History of Construction
Dolet Hills Ash Basin 2

CLECO Corporation

Dolet Hills Power Station
Project No. 90965

Revision 0
10/13/2016

History of Construction
Dolet Hills Ash Basin 2

prepared for

CLECO Corporation
Dolet Hills Power Station
DeSoto Parish, Louisiana

Project No. 90965

Revision 0
10/13/2016

prepared by

Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri

INDEX AND CERTIFICATION

CLECO Corporation
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Report Index

Certification

I hereby certify, as a Professional Engineer in the state of Louisiana, that the information in this document was assembled under my direct personal charge. This report is not intended or represented to be suitable for reuse by the CLECO Corporation or others without specific verification or adaptation by the Engineer.

This document has been digitally sealed and signed. October 13, 2016.

Randell L Sedlacek, P.E.
Louisiana License #38408

Date: 10/13/16

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LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
BMcD	Burns & McDonnell
CCR	Coal Combustion Residual
CFR	Code of Federal Regulations
CLECO	CLECO Corporation
CY	Cubic Yards
Dolet Hills	Dolet Hills Power Station
EPA	Environmental Protection Agency
GPM	Gallons per Minute
HUC	Hydrologic Unit Code
LSU	Louisiana State University
U.S.C	United States Code
USGS	United States Geological Survey

1.0 INTRODUCTION

On April 17, 2015, the Environmental Protection Agency (EPA) issued the final version of the federal Coal Combustion Residual (CCR) Rule to regulate the disposal of CCR materials generated at coal-fired units. The rule will be administered as part of the Resource Conservation and Recovery Act [RCRA, 42 United States Code (U.S.C.) §6901 et seq.], using the Subtitle D approach.

The existing CCR units at CLECO Corporation's (CLECO's) Dolet Hills Power Station (Dolet Hills) are subject to the CCR Rule, and as such CLECO must compile a History of Construction for each of the units per 40 CFR §257.73(c). This report serves as the History of Construction for Ash Basin 2 at Dolet Hills.

This history of construction is in addition to, not in place of, any other applicable site permits, environmental standards, or work safety practices.

2.0 PLAN OBJECTIVES

Per 40 CFR §257.73(c), the History of Construction must contain, to the extent feasible, the following items:

- The name and address of the owner/operator of the CCR unit, the name of the CCR unit, and the identification number of the CCR unit
- The location of the CCR unit on most recent United States Geological Survey (USGS) 7½ minute or 15 minute topographical map
- A statement of the purpose for which the CCR unit is being used
- The name and size of watershed within which the CCR unit is located
- A description of the physical and engineering properties of the foundation and abutment materials on which the CCR unit is constructed
- 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 or stage of the CCR unit; and the approximate dates of construction of each successive stage of construction of the CCR unit.
- Detailed dimensional drawings of the CCR Unit, including the following:
  - Plan view and cross sections of the length and width of the CCR unit
  - Foundation improvements
  - Drainage provisions, spillways, diversion ditches, outlets
  - Instrumentation locations
  - Slope protection
  - Normal operating pool surface elevation
  - Maximum pool surface elevation following peak discharge from the inflow design flood
  - Expected maximum depth of CCR within the unit
  - Any identifiable natural or manmade features that could adversely affect operation of the CCR unit due to malfunction or mis-operation
- A description of the type, purpose, and location of existing instrumentation
- Area-capacity curves for the CCR unit
- A description of each spillway and diversion design features and capacities and calculations used in their determination
- The construction specifications and provisions for surveillance, maintenance, and repair of the CCR unit
- Any record or knowledge of structural instability of the CCR unit.

3.0 HISTORY OF CONSTRUCTION

Section	CCR Rule Description	Included	Information	Source
40 CFR §257.73 (c)(1) (i)	Name and address of the owner/operator of the CCR unit	Y	Cleco Corporation 2030 Donahue Ferry Road P.O. Box 5000 Pineville, LA 71361-5000	Owner
	Name of the CCR units	Y	Ash Basin 2	Owner
	Identification number of the CCR unit	Y	P-0037 (permit number)	Owner
40 CFR §257.73 (c)(1) (ii)	Location of the CCR unit on most recent United States Geological Survey (USGS) 7½ minute or 15 minute topographical map	Y	See Appendix A	USGS Map
40 CFR §257.73 (c)(1) (iii)	Statement of the purpose for which the CCR unit is being used	Y	Receives primarily bottom ash sluice water, as well as other plant inflows including Sanitary Sewage Treatment Plant and demineralizer flush effluent. Basins 1 and 2 are designed to be alternately filled and cleaned with only one in service at a time.	Permit
40 CFR §257.73 (c)(1) (iv)	Name and size of watershed within which the CCR unit is located	Y	HUC12 = 111402060602 Bayou Pierre Lake Watershed Area = 18,174 acres Only approximately 119 acres of this overall watershed actually contributes runoff to Ash Basin 2.	HUC 12 Mapping LSU AGCenter.com
40 CFR §257.73 (c)(1) (v)	Description of the physical and engineering properties of the foundation and abutment materials on which the CCR unit is constructed	Y	Foundations soils consist of stiff silty clay underlain by dense silty sand or hard silty clays. Isolated areas of higher permeability materials were covered with cohesive material having a permeability no greater than $1x10^{-7}$ cm/s. See Appendix C	Permit
40 CFR §257.73 (c)(1) (vi)	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	Y	Embankments and linings constructed of on-site clay from the Secondary Pond and Ash Basin areas, as well as elsewhere on site. In-situ cohesive materials varied between liquid limit of 23-65 and plasticity index of 6-44. See Appendix C	Permit
	The method of site preparation and construction of each zone or stage of the CCR unit	Y	Pond constructed in cross-valley configuration. Embankments compacted to a min 90% modified Proctor dry density per ASTM D1557. See Appendix C	Permit
	The approximate dates of construction of each successive stage of construction of the CCR unit	Y	Permit received Nov. 1985, operational in 1986 No major construction modifications have been made since.	Permit Drawings / Owner
40 CFR §257.73 (c)(1) (vii)	Detailed dimensional drawings including the following:			
	Plan view and cross sections of the length and width of the CCR unit	Y	See Appendix D	Permit
	Foundation improvements	N	N/A	Permit

Section	CCR Rule Description	Included	Information	Source
	Drainage provisions, spillways, diversion ditches, outlets	Y	See Appendix E	Permit
	Instrumentation locations	Y	See Appendix F	Permit
	Slope protection	Y	Exterior Slope: 3:1, Vegetated Interior Slope: 3:1, Vegetated above EL 243.5 and riprap 3' above and below EL 240.5	Permit / Design Drawings
	Normal operating pool surface elevation	Y	Maximum operating level at EL 240.5. Normal operating level not found in records review. See Appendix D	Permit / Design Drawings / Owner
	Maximum pool surface elevation following peak discharge from the inflow design flood	Y	Maximum pool surface level at EL 244.4 following peak discharge from the inflow design flood, assuming pond is 50% full of ash to top of dike and initial water level of EL 240.5.	Inflow Design Flood Control System Plan, Oct. 2016
	Expected maximum depth of CCR within the unit	Y	Maximum ash level at EL 240.5. Depth of CCR is approximately 25.5 feet. See Appendix D	Permit / Design Drawings
	Any identifiable natural or manmade features that could adversely affect operation of the CCR unit due to malfunction or mis-operation	N	N/A	
40 CFR §257.73 (c)(1) (viii)	Description of the type, purpose, and location of existing instrumentation	Y	Monitoring Wells - background and compliance monitoring. See Appendix F for locations. Surface water level gauge (measured manually at weir box location)	Permit / Owner
40 CFR §257.73 (c)(1) (ix)	Area-capacity curves for the CCR unit	Y	See Appendix B	Measured in CAD based on Construction Drawings / aerial imagery
40 CFR §257.73 (c)(1) (x)	Description of each spillway and diversion design features and capacities and calculations used in their determination	Y	Auxiliary Spillway - EL 243.5 (designed for excess rainfall from the 100-yr flood) Weir Box - conveys overflow from normal operating procedures to Secondary Pond See Appendix E for details	Permit
40 CFR §257.73 (c)(1) (xi)	Construction specifications	N	Not found in records review	
	Provisions for surveillance, maintenance, and repair of the CCR unit	Y	Weekly and Annual Inspections per 40 CFR §257.83.	
40 CFR §257.73 (c)(1) (xii)	Any record or knowledge of structural instability of the CCR unit	N	N/A	

APPENDIX A – USGS TOPOGRAPHICAL MAP

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

BAYOU PIERRE LAKE QUADRANGLE
LOUISIANA
7.5-MINUTE SERIES

ASH BASIN 2

ASH BASIN 1

DOLET HILLS

Produced by the United States Geological Survey

North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid: Universal Transverse Mercator, Zone 15S
10 000-foot ticks: Louisiana Coordinate System of 1983 (north zone)

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery.....NAIP, July 2013
Roads.....HERE, ©2013 - 2014
Names.....GNIS, 2015
Hydrography.....National Hydrography Dataset, 2013
Contours.....National Elevation Dataset, 2011
Boundaries.....Multiple sources; see metadata file 1972 - 2015
Public Land Survey System.....BLM, 2015

MN
GN
1° 37′ 29 MILS
0° 18′ 5 MILS
UTM GRID AND 2015 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000-m Square ID
VR
Grid Zone Designation 15S

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the
National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.18

LOUISIANA
QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

ADJOINING QUADRANGLES
1 Holly
2 Clear Lake
3 East Point
4 Mansfield
5 Harmon
6 Trenton
7 Pelican
8 Evelyn

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

BAYOU PIERRE LAKE, LA
2015

NSN. 7643016368709
NGA REF NO. USGSX24K2751

APPENDIX B – AREA-CAPACITY CURVE


Dolet Hills - Ash Basin 2
Elevation (ft)
250
245
240
235
230
225
220
215
210
0
50
100
150
200
250
300
350
400
450
500
Storage Capactiy (ac-ft)

APPENDIX C – GEOLOGIC DATA

Laboratory permeability tests on ten cohesive soil samples from the basin area were performed, and the results are summarized in Table ABS 6.4.3.B-4.1. The liquid limit and the plasticity indices of in situ cohesive soils in the Ash Basin No. 1 area vary from 29 to 74 and 10 to 51, respectively, and the results are included in Table ABS 6.4.3.B.4-1.

Ash Basin No. 2

a. A plan view and cross-sections through the dike and the basin are shown in Exhibits ABS 6.4.3.B.1-1 and ABS 6.4.3.B.1-2. These exhibits include illustration of soil types and other general features of Ash Basin No. 2.

b. Twenty-two soil borings, B-3, B-53 through B-57, B-67 through B-76, and E-9 through E-14, were drilled in the Ash Basin No. 2 area. The locations of these borings are shown in Exhibit ABS 6.4.3.B.1-1 and the logs of these borings are presented in Appendix A.

c. Laboratory tests were performed on soil samples obtained from this basin area and the results are summarized in Table ABS 6.4.3.B.4-2. Based on the information obtained from the boring logs and laboratory test results, the subsurface conditions in the basin area consist of stiff silty clay underlain by dense silty sand or hard silty clays. These silty clay deposits, in some locations, are overlain by approximately 2' of red, expansive silty to sandy clays. These surface soil deposits are underlain by hard, silty clays of the Porters Creek Formation which is approximately 800' thick.

   As described above, the entire basin is located over impermeable cohesive soil deposits except in a few isolated instances. The log of Boring B-53 shows only one foot of clay material at the surface and the logs of Borings B-69 and B-71 show no clay at the surface.

Table ABS 6.4.3.B.4-2(Page 1 of 4)

SUMMARY OF LABORATORY TEST RESULTS OF
SOIL BORING SAMPLES RELATED TO ASH BASIN - 2

Boring Number	Sample Number	Sample Depth (Ft)	Particle Size Analysis (% Passing)				Atterberg Limits			Unified Soil Classification System	Water Content (%)	Dry Unit Weight (Pcf)	Laboratory Permeability (k,cm/sec)	Unconfined Compressive Strength q_u (Ksf)
			No. 4 Sieve	No.10 Sieve	No. 40 Sieve	No. 200 Sieve	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)					
B-3	SS-2	6.5-8.0			98	26				SM	9.9			
B-7	SS-2	14.5-16.0			100	54				SM	24.6			
B-53	ST-2	2.0-4.0			100	30	30	21	9	SC	13.7	113		
	SS-4	6.5-8.0			98	20				SM	12.0			
	PB-8	23.0-25.0			100	99	45	19	26	CL	22.0 22.4	101 106	3.9×10^{-8}	12.6
B-54	ST-2	2.0-4.0			96	87	55	18	37	CH	26.0	96		
	ST-4	6.0-8.0			100	99	65	21	44	CH	20.2 32.0	109 90	1.8×10^{-8}	
	SS-5	8.5-10.0			100	48				SM	31.0 27.9	97	4.1×10^{-8}	
B-55	ST-2	2.0-4.0			99	60	25	17	8	CL	15.0 15.3	108 110	3.1×10^{-8}	
	SS-5	8.5-10.0			100	99	45	21	24	CL	25.3			
	PB-9	28.0-30.0			100	100	50	19	31	CL-CH	24.0 24.0	105 102	3.8×10^{-9}	

Table ABS 6.4.3.B.4-2(Page 2 of 4)
SUMMARY OF LABORATORY TEST RESULTS OF
SOIL BORING SAMPLES RELATED TO ASH BASIN - 2

Boring Number	Sample Number	Sample Depth (Ft)	Particle Size Analysis (% Passing)				Atterberg Limits			Unified Soil Classification System	Water Content (%)	Dry Unit Weight (Pcf)	Laboratory Permeability (k, cm/sec)	Unconfined Compressive Strength q_u (Ksf)
			No. 4 Sieve	No.10 Sieve	No. 40 Sieve	No. 200 Sieve	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)					
B-56	ST-2	2.0-4.0			100	51				CL	15.4	111		
	PB-6	13.0-15.0			100	99	50	20	30	CL-CH	25.0 25.3	99 102	4.8×10^{-9}	11.5
	PB-10	33.0-35.5			100	100	47	19	28	CL	21.7	110	8.6×10^{-9}	10.4
B-57	ST-2	2.0-4.0			100	61	29	20	9	CL	16.1	108		
	ST-6	13.0-15.0			100	97	45	21	24	CL	25.1	96	2.6×10^{-8}	
	PB-8	23.0-25.0			100	100	46	19	27	CL	24.0	105		11.5
E-9	ST-3	4.0-6.0			98	72	47	20	27	CL	23.0	94	6.1×10^{-8}	
E-10	ST-3	4.0-6.0			100	94	43	20	23	CL	23.0	94	3.8×10^{-8}	
E-11	ST-3	4.0-6.0				47	30	19	11	SC	15.4	116		3.8
	ST-5	8.0-10 0				52	27	17	10	CL	27.0			
	ST-6	13.0 15.0			100	98				CL	15.0	116	6.6×10^{-8}	
E-12	ST-4	6.0-8.0				97	52	20	32	CH	16.0	116	4.1×10^{-8}	
	ST-6	13.0-15.0				97	50	19	31	CL-CH	23.4			
	ST-8	23.5-25.0				100	50	20	30	CL-CH	22.8			
E-13	ST-2	2.0-4.0				97	48	20	28	CL	20.3	95		4.8
	ST-5	8.0-10.0				97	45	20	25	CL	26.9	94		
	SS-6	13.5-15.0			100	97	45	20	25	CL	23.8			
	SS-8	23.5-25.0			100	98				CL	27.6			

Table ABS 6.4.3.B.4-2 (Page 3 of 4)
SUMMARY OF LABORATORY TEST RESULTS OF
SOIL BORING SAMPLES RELATED TO ASH BASIN - 2

Boring Number	Sample Number	Sample Depth (Ft)	Particle Size Analysis (% Passing)				Atterberg Limits			Unified Soil Classification System	Water Content (%)	Dry Unit Weight (Pcf)	Laboratory Permeability (k,cm/sec)	Unconfined Compressive Strength q_u (Ksf)
			No. 4 Sieve	No.10 Sieve	No. 40 Sieve	No. 200 Sieve	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)					
E-14	ST-2	2.0-4.0	100	99	98	51	38	19	19	CL	11.0	104	4.1×10^{-8}	4.9
	ST-3	4.0-6.0	100	100	99	12				SP-SM				
	ST-4	8.5-10.0	100	100	100	27				SM				
B-67	ST-2	2.0-4.0			100	96	55	22	33	CH	21.5	106	2.6×10^{-9}	
	ST-3	4.0-6.0			100	98	42	21	21	CL	21.0	98		
	ST-5	8.0-10.0				99	41	20	21	CL	24.5	99		
B-68	ST-2	2.0-4.0			100	62	34	19	15	CL	21.6	98	2.9×10^{-7}	
	SS-3	4.5-6.0				31				SM	15.9	100	1.4×10^{-7}	
	SS-4	6.5-8.0	98	97	96	21				SM	18.9			
	SS-5	8.5-10.0			100	23				SM	21.5			
B-69	ST-2	2.0-4.0			100	46	30	18	12	SC	19.7	105	1.4×10^{-8}	
	ST-3	4.0-6.0				38	29	17	12	SC	13.3	88		
	SS-4	6.5-8.0			100	41				SM	22.0			
	SS-5	8.5-10.0			100	44				SM	22.2			
B-70	ST-2	2.0-4.0			100	54	29	17	12	CL	20.9	105	1.8×10^{-8}	
	ST-3	4.0-6.0				46	35	18	17	SC	26.8	93		
	ST-5	8.0-10.0				99	55	22	33	CH	25.6	97		

Table ABS 6.4.3.B.4-2 (Page 4 of 4)
SUMMARY OF LABORATORY TEST RESULTS OF
SOIL BORING SAMPLES RELATED TO ASH BASIN - 2

Boring Number	Sample Number	Sample Depth (Ft)	Particle Size Analysis (% Passing)				Atterberg Limits			Unified Soil Classification System	Water Content (%)	Dry Unit Weight (Pcf)	Laboratory Permeability (k,cm/sec)	Unconfined Compressive Strength q_u (Ksf)
			No. 4 Sieve	No.10 Sieve	No. 40 Sieve	No. 200 Sieve	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)					
B-71	ST-1	0.0-2.0			100	20	23	17	6	SC	21.4	93		
	ST-2	2.0-4.0			100	38	26	17	9	SC	19.3	100	9.0×10^{-6}	
	SS-4	6.5-8.0			100	24	23	17	6	SC	20.7	-		
	SS-5	8.5-10.0			100	23	-	-	-	SM	24.4	-		
B-72	ST-2	2.0-4.0			100	66	40	19	21	CL	21.4	105	2.5×10^{-7}	
	ST-3	4.0-6.0			100	96	62	22	40	CH	24.3	95	9.0×10^{-8}	
	SS-4	8.5-10.0			100	99	50	20	30	CL-CH	22.3	102		
B-73	ST-2	2.0-4.0			100	75	44	21	23	CL	16.5	113.5	3.2×10^{-8}	
	ST-3	4.0-6.0			100	77	50	21	29	CL-CH	25.2	93		
	SS-4	6.5-8.0				23	26	17	9	SC	12.4	-		
B-74	ST-1	0.0-2.0			100	63	28	18	10	CL	21.4	101	1.2×10^{-7}	
	ST-3	4.0-6.0				47	33	19	14	SC	25.4	94	2.9×10^{-8}	
	ST-5	8.0-10.0				79	40	20	20	CL	27.8	89		
	SS-6	13.5-15.0			100	21	-	-	-	SCorSM	27.4	-		
B-75	ST-2	2.0-4.0			100	70	34	19	15	CL	22.4	89	9.5×10^{-7} (disturbed)	
	ST-3	4.0-6.0				53	34	18	16	CL	27.1	95	1.8×10^{-8}	
	ST-5	8.0-10.0				57	46	21	25	CL	20.8	97		
B-76	ST-2	2.0-4.0			100	98	56	21	35	CH	28.2	93	6.5×10^{-9}	
	ST-3	4.0-6.0				99	43	21	22	CL	26.8	92		
	ST-5	8.0-10.0				100	47	21	26	CL	23.8	101		

Boring B-53 is along the dike alignment (see Exhibits ABS 6.4.3.B.1-1 and ABS 6.4.3.B.1-2). Even though there is only one foot of CL material at this location, Borings B-67 and B-70, which are in the vicinity of Boring B-53, indicate 20' and 4' of CL at the surface, respectively.

Therefore, the thickness of the surface clays at Boring B-53 is an isolated condition. In addition, this area will be covered with cohesive material when the dike is constructed.

Boring B-69 indicates 6' of clayey fine sand (SC) material at the surface. However, the coefficient of permeability (k) of this material is 1.4×10^{-8} cm/sec (the requirement is $k \leq 1 \times 10^{-7}$ cm/sec). In addition to this very low k value, Borings B-73 ad B-68, which are in the vicinity of B-69, indicate 6' and 4' of CL material. Therefore, the soil conditions at Boring B-69 will not cause any problem with regard to contamination of groundwater. As part of the Construction Verification Program to be instituted by SWEPCO (see Appendix B), this area will be investigated to verify that a barrier equivalent to 3' of natural clay having a coefficient of permeability no greater than 1×10^{-7} cm/sec has been provided. If this investigation determines that any existing barrier material does not meet this permeability requirement, action will be taken to replace the unsuitable material with an acceptable non-synthetic lining material.

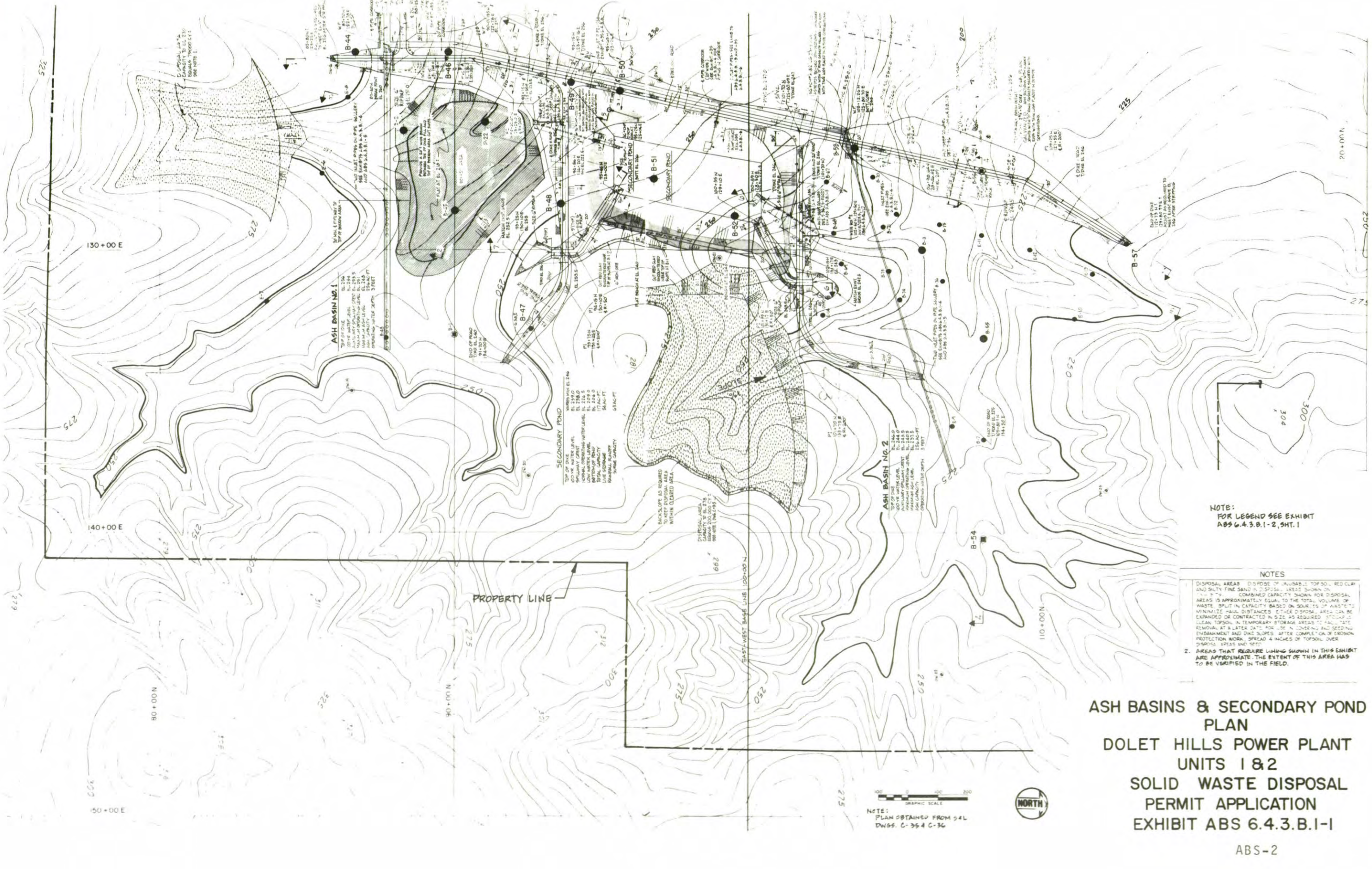
Boring B-71 indicates 8' of SC material with high k value (90×10^{-7} cm/sec). Two borings, B-72 and B-68, in the vicinity of Boring B-71, indicate 20' and 4' of clay (CL) material. Therefore, the surface soil condition at Boring B-71 is an isolated condition. As part of the Construction Verification Program (see Appendix B) this area will be investigated to verify that a barrier equivalent to 3' of natural clay having a coefficient of permeability no greater than 1×10^{-7} cm/sec has been provided. If this investigation determines that any existing barrier material does not meet this permeability requirement, action will be taken to replace the unsuitable material with an acceptable non-synthetic lining material.

The fill material required for construction of the dike with side slopes of three horizontal to one vertical, will be obtained from the excavation for the Secondary Pond and from suitable borrow areas within the Ash Basins (Exhibits ABS 6.4.3.B.1-1 and ABS 6.4.3.B.1-2). The borrow sources are identified in Exhibit ABS 6.4.3.B.1-1. The dike fill will be compacted to a minimum 90% modified Proctor maximum dry density per ASTM D1557.

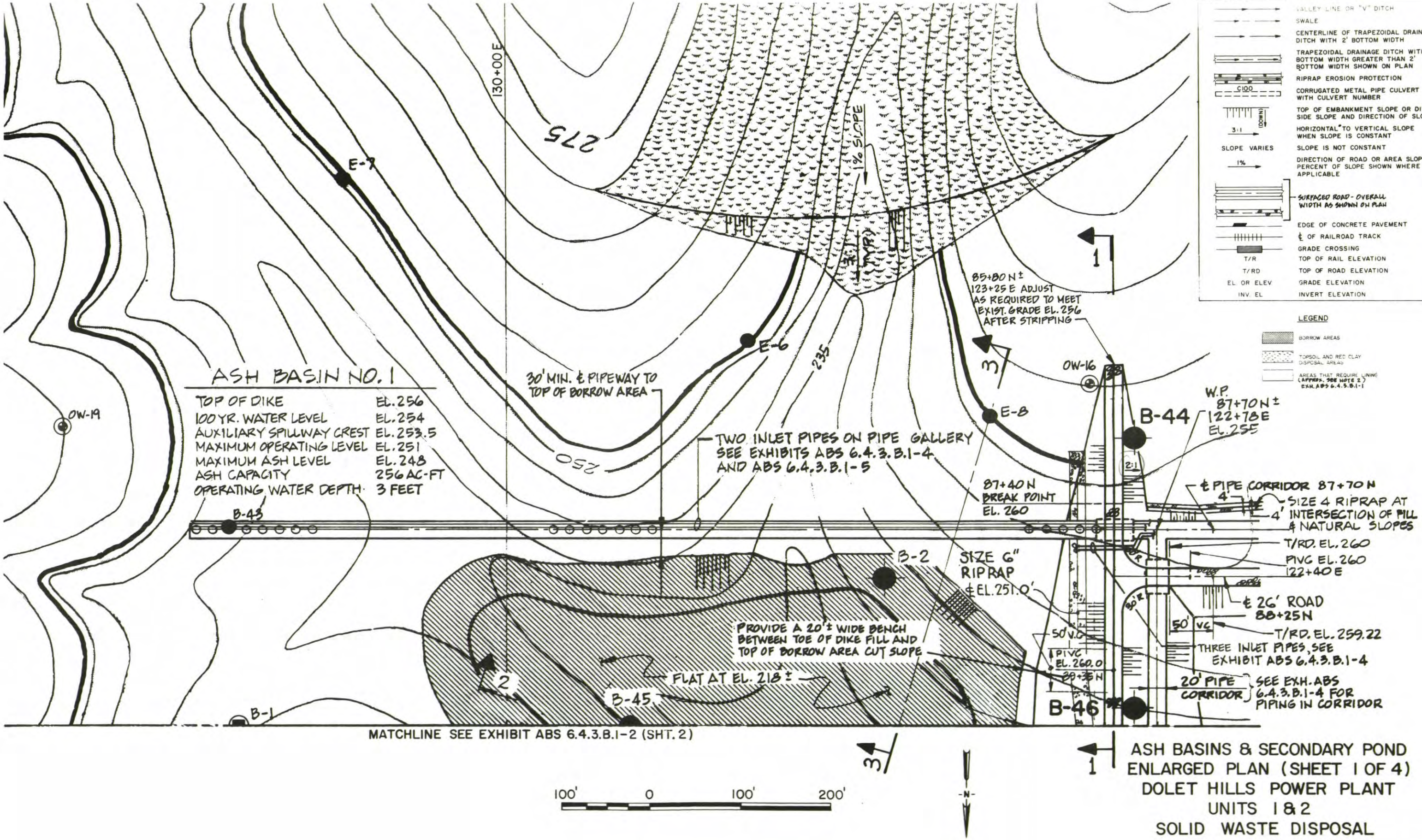
Laboratory permeability tests on twenty-six cohesive soil samples obtained from the borings in the basin area were performed, and the results are summarized in Table ABS 6.4.3.B.4-2. The liquid limit and plasticity indices of in situ cohesive soils in the Ash Basin No. 2 area vary from 23 to 65 and 6 to 44, respectively. These test results are also included in Table ABS 6.4.3.B.4-2.

Secondary Pond

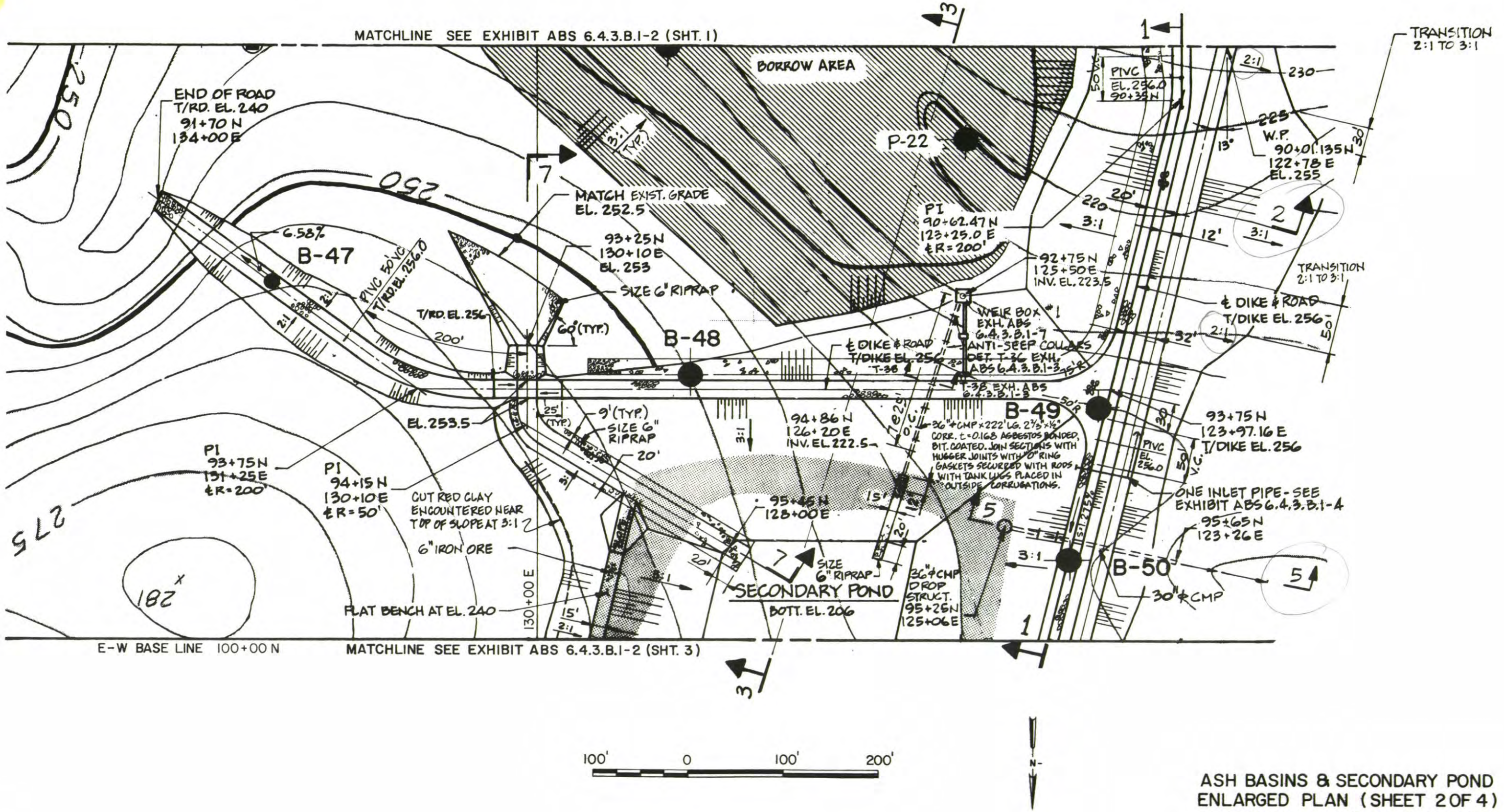
a. A plan view and cross sections through the dike and the pond are shown in Exhibits ABS 6.4.3.B.1-1 and ABS 6.4.3.B.1-2. These exhibits include illustration of



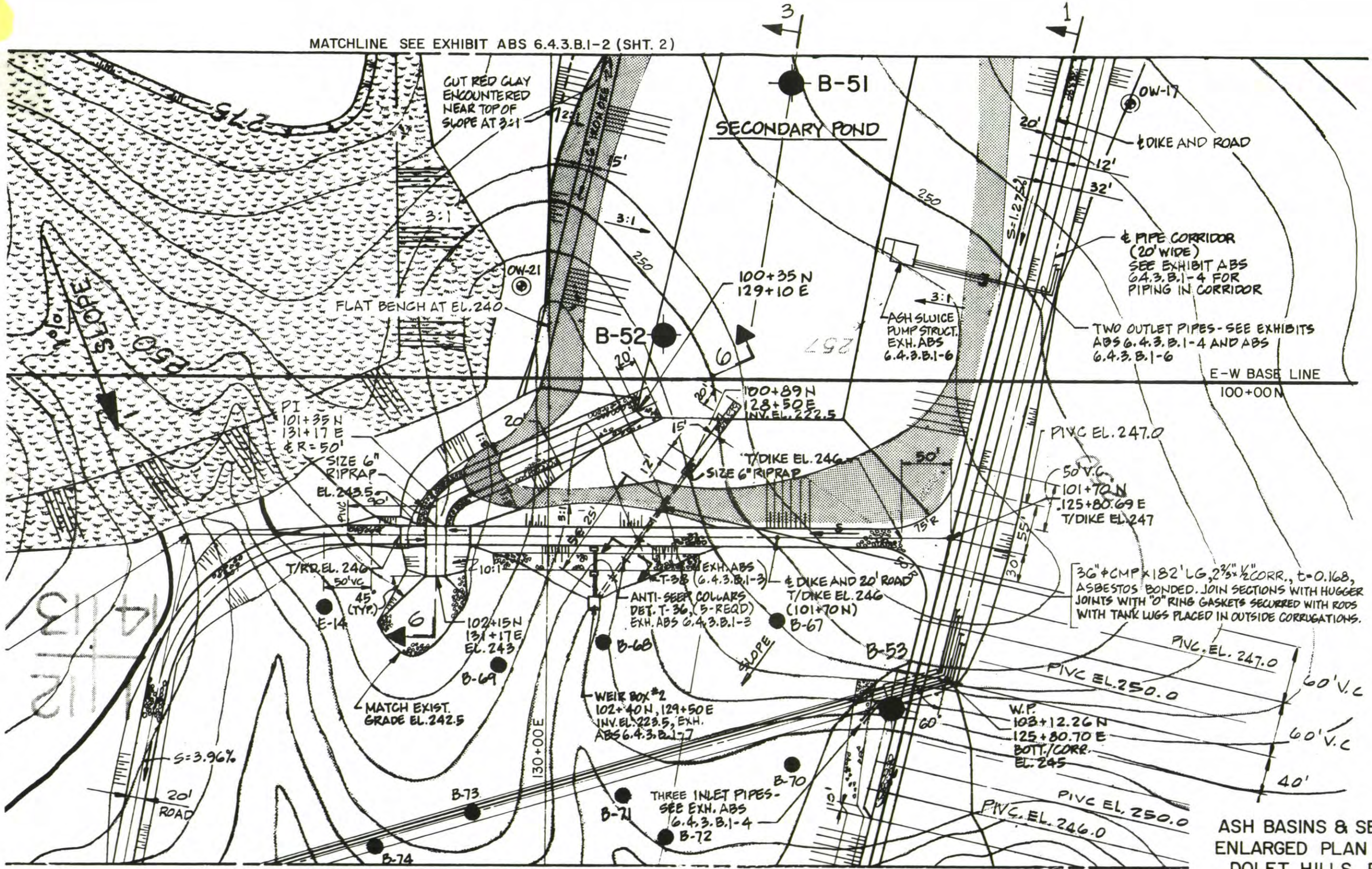
ASH BASINS & SECONDARY POND PLAN
DOLET HILLS POWER PLANT
UNITS 1 & 2
SOLID WASTE DISPOSAL
PERMIT APPLICATION
EXHIBIT ABS 6.4.3.B.1-1



ASH BASINS & SECONDARY POND ENLARGED PLAN (SHEET 1 OF 4) DOLET HILLS POWER PLANT UNITS 1 & 2 SOLID WASTE DISPOSAL PERMIT APPLICATION EXHIBIT ABS 6.4.3.B.1-2



ASH BASINS & SECONDARY POND
ENLARGED PLAN (SHEET 2 OF 4)
DOLET HILLS POWER PLANT
UNITS 1 & 2
SOLID WASTE DISPOSAL
PERMIT APPLICATION
EXHIBIT ABS 6.4.3.B.1-2



ASH BASINS & SECONDARY POND
ENLARGED PLAN (SHEET 3 OF 4)
DOLET HILLS POWER PLANT
UNITS 1 & 2
SOLID WASTE DISPOSAL
PERMIT APPLICATION
EXHIBIT ABS 6.4.3.B.1-2

MATCHLINE SEE EXHIBIT ABS 6.4.3.B.1-2 (SHT. 3)

TWO INLET PIPES ON PIPE GALLERY
SEE EXHIBITS ABS 6.4.3.B.1-4
AND ABS 6.4.3.B.1-5

B-3
B-75
B-76
E-9
B-7
B-55
E-11
E-12
E-10
E-13
B-57

END OF ROAD
T/ROAD EL. 225
105+80 ± N
134+50 E

106+98.64 N
128+46.42 E
INV. EL. 207

SIZE 6" RIPRAP

6-ANTI-SEEP COLLARS
DET. T-36 EXH. ABS 6.4.3.B.1-3

40' 25' 25' 25' 25'

30' (MIN.)
5' 25'

SIZE 12" RIPRAP

T-38
T-38
90°

B-56

DROP STRUCTURE WITH TRASH RACK

OW-18

INV. EL. 205.25 ±

FIELD ROUTE 2' WIDE BOTTOM DITCH AT S = .005 FT./FT.

℄ RIPRAP
EL. 240.5'

SIZE 6" RIPRAP

INV. EL. 206

TEMPORARY BASIN OUTLET
36" ϕ CMP 2⅔" × ½" CORR., t = 0.168, PLAIN GALVANIZED. JOIN SECTIONS WITH HUGGER JOINTS WITH "O" RING GASKETS SECURRED WITH RODS WITH TANK LUGS PLACED IN OUTSIDE CORRUGATIONS.

PI
109+25 N
127+55 E
℄ R = 200'

20°

℄ DIKE & ROAD
T/DIKE EL. 246

END OF DIKE
112+73 N ±
129+80.99 E ±
ADJUST AS REQUIRED TO MEET EXIST. GRADE EL. 246 AFTER STRIPPING

110+00 N

130+00 E

225
250
275
200

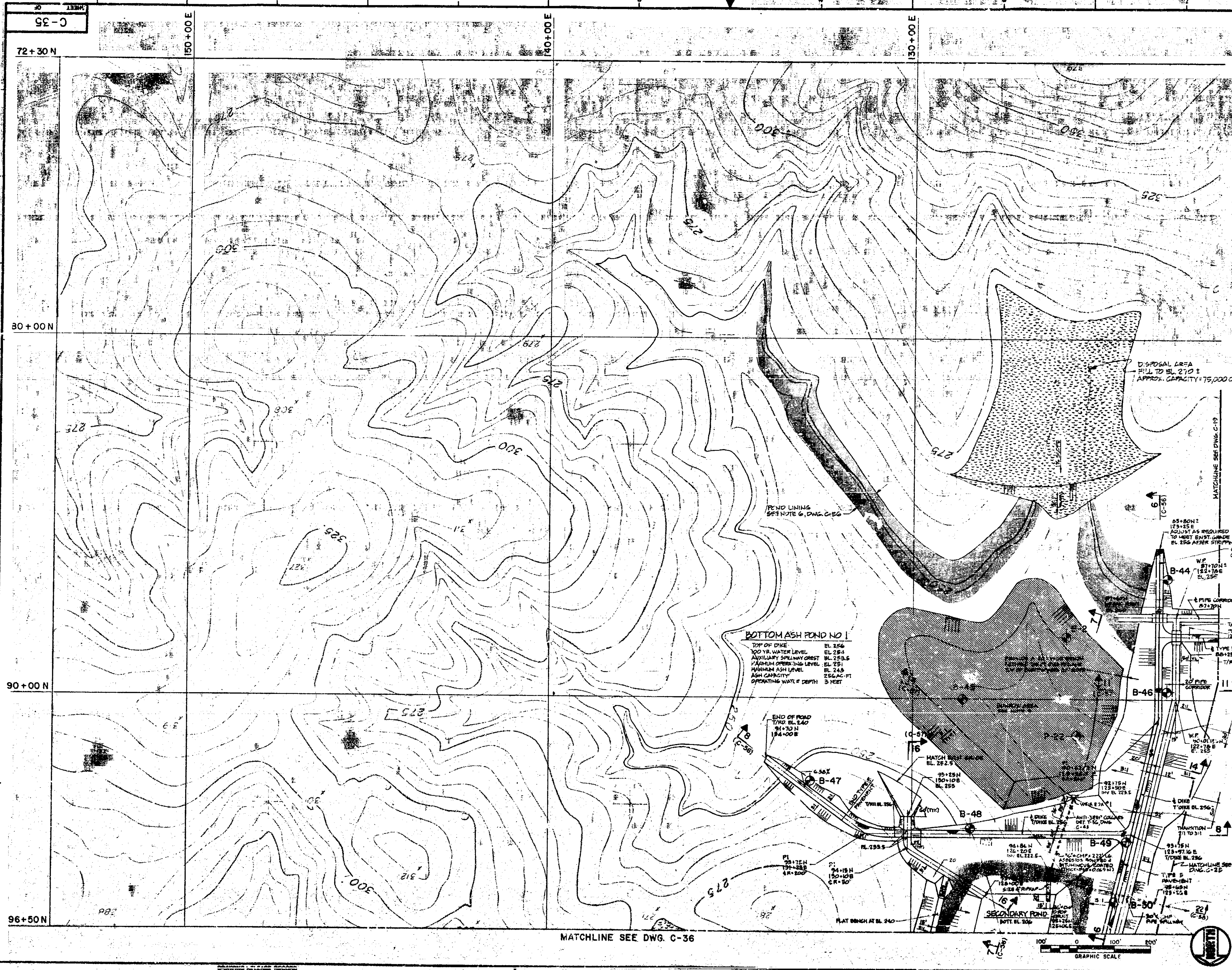
60' V.C.

100' 0 100' 200'

-N-

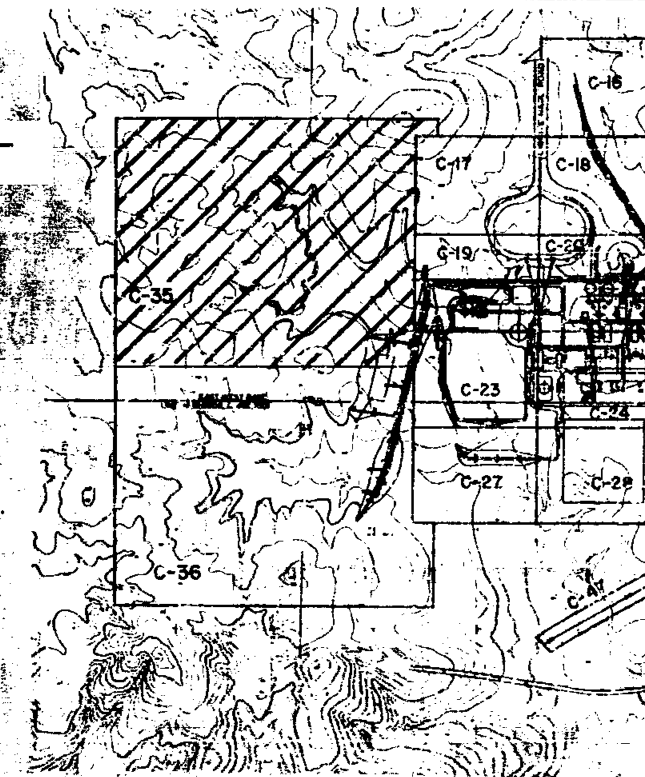
ASH BASINS & SECONDARY POND
ENLARGED PLAN (SHEET 4 OF 4)
DOLET HILLS POWER PLANT
UNITS 1 & 2
SOLID WASTE DISPOSAL
PERMIT APPLICATION
EXHIBIT ABS 6.4.3.B.1-2

APPENDIX D – DESIGN DRAWINGS



BOTTOM ASH POND NO 1

TOP OF DIKE	EL. 256
100 YR. WATER LEVEL	EL. 254
AUXILIARY SPILLWAY CREST	EL. 253.5
MAXIMUM OPERATING LEVEL	EL. 251
MAXIMUM ASH LEVEL	EL. 248
ASH CAPACITY	256 AC-FT
OPERATING WATER DEPTH	3 FEET



KEY PLAN

LEGEND

- BORROW AREAS
- TOPSOIL AND RED CLAY DISPOSAL AREAS
- AREAS THAT REQUIRE LINING

NOTES

1. TOPSOIL AND RED EXPANSIVE CLAY DISPOSAL AREAS:
   CLEAN TOPSOIL SHALL BE STOCKPILED IN THE DISPOSAL AREAS IN A MANNER WHICH WILL FACILITATE ITS REMOVAL AT A LATER DATE FOR USE IN COVERING AND SEEDING EMBANKMENT AND DIKE SLOPES FOR EROSION PROTECTION. AFTER COMPLETION OF THE EROSION PROTECTION WORK, GRADE EACH DISPOSAL AREA TO DRAIN, SPREAD 4" OF TOPSOIL OVER EXPOSED RED CLAY, AND SEED THE ENTIRE AREA.
2. FOR GENERAL NOTES SEE DRAWING C-10.
3. BORROW AREA:
   DRAWING C-14A PRESENTS AN ESTIMATE OF THE VOLUME OF CLAY BORROW REQUIRED. IT IS ESTIMATED THAT EXCAVATION TO EL. 208 IS REQUIRED TO OBTAIN THAT MATERIAL.

REFERENCE DRAWINGS

C-10	DRAWING INDEX, LEGEND & GENERAL NOTES
C-36	ASH POND GRADING PLAN - SHEET 2
C-56	ASH PONDS - SECTIONS & DETAILS - SHEET 1
C-57	ASH PONDS - SECTIONS & DETAILS - SHEET 2
C-1	BORING LOCATION PLAN
C-14A	MASS EARTHWORK PLAN - SPEC. H-5333.
C-43	DRAINAGE DETAILS
C-58	ASH PONDS - SECTIONS & DETAILS - SHEET 3

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE	FILM
A	11-1-81	A. Slack			FOR BID REFERENCE, SPEC. H-5370	✓

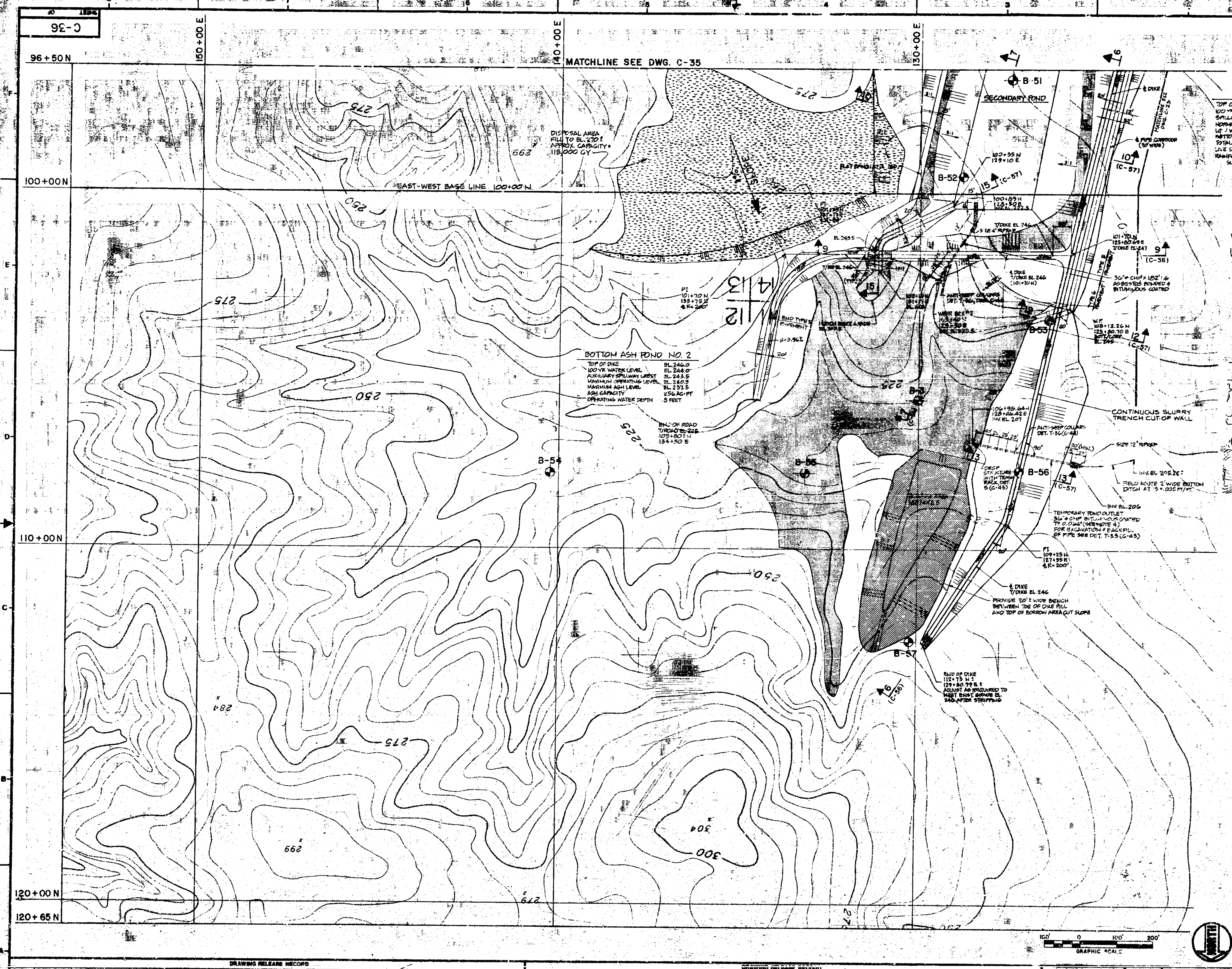
SCALE	1" = 100'-0"
PROJECT NUMBER	5803-03

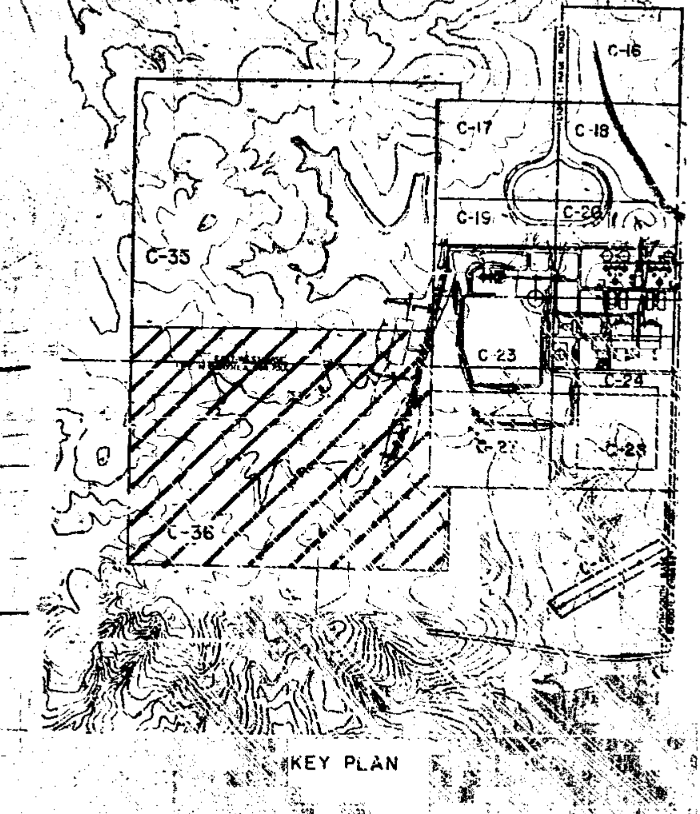
ASH POND GRADING
PLAN-SHEET 1
DOLET HILLS POWER PLANT UNIT NO. 1
SOUTHWESTERN ELECT. POWER CO.
CENTRAL LOUISIANA ELECT. CO., INC.
NABORTON, LOUISIANA

SARGENT & LUNDY
ENGINEERS
CHICAGO

DRAWING NO.	REV.
C-35	A

SHEET OF





NOTES

1. FOR GENERAL NOTES SEE DRAWING C-10
2. FOR LEGEND SEE DRAWING C-35.
3. BORROW AREA - CUT TO DEPTH NECESSARY TO BORROW REQUIRED VOLUME OF CLAY FOR LINING FOR INTERIOR OF ASH POND NO. 2. IT IS ESTIMATED THAT EXCAVATION TO EL. 203 IS NECESSARY TO OBTAIN THAT MATERIAL. CONSULT PURCHASER IF EXCAVATION BELOW EL. 203 IS REQUIRED.
4. THE TEMPORARY POND OUTLET WILL BE USED TO DISCHARGE CLEAN STORM RUNOFF FROM ASH POND NO. 2 UNTIL THAT POND IS USED TO STORE ASH. JUST PRIOR TO PLACING THE POND INTO OPERATION. THE TEMPORARY OUTLET SHALL BE FILLED WITH LEAN GROUT.

REFERENCE DRAWINGS

C-10	DRAWING INDEX, LEGEND & GENERAL NOTES
C-35	ASH POND GRADING PLAN - SHEET 1
C-56	ASH PONDS - SECTIONS & DETAILS SHEET 1
C-57	ASH PONDS - SECTIONS & DETAILS SHEET 2
C-1	BORING LOCATION PLAN
C-43	DRAINAGE DETAILS

DRAWING RELEASE RECORD

FILM	REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
	A	11-1-81	[illegible]			FOR BID REFERENCE, SPEC. H-5370

SCALE: 1" = 100'-0"

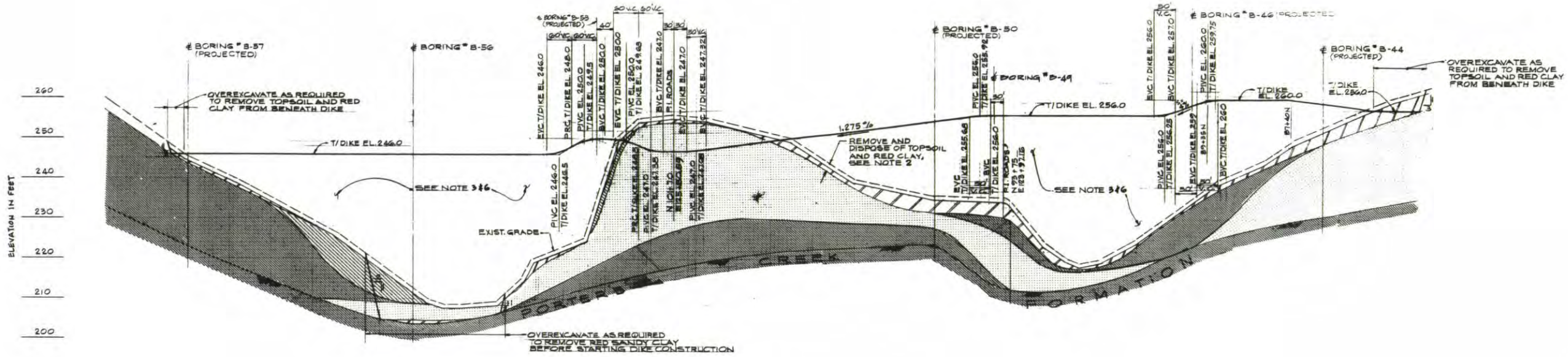
PROJECT NUMBER: 5803-03

ASH POND GRADING
PLAN-SHEET 2
DOLET HILLS POWER PLANT UNIT NO. 1
SOUTHWESTERN ELECT. POWER CO.
CENTRAL LOUISIANA ELECT. CO., INC.
NABORTON, LOUISIANA

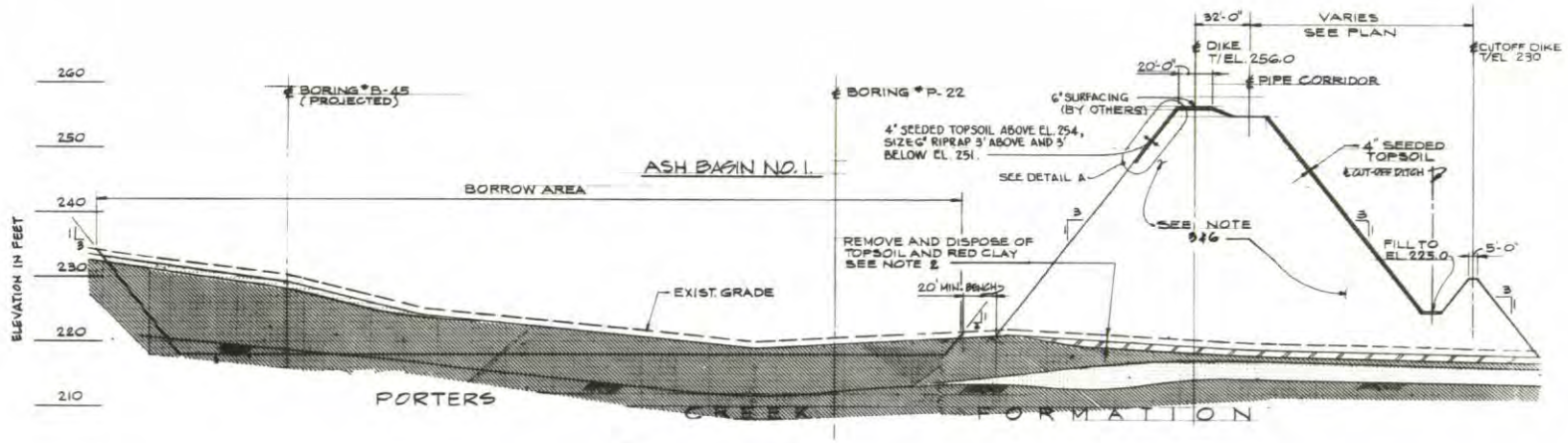
SARGENT & LUNDY
ENGINEERS
CHICAGO

DRAWING NO. C-36 | REV. A

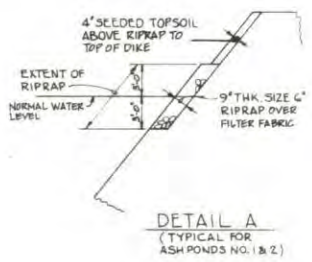
SHEET OF



SECTION 1



SECTION 2



DETAIL A
(TYPICAL FOR ASH PONDS NO. 1 & 2)

NOTE:
SECTIONS OBTAINED FROM S&L DWGS. C-56 & C-57

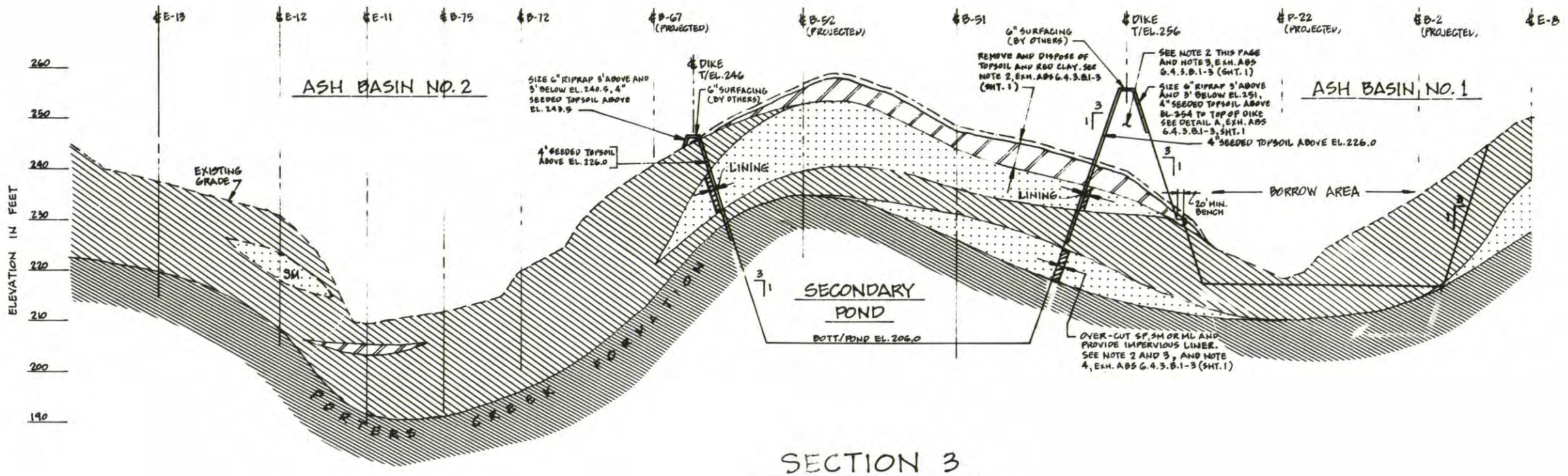
LEGEND

- CL OR CH - RED CLAY
- SP, SM OR ML - BROWN, SILTY FINE SAND TO SANDY SILT
- CL OR CH - GRAY, ORANGE SANDY SILTY CLAY
- CL - GRAY, HARD SILTY CLAY

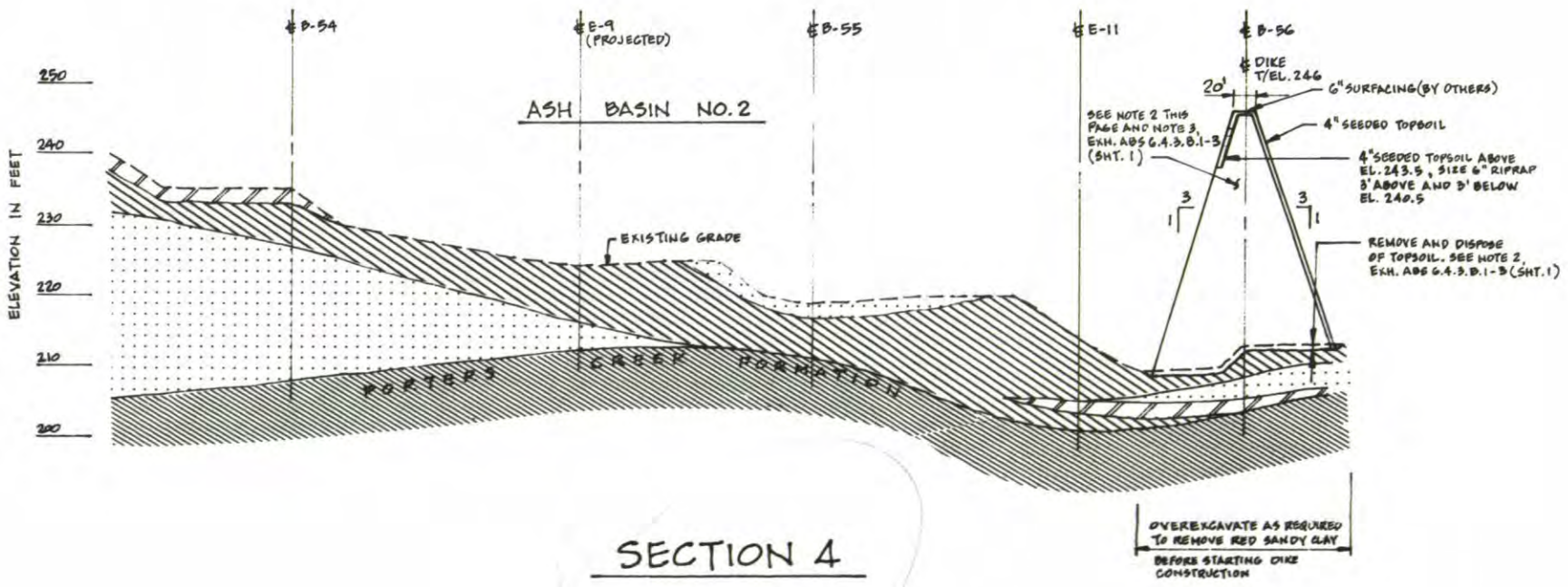
NOTES

1. SUBSURFACE CONDITIONS
   THE SUBSURFACE CONDITIONS SHOWN IN SECTION 1 AND 2 ARE APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
2. TOPSOIL AND RED CLAY SPOILS
   DISPOSAL AREAS FOR TOPSOIL AND RED CLAY SPOILS ARE SHOWN ON EXH. ABS 6.4.3.B.1-1
3. COHESIVE SOILS FOR DIKE CONSTRUCTION AND LININGS
   COHESIVE SOIL USED FOR DIKE CONSTRUCTION AND FOR IMPERVIOUS LININGS SHALL HAVE THE FOLLOWING PROPERTIES:
   - PERCENT PASSING NO. 200 U.S STANDARD SIEVE ---- 50% MINIMUM
   - LIQUID LIMIT ---- 30% MINIMUM
   - PLASTICITY INDEX ---- 15% MINIMUM
   - COEF. OF PERMEABILITY ---- 1×10^{-7} cm/sec max
4. IMPERVIOUS LINER - INSIDE SECONDARY POND. A MINIMUM OF 3 FEET OF COHESIVE MATERIAL IS REQUIRED ON POND SLOPES AS AN IMPERVIOUS LINER TO CONTROL SEEPAGE FROM WITHIN THE SECONDARY POND. INSTALLATION OF THE LINER IS REQUIRED WHERE SP, SM OR ML IS EXPOSED. THE LINER MAYBE OMITTED WHERE THE INSITU SOIL IS SUITABLE AS A LINER. THIS WILL BE DETERMINED BY THE PURCHASER AND/OR THE CONSULTING ENGINEER. NO LINING SHALL BE OMITTED UNLESS APPROVED IN ADVANCE.
5. DELETED
6. FOR ADDITIONAL NOTES SEE EXH. ABS 6.4.3.B.1-3, SHEET 2

ASH BASINS & SECONDARY POND SECTIONS AND DETAILS (SHEET 1 OF 3) DOLET HILLS POWER PLANT UNITS 1&2 SOLID WASTE DISPOSAL PERMIT APPLICATION EXHIBIT ABS 6.4.3.B.1-3



SECTION 3

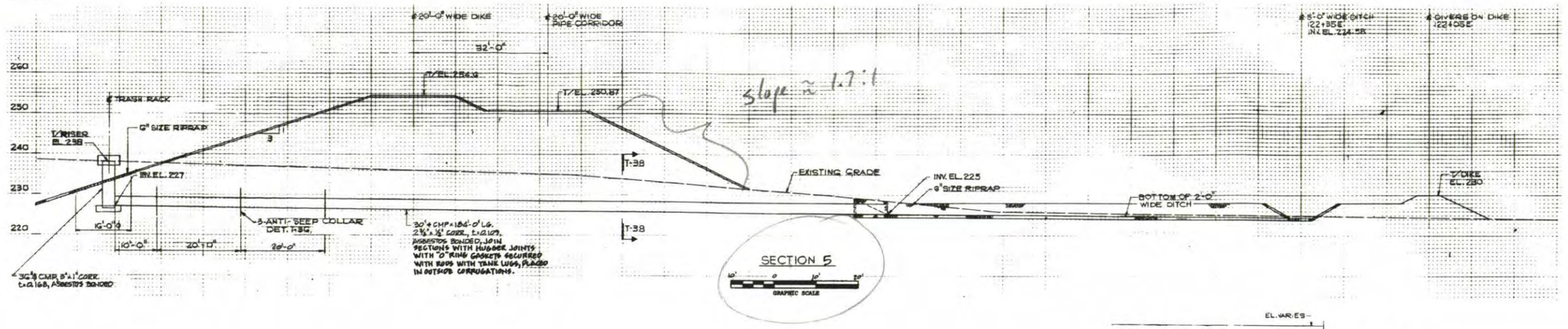


SECTION 4

NOTES
1. FOR LEGEND SEE EXH. ABS 6.4.3.B.1-3 (SHT. 1).
2. CLAY FOR DIKES AND LININGS (SEE NOTES 3, 4 ON EXH. ABS 6.4.3.B.1-3 (SHT. 1)) SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 9" LOOSE DEPTH AND UNIFORMLY COMPACTED TO 90% OF MAXIMUM DRY DENSITY, OBTAINED BY THE MODIFIED PROCTOR TEST (ASTM D-557). CLAY SHALL BE COMPACTED IN A KNEADING ACTION USING SHEEPS FOOT ROLLERS. COMPACTION EQUIPMENT SHALL BE APPROVED BY THE PURCHASER PRIOR TO USE.
3. CLAY FOR POND LININGS SHALL BE PLACED ON SIDE SLOPES IN HORIZONTAL LAYERS IN A STAIR STEP PATTERN SUCH THAT EACH SUCCEEDING LAYER IS STEPPED BACK FROM THE PRECEEDING LAYER.
4. DELETED
5. SUBSURFACE CONDITIONS SHOWN IN SECTIONS 3 AND 4 ARE APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD.

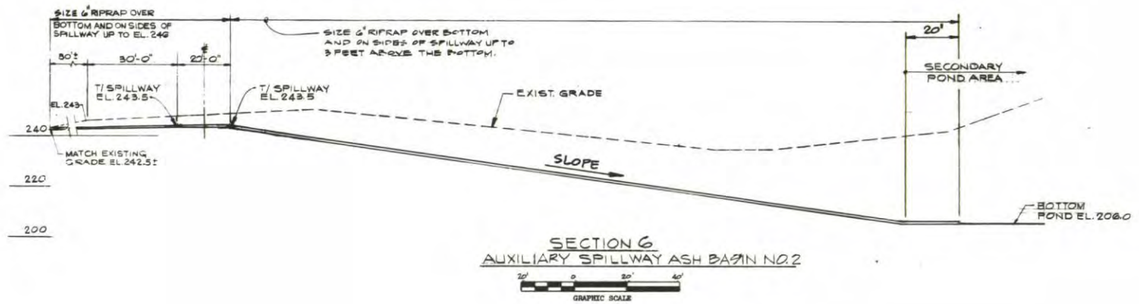
ASH BASINS & SECONDARY POND SECTIONS AND DETAILS (SHEET 2 OF 3) DOLET HILLS POWER PLANT UNITS 1 & 2 SOLID WASTE DISPOSAL PERMIT APPLICATION EXHIBIT ABS 6.4.3.B.1-3

APPENDIX E – DIVERSION DESIGN FEATURES



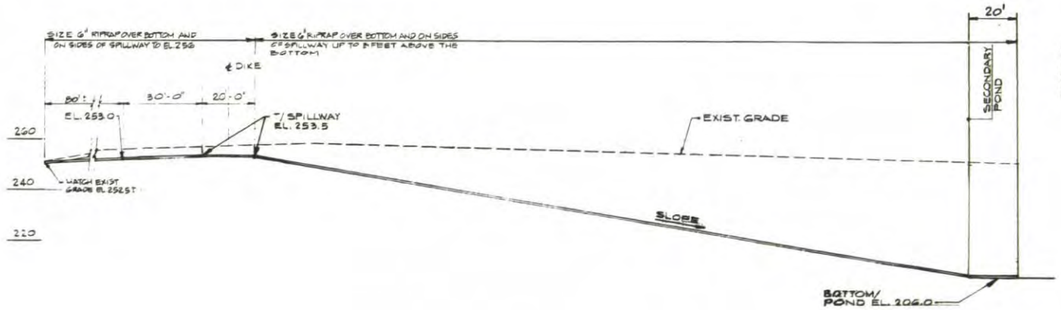
SECTION 5

GRAPHIC SCALE 10' 0 10' 20'



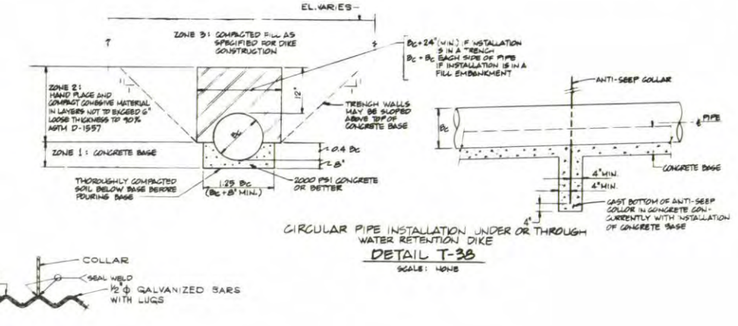
SECTION 6
AUXILIARY SPILLWAY ASH BASIN NO. 2

GRAPHIC SCALE 20' 0 20' 40'



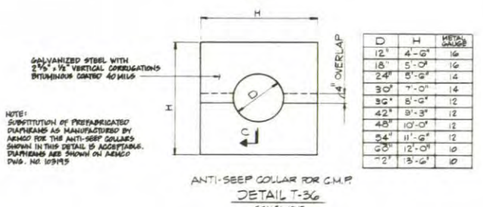
SECTION 7
AUXILIARY SPILLWAY ASH BASIN NO. 1

GRAPHIC SCALE 20' 0 20' 40'



CIRCULAR PIPE INSTALLATION UNDER OR THROUGH WATER RETENTION DIKE
DETAIL T-38
SCALE: NONE

SECTION C



D	H	METAL GAUGE
12"	4'-0"	16
18"	5'-0"	16
24"	5'-6"	14
30"	7'-0"	14
36"	8'-6"	12
42"	9'-3"	12
48"	10'-0"	12
54"	11'-0"	12
60"	12'-0"	10
72"	13'-6"	10

ANTI-SEEP COLLAR FOR C.M.P.
DETAIL T-36
SCALE: NONE

NOTE:
FOR LEGEND SEE EXHIBIT ABS 6.4.3.B.1-3 (SHT. 1)

Note:
See Plan locations in Appendix D

DRAWING RELEASE RECORD						
REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE	FILM

DRAWING RELEASE RECORD						
REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE	FILM

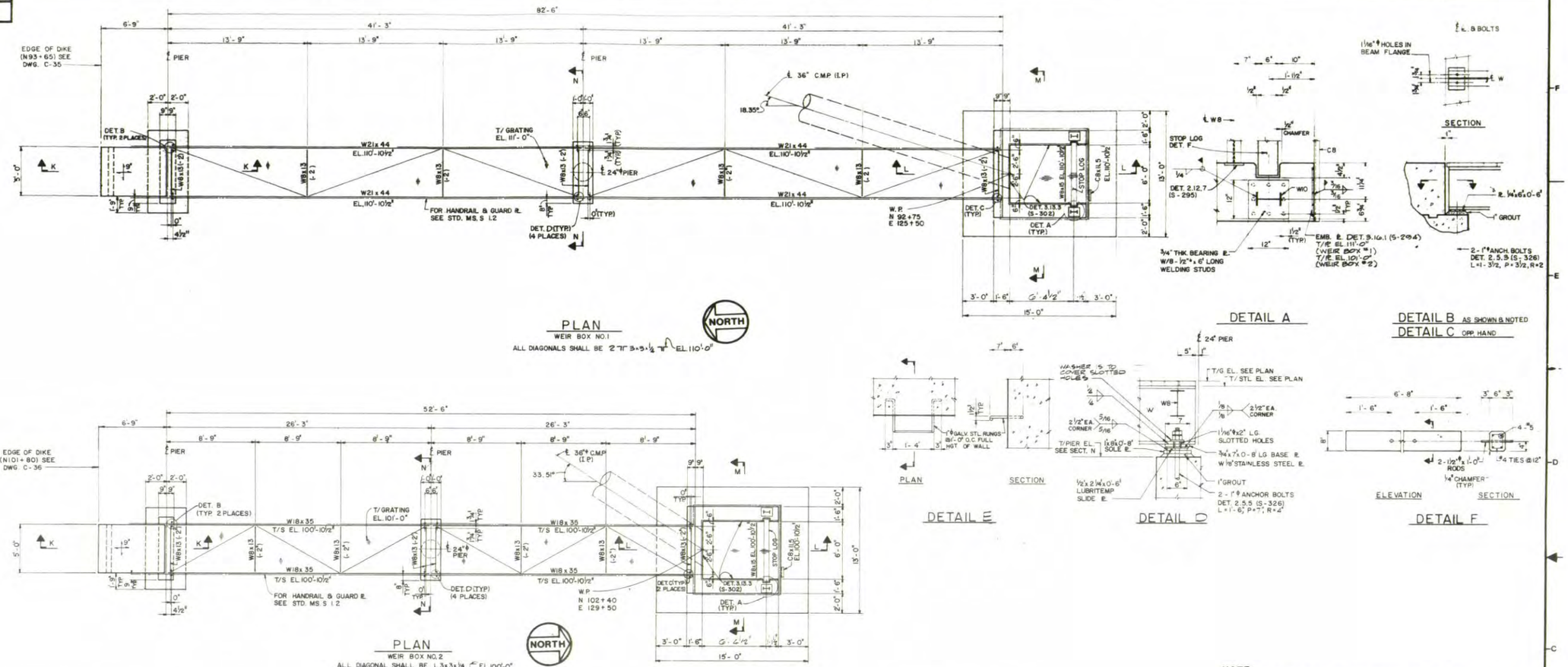
SCALE
PROJECT NUMBER

ASH BASINS & SECONDARY POND
SECTIONS AND DETAILS (SHEET 3 OF 3)
DOLET HILLS POWER PLANT
UNITS 1 & 2
SOLID WASTE DISPOSAL
PERMIT APPLICATION
EXHIBIT ABS 6.4.3.B.1-3

SARGENT & LUNDY ENGINEERS CHICAGO

DRAWING NO. REV.
SHEET OF

ABS-9



PLAN
WEIR BOX NO. 1
ALL DIAGONALS SHALL BE 2 7"x3"x5/16" ⊥ EL. 110'-0"

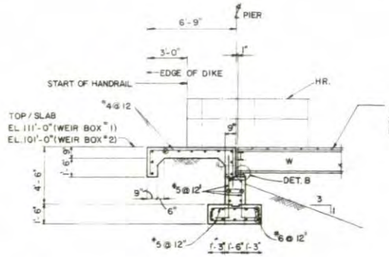
NORTH

PLAN
WEIR BOX NO. 2
ALL DIAGONAL SHALL BE L 3x3x1/4 ⊥ EL. 100'-0"

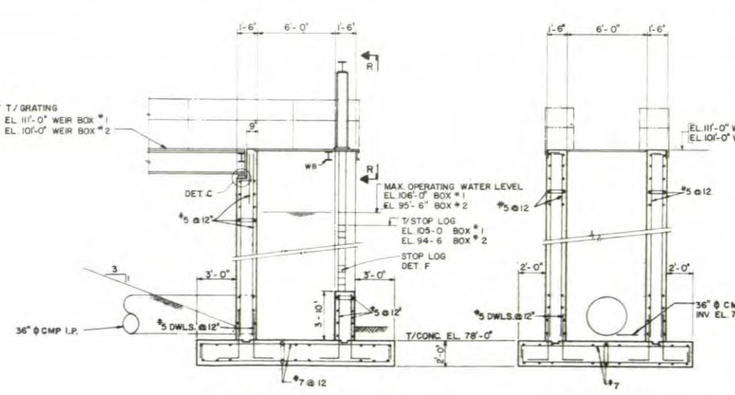
NORTH

DETAIL A

DETAIL B AS SHOWN & NOTED
DETAIL C OPP. HAND

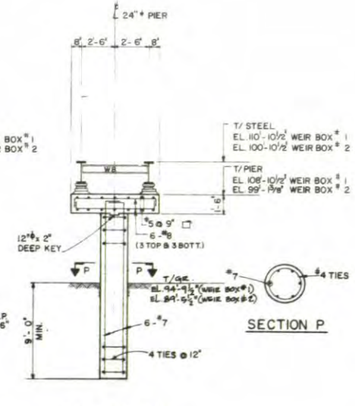


SECTION K



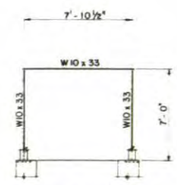
SECTION L

SECTION M



SECTION P

SECTION N



ELEVATION R

NOTE:
ADD 145' TO ELEVATION SHOWN ON PLAN TO OBTAIN COMPARABLE MEAN SEA LEVEL ELEVATION.

NOTES

1. FOR GENERAL NOTES SEE S-310.
2. ALL STRUCTURAL STEEL, GRATING, GUARD PLATES, EMBEDDED PLATES AND ANCHOR BOLTS SHALL BE GALVANIZED.
3. ALL WORK SHOWN ON THIS DRAWING SHALL BE FURNISHED AND INSTALLED BY THE GENERAL WORK CONTRACTOR PER SPECIFICATION H-5370 UNLESS OTHERWISE NOTED.

REFERENCE DRAWINGS

C-35	ASH POND GRADING PLAN - SH.1
C-36	ASH POND GRADING PLAN - SH.2

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE	FILM

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE	FILM
A	11-01-81				BID, SPEC. H-5370	
B	05-24-82				CONSTRUCTION, SPEC. H-5370	
C	09-01-83				RECORD REVISION, SPEC. H-5370	
D	09-12-83				RECORD REVISION, SPEC. H-5370 ; Rel'sed Sect N, DELETE W/D	

STATE OF LOUISIANA — KENNETH T. GOSTAL — REG. No. 18926 — REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING

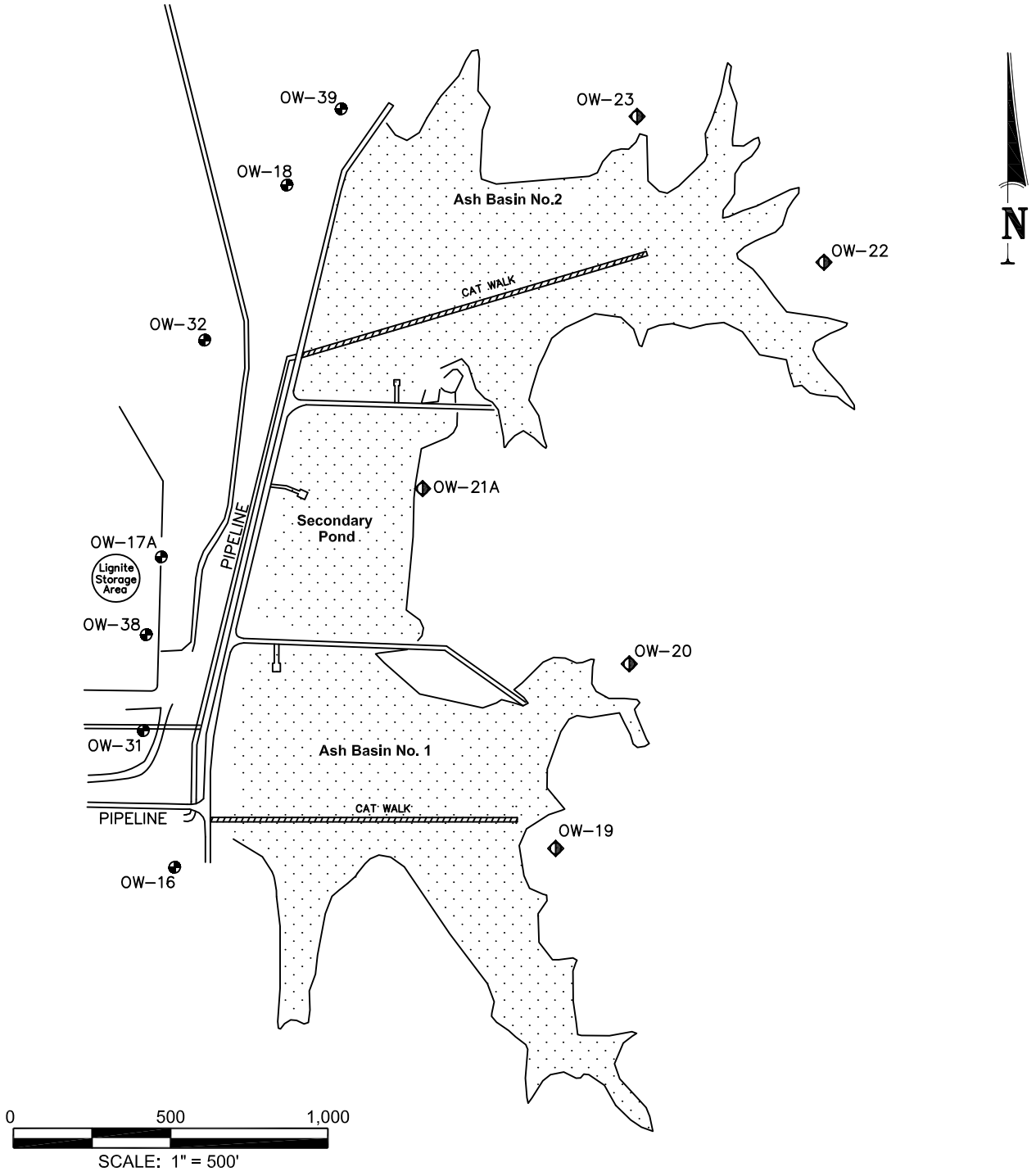
SCALE: 1/4"=1'-0" U.N.
PROJECT NUMBER: 5803-00

ASH BASIN WEIR BOXES
SECTIONS AND DETAILS
DOLET HILLS POWER PLANT
UNITS 1 & 2
SOLID WASTE DISPOSAL
PERMIT APPLICATION
EXHIBIT ABS 6.4.3.B.1-7

SARGENT & LUNDY ENGINEERS CHICAGO

DRAWING NO. S-466 REV. D
SHEET OF

APPENDIX F – INSTRUMENTATION



Legend

- OW–16 — Zone 4 Compliance Monitoring Well Location
- OW–23 — Zone 4 Background Monitoring Well Location
- Permitted Facility

CLECO Corporation

Dolet Hills Power Station

Zone 4 Monitoring Wells Location Map

DeSoto Parish, Louisiana

E·A·G·L·E ENVIRONMENTAL SERVICES, INC.

Drawn:	JP
Checked:	JM
Approved:	JM
Date:	10/4/16
Dwg. No.:	01-16-0159-A004

Figure 2

BURNS McDONNELL

CREATE AMAZING.

Burns & McDonnell World Headquarters
9400 Ward Parkway
Kansas City, MO 64114
O 816-333-9400
F 816-333-3690
www.burnsmcd.com