

**Tennessee Valley Authority  
Regulatory Submittal for Kingston Fossil Plant**

**Documents submitted:**

Storm Water Pollution Prevention Plan - North Borrow Area  
EPA-AO-053

**Date Submitted:**

**June 15, 2012**

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# Stormwater Pollution Prevention Plan

## North Borrow Area Project

### Kingston Fossil Plant

### Tennessee Valley Authority

<b>Revision</b>	<b>Description</b>	<b>Date</b>
A	Issued to TVA for Review	June 01, 2012

## Table of Contents

1	PURPOSE OF THE CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN.....	1
2	CONSTRUCTION SITE DESCRIPTION.....	1
	2.1 General Information .....	1
3	DISTURBED AREAS.....	1
4	SITE TOPOGRAPHY .....	2
5	SOIL TYPES .....	2
6	SITE DRAINAGE AND RUNOFF.....	2
7	EROSION PREVENTION AND SEDIMENT CONTROL MEASURES .....	2
8	INDUSTRIAL ACTIVITY DISCHARGE .....	3
9	AFFECTED WETLANDS.....	3
10	EROSION CONTROL PLAN .....	3
	10.1 Erosion Control During Construction .....	3
	10.1.1 General Erosion and Sediment Control Measures .....	3
	10.1.2 Roads and Access Areas .....	4
	10.1.3 Inspections and Maintenance .....	4
	10.1.4 Stabilization Requirements .....	5
	10.1.5 Final Seeding .....	5
	10.1.6 Fertilizer .....	5
	10.1.7 Soil and Sediment Control/Sediment Migration.....	6
	10.1.8 Dewatering of Work Areas/Vehicle Washing and Maintenance/Dust Suppression .....	6
	10.1.9 Housekeeping Requirements .....	6
	10.1.10 General Water Quality Requirements/Other Situations.....	6
	10.1.11 Sediment Pond Maintenance and Clean Out Plan .....	6
	10.2 Post-Construction Erosion Controls .....	7
11	SPECIFIC BEST MANAGEMENT PRACTICES AND SPILL PREVENTION .....	7
	11.1 Materials and Wastes .....	7
	11.1.1 Waste Materials.....	7
	11.1.2 Hazardous Waste .....	7
	11.1.3 Sanitary Waste .....	7
	11.1.4 Material Storage .....	8
	11.2 Product-Specific Practices (as applicable) .....	8
	11.2.1 Concrete.....	8
	11.2.2 Petroleum Products .....	8
	11.3 Spill Control and Response Practices .....	8
	11.3.1 Equipment .....	8
	11.3.2 Response .....	9
	11.3.3 Safety .....	9
12	HEALTH AND SAFETY .....	9

13	REPORTING AND RECORD KEEPING.....	9
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### Tables

Table 10-1	Final Seeding Rate.....	5
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### Attachments

Attachment 1	Major Activities Log (Form 006A)
Attachment 2	Drainage Maps, Runoff Coefficient Calculation, Drainage Calculation Summary
Attachment 3	Kingston Fossil Plant Vicinity Topographic Map, Kingston Ash Recovery Project Site Map, and SWPPP Drawings
Attachment 4	Storm Water Management Plan Contacts
Attachment 5	Sequence of Control Measure Implementation, Maintenance, and Removal Log (Form 007A)
Attachment 6	Daily Rainfall Gage Record (Form 005A)
Attachment 7	Construction Stormwater Inspection Certification

### List of Acronyms

cy	cubic yard
EMS	Environmental Management System
EPA	U.S. Environmental Protection Agency
KIF	Kingston Fossil Plant
msl	mean sea level
NPDES	National Pollutant Discharge Elimination System
PA-E	Program Administrator-Environmental
SWPPP	Storm Water Pollution Prevention Plan
TDEC	Tennessee Department of Environment and Conservation
TVA	Tennessee Valley Authority

## **1 PURPOSE OF THE CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN**

This Storm Water Pollution Prevention Plan (SWPPP) is being prepared to facilitate compliance with the substantive requirements of the Tennessee Department of Environment and Conservation (TDEC) General Permit for Storm Water Discharges Associated with Construction Activities. A permit is not required under the CERCLA process.

Retaining sediment onsite is paramount for compliance. This SWPPP contains specific guidance on controls being selected as well as design and installation requirements. A copy of the plan as well as inspection records must be kept onsite and provided to the plant Program Administrator-Environmental (PA-E) or onsite PA-E. The Erosion and Sedimentation Control Specialist for this construction activity is F. M. "Butch" Parton who can be contacted by phone at (865) 660-4458 or email [fmarton@tva.gov](mailto:fmarton@tva.gov).

## **2 CONSTRUCTION SITE DESCRIPTION**

### **2.1 GENERAL INFORMATION**

On Monday, December 22, 2008, a dike failed at the Tennessee Valley Authority's (TVA) Kingston Fossil Plant (KIF) releasing approximately 5.4 million cubic yards (cy) of coal ash. TVA, Roane County Office of Emergency Management, and Homeland Security responded immediately, and response and recovery continue.

TVA's KIF is located on the Emory River close to the confluence of the Clinch and Tennessee Rivers near Kingston, Tennessee. Construction of the plant began in 1951 and was completed in 1955.

As a part of the recovery of ash from the river and adjoining embayments, the ash will be stacked in a designed cell and capped with an EPA/TDEC approved cap. This cap will require over a million cubic yards of earthen materials.

The former Gupton property has been tested by drilling and test pits and has ample quantities of materials (except for topsoil) to construct the final cap for the site (see Stantec borrow study).

This SWPPP will cover the borrow activities on the former Gupton property and the properties acquired by TVA along Berkshire Road and will hereafter be called the North Borrow Area. The North Borrow Area is located on the east side of the Swan Pond Embayment, north of the Kingston Fossil Plant. Swan Pond Circle Road is located to the south and west of the site.

## **3 DISTURBED AREAS**

The estimated area of the North Borrow Area is approximately 254 acres. The area disturbed by the Borrow Project is approximately 100 acres. This 92 acres disturbed by excavation activities and approximately 8 acres disturbed by the topsoil stockpile.

## **4 SITE TOPOGRAPHY**

Topography on the site varies from gently sloping lowlands to relatively steep ridge flanks. The area exhibits approximately 350 feet of topographical relief, as depicted on the Topographic Relief Map in Attachment 3. Much of the northern extent of the site is relatively flat. The central region of the site could be described as gently rolling terrain, with slopes steadily becoming steeper as the approach the ridgeline to the east. Slopes abutting the toe of the ridge, typically below an elevation of 800 feet, varied from approximately 5:1 (horizontal:vertical) to 12:1. The slopes steepen to approximately 3:1 to 4:1 as they move up the ridge.

## **5 SOIL TYPES**

According to soil borings and soils mapping of the area, the majority of the soils are loams, silty loam, cobbly loam or Fullerton Pailo complex. The soils correspond to soil types B, C and D. The CN numbers for these soils can be seen in Attachment 2. The area is underlain by two bedrock formations. The Rome Formation forms Pine Ridge and runs towards this area. The Knox Formation is present underneath the majority of the site extending from the north.

## **6 SITE DRAINAGE AND RUNOFF**

The existing drainage generally runs from east to west or from the top of the ridge westward toward the embayment. It is carried by a series of swales and ditches to the embayment.

The proposed borrow area will be developed in 6 phases. The phases will start along Berkshire and continue north to just south of the power lines for Phases 1 thru 3. Phase 4 and 5 will be the large knoll where the former farm barns and silos were located. Phase 5 will be excavation on the first area along Berkshire and the fill work associated with leaving a generally flat slope as the final grading of the area.

Each phase will drain to one of the three sediment ponds to be installed prior to major borrow operations within these areas. The sediment ponds are designed to Tennessee Department of Environment and Conservation requirements and will discharge to the embayment. A series of ditches and pipes will convey the runoff from the excavation areas to the sediment ponds. The phased approach to stormwater management can be seen on the SWPPP drawings in Attachment 3.

## **7 EROSION PREVENTION AND SEDIMENT CONTROL MEASURES**

The site map and drawings (Attachment 3) depict the construction areas. The borrow area will drain to the sediment basins. Check dams, diversion berms/ditches and other stabilization methods will be used to maintain soil on-site to the extent practical.

## **8 INDUSTRIAL ACTIVITY DISCHARGE**

The site discharges process wastewater and storm water associated with industrial activity (coal-fired, steam electric generation) in accordance with NPDES permit number TN0005452 (001) and the Tennessee Stormwater Multi-Sector General Permit for Industrial Activities (TMSGP) permit number TNR051787. There is no additional source of storm water (other than construction storm water) or process wastewater on the plant site not under the control of the operator.

## **9 AFFECTED WETLANDS**

The receiving water for the Kingston Ash Recovery Project is Watts Bar Lake (Emory River). The affected wetland area located along the embayment and the tributary to the embayment are shown on the attached wetland drawing (attachment XX). The area of pond No. 3 will be converted into an enhanced wetland as a part of the restoration of the ash spill areas under a separate project.

## **10 EROSION CONTROL PLAN**

### **10.1 EROSION CONTROL DURING CONSTRUCTION**

#### **10.1.1 General Erosion and Sediment Control Measures**

Erosion and sediment controls will be designed to keep sediment in place and onsite. Control measures must be properly selected, installed, and maintained. If a measure proves to be ineffective, it must be replaced or modified.

Erosion and sediment controls must be in place and functional before any activities disturbing earth begins, and must be maintained throughout the construction period. Temporary measures may be removed to facilitate work but must be replaced after the work or at the end of each workday.

Construction will be sequenced to minimize the exposure time of the disturbed area. Existing vegetation will not be removed or disturbed more than 10 days before clearing and excavation begins, unless the area is seeded and mulched. These activities must be logged in the Major Activities Log (Attachment 1).

Clearing/grubbing must be held to the minimum necessary for grading and equipment operation.

Silt fence, sediment ponds, ditch dugouts, rock check dams, erosion eels, and other appropriate controls including temporary cover and seeding will be used as needed to minimize exposure of soil and to prevent eroded soil from leaving the work area.

Upland storm water diversion measures will be used to control run-on as needed. These will be installed prior to or concurrent with construction and the construction drawings will be updated as needed. Refer to SPPP drawings (Attachment XX) for details concerning storm water diversion measures.

All slopes will be 3(H):1(V) or flatter.

### 10.1.2 Roads and Access Areas

Access roads for construction will be installed with crushed stone, concrete, or asphalt, as necessary. When necessary, riprap, rock check dams, or berms will be used to control erosion caused by runoff. Runoff water will be diverted onto stable areas, or other devices will be used to control erosion at the discharge location.

Sediment tracking onto public roads will should not occur since the borrow traffic will not use public roads to convey the soil to the site.

### 10.1.3 Inspections and Maintenance

All erosion controls will be inspected and repaired as necessary, a minimum of 2 days per calendar week and a minimum of 72 hours between inspections. Sediment ponds and all other erosion and sediment control structures and devices will be cleaned out when reaching 50% of their capacity or as directed by the SWPPP Inspector. A certified State of Tennessee Level 1 Inspector, who is appointed by TVA, is responsible for the inspections. The qualified personnel who have a general understanding of erosion controls must perform the inspections. Inspectors must have successfully completed the "Fundamentals of Erosion Prevention and Sediment Control" or an equivalent course. The results of these inspections and necessary repairs will be logged on the SWPPP Inspection and Maintenance Report (Attachment 7). Areas to be inspected include outfalls, drainage locations, silt fences and other controls, inlet protection, vehicular entrance points, weekly litter pick up, stockpiled soil, material storage areas, disturbed areas not finally stabilized, etc. A **separate** sheet will be used for each area or control being inspected. For example, the silt fence will have its own sheet(s) so that a running record of the condition of that particular area can be segregated from the documentation on a rock lay down area. Inspection sheets will be maintained in a log by the Construction Manager.

During prolonged rainfall, daily inspections will be suggested and repairs will be made as needed. The SWPPP Inspector or the designee will make inspections on non-work days (weekends and holidays) if necessary. The official rainfall amount will be the rainfall as recorded at the TVA onsite gage for the KIF. Records of rainfall gage readings will be maintained and tracked on the Daily Rainfall Gage Record (Attachment 6) by the Project Manager.

Copies of rainfall logs and inspection records will be provided to the PA-E at the end of each month for the life of the project. A copy of the major activity log will be provided to the PA-E on a monthly basis. These records will be maintained onsite with the environmental records for a minimum of 10 years after the notice to terminate coverage under the general permit has been filed in accordance with the TVA Environmental Management System (EMS) procedures.

Repairs to any controls will be made as soon as practicable before the next rain event, but no later than 7 days after any deficiency is noted. If a device appears to be inadequate for the job, the Construction Manager will be notified. As a part of the inspection, the Inspector will complete a SWPPP Compliance Inspection Form. If any noncompliance conditions are found during the inspection, and noted on this form, a Noncompliance Condition Report will be issued. The Noncompliance Condition Report will be addressed and closed out within 14 calendar days.

Any modifications to this SWPPP that are required in response to inspections will be implemented within 14 days following the inspection.

#### 10.1.4 Stabilization Requirements

All disturbed areas will be stabilized as expeditiously as possible following completion of construction work in the area, but no later than 7 days after construction has permanently ceased (unless frozen ground conditions exist). Measures are required if construction temporarily ceases and will not commence again in 15 days.

#### 10.1.5 Final Seeding

Final site seed mixtures will be as shown in Table 10-1.

**Table 10-1 Final Seeding Rate**

Season / Location	Application Rate (Pounds per Acre)
Spring/Summer:	
Weeping Lovegrass	3
Bermuda	5
Redtop Grass	5
Kentucky 31 Fescue	25
German Millet	25
Fall/Winter:	
Rye	15
Fescue	50
Red Clover	5
White Clover	5
Bermuda	5
Love	3
Wild Flowers	12
Perimeter Dikes Grass Seed Mix:	
Red Clover	5
White Clover	5
Bermuda	10
Love	3

#### 10.1.6 Fertilizer

Apply fertilizer with the ratio of 19-19-19 at an application rate of 400 lbs/acre. Straw or mulch will be used to cover seeding. Straw or mulch will be applied at a rate of 2-1/2 tons/acre using hydroseeding methods.

### **10.1.7 Soil and Sediment Control/Sediment Migration**

Silt fences or other measures will isolate stockpiled soil to prevent soil movement.

Sediments that leave the site but do not reach the receiving stream will be removed so that they are not washed into streets or any receiving streams. TVA Environmental Compliance will be contacted if sediment reaches a receiving stream.

### **10.1.8 Dewatering of Work Areas/Vehicle Washing and Maintenance/Dust Suppression**

During dewatering of work areas (if required), water discharge will be directed to the existing settling basin or other discharge structure. The discharger will ensure that the discharge is not erosive and does not carry any visible traces of sediment into the receiving stream.

All water resulting from wheel wash stations will be directed to diversion ditches and conveyed to the existing settling basins or into the Sluice Trench, depending on location. No detergents will be used in onsite vehicle wash downs. No materials used for vehicle maintenance will be allowed to reach surface waters.

A water truck will be present during construction to provide dust suppression, if required. Water will be dispersed over disturbed areas that are being worked or are causing dusting. The truck will run at least once a day during dry periods, but may be required to run several times a day if necessary to control dusting.

### **10.1.9 Housekeeping Requirements**

Litter, construction debris, and/or chemicals will be picked up and properly disposed of prior to the anticipated storm events forecasted by local weather reports. Regular litter pickup (e.g., weekly or more often as needed) may be conducted as an adequate alternate to picking up litter before forecast storm events to prevent entry of trash into receiving streams. These litter pickup events need to be recorded on the SWPPP Compliance Condition Report (Attachment 8) and reported to the Erosion and Sedimentation Control Specialist.

### **10.1.10 General Water Quality Requirements/Other Situations**

Stormwater discharges will not have visible floating scum, oil, or other matter or cause an objectionable color contrast in the receiving stream. If such conditions are observed, controls will be inspected and repaired or reinforced as necessary and the onsite Project Manager should be notified immediately. If repairs or changes are made, they will be recorded on the inspection sheet(s).

Any situation that arises and has not specifically been mentioned above will be addressed by the Construction Manger in consultation with onsite PA-E as described in this SWPPP, and the Environmental Compliance group. At a minimum, industry standard best management practices will be used when addressing any new concerns.

### **10.1.11 Sediment Pond Maintenance and Clean Out Plan**

#### **10.1.11.1 Inspection and Maintenance**

The skimmers will be inspected once every month to insure they are in proper working order and cleaned out if fouled.

The sediment ponds are observed during the SWPPP inspections that occur twice weekly and if needed will be cleaned prior to the scheduled cleaning.

All areas will be monitored during the SWPPP inspections.

The sediment ponds will be cleaned out (sediment removed) when the clean out elevation is reached or it is deemed that an average of the sediment elevation yields the clean out elevation. The clean out elevations are: Pond 1 =741.5, Pond 2 = 741.35 and Pond 3 =745.5. These elevations will be determined once a month by the use of sonar and/or other means. Once the sediment elevation is determined the SWPPP Manager will decide if clean out is required. Additional clean out may be required if large storm events or other events warrant it, as determined by the SWPPP Manager.

Sediment Ponds are proposed to be cleaned out using a combination of mechanical equipment (trackhoe and truck). The material removed by mechanical means will be stockpiled onsite until it is dry enough to be used as fill material.

## **10.2 POST-CONSTRUCTION EROSION CONTROLS**

Erosion control measures will be inspected and maintained until vegetation in the disturbed areas has returned to the pre-construction conditions or the site is stabilized.

All debris and temporary erosion control devices will be removed when stabilization measures are complete and persistent vegetative cover or surface stabilization is achieved.

# **11 SPECIFIC BEST MANAGEMENT PRACTICES AND SPILL PREVENTION**

## **11.1 MATERIALS AND WASTES**

### **11.1.1 Waste Materials**

Trash and construction debris from the site that has not come into contact with ash materials will be hauled to an approved landfill. No construction waste material will be buried onsite. Clearing debris (brush and timber) may be chipped and used as mulch onsite in accordance with state and local regulations. The onsite PA-E will be contacted for approved method of disposing of clearing debris if any is generated.

### **11.1.2 Hazardous Waste**

In the event that hazardous waste is generated, hazardous waste will be disposed of according to EPA regulations, state, and/or local regulations. The onsite PA-E will be contacted for approved method of disposing of such materials.

### **11.1.3 Sanitary Waste**

Portable sanitary units will be provided for use by workers as needed throughout the life of the project. Sanitary waste will be regularly collected from the portable units by a licensed sanitary waste management contractor.

#### **11.1.4 Material Storage**

Stored materials that cannot contaminate storm water may be stored in the open. However, the lay down area for these items will be prepared so that no sediment leaves the site.

Stored petroleum and other liquid products will have secondary containment if the aggregate quantity in one spot is 55 gallons or greater. The KIF Integrated Pollution Prevention Plan provides requirements for storage of liquid products.

Other products that may contaminate storm water. For example, dry fertilizer, will be covered or stored inside to prevent contact with storm water.

Hazardous wastes and materials will have secondary containment and will be covered or stored inside to prevent contact with storm water. The secondary containment will have a manually operated drain valve that can be locked. If stored inside, the secondary containment needs no drain.

Releases to secondary containment will be cleaned up when discovered and the source of the release repaired as soon as possible. Secondary containment may be earth, but spills to earth will be completely cleaned up within 2 hours of discovery. The onsite Project Manager will be notified immediately, who in turn will contact the onsite PA-E as soon as possible. See reporting and record keeping requirements below.

Material storage areas will be as small as practicable and as few in number as practicable. They will be established only in designated areas that minimize the disturbance of soil during use and the chance of storm water runoff contaminated with sediment or other pollutants.

### **11.2 PRODUCT-SPECIFIC PRACTICES (AS APPLICABLE)**

#### **11.2.1 Concrete**

Unused concrete and wash water will be disposed of at the direction of TVA. Concrete and water from the washout or fill will not reach waters of the state, either surface or ground waters. Disposal pits or wash pits will not be located within 200 ft of any stream or wet weather conveyance.

#### **11.2.2 Petroleum Products**

All onsite vehicles will be monitored for leaks and will receive regular preventive maintenance to reduce the chance of leakage. If petroleum products will be present at the site, they are stored in tightly sealed containers that are clearly labeled. If the aggregate quantity of petroleum products in one spot is 55 gallons or greater, secondary containment will be provided per the KIF Integrated Pollution Prevention Plan.

### **11.3 SPILL CONTROL AND RESPONSE PRACTICES**

#### **11.3.1 Equipment**

TVA and the constructor will maintain stockpiles of materials and equipment necessary for spill cleanup on the site at all times. Equipment and materials will include but not be limited to brooms, shovels, rags, absorbent materials, and plastic or metal trash containers specifically designed for this purpose. The materials and equipment necessary for spill cleanup will be

dependent upon the nature and quantity of the material stored onsite. A signed inventory sheet will be provided to the onsite PA-E on a monthly basis.

### **11.3.2 Response**

All spills will be cleaned up immediately upon discovery. The constructor will report spills to the Construction Manager. The Construction Manager will contact the onsite PA-E as soon as possible. See Section 13 for reporting and record keeping requirements.

### **11.3.3 Safety**

All spill areas will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with hazardous substances.

## **12 HEALTH AND SAFETY**

Activities conducted under this SWPPP will be in accordance with requirements of the Site Wide Safety and Health Plan. In particular, care will be taken during inspection activities for safe footing. Work immediately adjacent to ponds or the river will be done using a personal floatation device.

## **13 REPORTING AND RECORD KEEPING**

In the event of a spill of oil, hazardous substances, or other pollutants, to the waters of the state, the onsite Construction Manager will notify the onsite PA-E and the Operations Duty Specialist. These individuals will notify the National Response Center, Tennessee Emergency Management Agency, and the Spill Prevention Control and Countermeasure Environmental Compliance. The onsite PA-E will contact the local Environmental Assistance Center (Division of Water Pollution Control) within 14 days of the release to storm water or the receiving stream.

The Project Manager will place a write-up of the spill in the SWPPP file within 14 days of the event and will coordinate with the NPDES specialist any needed plan modifications to include additional measures as necessary. The write-up will include description of the release (i.e., quantity and type of material), date of the release, circumstances leading to the release, and steps taken to respond and/or address the release.

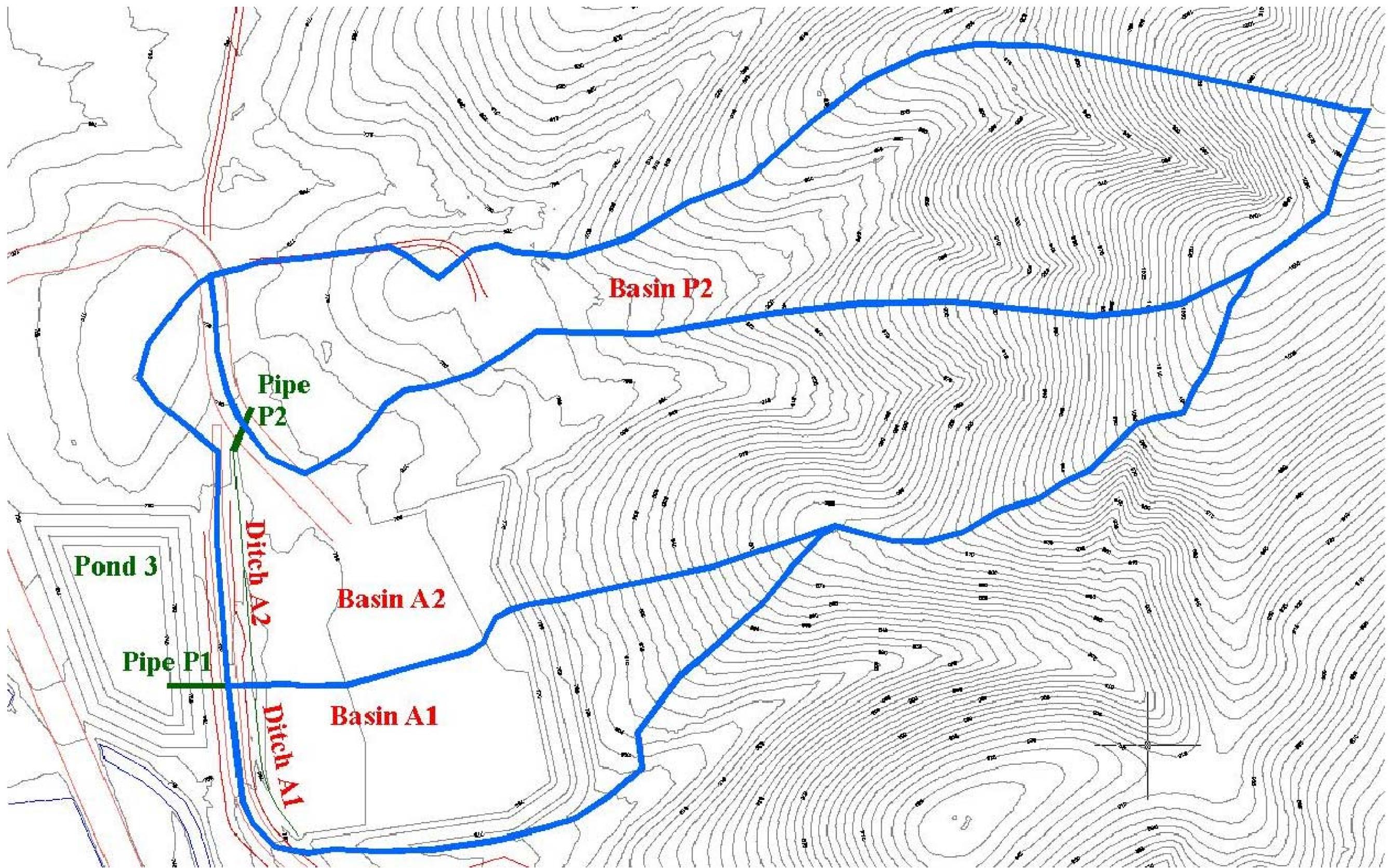
If a change in project scope occurs, the SWPPP will be modified. If state inspectors require a modification, it will be accomplished in a timely manner. If any routine inspection warrants a plan modification, the SWPPP will be modified within 7 days and the revision will be implemented within 14 days.

The required records will be kept on file in the construction office and the final, complete set of records will be transferred to the plant PA-E at the end of construction. TVA is required by the permit to keep records of all spills and inspections for a minimum of 3 years after the Notice of Termination is filed, or longer if requested by the Tennessee Division of Water Pollution Control; however, the TVA EMS system requires 10 years record maintenance.

**Attachment 1**  
**Major Activities Log (Form 006A)**



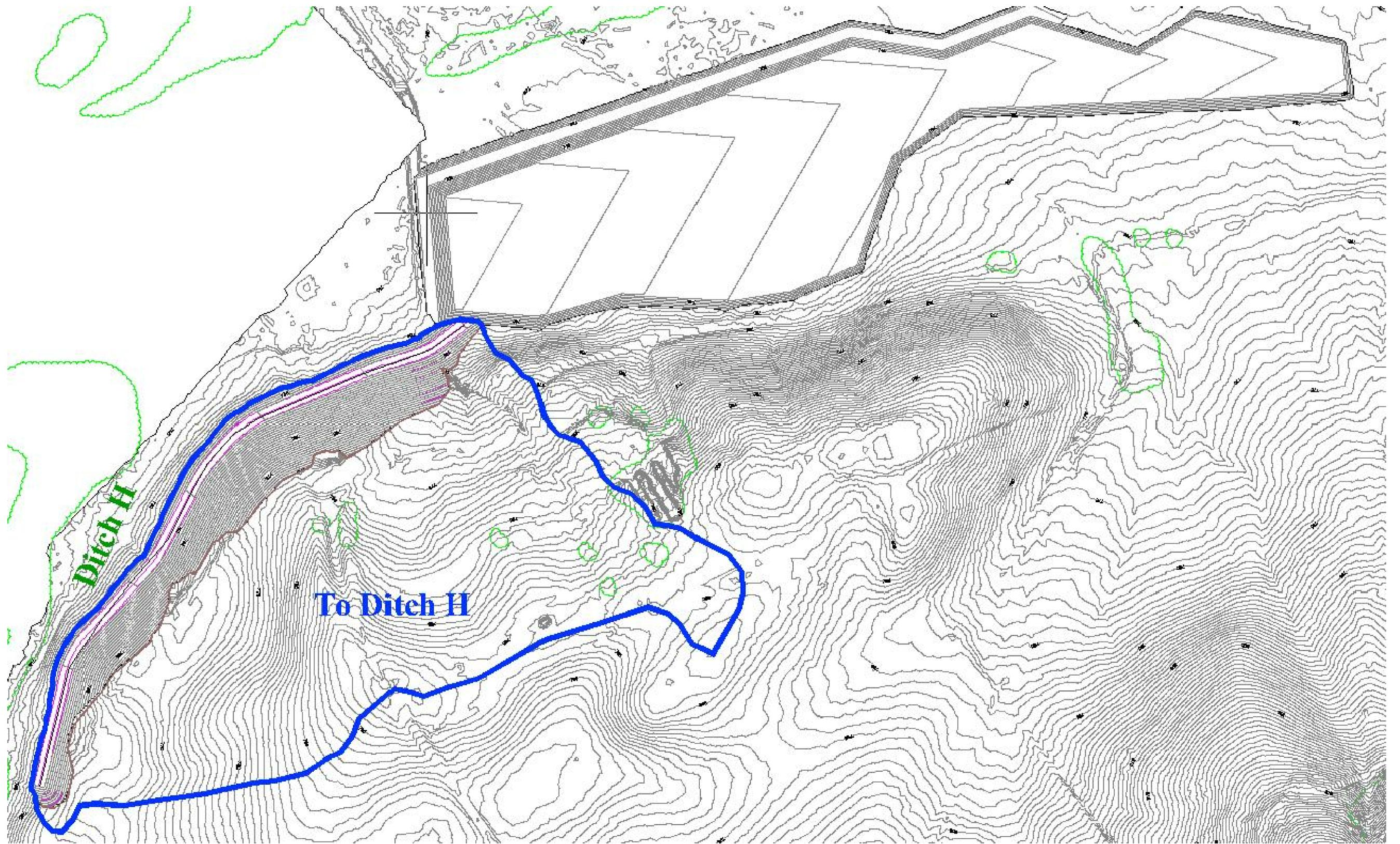
**Attachment 2**  
**Drainage Maps, Runoff Coefficient Calculation, Drainage Calculation Summary**



PLAN



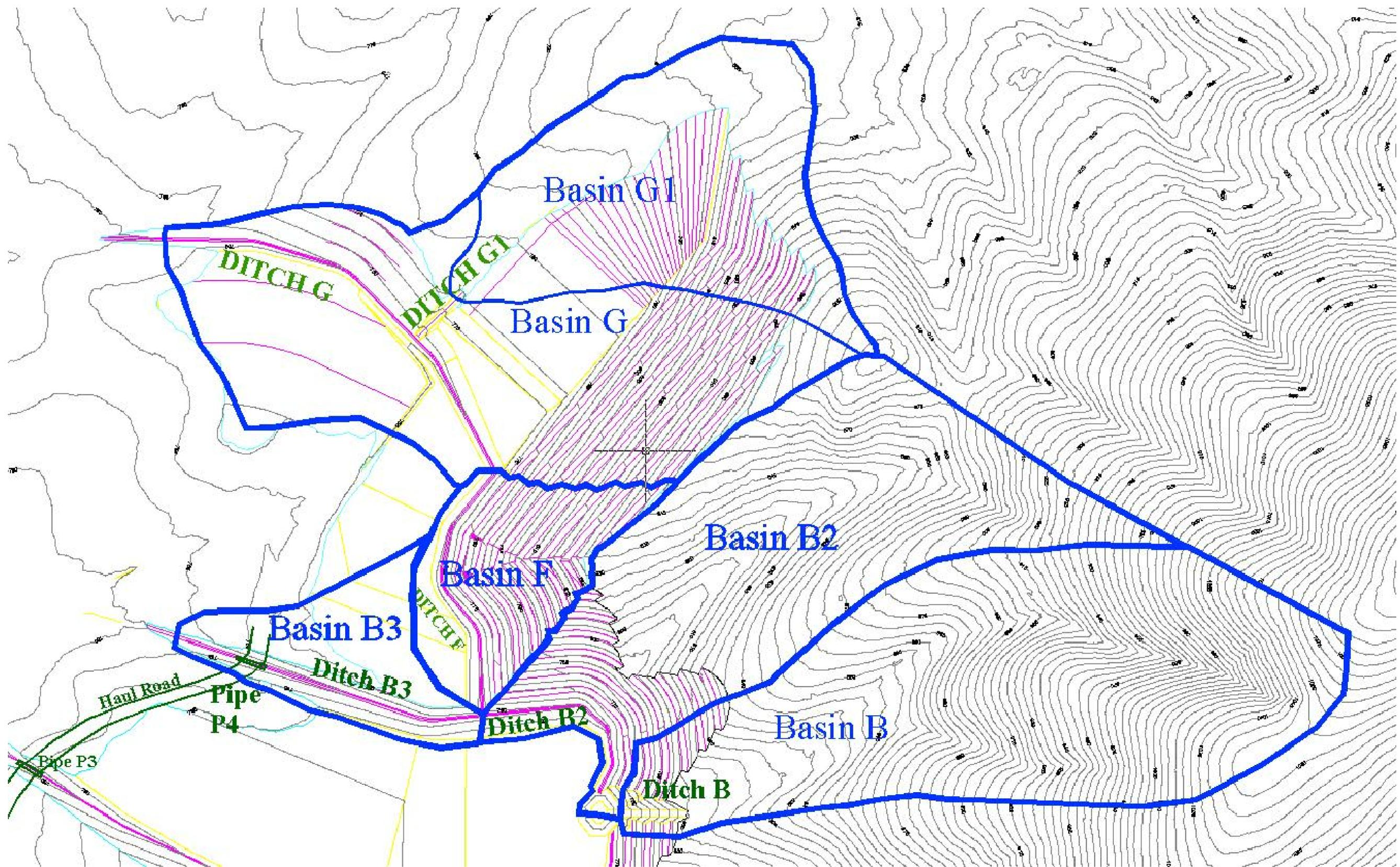
<b>JACOBS</b>		
KINGSTON FOSSIL PLANT TENNESSEE VALLEY AUTHORITY		
PHASE 1 DRAINAGE MAP		
SCALE: NONE	DRAWING NO. DM-01	REV.



PLAN



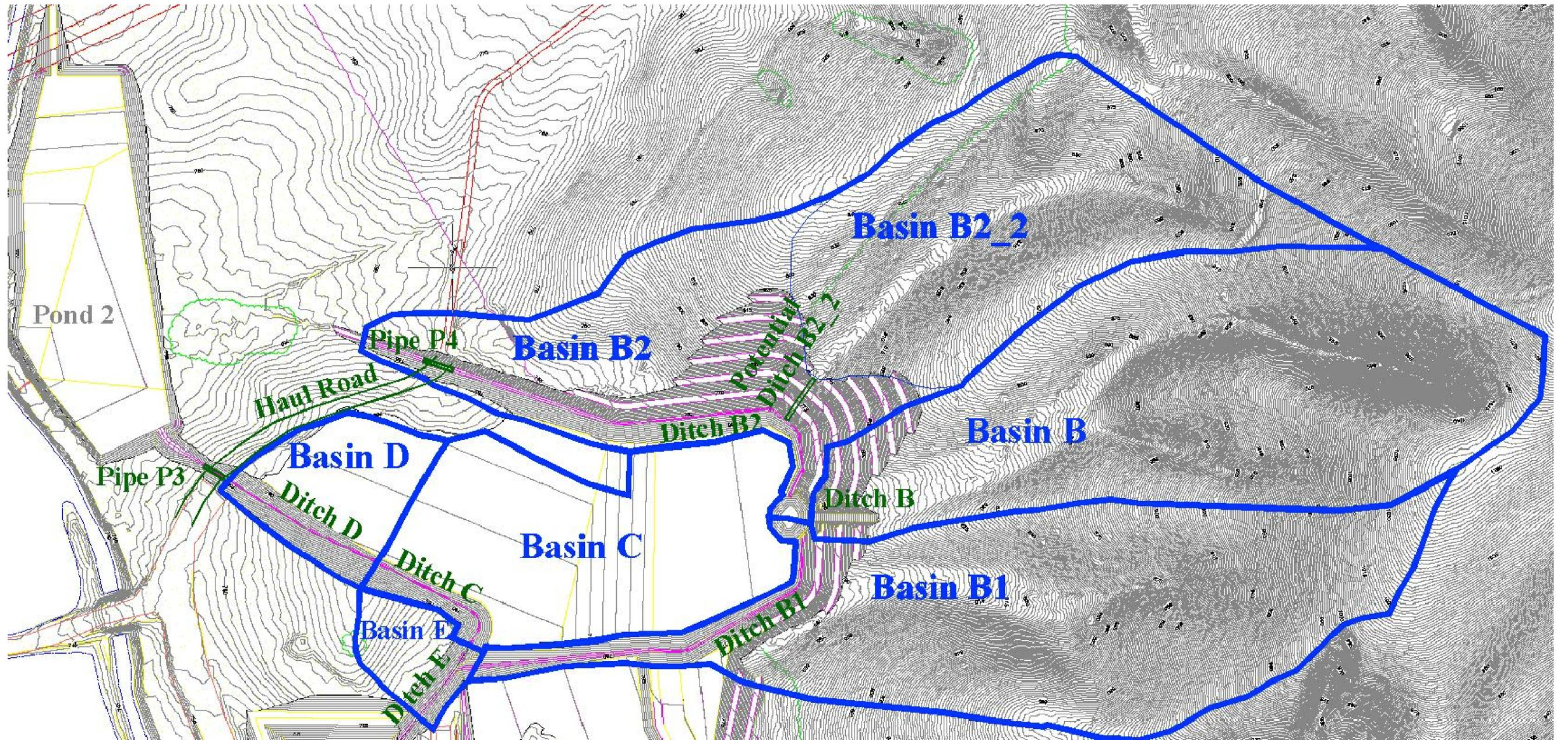
<b>JACOBS</b>		
KINGSTON FOSSIL PLANT TENNESSEE VALLEY AUTHORITY		
PHASE 4 DRAINAGE MAP		
SCALE: NONE	DRAWING NO. DM-04	REV.



PLAN



<b>JACOBS</b>		
KINGSTON FOSSIL PLANT TENNESSEE VALLEY AUTHORITY		
PHASE 3 DRAINAGE MAP		
SCALE: NONE	DRAWING NO. DM-03	REV.



PLAN



<b>JACOBS</b>		
KINGSTON FOSSIL PLANT TENNESSEE VALLEY AUTHORITY		
PHASE 2 DRAINAGE MAP		
SCALE: NONE	DRAWING NO. DM-02	REV.

## Composite Curve Numbers

Note: For disturbed soils, HSG was increased by one category. eg HSG B goes to HSG C.

<b>Sub-Area 1</b>			
<b>Pre-Construction</b>			
		Area (acres)	CN
HSG B	Woods in Fair Condition	0.00	60
	Pasture in Fair Condition	25.14	69
	Newly Graded	0.00	86
HSG C	Woods in Fair Condition	0.00	73
	Pasture in Fair Condition	6.08	79
	Newly Graded	0.00	91
HSG D	Woods in Fair Condition	0.00	79
	Pasture in Fair Condition	10.81	84
	Newly Graded	0.00	94
Total Area (acres)	42.03	Composite CN	74
<b>During Construction</b>			
		Area (acres)	CN
HSG B	Woods in Fair Condition	0.00	60
	Pasture in Fair Condition	0.00	69
	Newly Graded	25.14	83
HSG C	Woods in Fair Condition	0.00	73
	Pasture in Fair Condition	0.00	79
	Newly Graded	6.08	91
HSG D	Woods in Fair Condition	0.00	79
	Pasture in Fair Condition	0.00	84
	Newly Graded	10.81	94
Total Area (acres)	42.03	Composite CN	89
<b>Post-Construction</b>			
		Area (acres)	CN
HSG B	Woods in Fair Condition	0.00	60
HSG B (Disturbed)	Pasture in Fair Condition	25.14	79
HSG B	Newly Graded	0.00	83
HSG C	Woods in Fair Condition	0.00	73
HSG C (Disturbed)	Pasture in Fair Condition	6.08	84
HSG C	Newly Graded	0.00	91
HSG D	Woods in Fair Condition	0.00	79
HSG D (Disturbed)	Pasture in Fair Condition	10.81	89
HSG D	Newly Graded	0.00	94
Total Area (acres)	42.03	Composite CN	82

<b>Sub-Area 2</b>				
<b>Pre-Construction</b>				
		Area (acres)	CN	
HSG B	Woods in Fair Condition	12.13	60	
	Pasture in Fair Condition	34.55	69	
	Newly Graded	0.00	86	
HSG C	Woods in Fair Condition	0.00	73	
	Pasture in Fair Condition	0.00	79	
	Newly Graded	0.00	91	
HSG D	Woods in Fair Condition	0.00	79	
	Pasture in Fair Condition	0.00	84	
	Newly Graded	0.00	94	
Total Area (acres)	46.68	Composite CN	67	
<b>During Construction</b>				
		Area (acres)	CN	
HSG B	Woods in Fair Condition	12.13	60	
	Pasture in Fair Condition	0.00	69	
	Newly Graded	34.55	83	
HSG C	Woods in Fair Condition	0.00	73	
	Pasture in Fair Condition	0.00	79	
	Newly Graded	0.00	91	
HSG D	Woods in Fair Condition	0.00	79	
	Pasture in Fair Condition	0.00	84	
	Newly Graded	0.00	94	
Total Area (acres)	46.68	Composite CN	79	
<b>Post-Construction</b>				
		Area (acres)	CN	
HSG B	Woods in Fair Condition	12.13	60	
HSG B (Disturbed)	Pasture in Fair Condition	34.55	79	
HSG B	Newly Graded	0.00	83	
HSG C	Woods in Fair Condition	0.00	73	
	HSG C (Disturbed)	Pasture in Fair Condition	0.00	84
	HSG C	Newly Graded	0.00	91
HSG D	Woods in Fair Condition	0.00	79	
	HSG D (Disturbed)	Pasture in Fair Condition	0.00	89
	HSG D	Newly Graded	0.00	94
Total Area (acres)	46.68	Composite CN	74	

<b>Sub-Area 3</b>				
<b>Pre-Construction</b>				
		Area (acres)	CN	
HSG B	Woods in Fair Condition	17.33	60	
	Pasture in Fair Condition	28.47	69	
	Newly Graded	0.00	86	
HSG C	Woods in Fair Condition	0.00	73	
	Pasture in Fair Condition	0.00	79	
	Newly Graded	0.00	91	
HSG D	Woods in Fair Condition	0.00	79	
	Pasture in Fair Condition	0.00	84	
	Newly Graded	0.00	94	
Total Area (acres)	45.80	Composite CN	66	
<b>During Construction</b>				
		Area (acres)	CN	
HSG B	Woods in Fair Condition	17.33	60	
	Pasture in Fair Condition	0.00	69	
	Newly Graded	28.47	83	
HSG C	Woods in Fair Condition	0.00	73	
	Pasture in Fair Condition	0.00	79	
	Newly Graded	0.00	91	
HSG D	Woods in Fair Condition	0.00	79	
	Pasture in Fair Condition	0.00	84	
	Newly Graded	0.00	94	
Total Area (acres)	45.80	Composite CN	76	
<b>Post-Construction</b>				
		Area (acres)	CN	
HSG B	Woods in Fair Condition	17.33	60	
HSG B (Disturbed)	Pasture in Fair Condition	28.47	79	
HSG B	Newly Graded	0.00	83	
HSG C	Woods in Fair Condition	0.00	73	
	HSG C (Disturbed)	Pasture in Fair Condition	0.00	84
	HSG C	Newly Graded	0.00	91
HSG D	Woods in Fair Condition	0.00	79	
	HSG D (Disturbed)	Pasture in Fair Condition	0.00	89
	HSG D	Newly Graded	0.00	94
Total Area (acres)	45.80	Composite CN	72	

## Sediment Pond Configurations

Sediment ponds as configured on the last set of contours are acceptable with the following modifications.

1. The 746.0 contour must be closed at the north end of the channel leading into the north end of sediment pond 2.
2. The 753.0 contour must be closed at the northwest end of the ditch leading into the south end of Pond 3.
3. Runoff must be diverted past the north end of the channel leading into Pond 2 from the north as previously discussed. An alternative is to close the 747.0 contour as well as the 746.0 contour.
4. Runoff from the hillside to the east of the southern end of Sub-Area 3 must be diverted to the south as previously discussed.

Each pond has a 6 ft diameter standpipe as the principal spillway. The configurations of the principal and emergency spillways are as follows.

Pond	Outlet Pipe			Principal Spillway	Emergency Spillway		Embankment Top
	Inlet Invert	Outlet Invert	Length (ft)	Top	Top	Width	
1	740	739	150	743.50	746.00	15.0	750.0
2	740	739	100	743.35	744.42	20.0	746.0
3	744	743	100	749.20	751.00	15.0	753.0

### Routing Flow through the Sediment Ponds

Hydrographs have been generated using HEC-HMS version 3.5 and routed through the sediment ponds. The beginning water surface elevation in each simulation is the top of the principal spillway. The outlet from each pond is through a 36 inch diameter RCP pipe with no tailwater effect.

The discharge from each pond was defined by an elevation-discharge rating curve developed as follows.

1. The water surface elevation in the pond for a series of flows was developed as follows.
  - a. The headwater required for flow through the 36 inch diameter outlet pipe was tabulated for a series of flows at 1 cfs increments.
  - b. For each of a series of assumed total discharges from the pond, a water surface elevation was assumed.
  - c. The discharge through the emergency spillway for the assumed elevation was computed, with the remaining discharge passing through the standpipe and the outlet pipe.
  - d. The headwater from the outlet pipe was interpolated from the results of part a, and used as tailwater for flow into the standpipe.
  - e. The flow into the standpipe (principal spillway) for the assumed headwater and tailwater was computed for both weir flow and orifice flow, and the smaller of the two flows used as the flow into the standpipe.

- f. The total discharge (emergency spillway plus principal spillway) for the assumed headwater was compared with the target discharge.
- g. A new headwater was assumed and the process repeated until the assumed and computed discharges matched within 0.01%.

Elevations of the cleanout, the dewatering orifice, the top of the standpipe, and the corresponding storage volumes are given below.

<b>Pond 1</b>			<b>Drainage Area = 42.03 acres</b>		
Total Storage Volume (cy)	Total Storage Elevation (feet)	Wet Storage Volume (cy)	Wet Storage Elevation (feet)	Cleanout Volume (cy)	Cleanout Elevation (feet)
<b>Required Volumes and Elevations</b>					
5,362	742.17	2,816	741.44	1,429	741.02
<b>Design Volumes and Elevations</b>					
14,534	743.50	7,525	742.50	3,026	741.50
<b>Pond 2</b>			<b>Drainage Area = 46.68 acres</b>		
Total Storage Volume (cy)	Total Storage Elevation (feet)	Wet Storage Volume (cy)	Dry Storage Elevation (feet)	Cleanout Volume (cy)	Cleanout Elevation (feet)
<b>Required Volumes and Elevations</b>					
6,255	742.83	3,128	741.92	1,587	741.31
<b>Design Volumes and Elevations</b>					
8,277	743.35	4,562	742.35	1,687	741.35
<b>Pond 3</b>			<b>Drainage Area = 45.80 acres</b>		
Total Storage Volume (cy)	Total Storage Elevation (feet)	Wet Storage Volume (cy)	Dry Storage Elevation (feet)	Cleanout Volume (cy)	Cleanout Elevation (feet)
<b>Required Volumes and Elevations</b>					
6,137	748.98	3,068	746.76	1,557	745.47
<b>Design Volumes and Elevations</b>					
6,504	749.20	3,242	746.90	1,596	745.50

Runoff hydrographs entering each pond were generated and routed through the sediment pond using HEC-HMS version 3.5. The results are as follows.

**Peak water surface elevations for the 5, 25, and 100 year 24-hour storms for the proposed sediment basins.**

Location	Top of Embankment	Elev of Emergency Spillway	5 year max Water Surface Elevation	25 year max Water Surface Elevation	100 year max Water Surface Elevation
Pond 1	750.00	746.00	743.51	743.52	743.52
Pond 2	746.00	744.42	744.37	744.92	745.15
Pond 3	753.00	751.00	750.52	751.37	751.73

## Faircloth Skimmer Sizing

The size and orifice diameter of the Faircloth Skimmer required to slowly dewater each pond was computed as recommended by the manufacturer.

The installation instructions for the Faircloth Skimmer Surface Drain include instructions for sizing the drain orifice.

As an example, for a 5 inch skimmer, the data are:

Head (H) = 4 inches = 0.333 ft

Orifice Coefficient(C) = 0.59

Inserting these values into the orifice equation yields:

$$Q = 0.59 A \sqrt{2gH} = 0.59 \left( \frac{\pi D^2}{4} \right) \sqrt{2(32.2)(0.333)}$$

where Q = flow rate (cfs)

D = orifice diameter in ft.

The orifices were sized to drain the required dry storage volume in 72 hours, not the design dry storage volume. This is conservative since the design volume (particularly in Pond 1) is greater than the required volume. For Pond 1 that is much larger than needed, the required dry storage is 2,816 cy, while the design dry storage is 13,600 cy. If the Faircloth Skimmer were design to drain 13,600 cy in 72 hours, the required storage of 2,816 cy would be drained in about 15 hours and insufficient time would be available for sediment to settle.

The volume of water to be drained in 72 hours is 2,816 cy for Pond 1, 3,128 cy for Pond 2, and 3,086 cy for Pond 3. Solving the orifice equation yields:

D = 4.44 inches for Pond 1.

D = 4.67 inches for Pond 2.

D = 4.63 inches for Pond 3.

Faircloth Skimmers with a nominal size of 5 inches will be required. The Faircloth Skimmer Surface Drain installation manual states that "As a practical matter" 0.1 inch "is about as close as the cutter can be adjusted and the orifice cut". Therefore the design orifice diameters are

D = 4.4 inches for Pond 1.

D = 4.7 inches for Pond 2.

D = 4.6 inches for Pond 3.

## Ditch and Pipe Notes

Files included are:

1. Phase n.jpg and Phase n Design.dwg for n = 1,2,3,4 are graphics showing the locations of ditches and pipes and the AutoCad drawings from which the jpeg files were taken. Note that ditches B2\_2 and G1 are proposed steep ditches with riprap and the corresponding drainage basins were used to estimate flow in the ditches. Basin G1 is within Basin G and Basin B2\_2 is within Basin B2. ie, Basin G includes basin G1 so the flow in ditch G is the runoff from Basin G and not the sum of the runoff from Basin G and the runoff from Basin G1.
2. PostConstruction North and South show the SubBasin delineations for the "permanent" situations.
3. Ditch Sizes and Linings.doc summarizes the results of the calculations.
4. Ditch and Pipe Notes.doc is this information.

### Methodology:

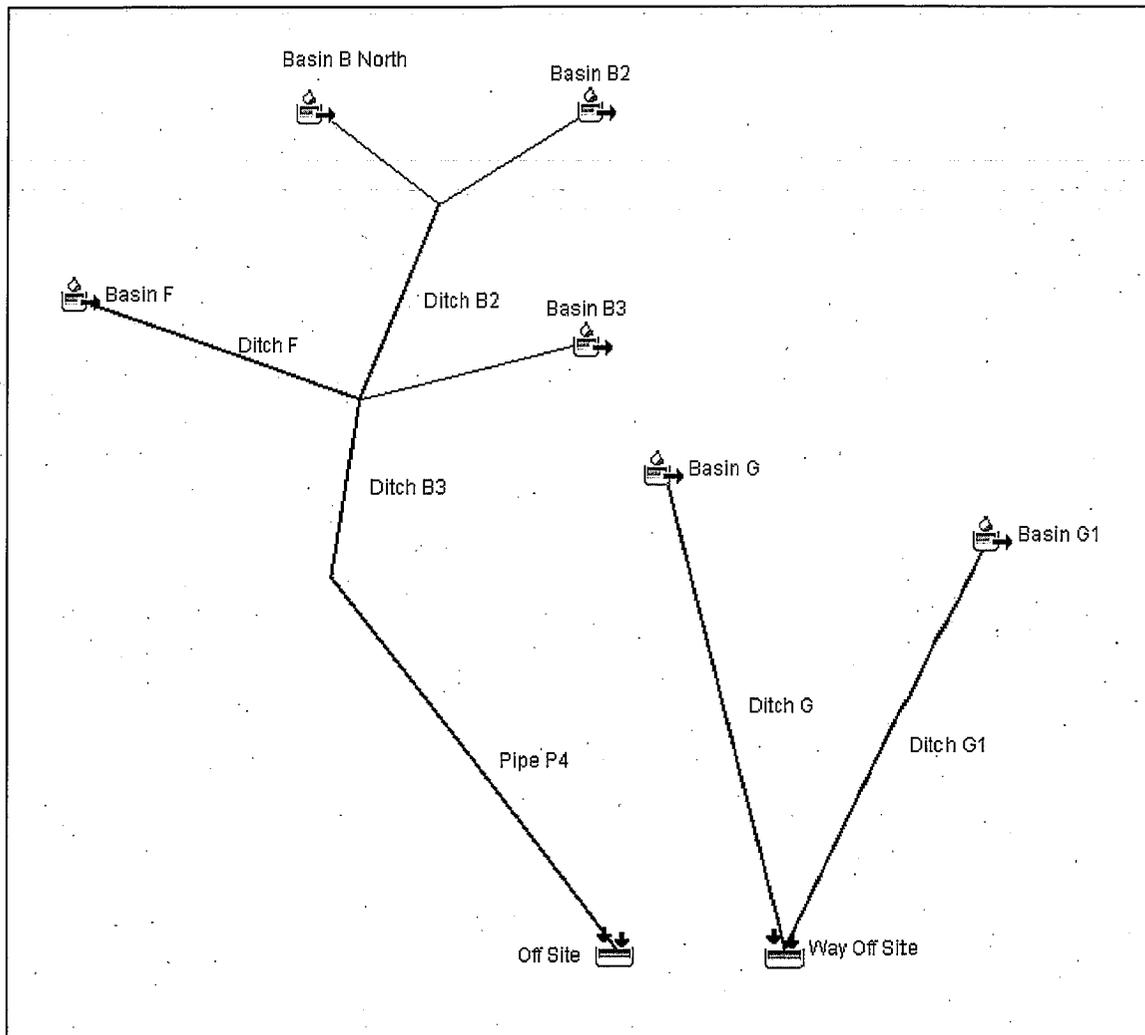
SubBasins were delineated to define areas draining to each ditch and/or pipe. As much as possible, the names were matched with the names of the ditches and pipes. Curve numbers were assigned as for the sediment ponds. For example, for SubBasin B1 in Phase 2, the SubBasin attributes are:

Ditch	Basin(s)	Contributing Drainage Area				Estimated	
		Sq Ft	Acres	Sq Mi	CN	TOC	Lag
B1	B1	331,105	7.60	0.011876769	64	8	4.8
	Bare	41,223			CN = 86		
	Pasture	13,284			CN = 69		
	Forest	276,598			CN = 60		

The Time of Concentration (TOC) was estimated by a visual comparison with the Sediment Pond drainage areas. They were not calculated in detail.

I built a HEC-HMS model to compute the runoff from each SubArea and route it through the ditches and pipes. The routing was simply instantaneous with a zero lag. An example model layout is shown below for Phase 3. Basin B North is 1/2 of Basin B, that flows into Ditch B2 from the plunge pool.

The pipes were analyzed in HY-8 as CMP pipes projecting into the upstream sump with no headwall. Any improvements would yield a lower headwater.



**Figure 1 Schematic of Phase 3 drainage.**

Manning n values and permissible shear stresses were obtained from Table in Chapter 5 of the May 2011 edition of the TDOT drainage manual. Where the TDOT guidance specified n as a function of depth such as for TRMs and ECBs in Table 5A-6, the n value was linearly interpolated with depth for the depth range from 0.5 to 32.0 ft.

You might argue for rip-rap protection for the steep ditches from Tables 5A-22 to 5A-25. I plotted the permissible maximum flows against channel slope for 3:1 side slopes and a 10 foot bottom with and fit the data to a simple power curve. Extrapolation of the curve indicates that rip-rap might well work.

I don't have any real data for ditch U as it was not on the topography, but there will need to be a ditch there to divert water from the hillside away from Pond 3.











Pipe Summary

Tailwater for P1 from predicted maximum water surface elevation in Pond 3

Other tailwaters from flow in downstream ditches

**Analysis of Pipe Flow**

**Phase 1**

Pipe P1 leading to Pond 3 from Ditches A-1 and A-2

TW	Qmax	Length	U/S Invert	D/S Invert	Diameter inches	Number of Barrels	U/S Head	Control
750.18 2 year	36.2	125.0	750.0	745.0	36.0	1	753.32	Outlet
750.87 10 year	74.6						755.19	Outlet
751.37 25 year	100.1						755.33	Outlet

Pipe P2 leading to Ditch A-2

Assume Top of road at 764.0

	Qmax	Length	U/S Invert	D/S Invert	Diameter	Number of Barrels	U/S Head	Control
2 year	8.5	72.0	761.0	759.0	18.0	1	763.19	Inlet
10 year	21.1						764.12	Inlet
25 year	30.0						764.18	Inlet

**Phase 2**

Pipe P3 under haul road and leading to Pond 2

Assume Top of road at 756.0

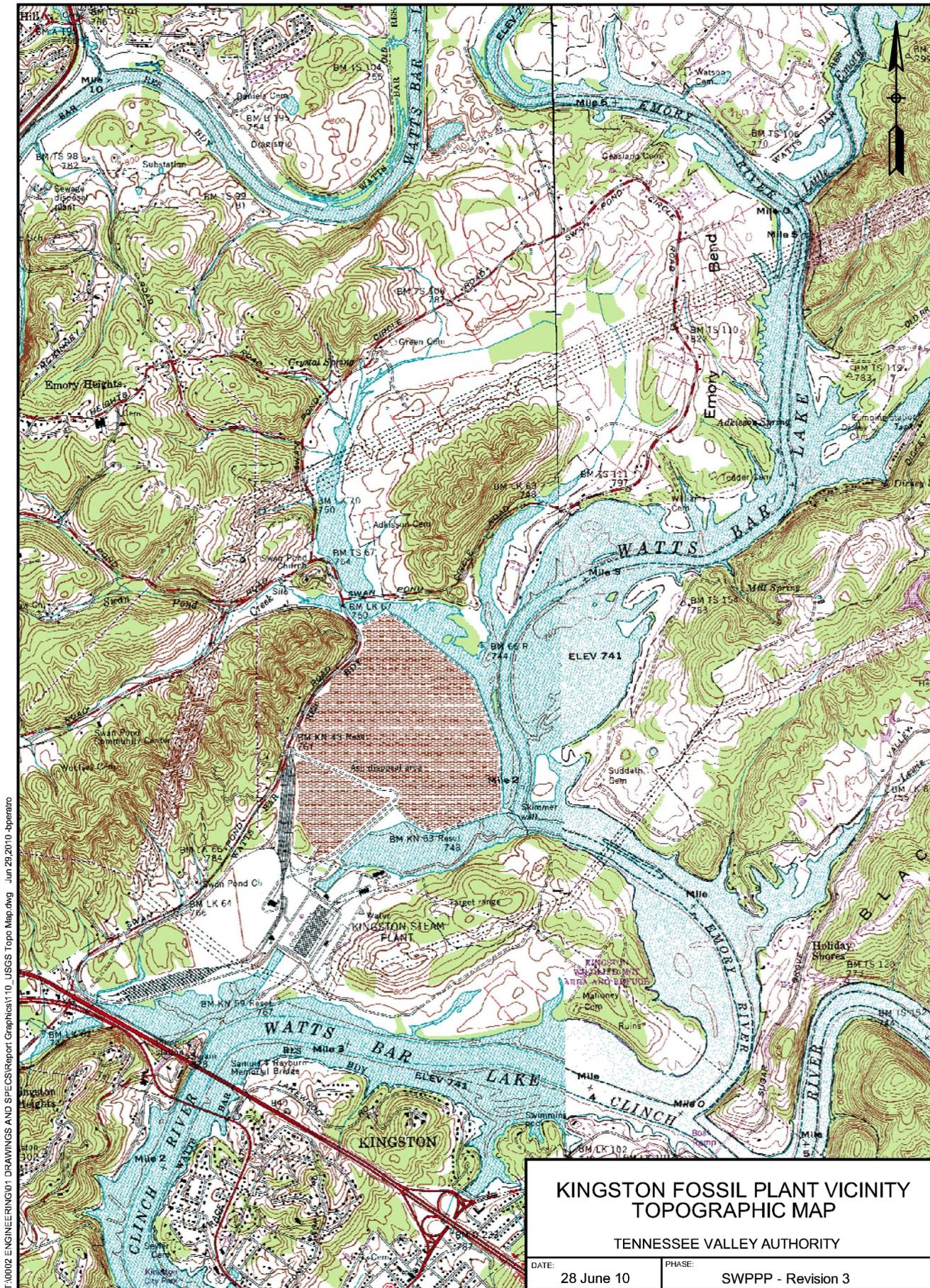
	Qmax	Length	U/S Invert	D/S Invert	Diameter	Number of Barrels	U/S Head	Control
2 year	4.3	50.0	753.5	751.5	18.0	1	754.73	Inlet
10 year	6.8						755.25	Inlet
25 year	8.2						755.60	Inlet

Pipe P4 under Haul Road  
Assume Top of road at 756.5

	Qmax	Length	U/S Invert	D/S Invert	Diameter	Number of U/S Head	Control
2 year	15.9	50.0	753.0	752.4	24.0 Barrels	755.68	Outlet
10 year	34.4					756.65	Outlet
25 year	46.8					756.72	Outlet

Assume CMP Pipe with thin edge projecting  
Analyze in HY-8 "R:\TVA\2012 Work\April\April Calculations\Pipe  
Analysis.hy8".

**Attachment 3**  
**Kingston Fossil Plant Vicinity Topographic Map, Kingston Ash Recovery Project Site**  
**Map, and SWPPP Drawings**



**KINGSTON FOSSIL PLANT VICINITY  
TOPOGRAPHIC MAP**

TENNESSEE VALLEY AUTHORITY

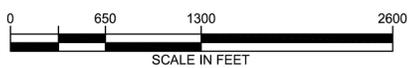
DATE: 28 June 10	PHASE: SWPPP - Revision 3
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I:\002 ENGINEERING\Civil\Report\Graphics\109\_SWPPP Site Map R1.dwg May 31 2012 -dlong

DATE OF PHOTO: MARCH 26, 2012

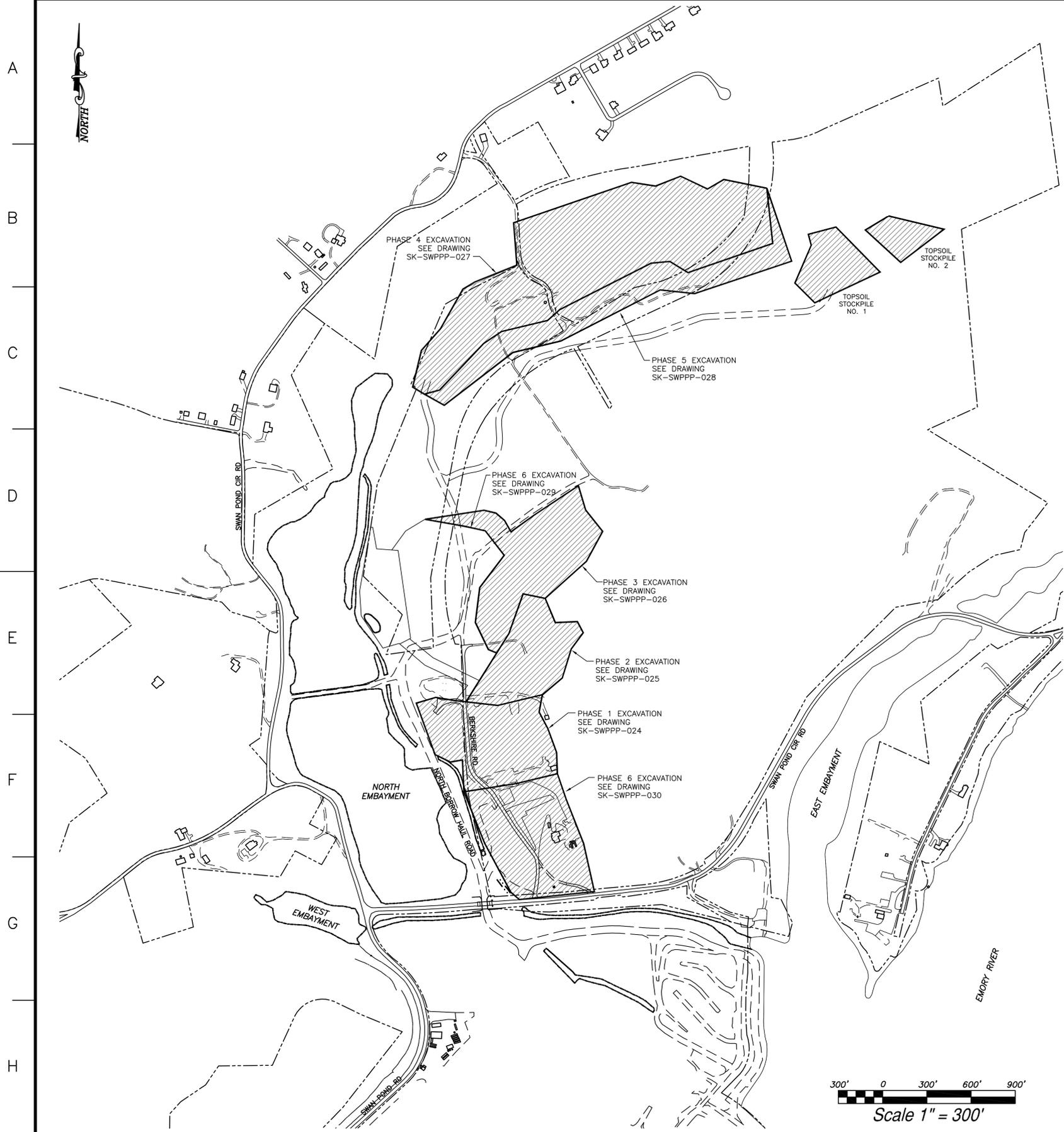


## KINGSTON ASH RECOVERY PROJECT SITE MAP

TENNESSEE VALLEY AUTHORITY

DATE: 31 MAY 12

PHASE: SWPPP - Revision 3



NOTE: THE PROJECT SURVEY COORDINATES HORIZONTAL PROJECTION/DATUM: TN LAMBERT/NAD 27 AND VERTICAL DATUM: NGVD 29, US SURVEY FEET ALSO KNOWN AS STATE PLANE/PLANT COORDINATES.

KIF SURVEYED BENCH MARKS / CONTROL POINTS			
NUMBER	NORTHING	EASTING	ELEVATION
CHT-7	554799.20	2439803.12	767.36
ASH-25	554992.49	2440317.38	794.95
ASH-28	553804.20	2441107.00	765.01

GENERAL NOTE:  
CONTRACTOR SHALL INSPECT OUTFALL POINTS AFTER ANY STORM EVENT AND MAKE NECESSARY ADJUSTMENTS TO (BMP)S TO ELIMINATE SEDIMENT FROM EXITING SITE.

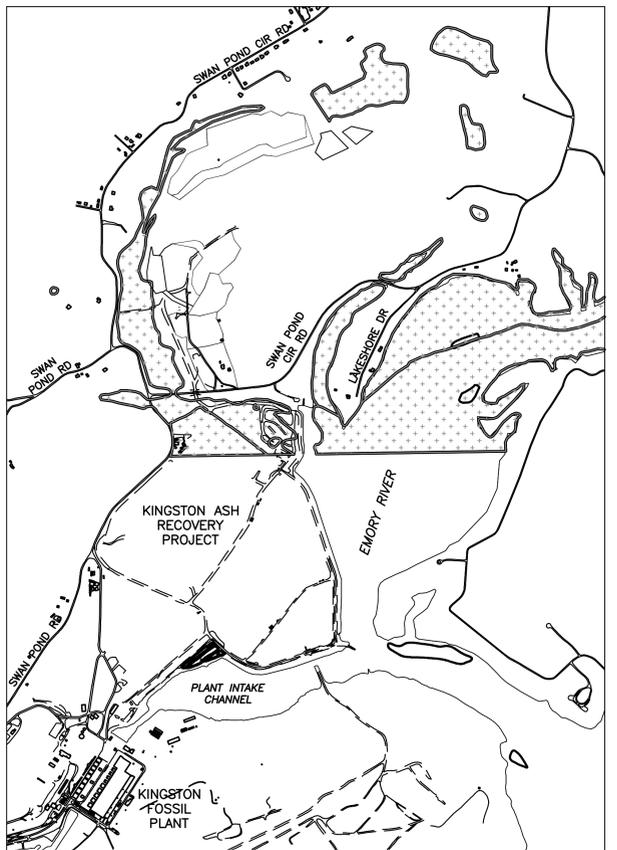
- LEGEND
- 389.65 SPOT ELEVATION
  - 390— PROPOSED CONTOUR
  - EXISTING CONTOUR
  - SF — SILT FENCE
  - FD — FRENCH DRAIN SYSTEM
  - ⊠ CHECK DAM - HAY BALE
  - DIVERSION BERM
  - - - - TVA BOUNDARY
  - WETLANDS

DISTURBED AREAS			
LOCATION	AREA (ACRES)	LOCATION	AREA (ACRES)
PHASE 1	8.1	TOPSOIL STOCKPILES	5.7
PHASE 2	13.3	HAUL ROADS OUTSIDE OF PHASE AREAS	5.4
PHASE 3	12.1		
PHASE 4	13.7		
PHASE 5	25.7		
PHASE 6	24.8		

SITE INFORMATION:

KRP SITE AREA: 800 ACRES  
 LAND DISTURBANCE AREA: 108.8 ACRES

PROPERTY OWNER: TENNESSEE VALLEY AUTHORITY  
 KINGSTON FOSSIL PLANT  
 HARRIMAN, TENNESSEE  
 PHONE NO.: 865-717-6520

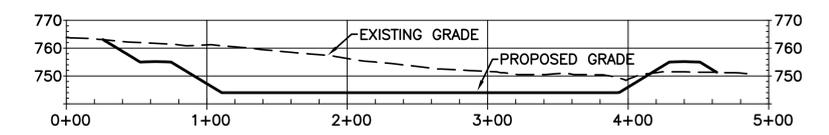
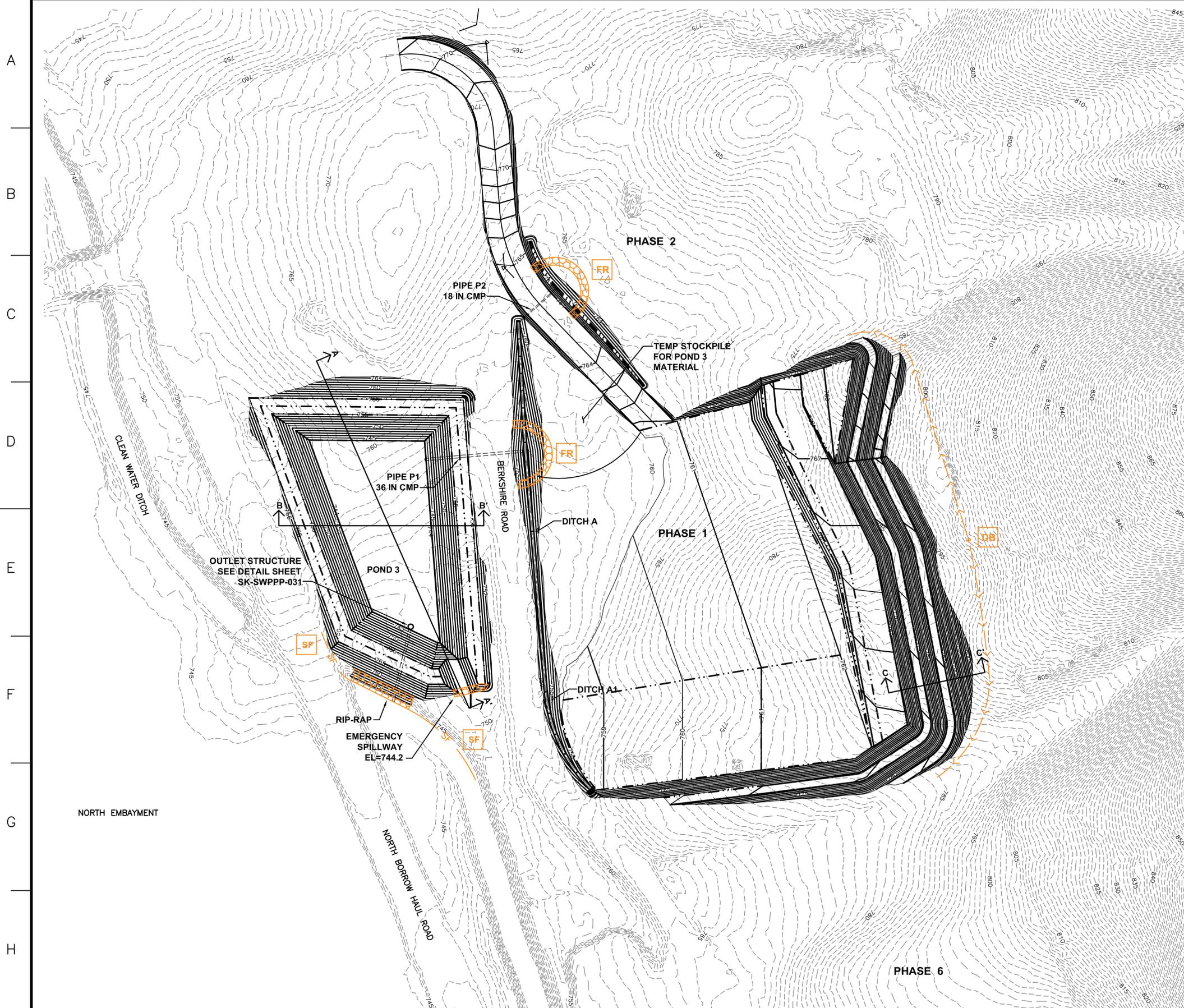


LOCATION MAP  
NOT TO SCALE

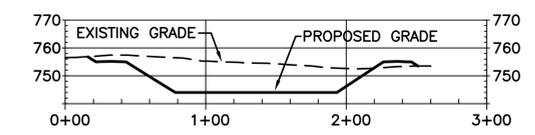
TDEC BEST MANAGEMENT PRACTICES MANUAL (BMP) CHART			
CODE	PRACTICE	DETAIL	DESCRIPTION
CD-1	CHECK DAM		A SMALL TEMPORARY BARRIER OR DAM CONSTRUCTED ACROSS A SWALE, DRAINAGE DITCH OR AREA OF CONCENTRATED FLOW, MADE FROM STONE OR ROCK.
CD-2	CHECK DAM		SAME AS ABOVE EXCEPT MADE FROM STRAW BALES OR EROSION SOCKS.
FR	FILTER RING		A TEMPORARY STONE BARRIER CONSTRUCTED AT STORM DRAIN INLETS
CE	CONSTRUCTION ENTRANCE		A CRUSHED STONE PAD LOCATED AT THE CONSTRUCTION SITE EXIT TO PROVIDE A PLACE FOR REMOVING MUD FROM TIRES THEREBY PROTECTING PUBLIC STREETS.
DB	DIVERSION BERM		AN EARTH CHANNEL OR BERM LOCATED ABOVE ACROSS A SLOPE TO DIVERT RUNOFF. THIS MAY BE A TEMPORARY OR PERMANENT STRUCTURE.
SF	SEDIMENT BARRIER		A BARRIER TO PREVENT SEDIMENT FROM LEAVING THE CONSTRUCTION SITE. IT MAY BE SANDBAGS, BALES OF STRAW OR HAY, BRUSH, LOGS AND POLES, GRAVEL, OR A SEDIMENT FENCE. THE BARRIERS ARE USUALLY TEMPORARY AND INEXPENSIVE.
OP	STORM DRAIN OUTLET PROTECTION		A PAVED OR SHORT SECTION OF RIP-RAP CHANNEL AT THE OUTLET OF A STORM DRAIN SYSTEM PREVENTING EROSION FROM THE CONCENTRATED RUNOFF.
TS PS	DISTURBED AREA STABILIZATION (WITH PERMANENT VEGETATION)		ESTABLISHING TEMPORARY AND PERMANENT VEGETATIVE COVER SUCH AS TREES, SHRUBS, VINES, GRASSES, SOY, OR LEGUMES ON DISTURBED AREAS.
SR	SURFACE ROUGHENING		A ROUGH SOIL SURFACE WITH HORIZONTAL DEPRESSIONS ON A CONTOUR OR SLOPES LEFT IN A ROUGHENED CONDITION AFTER GRADING.
IP	INLET SEDIMENT TRAP		AN IMPOUNDING AREA CREATED BY EXCAVATING AROUND A STORM DRAIN INLET. THE EXCAVATED AREA WILL BE FILLED AND STABILIZED ON COMPLETION OF CONSTRUCTION ACTIVITIES.
RR	PERMANENT STABILIZATION W/ RIP-RAP		A PERMANENT, EROSION-RESISTANT GROUND COVER OF LARGE, LOOSE, ANGULAR STONE WITH A GEOTEXTILE OR GRANULAR UNDERLINING.
MA	EROSION CONTROL BLANKET/MATTING		A PROTECTIVE BLANKET OR SOIL STABILIZATION MAT USED TO ASSIST IN ESTABLISHMENT OF TEMPORARY OR PERMANENT VEGETATION ON STEEP SLOPES, CHANNELS, OR STREAM BANKS.
CFS	COMPOSITE FILTER SOCK		A TUBULAR SEDIMENT CONTROL AND STORM WATER RUNOFF FILTRATION DEVICE.
CRS	CONSTRUCTION ROAD STABILIZATION		TO PROVIDE A FIXED ROUTE FOR CONSTRUCTION TRAFFIC, AND TO REDUCE EROSION AND SUBSEQUENT RE-GRADING OF PERMANENT ROADBEDS BETWEEN THE TIME OF INITIAL GRADING AND FINAL STABILIZATION.

FOR SWPPP PURPOSE ONLY  
NOT FOR CONSTRUCTION

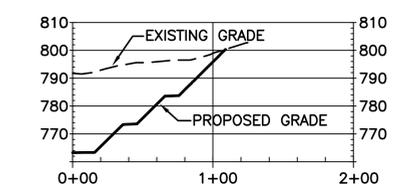
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SCALE: 1" = 100'											EXCEPT AS NOTED	
CIVIL YARD												
CIVIL NORTH BORROW AREA												
EROSION & SEDIMENT CONTROL PLAN												
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:						
J. ASHWORTH	B. PERATROVICH	F.M. PARTON										
KINGSTON FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING												
AUTOCAD R	2008	DATE	08/15/12	36	SK-SWPPP-023							R 0



SECTION A-A' POND 3



SECTION B-B' POND 3

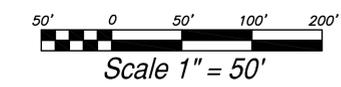


SECTION C-C' TYPICAL BENCH

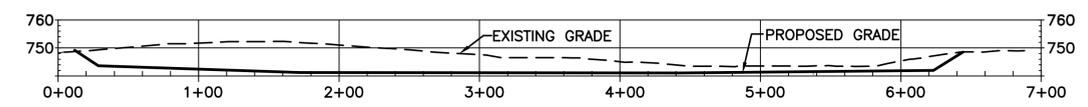
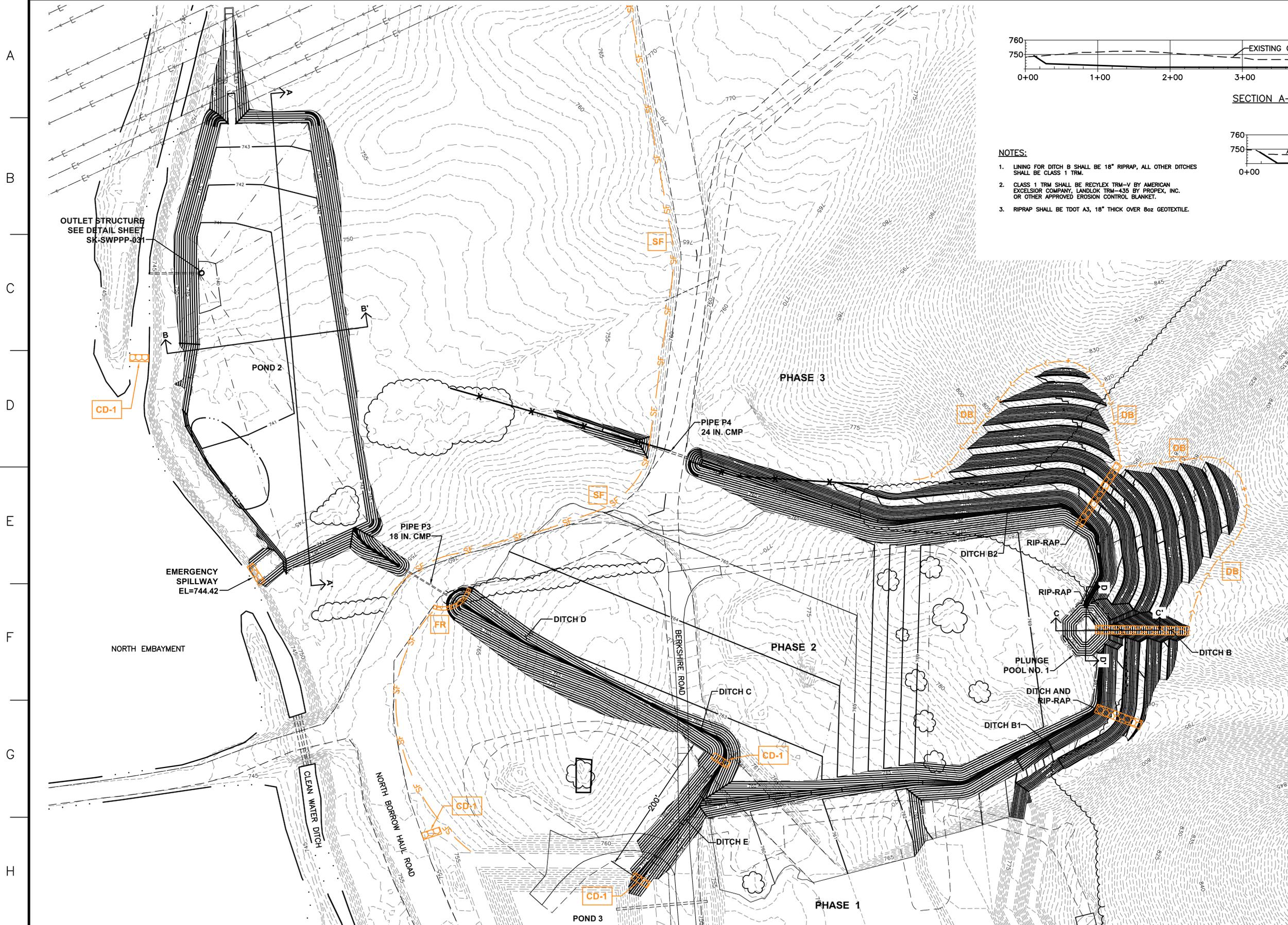
NOTES:

1. LINING FOR DITCHES A AND A1 SHALL BE CLASS 1 TRM.
2. CLASS 1 TRM SHALL BE RECYLEX TRM-V BY AMERICAN EXCELSIOR COMPANY, LANDLOK TRM-435 BY PROPEX, INC. OR OTHER APPROVED EROSION CONTROL BLANKET.

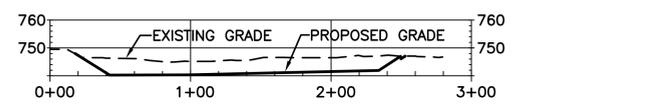
FOR SWPPP PURPOSE ONLY  
NOT FOR CONSTRUCTION



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SCALE: 1" = 100'											EXCEPT AS NOTED	
CIVIL YARD												
CIVIL												
NORTH BORROW AREA												
PHASE 1 EXCAVATION												
DESIGNED BY:	DRWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:						
J. ASHWORTH	B. PERATROVICH	F.M. PARTON										
KINGSTON FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING												
AUTOCAD R 2008	DATE	36	SK-SWPPP-024 R 0									
PLOT FACTOR: W_TVA												

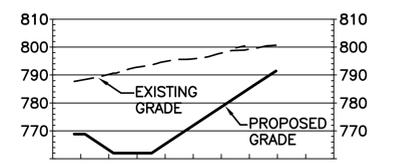


SECTION A-A' POND 2

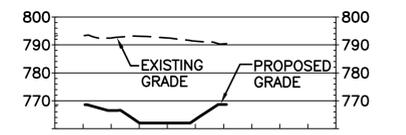


SECTION B-B' POND 2

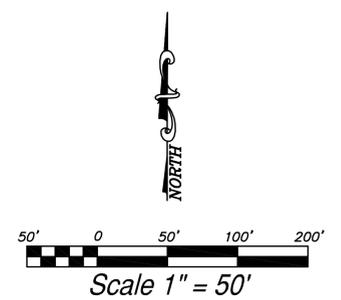
- NOTES:**
1. LINING FOR DITCH B SHALL BE 18" RIPRAP, ALL OTHER DITCHES SHALL BE CLASS 1 TRM.
  2. CLASS 1 TRM SHALL BE RECYCLEX TRM-V BY AMERICAN EXCELSIOR COMPANY, LANDLOK TRM-435 BY PROPEX, INC. OR OTHER APPROVED EROSION CONTROL BLANKET.
  3. RIPRAP SHALL BE TDOT A3, 18" THICK OVER 8oz GEOTEXTILE.



SECTION C-C' PLUNGE POOL NO. 1



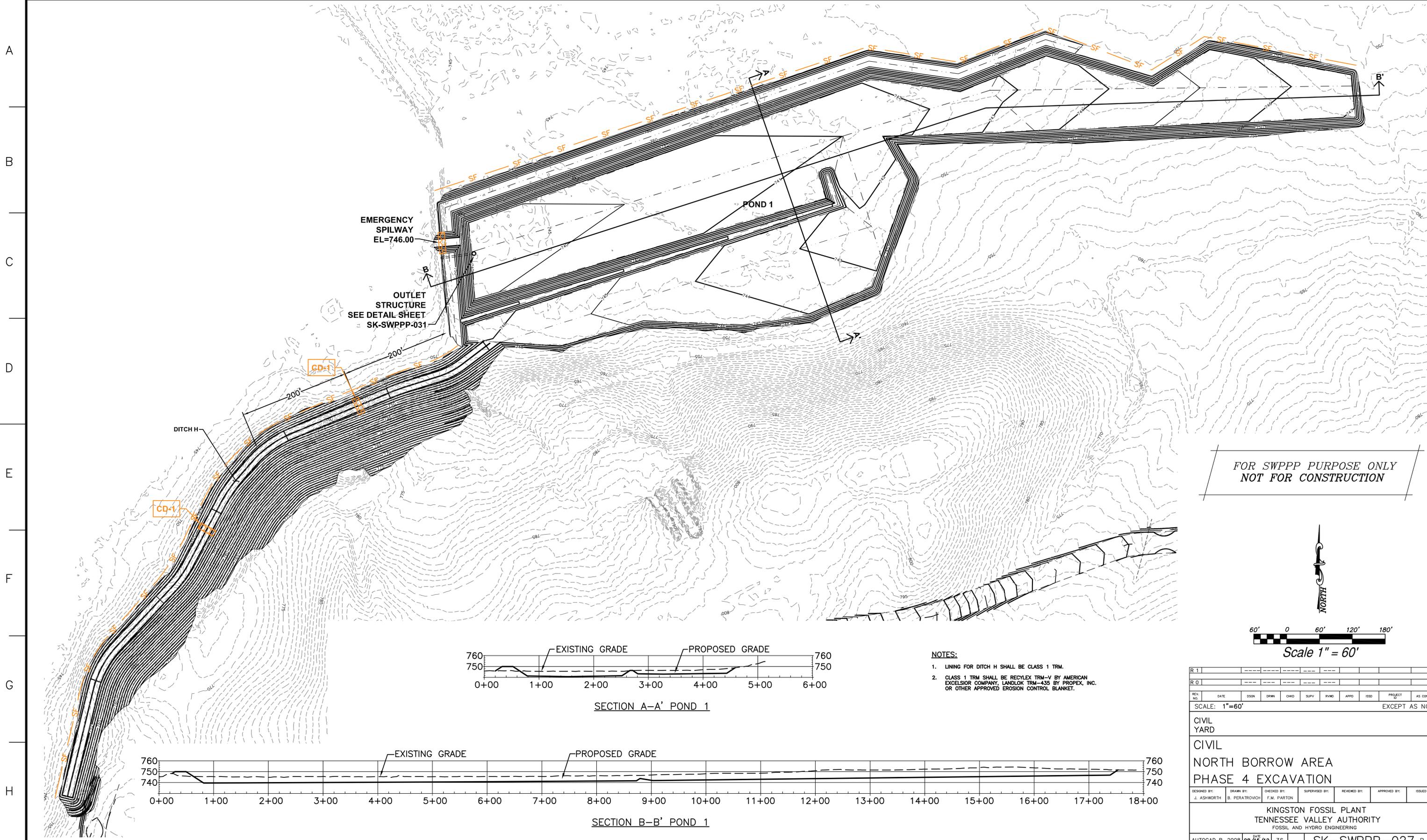
SECTION D-D' PLUNGE POOL NO. 1



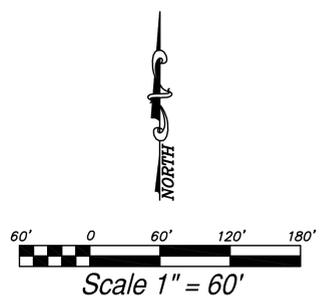
FOR SWPPP PURPOSE ONLY  
NOT FOR CONSTRUCTION

R 1											DISCIPLINE
R 0											INTERFERENCE
REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVND	APPR	ISSD	PROJECT	AS CONST	REV. CD
SCALE: 1" = 100'											EXCEPT AS NOTED
CIVIL YARD											
CIVIL NORTH BORROW AREA PHASE 2 EXCAVATION											
DESIGNED BY:	DRWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:					
J. ASHWORTH	B. PERATROVICH	F.M. PARTON									
KINGSTON FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING											
AUTOCAD R 2008	DATE	36	SK-SWPPP-025 R 0								
			PLOT FACTOR:								
			W_TVA			C.A.D. DRAWING DO NOT ALTER MANUALLY					

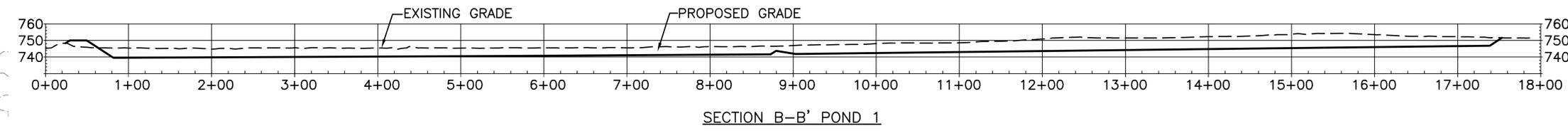
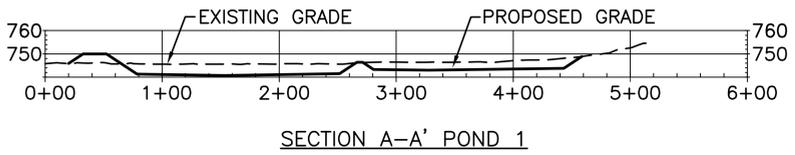




FOR SWPPP PURPOSE ONLY  
NOT FOR CONSTRUCTION



- NOTES:**
1. LINING FOR DITCH H SHALL BE CLASS 1 TRM.
  2. CLASS 1 TRM SHALL BE RECYLEX TRM-V BY AMERICAN EXCELSIOR COMPANY, LANDLOK TRM-435 BY PROPEX, INC. OR OTHER APPROVED EROSION CONTROL BLANKET.



REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVD	APPD	ISSD	PROJECT NO.	AS CONST	REV. CD.
J. ASHWORTH	08/15/12	B. PERATROVICH	F.M. PARTON								
SCALE: 1"=60' EXCEPT AS NOTED											
CIVIL YARD											
CIVIL NORTH BORROW AREA PHASE 4 EXCAVATION											
DESIGNED BY: J. ASHWORTH											
DRAWN BY: B. PERATROVICH											
CHECKED BY: F.M. PARTON											
SUPERVISED BY:											
REVIEWED BY:											
APPROVED BY:											
ISSUED BY:											
KINGSTON FOSSIL PLANT											
TENNESSEE VALLEY AUTHORITY											
FOSSIL AND HYDRO ENGINEERING											
AUTOCAD R 2008	08/15/12	36	SK-SWPPP-027 R 0								



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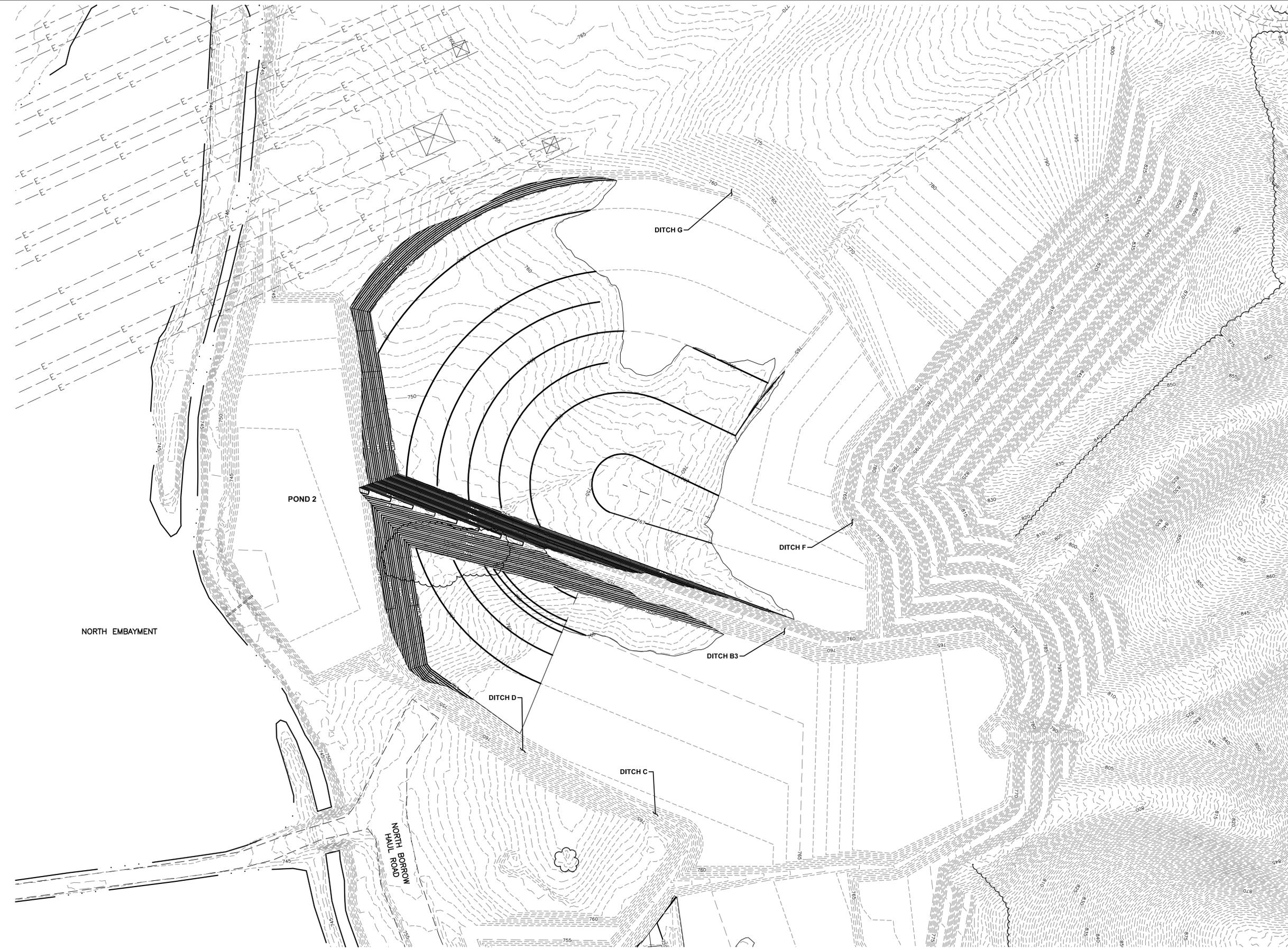
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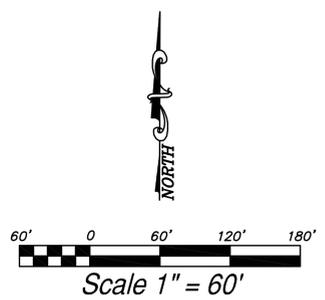
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**NOTES:**

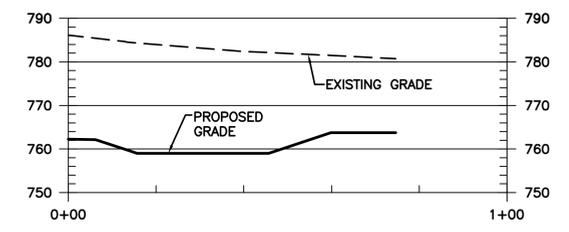
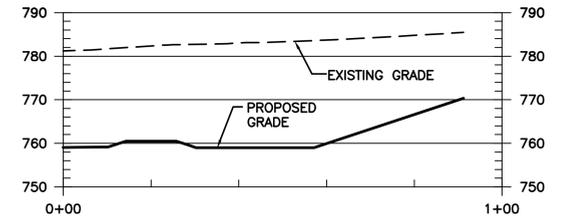
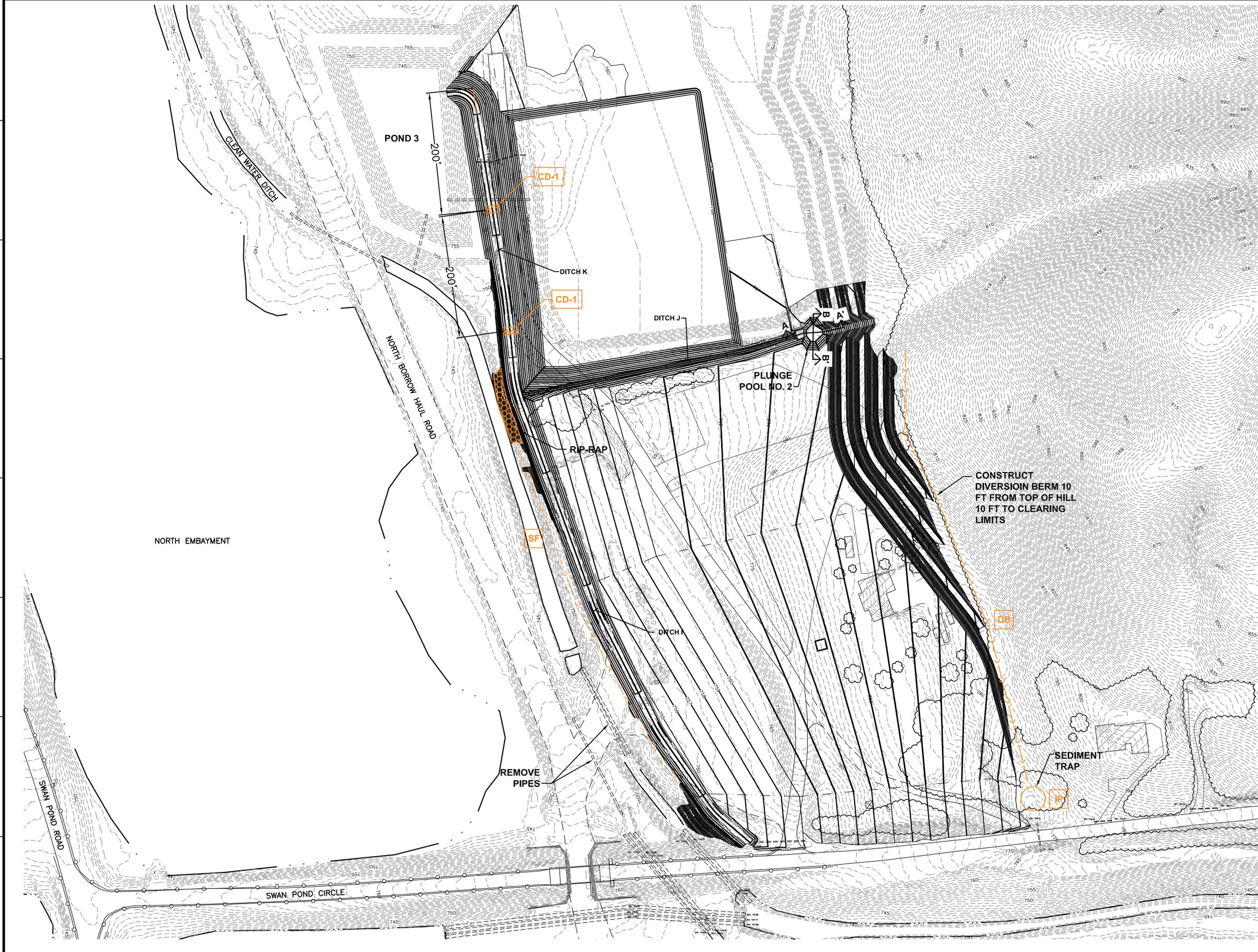
1. LINING FOR ALL DITCHES SHALL BE CLASS 1 TRM.
2. CLASS 1 TRM SHALL BE RECYCLE TRM-V BY AMERICAN EXCELSIOR COMPANY, LANDLOK TRM-435 BY PROPEX, INC. OR OTHER APPROVED EROSION CONTROL BLANKET.

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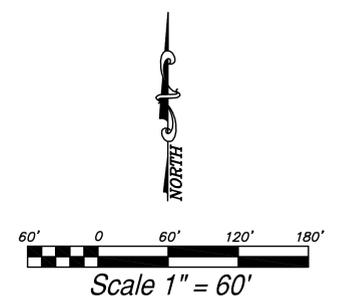
R 1										
R 0										
REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVND	APPR	ISSD	PROJECT ID	AS CONST
SCALE: 1"=60' EXCEPT AS NOTED										
CIVIL YARD										
CIVIL NORTH BORROW AREA PHASE 6 EXCAVATION - NORTH										
DESIGNED BY:	DRWN BY:	CHKD BY:	SUPV BY:	RVND BY:	APPR BY:	ISSD BY:				
J. ASHWORTH	B. PERATROVICH	F.M. PARTON								
KINGSTON FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING										
AUTOCAD R 2008 08/15/12 36 SK-SWPPP-029 R 0										

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- NOTES:**
1. LINING FOR ALL DITCHES SHALL BE CLASS 1 TRM.
  2. CLASS 1 TRM SHALL BE RECYCLE TRM-V BY AMERICAN EXCELSIOR COMPANY, LANDLOK TRM-435 BY PROPEX, INC. OR OTHER APPROVED EROSION CONTROL BLANKET.

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REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVND	APPR	ISSD	PROJECT ID	AS CONST	REV CD	DISCIPLINE
SCALE: 1"=60'											EXCEPT AS NOTED	
CIVIL YARD												
CIVIL												
NORTH BORROW AREA												
PHASE 6 EXCAVATION - SOUTH												
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:						
J. ASHWORTH	B. PERATROVICH	F.M. PARTON										
KINGSTON FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING												
AUTOCAD R 2008	DATE 05/05/10	36	SK-SWPPP-030 R 0									



**Attachment 4**  
**SWPPP Contacts**

## STORM WATER POLLUTION PREVENTION PLAN CONTACTS

**Kingston Fossil Plant  
Kingston Ash Recovery Project**  
1134 Swan Pond Road  
Harriman, TN 37748

<b>Operator(s):</b>
Tennessee Valley Authority
Kingston Fossil Plant
Kathryn Nash, TVA General Manager
1134 Swan Pond Road
Harriman, TN 37748
Phone: 865-717-6516
kncopela@tva.gov

<b>Project Manager:</b>
Tennessee Valley Authority
Bruce Haas, Project Manager
1134 Swan Pond Road
Harriman, TN 37748
Phone: 865-632-16027
bjhaas@tva.gov

<b>This SWPPP was Prepared by:</b>
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Harriman, TN 37748
Phone: 865-660-4459 / 865-660-4458
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Michelle Cagley, Program Administrator (Environmental)
Kingston Ash Recovery Project
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**Onsite Program Administrator (Environmental) PA(E):**

Jacobs Engineering Group Inc.

Lori Whitehorse

Kingston Ash Recovery Project

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Harriman, TN 37748

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**NPDES Water Specialist:**

Tennessee Valley Authority

Sam W. Hixson, Senior Water Specialist

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Chattanooga, TN 37402

Phone: 423-751-6705

swhixson@tva.gov

**Construction Manager:**

Jacobs Engineering Group Inc.

Jim Sells

Kingston Ash Recovery Project

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Harriman, TN 37748

Phone: 865-717-6517 / Mobile: 786-236-5758

jsells@tva.gov

**Attachment 5**  
**Sequence of Control Measure Implementation, Maintenance, and Removal Log**



**Attachment 6**  
**Daily Rainfall Gage Record (Form 005A)**



**Attachment 7**  
**Construction Stormwater Inspection Certification**



**TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION (TDEC)**

Division of Water Pollution Control (WPC)  
 6<sup>th</sup> Floor Annex, L&C Tower, 401 Church Street, Nashville, Tennessee 37243  
 1-888-891-8332 (TDEC)

**General NPDES Permit for Stormwater Discharges from Construction Activities (CGP)**

**Construction Stormwater Inspection Certification (Twice-Weekly Inspections)**

<b>Site or Project Name:</b>		<b>NPDES Tracking Number: TNR</b>	
Primary Permittee Name:		Date of Inspection:	
Current approximate disturbed acreage:		Has rainfall been checked/documentated daily? <input type="checkbox"/> Yes <input type="checkbox"/> No	Name of Inspector:
Current weather conditions:		Inspector's TNEPSC Certification Number:	

**Please check the box if the following items are on-site:**

- Notice of Coverage (NOC)     
  Stormwater Pollution Prevention Plan (SWPPP)     
  Twice-weekly inspection documentation  
 Site contact information     
  Rain Gage     
  Off-site Reference Rain Gage Location: \_\_\_\_\_

**Best Management Practices (BMPs):**

**Are the Erosion Prevention and Sediment Controls (EPSCs) functioning correctly:** If "No", describe below in Comment Section

- |                                                                                                                                                                                                                                                                                                          |                              |                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|----------------------------------------------------------|
| 1. Are all applicable EPSCs installed and maintained per the SWPPP?                                                                                                                                                                                                                                      | <input type="checkbox"/> Yes | <input type="checkbox"/> No                              |
| 2. Are EPSCs functioning correctly at all disturbed areas/material storage areas per section 4.1.5?                                                                                                                                                                                                      | <input type="checkbox"/> Yes | <input type="checkbox"/> No                              |
| 3. Are EPSCs functioning correctly at outfall/discharge points such that there is no objectionable color contrast in the receiving stream, and no other water quality impacts per section 5.3.2?                                                                                                         | <input type="checkbox"/> Yes | <input type="checkbox"/> No                              |
| 4. Are EPSCs functioning correctly at ingress/egress points such that there is no evidence of track out?                                                                                                                                                                                                 | <input type="checkbox"/> Yes | <input type="checkbox"/> No                              |
| 5. If applicable, have discharges from dewatering activities been managed by appropriate controls per section 4.1.4? If "No", describe below the measures to be implemented to address deficiencies.                                                                                                     | <input type="checkbox"/> Yes | <input type="checkbox"/> No                              |
| 6. If construction activity at any location on-site has temporarily/permanently ceased, was the area stabilized within 14 days per section 3.5.3.2? If "No", describe below each location and measures taken to stabilize the area(s).                                                                   | <input type="checkbox"/> Yes | <input type="checkbox"/> No                              |
| 7. Have pollution prevention measures been installed, implemented, and maintained to minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters per section 4.1.5? If "No", describe below the measures to be implemented to address deficiencies. | <input type="checkbox"/> Yes | <input type="checkbox"/> No                              |
| 8. If a concrete washout facility is located on site, is it clearly identified on the project and maintained? If "No", describe below the measures to be implemented to address deficiencies.                                                                                                            | <input type="checkbox"/> N/A | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| 9. Have all previous deficiencies been addressed? If not, describe the remaining deficiencies in the Comments section.<br><input type="checkbox"/> Check if deficiencies/corrective measures have been reported on a previous form.                                                                      | <input type="checkbox"/> Yes | <input type="checkbox"/> No                              |

Comment Section. If the answer is "No" for any of the above, please describe the problem and corrective actions to be taken. Otherwise, describe any pertinent observations:

**Certification and Signature** (must be signed by the certified inspector and the permittee per Sections 3.5.8.2 (g) and 7.7.2 of the CGP)

I certify under penalty of law that this report and all attachments are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Inspector Name and Title:	Signature:	Date:
Permittee Name and Title:	Signature:	Date:

# Construction Stormwater Inspection Certification Form (Twice-Weekly Inspections)

## **Purpose of this form/ Instructions**

An inspection, as described in section 3.5.8.2. of the General Permit for Stormwater Discharges from Construction Activities (“Permit”), shall be performed at least twice every calendar week and documented on this form. Inspections shall be performed at least 72 hours apart. Where sites or portion(s) of construction sites have been temporarily stabilized, or runoff is unlikely due to winter conditions (e.g., site covered with snow or ice), such inspection only has to be conducted once per month until thawing results in runoff or construction activity resumes.

Inspectors performing the required twice weekly inspections must have an active certification by completing the “Fundamentals of Erosion Prevention and Sediment Control Level I” course. (<http://www.tnepsc.org/>). A copy of the certification or training record for inspector certification should be kept on site.

Qualified personnel, as defined in section 3.5.8.1 of the Permit (provided by the permittee or cooperatively by multiple permittees) shall inspect disturbed areas of the construction site that have not been finally stabilized, areas used for storage of materials that are exposed to precipitation, structural control measures, locations where vehicles enter or exit the site, and each outfall.

Disturbed areas and areas used for storage of materials that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the site’s drainage system. Erosion prevention and sediment control measures shall be observed to ensure that they are operating correctly.

Outfall points (where discharges leave the site and/or enter waters of the state) shall be inspected to determine whether erosion prevention and sediment control measures are effective in preventing significant impacts to receiving waters. Where discharge locations are inaccessible, nearby downstream locations shall be inspected. Locations where vehicles enter or exit the site shall be inspected for evidence of offsite sediment tracking.

Based on the results of the inspection, any inadequate control measures or control measures in disrepair shall be replaced or modified, or repaired as necessary, before the next rain event if possible, but in no case more than 7 days after the need is identified.

Based on the results of the inspection, the site description identified in the SWPPP in accordance with section 3.5.1 of the Permit and pollution prevention measures identified in the SWPPP in accordance with section 3.5.2 of the Permit, shall be revised as appropriate, but in no case later than 7 days following the inspection. Such modifications shall provide for timely implementation of any changes to the SWPPP, but in no case later than 14 days following the inspection.

All inspections shall be documented on this Construction Stormwater Inspection Certification form. Alternative inspection forms may be used as long as the form contents and the inspection certification language are, at a minimum, equivalent to the division’s form and the permittee has obtained a written approval from the division to use the alternative form. Inspection documentation will be maintained on site and made available to the division upon request. Inspection reports must be submitted to the division within 10 days of the request.

Trained certified inspectors shall complete inspection documentation to the best of their ability. Falsifying inspection records or other documentation or failure to complete inspection documentation shall result in a violation of this permit and any other applicable acts or rules.