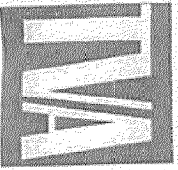


Review of Project Planning Document

**KIF450 Gypsum Disposal Facility
Kingston Fossil Plant**

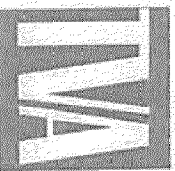


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1.0 Problem Statement

- Provide a disposal facility capable of handling gypsum by-products from TVA's Kingston Fossil Plant
- Facility designed to handle 100 percent of anticipated gypsum production in the event that gypsum cannot be marketed
- Two-phase build out for operational flexibility
- Permitted in accordance with TDEC Rule 1200-1-7



Starting Point and Site Constraints

Production Rates

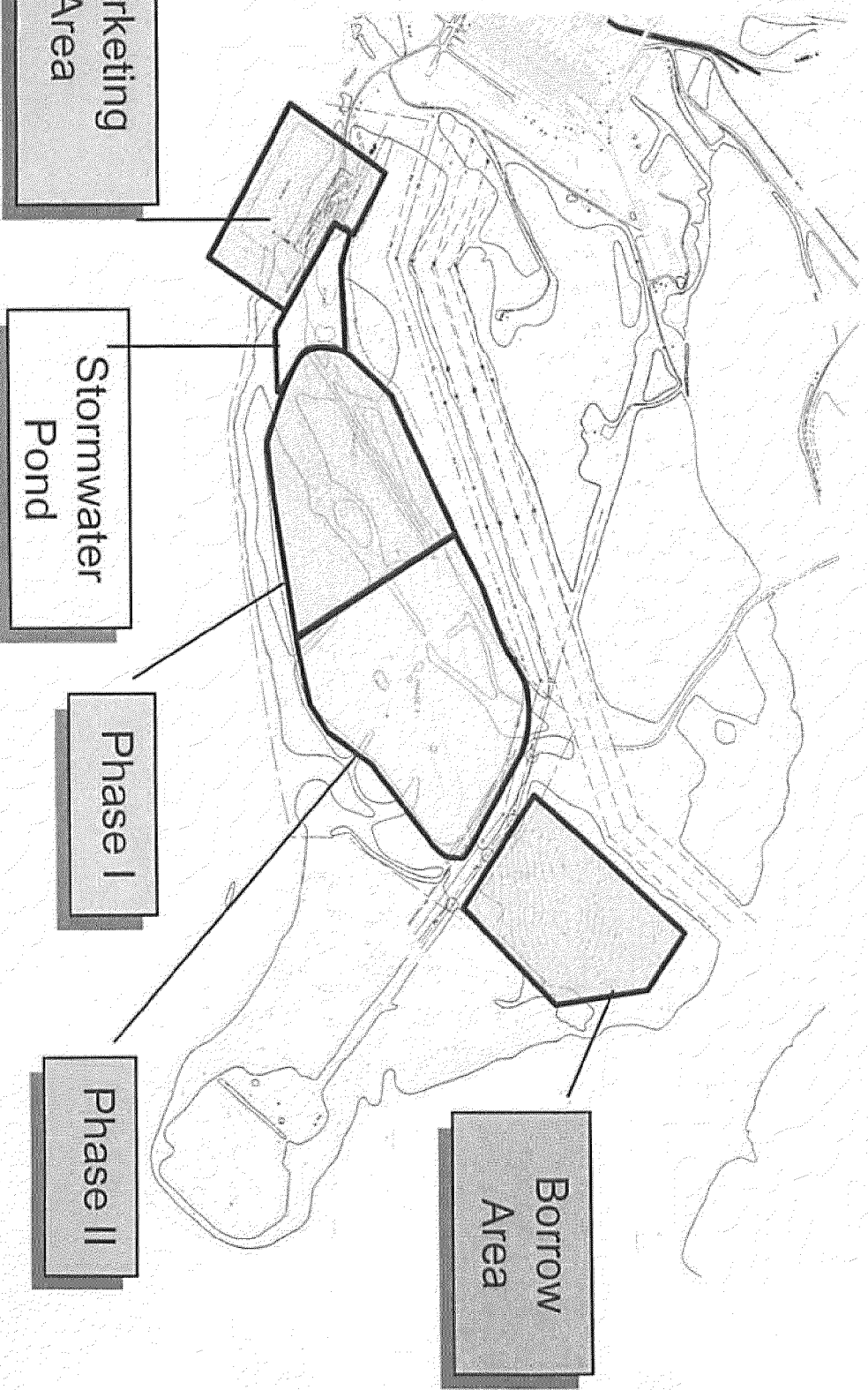
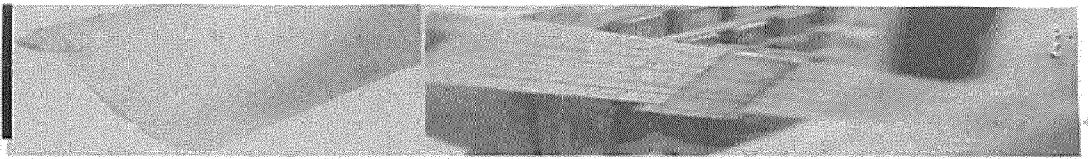
- Using a design coal of 3.2#, assumed gypsum production is 492,800 ton/yr
- Assume operation as a wet pond for first 2 yrs and base capacity on full by-pass
- Assume 67 lb/cf density for settled gypsum (0.90ton/cy)
- 547,500 cy/yr of settled gypsum

Site Constraints

- July 2005 potentiometric elevation in area of disposal area is 741' MSL with a statistical high of 749' MSL
- Based on the need to provide a 3'-5' min separation to groundwater, lowest subgrade elevation of 752' ~ 754' EL was selected for preliminary layouts
- A two phase build-out was assumed to provide TVA with maximum operational flexibility



Site Layout and Features



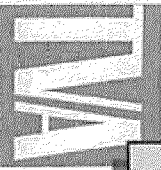
Marketing Area

Stormwater Pond

Phase I

Phase II

Borrow Area



2.0 Scope of Work

■ Design and Permit Applications

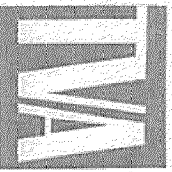
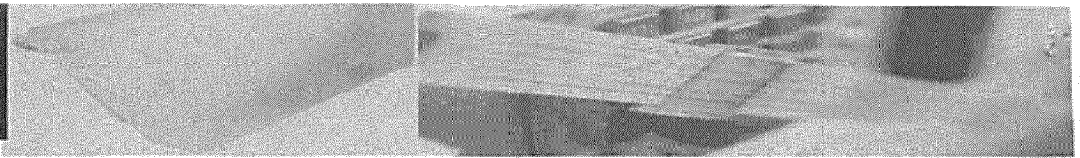
- Preparation of TDEC Part 2 Solid Waste Permit Application Package
- USACE 404 Permit (construction in wetland areas and below ordinary high water)
- Aquatic Resources Alteration Permit (ARAP)/Section 401 Certification
- Stormwater Pollution Prevention Plan (SWPPP) revision
- Address NPDES permit conditions for discharge from the stormwater pond; discharge will be located at the existing plant discharge (plant discharge channel)



2.0 Scope of Work (Cont.)

■ **Construction Activities**

- Step 1 – Prepare Phase I Area, i.e., clearing, grubbing, erosion controls, access roads and parking areas, preparation of borrow area (if needed). Construct access roads and equipment parking areas.

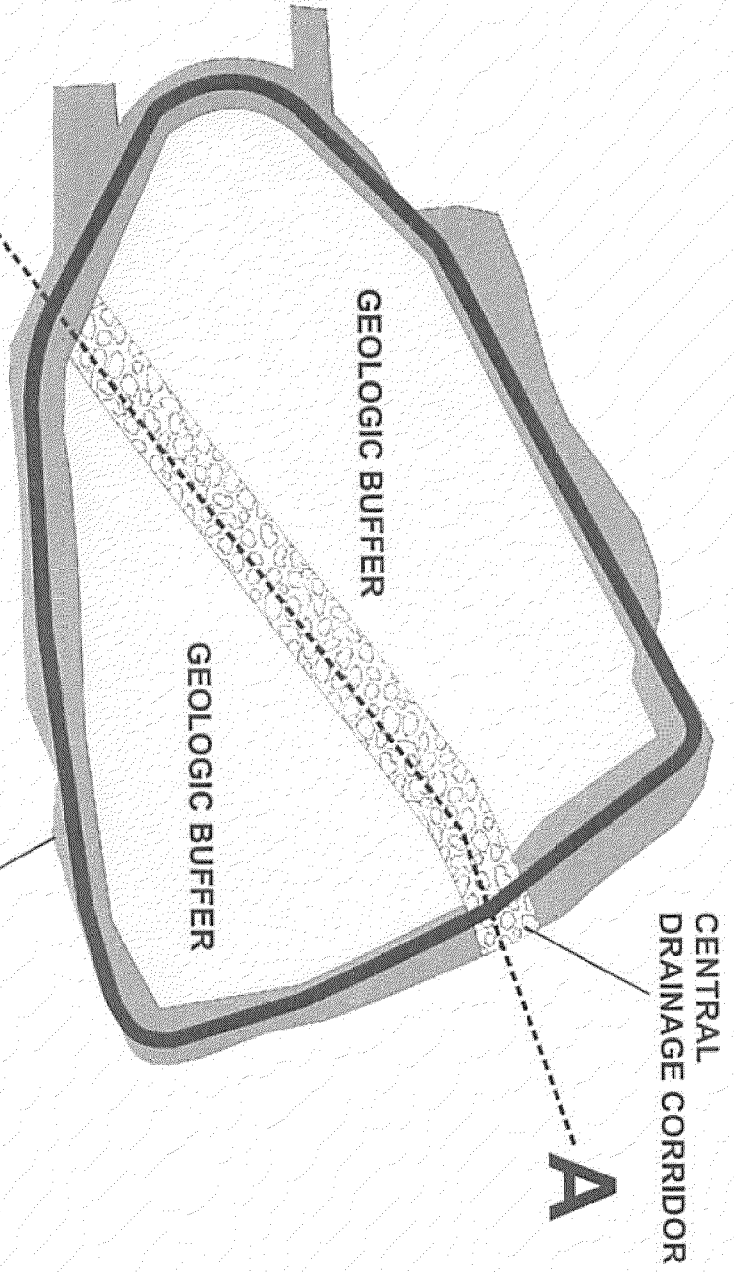
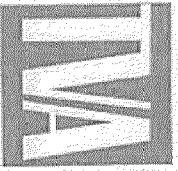


2.0 Scope of Work (Continued)

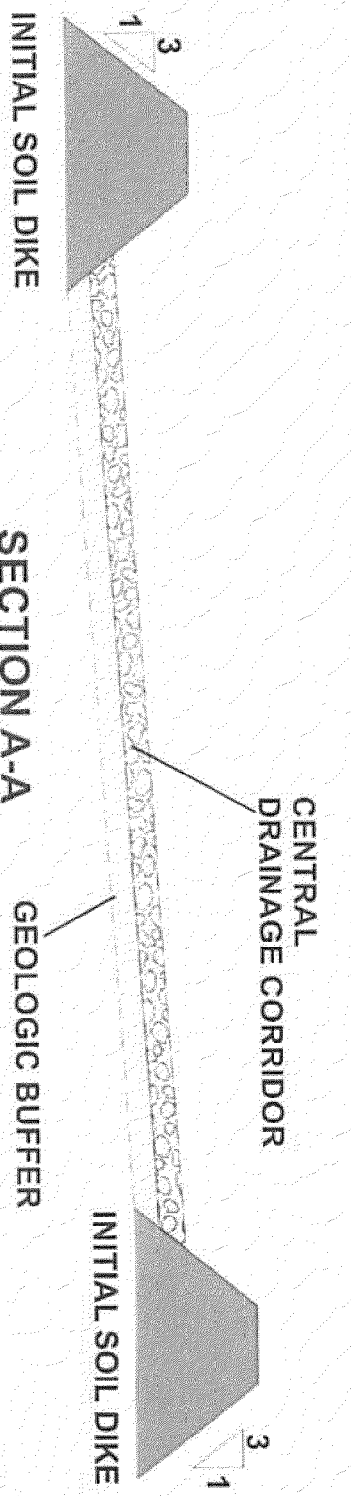
■ Construction activities

- Step 2 – Earthwork for construction of geologic buffer, stormwater pond, and soil starter dikes, and surface water diversion ditches. Construct central drainage corridor, sump/lift station, and gypsum bypass pipeline





PLAN VIEW



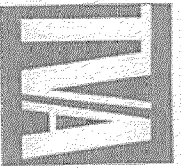
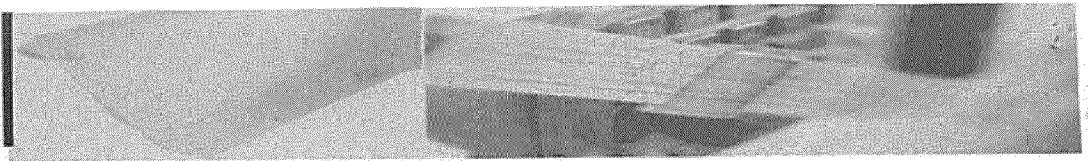
SECTION A-A

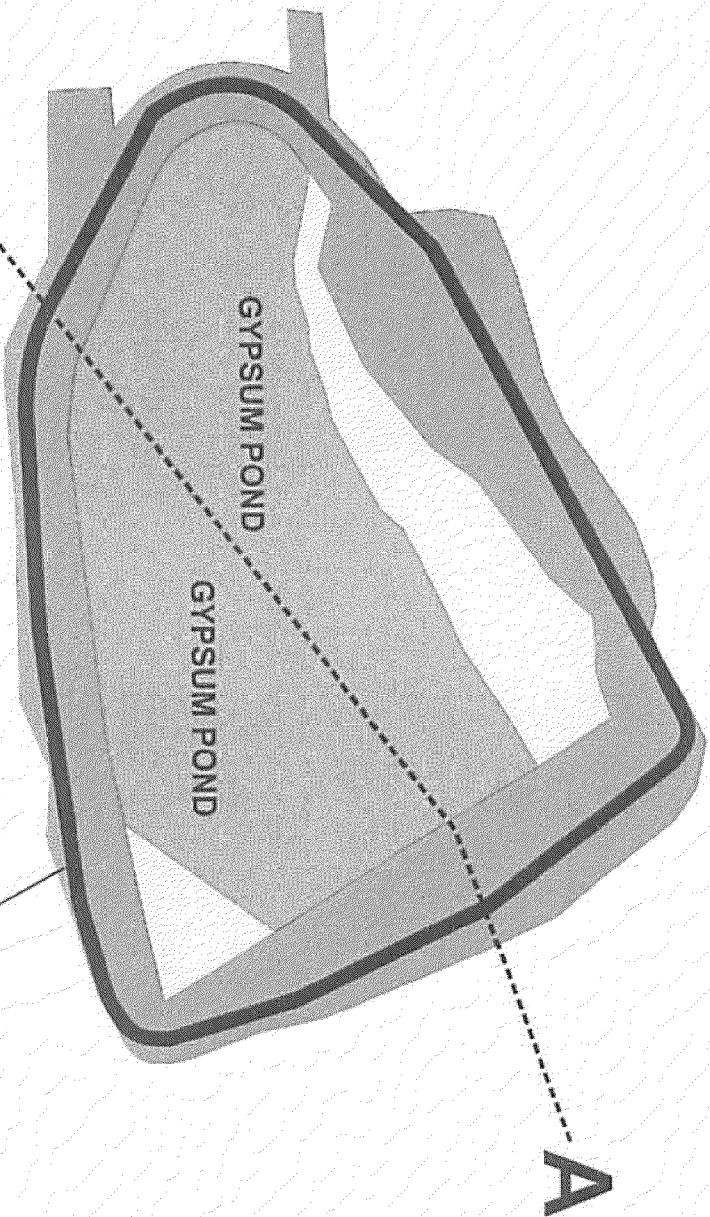
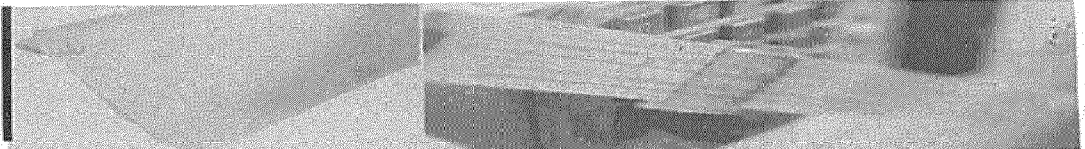
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2.0 Scope of Work (Continued)

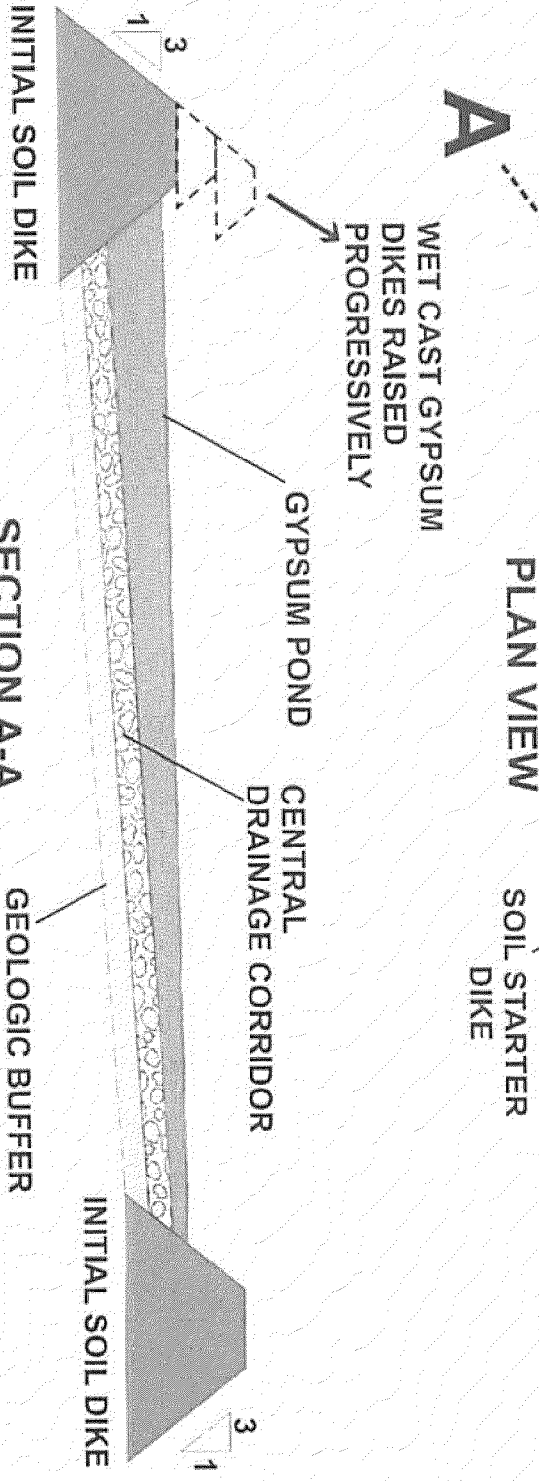
- **Construction Activities**
 - Step 3 – Commence wet pond operations in Phase I; progressively raise elevation of soil starter dikes using wet cast gypsum





A
 WET CAST GYPSUM
 DIKES RAISED
 PROGRESSIVELY

PLAN VIEW

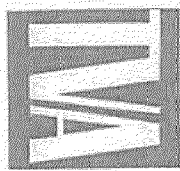


INITIAL SOIL DIKE

SECTION A-A

GEOLOGIC BUFFER

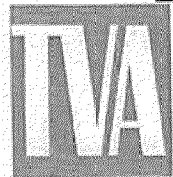
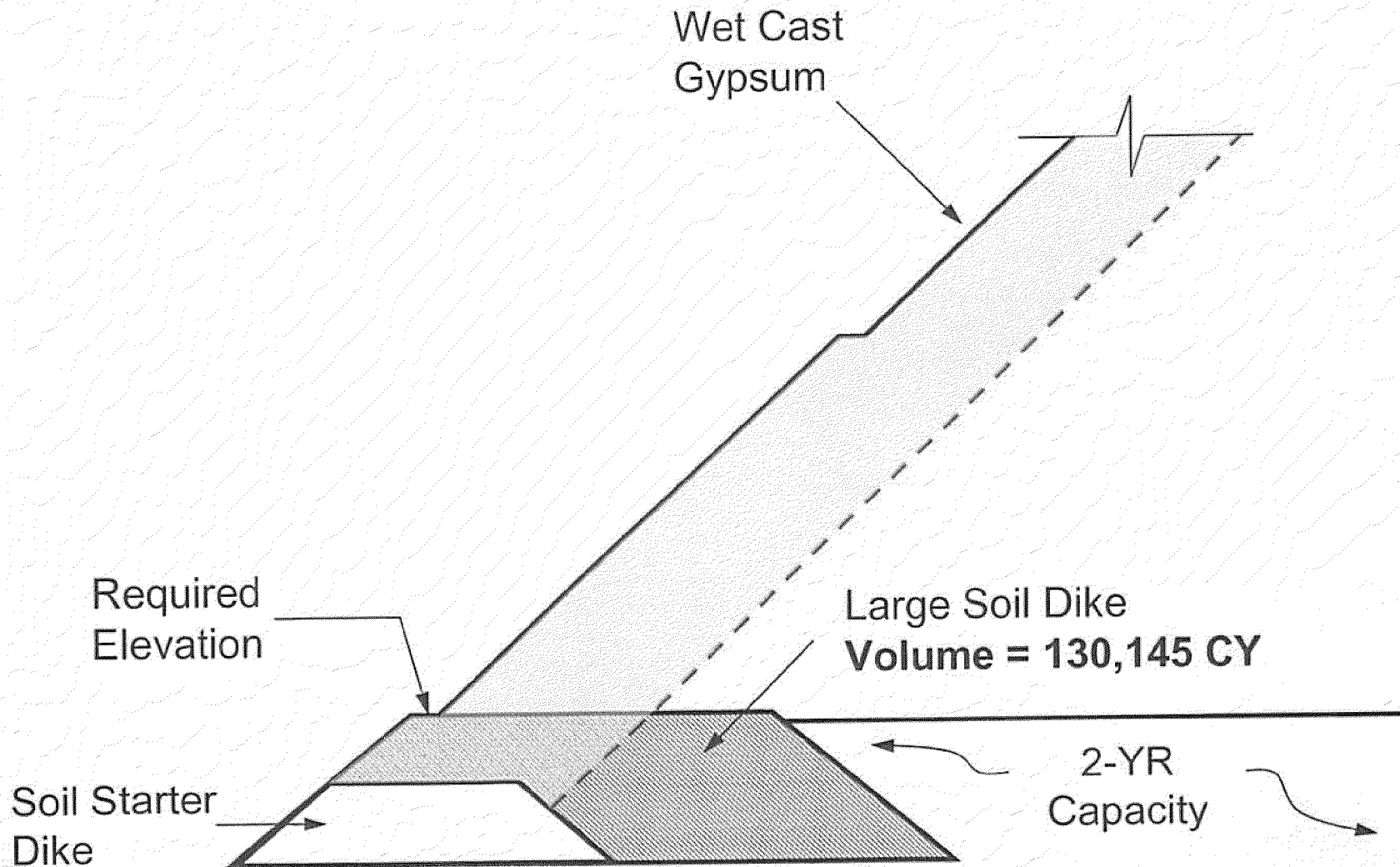
INITIAL SOIL DIKE



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Alternative Starter Dike Configurations



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Comparison of Methods

Method	Advantages	Disadvantages
1. Small Earth Starter Dike with Wet Cast Construction	<ul style="list-style-type: none">▪ Ease of construction▪ Conventional operation▪ Lowest cost capital project▪ Provides maximum disposal capacity	<ul style="list-style-type: none">▪ Does not initially provide 2 years of wet pond capacity (without operation)▪ Requires on-going operation to raise dikes
2. Large Earth Starter Dike	<ul style="list-style-type: none">▪ Provides initial 2 years of wet pond capacity	<ul style="list-style-type: none">▪ Most expensive option▪ Uses valuable borrow material; may require additional off-site soils▪ Does not maximize disposal capacity



2.0 Scope of Work (Cont.)

■ Construction Activities

- Step 4 – Prepare Phase II Area, i.e., clearing, grubbing, erosion controls, access roads and parking areas, preparation of borrow area (if needed). Construct temporary access roads from Phase I area. Note: timing based on operational needs

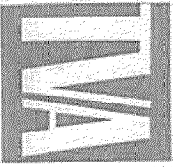
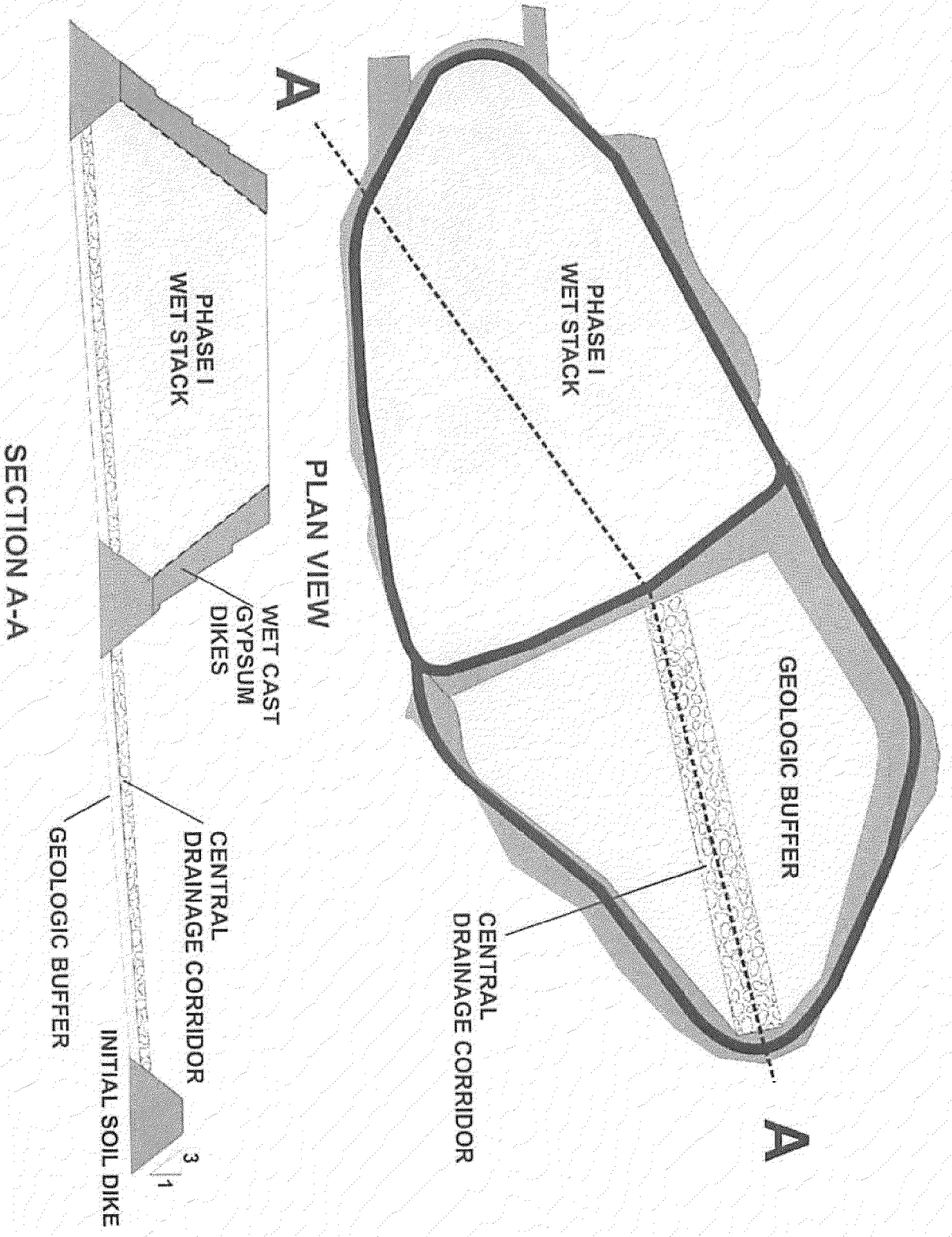
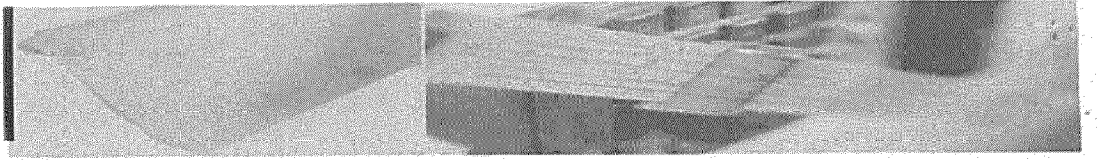


2.0 Scope of Work (Continued)

■ Construction Activities

- Step 5 – Phase II earthwork for construction of geologic buffer, soil starter dikes, and surface water diversion ditches. Construct central drainage corridor, and extend gypsum bypass pipeline





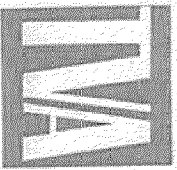
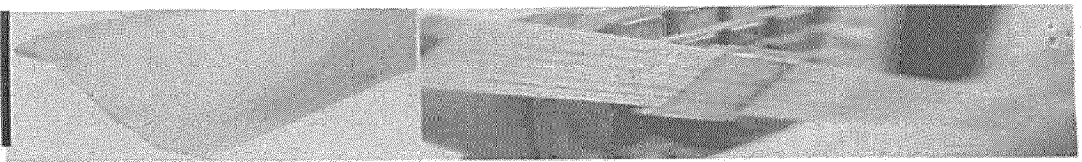
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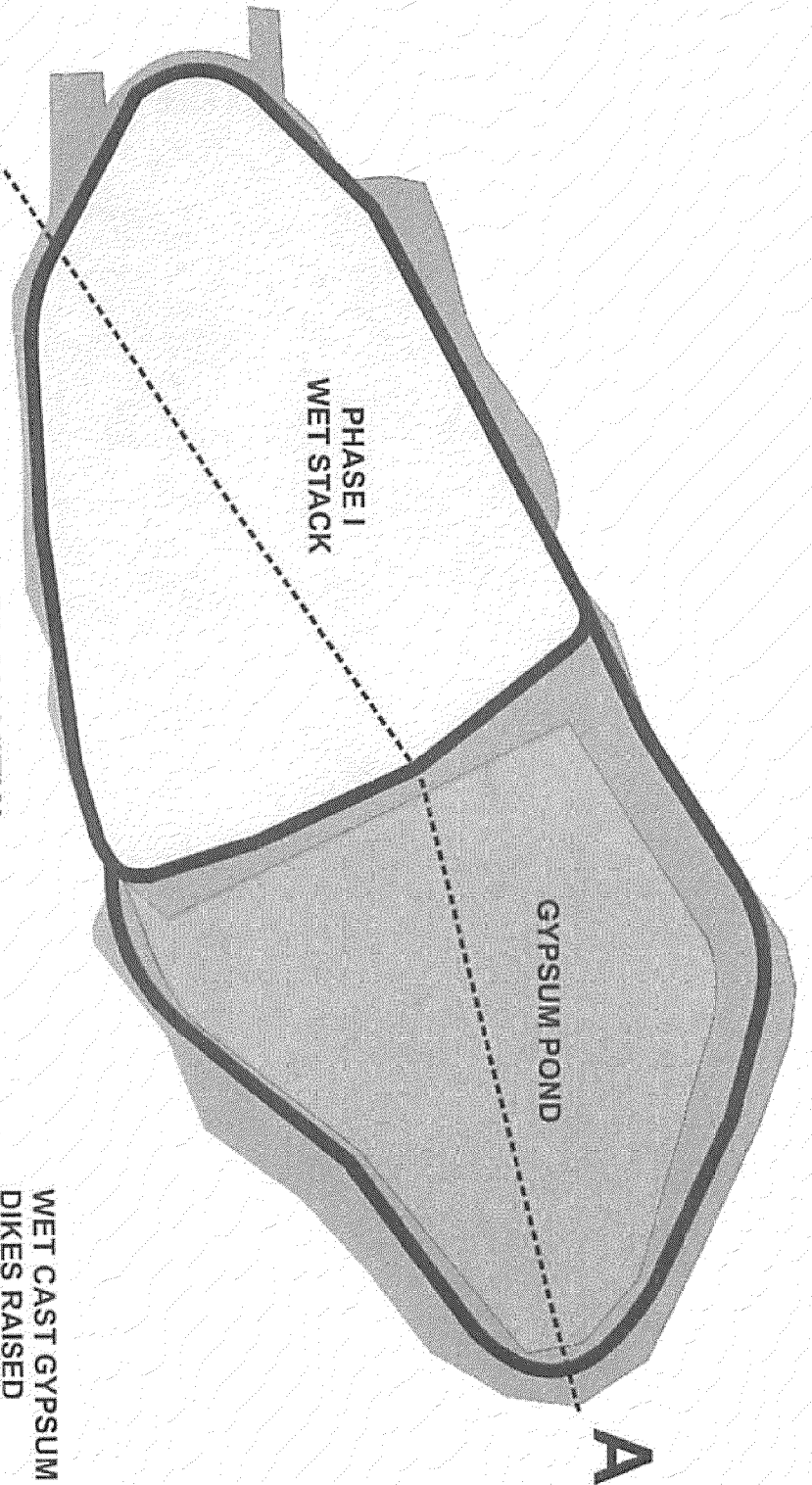
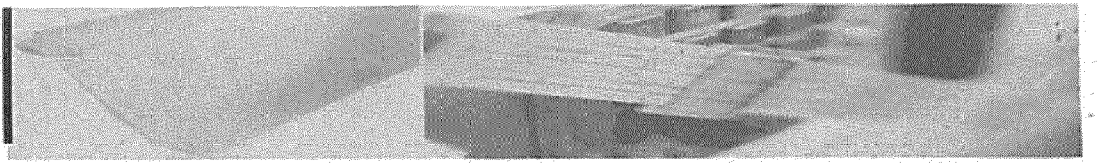


2.0 Scope of Work (Continued)

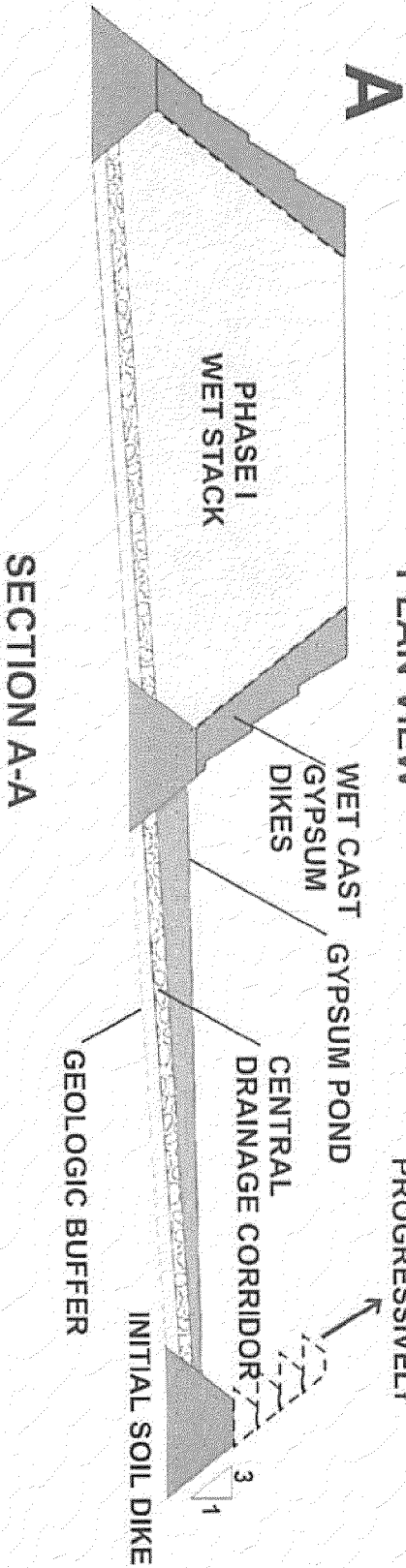
- **Construction activities**

- Step 6 – Commence wet pond operations in Phase II; progressively raise elevation of starter dikes using wet cast gypsum

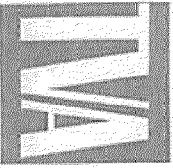




PLAN VIEW



SECTION A-A



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