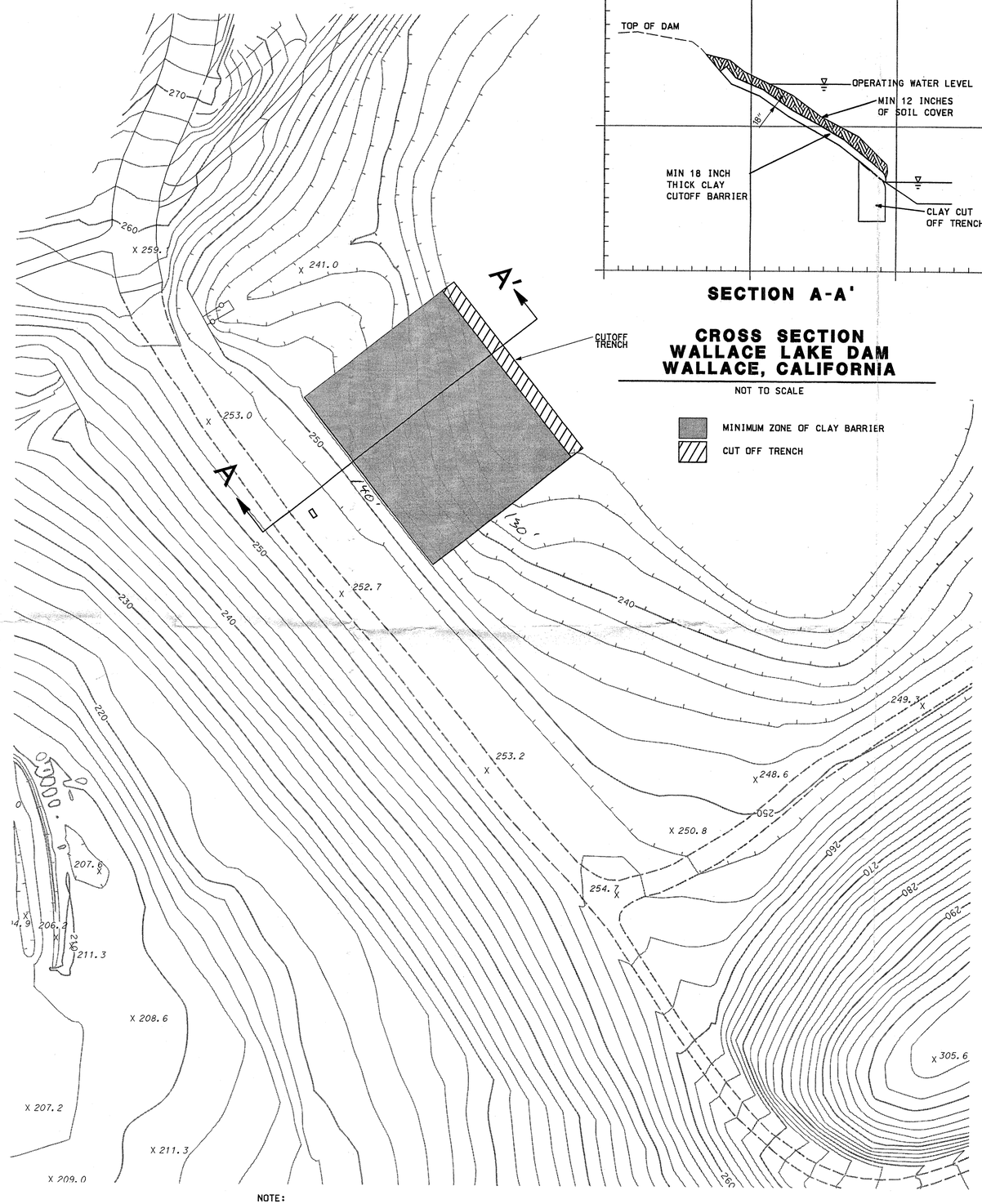


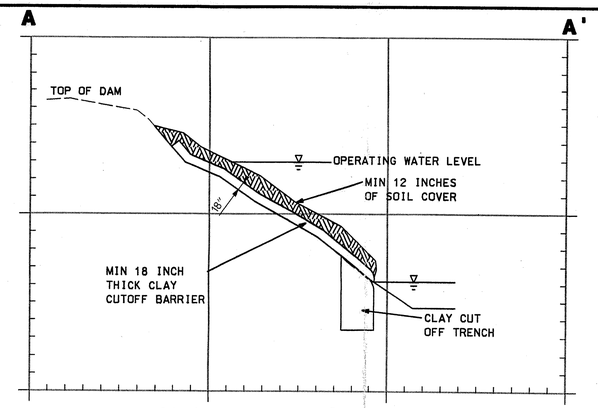


## SECTION A-A'

## CROSS SECTION
## WALLACE LAKE DAM
## WALLACE, CALIFORNIA

NOT TO SCALE

MINIMUM ZONE OF CLAY BARRIER

CUT OFF TRENCH

NOTE:
THE SOILS REPORT WAS PREPARED BY KLEINFELDER, INC.
THE TITLE OF THE SOIL'S REPORT IS ENTITLED
"GEOTECHNICAL SERVICES REPORT DAM EVALUATION
WALLACE LAKE ESTATES, WALLACE CALIFORNIA"
DATED OCTOBER 13, 2005(REVISED)

40 20 0 40 80 120

GRAPHIC SCALE 1"= 40'

### Stripping

1. Prior to general earthwork, surface vegetation and any debris should be removed and disposed of outside the construction limits. Depending on the concentration of vegetation, it may be possible to mow and rake off the surface vegetation. Deep stripping will be required where concentrations of organic soils are encountered.

2. The depth of stripping and/or disking should be determined in the field by a representative of Kleinfelder prior to earthwork.

3. The stripped material should not be incorporated into any engineered fill.

### Subgrade Preparation

1. Subgrade areas that will receive clay fill for construction of the cutoff barrier should be proof-rolled with a water truck or other heavy construction equipment in order to evaluate the stability of the subgrade soils. If unstable areas are identified, these areas should be stabilized. A representative of Kleinfelder should observe the proof-rolling and provide remedialrecommendations as warranted.

2. In - place scarification and compaction may not be adequate to densify all disturbed soil within areas grubbed or otherwise disturbed below a depth of about 6 inches. Therefore, overexcavation of disturbed soil, scarification and compaction of the exposed subgrade, and replacement with engineered fill may be required to densify all disturbed soil.

### Cutoff Barrier and Trench

1. A minimum 18 inch thick clay cutoff barrier should be placed in the area shown on the plan detail and should extend from adjacent the water line and up the face of the dam to above the preferred operation level of the lake.

2. A minimum 4 foot deep by 2 foot wide, compacted clay cutoff trench should be placed at the toe of the barrier. Cut off trench excavation shoud be limited to 25 feet at any one time. If required, trench base stabilization may be realized by the placement of woven geotextile fabric, such as Mirafi® 600X or a similar fabric with equivalent tensile strength properties.

3. Excavations may be kept dry by pumping seepage into Wallace Lake. Sediment discharge from this pumping may be controlled by pumping water through a sediment filter bag, such as those constructed by SiltTex® or an equivalent.

4. Once the barrier and the trench are placed, at least 1 foot of native soilland/or gravel should be placed over the barrier for protection and to reduce drying/cracking of the clay during dry weather. The soil cover material should be tamped firm until an unyielding condition is achieved.

5. A general cross-section detail showing the general layout of the barrier, cutoff trench and soil cover is shown.

6. The clay barrier and cutoff trench materials should be prepared and compacted in accordance with the earthwork requirements discussed in the following sections.

7. During earthwork, a representative from Kleinfelder should observe the earthwork operations and stock piling of clay material to visually document that the stockpiled material is suitable, i.e., the clay is not contaminated with sand and gravel.

8. Following placement of the compacted clay, it will be necessary to sprinkle the surface of the cutoff barrier with water so that the clay does not shrink and crack before the protective soilis placed over the top.

### Fill Materials

1. The native soils encountered in our borings, minus organics, debris and/or other deleterious materials, should be suitable for use as general engineered fill in the proposed cutoff barrier area.

2. Clay soil used to construct the cutoff barrier and trench should be nearly free of gravel organic material or other deleterious debris, and meet the requirements presented below:

| Sieve Size | Percent Passing |
|---|---|
| 3-inch | 100 |
| No. 4 90 | 90-100 |
| No. 200 | 51- 90 |
| Plasticity (ASTM D4318) | |
| Liquid Limit | Plasticity Index |
| Less than 50 | Less than 30 and greater than or equalto 15 |
| Falling Head Permeability (ASTM D5084) | |
| x10-6 cm/second or slower | |

3. All materials to be used for the clay barrier should be sampled and tested by the project Geotechnical Engineer prior to being transported to the site.

### Engineered Fill

1. All fill soils, either native or imported, required to bring the site to final grade should be compacted as engineered fill.

2. Native subgrade soil composed of sand, silt or gravel mixtures should be uniformly moisture conditioned to between 0 and 4 percentage points above the optimum moisture content, placed in horizontal lifts less than 8 inches in loose thickness, and compacted to at least 90 percent of the maximum dry density as determined by ASTM Test Method D 1557 .

3. Clay fill used for construction of the cutoff barrier should be uniformly moisture conditioned to between 1 and 5 percentage points above the optimum moisture content and compacted to at least 93 percent of the maximum dry density, as determined by ASTM Test Method D 1557.

4. Clay fill used for construction of the cutoff trench should be uniformly moisture conditioned to between 2 and 5 percentage points above the optimum moisture content and compacted to at least 88 percent of the maximum dry density, as determined by ASTM Test Method D 1557.

5. Additional fill lifts should not be placed if the previous lift did not meet the required dry density or if soil conditions are not stable. Discing and/or blending may be required to uniformly moisture condition soils used for engineered fill.

6. Protective fill placed over the cutoff barrier should be tamped firm until a firm/unyielding condition is achieved.

### Temporary Excavations

1. Construction site safety generally is the sole responsibility of the Contractor, who shall also be solely responsible for the means, methods, and sequencing of construction operations. The Contractor should be aware that slope height, slope inclination, or excavation depths should in no case exceed those specified in local, state, and/or federal safety regulations (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations).

2. During wet weather, earthen berms or other methods should be used to prevent runoff water from entering all excavations. All runoff water, seepage and/or groundwater encountered within excavations should be collected and disposed of outside the construction limits.

### Quality Control

As a minimum, our Construction Services should include observation and testing during placement and compaction of fills used to construct the pavement section or clay cut off barrier and trench.

# CLAY BARRIER CUTOFF TRENCH

KLEINFELDER
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REGISTERED PROFESSIONAL ENGINEER
RONALD TERRY FRANZEN
No. 388
Exp. 3/31/07
GEOTECHNICAL
STATE OF CALIFORNIA

# SITE PLAN
# WALLACE LAKE DAM
# WALLACE, CALIFORNIA

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