STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-001
(916) 653-5791

AUG - 9 2007

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TRLIA

Permit No. 18170 BD

Three Rivers Levee Improvement Authority
915 Eighth Street, Suite 115
Marysville, California 95901-5273

Enclosed is your approved Reclamation Board Encroachment Permit Conditions.

Under the Standard General Condition Four (4) of the permit, you are required to accomplish the work under direction and supervision of the Department of Water Resources; therefore, you must advise the Department at 3310 El Camino Avenue, Sacramento, California 95821, attention Cindy Ungacta, telephone (916) 574-1213, at least ten days prior to starting your project. An addressed postcard is enclosed for your convenience.

Please note that the permit grants the work proposed in your application. This permit, in addition to the twelve (12) standard conditions, includes special conditions, which may place limitations on or require modifications to your project. You are advised to read all conditions prior to starting the project. Commencing any work under this permit shall constitute an acceptance of the provisions of the permit and an agreement to perform accordingly. This permit does not relieve you from the responsibility for obtaining authorization from any State, local, or federal agencies for your proposed project.

Please refer to your permit number when communicating with this office. For further information, contact Sam Brandon of my staff at (916) 574-0651.

Sincerely,

Mark A. Herold, Chief
Floodway Protection Section
Division of Flood Management

Enclosure

STATE OF CALIFORNIA
THE RESOURCES AGENCY
THE RECLAMATION BOARD

PERMIT NO. 18170 BD

This Permit is issued to:

Three Rivers Levee Improvement Authority
915 Eighth Street, Suite 115
Marysville, California 95901-5273

To restore the integrity of Sacramento River Flood Control Project levees by constructing cutoff walls, stability berms, waterside blankets, and relief wells between Levee Miles 13.3 to 17.1 (Segment 1) and 23.6 to 26.1 (Segment 3), and flattening 3,000 feet of waterside slope between Levee Miles 23.6 and 26.1 on the left (east) bank levee of the Feather River; and restoring the levee crown elevations to design from Levee Mile 0.0 to 0.3 on the left (south) bank levee of Yuba River and between Levee Miles 23.6 and 26.1 on the left (east) bank levee of the Feather River. The project is located south of Marysville and west of Highway 70 (Section 26,35,1, T14N, R3E, MDB&M, Reclamation District 784, Feather River, Yuba County).

NOTE: Special Conditions have been incorporated herein which may place limitations on and/or require modification of your proposed project described above.

(SEAL)

Dated: AUG - 9 2007

Jay S. Punia
General Manager

GENERAL CONDITIONS:

ONE: This permit is issued under the provisions of Sections 8700 – 8723 of the Water Code.

TWO: Only work described in the subject application is authorized hereby.

THREE: This permit does not grant a right to use or construct works on land owned by the Sacramento and San Joaquin Drainage District or on any other land.

FOUR: The approved work shall be accomplished under the direction and supervision of the State Department of Water Resources, and the permittee shall conform to all requirements of the Department and The Reclamation Board.

FIVE: Unless the work herein contemplated shall have been commenced within one year after issuance of this permit, the Board reserves the right to change any conditions in this permit as may be consistent with current flood control standards and policies of The Reclamation Board.

SIX: This permit shall remain in effect until revoked. In the event any conditions in this permit are not complied with, it may be revoked on 15 days' notice.

SEVEN: It is understood and agreed to by the permittee that the start of any work under this permit shall constitute an acceptance of the conditions in this permit and an agreement to perform work in accordance therewith.

EIGHT: This permit does not establish any precedent with respect to any other application received by The Reclamation Board.

NINE: The permittee shall, when required by law, secure the written order or consent from all other public agencies having jurisdiction.

TEN: The permittee is responsible for all personal liability and property damage which may arise out of failure on the permittee's part to perform the obligations under this permit. If any claim of liability is made against the State of California, or any departments thereof, the United States of America, a local district or other maintaining agencies and the officers, agents or employees thereof, the permittee shall defend and shall hold each of them harmless from each claim.

ELEVEN: The permittee shall exercise reasonable care to operate and maintain any work authorized herein to preclude injury to or damage to any works necessary to any plan of flood control adopted by the Board or the Legislature, or interfere with the successful execution, functioning or operation of any plan of flood control adopted by the Board or the Legislature.

TWELVE: Should any of the work not conform to the conditions of this permit, the permittee, upon order of The Reclamation Board, shall in the manner prescribed by the Board be responsible for the cost and expense to remove, alter, relocate, or reconstruct all or any part of the work herein approved.

SPECIAL CONDITIONS FOR PERMIT NO. 18170 BD

THIRTEEN: This permit is not valid until a Cooperation Agreement for the project that provides local assurances to operate and maintain the completed project and to hold harmless and indemnify the Board and State of California satisfactory to the Board is executed among the Board, Three Rivers Levee Improvement Authority, Reclamation District 784, and Yuba County.

FOURTEEN: The permittee is subject to the conditions and cautions set forth in the Department of the Army memorandum dated August 2, 2007, approving alteration of the Sacramento River Flood Control Project, Feather and Yuba Rivers, which is attached to this permit as Exhibit A and is incorporated by reference

FIFTEEN: The permittee shall comply with all conditions set forth in the letter from the Department of the Army dated May 17, 2007, which is attached to this permit as Exhibit B and incorporated by reference excluding Condition 'c'.

SIXTEEN: This permit is not valid until the permittee has resolved all comments provided by the Corps of Engineers in Exhibit B. All responses to the Corps of Engineers shall also be provided to The Reclamation Board.

SEVENTEEN: Within three years from completion of the modifications approved by this permit, the permittee shall provide the Sacramento and San Joaquin Drainage District, acting by and through The Reclamation Board of the State of California, a permanent easement granting all flood control

rights upon, over and across the property to be occupied by the existing or to-be-reconstructed levee, including the areas of the cutoff walls, waterside blankets, relief wells, and stability berms. For information regarding existing Reclamation Board easements and required easements, please contact Jeff Fong at (916) 657-2831.

EIGHTEEN: The easement for Segment 1 (LM 13.3 to LM 17.1) shall, at the minimum, include the entire levee section including waterside blankets, relief wells, stability berms, and the area fifty (50) feet in width adjacent to the landward levee toe if the area is not presently encumbered by a Reclamation Board permit.

NINETEEN: The easement for Segment 3 (LM 23.6 to LM 26.1) shall, at the minimum, include the entire levee section including waterside blankets, relief wells, stability berms, and the area ten (10) feet in width adjacent to the landward levee toe if the area is not presently encumbered by a Reclamation Board easement.

TWENTY: For work proposed on land owned in fee or easement by Reclamation District No. 784, the permittee may be required to secure an easement, license, or permit from the District prior to commencement of work.

TWENTY-ONE: All work approved by this permit shall be in accordance with the submitted drawings and specifications except as modified by special permit conditions herein. No further work, other than that approved by this permit, shall be done in the area without prior approval of The Reclamation Board.

TWENTY-TWO: The maximum levee crown elevations of the levee reaches where construction activities affect the levee crown area shall be limited to the maximum crown elevations shown for the same reaches on the US Army Corps of Engineers' Sacramento River Flood Control Project, California, Levee and Channel Profiles, dated March 15, 1957, or as modified by the Corps of Engineers and shown on "as-built" drawings provided to The Reclamation Board subsequent to March 15, 1957, or other documentation acceptable to The Reclamation Board.

TWENTY-THREE: Prior to commencement of excavation, the permittee shall create a photo record, including associated descriptions, of existing levee conditions. The photo record shall be certified by a licensed land surveyor or professional engineer registered in the State of California and submitted to The Reclamation Board within 30 days of beginning the project.

TWENTY-FOUR: Upon completion of the project, the permittee shall perform a levee crown profile survey and create a photo record, including associated descriptions, of "as-built" levee conditions. The photo record shall be certified by a licensed land surveyor or professional engineer registered in the State of California and submitted to The Reclamation Board within 120 days of project completion.

TWENTY-FIVE: The permittee shall maintain the permitted encroachment(s) and the project works in the manner required and as requested by an authorized representative of The Reclamation Board, Department of Water Resources, Reclamation District No. 784 or any other agency responsible for maintenance.

TWENTY-SIX: The permittee shall contact the Department of Water Resources by telephone, (916)

574-1213, and submit the enclosed postcard to schedule a preconstruction conference. Failure to do so at least 10 working days prior to start of work may result in delay of the project.

TWENTY-SEVEN: The permittee shall provide supervision and inspection services acceptable to The Reclamation Board.

TWENTY-EIGHT: Within 120 days of completion of the project, the permittee shall submit to The Reclamation Board a certification report, stamped and signed by a professional civil engineer registered in the State of California, certifying the work was inspected and performed in accordance with Reclamation Board permit conditions and submitted drawings and specifications.

TWENTY-NINE: Within 120 days of completion of the project, the permittee shall submit to The Reclamation Board proposed revisions to the Corps of Engineers, Supplement to Standard Operation and Maintenance Manual, Sacramento River Flood Control Project, Unit No. 145, Part 1 and the associated "as-built" drawings for system alterations approved by this permit that are to be incorporated into the federal Sacramento River Flood Control Project.

THIRTY: If FEMA certification of the levee by the Corps of Engineers is being considered, the project proponent should contact the U. S. Army Corps of Engineers regarding inspection of the project during construction for FEMA certification purposes.

THIRTY-ONE: The permittee shall contact the U. S. Army Corps of Engineers regarding inspection of the project during construction as the proposed work is an alteration to the existing Federal Flood Control Project that will be incorporated into the adopted plan of flood control.

THIRTY-TWO: The Reclamation Board and Department of Water Resources shall not be held liable for any damages to the permitted encroachment(s) resulting from flood fight, operation, maintenance, inspection, or emergency repair.

THIRTY-THREE: The permittee may be required, at permittee's cost and expense, to remove, alter, relocate, or reconstruct all or any part of the permitted encroachment(s) if removal, alteration, relocation, or reconstruction is necessary as part of or in conjunction with any present or future flood control plan or project or if damaged by any cause. If the permittee does not comply, The Reclamation Board may remove the encroachment(s) at the permittee's expense.

THIRTY-FOUR: The permittee should contact the U.S. Army Corps of Engineers, Sacramento District, Regulatory Branch, 1325 J Street, Sacramento, California 95814, telephone (916) 557-5250, as compliance with Section 10 of the Rivers and Harbors Act and/or Section 404 of the Clean Water Act may be required.

THIRTY-FIVE: The permittee shall be responsible for repair of any damages to the project levee and other flood control facilities due to construction, operation, or maintenance of the proposed project.

THIRTY-SIX: The permittee is responsible for all liability associated with construction, operation, and maintenance of the permitted facilities and shall defend and hold harmless the State of California, or any departments thereof, from any liability or claims of liability associated therewith.

THIRTY-SEVEN: If the project, or any portion thereof, is to be abandoned in the future, the permittee

or successor shall abandon the project under direction of The Reclamation Board and Department of Water Resources, at the permittee's or successor's cost and expense.

THIRTY-EIGHT: No construction work of any kind shall be done during the flood season from November 1 to April 15 without prior approval of The Reclamation Board.

THIRTY-NINE: Cleared trees and brush shall be completely burned or removed from the floodway, and downed trees or brush shall not remain in the floodway during the flood season from November 1 to April 15.

FORTY: No material stockpiles, temporary buildings, or equipment shall remain in the floodway during the flood season from November 1 to April 15.

FORTY-ONE: The permitted encroachment(s) shall not interfere with operation and maintenance of the flood control project. If the permitted encroachment(s) are determined by any agency responsible for operation or maintenance of the flood control project to interfere, the permittee shall be required, at permittee's cost and expense, to modify or remove the permitted encroachment(s) under direction of The Reclamation Board or Department of Water Resources. If the permittee does not comply, The Reclamation Board may modify or remove the encroachment(s) at the permittee's expense.

FORTY-TWO: During construction of the project, any and all anticipated or unanticipated conditions encountered which may impact levee integrity or flood control shall be brought to the attention of the Flood Project Inspector immediately and prior to continuation. Any encountered abandoned encroachments shall be completely removed or properly abandoned under the direction of the Flood Project Integrity and Inspection Branch Inspector.

FORTY-THREE: The stability of the levee shall be maintained at all times.

FORTY-FOUR: Excavations below the design flood plane and within the levee section or within ten (10) feet of the projected waterward and landward levee slopes shall have side slopes no steeper than 1 horizontal to 1 vertical. Flatter slopes may be required to ensure stability of the excavation.

FORTY-FIVE: A profile of the levee crown roadway and all access ramps that will be utilized for access to and from the borrow and project areas shall be submitted to The Reclamation Board prior to commencement of excavation.

FORTY-SIX: Any haul and access ramps and utilized levee crown roadway shall be maintained in a manner prescribed by the authorized representative of the Department of Water Resources, Reclamation District No. 784 or any other agency responsible for maintenance.

FORTY-SEVEN: Any damage to the levee crown roadway or access ramps that will be utilized for access for this project shall be promptly repaired to the condition that existed prior to this project.

FORTY-EIGHT: Equipment used in the construction of the cutoff walls shall not exceed live-load surcharge to a level that causes or contributes to the instability of the levee during construction operations.

FORTY-NINE: Fluid pressures in the cutoff wall construction zones shall be carefully monitored and

controlled to minimize the potential for hydrofracturing.

FIFTY: The permittee shall be responsible for all damages due to settlement, consolidation, or heave from any construction-induced activities.

FIFTY-ONE: Excess bentonite or other cutoff wall fluids shall be properly disposed of outside of the floodway. The bentonite or other cutoff wall fluids shall not be used as backfill material for levee reconstruction.

FIFTY-TWO: Restoration of the degraded levee shall not begin until the cutoff wall has cured and achieved at least 80 percent of its design strength prior to beginning backfill or as allowed by the Corps.

FIFTY-THREE: All fencing, gates and signs removed during construction of this project shall be replaced in kind and at the original locations. If it is necessary to relocate any fence, gate or sign, the permittee is required to obtain written approval from The Reclamation Board prior to installation at a new location.

FIFTY-FOUR: All temporary fencing, gates and signs shall be removed upon completion of the project.

FIFTY-FIVE: Any pipe or conduit being reinstalled in the levee section or within ten (10) feet of both the waterward and landward levee toes shall meet Title 23 standards.

FIFTY-SIX: Fill on the levee slope shall be keyed into the existing levee section with each lift.

FIFTY-SEVEN: Backfill material for excavations within the levee section and within ten (10) feet of the levee toes shall be placed in 4- to 6-inch layers, moisture conditioned above optimum moisture content, and compacted to a minimum of 90 percent relative compaction as measured by ASTM Method D1557-91.

FIFTY-EIGHT: Density tests by a certified materials laboratory will be required to verify compaction of backfill within the levee section and within ten (10) feet of the levee toes.

FIFTY-NINE: No cuts shall remain in the levee section upon completion of fill placement.

SIXTY: Fill material shall be placed only within the area indicated on the approved plans.

SIXTY-ONE: All fill material for reconstructing the levee crown fill areas and waterside blankets shall be impervious material with 20 percent or more passing the No. 200 sieve, a plasticity index of 8 or more, and a liquid limit of less than 50 and free of lumps or stones exceeding 3 inches in greatest dimension, vegetative matter, or other unsatisfactory material.

SIXTY-TWO: The fill surface areas shall be graded to direct drainage away from the toe of the levee.

SIXTY-THREE: The slopes of the reconstructed levee sections shall be no steeper than 3 horizontal to 1 vertical on the water side and 2 horizontal to 1 vertical on the land side.

SIXTY-FOUR: The reconstructed levee crown roadway and access ramps shall be surfaced with a minimum of 4 inches of compacted, Class 2, aggregate base (Caltrans Specification 26-1.02A).

SIXTY-FIVE: Aggregate base material shall be compacted to a relative compaction of not less than 95 percent per ASTM Method D1557-91, with a moisture content sufficient to obtain the required compaction.

SIXTY-SIX: The project sites including the levee sections and access ramps shall be restored to at least the condition that existed prior to commencement of work and there shall be no visible trace of the cutoff wall.

SIXTY-SEVEN: All debris generated by this project shall be disposed of outside the floodway and off the levee sections.

SIXTY-EIGHT: The permittee shall replant or reseed the levee slopes to restore sod, grass, or other non-woody ground covers if damaged during project work.

SIXTY-NINE: In the event existing revetment on the channel banks or levee slopes is disturbed or displaced, it shall be restored to its original condition upon completion of the proposed installation.

SEVENTY: In the event that levee or bank erosion injurious to the adopted plan of flood control occurs at or adjacent to the permitted encroachment(s), the permittee shall repair the eroded area and propose measures, to be approved by The Reclamation Board, to prevent further erosion.

SEVENTY-ONE: No material, other than temporary materials during construction, shall be stockpiled closer than 50 feet from the landward toe of the project levee.

SEVENTY-TWO: Any damage caused to the levees during placement or removal of any stockpiled material shall be repaired.

SEVENTY-THREE: Concrete pipe for the Linda County Water District discharge pipe replacement shall be AWWA C300 reinforced concrete cylinder pipe within the levee section and 10 feet landward and waterward of the levee toes. The permittee shall submit a joint detail for the pipe for approval by The Reclamation Board prior to pipe installation.

SEVENTY-FOUR: The high-density polyethylene pipe to be used for the Plumas Mutual pipeline replacement shall meet the following conditions: (a) joints must be heat or electrofusion welded (ASTM standards F1055-93, dated 1993 or D3261-93, dated 1993), (b) designed to resist all anticipated loading conditions, and (c) protected from ultraviolet radiation.

SEVENTY-FIVE: All reconstructed pipelines shall be tested and confirmed free of leaks by X-ray, pressure tests, or other approved methods during construction or anytime after construction upon request by The Reclamation Board.

SEVENTY-SIX: All abandoned piping and conduits shall be removed from the levee section and areas encompassed by the easements as defined by this permit.

SEVENTY-SEVEN: By acceptance of this permit, the permittee (Three Rivers Levee Improvement

Authority) acknowledges the authority of The Reclamation Board to regulate all future encroachments along these levee reaches including those that may encroach upon alterations approved by this permit prior to incorporation into the federal Sacramento River Flood Control Project by the Corps of Engineers.

SEVENTY-EIGHT: Any additional encroachment(s) within the floodway, on or in the levee section or within the easements required by this permit shall require an approved permit from The Reclamation Board.

SEVENTY-NINE: The disposal sites shall be located no closer than two hundred (200) feet from the landside toe of the Feather River levee and no closer than fifty (50) feet from the landside toe of the Bear River levee unless a revised underseepage analyses indicate a greater distance is required.

EIGHTY: The ground surface grading between the landside toes of the Feather River and Bear River levees and the disposal sites shall be contoured to allow surface runoff to drain away from the levee toes.

EXHIBIT A Jay

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
441 G STREET NW
WASHINGTON, D.C. 20314-1000

AUG 0 2 2007

CECW-P

MEMORANDUM FOR Commander, South Pacific Division

SUBJECT: Section 408 Approval of a Flood Control Project Alteration – Sacramento River Flood Control Project, Feather and Yuba Rivers, California

1. Reference CESPK-DE Memorandum dated 22 June 2007, subject as above; subsequent CESPK email dated 11 July 2007, transmitting documents to complete the package; and CESPD-PDC memo dated 31 July 2007, subject as above.

2. The Section 408 permit application for the subject alteration is approved. The alteration is for the purposes of strengthening the two levee segments (1 and 3) and restoring protection to match the 1957 flood design profile. Please note the companion application for Section 104 credit consideration was transmitted to the Assistant Secretary of the Army (Civil Works) for action on 26 July 2007. You should caution the local sponsors that formal approval from the ASA(CW) must be obtained prior to the start of construction in order for the work to qualify for any potential Section 104 credit. Also note that contract award is considered the start of construction.

3. Since it is anticipated that we will have more levee alterations in California, we need to adequately address cumulative effects and overlapping scopes. To accomplish this, one approach would be to prepare a programmatic level Environmental Impact Statement. Subsequent levee alteration requests could then tier off of and incorporate findings documented in the master EIS by reference. Until the potential cumulative effects of numerous levee alterations and related actions in the region are described in a programmatic NEPA document we will be hesitant to approve additional 408 requests for alterations to Federal flood damage reduction projects.

4. Please note that the discussion of flood protection in terms such as 100-year or 200-year level of protection is acceptable to comply with NEPA and other environmental statutes. However, a risk-based analysis as required by ER 1105-2-100 and ER 1105-2-101 will be needed to determine the terms of any eventual Section 104 reimbursement.

FOR THE COMMANDER:

STEVEN L. STOCKTON, P.E.
Deputy Director of Civil Works

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

REPLY TO ATTENTION OF

May 17, 2007

EXHIBIT B

Navigation and Flood Control Unit (18170)

Mr. Jay Punia, General Manager
The Reclamation Board
State of California
3310 El Camino Ave. Rm. LL40
Sacramento, California 95821

Dear Mr. Punia:

We have reviewed an application for a permit by Three Rivers Levee Improvement Authority (Reclamation Board Number 18170). The project includes constructing slurry cutoff walls and stability berms between Levee Miles 13.3 to 17.1 and 23.6 to 26.1, and reshaping the levee crown from Levee Mile 0.0 to 0.3 on the left (east) bank levee of the Feather River. The project is located south of Marysville and west of Highway 70 in Sections 1, 26, and 35, Township 14 North, Range 3 East, M.D.B.&M. Survey, Yuba County, California.

The District Engineer has no objection to a conditional approval of this application by your Board from a flood control standpoint subject to the following conditions:

a. That the permit shall be subject to HQ USACE issuing Section 408 approval. If HQ USACE disapproves the Section 408 request, the Reclamation Board shall notify the applicant that the conditional permit is no longer valid.

b. That no stockpiles of material or equipment shall remain in the floodway during the flood season of November 1 to April 15.

c. That after the installation of the slurry wall, the levee shall be reconstructed to at least the Corps design profile or the height before construction, whichever is higher.

d. That in the event trees and brush are cleared, they shall be properly disposed of either by complete burning or complete removal outside the limits of the project works.

In addition to the above comments, I have attached comments, from our Soil Design Section, that should be addressed by the applicant, to the Corps' satisfaction, prior to any construction.

Not enough information is provided to determine if there is a permit action under Section 10 and/or Section 404 permit process. Please advise the applicant to contact the U.S. Army Corps of Engineers, Sacramento District, Regulatory Branch, 1325 J Street, Sacramento, California 95814, telephone (916) 557-5250.

If you have any questions concerning our comments on this permit application, please contact Mr. Mohsen Tavana at (916) 557-6282 or Mr. Robert Murakami at (916) 557-6738.

Sincerely,

Michael D. Mahoney, P.E.
Chief, Construction-Operations Division

CF:
Mr. Jeremy Arrich, Acting Chief, Flood Project Integrity and Inspection Branch, 3310 El Camino Avenue, Suite LL30, Sacramento, CA 95821

CESPK-ED-GS

23 April 2007

Review of Reclamation Board Permit No. 18170
Three Rivers Levee Improvement Authority Phase 4 Feather River Segments 1 & 3
Reviewed by Soil Design Section, Corps of Engineers

Comments

1. Sheet C-6: The Corps has concern with the placement of piezometer P-F1 through the seepage berm in that it will be drilled through the berm's drainage layers and filters. The piezometer shall be relocated to outside the footprint of the seepage berm or be deleted altogether. Please coordinate piezometer relocation or deletion with the Corps.

2. Sheet C-24: Extend the waterside slope flattening to the spur levee at Sta 691+00. The contours shown on sheet C-24 indicate the slope is steeper than 1V:3H.

3. Sheet C-25: The levee crown reshaping between Sta 714+00 and 720+00 looks like a nominal levee raise. TRLIA is advised to obtain approval from the State Reclamation Board for any levee raising.

4. Sheet C-44 *Typical Waterside Blanket Cross Section*: The waterside blanket shall have a minimum thickness of 5 feet to reduce the threat of rodent holes and desiccation cracks from perforating the blanket.

5. Sheet C-44: Flattening the waterside slope using option 1 is unacceptable to the Corps if it reduces the levee crown width to less than 20 feet.

6. Sheet C-85 Details 1 & 2: Please indicate on what sheet Note 7 is located.

7. TRLIA shall drill additional auger borings between Sta 640+00 and 649+00 to verify the soils encountered in Corps boring 2F-91-44 and 44A. Auger borings should be drilled along the landside levee toe at 100-foot spacing to a depth of at least 30 feet. Based on the presence of a few auger borings already drilled in the area, the additional borings should be located at Sta 641+00, 642+00, 643+00, 646+00, 647+00, and 648+00 to provide coverage at 100-foot spacing.

8. Sheet C-21: The end of stability berm detail is not shown on sheet C-41 as is indicated in the note.

9. Sheet C-21: Clarification is needed for the end of the stability berm. Notes on the sheet indicate the berm ends at Sta 657+00 but the drawings show it continuing to Sta 658+00. Is there a drainage layer present between Sta 657+00 and 658+00? How is the drainage layer being accommodated at the end of berm? Additional details are required.

10. Main Report Table 3 *Summary of Utility Penetrations Beneath and Through the Levee*: The utilities crossing the Yuba River levee are not included in Table 3. Is GEI responsible for investigating these utilities?

11. Main Report Table 3 *Summary of Utility Penetrations Beneath and Through the Levee*: Indicate if flap gates and slide gates are present on the Pump Station No. 2 gravity drain and the force mains at Pump Station No. 2 and Pump Station No. 9

12. Main Report Table 3 *Summary of Utility Penetrations Beneath and Through the Levee*: Provide data indicating whether or not each utility crosses the levee above the 200-year water surface and 1957 Design Profile. This information is not FEMA critical but is required for the long-term goal of the project.

13. Main Report Table 3 *Summary of Utility Penetrations Beneath and Through the Levee*: Indicate whether or not the natural gas line at Sta 660+00 has a rapid closure devise as required by the State of California and USACE.

14. In addition to a list of utilities crossing through and under the levees, which has been provided, there must be documentation provided to the Corps that each utility has been designed and constructed in accordance to State of California Title 23 and USACE EM 1110-2-1913 and EM 1110-2-2902 criteria. Utilities that don't meet current State and USACE criteria shall be upgraded in accordance to said criteria.

15. Any changes made to the project beyond the *Issued for Approval Design Submittal* and during construction of the project shall be reviewed and approved by the Corps of Engineers technical staff. Failure of TRLIA to obtain approval from the Corps on modifications to the design features may result in the Corps unable to FEMA certify the work.

16. Specification section 02148 paragraph 2.2.2.3 *Well Screen* and 2.4.2.2 *Filter Pack for Well Screen*: Change the 0.20-inch slot size to 0.15-inch. This slot size change was made during construction of Site 7 Extension.

17. Sheet C-48: Be advised that the existing ground surface elevation for relief wells RW-27 and RW-31 are not in line the other relief wells.

18. Volume 2 Appendix F *Seepage Calculations*: The following comments are made on the relief well calculation provided on pages 48 through 51:

    - The effective well radius (r_w) value should be 6 inches per paragraph 6-8 of EM 1110-2-1914 instead of 4 inches.
    - Topography data from the Corps' Site 7 Extension Drawings indicate that the elevation of the landside ground is 30 feet and not 32 feet as shown in the GEI calculations. Please verify ground elevation and correct.

- The depth of the collector ditch is measured from the top of berm and not top of natural ground. The elevation of the collector ditch invert is around 30.5 feet at Sta 60+00.
- The transformed thickness of the top stratum should be used to calculate the uplift gradient. In the calculations at Sta 60+00, the thickness of the silty sand lower blanket layer should be transformed into an equivalent clay layer thickness.

19. Sheets C-2, C-3, C-4, & C-5: The sticklogs for the relief wells do not match the logs of exploration of the pilot holes. Please verify the accuracy of the sticklogs.

20. The relief well top of riser elevation needs to be as low as possible but not too low so that wells become flooded with backwater from the collector ditch. Instead of basing the top of riser elevation on a constant depth below the top of berm, the top of riser should be based on the water surface level in the collector ditch. The water level in the collector ditch should be determined and then the top of riser elevation set a few inches above the water level. The lower top of risers will greatly improve efficiency of the relief wells.

21. Based on the subsurface conditions between Sta 76+00 and 80+00 which indicates a 25 to 35-foot thick blanket, split-spacing between RW-11 and 14 may not be necessary. Additional evaluation should be conducted after the pilot holes have been drilled to determine if relief wells RW-32, 33, & 34 can be deleted.

22. The proposed additional relief wells will not sufficiently reduce exit gradients in the area between Sta 81+50 and 87+50. The Corps is calculating an exit gradient of 0.58 with the proposed split-spaced wells in place. At this time the Corps in unable to concur and approve the additional relief well installation at Site 7 Extension site. Additional investigation is required to determine an effective relief well design. Double split-spacing and setting the top of riser elevation lower is required to reduce the exit gradients to less than 0.5.

23. The Corps is currently in the process of revising the exit gradient criteria. Since the design of relief wells is dependent on the revised exit gradient, TRLIA is advised to postpone repair work at Site 7 Extension until revisions to the Corps' exit gradient criteria is complete.

24. Sheet C-41: According to the table provided on the sheet, levee sections taken at Sta 135+00, 140+00, 145+00, 150+00, 160+00, 215+00, 570+00, 575+00, 580+00, 595+00, 600+00, 615+00, 620+00, and 624+00 all have a crown width of less than 20 feet. Be advised that the reviewer has recently independently measured the crown width at each location listed above and found that the crown was 20 feet or greater in width.

25. Sections of the levee being raised, reshaped, restored, or reconstructed shall have a crown width of at least 20 feet and a waterside slope of 1V:3H or flatter. Upstream of Sta 613+87, the landside slope shall be constructed at a slope of 1V:2H or flatter. Downstream of Sta 613+87, the landside slope shall be constructed at a slope of 1V:3H or flatter unless the existing slope is steeper that 1V:3H. If the existing slope is steeper

than 1V:3H, the new slope shall be constructed at a slope that matches the existing slope, but the slope shall not be no steeper than 1V:2H.

26. Sheet C-73, Note 6: TRLIA shall notify the Corps of Engineers at least 48 hours prior to the excavation that exposes the slurry wall so that Corps of Engineers staff can inspect the exposed slurry wall. Contact either of the following individuals at the Corps: Henri Mulder at 916-557-7417, Ed Ketchum at 916-557-5383, or Michael Ramsbotham at 916-557-7174.

27. The Corps has calculated marginal exit gradients ranging from 0.45 to 0.53 in the Pump Station No. 9 inlet channel located near Sta 655+00. Piezometers shall be installed along the edge of the inlet channel to monitor peizometric pressures in the sand and gravel layer located between approximate elevation +6 and -10 feet. Coordinate actual locations and number of piezometers with the Corps of Engineers. GEI should consider conducting an underseepage analysis at this site and determine their own conclusions.

28. Main Report, paragraph 5.5, *Pump Station No. 9*: Obtain and review as-built drawings of Pump Station No. 9. Determine whether or not there are levee stability or integrity issues with Pump Station No. 9 that would require action.

29. Kennedy/Jenks Drawings Sheet C2: TRLIA shall obtain Corps of Engineers approval for any modifications made to the design of the wastewater treatment plant outfall pipe during subsequent design phases and during construction.

30. Kennedy/Jenks Drawings Sheet C2, Detail A: Control low strength material should be placed above the spring line of the pipe if structural collars are to be placed around the pipe joints.

31. Conflicts between review comments sent by the Corps of Engineer and comments and conditions from the State of California Reclamation Board shall be brought to the attention of the Corps and Reclamation Board for resolution.

32. Provide a minimum 20-foot wide maintenance easement/right-of way landward of the toe of new and modified stability berms. The 20-foot wide easement shall be free of all vegetation with the exception of grasses which shall be kept short.

33. The segment 3 levee downstream of Island Ave was raised in 1997 when the crest road was reinforced to provide emergency access to the Arboga levee break. The levee should be restored to the pre-1997 elevation and geometry in the areas where TRLIA will degrade the segment 3 levee for slurry wall construction (Sta 570+00 to 632+00). For the reach of levee upstream of Sta 632+00, the material used to reinforce the road (filter fabric and crushed gravel) is not suitable levee construction and shall not be located in the freeboard zone of the levee. If the gravel and filter fabric is located in the freeboard zone of the levee (i.e., within three feet of the 200-year water surface), the material must be removed and the levee reconstructed to the authorized height using suitable earthfill placed and compacted to the requirements in spec section 02331.

34. The disposal sites located on Sheets G-5 and G-7 shall meet the following conditions:

- Rerun underseepage analyses at both disposal sites with the addition of 5 feet of fill in the disposal area. Submit the analyses to the Corps for review.
- The disposal sites shall be located no closer than 200 feet from the landside toe of the Feather River levee and no closer than 50 feet from the landside toe of the Bear River levee unless underseepage analyses indicate a greater distance is required.
- The ground surface between the landside toe of the Bear River levee and the disposal site shall be contoured to allow surface runoff to drain. Submit the contouring plan to the Corps for approval.
- The disposal sites shall meet the conditions found in the Reclamation Board permit. Conflicts between conditions made by the Reclamation Board and the Corps shall be brought to the attention of the Corps.

35. Sheet C-76 Treatment Plant Pipe Replacement Sequence, Step 4: During the excavation of the levee for installation of the new pipe, a temporary soil cap or wet burlap shall be placed over the slurry wall if it is exposed for more than 24 hours.

36. Sheet C-76 Treatment Plant Pipe Replacement Sequence, Section A: The 6 inches of stripping of the top of the slurry wall shall occur no sooner than 12 hours prior to placement of earthfill. Sections of the top of slurry wall that are stripped shall be backfilled with earthfill on the same day of that stripping occured.

37. Sheet C-85: Provide compaction requirements of the trench backfill material.