HALEY & ALDRICH, INC.
6500 Rockside Road
Suite 200
Cleveland, OH 44131
216.739.0555

MEMORANDUM

31 October 2017
File No. 129800-002

SUBJECT: CCR History of Construction
Basin A and Basin B
Dynegy Miami Fort, LLC
Miami Fort Power Station
North Bend, Ohio

Haley & Aldrich, Inc. (Haley & Aldrich) has assisted Dynegy Miami Fort, LLC (Dynegy) with compiling the history of construction (revised) for Basin A and Basin B at the Miami Fort Power Station.[1] This work was performed in accordance with the U.S. Environmental Protection Agency's Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals (CCR) from Electric Utilities, 40 CFR Part 257, Subpart D, specifically §257.73(c)(1).

To the extent feasible, Dynegy has provided documentation supporting the history of construction. Information provided herein is based on the available data. Actual conditions may vary from those represented by the available data at the time data were obtained, despite the use of due care. Information concerning the history of construction of Basin A and Basin B is presented in the following sections and in the appendices within which specific supporting historic, design & construction documentation has been compiled.

§257.73(c)(1)(i): The name and address of the person(s) owning or operating the CCR unit; the name associated with the CCR unit; and the identification number of the CCR unit if one has been assigned by the state.

Owner: Dynegy Miami Fort, LLC
1500 Eastport Plaza Drive
Collinsville, IL 62234

Name of CCR Unit: Basin A
Basin B

ODNR Number: Basin A - 9046-001
Basin B - 9046-002

[1] This revised history of construction replaces the initial history of construction dated October 2016.

§257.73(c)(1)(ii): The location of the CCR unit identified on the most recent U.S. Geological Survey (USGS) 7 ½ minute or 15-minute topographic quadrangle map or a topographic map of equivalent scale if a USGS map is not available.

A general facility location map including the locations of Basin A and Basin B is provided in **Appendix A**.

§257.73(c)(1)(iii): A statement of the purpose for which the CCR unit is being used.

Basin A is used to store and dispose of sluiced bottom ash and fly ash. CCR is reclaimed from Basin A for beneficial use.

Basin B is used to store and dispose of bottom ash, fly ash, and non-CCR waste and to clarify water prior to discharge in accordance with NPDES Permit No. OH0009873.

§257.73(c)(1)(iv): The name and size in acres of the watershed within which the CCR unit is located.

Watershed Name: Basin A and Basin B are located within the Garrison Creek-Ohio River Watershed (Hydrologic Unit Code [HUC] 050902030204).

Watershed Area: The entire area of the Garrison Creek-Ohio River Watershed is 16,583 acres (USGS, 2016).

§257.73(c)(1)(v): A description of the physical and engineering properties of the foundation and abutment materials on which the CCR unit is constructed.

The foundation materials for Basin A and Basin B consist of alluvial clays, alluvial silts and silty clays, and sands and gravels.

A detailed description of the physical and engineering properties of the foundation soils on which Basins A and B are constructed is presented on Table 17 within a report entitled, "Geotechnical Report, Miami Fort Power Station, Basin A and Basin B," by AECOM dated October 7, 2016. Pertinent pages from the report are included in **Appendix B**.

§257.73(c)(1)(vi): A statement of the type, size, range, and physical and engineering properties of the materials used in constructing each zone or stage of the CCR unit; the method of site preparation and construction of each zone of the CCR unit; and the approximate dates of construction of each successive stage of construction of the CCR unit.

The original embankments of Basin A were constructed prior to 1959 from soils described as medium stiff to very stiff, lean clay with varying amounts of sand. In approximately 1976, the Basin A embankments were raised by approximately 10 ft using compacted bottom ash and fly ash

excavated from within the existing basin. Within limited areas, compacted cohesive soils were used to raise the embankments.

Basin B was constructed over three seasons between 1979 and 1982. The Basin B embankments were constructed using compacted bottom ash and fly ash which was covered by a 5-foot thick clay cover.

A description of the physical engineering properties of the materials used in constructing the embankments is presented on Table 17 within a report entitled, "Geotechnical Report, Miami Fort Power Station, Basin A and Basin B," by AECOM dated October 7, 2016. Pertinent pages from the report are included in **Appendix B**.

Information on the method of site preparation and construction for the original construction of the Basin A and Basin B embankments is not available. It is understood that the Basin A embankment raise constructed in 1976 was completed in accordance with the specifications included within Appendix III of the report entitled, "Report on Geotechnical Investigation, Ash Pit Dike Modifications, Miami Fort Station" by H.C. Nutting Company dated May 17, 1976, provided in **Appendix F**.

§257.73(c)(1)(vii): At a scale that details engineering structures and appurtenances relevant to the design, construction, operation and maintenance of the CCR unit, detailed dimensional drawings of the CCR unit, including a plan view and cross sections of the length and width of the CCR unit, showing all zones, foundation improvements, drainage provisions, spillways, diversion ditches, outlets, instrument locations, and slope protection, in addition to the normal operating pool surface elevation and the maximum pool surface elevation following peak discharge from the inflow design flood, the expected maximum depth of CCR within the CCR surface impoundment, and any identifiable natural or manmade features that could adversely affect operation of the CCR unit due to malfunction or mis-operation.

Design drawings providing available information from the list above for Basin A and Basin B, are included in **Appendix C**. Information identified in 257.73(c)(1)(vii) not included in Appendix C, particularly with respect to foundation improvements, diversion ditches, slope protection, normal and maximum operating pool elevations is assumed to be unavailable.

Based on the review of the drawings listed above, no natural or manmade features that could adversely affect operation of these CCR units due to malfunction or mis-operation were identified.

§257.73(c)(1)(viii): A description of the type, purpose, and location of existing instrumentation.

A total of eight piezometers exist in Basin A and Basin B. Six vibrating wire piezometers were installed during the 2011 field investigation by S&ME. The piezometers were installed in borings B-B-1103, B-B-1104, B-B-1105, B-B-1106, B-A-1111, and B-A-1112 at the locations shown on Plate 2 in **Appendix D**. Two standpipe piezometers were installed by AECOM during their 2015

investigation, the locations of which are shown in Figure 2A in Appendix D. The purpose of the piezometers is to measure piezometric levels within and in the vicinity of the basin embankments.

§257.73(c)(1)(ix): Area-capacity curves for the CCR unit.

Area-capacity curves for Basin A and Basin B are not available.

§257.73(c)(1)(x): A description of each spillway and diversion design features and capacities and calculations used in their determination.

The primary spillway of Basin A consists of a 36-in. diameter high-density polyethylene (HDPE) morning glory spillway. The spillway drains to a 42-in. diameter secondary corrugated metal pipe (CMP) that flows to the primary 42-in. CMP discharge pipe by a wye connection. Water from Basin A flows into Basin B through a 48-in. CMP culvert that penetrates the common berm between the two basins. The 48-in. CMP has been slip lined with a 40-in. diameter HDPE pipe for a length of approximately 73 ft at the upstream end of the pipe.

The primary spillway of Basin B consists of a 36-in. diameter ductile iron pipe (DIP) morning glory spillway. The Basin B spillway connects to a 42-in. CMP that discharges into the Ohio River through a NPDES outfall.

In 2016, the discharge capacity of Basins A and B was evaluated by AECOM using HydroCAD 10 software modeling a 1,000-year, 24-hour rainfall event. A description of the spillways and associated results of the peak flow analysis were presented in a report entitled, "Hydrologic and Hydraulic Summary Report, Miami Fort Power Station, Basin A and Basin B" by AECOM dated October 7, 2016. Pertinent pages from the report are included in **Appendix E**.

§257.73(c)(1)(xi): The construction specifications and provisions for surveillance, maintenance, and repair of the CCR unit.

The construction specifications for the original Basin A and Basin B construction are not available. The construction specifications for the Basin A embankment raise are located in a report entitled, "Report on Geotechnical Investigation, Ash Pit Dike Modifications, Miami Fort Station" by H.C. Nutting Company dated May 17, 1976. Pertinent pages from the report are included in **Appendix F**.

Provisions for surveillance, maintenance, and repair of Basin A and Basin B are included in a document entitled, "Miami Fort Ash Pond A & B, Operation Maintenance Manual and Emergency Action Plan" which is included in **Appendix G**.

§257.73(c)(1)(xii): Any record or knowledge of structural instability of the CCR unit.

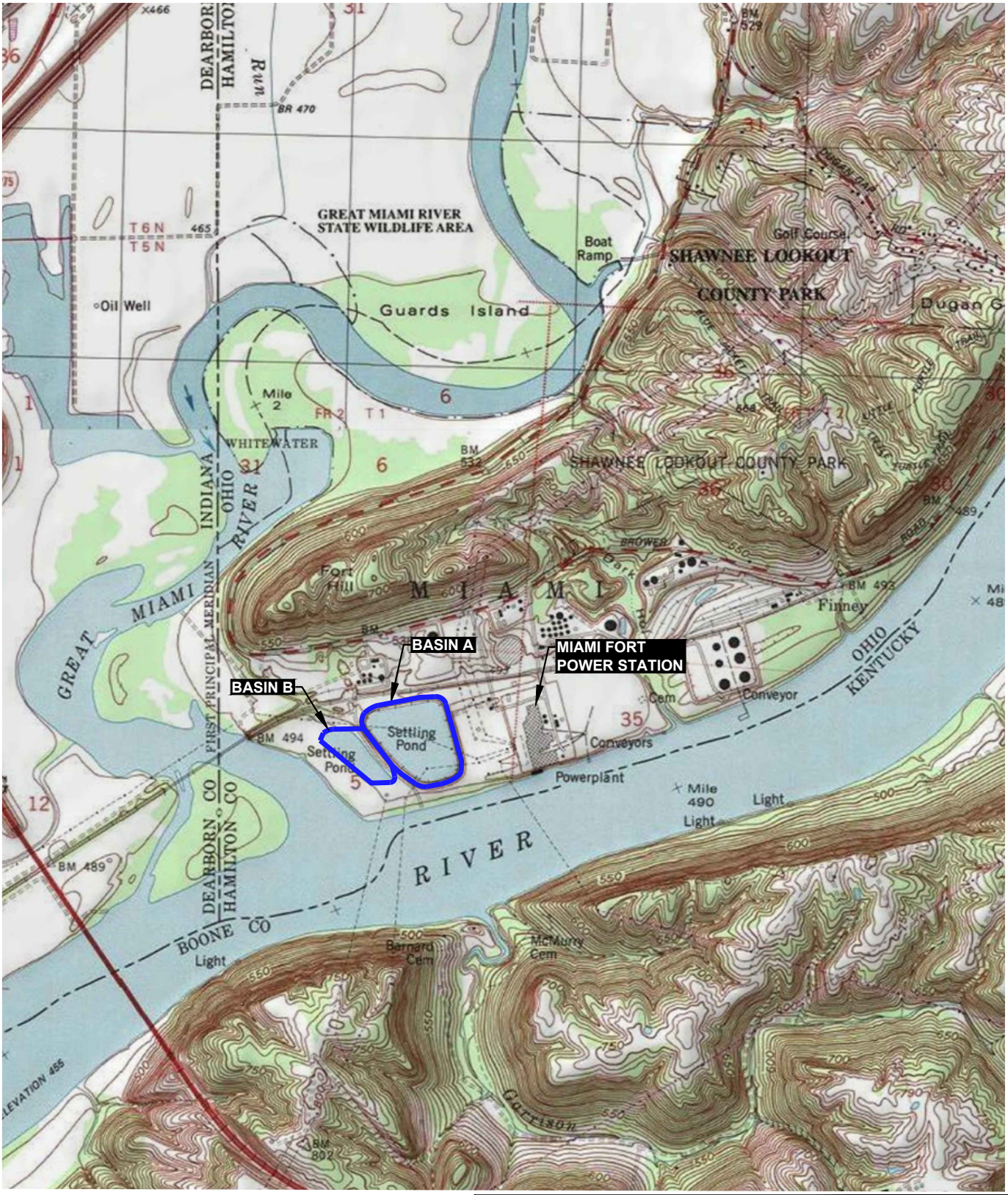
There are no records or knowledge of any structural instability of Basin A or Basin B at Miami Fort Power Station.

List of Appendices:

Appendix A – Project Locus
Appendix B – Physical and Engineering Properties of Foundation and Embankment Materials
Appendix C – Available Design Drawings
Appendix D– Instrumentation
Appendix E – Pages from AECOM Hydrologic and Hydraulic Summary Report
Appendix F – Basin A Embankment Raise Construction Specifications
Appendix G - Operation Maintenance Manual and Emergency Action Plan

Appendix A

Project Locus



MAP SOURCE: ESRI

SITE COORDINATES: 39°7'5"N, 84°48'20"W

HALEY ALDRICH

DYNEGY MIAMI FORT POWER STATION
11021 BROWER ROAD
NORTH BEND, OHIO

PROJECT LOCUS

APPROXIMATE SCALE: 1IN = 2000 FT
OCTOBER 2017

FIGURE 1

VARI, KATALIN Printed: 10/27/2017 10:08 AM Layout: L
G:\129800 - DYNEGY GENERAL ENGINEERING SUPPORT\CAD\FIGURES\129530-002_0001_FIG-1_LOCUS MIAMI FORT.DWG

Appendix B

Physical and Engineering Properties of Foundation and Embankment Materials

Previous subsurface investigations were performed in May of 2011 by S&ME Inc. and in March of 1976 by H.C. Nutting Company. The S&ME and H.C. Nutting Company investigations included 14 and 34 borings, respectively, around and within Basins A and B. This data was not the primary source of data for AECOM, but was used to supplement AECOM's data. A previous survey was done in September of 2014 by ESP Associates but did not encompass the entire downstream slopes of the dikes; therefore, supplemental surveys were performed at the critical cross sections by Ellison Surveying Inc. in 2015.

3. SUMMARY OF SITE-SPECIFIC SUBSURFACE CONDITIONS

Based upon current and previous laboratory testing results, as well as field observations during the drilling exploration, the on-site materials at Miami Fort Basins A and B were classified into 11 representative material horizons. The horizons are discussed in detail in Section 3.1.

3.1. ***Site Stratigraphy***

Natural Foundation Soils

Alluvial Clays: The predominant materials immediately underlying the dike embankment materials consisted of low to moderate plasticity clays. Index testing classified these soils as lean clays (CL) to occasional silty clays (CL-ML), each with varying amounts of sand. These materials were typically underlain by higher permeability alluvial silts and silty clays (described below) throughout much of the site, except for the northernmost portions of the Basin dikes where the clays were underlain by sand and gravel deposits. Thicknesses of the alluvial clays ranged from approximately 11.5 to 25 feet underneath the Basin B dike and approximately 6 to 24 feet underneath the Basin A dike. These materials ranged from very soft to very stiff and were typically medium stiff, with uncorrected SPT N-values ranging from 2 to 15 blows per foot (bpf).

Alluvial Silts and Silty Clays: Typically, the alluvial silts and silty clays were observed under the alluvial clays horizon with measured thicknesses ranging from approximately 4 to 29.9 feet under the Basin B dikes and approximately 4.5 to 22 feet underneath the Basin A Dikes. The average thickness, when encountered, was about 16 feet. Index testing typically resulted in classifications of silt (ML) and silty clay (CL-ML). One sample subject to gradation testing received a classification of silty sand (SM), indicating there were some zones with significant amounts of fine sand in layers or lenses. Materials were observed to be medium brown to gray, low to very low in plasticity, and often saturated. The alluvial silts and silty clays horizon appeared to become thicker moving south and west approaching the Ohio and Great Miami Rivers. Materials were observed to be very soft to very stiff and were typically medium stiff, with uncorrected SPT N-values ranging from 2 to 17 bpf.

Sand and Gravel: A layer of sand and gravel underlies the entire site. This material has been estimated to extend to bedrock near an elevation of approximately 350 feet (S&ME, 2011). For this exploration, auger borings were terminated upon encountering this horizon, but several CPT soundings were advanced up to 30 feet into this horizon to estimate its relative density and hydraulic properties. Significantly higher tip resistance values (relative to overlying clays/silts) were measured in the CPT soundings. The top of this horizon was typically higher in elevation on the northern portions of the site (above EL 450 feet) and tended to grade lower in elevation to the south and west moving toward the confluence of the Ohio and Great Miami Rivers. Historic reports were reviewed for data on the sand and gravel layer. The H.C. Nutting report dated January 26, 1978 depicts borings that penetrated into this horizon. Materials were observed to be medium dense to dense, although typically medium dense, with uncorrected SPT N-values ranging from 13 to 37 bpf.

Table 17. Static Strength Parameters Summary

General Classification	Material	Moist Unit Weight (pcf)	Effective (drained) Shear Strength Parameters		Total (undrained) Shear Strength Parameters[5]	
			c' (psf)	Φ' (°)	c (psf)	Φ (°)
Basin A Fill Materials	Basin A Original Dike[1]	127	0	30	200	20
	Basin A Raised Dike[1]	133	200	30	600	17
	Basin A Bottom Ash Blanket[2]	117	0	35	0	35
	Rubble Fill[3]	120	0	30	0	30
	Compacted Bottom /Fly Ash	*Based on a note from drawing 7-3605-S2, the middle portion of the dike cross section was described as "compacted bottom ash and fly ash" and the same index properties as the Basin B Compacted Ash horizon were assigned.*				
Basin B Fill Materials	Basin B Dike Clay Cover[1]	130	200	26	600	17
	Basin B Compacted Ash[1]	110	0	33	0	33
	Basin B Blanket Drain[2]	115	0	32	0	32
Ponded CCR Materials	Sluiced Ash[4]	95	0	28	0	28
	Filled-in Bottom Ash[4]	110	0	34	0	34
Natural Foundation Soils	Alluvial Clays[1]	126	150	29	400	18
	Alluvial Silts and Silty Clays[1]	126	200	28	525	17
	Sand and Gravel[3]	120	0	31	0	31

Notes:

1. *Strengths determined from current triaxial test data (combined with recent triaxial data when available).*
2. *Strengths determined from current direct shear data.*
3. *Strengths determined from review of historical data/reports.*
4. *Strengths determined from typical values in literature.*
5. *Corresponds to undrained shear strength based on effective stress, or a "R-envelope" shear strength as presented in Duncan and Wright, 2005.*

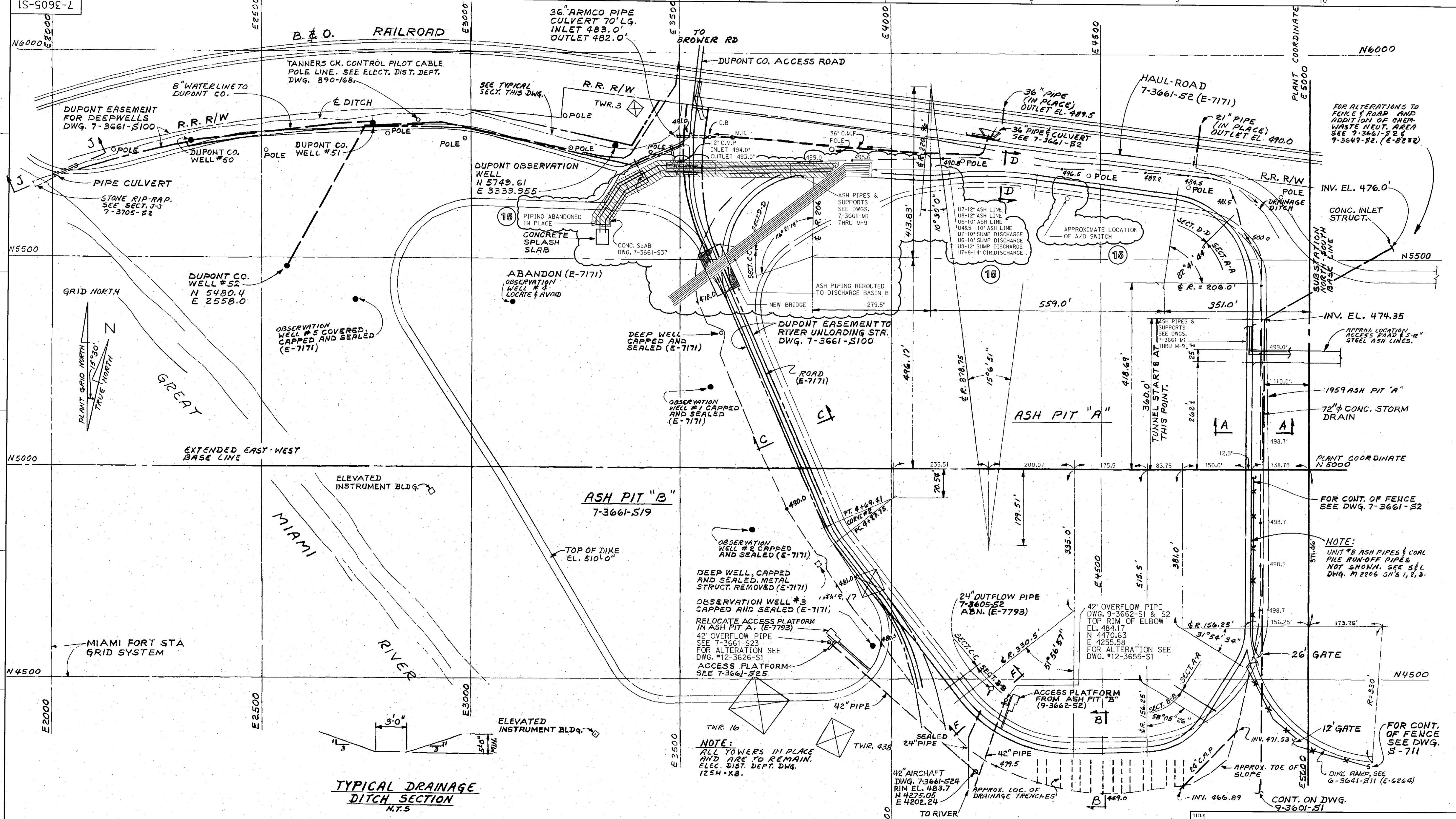
AECOM performed engineering interpretation of triaxial shear strength data obtained from testing of various fine-grained fill materials and natural soils across the site; the results presented in the table above reflect this interpretation. As a result of having multiple laboratory CU tests performed on selected materials, failure envelopes were defined by plotting the failure points on a Modified Mohr-Coulomb plot (also referred to as p-q and p'-q plots), as described in Appendix D of the United States Corps of Engineers (USACE) EM-1110-2-1902 Slope Stability Engineer Manual.

In analyzing the test results, a number of definitions of failure were considered, including the point of peak deviator stress during the test, the deviator stress corresponding to an axial strain of 15%, and the point of the test with the maximum effective principle stress ratio (obliquity) from the tabulated CU test data. For both effective and total strength conditions, the failure point was selected to coincide with the point of maximum deviator stress at or below 15% axial strain, which resulted in a conservative interpretation of strength parameters.

The resulting p-q plots from this procedure are given in **Attachment D**. In fitting strength parameters to multiple test results, shear strength parameters were selected such that about two thirds of the total tests are above the selected failure envelope, consistent with USACE recommendations.

Appendix C

Available Design Drawings



7-3605-S1
B. & O. RAILROAD
36" ARMCO PIPE CULVERT 70' LG. INLET 483.0' OUTLET 482.0'
TO BROWER RD
DUPONT CO. ACCESS ROAD
TANNERS CK. CONTROL PILOT CABLE POLE LINE. SEE ELECT. DIST. DEPT. DWG. 890-168.
8" WATERLINE TO DUPONT CO.
℄ DITCH
DUPONT EASEMENT FOR DEEPWELLS DWG. 7-3661-S100
R.R. R/W
SEE TYPICAL SECT. THIS DWG.
TWR. 3
DUPONT CO. WELL #50
DUPONT CO. WELL #51
PIPE CULVERT
STONE RIP-RAP. SEE SECT. J-J 7-3705-S2
DUPONT OBSERVATION WELL N 5749.61 E 3339.955
PIPING ABANDONED IN PLACE
CONCRETE SPLASH SLAB
CONC. SLAB DWG. 7-3661-S37
36" PIPE (IN PLACE) OUTLET EL. 489.5
36" PIPE & CULVERT SEE 7-3661-S2
HAUL-ROAD 7-3661-S2 (E-7171)
21" PIPE (IN PLACE) OUTLET EL. 490.0
FOR ALTERATIONS TO FENCE & ROAD AND ADDITION OF CHEM-WASTE NEUT. AREA SEE 7-3661-S2 & 9-3649-S2. (E-8232)
ASH PIPES & SUPPORTS SEE DWGS. 7-3661-MI THRU M-9
U7-12" ASH LINE
U8-12" ASH LINE
U6-10" ASH LINE
U4&5 -10" ASH LINE
U7-10" SUMP DISCHARGE
U6-10" SUMP DISCHARGE
U8-12" SUMP DISCHARGE
U7+8-14" CIR.DISCHARGE
APPROXIMATE LOCATION OF A/B SWITCH
INV. EL. 476.0'
CONC. INLET STRUCT.
SUBSTATION NORTH-SOUTH BASE LINE
DUPONT CO. WELL #52 N 5480.4 E 2558.0
GRID NORTH
PLANT GRID NORTH
TRUE NORTH
15°30'
ABANDON (E-7171) OBSERVATION WELL #4 LOCATE & AVOID
OBSERVATION WELL #5 COVERED, CAPPED AND SEALED (E-7171)
ASH PIPING REROUTED TO DISCHARGE BASIN B
NEW BRIDGE
DUPONT EASEMENT TO RIVER UNLOADING STA. DWG. 7-3661-S100
DEEP WELL CAPPED AND SEALED (E-7171)
ROAD (E-7171)
OBSERVATION WELL #1 CAPPED AND SEALED (E-7171)
INV. EL. 474.35
APPROX. LOCATION ACCESS ROAD & 5-12" STEEL ASH LINES.
1959 ASH PIT "A"
72" ∅ CONC. STORM DRAIN
ASH PIT "A"
TUNNEL STARTS AT THIS POINT.
GREAT MIAMI RIVER
EXTENDED EAST-WEST BASE LINE
PLANT COORDINATE N 5000
ELEVATED INSTRUMENT BLDG.
ASH PIT "B" 7-3661-S19
FOR CONT. OF FENCE SEE DWG. 7-3661-S2
NOTE: UNIT #8 ASH PIPES & COAL PILE RUN-OFF PIPES NOT SHOWN. SEE S&L DWG. M 2206 SH'S 1, 2, 3.
TOP OF DIKE EL. 510'-0"
OBSERVATION WELL #2 CAPPED AND SEALED (E-7171)
DEEP WELL, CAPPED AND SEALED. METAL STRUCT. REMOVED (E-7171)
OBSERVATION WELL #3 CAPPED AND SEALED (E-7171)
RELOCATE ACCESS PLATFORM IN ASH PIT A. (E-7793)
42" OVERFLOW PIPE SEE 7-3661-S23 FOR ALTERATION SEE DWG. #12-3626-S1
ACCESS PLATFORM SEE 7-3661-S25
24" OUTFLOW PIPE 7-3605-S2 ABN. (E-7793)
42" OVERFLOW PIPE DWG. 9-3662-S1 & S2 TOP RIM OF ELBOW EL. 484.17 N 4470.63 E 4255.58 FOR ALTERATION SEE DWG. #12-3655-S1
26' GATE
MIAMI FORT STA GRID SYSTEM
ACCESS PLATFORM FROM ASH PIT "B" (9-3662-S2)
12' GATE
FOR CONT. OF FENCE SEE DWG. S-711
ELEVATED INSTRUMENT BLDG.
TWR. 16
42" PIPE
TWR. 438
SEALED 24" PIPE
NOTE: ALL TOWERS IN PLACE AND ARE TO REMAIN. ELEC. DIST. DEPT. DWG. 125H-X8.
42" PIPE
42" AIRSHAFT DWG. 7-3661-S24 RIM EL. 483.7 N 4275.05 E 4202.24
APPROX. LOC. OF DRAINAGE TRENCHES
24" C.M.P.
INV. 471.53
APPROX. TOE OF SLOPE
INV. 466.89
DIKE RAMP, SEE 6-3641-S11 (E-6264)
CONT. ON DWG. 9-3601-S1
TO RIVER
TYPICAL DRAINAGE DITCH SECTION N.T.S.

LEGEND:

1959 ASH PIT "A" - EL. 500'
1976 " " - EL. 510'
FUTURE ASH PIT "B" - EL. 510'
APPROX. TOE OF SLOPE EL.

REFERENCES:

7-3605-S2 ASH DISPOSAL PIT A ALTERATIONS-SH.1
7-3605-S3 ASH DISPOSAL PIT A ALTERATIONS-SH.1 ROAD PROFILES
7-3605-S4 TEST HOLE LOCATION PLAN
7-3605-S5 TEST HOLE LOCATION PLAN LOGS SHEET 1
7-3605-S6 TEST HOLE LOCATION PLAN LOGS SHEET 2
7-3605-S7 PIT ACCESS PLATFORM-ASSEMBLY
M-2206 SHT. 1,2,3, ASH PIT A- DISCHARGES
6-3641-S11 DIKE RAMP-CONTOURS & GRADING
7-3605-S8 ASH DISPOSAL PIT A CONTOURS & GRADING
7-3605-S8 ASH DISPOSAL PIT A ALTERATIONS-SH.2
7-3661-S1 HAUL ROAD- GENERAL ARRAGENENT
7-3661-S19 ASH PIT B-GENERAL ARRANGEMENT.
7-3661-S23 OVERFLOW PIPE DETAILS ASH PIT B
7-3661-S24 OVEFLOW MANHOLE DETS. ASH PIT B
7-3661-S1 HAUL ROAD-CONTOURS BEFORE GRADING.

REVISION 15 — DES: CB DFTR: CB — CHKD: NM ENGR: NM APPD: NM — W.C. NO.: MF601061AB-M PIN: MF601061

DESCRIPTION: REV'D BY CINERGY E&C MATERIAL & PIPING CHANGES FOR ASH LINES.

ISSUE TYPE: AS-BUILT DATE ISSUED: 2/3/05

REV	DATE	APPD	W.C.	DESCRIPTION
14	12-22-95		26408	

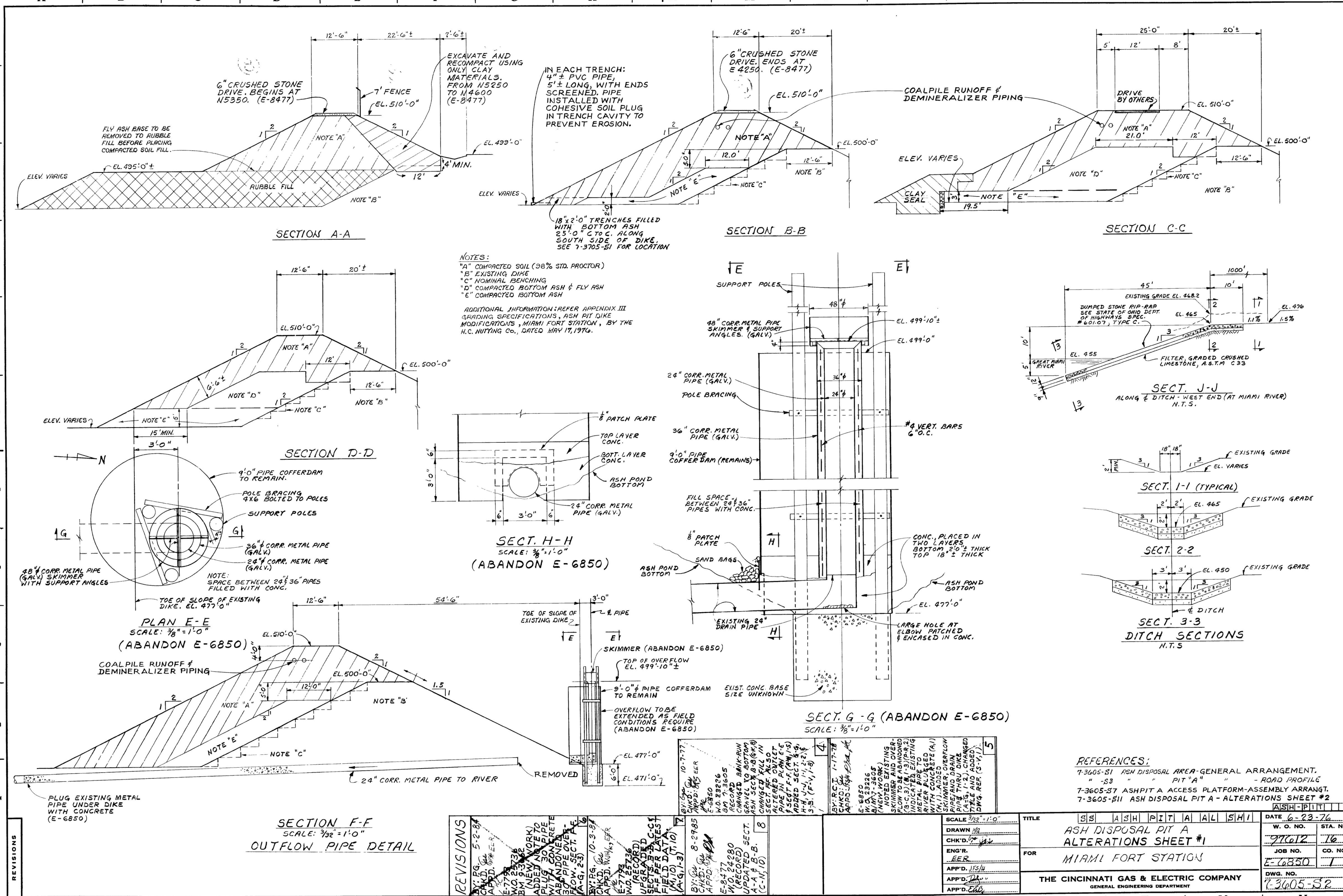
TITLE: ASH DISPOSAL PIT A GENERAL ARRANGEMENT

FOR: MIAMI FORT STATION — STA. NO. 16

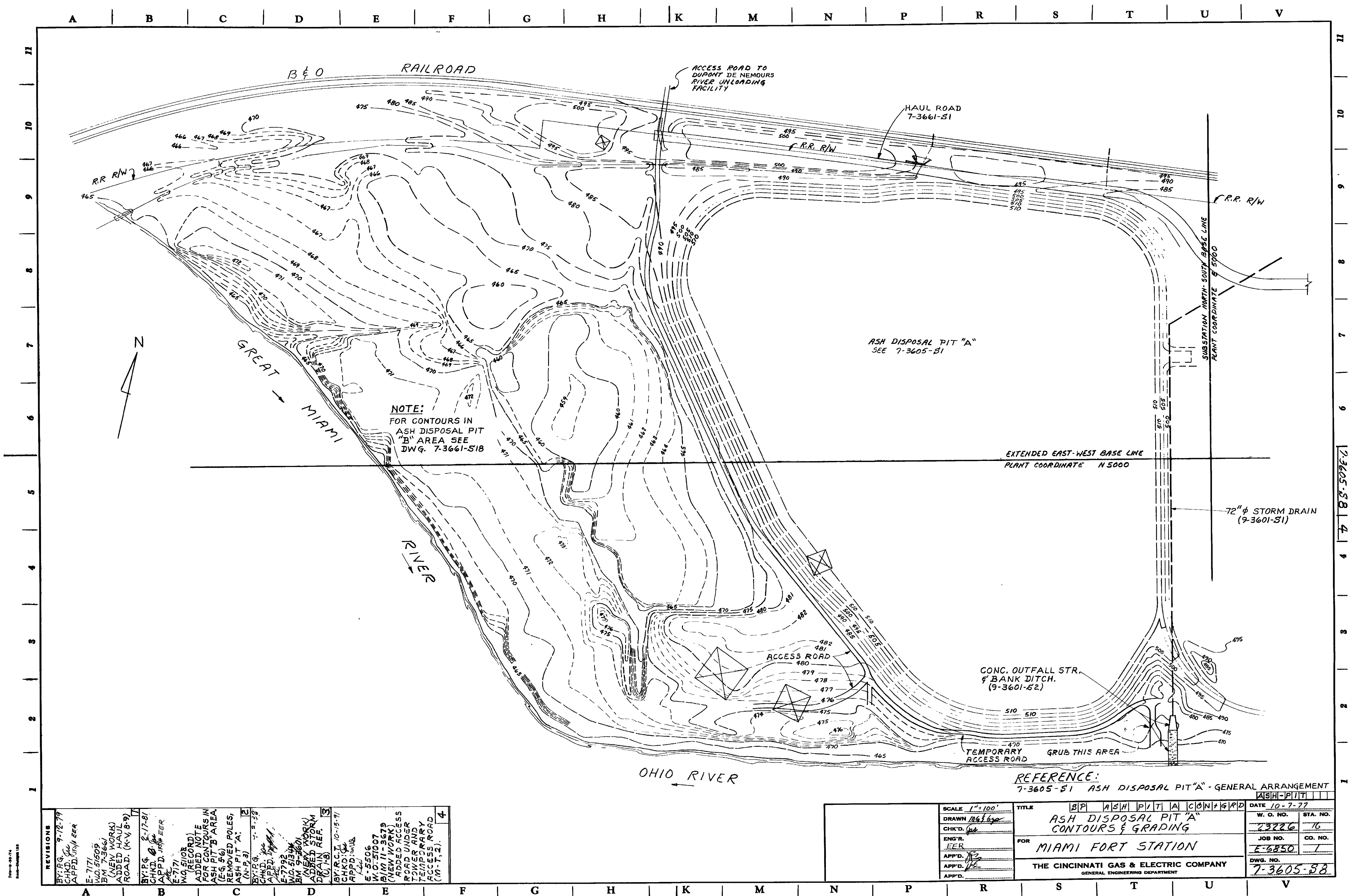
SCALE 1"=100' DWG TYPE SP
DES GYS DFTR GYS
CHKD MS ENGR EER
APPD JFS PIN NO.
W.C. NO. 97612 DATE 6-23-76
JOB NO. E-6850 DWG SIZE D

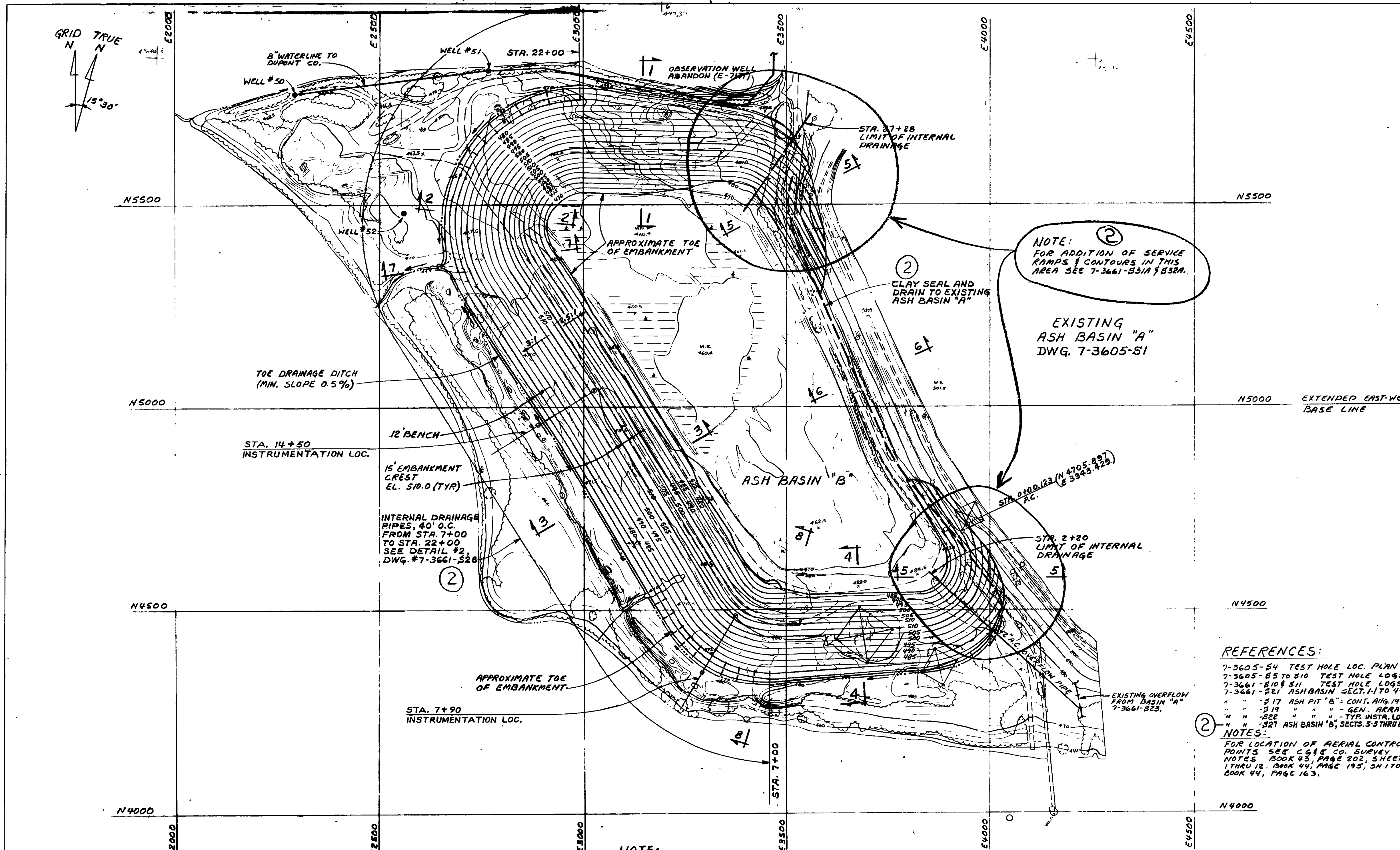
CINERGY® CINCINNATI GAS & ELECTRIC COMPANY

DRAWING NO. 7-3605-S1



SECTION A-A
6" CRUSHED STONE DRIVE. BEGINS AT N5350. (E-8477)
7' FENCE
EL. 510'-0"
EXCAVATE AND RECOMPACT USING ONLY CLAY MATERIALS. FROM N5250 TO N4600 (E-8477)
FLY ASH BASE TO BE REMOVED TO RUBBLE FILL BEFORE PLACING COMPACTED SOIL FILL.
EL. 495'-0" ±
EL. 499'-0"
ELEV. VARIES
RUBBLE FILL
NOTE "A"
NOTE "B"
4' MIN.
12'
12'-6"
22'-6" ±
7'-6" ±
SECTION B-B
IN EACH TRENCH: 4" ± PVC PIPE, 5' ± LONG, WITH ENDS SCREENED. PIPE INSTALLED WITH COHESIVE SOIL PLUG IN TRENCH CAVITY TO PREVENT EROSION.
6" CRUSHED STONE DRIVE. ENDS AT E4250. (E-8477)
EL. 510'-0"
EL. 500'-0"
18"x2'-0" TRENCHES FILLED WITH BOTTOM ASH 25'-0" C TO C. ALONG SOUTH SIDE OF DIKE. SEE 7-3705-S1 FOR LOCATION
NOTE "E"
NOTE "C"
SECTION C-C
COALPILE RUNOFF & DEMINERALIZER PIPING
DRIVE BY OTHERS
EL. 510'-0"
EL. 500'-0"
ELEV. VARIES
CLAY SEAL
NOTE "D"
19.5'
21.0'
NOTES:
"A" COMPACTED SOIL (98% STD. PROCTOR)
"B" EXISTING DIKE
"C" NOMINAL BENCHING
"D" COMPACTED BOTTOM ASH & FLY ASH
"E" COMPACTED BOTTOM ASH
ADDITIONAL INFORMATION: REFER APPENDIX III GRADING SPECIFICATIONS, ASH PIT DIKE MODIFICATIONS, MIAMI FORT STATION, BY THE H.C. NUTTING Co., DATED MAY 17, 1976.
SECTION D-D
EL. 510'-0"
EL. 500'-0"
ELEV. VARIES
15' MIN.
PLAN E-E
SCALE: 3/8" = 1'-0"
(ABANDON E-6850)
9'-0" PIPE COFFERDAM TO REMAIN
POLE BRACING 4X6 BOLTED TO POLES
SUPPORT POLES
36" ∅ CORR. METAL PIPE (GALV.)
24" ∅ CORR. METAL PIPE (GALV.)
48" ∅ CORR. METAL PIPE (GALV.) SKIMMER WITH SUPPORT ANGLES
NOTE: SPACE BETWEEN 24" & 36" PIPES FILLED WITH CONC.
TOE OF SLOPE OF EXISTING DIKE. EL. 477'-0"
SECT. H-H
SCALE: 3/8" = 1'-0"
(ABANDON E-6850)
1/8" PATCH PLATE
TOP LAYER CONC.
BOTT. LAYER CONC.
ASH POND BOTTOM
24" CORR. METAL PIPE (GALV.)
SECT. G-G (ABANDON E-6850)
SCALE: 3/8" = 1'-0"
SUPPORT POLES
48" CORR. METAL PIPE SKIMMER & SUPPORT ANGLES (GALV.)
EL. 499'-10" ±
EL. 499'-0"
24" CORR. METAL PIPE (GALV.)
POLE BRACING
36" CORR. METAL PIPE (GALV.)
#4 VERT. BARS 6" O.C.
9'-0" PIPE COFFER DAM (REMAINS)
FILL SPACE BETWEEN 24" & 36" PIPES WITH CONC.
1/8" PATCH PLATE
SAND BAGS
ASH POND BOTTOM
CONC., PLACED IN TWO LAYERS BOTTOM 2'-0" ± THICK TOP 18" ± THICK
EL. 477'-0"
EXISTING 24" DRAIN PIPE
LARGE HOLE AT ELBOW PATCHED & ENCASED IN CONC.
EXIST. CONC. BASE SIZE UNKNOWN
SECTION F-F
SCALE: 3/32" = 1'-0"
OUTFLOW PIPE DETAIL
COALPILE RUNOFF & DEMINERALIZER PIPING
EL. 510'-0"
EL. 500'-0"
54'-6"
PLUG EXISTING METAL PIPE UNDER DIKE WITH CONCRETE (E-6850)
24" CORR. METAL PIPE TO RIVER
REMOVED
TOE OF SLOPE OF EXISTING DIKE
℄ PIPE
SKIMMER (ABANDON E-6850)
TOP OF OVERFLOW EL. 499'-10" ±
9'-0" ∅ PIPE COFFERDAM TO REMAIN
OVERFLOW TO BE EXTENDED AS FIELD CONDITIONS REQUIRE (ABANDON E-6850)
EL. 477'-0"
EL. 471'-0"
SECT. J-J
ALONG ℄ DITCH - WEST END (AT MIAMI RIVER)
N.T.S.
EXISTING GRADE EL. 468.2
DUMPED STONE RIP-RAP SEE STATE OF OHIO DEPT. OF HIGHWAYS SPEC. #601.07, TYPE C.
FILTER, GRADED CRUSHED LIMESTONE, A.S.T.M. C33
GREAT MIAMI RIVER
EL. 455
EL. 465
EL. 476
SECT. 1-1 (TYPICAL)
SECT. 2-2
SECT. 3-3
DITCH SECTIONS
N.T.S.
EXISTING GRADE
EL. VARIES
EL. 465
EL. 450
℄ DITCH
REFERENCES:
7-3605-S1 ASH DISPOSAL AREA - GENERAL ARRANGEMENT.
" -S3 " " PIT "A" " - ROAD PROFILE
7-3605-S7 ASHPIT A ACCESS PLATFORM - ASSEMBLY ARRANGT.
7-3605-S11 ASH DISPOSAL PIT A - ALTERATIONS SHEET #2
REVISIONS
TITLE: ASH DISPOSAL PIT A ALTERATIONS SHEET #1
FOR: MIAMI FORT STATION
THE CINCINNATI GAS & ELECTRIC COMPANY
GENERAL ENGINEERING DEPARTMENT
SCALE 3/32" = 1'-0"
DATE 6-23-76
W. O. NO. 97612
STA. NO. 16
JOB NO. E-6850
CO. NO. 1
DWG. NO. 7-3605-S2


B & O RAILROAD
ACCESS ROAD TO DUPONT DE NEMOURS RIVER UNLOADING FACILITY
HAUL ROAD 7-3661-51
R.R. R/W
ASH DISPOSAL PIT "A" SEE 7-3605-51
SUBSTATION NORTH-SOUTH BASE LINE PLANT COORDINATE E 5000
NOTE:
FOR CONTOURS IN ASH DISPOSAL PIT "B" AREA SEE DWG. 7-3661-518
EXTENDED EAST-WEST BASE LINE PLANT COORDINATE N 5000
72" ϕ STORM DRAIN (9-3601-51)
GREAT MIAMI RIVER
ACCESS ROAD
CONC. OUTFALL STR. & BANK DITCH. (9-3601-52)
TEMPORARY ACCESS ROAD
GRUB THIS AREA
OHIO RIVER
REFERENCE:
7-3605-51 ASH DISPOSAL PIT "A" - GENERAL ARRANGEMENT
REVISIONS
BY: P.G. 9-12-79 CHKD. APPD. JFS EER E-7171 W.O. 51509 BM 7-3661 (NEW WORK) ADDED HAUL ROAD. (K-V, 8-9) 1
BY: P.G. 2-17-81 CHKD. APPD. JFS EER E-7171 W.O. 51108 (RECORD) ADDED NOTE FOR CONTOURS IN ASH PIT "B" AREA (E-G, 5-6) REMOVED POLES, ASH PIT "A". (N-P, 3) 2
BY: P.G. CHKD. APPD. E-7792 W.O. 51344 BM 9-3601 (NEW WORK) ADDED STORM DRAIN REF. (U, 1-8) 3
BY: R.C.T. 10-15-91 CHKD. APPD. E-5506 W.O. 51007 B/M 11-3679 (NEW WORK) ADDED ACCESS ROAD UNDER TOWER AND TEMPORARY ACCESS ROAD (M-T, 2). 4
SCALE 1" = 100'
DRAWN MG & bga
ENG'R. EER
TITLE BP ASH PIT A CON + GRD
ASH DISPOSAL PIT "A" CONTOURS & GRADING
FOR MIAMI FORT STATION
THE CINCINNATI GAS & ELECTRIC COMPANY
GENERAL ENGINEERING DEPARTMENT
ASH-PIT
DATE 10-7-77
W. O. NO. 23226
STA. NO. 76
JOB NO. E-6850
CO. NO. 1
DWG. NO. 7-3605-58
7-3605-58 4



REFERENCES:

7-3605-S4 TEST HOLE LOC. PLAN
7-3605-S5 TO S10 TEST HOLE LOGS
7-3661-S10 & S11 TEST HOLE LOGS
7-3661-S21 ASH BASIN SECT. 1-1 TO 4-4
" " -S17 ASH PIT "B" - CONT. AUG. 1979
" " -S19 " " " - GEN. ARRAN.
" " -S22 " " " - TYP. INSTR. LOC.
② " " -S27 ASH BASIN "B", SECTS. 5-5 THRU 8-8

NOTES:

FOR LOCATION OF AERIAL CONTROL POINTS SEE CG&E CO. SURVEY NOTES BOOK 43, PAGE 202, SHEETS 1 THRU 12. BOOK 44, PAGE 195, SH 1 TO 3 & BOOK 44, PAGE 163.

NOTE:

CONTOURS AS PER AERIAL PHOTOGRAPH DATED 8-7-79 a.m.

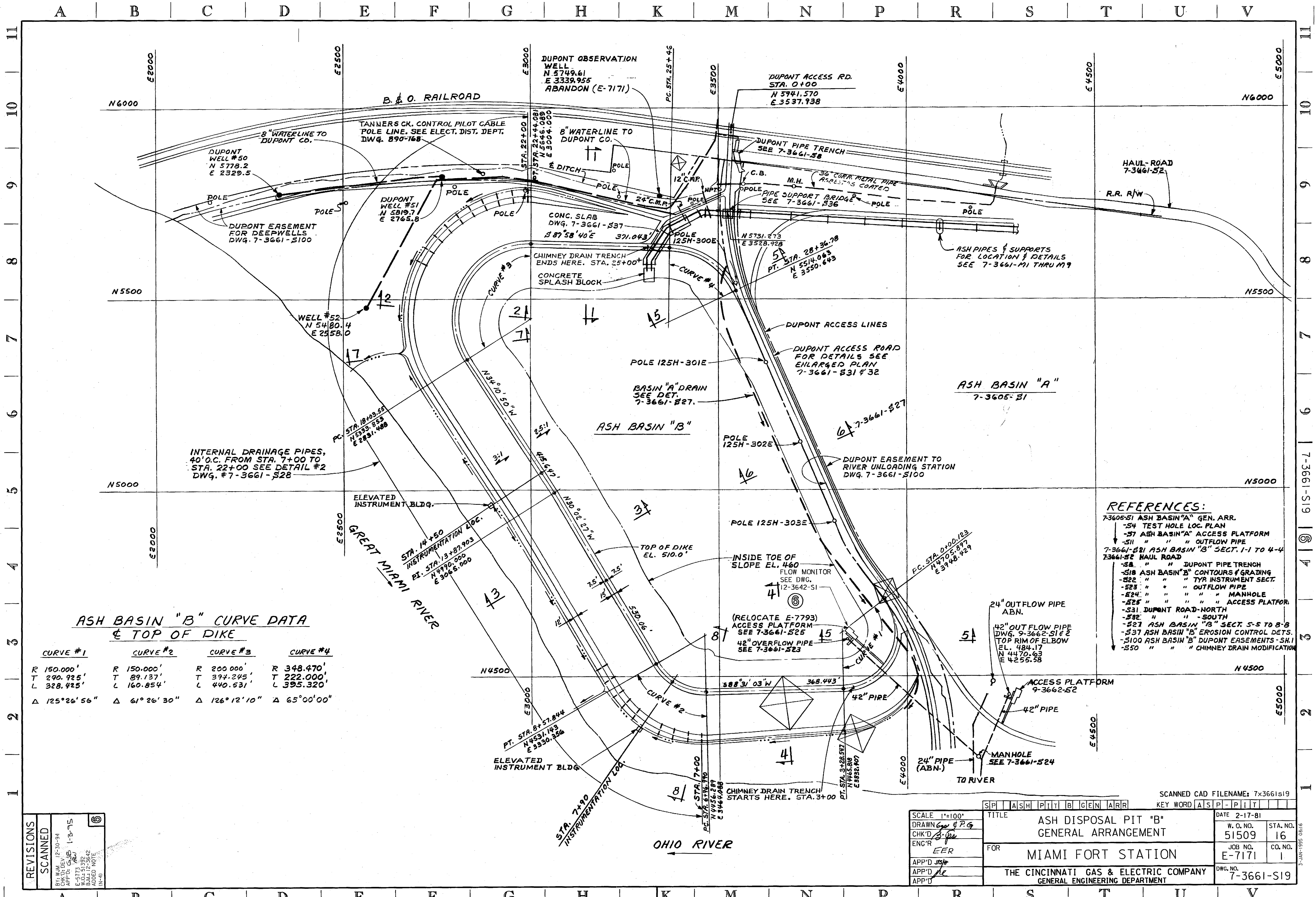
REVISIONS

BY: P.G. 2-17-81 CHKD. APPD. JFS EER
E-7171 W.O. 51102 (RECORD) ADDED DWG. REF. FOR ASH BASIN "A". ADDED INSTRUT. LOC. STA. & REF. DWG.

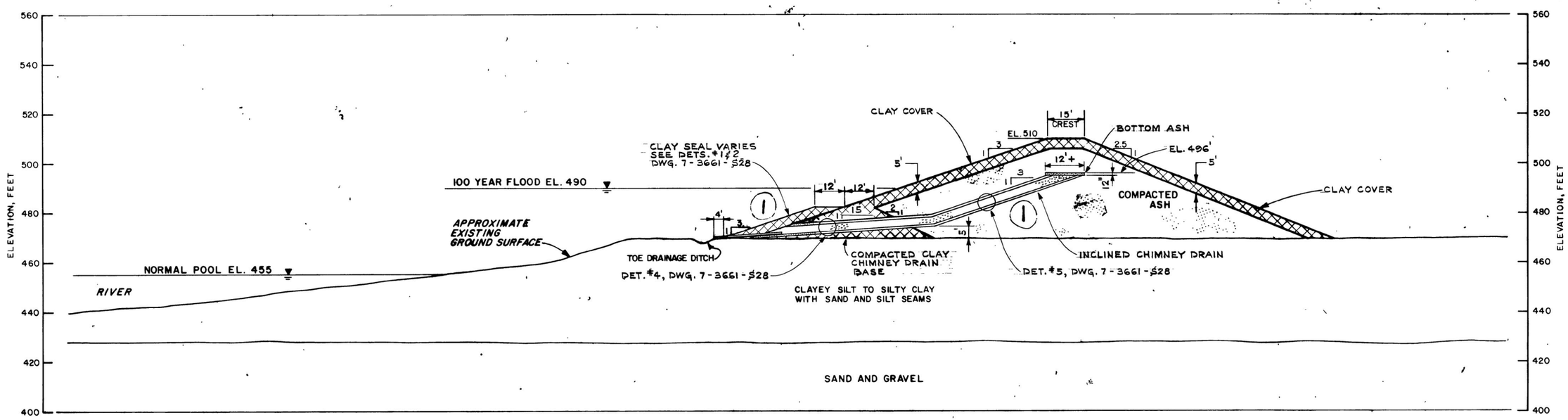
BY: R.C.T. 5-14-82 CHKD. APPD. EER
E-7171 W.O. 51127 (RECORD) ADDED DRAIN TO EXISTING "ASH BASIN "A" AND INTERNAL DRAINAGE PIPES AT ASH BASIN "B" AS PER FIELD CONSTRUCTION. INDICATED SECTS 5-5 THRU 8-8. ADDED DWG REFS. ALSO ADDED SERVICE RAMP & CONTOUR ALTERATION NOTE ②

#16186

SCALE: 1" = 100'	TITLE: SP ASH B CONT + GRAD ASH DISPOSAL PIT "B" CONTOURS & GRADING	DATE 1-7-80
DRAWN:		W.O. No. 51509 / STA. No. 16
CHKD:	FOR MIAMI FORT STATION	JOB No. E-7171 / CO. No. 1
ENGR: EER		
APP'D: JFS	THE CINCINNATI GAS & ELECTRIC COMPANY GENERAL ENGINEERING DEPARTMENT	DWG. No. 7-3661-S18
APP'D:		
APP'D:		



B. & O. RAILROAD
DUPONT OBSERVATION WELL N 5749.61 E 3339.955 ABANDON (E-7171)
DUPONT ACCESS RD. STA. 0+00 N 5941.570 E 3537.938
TANNERS CK. CONTROL PILOT CABLE POLE LINE. SEE ELECT. DIST. DEPT. DWG. 890-168
8" WATERLINE TO DUPONT CO.
DUPONT WELL #50 N 5778.2 E 2329.5
DUPONT WELL #51 N 5819.7 E 2765.8
DUPONT EASEMENT FOR DEEPWELLS DWG. 7-3661-S100
DUPONT PIPE TRENCH SEE 7-3661-S8
36" CORR. METAL PIPE ASBESTOS COATED
PIPE SUPPORT BRIDGE SEE 7-3661-S36
HAUL-ROAD 7-3661-S2
R.R. R/W
CONC. SLAB DWG. 7-3661-S37
S 87°58'40"E 371.043'
POLE 125H-300E
N 5731.273 E 3528.928
CHIMNEY DRAIN TRENCH ENDS HERE. STA. 25+00
CONCRETE SPLASH BLOCK
PT. STA. 28+36.78 N 5514.063 E 3550.643
ASH PIPES & SUPPORTS FOR LOCATION & DETAILS SEE 7-3661-M1 THRU M9
WELL #52 N 5480.4 E 2558.0
DUPONT ACCESS LINES
DUPONT ACCESS ROAD FOR DETAILS SEE ENLARGED PLAN 7-3661-S31 & 32
POLE 125H-301E
BASIN "A" DRAIN SEE DET. 7-3661-S27
ASH BASIN "A" 7-3605-S1
ASH BASIN "B"
POLE 125H-302E
DUPONT EASEMENT TO RIVER UNLOADING STATION DWG. 7-3661-S100
PC. STA. 18+03.55 N 5333.853 E 2831.488
INTERNAL DRAINAGE PIPES, 40' O.C. FROM STA. 7+00 TO STA. 22+00 SEE DETAIL #2 DWG. #7-3661-S28
ELEVATED INSTRUMENT BLDG.
STA. 14+50 INSTRUMENTATION LOC.
PI. STA. 13+87.903 N 4990.000 E 3065.000
GREAT MIAMI RIVER
POLE 125H-303E
TOP OF DIKE EL. 510.0'
INSIDE TOE OF SLOPE EL. 460
FLOW MONITOR SEE DWG. 12-3642-S1
(RELOCATE E-7793) ACCESS PLATFORM SEE 7-3661-S25
42" OVERFLOW PIPE SEE 7-3661-S23
PC. STA. 0+00.123 N 4705.897 E 3948.429
24" OUTFLOW PIPE ABN.
42" OUT FLOW PIPE DWG. 9-3662-S1 & 2 TOP RIM OF ELBOW EL. 484.17 N 4470.63 E 4255.58
ACCESS PLATFORM 9-3662-S2
42" PIPE
MANHOLE SEE 7-3661-S24
24" PIPE (ABN.)
TO RIVER
S 88°31'03"W 368.443'
PT. STA. 8+57.844 N 4531.163 E 3330.356
ELEVATED INSTRUMENT BLDG
STA. 7+90 INSTRUMENTATION LOC.
STA. 7+00
PC. STA. 6+16.990 N 4456.289 E 3466.098
CHIMNEY DRAIN TRENCH STARTS HERE. STA. 3+00
PT. STA. 3+28.547 N 4465.818 E 3832.807
OHIO RIVER
ASH BASIN "B" CURVE DATA ℄ TOP OF DIKE
CURVE #1 R 150.000' T 290.925' L 328.425' Δ 125°26'56"
CURVE #2 R 150.000' T 89.137' L 160.854' Δ 61°26'30"
CURVE #3 R 200.000' T 397.245' L 440.531' Δ 126°12'10"
CURVE #4 R 348.470' T 222.000' L 395.320' Δ 65°00'00"
REFERENCES:
7-3605-S1 ASH BASIN "A" GEN. ARR.
-S4 TEST HOLE LOC. PLAN
-S7 ASH BASIN "A" ACCESS PLATFORM
-S11 " " " OUTFLOW PIPE
7-3661-S21 ASH BASIN "B" SECT. 1-1 TO 4-4
7-3661-S2 HAUL ROAD
-S8 " " DUPONT PIPE TRENCH
-S18 ASH BASIN "B" CONTOURS & GRADING
-S22 " " " TYP. INSTRUMENT SECT.
-S23 " " " OUTFLOW PIPE
-S24 " " " " MANHOLE
-S25 " " " " ACCESS PLATFORM
-S31 DUPONT ROAD-NORTH
-S32 " " -SOUTH
-S27 ASH BASIN "B" SECT. 5-5 TO 8-8
-S37 ASH BASIN "B" EROSION CONTROL DETS.
-S100 ASH BASIN "B" DUPONT EASEMENTS-SH.1
-S50 " " " CHIMNEY DRAIN MODIFICATION
SCANNED CAD FILENAME: 7x3661s19
KEY WORD ASP-PIT
SP ASH PIT B GEN ARR
SCALE 1"=100'
TITLE ASH DISPOSAL PIT "B" GENERAL ARRANGEMENT
FOR MIAMI FORT STATION
THE CINCINNATI GAS & ELECTRIC COMPANY GENERAL ENGINEERING DEPARTMENT
DATE 2-17-81
W.O. NO. 51509
STA. NO. 16
JOB NO. E-7171
CO. NO. 1
DWG. NO. 7-3661-S19
ENG'R EER
REVISIONS
SCANNED
7-3661-S19



TYPICAL SECTION

SCALE
20 0 20 40 FEET

REFERENCES:
7-3661-S18 ASH BASIN "B" - CONTOURS & GRADING

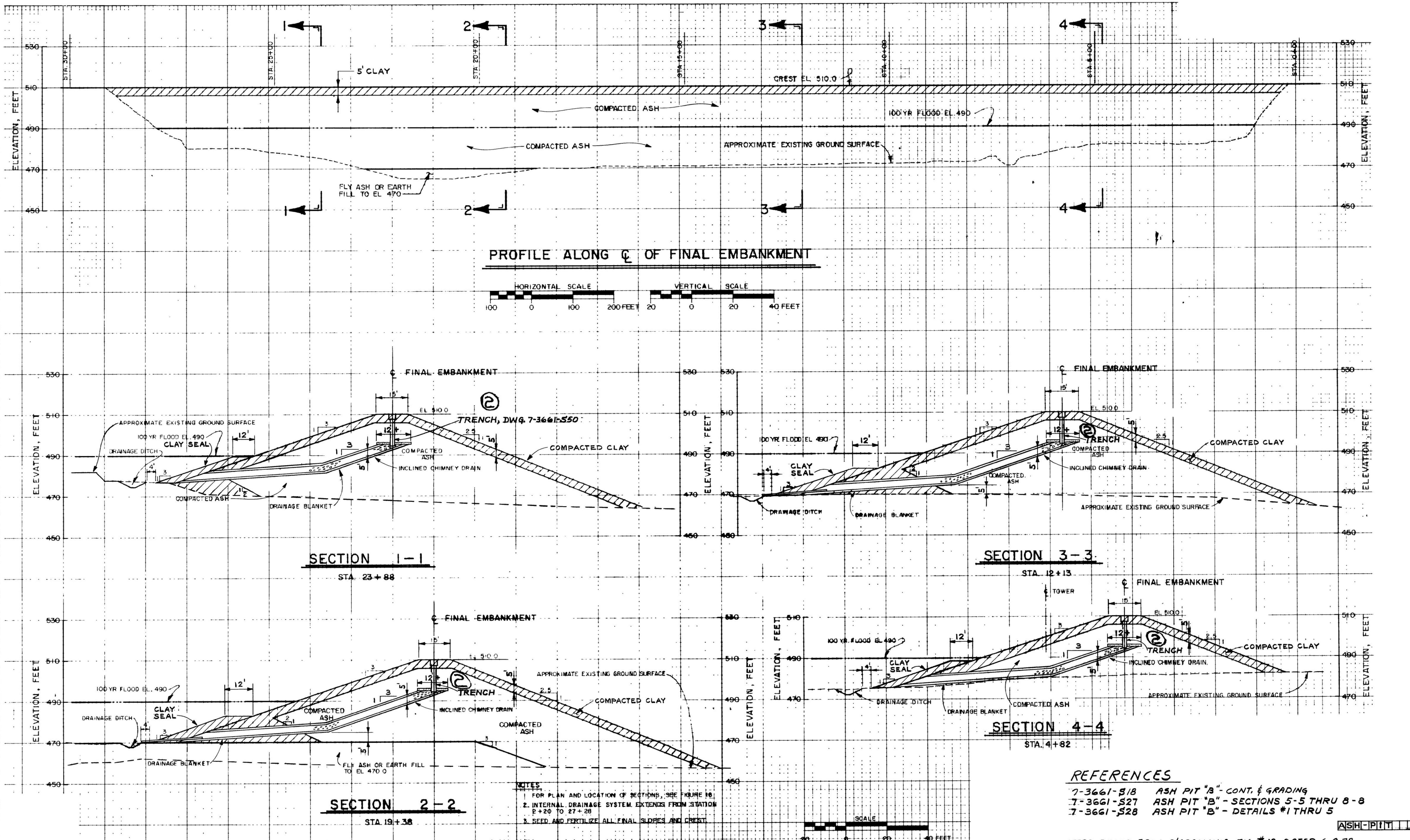
REPRODUCED FROM D'APPOLONIA FIG. #17, DATED 5-24-79

REVISIONS
1 BY: R.C.T. 5-14-82
CHK'D. [illegible]
APP'D. [illegible] ENGR
E-7171
W.O. 51127
(RECORD)
ADDED CLAY SEAL AND CHANGED CHIMNEY DRAIN AS PER FIELD CONSTRUCTION.

SCALE 1"=20'
DRAWN GJP
CHK'D. [illegible]
ENG'R. EER
APP'D. JFS/H
APP'D. [illegible]
APP'D. WDW

TITLE SS ASH PIT B TYPICAL
ASH DISPOSAL PIT "B"
TYPICAL SECTION
FOR MIAMI FORT STATION
THE CINCINNATI GAS & ELECTRIC COMPANY
GENERAL ENGINEERING DEPARTMENT

DATE 12-5-79
W. O. NO. 51509
STA NO 16
JOB NO. E-7171
CO NO 1
DWG. NO. 7-3661-S20



NOTES

1. FOR PLAN AND LOCATION OF SECTIONS, SEE FIGURE 16
2. INTERNAL DRAINAGE SYSTEM EXTENDS FROM STATION 2+20 TO 27+28
3. SEED AND FERTILIZE ALL FINAL SLOPES AND CREST.

REFERENCES

7-3661-S18 ASH PIT "B" - CONT. & GRADING
7-3661-S27 ASH PIT "B" - SECTIONS 5-5 THRU 8-8
7-3661-S28 ASH PIT "B" - DETAILS #1 THRU 5

ASH-PIT

REPRODUCED FROM D'APPOLONIA FIG. #18, DATED 6-8-79

REVISIONS

1: BY: R.C.T. 5-14-82, CHKD:, APPD: EER; E-7171, W.O. 51127 (RECORD) ADDED CLAY SEAL AND CHANGED CHIMNEY DRAIN AS PER FIELD CONSTRUCTION. ADDED DWG. REFS. (S-V,1).

2: BY: P.G. 10-3-84, CHKD., APPD. WJH/K, EER; E-7171, W.O. 51127 (RECORD) ADDED TRENCH TO CHIMNEY DRAIN PER FIELD DATA TO SECTS. 1-1, 2-2, 3-3 & 4-4. (E-F,6), (F,3), (R,6) (S,3-4)

SCALE	NOTED
DRAWN	
CHK'D.	
ENG'R.	EER
APP'D.	JFS/H
APP'D.	
APP'D.	

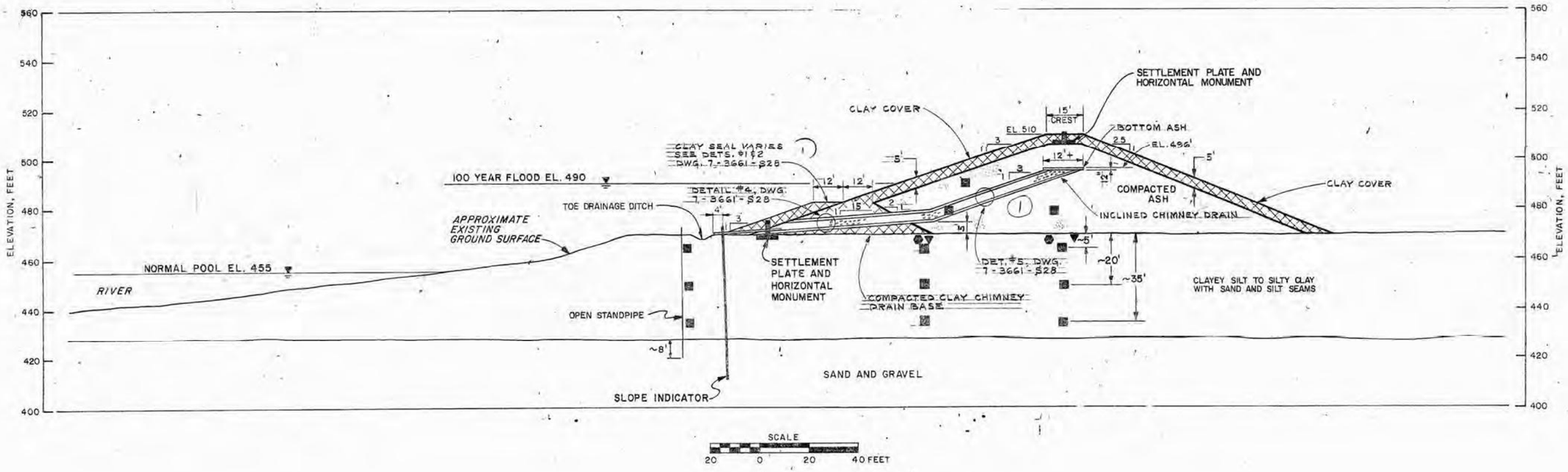
TITLE: SS ASH PIT B 1-1 4-4

ASH DISPOSAL PIT "B"
SECTIONS 1-1 TO 4-4

FOR: MIAMI FORT STATION

THE CINCINNATI GAS & ELECTRIC COMPANY
GENERAL ENGINEERING DEPARTMENT

DATE	12-5-79
W. O NO	51509
STA NO	16
JOB NO	E-7171
CO NO	1
DWG. NO.	7-3661-S21



TYPICAL INSTRUMENTATION SECTION

NOTE: 2 SECTIONS PROPOSED AT STATIONS 7+90 AND 14+50.

LEGEND

- ■ PNEUMATIC PIEZOMETERS
- ▼ REMOTE SETTLEMENT GAUGE
- ● TOTAL LOAD CELL

IMAGE REFERENCE: ASH DISPOSAL PIT "B", TYPICAL INSTRUMENT SECTION, MIAMI FORT STATION, THE CINCINNATI GAS & ELECTRIC COMPANY GENERAL ENGINEERING DEPARTMENT, DWG NO. 7-3661-S22, DATED 12-5-79

CHA
III Winners Circle, PO Box 5269 · Albany, NY 12205-0269
Main: (518) 453-4500 · www.chacompanies.com

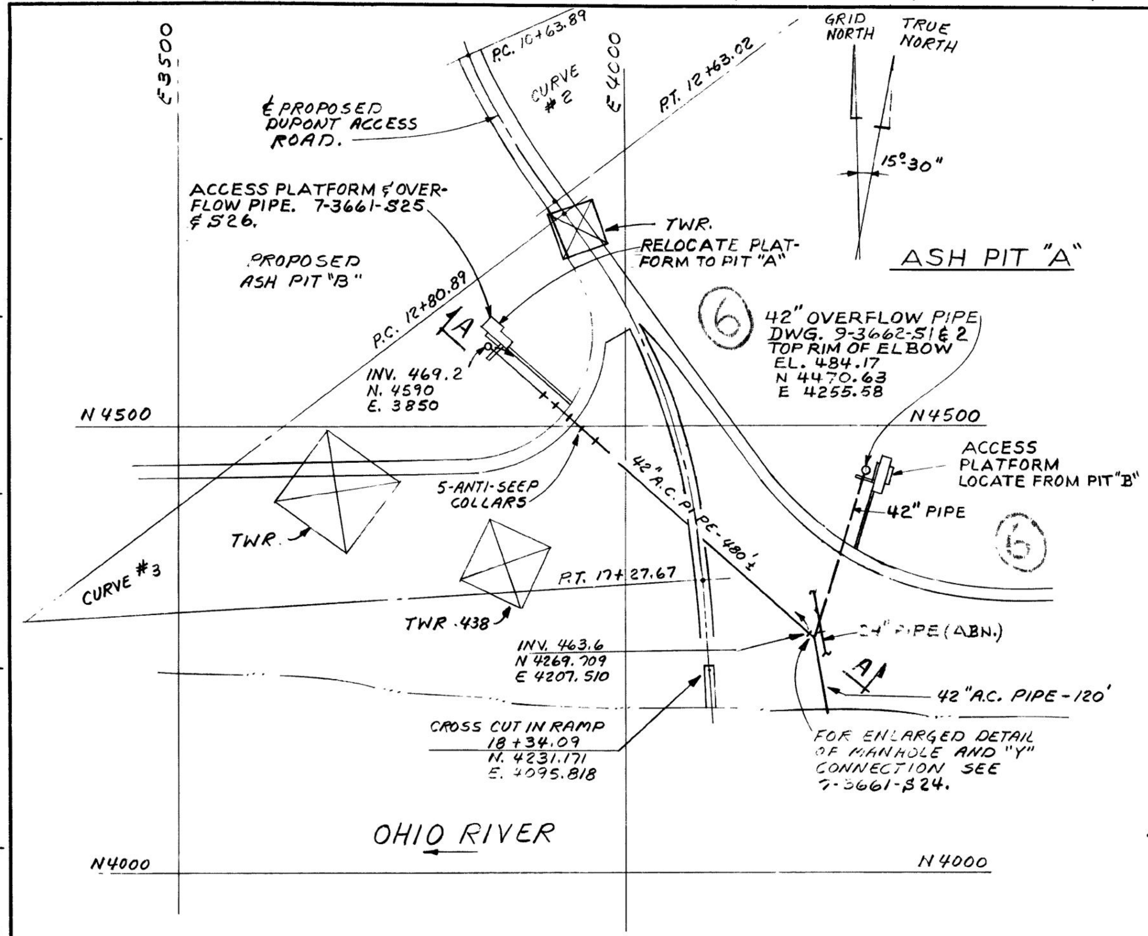
ASH POND B INSTRUMENTATION LOCATION

MIAMI FORT GENERATING STATION
DUKE ENERGY CORPORATION
NORTH BEND, OHIO

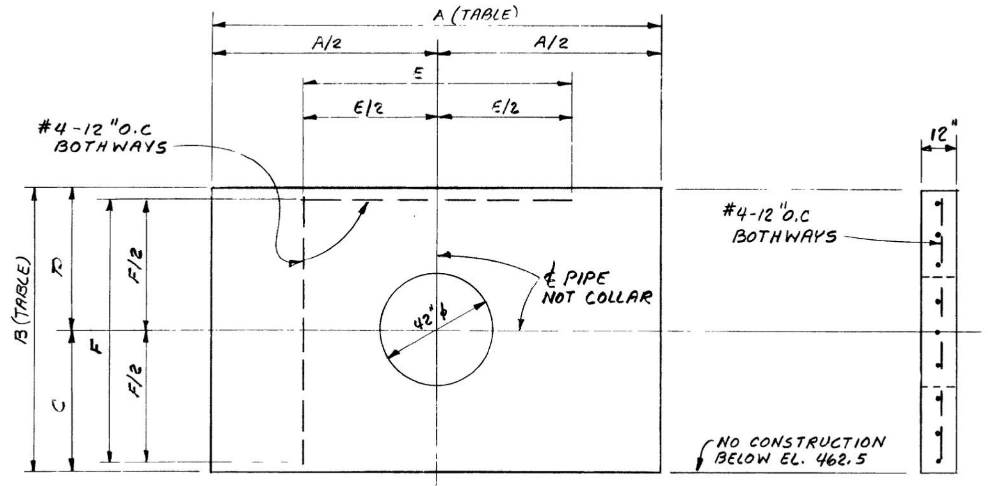
PROJECT NO. 20085.1050

DATE: 11/2009

FIGURE 7



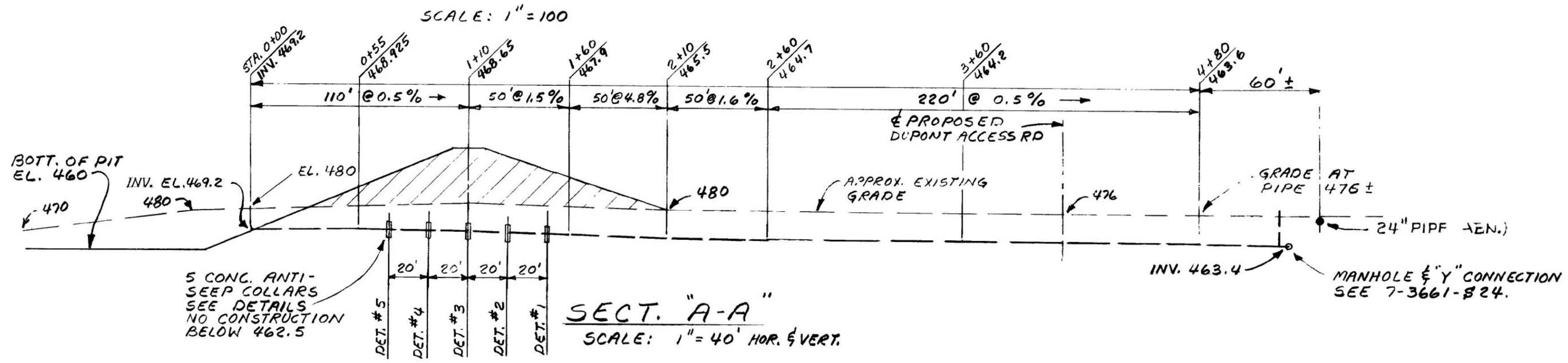
ASH PIT "B"
LOCATION PLAN OF OVERFLOW PIPE
SCALE: 1" = 100



ANTI-SEEP COLLAR
DETAIL #1 THRU #5
5 REQ'D SCALE: 3/8"=1'-0"

A.C. = ASBESTOS COATED

ANTI-SEEP COLLAR DIMENSIONS						
DET. #	A	B	C	D	E	F
#1	13'-5"	8'-6"	4'-5"	4'-1"	12'-0"	8'-0"
#2	13'-0"	8'-0"	3'-11"	4'-1"	8'-0"	8'-0"
#3	13'-0"	8'-0"	4'-0"	4'-0"	8'-0"	8'-0"
#4	13'-5"	10'-4"	6'-3"	4'-1"	8'-0"	8'-0"
#5	12'-0"	11'-0"	6'-9"	4'-3"	8'-0"	8'-0"



SECT. "A-A"
SCALE: 1" = 40' HOR. & VERT.

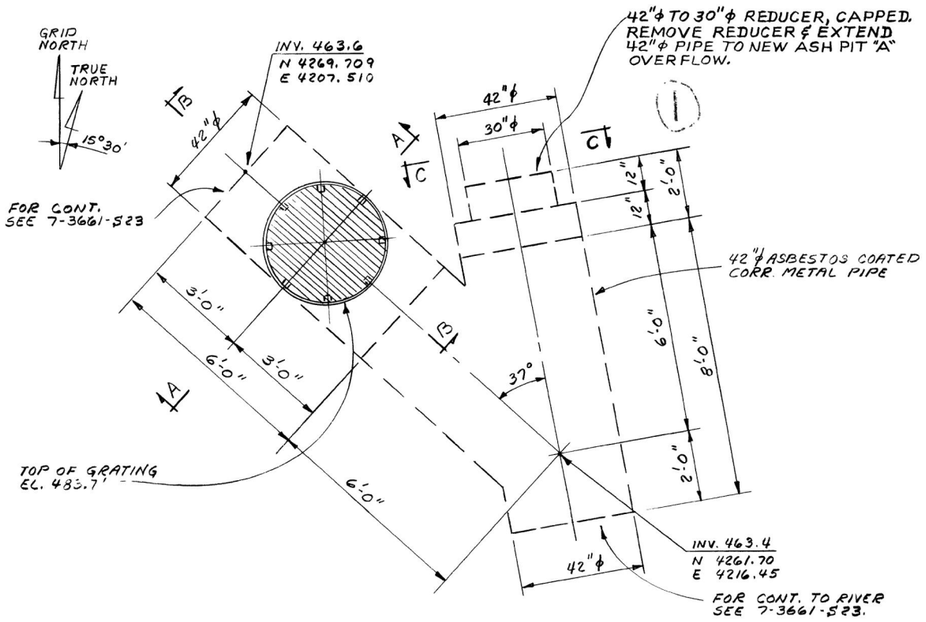
REFERENCES:
7-3661-S24 ASH PIT "B" OVERFLOW PIPE DETS. SH. 2
7-3661-S25 " " " ACCESS PLATFORM DETS.

FORMERLY DWG. 7-3661-S18, REV "0"

ASH-PIT

SCALE	NOTED
DRAWN	Bgp
CHK'D.	Jas
ENG'R.	EER
APP'D.	JFS
APP'D.	
APP'D.	
TITLE	SD ASH B OVERFLOW 1 — ASH DISPOSAL PIT "B" OVERFLOW DETAILS - SHEET 1
FOR	MIAMI FORT STATION
DATE	9-12-79
W. O. NO.	51509
STA. NO.	16
JOB NO.	E-7171
CO. NO.	1
DWG. NO.	7-3661-S23

THE CINCINNATI GAS & ELECTRIC COMPANY
GENERAL ENGINEERING DEPARTMENT

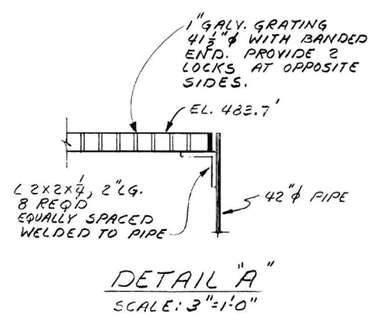


PLAN

MANHOLE & Y CONNECTION

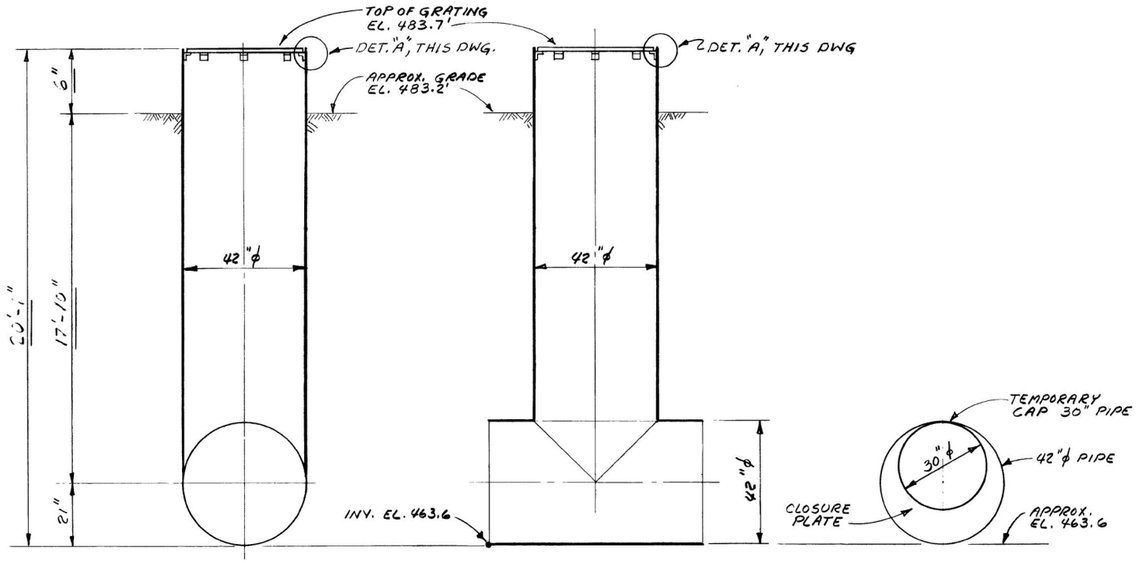
FOR LOCATION SEE 7-3661-523

SCALE: $\frac{1}{2}$"=1'-0"



DETAIL "A"

SCALE: 3"=1'-0"



SECT. A-A

SCALE: $\frac{1}{2}$"=1'-0"

SECT. B-B

SCALE: $\frac{1}{2}$"=1'-0"

SECT. C-C

SCALE: $\frac{1}{2}$"=1'-0"

(1) REMOVE (E-7793)

REFERENCE:

7-3661-523 ASH BASIN "B" - OVERFLOW PIPE

REVISIONS		
BY: RG	5-2-84	1
CHK'D.		
APP'D.	EER	
E-7793		
W.O. 25736		
BM 9-3662		
(NEW WORK) ADDED NOTE TO Y FITTING IN PLAN (E-G, 10-11) REMOVED SECT. C-C (G-K, 23)		

SCALE: NOTED

DRAWN: EGP

CHK'D.: JPL

ENG'R.: EER

APP'D.: JRH

APP'D.: HSC

APP'D.: WDW

TITLE: BD ASH BASIN "B" OVERFLOW 2

ASH DISPOSAL PIT "B" OVERFLOW DETAILS - SHEET 2

FOR MIAMI FORT STATION

THE CINCINNATI GAS & ELECTRIC COMPANY

GENERAL ENGINEERING DEPARTMENT

ASH-PIT

DATE: 3-12-80

W. O. NO.: 51509

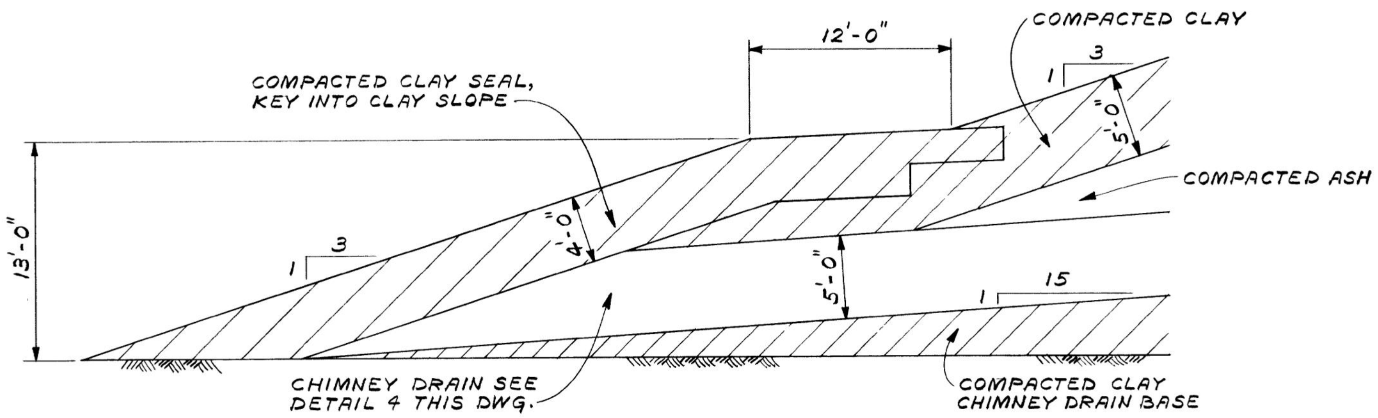
STA. NO.: 16

JOB NO.: E-7127

CO. NO.: 1

DWG. NO.: 7-3661-524

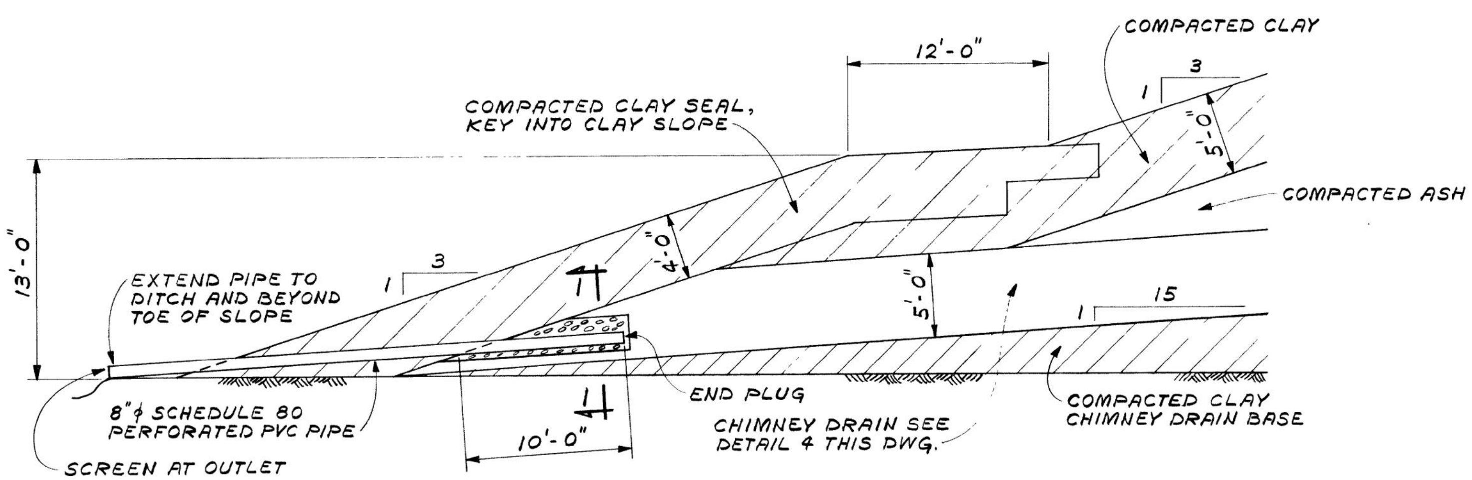
Data-a 10-74
Stock-Gedges 188



CLAY SEAL AT CHIMNEY DRAIN OUTLET STATIONS 2+20 TO 25+00

DETAIL #1

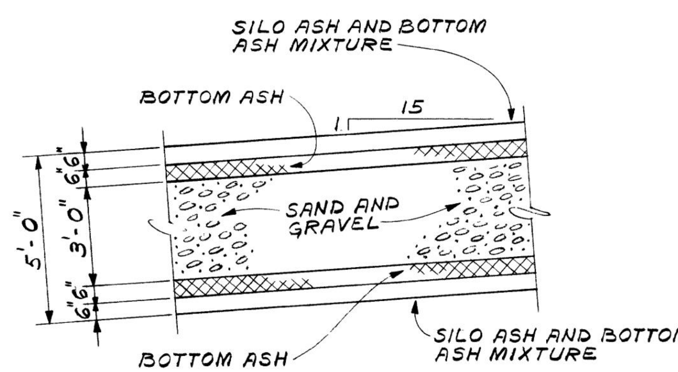
SCALE: 3/16" = 1'-0"



TYPICAL OUTLET

DETAIL #2

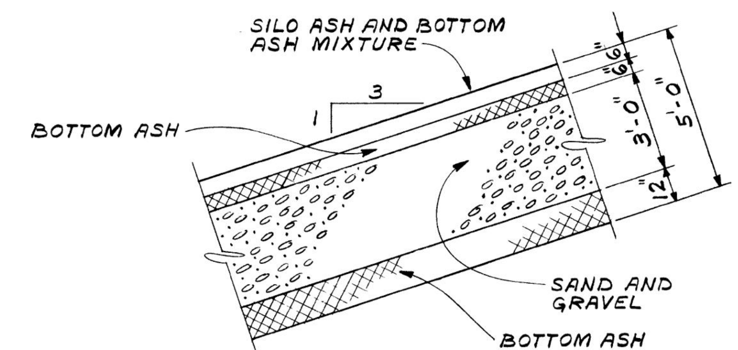
SCALE: 3/16" = 1'-0"



CHIMNEY DRAIN AND FOUNDATION

DETAIL #4

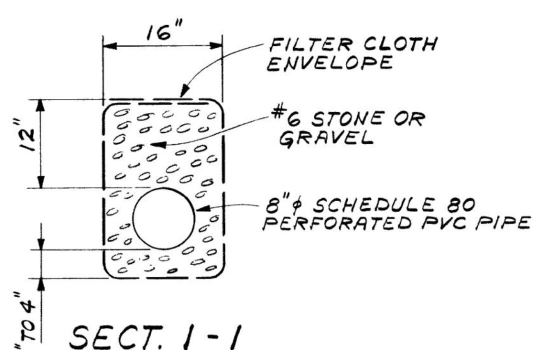
SCALE: 3/8" = 1'-0"



CHIMNEY DRAIN AND FOUNDATION

DETAIL #5

SCALE: 3/8" = 1'-0"



SECT. 1-1

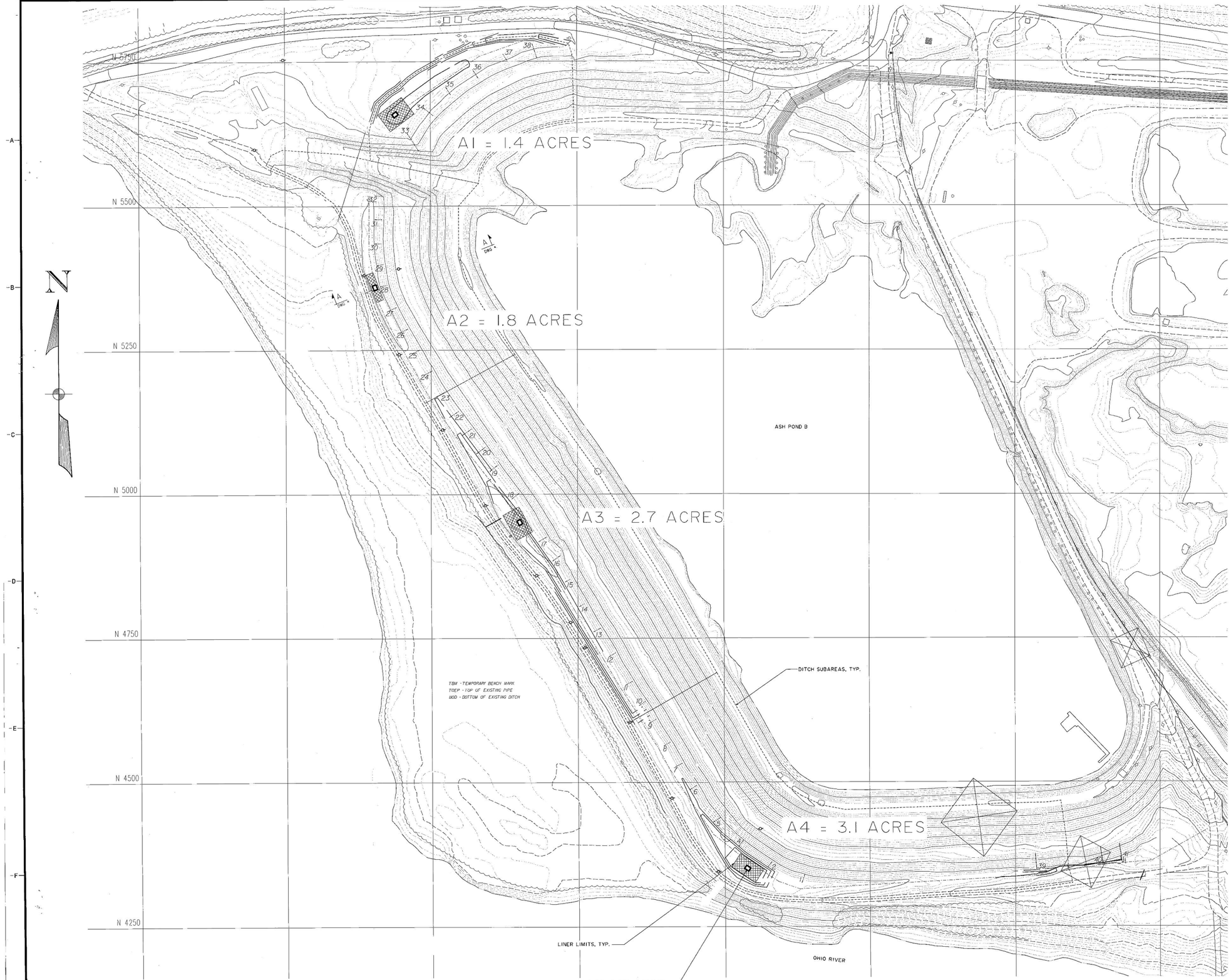
SCALE: 1" = 1'-0"

REFERENCES:

7-3661-S20 ASH DISPOSAL PIT "B", TYPICAL SECTION
7-3661-S21 ASH DISPOSAL PIT "B", SECTIONS 1-1 TO 4-4

REVISIONS

SCALE AS NOTED	TITLE SD BASIN B DETS SH 4	DATE 5-14-82	
DRAWN R.C.T.	ASH DISPOSAL BASIN "B" DETAILS - SH. #4	W. O. NO. 51127	STA. NO. 16
CHK'D [signature]			
ENG'R EER	FOR MIAMI FORT STATION	JOB NO. E-7171	CO. NO. 1
APP'D [signature]			
APP'D [signature]	THE CINCINNATI GAS & ELECTRIC COMPANY GENERAL ENGINEERING DEPARTMENT	DWG. NO. 7-3661-S28	
APP'D [signature]			



DITCH SUBAREAS SUMMARY

AREA	DRAINAGE AREA (AC)
A1	1.4
A2	1.8
A3	2.7
A4	3.1
TOTAL	9.0

INDUSTRIAL WASTE DISPOSAL
APPROVED
OHIO ENVIRONMENTAL PROTECTION AGENCY
AS EVIDENCED BY COPY OF
LETTER OF APPROVAL
HERETO ATTACHED

PAID 780735
Received Date: 10-19-2010
Check Amount: $1,675.00
Check Number: 1000038399
Check Date: 7-13-2010
Revenue ID: 780735

NOT FOR CONSTRUCTION

SCALE: 1" =60'
0 60 120 FEET

RECEIVED
OHIO EPA
OCT 19 2010

STATE OF OHIO
ALLEN J. SMITH JR
E-71835
REGISTERED PROFESSIONAL ENGINEER
ALLEN J. SMITH JR
Name
16 - OCTOBER - 2010
Date

REV	DATE	JOB NO.	PROJECT TYPE	DES	DFTR	CHKD	ENGR	APPD
1	10/6/2010	MCAP1210AB-M	NEW CONSTRUCTION	AJS	RSH	SJL	AJS	SJL

DESC: MODIFIED NEW TDP 39, 40, & 41. ADDED LINED DITCH. DEL. HEADER PIPE AND 2 SUMPS. CHANGED SCALE TO 1"=60'

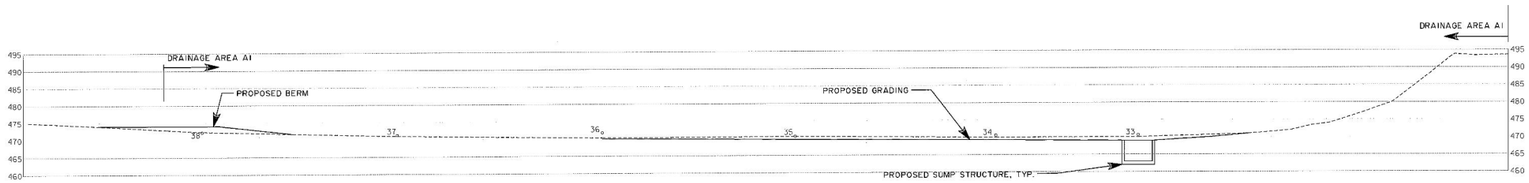
TITLE
Southwest District
ASH POND B TOE DRAINS
TOE DRAIN PIPING
TO SUMP PUMPS ON BASIN 1 & 2

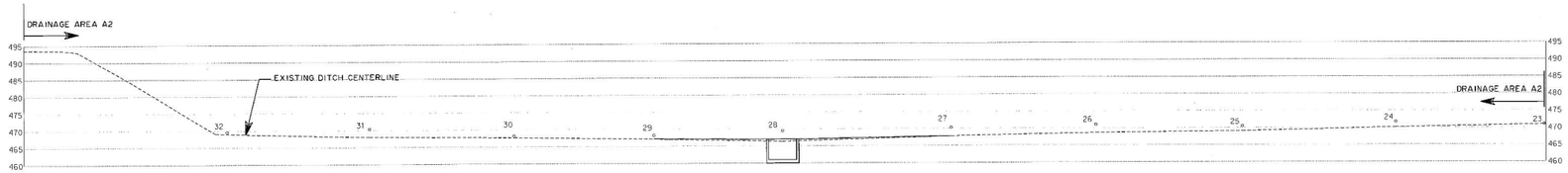
FOR
MIAMI FORT STATION UNITS 7 & 8

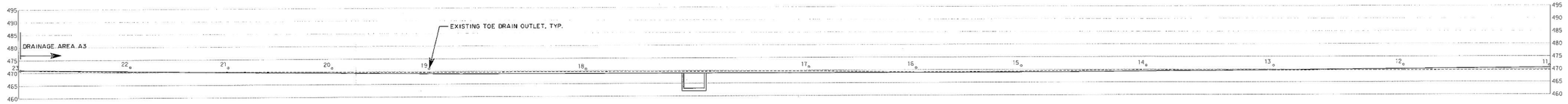
Duke Energy

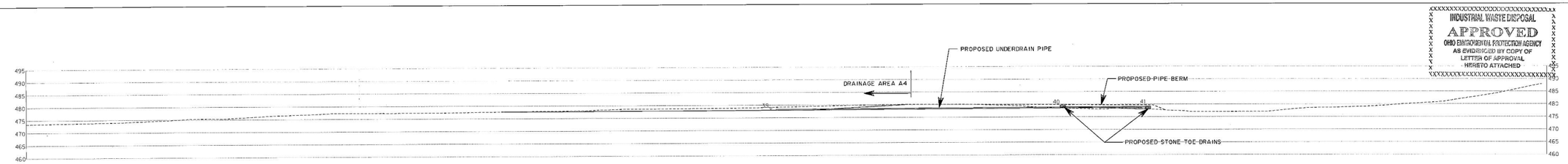
SCALE: 1"=72'	DES: DLL
DWG TYPE: MP	DFTR: DLL
JOB NO: MCAP1210-M	CHKD: WT
DATE: 12/9/2009	ENGR: WT
FILENAME: MFS_00_S&L_M-2570-1.DGN	APPD: WT/SRG

DWG SIZE	DRAWING NO.	REVISION
ARCH E1 30.0"x42.0"	M-2570 -1	1









INDUSTRIAL WASTE DISPOSAL
APPROVED
OHIO ENVIRONMENTAL PROTECTION AGENCY
AS EVIDENCED BY COPY OF
LETTER OF APPROVAL
HERETO ATTACHED

PROFILE
SCALE: ¾" = 1'

RECEIVED
OHIO EPA
OCT 19 2010
Southwest District

NOT FOR CONSTRUCTION

STATE OF OHIO
ALLEN J. SMITH JR
E-71835
REGISTERED PROFESSIONAL ENGINEER
ALLEN J SMITH JR
Name
16-OCTOBER-2010
Date

REV	DATE	JOB NO.	PROJECT TYPE	DES	DFTR	CHKD	ENGR	APPD
1	10/6/2010	MCAP1210AB-M	NEW CONSTRUCTION	AJS	RSH	SJL	AJS	SJL

DESC: REGRADED DITCH
DEL. HEADER PIPE AND ADDED 2 SUMPS.

TITLE
ASH POND B TOE DRAINS
TOE DRAINS PROFILE AND TIE IN TO
12" DIA PIPE AND SUMP PUMP #1 & 2

FOR MIAMI FORT STATION UNITS 7 & 8

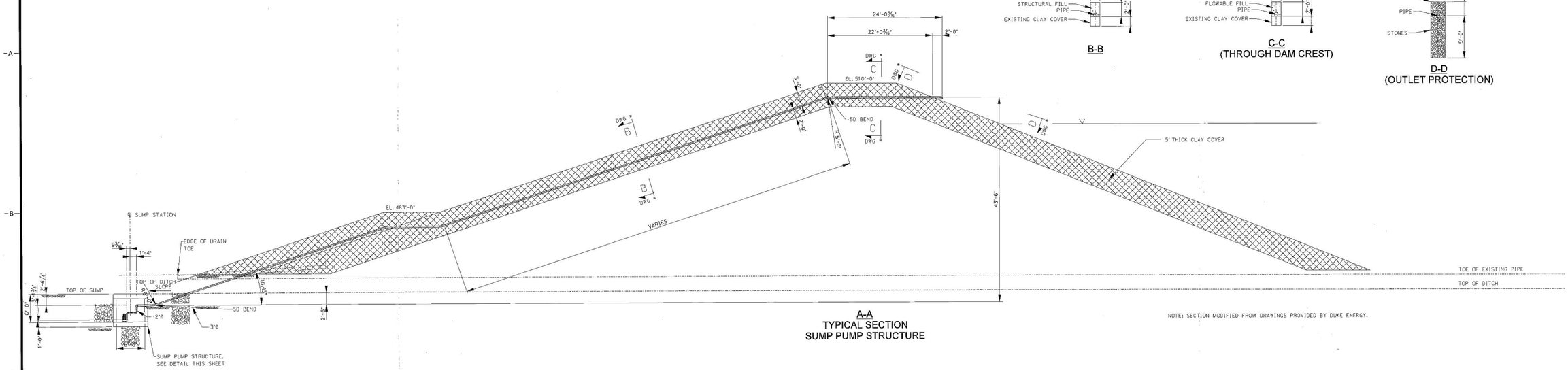
Duke Energy

SCALE: 1/16"=1'-0"	DES: DLL
DWG TYPE: MD	DFTR: DLL
JOB NO: MCAP1210-M	CHKD: WT
DATE: 12/9/2009	ENGR: WT
FILENAME: MFS_00_S&L_M-2570-2.DGN	APPD: WT/SRG

DWG SIZE	DRAWING NO.	REVISION
ARCH E1 30.0"x42.0"	M-2570-2	1

NOTES:

1. ALL DIMENSIONS AND LOCATIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR PRIOR TO START OF WORK.
2. ESTIMATED LENGHT OF 3"Ø HDPE PIPE DR 11 = 800'-0"



A-A
TYPICAL SECTION
SUMP PUMP STRUCTURE

NOTE: SECTION MODIFIED FROM DRAWINGS PROVIDED BY DUKE ENERGY.

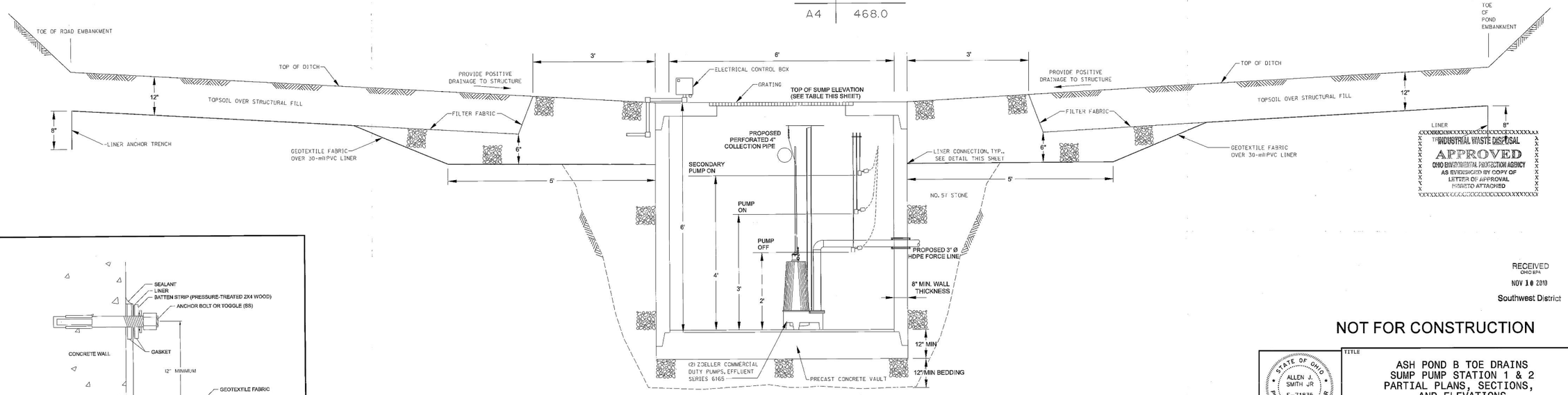
B-B

C-C
(THROUGH DAM CREST)

D-D
(OUTLET PROTECTION)

SUMP STRUCTURE SUMMARY

AREA	TOP OF SUMP EL.
A1	469.0
A2	467.0
A3	469.0
A4	468.0



SUMP STRUCTURE / LIFT STATION DETAIL
N.T.S

LINER CONNECTION DETAIL
N.T.S

RECEIVED
OHIO EPA
NOV 10 2010
Southwest District

NOT FOR CONSTRUCTION

STATE OF OHIO
ALLEN J. SMITH JR
E-71635
REGISTERED PROFESSIONAL ENGINEER
ALLEN J SMITH JR
NAME
19-OCTOBER-2010
DATE

REV	DATE	JOB NO.	PROJECT TYPE	DES	DFTR	CHKD	ENGR	APPD
1	10/6/2010	MCAP1210AB-M	NEW CONSTRUCTION	AJS	RSH	SJL	AJS	SJL

DESC: MODIFIED FORCE LINE PIPE AND BACKFILL DETAILS. ADDED SUMP STRUCTURE DETAIL.

REV	DATE	JOB NO.	PROJECT TYPE	DES	DFTR	CHKD	ENGR	APPD
2	11/5/2010	MCAP1210AB-M	NEW CONSTRUCTION	AJS	RSH	SJL	AJS	SJL

DESC: CORRECTED TOP OF SUMP ELEVATIONS.

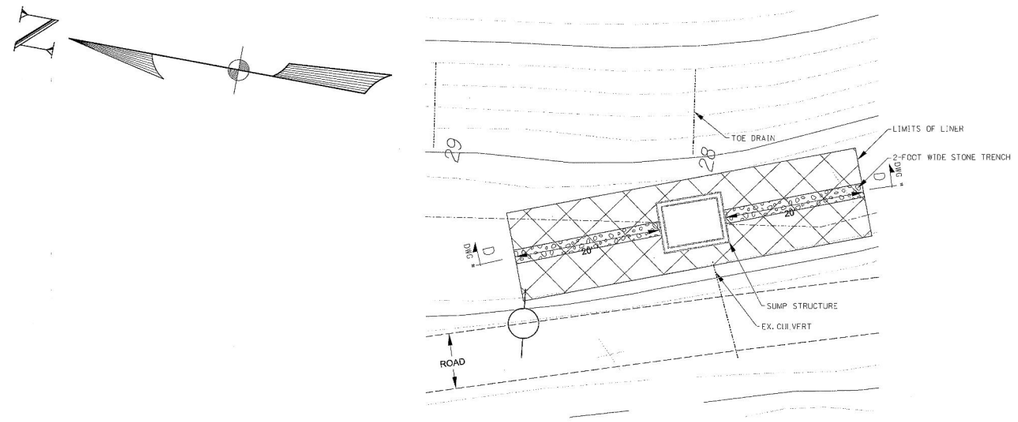
TITLE
ASH POND B TOE DRAINS
SUMP PUMP STATION 1 & 2
PARTIAL PLANS, SECTIONS, AND ELEVATIONS

FOR
MIAMI FORT STATION UNITS 7 & 8

Duke Energy.

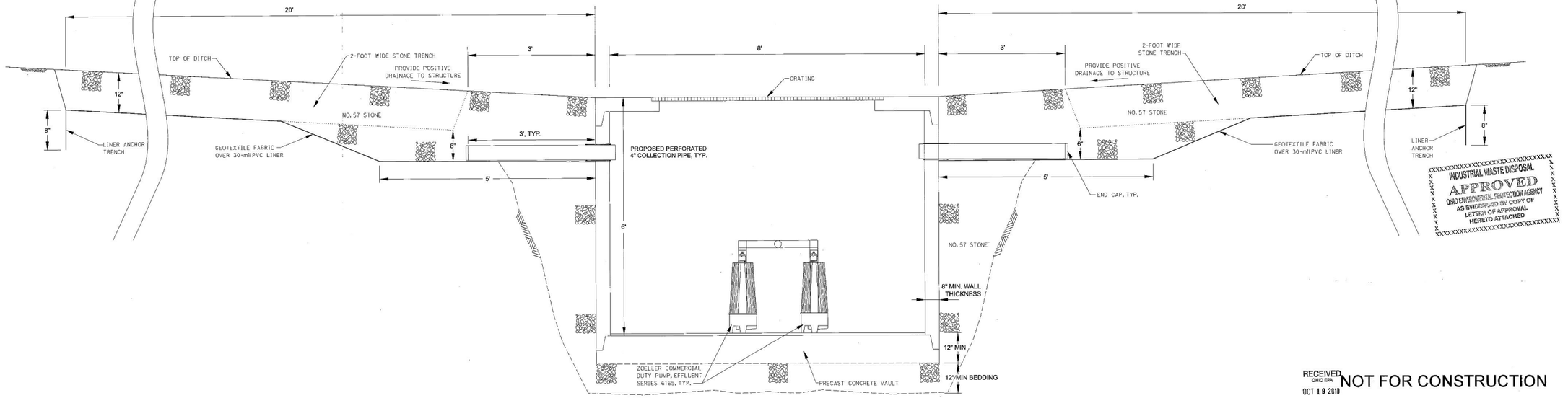
SCALE: 1/8"=1'-0"	DES: DLL
DWG TYPE: MP	DFTR: DLL
JOB NO: MCAP1210-M	CHKD: WT
DATE: 12/9/2009	ENGR: WT
FILENAME: MFS_00_S&L_M-2570-3.DGN	APPD: WT/SRG

DWG SIZE	DRAWING NO.	REVISION
ARCH E1 30.0"x42.0"	M-2570 - 3	2



TYPICAL PARTIAL PLAN
SUMP PUMP STRUCTURE

SCALE:1" = 1'-0"



D-D

N.T.S

INDUSTRIAL WASTE DISPOSAL
APPROVED
OHIO ENVIRONMENTAL PROTECTION AGENCY
AS EVIDENCED BY COPY OF LETTER OF APPROVAL HERETO ATTACHED

RECEIVED
OHIO EPA
OCT 19 2010
Southwest District

NOT FOR CONSTRUCTION

STATE OF OHIO
ALLEN J. SMITH JR
E-71835
REGISTERED PROFESSIONAL ENGINEER

ALLEN J. SMITH JR.
Name

15-OCTOBER-2010
Date

REV	DATE	JOB NO.	PROJECT TYPE	DES	DFTR	CHKD	ENGR	APPD
1	10/6/2010	MCAP1210AB-M	NEW CONSTRUCTION	AJS	RSH	SJL	AJS	SJL

DESC: DEL. TOE DRAIN CONNECTIONS. ADDED PARTIAL PLAN AND SECTION D-D. CHANGED SCALE.

TITLE

ASH POND B TOE DRAINS
TOE DRAINS (15 THRU 38) TIE IN TO 12" DIAMETER HEADER

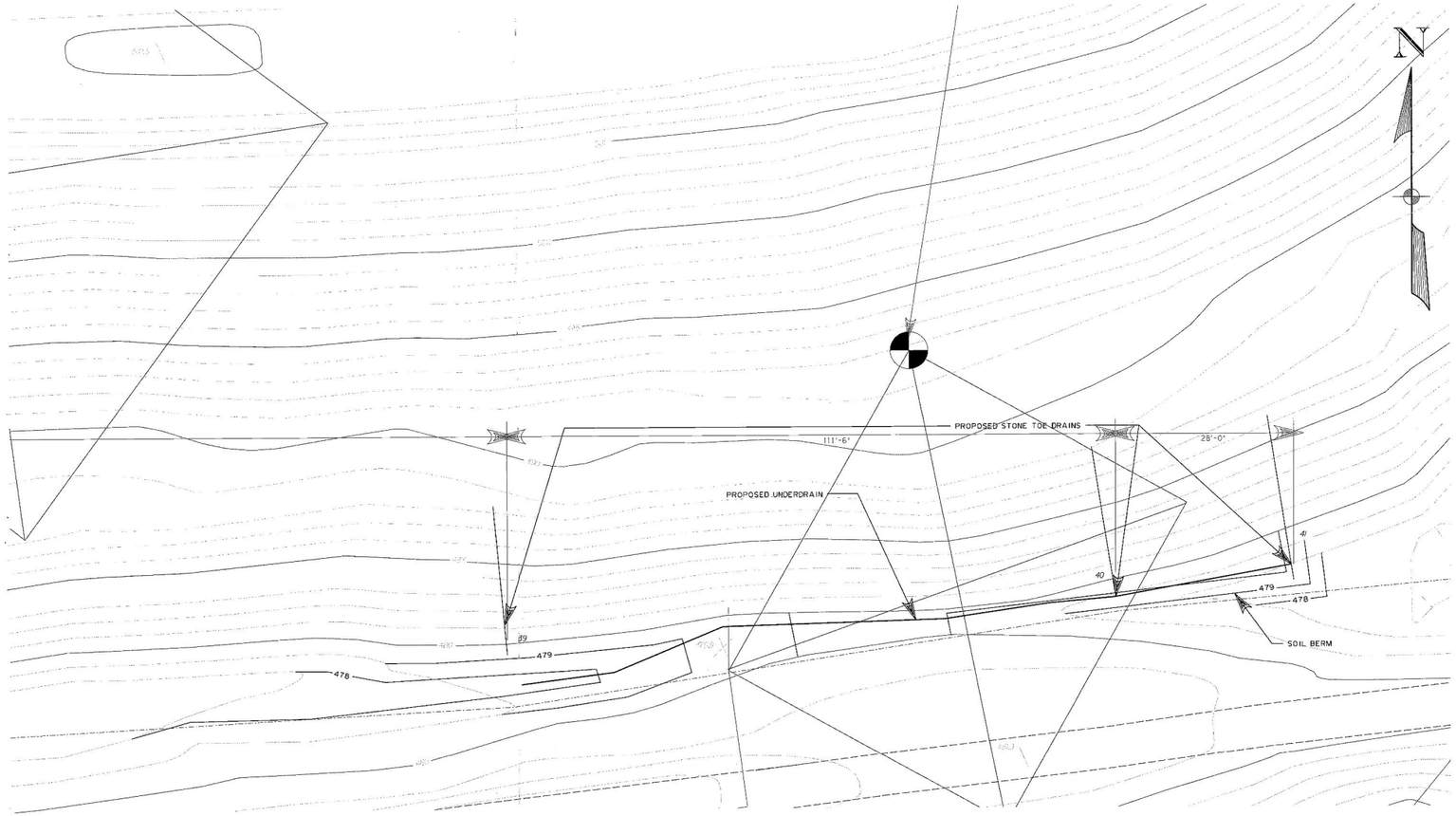
FOR

MIAMI FORT STATION UNITS 7 & 8

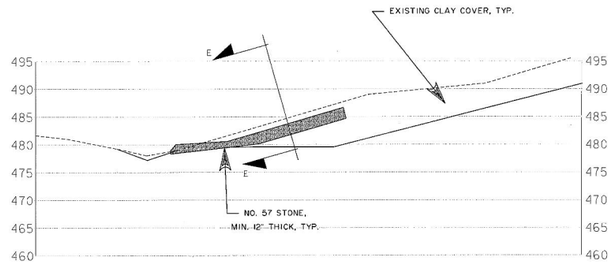
Duke Energy

SCALE: 1/4"=1'-0"	DES: DLL
DWG TYPE: MD	DFTR: DLL
JOB NO: MCAP1210-M	CHKD: WT
DATE: 12/9/2009	ENGR: WT
FILENAME: MFS_00_S&L_M-2570-4.DGN	APPD: WT/SRG

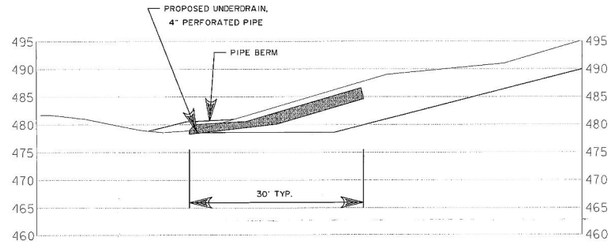
DWG SIZE	DRAWING NO.	REVISION
ARCH E1 30.0"x42.0"	M-2570-4	1



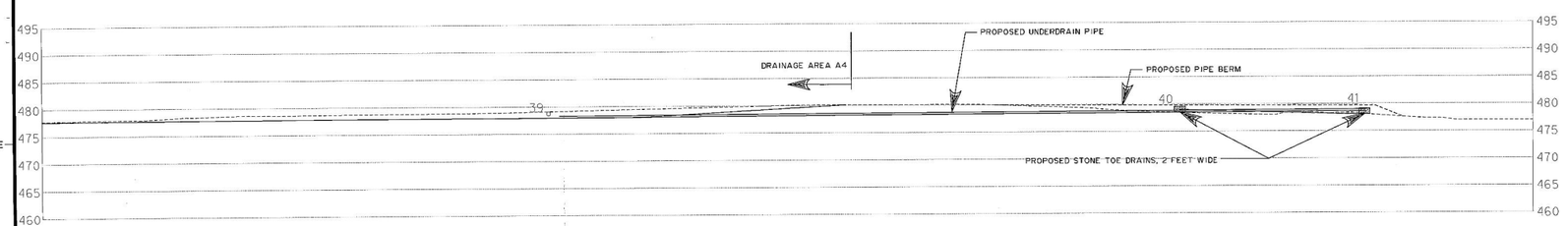
PROPOSED STONE TOE DRAIN PLAN
SCALE: 1" = 10'



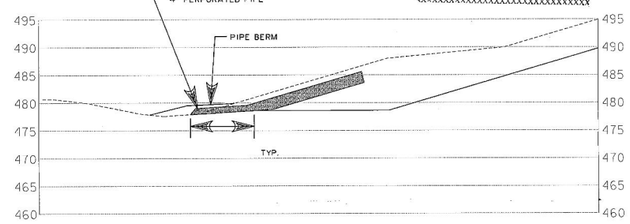
TOE DRAIN #39 SECTION



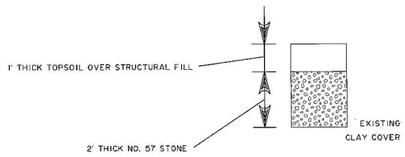
TOE DRAIN #40 SECTION



PROFILE



TOE DRAIN #41 SECTION



E-E
SCALE: 1" = 2'

INDUSTRIAL WASTE DISPOSAL
APPROVED
OHIO ENVIRONMENTAL PROTECTION AGENCY
AS EVIDENCED BY COPY OF
LETTER OF APPROVAL
HERETO ATTACHED

RECEIVED
OHIO EPA
OCT 19 2010
Southwest District

NOT FOR CONSTRUCTION

STATE OF OHIO
ALLEN J. SMITH JR
E-71835
REGISTERED PROFESSIONAL ENGINEER

ALLEN J SMITH JR
Name
15-OCTOBER-2010
Date

REV	DATE	JOB NO.	PROJECT TYPE	DES	DFTR	CHKD	ENGR	APPD
1	10/6/2010	MCAP1210AP-M	NEW CONSTRUCTION	AJS	RSH	SJL	AJS	SJL

DESC: DEL. TOE DRAIN CONNECTIONS. ADDED STONE TOE DRAINS (39, 40, 41) PLAN AND DETAILS. CHANGED SCALE.

TITLE
ASH POND B TOE DRAINS
8"DIA TOE DRAINS TIE IN TO THE
12"DIA DRAIN HEADER

FOR
MIAMI FORT STATION UNITS 7 & 8

Duke Energy®

SCALE: 1/4"=1'-0"	DES: DLL
DWG TYPE: MD	DFTR: DLL
JOB NO: MCAP1210-M	CHKD: WT
DATE: 12/9/2009	ENGR: WT
FILENAME: MFS_00_S&L_M-2570-5.DGN	APPD: WT/SRS

DWG SIZE	DRAWING NO.	REVISION
ARCH E1 30.0"x42.0"	M-2570-5	1

EX.CULVERT

PROPOSED BERM

BOD 472.33'

BOD 470.96'

BOD 470.26'

BOD 470.48'

BOD 470'

BOD 470.05'

38 TOEP EL.472.58'

37 TOEP EL.471.63'

36 TOEP EL.472.10'

35 TOEP EL.470.88'

34 TOEP EL.470.95'

33 TOEP EL.470.96'

LINER LIMITS

6'X8' PRECAST CONCRETE VAULT

R/D

INV-24CMP EL.469.71'

INV-24CMP. 469.41'

DRAINAGE AREA A1 = 1.4 ACRES

MATCHLINE DRAWING NO. M-2570-7

ASH POND B

TBM - TEMPORARY BENCH MARK
TOEP - TOP OF EXISTING PIPE
BOD - BOTTOM OF EXISTING DITCH

SCALE: 1" =20'
0 20 40 FEET

N

INDUSTRIAL WASTE DISPOSAL
APPROVED
OHIO ENVIRONMENTAL PROTECTION AGENCY
AS ENDORSED BY COPY OF
LETTER OF APPROVAL
HERETO ATTACHED

RECEIVED
OHIO EPA
OCT 19 2010
Southwest District

NOT FOR CONSTRUCTION

TITLE
ASH POND B TOE DRAINS

AREA A1 PLAN

FOR
MIAMI FORT STATION UNITS 7 & 8

Duke Energy.

SCALE: 1"=20'	DES: MTS	
DWG TYPE:	DFTR: RSH	
JOB NO: MCAP1210-M	CHKD: SSL	
DATE: 10/6/2010	ENGR: AJS	
FILENAME: MFS_00_S&L_M-2570-6.DGN	APPD: SSL KAH	
DWG SIZE	DRAWING NO.	REVISION
ARCH E1 30.0"x42.0"	M-2570-6	

STATE OF OHIO
ALLEN J. SMITH JR
E-71835
REGISTERED PROFESSIONAL ENGINEER

ALLEN J. SMITH JR
None
16-OCTOBER-2010
DATE

INDUSTRIAL WASTE DISPOSAL
APPROVED
OHIO ENVIRONMENTAL PROTECTION AGENCY
AS EVIDENCED BY COPY OF
LETTER OF APPROVAL
HERETO ATTACHED

RECEIVED
OHIO EPA
OCT 19 2010
Southwest District

NOT FOR CONSTRUCTION

ASH POND B TOE DRAINS

AREA A2 PLAN

FOR MIAMI FORT STATION UNITS 7 & 8

Duke Energy

STATE OF OHIO
ALLEN J. SMITH JR
E-71935
REGISTERED
PROFESSIONAL ENGINEER

ALLEN J. SMITH JR
Name
15 OCTOBER 2010
Date

SCALE: 1"=20'		DES: AJS
DWG TYPE:		DFTR: RSH
JOB NO: MCAP1210-M		CHKD: SJL
DATE: 10/6/2010		ENGR: AJS
FILENAME: MFS_00_SAI_M-2570-7.DGN		APPD: SJL
DWG SIZE	DRAWING NO.	REVISION
ARCH E1 30.0"x42.0"	M-2570-7	

ASH POND B

DRAINAGE AREA A3 = 2.7 ACRES

MATCHLINE DRAWING NO. M-2570-7

MATCHLINE DRAWING NO. M-2570-9

TOEP EL. 471.33'
TOEP EL. 472.49'
TOEP EL. 472.14'
TOEP 471.77'
TOEP 471.44'
BOD 469.68'
BOD 469.65'
TOEP 471.09'
BOD 469.73'
TOEP 471.71'
BOD 469.07'
TOEP 471.15'
TOEP 471.82'
TOEP 471.89'
TOEP 471.77'
SET PIN "CONC" 473.24' N=473,442', E=303,886'
TOEP 472.04'
TOEP 471.85'
TOEP 470.90'

23 22 21 20 19 18 17 16 15 14 13 12 11 10

471 470 469

BOD 470.93'
BOD 470.26'
BOD 469.93'
BOD 470.70'
BOD 469.32'
BOD 469.90'
BOD 469.63'
BOD 469.53'
BOD 469.51'

6'X8' PRECAST CONCRETE VAULT

LINER LIMITS

FIELD-FIT CULVERT W/ RISER TO EL. 470.9

TOP 12 ID 467.90'

TOP 12 ID 467.15'

PROPOSED BERM

TEMPORARY BENCH MARK ITBM
IRON ROD SET IN CONC.
N = 473,442.29
E = 303,886
EL. 473.24'

INDUSTRIAL WASTE DISPOSAL
APPROVED
OHIO ENVIRONMENTAL PROTECTION AGENCY
AS EVIDENCED BY COPY OF LETTER OF APPROVAL HERETO ATTACHED

TBM - TEMPORARY BENCH MARK
TOEP - TOP OF EXISTING PIPE
BOD - BOTTOM OF EXISTING DITCH

NOT FOR CONSTRUCTION

SCALE: 1" =20'
0 20 40 FEET

STATE OF OHIO
ALLEN J. SMITH JR
E-71835
REGISTERED PROFESSIONAL ENGINEER

ALLEN J. SMITH JR
Name
15 - OCTOBER - 2010
Date

TITLE
ASH POND B TOE DRAINS

AREA A3 PLAN

FOR
MIAMI FORT STATION UNITS 7 & 8

Duke Energy

SCALE: 1"=20'		DES: AJS
DWG TYPE:		DFTR: RSH
JOB NO: MCAP1210-M		CHKD: SJL
DATE: 10/6/2010		ENGR: AJS
FILENAME: MFS_00_S&L_M-2570-8.DGN		APPD: SJL KM
DWG SIZE	DRAWING NO.	REVISION
ARCH E1 30.0"x42.0"	M-2570-8	

MATCHLINE DRAWING NO. M-2570-8

PROPOSED BERM

TOEP 471.57'

TOEP 471.44'

8

TOEP 471.15'

7

TOEP 471.51'

6

BOD 468.82'

TOEP 471.09'

5

BOD 468.82'

TOEP 470.68'

4

BOD 468.88'

TOEP 470.97'

3

2

6'X8' PRECAST CONCRETE VAULT

EX. CULVERT

1

TOEP 472.30'

FIELD-FIT CULVERT W/ RISER TO EL. 471.4

LINER LIMITS

BOD 472.04'

BOD 470.96'

TEMPORARY BENCH MARK (TBM)
CHISELED "X" ON CONC. WELL PAD
N = 4311.2101
E = 3359.0812
EL. = 472.94'

TBM - TEMPORARY BENCH MARK
TOEP - TOP OF EXISTING PIPE
BOD - BOTTOM OF EXISTING DITCH

ASH POND B

DRAINAGE AREA A4 = 3.1 ACRES

OHIO RIVER

PROPOSED STONE TOE DRAINS

421'-0"

111'-6"

28'-0"

39

40

41

479

478

483.1

TOP 12 ID CULVERT

PROPOSED INDUSTRIAL WASTE DISPOSAL

APPROVED
OHIO ENVIRONMENTAL PROTECTION AGENCY
AS EVIDENCED BY COPY OF
LETTER OF APPROVAL
HERETO ATTACHED

476.04'

SCALE: 1" =20'
0 20 40 FEET

NOT FOR CONSTRUCTION

ALLEN J. SMITH JR
E-71835
REGISTERED PROFESSIONAL ENGINEER
ALLEN J. SMITH JR
Name
16 - SEPTEMBER - 2010
Date

TITLE
ASH POND B TOE DRAINS

AREA A4 PLAN

FOR
MIAMI FORT STATION UNITS 7 & 8

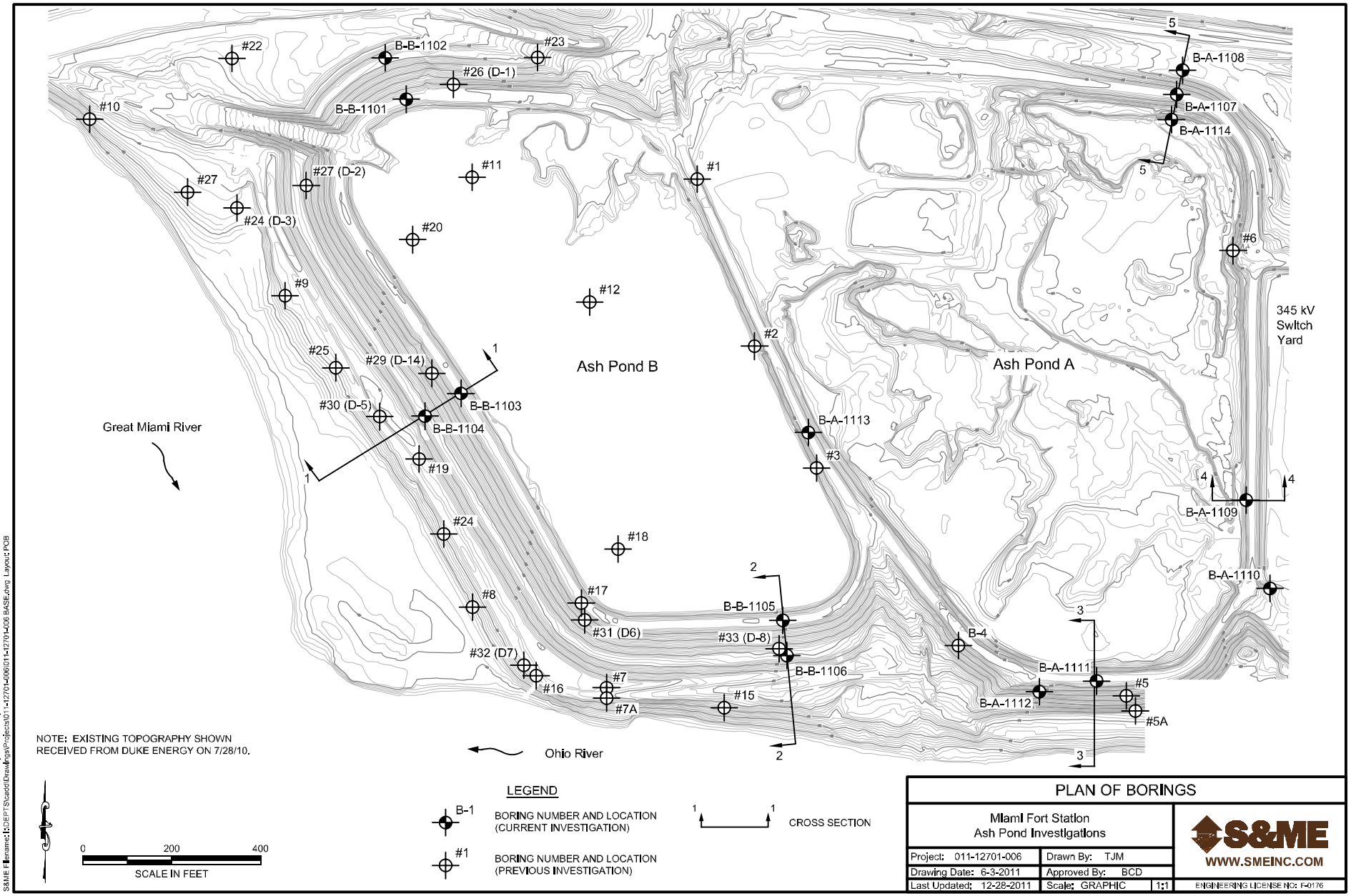
Duke Energy

SCALE: 1"=20'	DES: AJS	
DWG TYPE:	DFTR: RSH	
JOB NO: MCAP1210-M	CHKD: SSL	
DATE: 10/6/2010	ENGR: AJS	
FILENAME: MFS_00_S&L_M-2570-9.DGN	APPD: SSL KAL	

DWG SIZE	DRAWING NO.	REVISION
ARCH E1 30.0"x42.0"	M-2570-9	

Appendix D

Instrumentation



PLAN OF BORINGS

Miami Fort Station
Ash Pond Investigations

S&ME
WWW.SMEINC.COM

Project: 011-12701-006	Drawn By: TJM		
Drawing Date: 6-3-2011	Approved By: BCD		
Last Updated: 12-28-2011	Scale: GRAPHIC	1:1	ENGINEERING LICENSE NO: F-0176

PLATE 2

Images:
Xrefs:
File Last Updated: Dec 28, 2011
Plot Into: 12-28-2011 @ 12:26pm By: tmckelvey
S&ME Filename: I:\DEPTS\cadd\Drawings\Projects\011-12701-006\011-12701-006 BASE.dwg Layout: POB

The borings were performed with either a truck-mounted drill rig or a track-mounted drill rig and were advanced between sampling attempts using 3¼-inch I.D. hollow-stem augers. Disturbed, but representative samples were obtained by lowering a 2-inch O.D. split-barrel sampler to the bottom of the hole and driving it into the soil by blows from a 140-pound hammer freely falling 30 inches (Standard Penetration Test, ASTM D1586). SPT sampling was generally performed continuously through embankment fill layers and at 2½-foot intervals once natural soils were encountered. Split barrel samples were examined immediately after recovery and representative portions of each sample were placed in air tight jars and retained for subsequent laboratory testing.

In addition to the disturbed samples, thin-walled press tube samples were also attempted at various depths in order to obtain relatively undisturbed soil samples for strength testing. The samples were collected by hydraulically pressing a 3-inch diameter thin-walled steel (Shelby) tube at the end of the drill rod stem. The samples were preserved inside the Shelby tube sampler and sealed with wax. The sample collection was completed in accordance with ASTM D 1587 Method for Thin-Walled Tube Geotechnical Sampling of Soils. In all, 14 Shelby Tube samples were attempted during drilling and returned to the lab for evaluation.

In the field, the following procedures and specific duties were performed by a Staff Engineering Technician from our office:

- examined all samples recovered from the borings;
- cleaned soil samples of cuttings and preserved representative portions in airtight glass jars;
- made seepage observations and measured the water levels in the borings;
- prepared a log of each boring;
- made hand-penetrometer measurements in soil samples exhibiting cohesion; and,
- provided liaison between the field personnel and the Project Manager so that the field investigation could be modified in the event that unexpected subsurface conditions were encountered.

Upon completion of drilling, water levels were measured and Borings B-B-1101, 1102, B-A-1107, 1108, 1109, 1110, 1113 and 1114 were backfilled with cement-bentonite grout. Vibrating wire (VW) piezometers were installed in the remaining borings. The installation of the VW piezometers is discussed in the following section of this report. Additionally, the mid-slope bench cut to facilitate drilling Borings B-A-1112 was re-graded to the approximate original grade and seeded immediately following the completion of the boring.

Vibrating Wire Piezometer Installation

Vibrating wire piezometers were installed at selected depths within the crest of Ponds B and A (Borings B-B-1103, 1105 and B-A-1111), intermediate benches of Pond B (B-B-1104 and 1106) and mid-slope of Pond A (B-A-1112) as part of this investigation. A summary of VW piezometer installations is provided in Table 1. The VW piezometers were grouted in-place with a cement-bentonite grout mixture recommended by the

manufacturer (Durham Geo Slope Indicator). The VW piezometer cables are connected to data loggers that are programmed to record pore pressure readings every 6 hours. The data loggers continue to collect data and are downloaded periodically to monitor the long term pore pressures within the embankments. The collection of continuous data in conjunction with precipitation and river stage data can be used to determine if there is a correlation with surface infiltration and pore pressures within the embankment near the surface. The precipitation and river stage data is not available at the plant itself; therefore information from the river gauge stations (USGS No. 03255000) located in Cincinnati and National Weather Service data for Cincinnati was utilized.

The readings were downloaded and reduced to provide water levels at specific locations within the embankments. The results of the piezometer readings obtained through November 7, 2011 are submitted in Appendix C. This information was used in conjunction with finite element analyses to develop a design phreatic surface for use with the stability analyses. This is further discussed in subsequent sections of this report.

Table 1: Summary of Piezometer Installation

Piezometer/Boring Number	Cross-Section	Installation Date	Location	Depth (feet)	Tip Elevation
MFS #1/B-B-1103	1	5/12/2011	Center of Crest	41	468.2
MFS #2/B-B-1104		5/11/2011	Outboard Slope – Intermediate Bench	20	462.0
MFS #3/B-A-1105	2	5/6/2011	Center of Crest	31	478.3
MFS#4/B-A-1106		5/6/2011	Outboard Slope – Intermediate Bench	20	470.0
MFS#5/B-A-1111	3	5/5/2011	Center of Crest	39	470.0
MFS#6/B-A-1112		5/10/2011	Outboard Slope – Cut Bench	31	466.0

Notes: Elevations in Feet above mean sea level.
Elevations of Mid-slope piezometers were estimated from available topographic information

LABORATORY TESTING

Index Testing

Laboratory testing was performed on selected representative soil samples obtained during the field investigations to determine natural moisture content (ASTM D2216), liquid and plastic limits (ASTM D4318), and grain size analyses (ASTM D422). The results of these and other tests permit an evaluation of the strength, compressibility and permeability characteristics of the soils encountered at this site.

The results of the moisture content testing and of the liquid and plastic limits are graphically displayed on the individual boring logs presented as Plates 4 through 28 in Appendix A. A summary of all S&ME laboratory test results are presented as Plates 1

EXPLORATION METHOD (B=BORING, C=CPT, P=PIEZOMETER)

XXX-X###

ID NUMBER

STATION ABBREVIATION

SOURCE:
MAP PROVIDED BY GOOGLE EARTH PRO 2015

LEGEND

PIEZOMETER LOCATION

CCR UNIT BERM ALIGNMENT

NOTE: PIEZOMETER LOCATION PENDING SURVEY.

0 200

APPROXIMATE SCALE FEET

N

Dynegy Miami Fort, LLC

PROJECT NO. 60440203

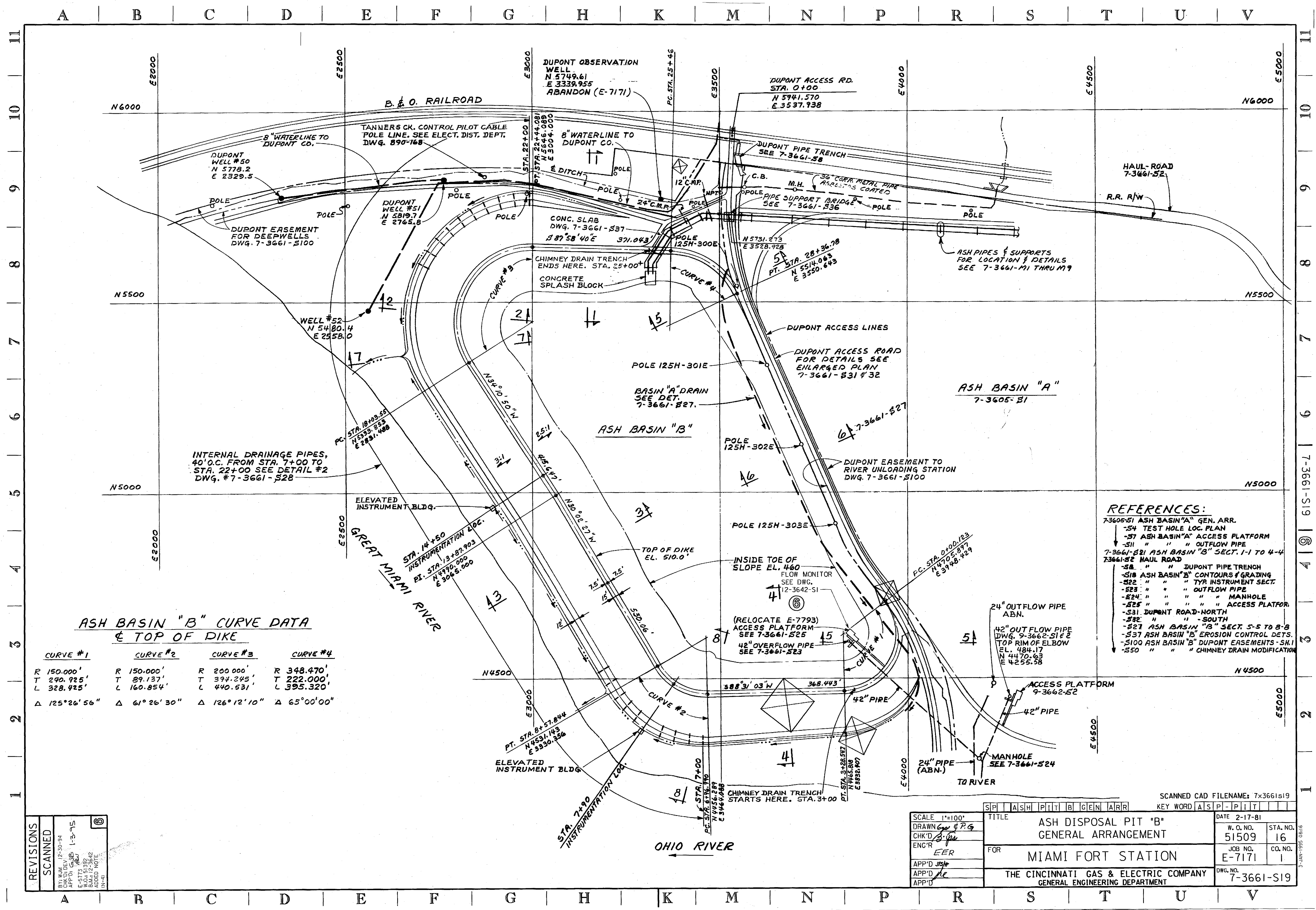
AECOM

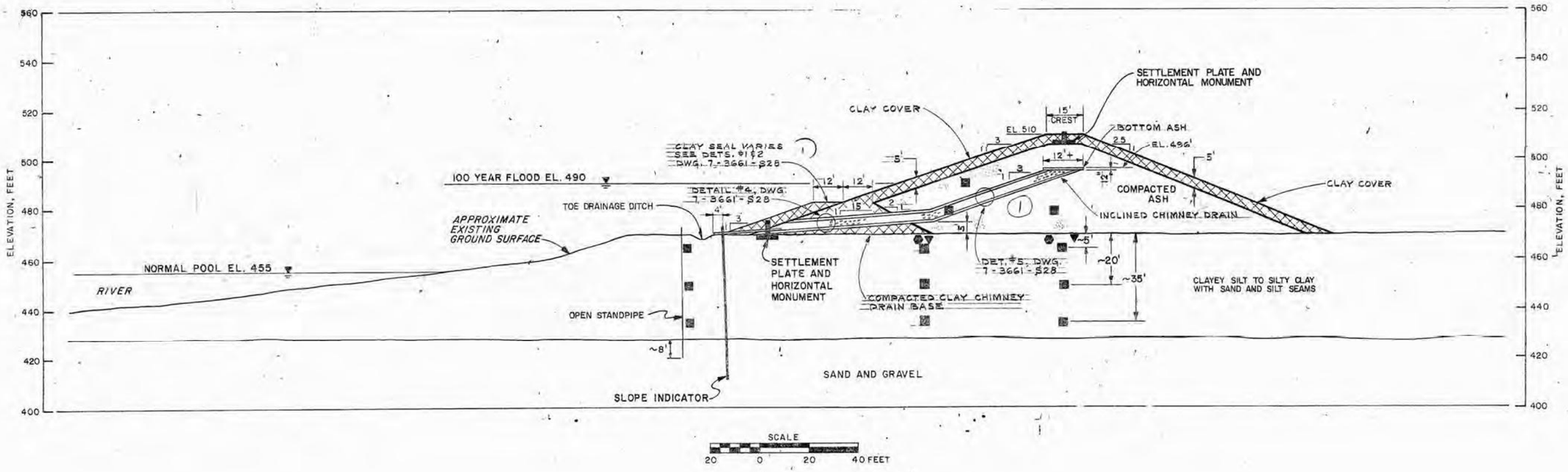
DRN. BY: djd October 2015
DSGN. BY: eg
CHKD. BY: eg

Miami Fort Basin A & B Piezometer Locations

FIG. NO. 2A

File: P:\PROJECTS\GEOTECH\60428794_DYNEGYCCR\04TASKS\00 PROGRAM TASKS\1.0 TASK 1 INITIAL UNIT ASSESSMENT\CCR FACT SHEETS\SITE MAPS\FIGURE 2A PIEZOMETER LOCATION PLAN (MIAMI FORT BASIN A & B).DWG Last edited: NOV. 09, 15 @ 4:20 p.m. by: david_dejuire


B. & O. RAILROAD
DUPONT OBSERVATION WELL N 5749.61 E 3339.955 ABANDON (E-7171)
DUPONT ACCESS RD. STA. 0+00 N 5941.570 E 3537.938
TANNERS CK. CONTROL PILOT CABLE POLE LINE. SEE ELECT. DIST. DEPT. DWG. 890-168
8" WATERLINE TO DUPONT CO.
DUPONT WELL #50 N 5778.2 E 2329.5
DUPONT WELL #51 N 5819.7 E 2765.8
DUPONT EASEMENT FOR DEEPWELLS DWG. 7-3661-S100
DUPONT PIPE TRENCH SEE 7-3661-S8
36" CORR. METAL PIPE ASBESTOS COATED
PIPE SUPPORT BRIDGE SEE 7-3661-S36
HAUL-ROAD 7-3661-S2
R.R. R/W
CONC. SLAB DWG. 7-3661-S37
S 87°58'40"E 371.043'
POLE 125H-300E
N 5731.273 E 3528.928
CHIMNEY DRAIN TRENCH ENDS HERE. STA. 25+00
CONCRETE SPLASH BLOCK
PT. STA. 28+36.78 N 5514.063 E 3550.643
ASH PIPES & SUPPORTS FOR LOCATION & DETAILS SEE 7-3661-M1 THRU M9
WELL #52 N 5480.4 E 2558.0
DUPONT ACCESS LINES
DUPONT ACCESS ROAD FOR DETAILS SEE ENLARGED PLAN 7-3661-S31 & 32
POLE 125H-301E
BASIN "A" DRAIN SEE DET. 7-3661-S27
ASH BASIN "A" 7-3605-S1
ASH BASIN "B"
POLE 125H-302E
DUPONT EASEMENT TO RIVER UNLOADING STATION DWG. 7-3661-S100
INTERNAL DRAINAGE PIPES, 40' O.C. FROM STA. 7+00 TO STA. 22+00 SEE DETAIL #2 DWG. #7-3661-S28
PC. STA. 18+03.55 N 5333.853 E 2831.488
ELEVATED INSTRUMENT BLDG.
GREAT MIAMI RIVER
STA. 14+50 INSTRUMENTATION LOC.
PI. STA. 13+87.903 N 4990.000 E 3065.000
POLE 125H-303E
TOP OF DIKE EL. 510.0'
INSIDE TOE OF SLOPE EL. 460
FLOW MONITOR SEE DWG. 12-3642-S1
PC. STA. 0+00.123 N 4705.897 E 3948.429
(RELOCATE E-7793) ACCESS PLATFORM SEE 7-3661-S25
42" OVERFLOW PIPE SEE 7-3661-S23
24" OUTFLOW PIPE ABN.
42" OUT FLOW PIPE DWG. 9-3662-S1 & 2 TOP RIM OF ELBOW EL. 484.17 N 4470.63 E 4255.58
ACCESS PLATFORM 9-3662-S2
42" PIPE
MANHOLE SEE 7-3661-S24
24" PIPE (ABN.)
TO RIVER
S 88°31'03"W 368.443'
PT. STA. 8+57.844 N 4531.143 E 3330.356
ELEVATED INSTRUMENT BLDG
STA. 7+90 INSTRUMENTATION LOC.
PC. STA. 6+16.390
CHIMNEY DRAIN TRENCH STARTS HERE. STA. 3+00
PT. STA. 3+28.547
OHIO RIVER
ASH BASIN "B" CURVE DATA ℄ TOP OF DIKE
CURVE #1 R 150.000' T 290.925' L 328.425' Δ 125°26'56"
CURVE #2 R 150.000' T 89.137' L 160.854' Δ 61°26'30"
CURVE #3 R 200.000' T 397.295' L 440.531' Δ 126°12'10"
CURVE #4 R 348.470' T 222.000' L 395.320' Δ 65°00'00"
REFERENCES:
7-3605-S1 ASH BASIN "A" GEN. ARR.
-S4 TEST HOLE LOC. PLAN
-S7 ASH BASIN "A" ACCESS PLATFORM
-S11 " " " OUTFLOW PIPE
7-3661-S21 ASH BASIN "B" SECT. 1-1 TO 4-4
7-3661-S2 HAUL ROAD
-S8 " " DUPONT PIPE TRENCH
-S18 ASH BASIN "B" CONTOURS & GRADING
-S22 " " " TYP. INSTRUMENT SECT.
-S23 " " " OUTFLOW PIPE
-S24 " " " " MANHOLE
-S25 " " " " ACCESS PLATFORM
-S31 DUPONT ROAD-NORTH
-S32 " " -SOUTH
-S27 ASH BASIN "B" SECT. 5-5 TO 8-8
-S37 ASH BASIN "B" EROSION CONTROL DETS.
-S100 ASH BASIN "B" DUPONT EASEMENTS-SH.1
-S50 " " " CHIMNEY DRAIN MODIFICATION
SCANNED CAD FILENAME: 7x3661s19
KEY WORD ASP-PIT
SP ASH PIT B GEN ARR
SCALE 1"=100'
TITLE ASH DISPOSAL PIT "B" GENERAL ARRANGEMENT
FOR MIAMI FORT STATION
THE CINCINNATI GAS & ELECTRIC COMPANY GENERAL ENGINEERING DEPARTMENT
DATE 2-17-81
W. O. NO. 51509
STA. NO. 16
JOB NO. E-7171
CO. NO. 1
DWG. NO. 7-3661-S19
REVISIONS
SCANNED
7-3661-S19



TYPICAL INSTRUMENTATION SECTION

NOTE: 2 SECTIONS PROPOSED AT STATIONS 7+90 AND 14+50.

LEGEND

- ■ PNEUMATIC PIEZOMETERS
- ▼ REMOTE SETTLEMENT GAUGE
- ● TOTAL LOAD CELL

IMAGE REFERENCE: ASH DISPOSAL PIT "B", TYPICAL INSTRUMENT SECTION, MIAMI FORT STATION, THE CINCINNATI GAS & ELECTRIC COMPANY GENERAL ENGINEERING DEPARTMENT, DWG NO. 7-3661-S22, DATED 12-5-79

CHA
III Winners Circle, PO Box 5269 · Albany, NY 12205-0269
Main: (518) 453-4500 · www.chacompanies.com

ASH POND B INSTRUMENTATION LOCATION

MIAMI FORT GENERATING STATION
DUKE ENERGY CORPORATION
NORTH BEND, OHIO

PROJECT NO. 20085.1050

DATE: 11/2009

FIGURE 7

Appendix E

Pages from AECOM Hydrologic and Hydraulic Summary Report

1. INTRODUCTION

1.1. *Purpose Of This Memorandum*

This report presents the results of the hydrologic and hydraulic analysis prepared by AECOM for the Miami Fort Power Station[1] Basin A and Basin B Coal Combustion Residuals (CCR) units, located in North Bend, Ohio in Hamilton County (See Attachment A for Location Map). This analysis was completed in accordance with the Environmental Protection Agency (EPA) 40 CFR Part §257, subpart D, regulations for the disposal of CCR. As required by §257.82(a), by October 17, 2016 owners and operators of existing CCR surface impoundments must develop an Inflow Design Flood Control Plan that documents how the inflow design flood control system had been designed and constructed to meet the following requirements:

- *(40 CFR §257.82, (a)(1)* - The inflow design flood control system must adequately manage flow into the CCR unit during and following the peak discharge of the inflow design flood.
- *(40 CFR §257.82, (a)(2)* - The inflow design flood control system must adequately manage flow from the CCR unit to collect and control the peak discharge resulting from the inflow design flood.

Basin A and Basin B have a significant hazard potential based on the initial hazard potential classification assessment performed by Stantec in 2016 in accordance with §257.73(a)(2). The "Significant Hazard" category indicates that the inflow design flood is the 1,000-year storm event. This event is the basis for AECOM's certification.

1.2. *Brief Description of Impoundments*

Basin A and Basin B are utilized for managing CCR waste materials generated by the Miami Fort Power Station. The ponds are located to the west of the power generating station and consist of four-sided above-ground earthen embankments. The ponds share a separator dike and are surrounded by an earthen embankment. The ponds are hydraulically connected with a 48-inch CMP culvert sliplined with a 40-inch HDPE pipe that runs through the shared dike. Basin A was put into service in 1959 and Basin B was added in 1982. A plan view of the Miami Fort Power Station is included in Attachment A.

The ponds are hydraulically connected and work in series; Basin A discharges into Basin B and the ultimate outfall structure to the Ohio River is in Basin B. Therefore, a concurrent hydraulic evaluation of both ponds is warranted. The ponds currently receive process flows from ash transport water and other miscellaneous waste streams from the Miami Fort Power Station. Basin A receives the site's process flows as determined by the site water balance chart provided by DMF.

[1] Dynegy Administrative Services Company (Dynegy) contracted AECOM to develop this Hydrologic and Hydraulic Summary Report on behalf of the Miami Fort Power Station. Therefore, "Dynegy" is referenced in materials attached to this hydrologic and hydraulic report.

The normal water surface elevation (WSE[2]) of Basin A is 501.5 feet (NAVD88 vertical datum applies to all elevations in this report) as determined by sunny day hydraulic analysis. A sunny day hydraulic analysis uses plant process flows to estimate the stabilized water surface elevation in the basin, prior to a rainfall event occurring. Basin A's surface area is approximately 30 acres. Normal pool elevation in Basin B is 499.4 feet, which is based on the surveyed WSE from the 2014 ESP Associates survey. Basin B is approximately 20 acres and discharges to the Ohio River through NPDES permitted Outfall 002.

2. POND CAPACITY / IMPOUNDMENT COMPUTATIONS

The elevation/areas for Basins A and B were determined using AutoCAD analysis of a 2014 topographic and bathymetric survey, completed by ESP Associates. Refer to Attachment B for further details.

3. HYDROLOGIC AND HYDRAULIC ANALYSIS OF MIAMI FORT PONDS

3.1. *Rainfall Data*

The rainfall information used in the HydroCAD modeling was based on the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 2, Version 3 which provides rainfall data for storm events with average recurrence intervals ranging from 1 to 1,000 years and durations ranging from 5 minutes to 60 days. The design storm rainfall depth, obtained from NOAA website, is 7.81 in for the 24-hour, 1,000-year storm. The Soil Conservation Service (SCS) Type II storm used by AECOM is appropriate to use for storms up to the 1,000-year flood at the project site.

3.2. *Runoff Computations*

To assess the capacity of the ponds to store and convey the storm flows, a hydraulic model was created in HydroCAD 10.00-12. HydroCAD has the capability to evaluate each pond within the network, to respond to variable tailwater, and reversing flows. HydroCAD routing calculations reevaluate the pond systems' discharge capability at each time increment, making the program an efficient and dynamic tool for this evaluation. Runoff was calculated using the SCS Curve Number Method, where curve numbers were assigned to each subcatchment based on the type of land cover and soil type present.

3.3. *Ohio River Tailwater*

The Ohio River acts as an outfall for Basins A and B, and therefore the pool level in the Ohio River may affect the corresponding pool levels in Basins A and B. The Ohio River surface water elevation obtained from the Federal Emergency Management Agency Flood Insurance Rate Maps. The 100-year/24-hour flood elevation in the Ohio River is at 490 feet.

Please refer to Attachment B for further details and modeling results.

[2] Available surveyed WSEs (ESP Associates, 2014) were compared to sunny day analysis WSEs for both basins. The higher elevation in each basin was used for the normal WSE to be conservative.

4. CONCLUSIONS

- The inflow design flood control system of the Miami Fort Basin A and Basin B adequately manages flow into and out of the ponds during and following the peak discharge of the 1,000-year storm event inflow design flood. Results of the model are summarized in Table 4.1.

Table 4.1
Miami Fort Summary of Hydrologic and Hydraulic Analysis, 1,000-Year, 24-Hour Storm

CCR Unit	Beginning WSE[1] (ft)	Peak WSE (ft)	Crest Elevation (ft)
Basin A	501.5	502.6	507
Basin B	499.4	500.0	506

[1]WSE = Water Surface Elevation

- The H&H evaluation under the described scenario indicates that neither pond will overtop during the 1,000-year storm event while the Ohio River is experiencing a 100-yr flood.
- Additionally, no overland flow outside of the ponds will overtop the pond embankments.
- Basin A and Basin B meet the hydraulic requirements for certification, per §257.82(a).

5. LIMITATIONS

Background information, design basis, and other data which AECOM has used in preparing this report have been furnished to AECOM by the Miami Fort Power Station. AECOM has relied on this information as furnished, and is not responsible for the accuracy of this information. Our recommendations are based on available information from previous and current investigations. These recommendations may be updated as future investigations are performed.

The conclusions presented in this report are intended only for the purpose, site location, and project indicated. The recommendations presented in this report should not be used for other projects or purposes. Conclusions or recommendations made from these data by others are their responsibility. The conclusions and recommendations are based on AECOM's understanding of current plant operations, maintenance, stormwater handling, and ash handling procedures at the station, as provided by the Miami Fort Power Station. Changes in any of these operations or procedures may invalidate the findings in this report until AECOM has had the opportunity to review the changes, and revise the report if necessary.

This hydrologic and hydraulic analysis was performed in accordance with the standard of care commonly used as state-of-practice in our profession. Specifically, our services have been performed in accordance with accepted principles and practices of the engineering profession. The conclusions presented in this report are professional opinions based on the indicated project criteria and data available at the time this report was prepared. Our services were provided in a manner consistent with the level of care and skill ordinarily exercised by other professional consultants under similar circumstances. No other representation is intended.

Attachment F

Basin A Embankment Raise Construction Specifications

REPORT OF
GEOTECHNICAL INVESTIGATION
ASH PIT DIKE MODIFICATIONS
MIAMI FORT STATION
FOR THE
THE CINCINNATI GAS & ELECTRIC COMPANY

1976

BY
THE H. C. NUTTING COMPANY
CINCINNATI, OHIO

THE H. C. NUTTING COMPANY
GEOTECHNICAL AND TESTING ENGINEERS SINCE 1921
4120 AIRPORT ROAD · CINCINNATI, OHIO 45226 · TEL. 513-321-5816

May 17, 1976

Order No. 373.175 bj

The Cincinnati Gas & Electric Company
P.O. Box 960
Cincinnati, Ohio 45201

Attn: Mr. R. J. VanVeen,
Principal Structural Engineer
General Engineering Department

Re: Ash Pit Dike Modifications
Miami Fort Station
Job E-6850
Order No. M-21170

Gentlemen:

Submitted herewith is our report of the investigation made for the reference project to establish geotechnical design requirements covering the grading needed to increase the top of the existing dike to a finished elevation of 510, an additional height of 10 ft. All work was accomplished in accordance with the above purchase order and included a series of conventional soil borings at mutually selected locations, laboratory tests, appropriate analysis and preparation of this report with findings and design recommendations. Specifications presenting recommended technical criteria is included in the appendix.

Our contract also included four borings along the bank of the Great Miami River, as preliminary exploration of a future ash pit dike location. Our comments and recommendations for the design investigation are also included.

All findings have been discussed with your Messrs. O. C. Brewer and Emmary Rader and are confirmed herein. In brief resume, our investigation has indicated suitable conditions to allow construction of the proposed embankment needed to increase the elevation of the existing dike, utilizing a composite section composed of bottom ash obtained from the existing lagoon and a surface cap of cohesive soil obtained from the

adjacent future ash pit area. Due to the low shear strength of the foundation materials nearest the river and a greater exposure to future erosion, ash has been excluded from this portion of embankment.

We appreciate this opportunity of consultation and we have experienced field personnel who can provide the quality assurance necessary during the future construction. In the event of question concerning our findings, the writer would be pleased to call upon you at your office to discuss the details presented herein.

Respectfully submitted,

THE H. C. NUTTING COMPANY

Merle F. Nethero

Merle F. Nethero, P.E.
Geotechnical Engineer

TABLE OF CONTENTS

	PAGE NO.
INTRODUCTION	1
INVESTIGATIONAL PROCEDURES	1
DISCUSSION	2
CONCLUSIONS AND RECOMMENDATIONS	3

APPENDIX I

SITE PLAN AND BORING SUMMARY PROFILES	PLATE I
TEST BORING REPORTS	HOLES 1-14, 5A

APPENDIX II

LABORATORY TEST DATA

APPENDIX III

GRADING SPECIFICATIONS

APPENDIX III

GRADING SPECIFICATIONS

GRADING SPECIFICATIONS
ASH PIT DIKE MODIFICATIONS
MIAMI FORT STATION
THE CINCINNATI GAS & ELECTRIC COMPANY

---

1. SCOPE

This specification describes the preliminary foundation preparation measures, selection and placement of borrow materials, methods of embankment construction, quality assurance requirements and related criteria governing the required grading as detailed in the project drawings and specifications.

2. FILL MATERIAL

All on-site available cohesive soils excluding the organic topsoil development are suitable for use in constructing the required embankment, subject to necessary adjustment in the natural water content prior to compaction. It is not intended that off-site borrow material will be required. The following tabulated data presents the results of laboratory Standard Proctor Moisture-Density Tests previously performed on suitable fill materials used at this station.

Material Description	Maximum Dry Density (PCF)	Optimum Water Content (%)
Brown Silty Clay	111.1	15.5
Brown Sandy Silt	112.9	12.0
Brown Silty Clay Loam	113.1	15.3
Brown Silt	110.2	16.0
Light Brown & Gray Sandy Silty Clay	109.7	16.8

Ash materials obtained from within the existing lagoon shall be used in embankment as shown on

the typical section (Plate D attached) and where indicated on the project drawings. Because of permeability and shear strength requirements, the first 5 ft. of ash (as minimum) shall be coarse textured "bottom ash", as obtained close to the discharge pipe within northeastern sections of the basin. The remaining portions of ash embankment shall be fly ash, bottom ash or combinations thereof, tending to select those materials which are more coarse textured and can be placed and compacted most expediently. Tabulated as follows are the results of Standard Proctor Moisture-Density Tests conducted on the ash obtained from boring 6.

Material Description	Maximum Dry Density (PCF)	Optimum Moisture Content (%)
Bottom Ash	110.6	11.6
Coarse Textured Fly Ash	102.2	14.0
Extreme Coarse Textured Bottom Ash	125.7	9.6
Extreme Fine Textured Ash	92.9	19.7

Additional samples of ash will have to be obtained and tested in the laboratory in conjunction with their project use.

3. PREPARATION OF Fill FOUNDATION

Prior to the placement of the first lift of compacted fill, all organic topsoil development must be undercut and removed, generally less than 6". Do not remove the underlying dark brown silt loam. Within northern areas at preliminary boring 14, limited areas of undercutting to a depth of 3 ft. will be required in order to remove soft recent organic sediments. The final limits of additional undercutting will be defined based upon the conditions existing at the time of the work.

Extreme southern areas contain a surface layer of bottom ash fill, placed as roadbed for perimeter

access. Undercutting of the existing ash is not necessary unless it has been placed over wood, organic sediments or debris. Sufficient test pits should be excavated with a small backhoe to establish suitability of the existing foundation materials and define areas of any necessary undercutting and replacement.

In conjunction with stripping all scrub trees growing on the existing dike shall be removed, presumably in conjunction with stripping of topsoil and grubbing of the general dike foundation area.

4. BENCHING

The exposed slope of the existing dike shall receive "nominal" benching in conjunction with lift construction, as the overall embankment increases in height. Nominal benching shall be as shown on the typical section (Plate D attached) and shall involve a maximum of 5 ft. of horizontal existing dike excavation.

Any evidence of seepage from the existing dike as exposed during the grading or benching operations must be carefully evaluated by the project Geotechnical Engineer and supplemental underdrainage measures designed and constructed. Typically, this will consist of additional use of more porous coarse textured bottom ash fill as a drainage blanket.

5. FILL PLACEMENT

Following preparation and approval of the fill foundation, approximate 8" thick lifts of coarse textured bottom ash shall be placed and compacted. Within the non-riverside areas of dike, the bottom 5 ft. as minimum shall consist of compacted lifts of coarse textured bottom ash. Within the designated areas nearest the river, only cohesive fill materials may be used which are placed in 8" thick compacted lifts. Where the transition in section occurs, the ash should increase in thickness in a northwesterly direction rather than utilizing an abrupt change.

6. COMPACTION

Each lift of fill shall be compacted until the minimum field density as established by conventional test methods is 98% of Standard Proctor Laboratory Moisture-Density, ASTM D 698. A sheepsfoot compactor, minimum 20 ton, either pulled or self-propelled shall be used for compacting all lifts of cohesive fill. Compaction of ash shall be accomplished with vibratory rollers, the size and vibrating frequency selected by the contractor as being most expedient for the rate of placement and moisture conditions involved.

7. MOISTURE CONTROL

The moisture content of the fill material at the time of compaction shall be within the "optimum" moisture range, generally taken as within 2% of laboratory optimum. Natural water content of the available cohesive borrow materials are generally 5 to 8% in excess of laboratory optimum indicating drying will be required.

The ash borrow materials will be obtained from within the existing basin. Ideally, the outlet level should be lowered at the earliest possible date to allow drainage to occur. Procedures must be worked out between the contractor and the owner whereby the initially desired bottom ash and subsequently mixtures of fly ash and bottom ash can be removed, placed on the fill area, stockpiled or otherwise handled. It is essential that drying be induced and expedited as much as possible.

In the event rainfaill or excess natural moisture produces a moisture content beyond the optimum range, drying by discing shall be achieved in advance of compaction.

8. SEASONAL LIMITS

No fill material shall be placed, spread or compacted during unfavorable weather. When the work is interrupted by rain, fill operations shall not be resumed until the owner's representative indicates that the moisture content and

density of the previously placed fill are as specified. In the event winter construction is involved, no fill shall be placed during freezing or thawing conditions.

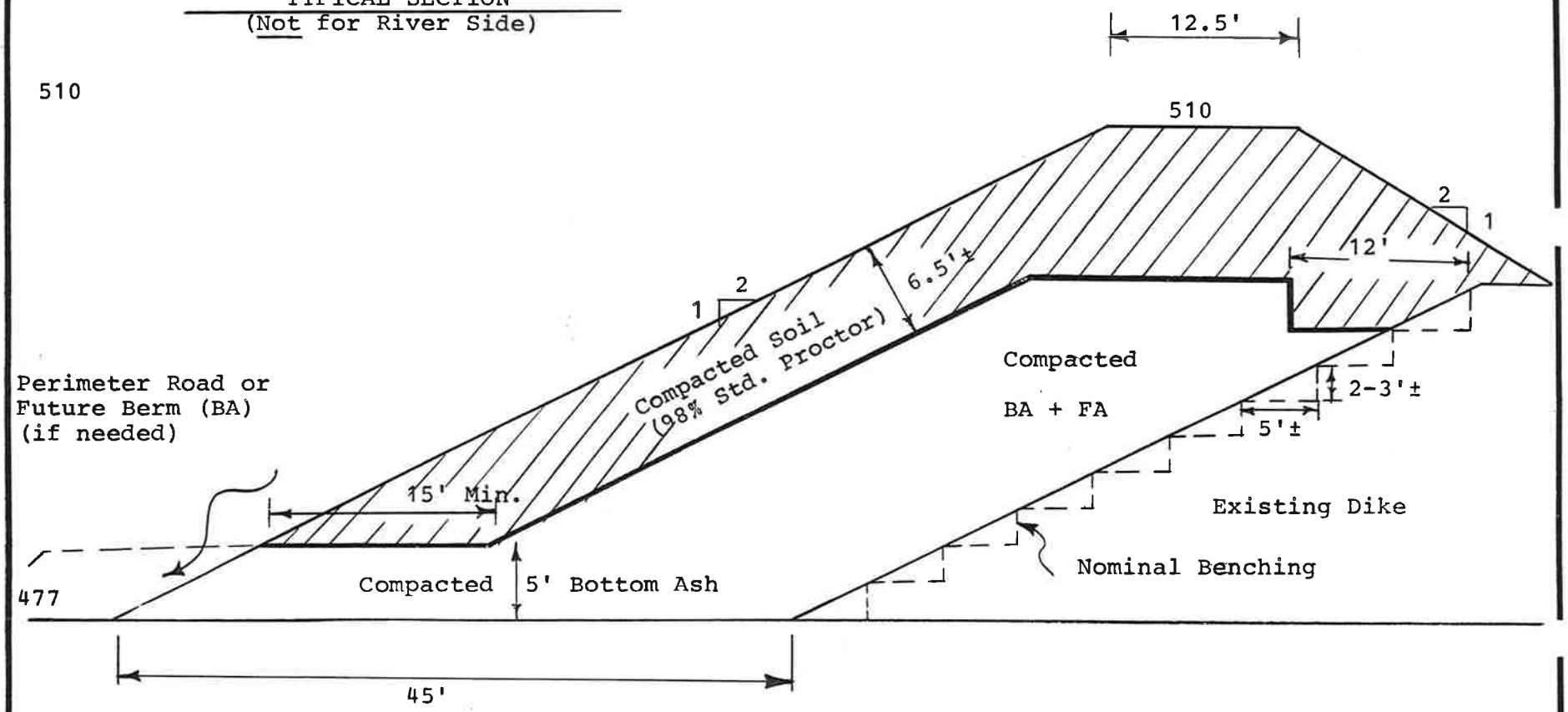
9. QUALITY ASSURANCE INSPECTION AND TESTS

Full-time inspection will be provided by the owner's representative beginning with the initial stripping of the foundation to receive fill and terminating following completion of final grade. It shall be the technician's responsibility to determine whether the materials, procedures and moisture conditions fulfill the requirements of these specifications, directing and approving all necessary changes. Sufficient tests shall be made on a given lift of compacted fill to establish compliance. Any areas failing to comply with the specified density shall be reworked and retested as necessary to demonstrate full compliance of the final embankment.

10. CONTROLLED RATE OF FILL PLACEMENT AND MONITORING OF FOUNDATION PERFORMANCE - RIVERSIDE DIKE

Due to the more critical foundation stability within that portion of cohesion dike nearest the river, the rate of fill placement shall be limited to a maximum of 1 ft. per day or 5 ft. per week, whichever is greater. Prior to placing fill, stakes shall be placed just beyond the toe of embankment on 25 ft. spacing throughout the approximate 300 ft. long section nearest the riverbank. Stakes should project approximately 2 ft. above grade and 30" below, having approximate 1" x 2" dimensions and some convenient reference for monitoring horizontal and vertical movement. Readings shall be recorded weekly by the project surveyor, and at adjusted intervals based upon the results obtained.

TYPICAL SECTION
(Not for River Side)



Scale 1" = 10'

THE H. C. NUTTING COMPANY
SOILS AND FOUNDATIONS ENGINEERS
AIRPORT ROAD, CINCINNATI, OHIO 45226

PLATE D

Attachment G

Operation Maintenance Manual and Emergency Action Plan

MIAMI FORT ASH POND A & B

OPERATION MAINTENANCE MANUAL AND EMERGENCY ACTION PLAN

(PURSUANT TO OAC RULE 1501:21-21-03)

(A) Operation Plan

Ash Ponds A & B are used as settling ponds for coal ash.

(B) Scheduled Maintenance Program

A regular vegetation management program is followed to ensure that visual inspections can be completed without hindrance. Repairs are completed as needed as part of a regular maintenance program.

(C) Inspection and Monitoring Program

Ash Ponds A & B are visually inspected weekly and monthly by Ash Management personnel and records are made of those inspections. Attached are copies of the inspection forms. Any concerns and remedial actions are also noted on the inspection forms. Inspection forms are kept on file by Ash Management site representatives.

(D) Safe-rate Drawdown Procedure for the Reservoir

Not applicable

(E) Provisions for Periodic Inspection by a Qualified Engineer

Once a year a qualified engineer from the Station and/or Program Engineering will inspect Ash Ponds A & B.

(F) Emergency Action Plan

PURPOSE OF PLAN

The purpose of the Emergency Action Plan is to provide a written plan that personnel at the Miami Fort Station can readily utilize to aid them in determining an appropriate course of action if some degree of a slope failure is visually observed. This document is designed as a guideline for these personnel to use. Immediate decisions for any particular course of actions will be required by personnel based on their observations, experience and knowledge of the site conditions.

OBSERVATION OF CONDITIONS

LEVEL 1 - Tension cracks observed on the dike roadway or slope which were not present during the previous inspection.

LEVEL 2 - Tension cracks in excess of three inches wide observed on the dike roadway or slope which were not present during the previous inspection.

LEVEL 3 - Downward slope movement visually observed on the dike roadway or slope which was not present during the previous inspection.

LEVEL 4 - Volumes of water/material are in transport (i.e. piping). Visual observations indicate that slope failure may be imminent.

COURSE OF ACTION

LEVEL 1 -
1. Notify Ash Management site representative

LEVEL 2 -
1. Notify Ash Management site representative as soon as possible
2. The tension cracks should be clearly marked with spray paint and/or staked and the slope should be monitored at least once a day for any further movement.

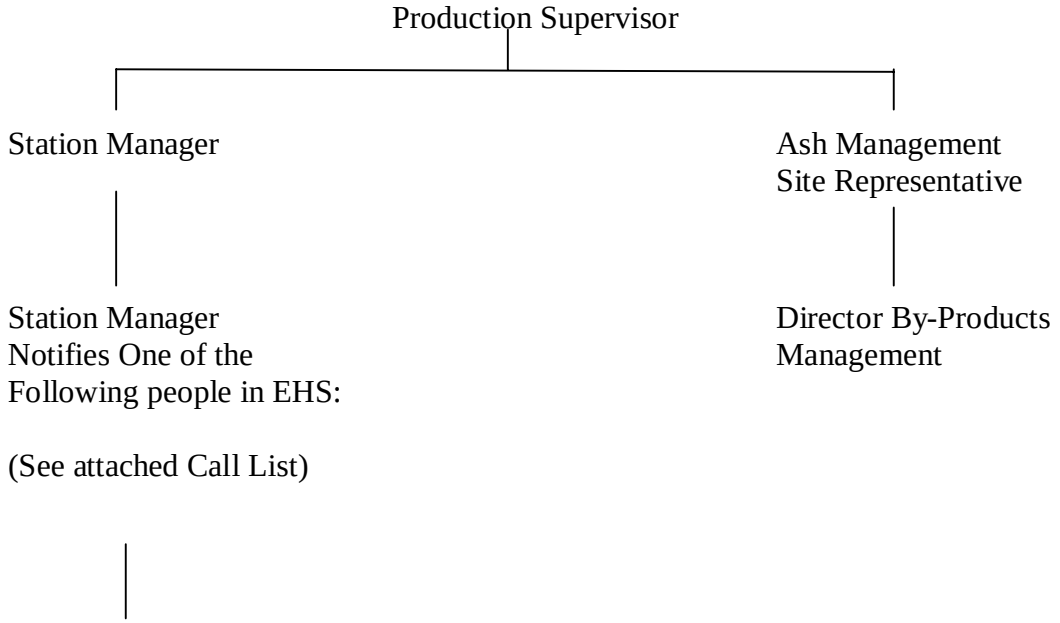
LEVEL 3 -
1. Notify Ash Management site representative as soon as possible
2. The downward movement of the slope should be clearly marked with spray paint and/or staked
3. Markers should be installed and surveyed as soon as possible. The slope should be monitored at least twice a day for any further movement.

LEVEL 4 -
1. Notify the Production Supervisor immediately that a slope failure may be imminent and request immediate evacuation of all personnel from the affected area as well as any adjacent areas that may be affected by a dam breach. No personnel shall enter the embankment area until visual observations indicate slope failure will not occur in the near future, the downward slope movement has ceased and the area appears secured.
2. Notify Ash Management site representative.
3. Notify Environmental, Health and Safety representative.

LEVEL 4 NOTIFICATION

CONTACT THE GENERAL Production Supervisor
IMMEDIATELY AT 513-287-5042

PRODUCTION SUPERVISOR SHALL CONTACT ALL THE FOLLOWING PEOPLE



Environmental Services Notifies:

Ohio Department of Natural Resources
Division of Water
Dam Permits and Hydraulics Section
(24 hour Emergency number – 614-799-9538)

And

Writing Per OAC 1501:21-15.01 and Ohio EPA

DUKE ENERGY SPILL/RELEASE CONTACTS – OHIO & KENTUCKY
11/3/2010

1. Environmental Staff

The following contact list should be used by Duke Energy facilities in Ohio and Kentucky to notify corporate Environmental staff in the event of a reportable oil or chemical release to the environment.

If a reportable release occurs, please contact a member of the Environmental staff, regardless of the time of day, using the following call list. Start at the top of the list and continue calling until you have reached one of the people listed below. DO NOT leave a message.

	Office	Home	Mobile
Rhonda Herzog	513-287-3424	859-363-1767	513-543-0249
Pat Coyle	513-287-2268	513-877-2122	513-509-0040
Randy Born	513-287-3234	859-261-1678	513-260-1679
Tammy Jett	513-287-2208	513-738-0203	513-659-9198
Kerri Buhrlage	513-287-2414	513-385-1235	513-673-4738
John Pike	317-838-6218	317-539-7529	317-431-5488
Bill Taylor	317-838-1711	317-796-6572 (cell)	317-796-6572
Mike Judd	317-838-1729	317-272-0803	317-670-5038
Pat McKee	317-838-1194	317-745-4428	317-430-2764
Debbie Nispel	317-838-1957	765-653-6542	765-720-2077

2. Corporate Communications

If the release could cause concern to the public or involve the news media, Duke Energy's media relations staff should be contacted as soon as possible, regardless of the time of day.

Call: 888-266-3853 (DUKE) or 704-382-9152

You will be asked to leave a voicemail message with the following information:

- Your name
- A telephone number where you can be reached
- A brief description of the event.

Someone from media relations will return your call within 30 minutes. If your call is not returned within 30 minutes, please call 980-373-6040 and have them page the corporate communication duty person.

DUKE ENERGY
MONTHLY DAM INSPECTION CHECKLIST

NAME OF STATION: **COUNTY, ST:**
INSPECTOR: **INSPECTION DATE:**
WEATHER: **AMT OF RAINFALL IN LAST 24 HOURS:**

Pool Level
Primary Pond Level:

Interior Slope	**Yes**	**No**	**N/A**	**Monitor**	**Repair**	**Evaluate**
Are there any cracks, slides or erosion?	☐	☐	☐	☐	☐	☐
Are there any rodent burrows or depressions?	☐	☐	☐	☐	☐	☐
Is there vegetation or sediment in the riprap?	☐	☐	☐	☐	☐	☐
Is there vegetation greater than 2 inch diameter?	☐	☐	☐	☐	☐	☐
Comments:						
Crest	**Yes**	**No**	**N/A**	**Monitor**	**Repair**	**Evaluate**
Are there large cracks?	☐	☐	☐	☐	☐	☐
Are there low areas or potholes?	☐	☐	☐	☐	☐	☐
Is there vegetation greater than 2 inch diameter?	☐	☐	☐	☐	☐	☐
Comments:						
Exterior Slope	**Yes**	**No**	**N/A**	**Monitor**	**Repair**	**Evaluate**
Are there cracks, slides or erosion?	☐	☐	☐	☐	☐	☐
Are there rodent burrows or depressions?	☐	☐	☐	☐	☐	☐
Is the grass cover in good condition?	☐	☐	☐	☐	☐	☐
Are there areas of seepage?	☐	☐	☐	☐	☐	☐
Is there vegetation greater than 2 inch diameter?	☐	☐	☐	☐	☐	☐
Comments:						
Outlet Structure (Discharge Tower)	**Yes**	**No**	**N/A**	**Monitor**	**Repair**	**Evaluate**
Are the valves and operators in good condition?	☐	☐	☐	☐	☐	☐
Is the system operable?	☐	☐	☐	☐	☐	☐
Is the outlet structural material in good condition?	☐	☐	☐	☐	☐	☐
Is the walkway to the outlet in good condition?	☐	☐	☐	☐	☐	☐
Comments:						
Emergency Spillway (If applicable)	**Yes**	**No**	**N/A**	**Monitor**	**Repair**	**Evaluate**
Are there cracks or slides in the spillway?	☐	☐	☐	☐	☐	☐
Are there any points of erosion around or along the spillway?	☐	☐	☐	☐	☐	☐
Piezometers	**Yes**	**No**	**N/A**	Monitor		
Are all Piezometers working properly?	☐	☐	☐	☒		
Comments:						
Monitoring Wells	**Yes**	**No**	**N/A**	Monitor		

Are all monitoring wells working properly?	☐	☐	☐	☒
Comments:				
Drains	**Yes**	**No**	**N/A**	Monitor
Are all drains working properly?	☐	☐	☐	☒
Comments:				
Survey Monuments	**Yes**	**No**	**N/A**	Monitor
Are all survey monuments in place?	☐	☐	☐	☒
Comments:				

2" Rainfall Inspection	Yes/No	Date(s)	Comments
Has a 2" rain event occurred during the month			

Post Pictures Here:

SIGNATURE _____
DATE _____

I hereby certify that I have reviewed the following checklist and have taken the appropriate action(s) to remediate any areas that may cause harm to the structural integrity of the dam.

REVIEWED BY _____
DATE _____

ANNUAL DAM INSPECTION CHECKLIST
Duke Energy
Program Engineering

NAME OF FACILITY:
LOCATION: **Municipality:** **County:**
CLASSIFICATION DATA: **Size:** **Hazard:**

PHYSICAL DATA:
Type of Dam: _____ **Height of Dam:** _____ **Normal Pool Storage Capacity:** _____

OPERATOR: _____
ADDRESS: _____ _____
PHONE: (___)-___-_____ **FAX NO.:** (___)-___-_____ **E-MAIL ADDRESS:** _____

PERSONS PRESENT AT INSPECTION:

Name	**Title/Position**	**Representing**
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

DATE OF INSPECTION: ____/_____/_____

WEATHER: _____

TEMPERATURE: _____

This is to certify that the above dam has been inspected and the following are the results of this inspection.

_____ _____
Date

NAME OF DAM:		DATE:

ITEM	CONDITION	COMMENTS	MONITOR	REPAIR	EVALUATE
EMBANKMENT: CREST					
1	Surface Cracking		☐	☐	☐
2	Sinkhole, Animal Burrow		☐	☐	☐
3	Low Area(s)		☐	☐	☐
4	Horizontal Alignment		☐	☐	☐
5	Ruts and/or Puddles		☐	☐	☐
6	Vegetation Condition		☐	☐	☐
7	Warning Signs		☐	☐	☐
8			☐	☐	☐
Additional Comments (Refer to item number if applicable):					
EMBANKMENT: UPSTREAM FACE					
10	Slide, Slough, Scarp		☐	☐	☐
11	Slope Protection		☐	☐	☐
12	Sinkhole, Animal Burrow		☐	☐	☐
13	Emb.-Abut. Contact		☐	☐	☐
14	Erosion		☐	☐	☐
15	Vegetation Condition		☐	☐	☐
17			☐	☐	☐
Additional Comments (Refer to item number if applicable):					
EMBANKMENT: DOWNSTREAM FACE					
18	Wet Area(s) (No Flow)		☐	☐	☐
19	Seepage		☐	☐	☐
20	Slide, Slough, Scarp		☐	☐	☐
21	Emb. - Abut. Contact		☐	☐	☐
22	Sinkhole, Animal Burrow		☐	☐	☐
23	Erosion		☐	☐	☐
24	Unusual Movement		☐	☐	☐
25	Vegetation Control		☐	☐	☐
26			☐	☐	☐
27			☐	☐	☐
Additional Comments (Refer to item number if applicable):					

NAME OF DAM:		DATE:

ITEM	CONDITION	COMMENTS	MONITOR	REPAIR	EVALUATE
EMBANKMENT: INSTRUMENTATION					
28	Piezometers/Observ. Wells		☐	☐	☐
29	Staff Gauge and Recorder		☐	☐	☐
30	Weirs		☐	☐	☐
31	Survey Monuments		☐	☐	☐
32	Drains		☐	☐	☐
33	Low Flow Release		☐	☐	☐
34	Frequency of Readings		☐	☐	☐
35	Location of Records		☐	☐	☐
36			☐	☐	☐
37			☐	☐	☐
Additional Comments (Refer to item number if applicable):					
DOWNSTREAM AREA					
38	Abutment Leakage		☐	☐	☐
39	Foundation Seepage		☐	☐	☐
40	Slide, Slough, Scarp		☐	☐	☐
41	Drainage System		☐	☐	☐
42	Boils		☐	☐	☐
43	Wet Areas		☐	☐	☐
44	Reservoir Slopes		☐	☐	☐
45	Access Roads		☐	☐	☐
46	Security Devices		☐	☐	☐
47	Signs and Buoys		☐	☐	☐
48			☐	☐	☐
49			☐	☐	☐
Additional Comments (Refer to item number if applicable):					
SPILLWAYS: ERODABLE CHANNEL					
50	Slide, Slough, Scarp		☐	☐	☐
51	Erosion		☐	☐	☐
52	Vegetation Condition		☐	☐	☐
53	Debris		☐	☐	☐
54			☐	☐	☐
55			☐	☐	☐
Additional Comments (Refer to item number if applicable):					

NAME OF DAM:		DATE:

ITEM	CONDITION	COMMENTS	MONITOR	REPAIR	EVALUATE
SPILLWAYS: NON-ERODABLE CHANNEL					
56	Sidewalls		☐	☐	☐
57	Channel Floor		☐	☐	☐
58	Unusual Movement		☐	☐	☐
59	Approach Area		☐	☐	☐
60	Weir or Control		☐	☐	☐
61	Discharge Channel		☐	☐	☐
62	Boils or Bimps		☐	☐	☐
63			☐	☐	☐
64			☐	☐	☐
Additional Comments (Refer to item number if applicable):					
SPILLWAYS: DROP INLET					
65	Intake Structure		☐	☐	☐
66	Trashrack		☐	☐	☐
67	Stilling Basin		☐	☐	☐
68			☐	☐	☐
69			☐	☐	☐
Additional Comments (Refer to item number if applicable):					
OUTLET					
70	Intake Structure		☐	☐	☐
71	Trash rack		☐	☐	☐
72	Stilling Basin		☐	☐	☐
73	Primary Closure		☐	☐	☐
74	Secondary Closure		☐	☐	☐
75	Control Mechanism		☐	☐	☐
76	Outlet Pipe		☐	☐	☐
77	Outlet Tower		☐	☐	☐
78	Outlet Structure		☐	☐	☐
79	Seepage		☐	☐	☐
80	Unusual Movement		☐	☐	☐
Additional Comments (Refer to item number if applicable):					

NAME OF DAM:		DATE:

ITEM	CONDITION	COMMENTS	MONITOR	REPAIR	EVALUATE
RESERVOIR AREA					
81	Sedimentation		☐	☐	☐
82	Slope Stability		☐	☐	☐
83	Sinkholes		☐	☐	☐
84	Fractures		☐	☐	☐
85	Unwanted Growth		☐	☐	☐
86	Storage Gage		☐	☐	☐
Additional Comments (Refer to item number if applicable):					

Final Comments:

DAM Inspection CHECKLIST
Duke Energy
Program Engineering

NAME OF DAM:	

This is to certify that both the Downstream Hazard Description is accurate and the Posted Notice locations listed below have been inspected and the following are the results of these inspections.

Name of Dam Owner	Signature of Dam Owner	Date

This Dam Owners Notice Checklist is to accompany the Inspection Checklist filed by the Engineer.

EMERGENCY ACTION PLAN

Date of Last Update of Emergency Plan:	

Downstream Hazard Description, additionally, specify any new developments, structures, etc. downstream within the inundation area:

Action Items

ITEM #	DATE INSPECTED	LOCATION	COMMENTS	EXISTING	MISSING	REPLACED
				☐	☐	☐
				☐	☐	☐
				☐	☐	☐
				☐	☐	☐
				☐	☐	☐
				☐	☐	☐
				☐	☐	☐
				☐	☐	☐

Additional Comments (Refer to item number if applicable):