

AMENDMENT NO. 5

AGREEMENT FOR PROFESSIONAL SERVICES  
FOR  
PHASE 4 FEATHER RIVER LEVEE REPAIRS  
BETWEEN  
THREE RIVERS LEVEE IMPROVEMENT AUTHORITY AND  
BOOKMAN-EDMONSTON/GEI CONSULTANTS

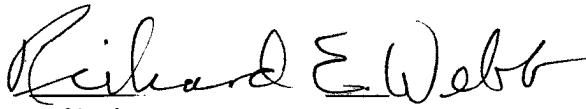
THIS AMENDMENT TO AGREEMENT is made effective February 27, 2007, by and between Three Rivers Levee Improvement Authority ("TRLIA") and Bookman-Edmonston/GEI Consultants, a division of GEI Consultants, Inc. ("Consultant"), who agree as follows:

1. **Recitals.** This Amendment is made with reference to the following background recitals:
  - 1.1. Effective December 13, 2005, the parties entered into the Agreement for Professional Services relating to TRLIA's Phase 4 Feather River Levee project with a contract value of \$1,439,400.
  - 1.2. Effective April 25, 2006, the parties entered into Amendment No. 1 to the Agreement for Professional Services relating to TRLIA's Phase 4 Feather River Levee Repair design in the amount of \$3,082,240 for a total contract value of \$4,521,640.
  - 1.3. Effective June 27, 2006, the parties entered into Amendment No. 2 to the Agreement for Professional Services relating to TRLIA's Phase 4 Feather River Levee Repair design in the amount of \$32,700 for a total contract value of \$4,554,340.
  - 1.4. Effective October 30, 2006, the parties entered into Amendment No. 3 to the Agreement for Professional Services relating to TRLIA's Phase 4 Feather River Levee Repair design in the amount of \$262,500 for a total contract value of \$4,816,840.
  - 1.5. Effective January 16, 2007, the parties entered into Amendment No. 4 to the Agreement for Professional Services relating to TRLIA's Phase 4 Feather River Levee Repair design in the amount of \$115,000 for a total contract value of \$4,931,840.
  - 1.6. The parties now desire to amend the Professional Services Agreement to expand scope of services and base contract fee.
  
2. **Fourth Amendment to Agreement.** The Professional Services Agreement is hereby amended as follows:

- 2.1. The scope of services (Attachment A to the Agreement for Professional Services between TRLIA and B-E/GEI, dated December 13, 2005) is amended to expand the scope of work as described by the attached Exhibit A dated February 23, 2007 to include design of the Feather River Levee Repairs, Segment 2.
- 2.2. The payment, budget, and not-to-exceed amounts (Professional Services Agreement Attachment B) are amended by the attached Exhibit B to include the additional amount of \$5,860,244 for a total contract of \$10,792,084.
3. **No Effect on Other Provisions.** Except for the amendments in Section 2, the remaining provisions of the Professional Services Agreement shall be unaffected and remain in full force and effect.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on  
April 3, 2007.

THREE RIVERS LEVEE IMPROVEMENT  
AUTHORITY OF YUBA COUNTY

  
Chairman

BOOKMAN-EDMONSTON, A  
DIVISION OF GEI  
CONSULTANTS, INC.

  
Raymond D. Hart  
Senior Vice President

ATTEST:  
DONNA STOTTEMEYER  
SECRETARY, THREE RIVERS



APPROVED AS TO FORM:  
DANIEL G. MONTGOMERY  
COUNTY COUNSEL



**EXHIBIT A**  
**SCOPE OF WORK FOR DESIGN OF PHASE 4 FEATHER RIVER LEVEE REPAIRS,**  
**FEATHER RIVER LEFT LEVEE, SEGMENT 2**  
**APPROXIMATE PLM 17.1 TO PLM 23.6**

**A.1 BACKGROUND**

Studies by the Department of Water Resources (DWR), U.S. Army Corps of Engineers (Corps), and Three Rivers Levee Improvement Authority (TRLIA) indicate that several reaches of the left (east) Feather River levee between the mouth of the Yuba River and the Reclamation District No. 784 (RD 784) Pump Station No. 2 do not satisfy geotechnical criteria for seepage at the 100-year water surface. The scope of work for this Change Order No. 5 is a continuation of the Phase 4 Feather River Levee Repair Project being undertaken by TRLIA and Bookman-Edmonston, a Division of GEI Consultants, Inc. (B-E/GEI), TRLIA's design engineer for this project. A prior change order to B-E/GEI's design contract (Change Order No. 1 dated April 25, 2006) addressed the reaches of the Feather River left bank levee from PLM 13.3 to 17.1 (Segment 1) and PLM 23.6 to 26.1 and the Yuba River left bank levee PLM 0.0 to 0.3 (Segment 3). The scope of work being incorporated via this Change Order No. 5 includes the repair of the remaining reach of Feather River levee in RD 784, i.e., the reach of left bank levee between approximately PLM 17.1 and 23.6 (Segment 2), or a total length of existing levee of about 6.5 miles. The levee reach under study is shown on Figure 1.

**A.2 OBJECTIVE**

The objectives of the Feather River levee repairs are (1) to secure flood protection for at least a flood event with a 0.5 percent (or 1 in 200) annual chance of exceedance, (2) to help secure FEMA certification of the subject reach of levee, (3) to achieve these objectives as soon as possible, and (4) to incorporate environmental mitigation as appropriate.

**A.3 APPROACH**

Primary alternatives for upgrading Segment 2 of the left bank Feather River levee include (1) strengthening the levee, and (2) replacing the existing levee with a new levee located at some distance from the existing levee. This second option is referred to as a "setback levee." This scope assumes implementation of the setback levee alternative that is described as Alternative 2 in the Final Environmental Impact Report for the Feather River Levee Repair Project dated November 2006 and adopted by the TRLIA Board of Directors on February 6, 2007.

Consistent with previous work under this contract, the proposed work breakdown structure is listed below:

**Task 1 – PreDesign/Detailed Investigation**

1.1 – Site Visits/Data Review

1.2 - Basis of Design Report

- 1.3 – Field Exploration
- 1.4 – Geotechnical Data Report
- 1.5 – Phase 1 Environmental Site Assessment

**Task 2 – Detailed Design and Construction Documents**

- 2.1 – Engineering Analyses
- 2.2 – Coordination of Hydraulic Modeling
- 2.3 – Geomorphic Studies
- 2.4 – Design of Environmental Enhancement Measures
- 2.5 – Facilities Design, Including Drawings
- 2.6 – Specifications
- 2.7 – Design Report
- 2.8 – Construction Cost Estimate and Schedule
- 2.9 – Construction Contract Documents

**Task 3 – Bidding and Contract Award**

**Task 4 – Environmental Coordination and Permitting**

**Task 5 – Project Management**

**Task 6 – Levee Certification Services (Optional)**

A brief description of the scope of each task is presented under the heading SCOPE OF SERVICES AND DUTIES below. A tentative project schedule is shown on Figure 2. The schedule shows the proposed implementation sequence with major summary activities (engineering, environmental/permitting, land acquisition, and construction).

***General Assumptions:***

- ***Available data developed by the Corps, RD 784, DWR, TRLIA and their respective consultants will be made available to the Consultant and will be relied upon by the Consultant in the performance of our services.***
- ***Land acquisition services, land pricing, preparation of plats and legals, right-of-way negotiations, and negotiation of access agreements are not included in B-E/GEI's scope. It is assumed that necessary land pricing input and right-of-entry will be provided to B-E/GEI by TRLIA and its other consultants at the appropriate times.***
- ***Engineering and environmental services during construction and construction management services are not included in this scope.***
- ***All necessary CEQA compliance has been completed. If it is determined that additional CEQA compliance is needed to address environmental effects not covered by the above-referenced EIR (e.g., development of a new borrow site not identified at the time of the EIR preparation), an additional scope and budget would be prepared.***

## **A.4 SCOPE OF SERVICES AND DUTIES**

The services to be provided by Consultant and the scope of Consultant's duties include the following:

### **Task 1. Pre-Design / Detailed Investigations**

#### **Task 1.1. Site Visits/Data Review**

Site visits to the left bank Feather River levee area, setback area, and setback levee alignment will be required to obtain information, assess existing site conditions and reconcile design details with actual field conditions. A kickoff meeting will be held between design team members and TRLIA personnel to discuss design, operations, and environmental criteria and requirements. Available information pertaining to levee and Pump Station No. 3 design, construction and performance will be collected, reviewed for relevance, and incorporated into the setback levee design as appropriate. Information collected and reviewed will include details from previous levee evaluation studies, levee repair and maintenance information, pump station operation and maintenance data, prior Corps, Kleinfelder and B-E/GEI investigations, and available construction records.

#### ***Deliverables:***

- ***Data obtained will be included in other reports described below.***

#### ***Assumptions:***

- ***TRLIA will provide B-E/GEI with all available information from their files, including information prepared by MBK Engineers, Kleinfelder, Corps studies, DWR studies, and other related work.***

#### **Task 1.2. Basis of Design Report**

The Basis of Design Report (BDR) will establish the design basis and will present the criteria, methods of analysis, and standards to be used in the design of the setback levee and pump station replacement. The general design criteria established in prior TRLIA studies and in the BDR previously prepared by B-E/GEI for the adjacent levee segments will be reviewed and verified. FEMA levee certification criteria will be set forth and will be the basis for assuring conformance in design and construction. FEMA requirements are described in Section 65.10 of the National Flood Insurance Program (NFIP) regulations and summarized in Appendix H of FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners*. Corps, Reclamation Board, and RD 784 operations requirements will be addressed in establishing the design criteria for the setback levee and for replacement of Pump Station No. 3.

#### ***Deliverables:***

- ***Draft Basis of Design Report***

***Assumptions:***

- ***One round of regulatory comments.***
- ***After comments have been received, the Basis of Design Report will be updated and incorporated in the Design Report, which will be prepared under a separate task.***

**Task 1.3. Field Explorations**

This task will begin with the collection and assimilation of existing geotechnical data developed by the Corps and its consultants, TRLIA and RD 784's consultants, DWR, and B-E/GEI from previous studies. An evaluation of geotechnical data gaps will be made and a detailed Field Exploration Work Plan prepared. Field explorations in support of the setback levee design are anticipated to include the following:

- *Review of geologic mapping of the levee alignment and detailed geologic reconnaissance to augment the existing information. Available soil surveys by the U.S. Soil Conservation Service and well records at the California Department of Water Resources also will be obtained and reviewed.*
- *Review of current and historical aerial photographs and maps to identify geomorphic features such as buried channels and abandoned meanders that may have an impact on levee performance during flooding.*
- *Aerial and ground topographic mapping of the setback area, levee footprint and potential borrow area site(s). Additional detail surveys will be performed in areas where greater detail is needed, such as along the levee centerline and in the vicinity of the planned relocated Pump Station No. 3. Locations of all borings, test pits, and other explorations performed for this contract will be established by survey methods.*
- *Drilling of conventional hollow-stem auger, mud-rotary, and/or sonic geotechnical test borings through the levee foundation at spacings not exceeding approximately 500 feet, at selected locations along the landside and/or waterside levee toe, and where the available data is insufficient to properly characterize the subsurface conditions to the appropriate depths. These explorations will provide needed data on the levee foundation geotechnical conditions, including the presence of soft compressible sediments and permeable layers in the foundation that would require seepage mitigation.*
- *Cone penetration testing (CPT) to supplement foundation information between borings along the levee alignment.*
- *Use of geophysical techniques to provide additional coverage of subsurface conditions between borings.*
- *Excavation of test pits along the setback levee foundation to assess depth of roots and stripping requirements, and to obtain bulk samples of levee foundation soils for material property testing. Foundation test pit exploration will be evenly distributed along the levee alignment.*

- *Excavation of test pits in potential borrow areas to define the limits of potential borrow, determine quantity of material available for borrow, and obtain soil samples for material property testing.*
- *Sampling and laboratory testing to evaluate material properties for the existing levee and foundation soils and proposed borrow material. Anticipated soil testing includes the following: gradation, unit weight, moisture content, specific gravity, Atterberg limits, compaction, permeability, consolidation, and triaxial shear strength (unconsolidated-undrained and consolidated-undrained).*

Other activities within this task will include preparation of subcontracts, coordinating site access with TRLIA and BRI, utility clearance, supervision of subcontractors, documenting and logging field exploration activities, and preparing logs and data summaries.

A preliminary site subsurface exploration program is summarized in the tabulation below. The final explorations will be adjusted depending upon detailed review of available data and actual site conditions encountered.

<b>Exploration</b>	<b>Location</b>	<b>Number</b>	<b>Depth (feet)</b>
Conventional Soil Borings	Levee crown centerline, levee tie-ins and Pump Station 3	60 to 70	80 to 90
Cone Penetrometer Soundings	Levee crown centerline and levee toes	80 to 90	80 to 90
Sonic Borings	Levee crown centerline	20 to 25	80 to 90
Test Pits	Borrow areas and levee foundation area	200 to 250	10 to 15

***Deliverables:***

- ***Field Exploration Work Plan***
- ***Topographic maps and surveys***

***Assumptions:***

- ***One round of regulatory comments for the Field Exploration Work Plan.***
- ***Rights-of-entry will be secured by TRLIA in a timely fashion to permit the orderly progress of the work.***
- ***Field investigation program is summarized in the tabulation above.***

**Task 1.4. Geotechnical Data Report**

A Geotechnical Data Report will be prepared augmenting the January 2007 Geotechnical Data Report previously prepared by B-E/GEI to present available geotechnical data and information obtained during the data collection and field investigation activities. Information in this report will include the results of current and previous investigations including:

- *Geologic mapping*
- *Summary of previous geotechnical field investigations and laboratory testing*
- *Summary of current geotechnical field investigations and laboratory testing*
- *Borehole and CPT logs*
- *Test pit logs*
- *Field testing results*
- *Geophysical survey reports*
- *Laboratory testing results*

***Deliverables:***

- ***Draft and final Geotechnical Data Reports***

***Assumptions:***

- ***One round of regulatory comments for the Geotechnical Data Report.***
- ***Two-week turn-around time for regulatory comments.***

**Task 1.5. Phase 1 Environmental Site Assessment**

A Phase 1 Environmental Assessment will be performed to identify whether recognized environmental conditions (hazardous substances or petroleum products) may be present at the site in areas that could be impacted by levee repair activities. This assessment will build on the Screening-Level Environmental Assessment recently prepared by B-E/GEI in support of the Alternatives Analysis for this reach of the levee. The assessment will include:

- *Radius search of listed hazardous materials sites and records listed in California and Federal regulatory databases.*
- *Review of historic aerial photographs.*
- *Review of documents on file at the California EPA Central Valley Regional Water Quality Control Board and the Yuba County Board of Environment and Health.*
- *Interview of landowners or operators of properties within the Site.*
- *Inspection of properties within the Site.*

***Deliverables:***

- ***Draft and final Phase 1 Environmental Assessment Report***

## **Task 2. Detailed Design and Contract Documents**

### **Task 2.1. Engineering Analyses**

Engineering analyses will be performed for the design of the setback levee and associated features (cutoff walls, berms, erosion protection, drainage structures, utility relocations, etc.). These analyses will include:

- *Levee through-seepage and underseepage*
- *Levee stability*
- *Levee settlement*
- *Levee erosion resistance*
- *Relief well and drainage analyses*
- *Grading plans*
- *Borrow area development*
- *Structural evaluations and other analyses as required*

Results of these analyses will be presented in a Design Report, to be prepared under Task 2.7.

#### ***Assumptions:***

- *Up to twenty representative levee cross sections will be analyzed for through-seepage and underseepage. Up to ten sections will be analyzed for stability. Up to ten sections will be analyzed for settlement.*
- *Preparation of an interior drainage study for the entire RD 784 basin, as may be needed for FEMA certification, is not included in this scope.*

### **Task 2.2. Hydraulic Modeling**

This task will coordinate with MBK Engineers the hydraulic analysis of the Feather River levee using the existing Feather-Yuba HEC-RAS model. Water surface profiles will be refined for the 1:100 and 1:200 annual exceedence probability (AEP) flood events for two storm centerings. Water surface profiles, charts, and maps will be prepared to present results. The water surface profiles will be used to verify levee freeboard and as input for geotechnical seepage and stability analyses.

A two-dimensional hydraulic model will be run to develop velocity information along the setback area and levee. The model will be run for the 1-in-100 and 1-in-200 AEP flood events for two storm centerings. This velocity information will be evaluated to determine the reaches where erosion problems may exist along the levee. Erosion protection alternatives will be developed.

This task also will evaluate detention basin and/or increased pumping capacity requirements that may become necessary as a result of interior flood storage capacity lost through the construction

of the setback levee within the current 100-year interior floodplain. We anticipate that this task will be conducted by our subconsultant MHM and Mr. Kit Burton.

This task also will include meetings and coordination required with the Corps, the Reclamation Board, DWR, RD 784, and other agencies and stakeholders to communicate the results of these modeling efforts and to obtain agency/stakeholder consensus with the final “design level” product.

***Deliverables:***

- ***Technical Memorandum on Mitigation Alternatives for Interior Flood Storage Impacts***
- ***Review of MBK Engineers’ Hydrologic and Hydraulic Report for Phase 4 Levee Repairs. This report will detail the hydraulic analyses and contain tabular and graphical presentation of the results of these analyses.***

***Assumptions:***

- ***MBK Engineers will perform the hydraulic modeling and prepare the H&H Report under contract to TRLIA. Budget for the MBK contract is not included herein.***
- ***Evaluation of mitigation measures for downstream impacts (if any) is not included.***

**Task 2.3. Geomorphic Studies**

The BE/GEI team, with key input from subconsultant Philip Williams and Associates (PWA), will conduct a geomorphic assessment of existing and proposed project conditions on the Feather River and its floodplain to assess the potential effects of the setback levee on erosion, sedimentation, and channel stability. The geomorphic assessment will also support the environmental restoration design by identifying potential areas of channel migration, disturbance, and flow. The work will focus on: 1) evaluating the project’s geomorphic stability and performance from the perspective of flood control operations and management; and 2) optimizing environmental enhancement within the context of the project’s overall flood- and land-management goals.

Geomorphic input to the project design will be based on a review of existing sediment data, analysis of historic and existing site conditions to determine geomorphic trends, and evaluation of sediment transport conditions under existing and proposed project conditions. A literature review, a field geomorphic reconnaissance and two-dimensional sediment transport modeling will be undertaken.

The geomorphic conditions at the site will be evaluated based on the understanding developed during the site investigation and hydraulic studies of existing and proposed site conditions. Hydraulic studies of the site for purposes of project design will be conducted by MBK Engineers, using the model RMA-2. The results of these analyses of various flood events under existing and proposed conditions will be evaluated for sediment transport implications by PWA using the 2D hydrodynamic and sediment transport model, MIKE 21C. MIKE 21C will be used to simulate the river and floodplain between Marysville/Yuba City and the confluence with the

Bear River. MIKE 21C allows greater efficiency and more-realistic assessment of mixed sediment particle distributions than other widely available 2D sediment transport models, and its unsteady modeling capabilities make it better suited to assessing floodplain inundation and re-emergence, which is critical to the design of features such as fish escape swales and other environmental enhancements.

The model will be used to estimate changes in erosion and deposition rates in the channel and floodplain with setback levee construction compared to existing conditions. Erosion and deposition rates will be assessed both within the channel and floodplain and upstream and downstream of the project reach. The long-term rate of sediment accumulation will be estimated for comparison with flood conveyance requirements. Predicted bank erosion and migration rates will be compared with the available distance from the river to nearby infrastructure. The effects of potential environmental enhancements and alternative details associated with the setback levee will also be assessed (e.g. changes in the location of levee removal sections, amount of remnant levee left behind, fish passage swales on the floodplain).

In conjunction with the hydrodynamic modeling, a qualitative and quantitative geomorphic evaluation will be conducted of erosion and deposition rates in the channel and floodplain, rates of sediment transport, and channel stability conditions in the project reach with the selected project compared to existing conditions. Available information will be reviewed and a qualitative geomorphic evaluation will be performed to identify potential short and long-term effects of the setback levee on erosion, sedimentation, and channel and levee stability through the reach. Analysis of channel stability will focus on fluvial erosion considerations.

Erosion and deposition susceptibility modeling will be undertaken in conjunction with hydraulic modeling to ascertain the impacts of flood flows on levee erosion and movement of bedload in the setback area. Results will be used by the design team in determining borrow sites and environmental mitigation and restoration actions. Alternative arrangements for removal of the existing levee will also be evaluated in conjunction with hydraulic modeling results. Geomorphic input to the project design will be based on a review of existing sediment data, a field geomorphic reconnaissance, analysis of historic and existing site conditions to determine geomorphic trends, results of the MIKE 21C analysis, and evaluation of sediment transport conditions under existing conditions and with setback levee construction. Findings will be used to develop recommendations for the design team with respect to minimizing erosion and sedimentation hazards, channel instability and the potential for the proposed project to create or avoid sediment related problems, including removal of portions of the existing levee.

Additionally, hydrology/hydraulic and sediment conditions at the site will be analyzed to evaluate any proposed habitat restoration plans developed as part of the levee project, and a site-specific geomorphic assessment of bank instability at Star Bend will be conducted to evaluate whether remedial action is necessary.

***Deliverable:***

- ***A technical memorandum that summarizes the findings.***

***Assumptions:***

- ***A draft memorandum will be submitted for review and comment.***
- ***Two-week turn-around time for regulatory comments.***
- ***Hydraulic model input data will provided by MBK***

**Task 2.4. Design of Environmental Enhancement Measures**

An environmental enhancement team consisting primarily of EDAW and PWA biologists, hydrologists and environmental scientists will implement the task. This will include design of giant garter snake (GGS) habitat mitigation measures, if developed on-site in combination with a borrow area/detention basin, and preparation of a conceptual design for ecosystem restoration in the setback area. In addition, the design for removal of the existing levee will incorporate concepts to use remaining portions of the existing levee for mitigation and/or enhancement as appropriate. Hydraulic modeling and geomorphic studies will influence design of environmental measures.

**Giant Garter Snake Mitigation**

The BE/GEI team will perform the following tasks for planning and design services related to a giant garter snake mitigation site to be developed at the site. Conceptual restoration planning is ongoing.

***Detailed Design***

A thorough detail design process is essential for efficient preparation of the construction documents. The team will field verify and refine each element of the conceptual restoration plan and develop schematic details addressing grading, planting, irrigation, staging area, water structures, fencing, and other details.

***Mitigation and Monitoring Plan***

At this time it is assumed that the mitigation site will also serve as mitigation for impacts to waters of the United States from the FRLRP. As such, the Corps requires that a Mitigation and Monitoring Plan (MMP) be prepared in order to provide technical information regarding the mitigation project, restoration details (planting plan, etc), monitoring and maintenance.

The MMP will follow Corps guidelines. The plan will include a project description, with detailed project site description, a characterization of the types, functions and values provided by habitats at the site, mitigation goals, including types of habitat to be restored, enhanced, or created and their functions and values. The plan will also include descriptions of proposed restoration activities within the identified mitigation area for project implementation, including site preparation and protection measures, a plant palette and conceptual planting plan, irrigation plan, proposed maintenance activities, a monitoring plan outlining the final success criteria for the restored areas, target jurisdictional acreage to be created, performance criteria, and monitoring methods as well as remedial contingencies. The enhancement project will be designed to meet regulatory agency guidelines. Research will also be conducted and compiled for inclusion in the

MMP including historical use of the site; reports and other documents produced by previous consultants; studies of the biological resources in the vicinity of the project area; and other information required to prepare the plan. This task also includes correspondence and meetings with regulatory agencies and TRLIA staff.

#### ***Operations and Management Plan***

The BE/GEI team will prepare an O&M plan to address the long-term management of the mitigation site. Topics to be addressed in this document will include detailed descriptions of the operation of the water control infrastructure, including maintaining jurisdictional wetlands and giant garter snake habitat; vegetation management, including removal of invasive non-native species; site protective features, including proposed use restrictions; and long-term management needs to maintain habitat in perpetuity. The document will be prepared with input from the 3rd party entity that will likely assume management responsibility for the mitigation site. The document will be prepared using the templates established by the Corps and USFWS as appropriate.

#### ***Preparation of a Conservation Easement***

The BE/GEI team will prepare a conservation easement between TRLIA and a non-profit, 3rd party entity as a mechanism to allow that party to provide management oversight for the mitigation site. This document will lay out the responsibilities of each party. An administrative draft will be prepared for TRLIA review, followed by a revised draft that will be reviewed by the 3rd party entity. A final version incorporating review comments will be prepared for adoption by both entities. The document will be prepared using the templates established by the Corps and USFWS, as appropriate. Fifteen hard copies will be distributed to TRLIA, the 3rd party entity and regulatory agencies.

### **Conceptual Design of Ecosystem Restoration**

#### ***Preparation of Concept Plan***

The BE/GEI team will prepare a concept plan for riparian and other associated habitat types at an approximately 800-acre restoration site located in the setback area. The team will prepare draft and final concept plans for the riparian mitigation area that will depict proposed habitat types, approximate elevations, water feature components, site boundary, adjacent land uses and auxiliary features such as culverts, risers, fencing, and gates relevant to regulatory agency review. The plan will be consistent with targeted mitigation requirements and will include additional detail sufficient to support evaluations of the costs and effectiveness of the restoration for the planning effort.

#### ***Preparation of Restoration Plan***

The team will prepare a written plan that provides details of proposed restoration of the setback area riparian restoration site. The plan will contain details similar to a MMP and may be titled as a MMP if necessary, to meet regulatory agency requirements. The plan will include a project description, with detailed project site description, a characterization of the types, functions and values provided by habitats at the site, mitigation goals (if any), including types of habitat to be restored, enhanced, or created and their functions and values. The plan will also include descriptions of proposed restoration activities within the site, including site preparation and protection measures, a plant palette, conceptual planting plan and specification, irrigation plan,

proposed maintenance activities, a monitoring plan outlining the final success criteria for the restored areas, target jurisdictional acreage to be created (if any), performance criteria, and monitoring methods as well as remedial contingencies. The enhancement project will be designed to meet regulatory agency guidelines.

Design work in this task will be coordinated with the Y-FWG, DFG, USFWS, and NOAA-Fisheries. Conceptual plans for operation and maintenance of mitigation measures, including identification of responsibilities for RD 784 or TRLIA, DWR, and a third-party conservator and for the environmental restoration area, will also be developed and coordinated with the agencies.

### ***Bid Solicitation***

The restoration plan will be used as a basis for TRLIA solicitation of bids from restoration contractors. The team will support TRLIA in bidder qualifications, preparation of bid package, and selection of restoration contractor.

### ***Deliverables:***

- ***Conceptual Design Technical Memorandum on Giant Garter Snake Mitigation***
- ***Draft and final Mitigation and Monitoring Plan for the GGS habitat***
- ***Administrative draft, draft, and final Operation and Maintenance Plan for the GGS habitat***
- ***Draft and final conservation easement for the GGS habitat***
- ***Draft and final Concept Restoration Plan for the Setback Area***
- ***Draft and final Restoration Plan for the Setback Area (to be used for bidding)***

### ***Assumptions:***

- ***Mitigation for GGS will be implemented at an on-site facility.***
- ***Two-week turn-around time for regulatory comments.***
- ***Preparation of Setback Area Restoration Plan will provide the basis for TRLIA soliciting proposals from a qualified restoration contractor, who would develop a detailed restoration plan; detailed operation and maintenance plan; and implement detailed planting designs, plant material collection and propagation, site preparation, irrigation system design, weed control and irrigation procedures and scheduling, monitoring protocols, reporting formats, flood/fire contingencies, and other implementation details.***

### **Task 2.5. Facilities Design, Including Drawings**

This task consists of the layout and design of the proposed setback levee in the form of drawings. Construction limits, survey control points, borrow and staging areas, environmental protection,

construction access roads, and site restoration requirements will be shown on drawings. Designs will be prepared for site excavation and grading, levee embankment, slurry walls, drainage facilities, relief wells, Pump Station No. 3 relocation, utility relocation, detention basin (if needed) and drainage facilities. The drawings will also include geologic profiles and sections. The drawings will be incorporated into the contract documents for construction. A preliminary list of drawings is included in Table 1. The drawings will be reviewed by TRLIA and other regulatory agencies at the 35%, 90%, and Issue-for Approval design levels.

This task will also include support of TRLIA's right-of-way activities. Right-of-way requirements (temporary and permanent easements) will be defined in this task. However, it is our understanding that BRI will prepare plats and legal descriptions working under a separate contract with TRLIA.

As discussed in Task 5, an internal Quality Control team will review the drawings to ensure that they are complete, conform to standards, and meet or exceed TRLIA's expectations.

***Deliverables:***

- ***35%, 90% and Issue-for Approval drawings***

***Assumptions:***

- ***Drawing list shown on Table 1.***
- ***Reviews at the 35%, 90% and Issue-for Approval design levels.***
- ***Two-week turn-around time for regulatory comments.***
- ***Right-of-way level of effort assumed; actual right-of-way needs uncertain at this time.***
- ***Plats and legal descriptions not included in scope (will be prepared by BRI under direct contract to TRLIA)***

**Task 2.6. Specifications**

This task consists of the preparation of technical specifications for inclusion in the construction contract documents. A preliminary list of specifications anticipated to be prepared is included in Table 2.

The specifications will be reviewed by TRLIA and other regulatory agencies along with the drawings (Task 2.5) at the 35%, 90%, and Issue-for Approval design levels.

As discussed in Task 5, an internal Quality Control team will review the specifications to ensure that they are complete, conform to standards, and meet or exceed TRLIA's expectations.

***Deliverables:***

- ***35%, 90% and Issue-for Approval technical specifications.***

***Assumptions:***

- *Specification list is shown on Table 2.*
- *Reviews at the 35%, 90% and Issue-for Approval design levels.*
- *Two-week turn-around time for regulatory comments.*

**Task 2.7. Design Report**

Results of the analyses performed in Task 2.1 will be presented in a Design Report. The Design Report will contain an interpretation and evaluation of the hydraulic, geological and geotechnical information applicable for the design of the setback levee and ancillary structures. The report will provide the basis for the geotechnical design including the selection of geotechnical parameters and the analysis of slope stability, seepage, erosion, and settlement. The report also will present the basis for the hydraulic and freeboard design, derived from Task 2.2.

***Deliverables:***

- *Draft and Final Design Report*

***Assumptions:***

- *One round of regulatory comments for the Design Report.*
- *Two-week turn-around time for regulatory comments*

**Task 2.8. Construction Cost Estimate and Schedule**

An engineer's cost estimate and schedule will be prepared for construction of the setback levee, as well as for evaluation of construction bids. The cost estimate will be a budget-level estimate, and construction contingencies and escalations appropriate to this level of estimate will be included. Quantity takeoffs will be prepared in support of the cost estimate. The quantity takeoffs will also be used in developing the bid schedule under Task 2.9. The cost estimate and schedule will be reviewed by TRLIA along with the drawings and specifications (Tasks 2.5 and 2.6) at the 35%, 90%, and Issue-for Approval design levels.

***Deliverables:***

- *35%, 90% and final Engineer's construction cost estimate and construction schedule*

***Assumptions:***

- *Reviews concurrent with 35% and 90% drawings and specifications.*

### **Task 2.9. Contract Documents**

Contract documents will be assembled in preparation for procuring two construction contracts to implement the levee construction, one for the foundation preparation and one for setback levee and pump station construction. The contract documents are expected to include:

- *Scope of work*
- *Construction bid schedule (quantities prepared in Task 2.8)*
- *Measurement and payment provisions*
- *Drawings (prepared in Task 2.5)*
- *Technical specifications (prepared in Task 2.6)*
- *Standard TRLIA contract, general provisions, and forms*
- *Special provisions, as necessary*

#### ***Deliverables:***

- *Draft and final contract documents*

#### ***Assumptions:***

- *The contract, general provisions, and other standard information to be included in the contract documents will be adapted from the Bear River Setback Levee Project.*
- *Two construction contracts will be awarded.*
- *All equipment procurement is assumed to be by the construction contractor.*
- *TRLIA will provide electronic files of other related contract documents (e.g., Upper Bear/WPIC and Yuba River projects) for reference.*

### **Task 3. Bidding/Contract Award**

The contract documents will be issued for bid to qualified contractors. Activities under this task are expected to include the following:

- *Assist TRLIA in pre-qualifying contractors*
- *Prepare letter of invitation to bid, including Instructions to Bidders and Notice to Contractors*
- *Prepare package of information for bidders*
- *Issue bid package to prequalified bidders*
- *Conduct pre-bid meeting and site visit*
- *Respond to bidders' questions and prepare bid addenda, as needed*

- *Receive and evaluate bids*
- *Recommend bid award*

***Deliverables:***

- *Bidding support documents (letter of invitation, contractor prequalification documents)*
- *Responses to bidders' questions/preparation of bid addenda*
- *Bidder evaluation/recommendation*

***Assumptions:***

- *Prepare two contract bid packages*
- *Attend one pre-bid meeting*
- *Prepare two addenda to each bid package*

#### **Task 4. Environmental Coordination and Permitting**

This subtask entails obtaining key agency permits, conducting coordination and consultation with regulatory agencies to ensure their understanding of the project design, coordinating on measures needed to protect nearby sensitive resources, and obtaining agency concurrence with the measures incorporated into the project. The B-E/GEI team will prepare memoranda providing project description details, information on anticipated construction methods, the locations of sensitive resources in the vicinity of the project site, and descriptions of the measures incorporated into the project design to protect sensitive biological resources as necessary. It is anticipated that the following permits and coordination will be accomplished.

***Section 404 of the Clean Water Act (CWA)***

The B-E/GEI team will prepare a Section 404 Clean Water Act permit application for submittal to the Sacramento District office of the Corps. Because of the anticipated extent of wetland impacts it is assumed that the project would not qualify for a Nationwide Permit and the application will request an individual permit from the Corps. The application package will include a previously prepared wetland delineation. The team will also prepare a 404(b)(1) alternatives analysis as part of the application process.

It is anticipated that the team will attend at least one pre-application meeting with the Corps to discuss the proposed project and various coordination meetings. Telephone coordination with the Corps will be conducted to discuss project characteristics, permit requirements, permitting schedules and to ensure that the permit application materials are complete, technically accurate, and meet the needs of the USACE.

***National Environmental Policy Act (NEPA) Compliance***

The B-E/GEI team will provide input to the preparation of the National Environmental Policy Act (NEPA) document to be completed by the Corps in association with Section 404 permitting

for the setback levee. It is assumed for the purposes of this scope that the Corps will use an Environmental Assessment (EA) to comply with NEPA requirements. It is assumed that a single EA will be prepared to support construction of the setback levee and removal of the existing levee, certification of the setback levee, and the Section 404 permit that is associated with Segment 2 activities. It is assumed that the B-E/GEI team will prepare an EA addressing all NEPA environmental issue areas. It is anticipated that the existing Environmental Impact Report (EIR) prepared for the project will provide a majority of the information required in the EA. However, new material is expected to be needed for the EA consisting of an air quality analysis using federal criteria, reconsideration of agricultural land conversion based on Corps criteria and mitigation strategies, discussion of socioeconomic effects, consideration of environmental justice issues, and consistency with various federal executive orders.

#### ***Consultation Under Section 7 of the Federal Endangered Species Act (ESA)***

Pursuant to the Federal Endangered Species Act, the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) have authority over projects that may affect the continued existence of federally listed species. Because wetlands will be filled as a result of the proposed project and a Section 404 permit from USACE will be required, a Section 7 consultation with USFWS will be the appropriate path to obtain an endangered species permit. The team's biologists will consult with USFWS regarding potential effects to species that are federally listed or proposed for listing as Threatened or Endangered and species considered as candidates for listing. This initial consultation will include discussion of the anticipated approach for the overall process and will provide the opportunity for agency feedback regarding preliminary conclusions.

The team will prepare a Biological Assessment for the Corps to submit to the USFWS. The BA will support consultation between the Corps and USFWS under Section 7 in association with Section 404 permitting for the setback levee. The BA will include a summary of consultation to date, description of the proposed action, an account of each species addressed, an assessment of project effects, description of measures to minimize and compensate for potential effects, and an effect determination for each species.

Species anticipated to be addressed in the BA include Valley elderberry longhorn beetle (VELB) and giant garter snake (GGS). At this time it is assumed no other federally-listed species under the jurisdiction of the USFWS are likely to be adversely affected and incidental take authorization would not be required. If it is determined through initial consultation with USFWS that take may occur for any other species, the scope would be amended to address those issues.

Consultation with NMFS under Section 7 of the ESA will follow the same process as described above for consultation with USFWS. There would be an initial consultation phase, preparation and submittal of a BA, and formal consultation. Species anticipated to be addressed in the BA include salmonids known to occur in the Feather River. At this time it is assumed no other federally-listed species under the jurisdiction of NMFS are likely to be adversely affected and incidental take authorization would not be required. If it is determined through initial consultation with NMFS that take may occur for any other species, this scope would be amended to address those issues.

#### ***Compliance with Section 106 of the National Historic Preservation Act***

The Corps, as a federal agency, must ensure its actions comply with Section 106 of the National Historic Preservation Act (NHPA). The scope of services below is an estimate of activities the Corps is expected to require for Section 106 compliance.

The team will complete cultural resources pedestrian surveys along the setback levee alignment and in the setback area where property access has not been available in the past or where vegetation has obscured the ground surface. The team will also complete further evaluation of site CA-YUB-5 to gather evidence that construction of the setback levee would not result in significant adverse effects to the site. Based on ongoing studies the setback levee footprint has been shifted 150 feet to the east to minimize the potential for levee construction activities to intersect significant cultural resources associated with CA-YUB-5. It is anticipated that the Corps will require preconstruction subsurface testing in the levee footprint corridor to attempt to verify whether or not significant cultural resources associated with site CA-YUB-5 extend into the levee footprint.

The team will prepare and implement a subsurface archaeological testing and evaluation program that includes Native American consultation, field excavation, laboratory analysis, and study documentation. As part of the testing and evaluation program, the B-E/GEI team will develop a research design to be approved by the Corps and the California State Preservation Officer (SHPO). Field testing will consist of the patterned placement of a limited number of shovel test pits and 1-meter by 1-meter test units in the levee footprint and the area between footprint and site CA-YUB-5. A Native American monitor would be on site during all field testing. Although the probability of encountering human remains has been substantially reduced because of the shifting of the levee alignment to the east, this scope includes identification of, and pre-coordination with the Most Likely Descendent (MLD), as designated by the Native American Heritage Commission (NAHC) to determine procedures in case human remains are discovered. However, this scope does not include activities associated with addressing human remains as the level of effort can vary widely depending on the type and extent of remains found.

The results of the site testing will be incorporated into a technical report. The technical report will be provided to the Corps, B-E/GEI, and TRLIA for review and comment. Subcontractor will make appropriate revisions based on comments received. The report will then be forwarded by the Corps to SHPO for concurrence on the findings.

#### ***Reclamation Board Application***

The B-E/GEI team will prepare the permit application package for Reclamation Board permitting of construction of the setback levee and removal of the existing Feather River levee. Depending on the outcome of further coordination with the Reclamation Board, either a single application package, or two application packages may be prepared for these activities. If a single application package is prepared, it is assumed that substantial supplemental information will be provided during the application process to address activities tied to removal of the existing levee (e.g., construction, restoration, long-term management in the setback area).

The B-E/GEI team will prepare a draft and final encroachment permit application package (or packages) and environmental questionnaire(s) for elements of setback levee construction under Reclamation Board jurisdiction (e.g., tying the setback levee into the existing levee); removal of

the existing Feather River levee; and construction, restoration (if applicable), and maintenance in the levee setback area. This task will involve responding to the questionnaire based on the most current understanding of the construction process and providing an updated project description and accompanying graphics. The application package to the Reclamation Board will include a memorandum documenting project details, sensitive resource conditions in the vicinity of the project sites, and avoidance measures.

#### ***Corps' 408 Authorization***

The team will support TRLIA in coordinating with Corps operations staff in regard to 408 Authorization. The team will attend meetings and provide documentation at TRLIA's direction.

#### ***Section 401 certification from the Central Valley Regional Water Quality Control Board***

As part of the overall Section 404 CWA authorization process, the GEI team will coordinate with the RWQCB to also obtain water quality certification consistent with Section 401 of the CWA.

#### ***California Endangered Species Act (CESA) Section 2081 Permit***

Subconsultant will prepare necessary materials and coordinate with DFG staff to obtain California Endangered Species Act (CESA) authorization for the project. It is assumed that for VELB and GGS, CESA compliance will be achieved through concurrence with the USFWS incidental take authorization as permitted under Section 2080.1 of the Fish & Game Code. For other state listed threatened and endangered species (e.g., Swainson's hawk), it is expected that take can be avoided and no CESA authorization will be required.

#### ***DFG Streambed Alteration Agreement***

A Section 1602 streambed alteration agreement from DFG will be required for impacts to the Plumas Lake Canal, resulting from relocation of Pump Station No. 3 and construction of inlet/outlet structures to a detention basin. The permit application will be prepared and coordination with the relevant resource agencies will be effected.

#### ***Deliverables:***

- ***Permit applications listed above and follow-on agency coordination.***

#### ***Assumptions:***

- ***Permit filing fees are assumed to be paid by TRLIA.***
- ***A certified CEQA document is required as part of the application submittal packages for several of the above permits. This scope of work and budget assume that the previously prepared EIR will be adequate to satisfy Agencies' CEQA requirements.***
- ***Level of effort for Agency consultation is uncertain. Best estimate has been included as a budget allocation. Specific assumptions are included in the scope description. The scope of services under this task is an estimate of activities the agencies are expected to require for environmental compliance and permitting. If it is determined through consultation with the agencies that additional actions are***

*necessary, the B-E/GEI team would amend the scope and budget to address those issues.*

- *Preconstruction surveys and construction monitoring are not included herein (will be part of engineering and environmental services during construction).*

## **Task 5. Project Management**

Project management and coordination are essential to ensure the successful completion of the Feather River levee repair and subsequent certification. The project management task will include the following activities:

- *Management and supervision of the design team*
- *Management, coordination and evaluation of subconsultant services*
- *Project and design coordination meetings*
- *Documentation of meetings*
- *Coordination of design activities with TRLIA and RD 784 personnel*
- *Coordination of design activities and design reviews with DWR, DFG, Corps, and Reclamation Board*
- *Preparation of monthly invoices and progress reports to TRLIA with current financial information and updated schedule. For continuity and consistency, the already established process and format for progress reports will be maintained.*

This task will also include continued involvement of a two-member Board of Senior Consultants (BOSC), which will provide the TRLIA with independent reviews of engineering design activities. It is anticipated that the two members of the BOSC for the ongoing work for the Feather River levee repairs (Dr. Faiz Makdisi and Mr. Donald Babbitt) will continue to form part of the BOSC. Periodic meetings will be held with the BOSC to review work plans, the results of field investigations, design studies, reports, design drawings, technical specifications, and construction contracting strategies. In advance of each meeting, the design team will prepare and distribute an agenda with the questions for which BOSC input is specifically requested, as well as supporting reports and meeting materials. Representatives of DWR, the Corps and the Reclamation Board will be invited to participate in the BOSC meetings, which will be a main tool for briefing and obtaining input and early concurrence from these organizations. At the conclusion of each meeting, the BOSC will prepare a formal letter report, and the recommendations will be addressed in the design of the levee repairs.

Updating of the Quality Control Plan (QCP) will also be included in this task. The QCP currently in place will be reviewed and revised as necessary. The QCP establishes the procedures, policies and actions for ensuring that the work is carried out to acceptable standards of quality and the project is implemented on time and within budget. The QCP includes preparation, review, coordination and checking of work products at each step of their development. Work products include the key deliverables and support documentation, such as work plans, design basis documents, technical memoranda, geotechnical data, drawings, and reports. The project management team is responsible for the assurance that these procedures are being implemented.

B-E/GEI's QC team will review technical approaches and verify that deliverables and supporting documents prepared for the TRLIA are complete, conform to standards, and meet or exceed the expectations of TRLIA and the management of the B-E/GEI Team firms.

***Deliverables:***

- ***Schedule***
- ***Monthly invoices***
- ***Monthly project status reports***
- ***Meeting minutes***
- ***BOSC documentation***
- ***Draft and final Quality Control Plan***

***Assumptions:***

- ***One project kick-off meeting***
- ***Weekly project conference calls***
- ***Twelve half-day project progress meetings***
- ***Four quarterly progress reports***
- ***Three one-day BOSC meetings***

## **Task 6. FEMA Certification**

Once the project is constructed, a Letter of Map Revision (LOMR) must be submitted to FEMA reflecting the changes to the floodplain caused by the levee construction. If this LOMR is not submitted, then FEMA will have no way of knowing the levee has been constructed, and will continue to assess flood insurance rates based on the "no-levee" scenario.

Two options exist for levee certification:

- *The Corps certifies the structural elements of the levee as providing protection from the 100-year flood. The Corps certification and the revised floodplain inundation maps are then submitted to FEMA for remapping via the LOMR process.*
- *The consultant submits data to FEMA for certification of the levee, along with the revised floodplain inundation maps. FEMA certifies the levee as providing 100-year flood protection and remaps the floodplain accordingly.*

In Option No. 1, only a LOMR submittal to FEMA is required. In Option No. 2, a LOMR submittal is required, and a Conditional Letter of Map Revision (CLOMR) is suggested.

If the Corps will not be certifying the structural elements of the levee, the B-E/GEI Team will package and submit the necessary documentation to FEMA for Conditional Letter of Map Revision (CLOMR) during the design phase of the project.

After completion of construction of the setback levee, we will package and submit the necessary post-construction documentation related to the Feather River Setback Levee to FEMA for Letter of Map Revision (LOMR). We will coordinate with FEMA during the CLOMR and LOMR review periods to address any questions they may have and expedite the review process.

The required documentation to be submitted to FEMA includes some items prepared during design. These items include:

- *Geotechnical data report summarizing the available geotechnical data (prepared under Task 1.4)*
- *Design report summarizing the geotechnical analyses performed in support of the setback levee design (prepared under Task 2.7)*
- *Design drawings (prepared under Task 2.5)*
- *Hydraulic analysis (assumed to be prepared by MBK)*

In addition to the documents described above, additional studies and analyses will be required in preparing the necessary documentation for the CLOMR and LOMR submittals. These additional studies and analyses, which are not included in this scope of work, are anticipated to include the following:

- *Record Drawings (prepared under separate contract after completion of setback levee construction)*
- *Water surface and top of levee profiles (based on Record Drawings and hydraulic analysis listed above)*
- *Interior drainage plan (assumed to be prepared by others for the complete RD 784 system)*
- *Pre- and post-project floodplain inundation maps (assumed to be prepared by others for the complete RD 784 system)*
- *Operation and maintenance plan (assumed to be prepared by others for the complete RD 784 system)*
- *Construction quality control records from setback levee construction (prepared under separate contract after completion of setback levee construction)*
- *FEMA filing fees (assumed to be submitted by TRLIA)*

***Deliverables:***

- ***Conditional Letter of Map Revision (CLOMR)***
- ***Letter of Map Revision (LOMR)***

***Assumptions:***

- ***Completion of Tasks 1 through 5 above.***

- ***Certification includes the Phase 4 Feather River levee reaches for which GEI has prepared designs.***
- ***B-E/GEI will perform construction management services for the levee construction.***
- ***Interior drainage plan , pre- and post-project floodplain inundation maps, and O&M plan for the interior drainage system are prepared by others for the complete RD 784 system.***
- ***FEMA filing fees not included in budget.***

**Table 1. Preliminary List of Drawings for Feather River Levee Repairs – Segment 2**

**GENERAL**

- *Project Location and General Notes*
- *List of Drawings*
- *Structural Notes*
- *Project Boundary and Land Ownership*
- *Existing Utilities (3)*
- *Demolition of Structures (3)*
- *Environmental Resource Exclusion Zones*
- *Environmental Resource Protection Details*
- *Survey Control System*
- *Construction Access Routes & Staging Area*
- *Clearing and Stripping Plan*
- *Site Restoration*

**GEOLOGY**

- *Geology Plan*
- *Surface Soils*
- *Borehole Locations (5 sheets)*
- *Geologic Profile Along Levee Alignment (12 sheets)*
- *Geologic Sections (2 sheets)*
- *Borrow Area Geologic Plans and Sections (6 sheets)*

**CIVIL**

- *General Plan*
- *Levee Detailed Plan & Profile (1 inch=50 ft scale; 1,500 ft per dwg; 22 sheets)*
- *Levee Cross-Sections (4 sheets)*
- *Typical Cross-Sections (4 sheets)*
- *Levee Tie-in Embankment Plans and Sections (4 sheets)*
- *Borrow Area Plan and Excavation Plan (6 sheets)*
- *Ramp Plan, Profile and Sections*
- *Relief Well Plans and Sections (2 sheets)*
- *Typical Relief Well Details*
- *Borrow Area Reclamation (4 sheets)*
- *Foundation Preparation and Slurry Wall Plan & Profile (22 sheets)*
- *Foundation Preparation and Slurry Wall Sections and Details (2 sheets)*

- *Floodplain Swale Design (4 sheets)*
- *Levee Removal Plan (8 sheets)*
- *Detention Basin/GGS Mitigation (8 sheets)*
- *Levee Gate Details*
- *Drainage Plans, Sections & Details (4 sheets)*
- *Removal and Relocation of Existing Utilities and Facilities (6 sheets)*
- *Fence Details*
- *Pump Station No. 3 Site Plan*
- *Pump Station No. 3 Grading Plan*
- *Pump Station No. 3 Demolition Plan*
- *Pump Station No. 3 Plan and Profile*
- *Pump Station No. 3 Pump Station Layout*
- *Pump Station No. 3 Equipment Arrangement*
- *Pump Station No. 3 Structure Concrete Outline and Reinforcement Details*
- *Pump Station No. 3 Outfall Structure Concrete Outline and Reinforcement Details*
- *Pump Station No. 3 Gate Shaft Structure Concrete Outline and Reinforcement Details*
- *Pump Station 3 Structural Details (3 sheets)*
- *Pump Station No. 3 Piping Details (3 sheets)*
- *Drawings TBD (5 sheets)*

**ELECTRICAL/OTHER**

- *Power Line Relocation (5 sheets)*
- *Electrical Symbols*
- *Electrical Abbreviations*
- *Electrical P&ID, Pump Station No. 3*
- *One-Line Diagram, Pump Station No. 3*
- *Electrical Site Plan, Pump Station No. 3*
- *P.S. No. 3 MCC Elevations (2 sheets)*
- *P.S. No. 3 Pump Control Elementary*
- *P.S. No. 3 Control Panel Power Distribution*
- *P.S. No. 3 Control Panel PLC I/O*
- *Electrical Details (2 sheets)*
- *SCADA Details (3 sheets)*
- *Security Light Details, P.S. No. 3*

**Table 2. Preliminary List of Specifications for Feather River Levee Repairs – Segment 2**

**DIVISION 1 - GENERAL REQUIREMENTS**

- *Summary of Work*
- *Measurement and Payment*
- *Submittal Procedures*
- *Sources for Reference Publications*
- *Contractor Quality Control*
- *Temporary Construction Facilities*
- *General Signage and Safety*
- *Construction and Demolition Waste Management*
- *Closeout Submittals*
- *Operations and Maintenance Data*

**DIVISION 2 - SITEWORK**

- *Mobilization and Demobilization*
- *Temporary Water Diversion and Control*
- *Subsurface Data*
- *Subsurface Drilling, Sampling and Testing*
- *Relief Wells*
- *Demolition*
- *Excavation and Site Preparation*
- *Soil Stabilization*
- *Earthwork*
- *Soil-Cement-Bentonite Slurry Cutoff Wall*
- *Soil- Bentonite Slurry Cutoff Wall*
- *Geosynthetics*
- *Temporary Erosion Control*
- *Asphalt Paving and Surfacing*
- *Storm Drainage Discharge Pipe and Culverts*
- *Underdrains*
- *Fencing*
- *Site Restoration*
- *Seeding and Revegetating*

**DIVISION 3 – CONCRETE**

- *Concrete for Minor Structures*
- *Cast-in-Place Reinforced Concrete*
- *Shotcrete*

**DIVISION 5 - METALS**

- *Metalwork Fabrication*
- *Structural Steel*
- *Ultrasonic Inspection of Weldments*
- *Ultrasonic Inspection of Plates*
- *Welding Pressure Piping*
- *Steel Joists and Decks*
- *Miscellaneous Metals*

**DIVISION 15 - MECHANICAL**

- *Vertical Pumps*
- *Piping*

**DIVISION 16 - ELECTRICAL**

- *Electrical Construction Work*
- *Conduit, Boxes and Grounding*
- *Wire, Fuses and Terminal Blocks*
- *Electric Motors, 3-Phase Vertical Induction Types*
- *Panelboard and Power Transformer*
- *Motor Control Center*
- *Solid State Soft Starter*
- *Factory and Field Testing*
- *Control Panel*
- *PLC and OI Hardware*
- *PLC and OI Applications Programming*
- *Instrumentation*
- *SCADA System*





**Exhibit B (Page 1 of 2)**  
**Phase 4 Feather River Levee Repairs - Segment 2 Setback Levee**  
**Summary Cost Estimate - B-E/GEI Team**  
 (Confidential and Proprietary Financial Information)

revised 2/23/07

Task	Estimated B-E/GEI Labor Effort		Estimated Subconsultant Effort Hours	Estimated Labor Cost	Estimated Laboratory Costs	Estimated ODC's	Total Estimated Task Cost
	Hours	Cost					
<b>Design Tasks</b>							
<b>Task 1 Pre-Design/Detailed Investigations</b>							
Task 1.1 Site Visits / Data Review	128	\$20,944	0	\$0		\$1,600	\$22,544
Task 1.2 Basis of Design Report	280	\$42,184	16	\$2,875		\$1,000	\$46,059
Task 1.3 Field Explorations	2,972	\$327,324	888	\$334,420	\$808,450	\$39,600	\$1,509,794
Task 1.4 Geotechnical Data Report	868	\$96,720	0	\$0		\$10,200	\$106,920
Task 1.5 Phase 1 Site Assessment	236	\$28,296	0	\$0		\$4,000	\$32,296
<b>Task 1 Subtotal</b>	<b>4,484</b>	<b>\$515,468</b>	<b>904</b>	<b>\$337,295</b>	<b>\$808,450</b>	<b>\$56,400</b>	<b>\$1,717,613</b>
<b>Task 2 Detailed Design and Construction Documents</b>							
Task 2.1 Engineering Analyses	1,720	\$225,832	0	\$0		\$24,000	\$249,832
Task 2.2 Hydraulic Modeling	168	\$29,920	250	\$34,500		\$500	\$64,920
Task 2.3 Geomorphic Evaluation	48	\$7,736	800	\$230,000		\$0	\$237,736
Task 2.4 Design of Environmental Measures	200	\$32,560	1,800	\$287,500		\$500	\$320,560
Task 2.5 Facilities Design, Including Drawings	11,364	\$1,551,368	2,300	\$311,650		\$22,100	\$1,885,118
Task 2.6 Specifications	564	\$88,628	200	\$23,000		\$4,000	\$115,628
Task 2.7 Design Report	478	\$72,316	40	\$6,325		\$4,000	\$82,641
Task 2.8 Construction Cost Estimate and Schedule	368	\$51,232	0	\$0		\$400	\$51,632
Task 2.9 Construction Contract Documents	196	\$27,752	0	\$0		\$2,100	\$29,852
<b>Task 2 Subtotal</b>	<b>15,106</b>	<b>\$2,087,344</b>	<b>5,390</b>	<b>\$892,975</b>	<b>\$0</b>	<b>\$57,600</b>	<b>\$3,037,919</b>
<b>Task 3 Bidding and Contract Award</b>	<b>296</b>	<b>\$45,712</b>	<b>0</b>	<b>\$0</b>		<b>\$2,400</b>	<b>\$48,112</b>
<b>Task 4 Environmental Coordination and Permitting</b>	<b>168</b>	<b>\$27,032</b>	<b>3,700</b>	<b>\$460,000</b>		<b>\$1,000</b>	<b>\$488,032</b>
<b>Task 5 Project Management</b>	<b>2,842</b>	<b>\$448,988</b>	<b>200</b>	<b>\$41,400</b>		<b>\$9,200</b>	<b>\$499,588</b>
<b>Task 6 FEMA Certification Support (Optional)</b>	<b>180</b>	<b>\$29,880</b>	<b>200</b>	<b>\$39,100</b>		<b>\$0</b>	<b>\$68,980</b>
<b>Total Estimate Labor Effort and Cost w/o Optional Task 6</b>	<b>22,896</b>	<b>\$3,124,544</b>	<b>10,194</b>	<b>\$1,731,670</b>	<b>\$808,450</b>	<b>\$126,600</b>	<b>\$5,791,264</b>
<b>Total Estimate Labor Effort and Cost w/ Optional Task 6</b>	<b>23,076</b>	<b>\$3,154,424</b>	<b>10,394</b>	<b>\$1,770,770</b>	<b>\$808,450</b>	<b>\$126,600</b>	<b>\$5,860,244</b>

Notes:

- 1) See Section A.4 of Scope of Work for scope of each task.
- 2) Estimated labor hours shown above does not include hours for other TRLIA consultants (e.g. MBK and BRI).
- 3) Estimated labor effort and cost is based on our understanding of the project requirements and the attached Scope of Work.
- 4) Hydraulic Analysis performed by MBK under contract to TRLIA - costs for analysis and report preparation not included.
- 5) Preparation of plats and legals performed by BRI under contract to TRLIA - costs not included.
- 6) Labor billing rates and other project costs shall be based on GEI's current fee schedule and payment terms (2007 schedule is attached), except as modified in Note 7 below. GEI's fee schedule is updated at the beginning of each year.
- 7) GEI will not seek reimbursement by TRLIA of out-of-state air fares incurred in connection with routine design activities required to perform the Scope of Work described in Section A.4 unless such travel and reimbursement are expressly approved in advance by TRLIA. It is also agreed that GEI will not seek reimbursement of meals expenses incurred in connection with the attendance of GEI personnel to project meetings and short site visits (less than a day in duration). GEI will be reimbursed for meals and lodging expenses incurred in connection with investigations and other engineering activities that involve overnight stay in the project area.

**FEE SCHEDULE**

<u>Personnel Category</u>	<u>Hourly Billing Rate \$ per hour</u>
Staff Professional – Grade 1	\$ 82
Staff Professional – Grade 2	\$ 91
Project Professional – Grade 3	\$ 101
Project Professional – Grade 4	\$ 111
Senior Professional – Grade 5	\$ 133
Senior Professional – Grade 6	\$ 153
Senior Professional – Grade 7	\$ 180
Senior Consultant – Grade 8	\$ 202
Senior Consultant – Grade 9	\$ 222
Senior Principal	\$ 260
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Senior CADD Drafter and Designer	\$ 101
CADD Drafter / Designer and Senior Technician	\$ 91
Technician, Word Processor, Administrative Staff	\$ 74
Office Aide	\$ 59

These rates are billed for both regular and overtime hours in all categories. Rates will increase up to 5% annually, at GEI's option, for all contracts that extend beyond twelve (12) months after the date of the contract.

**OTHER PROJECT COSTS**

**Subconsultants, Subcontractors and Other Project Expenses** - All costs for subconsultants, subcontractors and other project expenses will be billed at cost plus a 15% service charge. Examples of such expenses ordinarily charged to projects are subcontractors; subconsultants: chemical laboratory charges; rented or leased field and laboratory equipment; outside printing and reproduction; communications and mailing charges; reproduction expenses; shipping costs for samples and equipment; disposal of samples; rental vehicles; fares for travel on public carriers; special fees for insurance certificates, permits, licenses, etc.; fees for restoration of paving or land due to field exploration, etc.; state sales and use taxes and state taxes on GEI fees.

**Billing Rates for CADD and Specialized Technical Computer Programs** – Computer usage for CADD and specialized technical programs will be billed at a flat rate of \$10.00 per hour in addition to the labor required to operate the computer.

**Field and Laboratory Equipment Billing Rates** – GEI-owned field and laboratory equipment such as pumps, sampling equipment, monitoring instrumentation, field density equipment, portable gas chromatographs, etc. will be billed at a daily, weekly, or monthly rate, as needed for the project. Expendable supplies are billed at a unit rate.

**Transportation and Subsistence** - Automobile expenses for GEI or employee owned cars will be charged at the rate per mile set by the Internal Revenue Service for tax purposes plus tolls and parking charges. When required for a project, four-wheel drive vehicles owned by GEI or the employees will be billed at a daily rate appropriate for those vehicles. Per diem living costs for personnel on assignment away from their home office will be negotiated for each project.

**PAYMENT TERMS**

Invoices will be submitted monthly or upon completion of a specified scope of service, as described in the accompanying contract (proposal, project, or agreement document that is signed and dated by GEI and CLIENT).

Payment is due upon receipt of the invoice. Interest will accrue at the rate of 1% of the invoice amount per month, for amounts that remain unpaid more than 30 days after the invoice date. All payments will be made by either check or electronic transfer to the address specified by GEI and will include reference to GEI's invoice number.