

THE BOARD OF SUPERVISORS OF THE COUNTY OF STANISLAUS  
ACTION AGENDA SUMMARY

DEPT: PUBLIC WORKS

BOARD AGENDA # C-2

Urgent \_\_\_\_\_ Routine X

AGENDA DATE JUNE 19, 2001

CEO Concurs with Recommendation YES \_\_\_\_\_ NO \_\_\_\_\_  
(Information Attached)

4/5 Vote Required YES \_\_\_\_\_ NO X

SUBJECT: APPROVAL OF CONTRACT WITH TETRA TECH, INC., FOR ENGINEERING SERVICES FOR THE WEST STANISLAUS FLOOD CONTROL PROJECT

STAFF RECOMMENDATIONS:

APPROVE THE SUBJECT CONTRACT WITH TETRA TECH, INC., AND AUTHORIZE THE DIRECTOR OF PUBLIC WORKS TO SIGN ON BEHALF OF THE COUNTY.

FISCAL IMPACT:

Funds for this project were approved by the Board on May 8, 2001, and will be funded as a part of the 2001/2002 budget process. Funds will also be contributed by the Cities of Newman and Patterson and the State of California. The total estimated cost to produce the required technical analyses and their documentation is \$695,900.

BOARD ACTION AS FOLLOWS:

No. 2001-482

On motion of Supervisor Blom, Seconded by Supervisor Caruso and approved by the following vote,

Ayes: Supervisors: Mayfield, Blom, Simon, Caruso, and Chair Paul

Noes: Supervisors: None

Excused or Absent: Supervisors: None

Abstaining: Supervisor: None

1) X Approved as recommended

2) \_\_\_\_\_ Denied

3) \_\_\_\_\_ Approved as amended

Motion:

ATTEST: CHRISTINE FERRARO TALLMAN, Clerk

By: Deputy

*Christine Ferraro*

File No.

**SUBJECT:** APPROVAL OF CONTRACT WITH TETRA TECH, INC., FOR ENGINEERING SERVICES FOR THE WEST STANISLAUS FLOOD CONTROL PROJECT

**PAGE:** 2

**DISCUSSION:** On May 8, 2001, the Board approved an amendment to our agreement with the U.S. Army Corps of Engineers for the West Stanislaus Flood Control Project. One of the changes made as a part of that agreement was that the County would no longer be contributing cash towards the project, but would instead be providing engineering services. These services would for the most part be accomplished by the use of consultants with staff oversight.

The first of these contracts with the firm of Tetra Tech, Inc., is now ready for approval. This contract will for Orestimba Creek develop preliminary designs and cost estimates for the major flood control projects including levees, channel improvements and dams for detention basins. A risk analysis will be performed for each alternative. New flood plain maps will be developed for these alternatives to determine their effectiveness in controlling flooding. A final plan will be selected for flood control and a design will be optimized to determine the best benefit to cost ratio. Additional flood plains should be developed toward this final selected plan. An interior drainage analysis for flooding not due to Orestimba Creek will be performed. A final report will be prepared giving essentially a recommendation for a flood control plan and the analysis that leads to that recommendation.

In addition to the work on Orestimba Creek an economic analysis will be performed for Salado and Del Puerto Creeks. The County has surveyed the entire flood plains for these two creeks and has determined base elevations for all structures within the flood plain and the types and qualities on all crops grown. The consultant will take this information and develop damage estimates due to various design floods. These estimates will be used to determine the types and general costs of potential flood control solutions. At this point we would meet again with the elected officials of Patterson and with the Board to discuss potential projects on these two creeks.

**POLICY**

**ISSUE:**

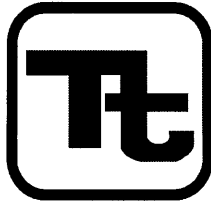
This action is consistent with the Board's policy of providing a safe, healthy community and multi-jurisdictional cooperation.

**STAFFING**

**IMPACT:**

Study will be conducted by present staff with the use of consultants.

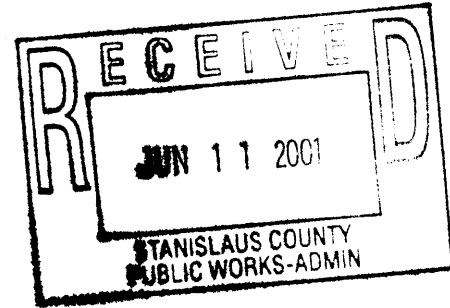
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# TETRA TECH, INC.

INFRASTRUCTURE SOUTHWEST GROUP

17770 Cartwright Road, Suite 500, Irvine, CA 92614  
(949) 250-6788 • FAX (949) 250-6776



June 5, 2001

Mr. George Stillman  
Director  
Stanislaus County, Department of Public Works  
1010 10<sup>th</sup> Street, Suite 3500  
Modesto, CA 95354

Subject: West Stanislaus Study - Orestimba Creek and Salado & Del Puerto Creeks

Dear Mr. Stillman:

Tetra Tech (Tt) appreciates the opportunity to submit this proposal for the County's in-kind services on the West Stanislaus Study's - Orestimba Creek Report and Salado & Del Puerto Creeks Baseline Economic Report with the Corps of Engineers. The primary purpose of the in-kind work items is to produce the technical studies and documentation necessary to be used by the Corps of Engineers when they formalize a recommended flood control solution on Orestimba Creek. In addition, a baseline economic damage report shall also be prepared for Salado and Del Puerto Creeks. The schedule for the work on Orestimba Creek is for a Final Report being available early spring 2002 for FY 2003 congressional considerations. This proposal was developed with this consideration in mind. The services herein do not include preparation of the Planning Report to be completed by the Corps. The services required of this proposal fall into seven technical and two managerial/review areas. A line by line listing and anticipated cost of each of the areas is as follows:

Task	Orestimba Creek	Salado & Del Puerto Creeks Creeks
Hydrology & Hydraulics	\$87,500.00	
Geotechnical	\$25,000.00	
Engineering & Design	\$140,400.00	
Economic Studies	\$77,900.00	\$218,600.00
Real Estate Studies	\$21,500.00	
Cost Estimating	\$25,000.00	
Plan Formulation	\$20,000.00	
Contractor Corps Certification	\$15,000.00	
Project Management	\$42,000.00	\$23,000.00
Total	\$454,300.00	\$241,600.00

The total estimated cost to produce the required technical analyses and their documentation is six hundred ninety-five thousand nine hundred dollars (\$695,900.00).

The following listed items are a brief outline of the scope of work anticipated for the conduct of these two studies.

1. LOCATIONS: (1) Orestimba Creek, City of Newman

(2) Salado & Del Puerto Creeks, City of Patterson

2. **ITEMS:** (1) Orestimba Creek Feasibility Analyses Appendices  
(2) Salado & Del Puerto Baseline Economic Analysis Report
3. **SERVICES REQUIRED:** The following is a description of the tasks that shall be covered under this proposal. All tasks shall be conducted to a level of detail consistent with the Corps of Engineers requirements for feasibility studies. Design drawings and plans, therefore, would be preliminary and approximately 30% of the level of detail typically shown on improvement plans.

*a. Hydrology & Hydraulics:*

It is to complete the requested work in the phases identified below.

**Phase 1 – Revise Hydraulic Models:** The A/E shall revise the hydraulic models to include the hydraulic features in each of the alternative designs. Where applicable, the A/E shall revise both the HEC-2 channel models and the FLO-2D floodplain models for each of the alternatives.

**Phase 2 – Reservoir Designs:** The A/E shall perform all work necessary to design the hydraulic features of the detention basins. This shall include determining the required embankment elevations and design of both the outlet works and spillway. The A/E shall follow criteria set in EM 1110-2-1603 and EM 1110-2-16-2 to perform these designs. In addition, any design shall meet both Corps criteria and the State of California's criteria for dam design. Designs shall be developed for one level of flood control protection. The initial design for each alternative shall be performed at the 100- year level of protection.

**Phase 3 – Levee Design and Channel Improvements:** This phase shall include the analyses necessary to determine levee height requirements, required channel excavation or realignment, and modification to structures to provide desired channel performance and flood control reliability. The A/E shall follow criteria set in EM 1110-2-1601 for analysis and design of modifications to the Orestimba Creek channel. EM 1110-2-1205 shall also be utilized to help insure environmental design concerns within the project area have been considered.

**Phase 4 – Project Floodplains:** The A/E shall develop with project floodplains for each of the alternatives. Four floodplains shall be developed for each alternative. The return period frequencies shall be the same four frequencies which were developed for the without-project condition. They are the 10, 50, 100, and 500 year return period flood events. All floodplain analyses shall account for the influence of Crow Creek flooding. The total number of floodplains developed shall be 12.

**Phase 5 – Channel Stability Analysis:** Previous analyses indicate that the Orestimba Creek channel is relatively unstable. Because the capacity of the channel is relatively small compared to flows of historic and potential flood events, channel instability has not been a major issue. As the channel capacity is increased and becomes part of a flood protection solution, channel stability needs to be insured to maintain the design level of protection or maintenance needs to be incorporated which maintains the channel flow capacity. Channel stability analyses and assessment shall consider criteria in EM 1110-2-1418 and EM 1110-2-4000.

**Phase 6 – Develop Data for Risk Based Analysis:** A Risk Based Analysis shall be performed on each alternative to support this project. The analysis requires hydrologic and hydraulic data and

uncertainties to be added. The A/E shall provide the necessary hydraulic data to perform this analysis. It is estimated that data shall be required at 5 index locations that describe the flood hazard of associated damage reaches. The A/E shall follow criteria described in EM 1110-2-1619 and Appendix A of EC 1105-2-205 where applicable. This data shall be required for each alternative.

**Phase 7 – Finalize Selected Plan:** Once an alternative is selected, this design shall be optimized. Two additional designs shall be performed to protect to the 50 and 500-year events. The design shall be optimized to determine the best benefit cost ratio. Once determined, the NED design will be finalized, and the final feasibility design plans shall be generated by the A/E.

**Phase 8 – Additional Floodplains for Selected Plan:** Two additional floodplains shall be developed for the selected plan. The HEC-2 and FLO-2D models shall be modified to incorporate two different levels of protection for the selected alternative. The two return periods that shall be modeled in addition to the 100-year flood event are the 50 and 500-year events.

**Phase 9 – Additional Risk Based Data for Selected Plan:** Once all floodplains for the selected plan are developed, the A/E shall develop the hydraulic data required to perform the Risk Based Analysis. It is estimated that data shall be required at 5 index locations that describe the flood hazard of associated damage reaches. This work shall follow the same procedure followed in Phase 6.

**Phase 10 – Interior Drainage Analysis:** Once a plan has been finalized, the A/E shall perform an internal drainage analysis to determine whether the plan adversely impacts drainage and may aggravate flooding. The A/E shall refer to EM 1110-2-1413 to perform the Interior Drainage analysis.

**Phase 11 – Final Project Floodplain:** The HEC-2 and FLO-2D models shall be revised to incorporate the final configuration of the chosen alternative. The models shall then be run to produce the project floodplain that shall demonstrate the residual flooding and verify that any induced flooding has been properly mitigated.

**Phase 12 – Draft Report:** The A/E shall provide a draft report that describes each of the phases of effort. The hydraulic functionality of each of the alternatives shall be described along with the analyses performed to arrive at the design. Results of the channel stability analysis shall also be described along with any mitigation that was designed to prevent adverse impacts of the project. The final design of the selected alternative shall be described in detail along with the concepts that were used to arrive at the design configuration. The report shall include floodplains for all the alternatives analyzed and the residual floodplain for the selected alternative that incorporates any features required to mitigate for interior drainage.

**Phase 13. Final Report:** The A/E shall accommodate recommendations received during the Government Review of the Draft Report in the Final Report. The Hydraulic and Hydrology Appendix shall be prepared consisting of narrative text, figures, and plates sufficient to meet Corps regulations on the preparation of feasibility studies.

***b. Geotechnical:***

This task includes review of published geological information and field investigations of existing and proposed project features. In addition, an analysis of existing data will be prepared of the site seismicity and geologic conditions of the study area. Other work will include identifying a

potential borrow source, and disposal site if necessary. Prepare a geotechnical report to document information developed and results obtained as part of the geotechnical studies. The report will be included in the Engineering Appendix. The report will include all pertinent plates and figures.

*c. Engineering and Design Studies:*

It shall provide preliminary designs for three alternatives on Orestimba Creek, which may consist of a dry dam, setback levees, or side channel storage. The designs will include field investigations, data collection, and conceptual designs for the three alternatives. Preliminary cost estimates will be provided for the three alternatives. A report will be written providing the results of the preliminary designs. This will be the equivalent of the Corps' F4 Report.

It will provide feasibility level designs and cost estimates for the selected alternative. Up to three locations will be evaluated for the selected plan. The project will be evaluated for three levels of flooding to size the proposed project, and to provide cost curves versus flood size. The project will be sized and a Feasibility level design and cost estimate will be prepared for the selected plan. A Design Appendix and MCACES cost estimate of the Selected Plan will be provided for the Feasibility Report.

*d. Economic Studies:*

The Orestimba Creek baseline economic analysis prepared for the County shall be extended to with-project conditions for three alternatives. These alternatives shall be examined in a risk-based economic environment consistent with Corps guidance of ER 1105-2-100, dated 22 April 2000 and Engineering Manual (EM) 1110-2-1619, dated 1 August 1996. Further, ER 1105-2-100 and IWR Report 87-R-10, dated October 1987, shall govern agricultural damages within the project area. Second, the flood plains of Salado and Del Puerto Creeks shall be analyzed at a baseline (without-project level) for inundation damages to structures and contents, agriculture, and for emergency costs associated with flooding. In the conduct of this portion it is assumed that the County shall provide similar services of inventory survey, agricultural parcel mapping, and the GIS referencing of structures in a similar manner to that which it produced on the Orestimba Creek baseline economic analysis. This baseline economic analysis and the Orestimba Creek with-project analysis shall be conducted in accordance with ER 1105-2-100 and shall be documented in accordance with the Corps guidelines and regulations regarding feasibility studies.

*e. Real Estate Studies*

This task includes the determination of tract ownership and acreage. Baseline preliminary real estate cost estimates on a per acre basis for general land-use types in the relevant study reaches shall be provided for alternative measures cost comparisons analyses. A narrative basis of estimate will be prepared and be included in the Engineering Appendix.

*f. Plan Formulation:*

Plan Formulation covers the plan formulation process leading to defining the flood control needs and opportunities that have been identified under detailed hydrology, hydraulics, geotechnical, and environmental studies. It will also further refine critical issues, study objectives, and flood control alternatives identified. Detailed formulation of alternative plans based on guidance from the Corps will be developed that technical element may assess and quantify hydraulic design,

hydrology, geotechnical design, and hydraulic and environmental effects. Costs and benefits of each alternative will be established.

**g. Contractor Corps Certification:**

Tt shall constitute an independent technical review team to review all submittals to comply with Corps contractor certification requirements and such certification shall be transmitted to the County.

**h. Project Management:**

Project Management is responsible for the general management of project manpower and financial resources for the delivery of work items by discipline and task order required by the contract.

**4. SUBMITTALS:** Tt shall submit the following:

Draft Final Technical Appendices: Five (5) copies of the Draft Final Technical Appendices shall be submitted to the Department of Public Works, Stanislaus County for technical review and comment.

Final Technical Appendices: The Final Technical Appendices submittal shall consist of five (5) complete copies.

The principal discipline members of Tt's team for this contract are as follows.

Discipline	Team Member
Project Management	Ira Artz
Study Management	Elden Gatwood
Hydrology & Hydraulics	Scott Tincher
Geotechnical	Chris Lee
Engineering & Design	Bob Hall
Economic & Real Estate Studies	Michael Gorecki
Plan Formulation	Elden Gatwood

I would like to express my appreciation for considering Tetra Tech on the West Stanislaus Study and the opportunity to serve the County.

Sincerely,

**TETRA TECH, INC.**  
INFRASTRUCTURE SOUTHWEST GROUP



Ira Mark Artz, P.E.  
Vice President

**TETRA TECH, INC  
PROJECT NO. 2001-2**

**A. Terms and Conditions**

Except as hereinafter provided, the services provided by the Consultant under this Project shall be subject to the terms and conditions set forth in the *Master Agreement For Professional Services* made and entered into by and between the County of Stanislaus ("County") and Tetra Tech, Inc. ("Consultant"), on January 4, 2000.

**B. Scope of Work**

The Consultant shall provide services under the Agreement and this Project for Baseline Economic Report for Orestimba Creek and Del Puerto Creek, as set forth in the Consultant's proposal dated June 5, 2001, attached hereto and, by this reference, made a part hereof.

**C. Compensation**

1. Consultant will be compensated for the services provided under this Agreement as follows on a lump sum basis for each task as set forth in the Consultant's proposal dated June 5, 2001, attached hereto and, by this reference, made a part hereof. In addition to the aforementioned fees, Consultant will be reimbursed for the following items, plus any expenses agreed by the parties as set forth in the Consultant's Proposal attached hereto, that are reasonable, necessary and actually incurred by the Consultant in connection with the services:

- (a) Any filing fees, permit fees, or other fees paid or advanced by the Consultant.
- (b) Expenses, fees or charges for printing, reproduction or binding of documents at actual costs.

2. The County shall retain ten (10) percent of all periodic or progress payments made to the Consultant until completion and acceptance of all work tasks.

3. The parties hereto acknowledge the maximum amount to be paid by the County for services provided shall not exceed **\$241,600.00**, including, without limitation, the cost of any subcontractors, consultants, experts or investigators retained by the Consultant to perform or to assist in the performance of its work under this Agreement.

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*Please see "amended" Page 1 (Attached).  
Change/corrected \$241,600.00 to  
reflect the maximum total approved  
in the item of \$695,900.00.*



AMENDED

TETRA TECH, INC  
PROJECT NO. 2001-02

AMENDED

**A. Terms and Conditions**

Except as hereinafter provided, the services provided by the Consultant under this Project shall be subject to the terms and conditions set forth in the *Master Agreement For Professional Services* made and entered into by and between the County of Stanislaus ("County") and Tetra Tech, Inc. ("Consultant"), on January 4, 2000.

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IN WITNESS WHEREOF, the parties have executed this Project No. 2001-2 on June 19, 2001.

**COUNTY OF STANISLAUS**

**TETRA TECH, INC.**

By:   
Pat Paul  
Chair of the Board of Supervisors

By:   
Ira Mark Artz, P.E.  
Vice President 

"County"

"Consultant"

ATTEST: Christine Ferraro Tallman  
Clerk of the Board of Supervisors of the  
County of Stanislaus, State of California

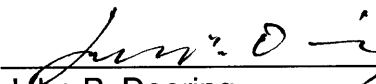
Taxpayer Identification No. 95-4148514

By:   
Deputy Clerk

APPROVED AS TO CONTENT:  
George Stillman, Director  
Department of Public Works

By:   
for: Patrick Bates  
Business Manager

APPROVED AS TO FORM:  
Michael H. Krausnick  
County Counsel

By:   
John P. Doering  
Deputy County Counsel

~~AMENDED~~  
01/15/01

**TETRA TECH, INC  
PROJECT NO. 2001-02**

6/19/01  
C-2  
~~AMENDED~~  
CANTON

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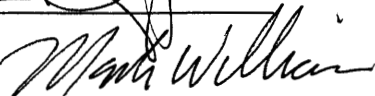
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IN WITNESS WHEREOF, the parties have executed this Project No. 2001-2 on June 19, 2001.

**COUNTY OF STANISLAUS**

**TETRA TECH, INC.**

By:   
Pat Paul  
Chair of the Board of Supervisors

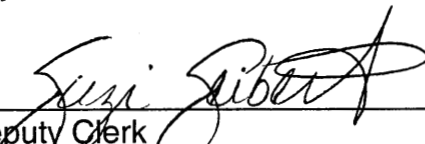
By:   
Ira Mark Artz, P.E.  
Vice President 

"County"

"Consultant"

ATTEST: Christine Ferraro Tallman  
Clerk of the Board of Supervisors of the  
County of Stanislaus, State of California

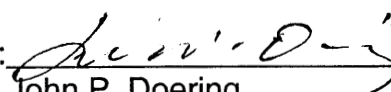
Taxpayer Identification No. 95-4148514

By:   
Deputy Clerk

APPROVED AS TO CONTENT:  
George Stillman, Director  
Department of Public Works

By:   
for Patrick Bates  
Business Manager

APPROVED AS TO FORM:  
Michael H. Krausnick  
County Counsel

By:   
John P. Doering  
Deputy County Counsel