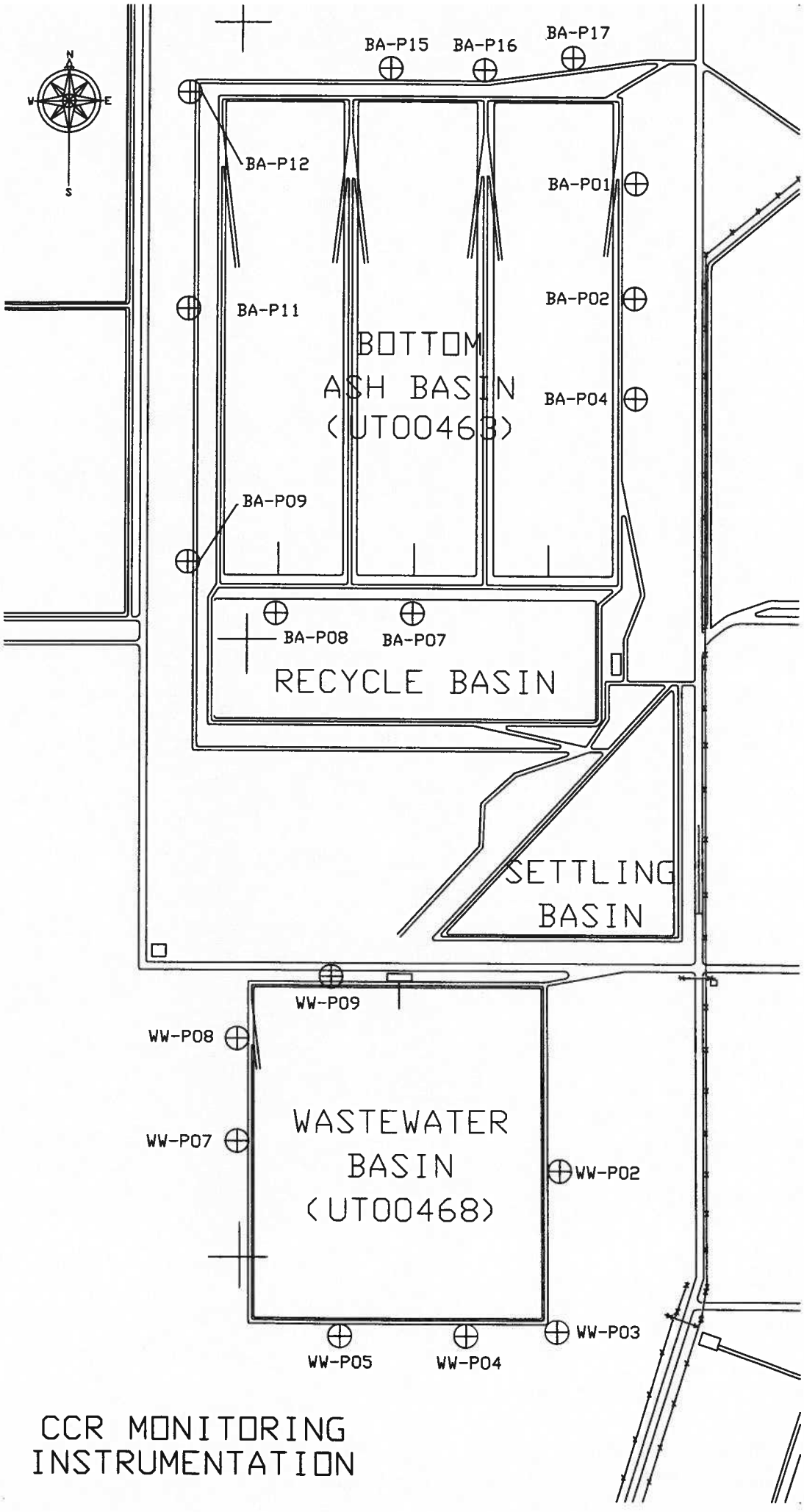

PLAN
ELEVATION
SECTION 1
SECTION 2
PLAN AT EL 4686'-6"
PLAN AT EL 4670'-6"
BASEPLATE PLAN
PLAN AT EL 4700'-6 3/4"
ELEVATION LOOKING EAST AND WEST
ELEVATION LOOKING NORTH AND SOUTH
PLAN AT EL 4660'-6"
BLACK & VEATCH
IPP
POWER PROJECT
CONCRETE - BOT ASH POND DISCHARGE STRUCT
PLANS, SECTIONS, AND DETAILS
9255 - 95TJ - S3843
5

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

Waste Water Basin Capacity Table

Contour Elevation	Water Depth	Volume in Acre Feet
4650	22	917
4649	21	866
4648	20	815
4647	19	765
4646	18	716
4645	17	667
4644	16	618
4643	15	570
4642	14	522
4641	13	474
4640	12	427
4639	11	380
4638	10	334
4637	9	287
4636	8	242
4635	7	197
4634	6	152
4633	5	108
4632	4	64
4631	3	28
4630	2	8.5
4629	1	1.3
4628	0	0

Douglas B. Grimshaw, PLS