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April 13, 2018

Tennessee Valley Authority
1101 Market Street
Chattanooga, Tennessee 37402

Existing Liner Assessment
Sluice Trench and Area East of the Sluice Trench
EPA Final CCR Rule
TVA Kingston Fossil Plant
Harriman, Tennessee

1.0 PURPOSE

This letter documents AECOM's certification of the existing liner assessment for the TVA Kingston Fossil Plant's inactive Sluice Trench and Area East of the Sluice Trench.

2.0 EXISTING LINER ASSESSMENT

As required by 40 CFR §257.71, an inactive existing surface impoundment must be evaluated as to whether or not it was constructed with a liner as described in 40 CFR §257.71(a)(1)(i)-(iii).

3.0 SUMMARY OF FINDINGS

The attached report presents the analysis for the existing liner assessment. The Sluice Trench and Area East of the Sluice Trench at Kingston Fossil Plant was evaluated relative to the CCR Rule requirements for liner certification for existing inactive CCR surface impoundments (40 CFR §257.71(a)(1)). Based on the evaluation of design drawings and available construction records, the Sluice Trench and Area East of the Sluice Trench was not constructed with a liner that meets the design criteria specified in 40 CFR §257.71(a)(1). Therefore, the impoundment will be considered an existing inactive unlined CCR Surface Impoundment.

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4.0 Qualified Professional Engineer Certification

I, Thomas A. Kovacic PE, being a Professional Engineer in good standing in the State of Tennessee, do hereby certify, to the best of my knowledge, information, and belief:

1. That the information contained in this certification is prepared in accordance with the accepted practice of engineering;
2. That the information contained herein is accurate as of the date of my signature below; and
3. That the TVA Kingston Fossil Plant's Sluice Trench and Area East of the Sluice Trench is considered an unlined inactive CCR surface impoundment as described in 40 CFR §257.71(a)(3).

SIGNATURE _____ DATE 4/13/18

ADDRESS: AECOM
1300 E. 9th Street, Suite 500
Cleveland, OH 44114

TELEPHONE: (216)-622-2300

ATTACHMENTS: Liner Design Demonstration (40 CFR §257.71) for Coal Combustion Residuals (CCR)

COAL COMBUSTION PRODUCT DISPOSAL PROGRAM

TENNESSEE VALLEY AUTHORITY – SLUICE TRENCH AND AREA EAST OF THE SLUICE TRENCH
HARRIMAN, TENNESSEE

LINER DESIGN DEMONSTRATION (40 CFR §257.71) FOR COAL COMBUSTION RESIDUALS (CCR)
INACTIVE SURFACE IMPOUNDMENT – KINGSTON FOSSIL PLANT

Prepared for

Tennessee Valley Authority
1101 Market Street
Chattanooga, TN 37402-2801

April 13, 2018

Prepared by

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FIGURES

APPENDICES

1.0 BACKGROUND

1.1 INTRODUCTION

On April 17, 2015, EPA published the Disposal of Coal Combustion Residuals (CCR) from Electric Utilities final rule (CCR Rule or the Rule) in the Federal Register. The Tennessee Valley Authority (TVA) contracted AECOM to evaluate compliance relative to 40 CFR § 257.71—the Rule's liner design criteria for the Kingston Fossil Plant (KIF) Sluice Trench and Area East of the Sluice Trench, which is an existing inactive CCR surface impoundment.

The KIF facility is located in eastern Tennessee along the banks of the Emory and Clinch River junction in Roane County Tennessee. The Sluice Trench is a closed inactive impoundment that formerly conveyed bottom ash and fly ash.

1.2 OBJECTIVE

The objective of this demonstration is to evaluate compliance related to 40 CFR § 257.71, specifically whether the Sluice Trench and Area East of the Sluice Trench was constructed with one of the following:

- A liner consisting of a minimum of two feet of compacted soil with a hydraulic conductivity of no greater than 1×10^{-7} cm/sec;
- A composite liner that meets the requirements of 40 CFR § 257.70(b); or
- An alternative composite liner that meets the requirements of 40 CFR § 257.70(c).

The Rule was clarified by the EPA during a presentation on April 15, 2015 titled, "Top 20 Questions on EPA's CCR Final Rule". First, an existing natural clay layer, regardless of its hydraulic conductivity, does not meet the Rule as an acceptable clay liner. Second, "compacted soil" means soil that is mechanically compacted in lifts.

1.3 SUMMARY OF HISTORICAL INFORMATION

The Sluice Trench, also known as the Ash Discharge Channel, and the Area East of the Sluice Trench is centrally located within Kingston Fossil Plant, north of the Emory River and northeast of the of the Kingston Steam Plant, depicted in **Figure 1**. The Ash Discharge Channel was constructed and put into service between 1976 and 1987. The Ash Discharge Channel was renamed the Sluice Trench after 2008. In accordance with 40 CFR § 257.257 102(b)(1) the Sluice trench, an inactive surface impoundment, was closed and capped in 2017. A Non-CCR Process Water Basin was constructed over a portion of the Sluice Trench. The area of the existing Sluice Trench outside the Non-CCR Process Water Basin was capped with compacted fill that meets the requirements specified in 40 CFR § 257.100(b)(3)(i). The area of the existing Sluice Trench within the Non-CCR Process Water Basin was capped with an engineered cap system that meets the requirements specified in 40 CFR § 257.100(b)(3)(ii). The Area East of

the Sluice Trench will be closed and capped in accordance with the requirements specified in 40 CFR § 257.100.

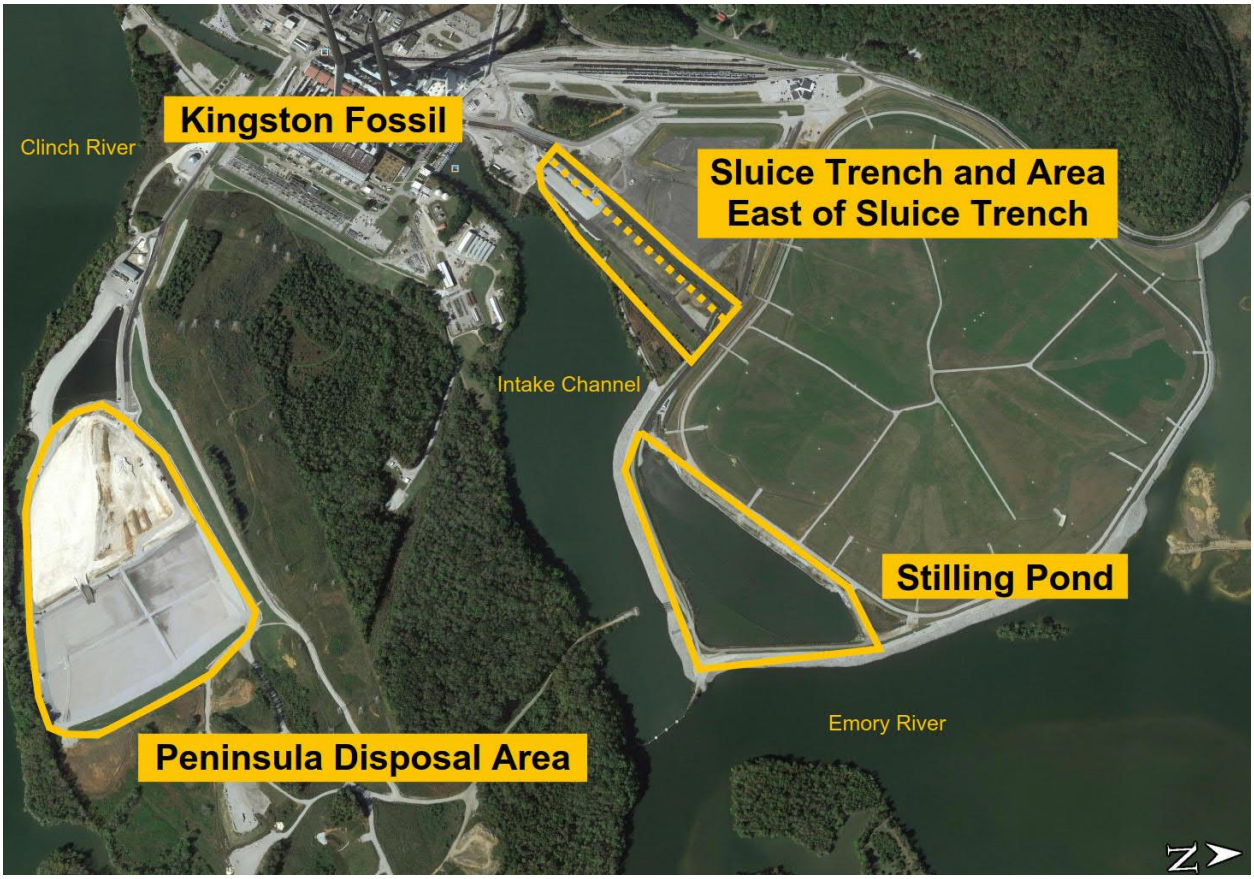


Figure 1. Site Overview

2.0 FIELD INVESTIGATION

AECOM performed a geotechnical exploration and analysis in 2016 which included the Sluice Trench and Area East of the Sluice Trench. Based upon subsurface data collected from the investigation and historical data provided by TVA, the embankments of the Sluice Trench and Area East of the Sluice Trench consist of sluiced fly ash overtop alluvium consisting of sandy silt and silty sand.

An examination of historical drawings does not show a presence of a liner constructed within the footprint of the Sluice Trench. Historical drawings can be found in **Appendix A**.

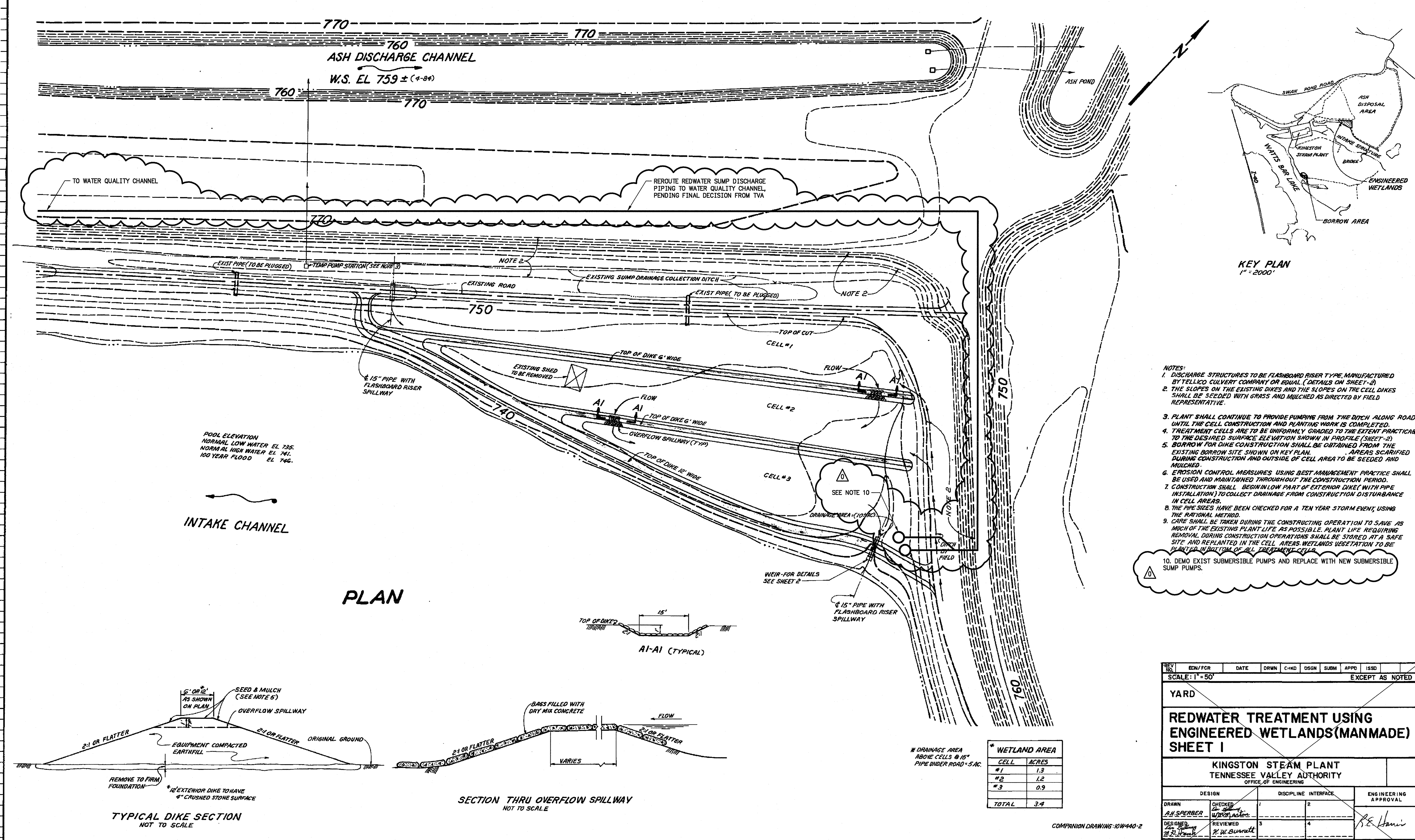
3.0 CONCLUSION

Historical construction documents were reviewed in order to evaluate status relative to the EPA Final CCR Rule criteria. Based on historical drawings and construction information no evidence can be found that suggest the Sluice Trench and Area East of the Sluice Trench at Kingston Fossil Plant was constructed with a liner that complies with the requirements of 40 CFR § 257.71 of the EPA Final CCR Rule. The Sluice Trench and Area East of the Sluice Trench is considered an unlined inactive CCR surface impoundment as described in 40 CFR § 257.71(a)(3).

4.0 REFERENCES

1. AECOM, KIF Geotechnical Exploration and Analysis Report (Rev. A), 2016.

APPENDIX A – HISTORICAL DRAWINGS



* WETLAND AREA	
CELL	ACRES
#1	1.3
#2	1.2
#3	0.9
TOTAL	3.4

COMPANION DRAWING: 10W440-2

NOTES:

1. DISCHARGE STRUCTURES TO BE FLASHBOARD RISER TYPE, MANUFACTURED BY TELLICO CULVERT COMPANY OR EQUAL. (DETAILS ON SHEET-2)
2. THE SLOPES ON THE EXISTING DIKES AND THE SLOPES ON THE CELL DIKES SHALL BE SEEDED WITH GRASS AND MULCHED AS DIRECTED BY FIELD REPRESENTATIVE.
3. PLANT SHALL CONTINUE TO PROVIDE PUMPING FROM THE DITCH ALONG ROAD UNTIL THE CELL CONSTRUCTION AND PLANTING WORK IS COMPLETED.
4. TREATMENT CELLS ARE TO BE UNIFORMLY GRADED TO THE EXTENT PRACTICABLE TO THE DESIRED SURFACE ELEVATION SHOWN IN PROFILE (SHEET-2)
5. BORROW FOR DIKE CONSTRUCTION SHALL BE OBTAINED FROM THE EXISTING BORROW SITE SHOWN ON KEY PLAN. . AREAS SCARIFIED DURING CONSTRUCTION AND OUTSIDE OF CELL AREA TO BE SEEDED AND MULCHED.
6. EROSION CONTROL MEASURES USING BEST MANAGEMENT PRACTICE SHALL BE USED AND MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
7. CONSTRUCTION SHALL BEGIN IN LOW PART OF EXTERIOR DIKE (WITH PIPE INSTALLATION) TO COLLECT DRAINAGE FROM CONSTRUCTION DISTURBANCE IN CELL AREAS.
8. THE PIPE SIZES HAVE BEEN CHECKED FOR A TEN YEAR STORM EVENT, USING THE RATIONAL METHOD.
9. CARE SHALL BE TAKEN DURING THE CONSTRUCTING OPERATION TO SAVE AS MUCH OF THE EXISTING PLANT LIFE AS POSSIBLE. PLANT LIFE REQUIRING REMOVAL DURING CONSTRUCTION OPERATIONS SHALL BE STORED AT A SAFE SITE AND REPLANTED IN THE CELL AREAS. WETLANDS VEGETATION TO BE PLANTED IN BOTTOM OF ALL TREATMENT CELLS.
10. DEMO EXIST SUBMERSIBLE PUMPS AND REPLACE WITH NEW SUBMERSIBLE SUMP PUMPS. (0)

REV NO.	ECN/FCR	DATE	DRWN	CHKD	DSGN	SUBM	APPD	ISSD

SCALE: 1" = 50' EXCEPT AS NOTED

YARD

REDWATER TREATMENT USING ENGINEERED WETLANDS (MANMADE) SHEET 1

KINGSTON STEAM PLANT
TENNESSEE VALLEY AUTHORITY
OFFICE OF ENGINEERING

DESIGN		DISCIPLINE INTERFACE		ENGINEERING APPROVAL
DRAWN A.H. SPERBER	CHECKED W.M. Martin	1	2	R.E. Harris
DESIGNED M.D. Franck	REVIEWED K.W. Burnett	3	4	

KNOXVILLE	DATE 7-28-87	36	C	10W440-1	R0

PRINT H
SIZE F
BR OR PROJ AB CE EE ME NE FE HE SE TE BL BF WB SQ
PRINTS REQD - R

ISSUED BY: J.L. Goldberg

DRAWING CHANGE AUTHORIZATION			
0	RMM 06/01/16	GDM 06/01/16	DCN# 117578368 R0
Rev.	Prepared/Date	Checked/Date	Change Reference & Rev.

Contract No.: 610920	Affected Base Drawing No.: 10W440-1	Sheet:	Rev.: 0
DCA Prerequisites:			
Att. Dwg. No.: N/A Sheet: Category: PRI	DCA NO: DCA-117578368-M-018		0
Discipline: M Unit:			

AECOM JOB NO. 60427821

NO.	DATE	BY	DESCRIPTION	CKD	APP
0	06/01/16	RMM	ISSUED FOR CONSTRUCTION	GDM	JPL

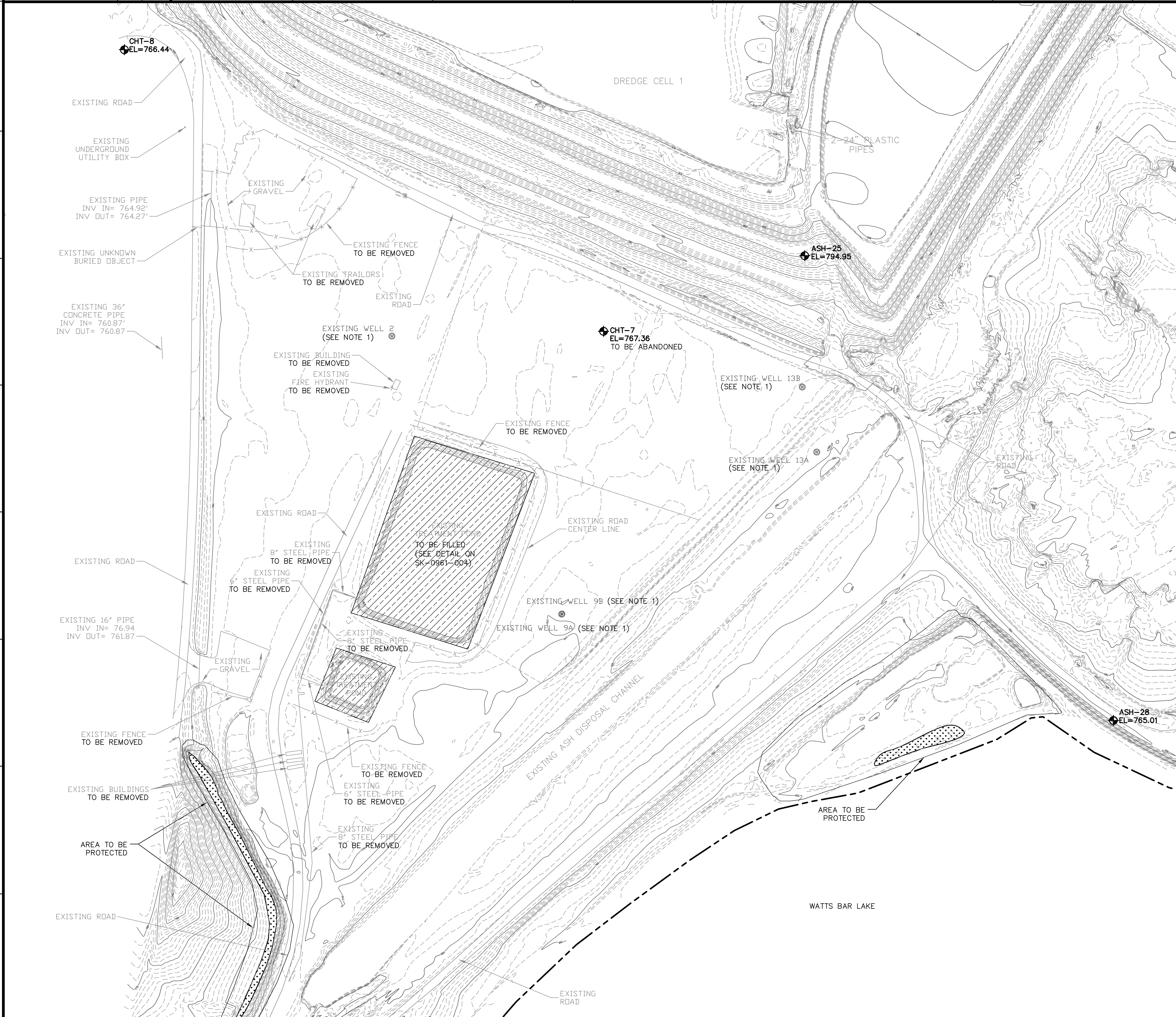
REVISIONS

RELEASED FOR CONSTRUCTION
REVISION NO 0
BY ______ DATE ______

FOR CLOUDED AREAS ONLY

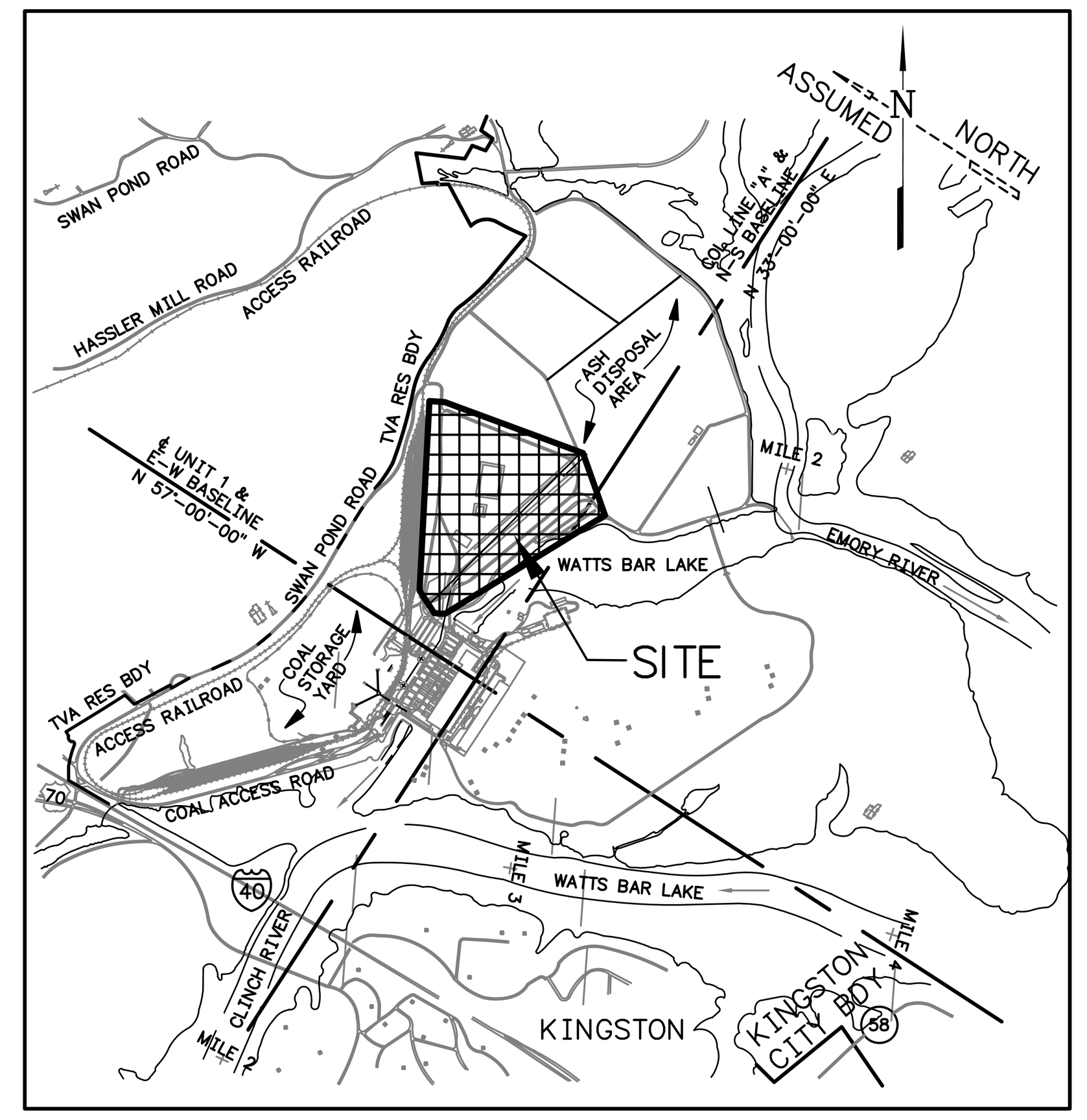
JOHN P. LEUMAS REGISTERED ENGINEER AGRICULTURE COMMERCE No. 00114841 STATE OF TENNESSEE
6-1-16

ENGINEER OF RECORD
NAME JOHN P. LEUMAS
NUMBER 0114841



NOTES

1. ABANDON/CLOSE EXISTING MONITORING WELLS IN ACCORDANCE WITH APPLICABLE REGULATIONS/REQUIREMENTS AS DIRECTED BY THE OWNER.



LOCALITY MAP
N.T.S.

KIF SURVEYED BENCH MARKS/CONTROL POINTS			
NUMBER	NORTHING	EASTING	ELEVATIONS
CHT-7	554799.20	2439803.12	767.36
CHT-8	555519.20	2438578.04	766.44
ASH-25	554992.49	2440317.38	794.95

WELLS TO BE CLOSED				
WELL	EASTING (FT)	NORTHING (FT)	EASTING (M)	NORTHING (M)
2	2439261.898746	554787.067064	743488.51371	169099.43624
9A	2439696.109470	554076.071140	743620.86141	168882.72425
9B	2439695.609450	554075.571160	743620.70900	168882.57185
13A	2440348.105540	554490.445980	743819.59021	169009.02595
13B	2440311.100000	554656.700000	743808.31090	169059.70028

SURVEY DATA NOTE:

1. THE TOPOGRAPHICAL DATA SHOWN IS BY TVA SURVEYING SERVICES / DALLAS SLUSS AT (423)751-2255 DATED 5/28/2008.

LEGEND

EXISTING MAJOR CONTOURS
EXISTING MINOR CONTOURS
EXISTING FENCE
TVA BOUNDARY
DEMOLISH

DEMOLITION

100' 0 100' 200' 300'
Scale 1" = 100'
NORTH

COMPANION DRAWINGS:
SK-0961-002 THRU SK-0961-004

DCN KIF-09-1230 R0
AA2

DRAWING CHANGE AUTHORIZATION			
0	DGS/02-16-09	BDC/WA 02-16-09	DCN-09-1230-R0/AA #2
Rev.	Prepared/Date	Checked/Date	Change Reference & Rev.

Contract No.:
DCA Prerequisites:
Ant. Dwg. No.: Sheet Category: SEC
Discipline C Unit: 0
Affected Base Drawing No. NA Sheet Rev.: 0
DCA NO: ESK-KIF-09-1230-SKC001 AA02

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST	REV CD
R	----	----	----	----	---	---					
R –	----	---	---	---	---	---					

DISCIPLINE INTERFACE
1
2
3
4

SCALE:1"= 100' EXCEPT AS NOTED

CIVIL
YARD

ASH PROCESSING & TEMPORARY STORAGE AREA EXISTING CONDITIONS & DEMO PLAN

DESIGNED BY: | DRAWN BY: | CHECKED BY: | SUPERVISED BY: | REVIEWED BY: | APPROVED BY: | ISSUED BY:

KINGSTON FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2004 | DATE 02/16/09 | 36 | SK-0961-001 | R 0

PLOT FACTOR:
W_TVA

C.A.D. DRAWING
DO NOT ALTER MANUALLY

TASK COMPLETED BY: | REV NO.