

TO: James L. App, City Manager
FROM: Meg Williamson, Interim Director of Public Works
SUBJECT: Mineral Hot Spring – City Hall/Library Parking Lot Repair
DATE: April 6, 2004

NEEDS: For the City Council to consider preparation of plans and specifications for the repair of the City Hall/Library parking lot.

- FACTS:**
1. The December 22, 2003 earthquake ruptured a thermal sulfur spring underground that surfaced in the City Hall/Library parking lot.
 2. The City engaged geologists and hydrogeologists to determine the source, nature and extent of the thermal spring's activity, as well as evaluate mitigation options. Two major concerns were noted: 1) sealing the rupture could cause a surface eruption elsewhere, and 2) prolonged pumping of the sulfur water could cause collapse of the parking lot.
 3. Due to these risks, engineering firms were invited to propose spring mitigation and parking lot repair alternatives.
 4. The City issued a Request for Qualifications (RFQ) for engineering firms; three firms responded. Two of the firms proposed working together as a team.
 5. The firms responding included Boyle Engineering, Fugro, and Todd Engineers. Boyle & Fugro suggested a joint effort using their respective expertise in Structural, Civil and Soil Mechanics Engineering to develop a repair protocol. Todd proposed an analytical approach to gather more Engineering data for a long term solution.
 6. Staff met with the respondents to discuss possible repair methods. The Boyle/Fugro team suggested an infiltration gallery and bridge system as a method of repair.
 - An infiltration gallery is a network of pipes that lie horizontally inside the hole and form a collection system to capture the sulfur water. The gallery also creates a more natural pathway for the water to enter the surrounding geological strata.
 - A soil fabric bridge system is proposed to be constructed in layers with engineered fill that spans the entire pit opening. The fabric provides a support system that holds the engineered fill in place in the event the bottom of the spring collapses.
 7. Once the infiltration and bridge system is in place the parking lot can be restored.
 8. Staff requested a scope of work and schedule from the Boyle/Fugro team. The estimated cost is \$118,270 requiring two months for completion of plans and specifications.

**ANALYSIS
AND**

CONCLUSION: There is uncertainty as to the flow pattern of the sulfur water. It appears that the water travels laterally through the geological strata rather than vertically. There is no information as to the depth of the water. The surface flow rate is approximately 450 gallons per minute (GPM). There is also an uncertainty as to how deep the fracture

extends and where it connects to the underground thermal reservoir. There is consensus among the experts that if the flow rate of thermal water is stopped too quickly, the spring will surface at a new location. There is no way to accurately predict where the water would surface.

Due to the uncertainties regarding the spring depth and excavation stability, there is concern that the weight of an engineered fill and/or continued flow could cause the excavation to collapse. Therefore, a structural bridge spanning the entire hole is required to prevent such a collapse.

The City needs engineering and construction plans and specifications to facilitate repair of the parking lot. The Boyle/Fugro team is qualified to prepare the plans and specifications in the amount of \$118,270.00.

**FISCAL
IMPACT:** \$118,270.00

- OPTIONS:**
- a. Adopt Resolution 04-xx:
 - 1) Appropriating \$118,300 from Account No. 100-820-5452-260; and
 - 2) Authorizing the City Manager to enter an Agreement with Boyle/Fugro for preparation of plans and specifications to repair the parking lot damage caused by the December 22, 2003, earthquake for a not-to-exceed sum of \$118,270.
 - b. Amend, modify, or reject the above option.

- Attachments (2)
1) Resolution
2) Boyle/Fugro Scope of Work

SCOPE OF SERVICES
Phase I - City Parking Area Remediation and Repair
City of El Paso de Robles

Boyle and Fugro recently submitted Statements of Qualification to the City of El Paso de Robles for handling the artesian spring that surfaced in the City parking area. Boyle recommends that the City take a 2-phased approach to this project:

Phase 1 – City Parking Area Remediation and Repair: This phase is addressed by this proposal. It includes an alternatives evaluation and engineering services for restoring the parking area and controlling the flow of water. The interim measures proposed in Phase 1, if deemed feasible, may reduce or eliminate flow and stability concerns associated with the existing site condition. If observation and monitoring of the Phase 1 interim measures eliminates or significantly reduces the flow of water from the site, the need for permanent facilities to treat and/or distribute the groundwater flow could also be reduced and possibly eliminated.

Phase 2 – Flow Mitigation and Disposal (Future - Not Included in this Proposal): During the subsequent phase, recommendations for construction of permanent treatment and/or distribution facilities for managing the groundwater flow would be developed and implemented, if needed. This phase would include permitting, treatment process development, and other analyses required for developing a permanent solution that is palatable to the City, citizens, and regulatory agencies.

Task 100 – Construction Observation during Vertical Pipe Installation

Boyle and Fugro will provide onsite construction observation during interim measures that will consist of installation of a vertical pipe and seal for temporary flow control. This budget and scope of work include services NOT included in the engineering services proposal for Phase I – City Parking Area Remediation and Repair.

Boyle/Fugro anticipates performing the following tasks:

The Boyle-Fugro team will attend a kickoff meeting with the Contractor and the City to review the goals for the project and details of the construction;

Provide construction observation on a part-time, as-needed basis, to observe key milestones such as setting the vertical pipe and placement of the seal;

Provide recommendations to the City, as needed, during completion of this work;

Perform materials testing for placement of base course and concrete;

Prepare an as-built drawing of the pipe and seal (including approximately elevation, dimensions and materials) on an available record drawing of the parking area (to be provided by the City). It is assumed the Contractor will provide notes, elevations, and dimensions for our use; and

Meet with the City to provide our recommendations for proceeding with the next phase of the project.

Task 200 – Alternatives Evaluation

Boyle and Fugro will review available soils, hydrogeologic, and geothermal studies;

Develop a base map from available as-built information, supplemented by the City's surveyor if needed;

Perform materials testing and geotechnical analysis;

Develop recommendations for stabilizing the parking area and controlling flow from the artesian spring. These alternatives will likely include:

- Collecting the flow with wells, drain fields, or sumps and directing to a single point of discharge;
- Developing percolation areas or injection points to return water to the subsurface; and
- Using grouting, concrete pumping, or shields to cutoff water from the spring.

Recommend interim measures for controlling flow, stabilizing the parking area, and reconstructing the parking lot;

Develop a schedule for implementing interim control measures and proceeding with subsequent phases of the project;

Prepare 10% plans and estimates for interim measures; and

Summarize recommendations and budget estimates in a letter report for review and approval by City staff.

Task 300 – Implementation of Interim Measures

It is assumed that the study in Task 100 will develop feasible interim measures for controlling flow and stabilizing the parking area. It is also assumed that the City can continue using the temporary pipe between the City parking lot and the Salinas River for discharging the flow.

Boyle will prepare a bid package for implementing these interim measures using Boyle's standard contract documents. It is assumed the following sheets will be included in the construction drawings;

- C1 – Title Sheet
- C2 – Grading Plan and Paving Details
- C3 – Utility Plan and Details
- C4 – Construction Details
- C5 – Construction Details

Boyle will prepare 50% and 90% submittals for review by the City and will incorporate comments in the final submittal. As part of the submittals and input to Boyle's design, Fugro will prepare a Preliminary

Geotechnical Report for the project discussing the geotechnical feasibility of the various alternatives evaluated.

Boyle will also respond to RFIs (in writing) and issue addenda to the documents as needed.

Task 400 – Construction Services for Interim Measures

Boyle will attend the bid opening, perform a bid analysis, and prepare recommendations for City Council to select a contractor;

The Boyle-Fugro team will provide construction observation on part-time, as-needed basis to evaluate compliance with the plans and specifications and resolve field issues; and

Review and approve payment requests from the Contractor;

Perform materials testing for placement of the backfill, base course, concrete, and pavement materials.

Task 500 – Meetings with City Staff

Boyle will attend bi-weekly meetings with City staff to discuss progress and address issues as they arise. Boyle will also attend two City Council meetings to address comments and questions from the City Council.

Task 600 – Project Management and Quality Control

Boyle will provide project management and quality control services for production of these deliverables.

Additional Services

The following additional services may be provided by Boyle upon request of the City and execution of a specific authorization setting forth applicable scope, fee, and schedule provisions:

1. Additional work outside the limits of work designated herein;
2. Permitting;
3. Water quality sampling, pilot testing, or laboratory analysis; and
4. Design or development of treatment processes.

Work or Services Provided by Client

1. Available water quality information;
2. Surveying; and

3. Available soils and geothermal reports.

Compensation for Engineering Services

Boyle will be compensated monthly with progress payments by the City for services provided by Boyle during the previous month pursuant to this Agreement and in accordance with Boyle's Hourly Rate Schedule (Exhibit "B"), which is attached hereto and made a part of this Agreement.

Compensation for Boyle's services, as described in the above Work Tasks, will be paid monthly and will be made on a time and materials basis with a budget of \$118,270 not to be exceeded without written authorization from the City. Our proposed budget is attached.

Additional Services

Boyle will be compensated by the Client for additional services provided by Boyle as requested in writing by the Client pursuant to the Additional Services section of this Agreement in accordance with the Hourly Rate Schedule set forth in Exhibit "B" and subject to any maximum amount mutually agreed to in writing.

Schedule

Boyle proposes to complete Task 200 within 6 weeks of Notice to Proceed with that task and Task 300 within 10 weeks of Notice to Proceed with Task 200.

Exhibit "B"

Compensation

Project Budget

**Engineering Services for Artesian Spring
Phase I - Parking Area Remediation and Repair**

City of El Paso de Robles

Task Description	Personnel Hours						Budget				Total	
	Consulting Engineer	Principal Engineer	Senior Engineer II	Associate Engineer	Drafter	Clerical	Total Hours	Labor	Non-Labor Cost	Subconsultants		Total Non-Labor
Task 100 - Construction Observation during Pipe Inst.												
Kickoff meeting			4				4	\$ 512	\$ 51	\$ 794	\$ 845	\$ 1,357
Observation			4	8			12	\$ 1,272	\$ 127	\$ 3,680	\$ 3,807	\$ 5,079
Recommendations			4	4			8	\$ 892	\$ 89	\$ 940	\$ 1,029	\$ 1,921
Materials testing							-	\$ -	\$ -	\$ 1,150	\$ 1,150	\$ 1,150
Meeting with City			4				4	\$ 512	\$ 51	\$ 794	\$ 845	\$ 1,357
As-built drawing			2	8	16		26	\$ 2,488	\$ 249	\$ 184	\$ 433	\$ 2,921
Subtotal			18	20	16	-	54	\$ 5,676	\$ 568	\$ 7,542	\$ 8,110	\$ 13,786
Task 200 - Alternatives Evaluation												
Develop base map and coordinate with the City's surveyor			2	8	8		18	\$ 1,752	\$ 175	\$ -	\$ 175	\$ 1,927
Geotechnical analysis			2	4			6	\$ 636	\$ 64	\$ 11,500	\$ 11,564	\$ 12,200
Develop recommendations			2	4			6	\$ 636	\$ 64	\$ -	\$ 64	\$ 700
Recommend interim measures			2	4			6	\$ 636	\$ 64	\$ -	\$ 64	\$ 700
Develop schedule and budgets			4	12			16	\$ 1,652	\$ 165	\$ -	\$ 165	\$ 1,817
Prepare 10% plans for interim control measures			4	8	16		28	\$ 2,744	\$ 274	\$ -	\$ 274	\$ 3,018
Prepare letter report			4	16		8	28	\$ 2,448	\$ 245	\$ -	\$ 245	\$ 2,693
Final report			4	8		8	20	\$ 1,688	\$ 169	\$ -	\$ 169	\$ 1,857
Subtotal			24	64	24	16	128	\$ 12,192	\$ 1,219	\$ 11,500	\$ 12,719	\$ 24,911
Task 300 - Implementation of Interim Measures												
Contract Documents			2	8	16	8	34	\$ 3,280	\$ 328	\$ -	\$ 328	\$ 3,608
Technical Specifications			2	8	32	8	50	\$ 4,800	\$ 480	\$ -	\$ 480	\$ 5,280
Plans (5 sheets)			16	80	100		196	\$ 18,848	\$ 1,885	\$ -	\$ 1,885	\$ 20,733
50% Submittal			2	4	4	4	14	\$ 1,420	\$ 142	\$ -	\$ 142	\$ 1,562
90% Submittal			2	4	4	4	14	\$ 1,420	\$ 142	\$ -	\$ 142	\$ 1,562
100% Submittal			2	4	4	4	14	\$ 1,420	\$ 142	\$ -	\$ 142	\$ 1,562
Respond to RFIs and Issue Addenda			2	8	16		26	\$ 2,864	\$ 286	\$ -	\$ 286	\$ 3,150
Subtotal			12	52	156	28	348	\$ 34,052	\$ 3,405	\$ -	\$ 3,405	\$ 37,457
Task 400 - Construction Services												
Attend Bid Opening and Perform Bid Analysis			4	8			12	\$ 1,272	\$ 127	\$ -	\$ 127	\$ 1,399
Construction Observation and Site Visits			8	40	60		108	\$ 12,100	\$ 1,210	\$ 5,750	\$ 6,960	\$ 19,060
Materials Testing							-	\$ -	\$ -	\$ 3,450	\$ 3,450	\$ 3,450
Review Payment Requests from Contractor			4	8			12	\$ 1,272	\$ 127	\$ -	\$ 127	\$ 1,399

Project Budget

**Engineering Services for Artesian Spring
Phase 1 - Parking Area Remediation and Repair**

City of El Paso de Robles

Task Description	Personnel Hours						Budget				Total	
	Consulting Engineer	Principal Engineer	Senior Engineer II	Associate Engineer	Drafter	Clerical	Total Hours	Labor	Non-Labor Cost	Subconsultants		Total Non-Labor
Subtotal	-	8	48	76	-	-	132	\$ 14,644	\$ 1,464	\$ 9,200	\$ 10,664	\$ 25,308
Task 500 - Meetings												
Meet with City Staff			16	16		4	36	\$ 3,776	\$ 378		\$ 378	\$ 4,154
Council Meetings			8	16		8	32	\$ 2,960	\$ 296		\$ 296	\$ 3,256
Subtotal	-	-	24	32	-	12	68	\$ 6,736	\$ 674	\$ -	\$ 674	\$ 7,410
Task 600 - Project Management												
Project Management			40			8	48	\$ 5,536	\$ 554		\$ 554	\$ 6,090
Quality Control	16				4		20	\$ 3,008	\$ 301		\$ 301	\$ 3,309
Subtotal	16	-	40	-	-	12	68	\$ 8,544	\$ 854	\$ -	\$ 854	\$ 9,398
Total	16	20	206	348	140	68	798	\$ 81,844	\$ 8,184	\$ 28,242	\$ 27,462	\$ 118,270

Amounts shown are fee.

**BOYLE ENGINEERING CORPORATION
(BAKERSFIELD AND SAN LUIS OBISPO OFFICES)**

**FEE SCHEDULE FOR PROFESSIONAL SERVICES
Effective January 1, 2004**

Engineers, Planners, Architects, Scientists:

Consultant	\$175.00 per hour
Principal	\$160.00 per hour
Senior II	\$140.00 per hour
Senior I	\$125.00 per hour
Associate	\$105.00 per hour
Assistant	\$85.00 per hour

Technical Support Staff:

Design/CADD Supervisor	\$100.00 per hour
Senior Designer/Design CADD Operator	\$85.00 per hour
Drafter/CADD Operator	\$75.00 per hour
Assistant CADD Operator	\$62.00 per hour
Clerical/General Office	\$55.00 per hour

General Project Expenses ⁽¹⁾ 8% of Labor

Direct Project Expenses

Other Reproduction (8-1/2 x 11/11x17 Color)	\$1.15/1.50 per page
Plan Sheet Printing – In House Bond / Mylar	\$3.00/7.00 per sheet
Subcontracted Services/Reproduction	Cost + 10%
Subcontracted or Subconsultant Services	Cost + 10%
Auto Mileage for Construction Phase Services	\$0.60 per mile
Travel & Subsistence (other than mileage)	Cost
Miscellaneous Supplies/Services	Cost + 10%

If authorized by the Client, an overtime premium multiplier of 1.5 may be applied to the billing rate of hourly personnel who work overtime in order to meet a deadline which cannot be met during normal hours.

Applicable sale taxes, if any, will be added to these rates. Invoices will be rendered monthly. Payment is due upon presentation.

Fee schedule is subject to change.

⁽¹⁾ Includes mail, telephone, fax, office photo copies, personal computers and mileage (except as noted).

RESOLUTION NO. 04-

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF PASO ROBLES
APPROPRIATING FUNDS AND AUTHORIZING THE CITY MANAGER TO EXECUTE AN
AGREEMENT FOR THE PREPARATION OF PLANS AND SPECIFICATIONS TO REPAIR THE
PARKING LOT DAMAGE CAUSED BY THE DECEMBER 22, 2003 EARTHQUAKE

WHEREAS, the December 22, 2003 earthquake ruptured a thermal sulfur spring underground that surfaced in the City Hall/Library parking lot; and

WHEREAS, due to risks associated with sealing the spring or continuous pumping of water, the City issued a Request for Qualifications (RFQ) for engineering firms to develop spring mitigation and parking lot repair alternatives; and

WHEREAS, the City received three (3) responses to the RFQ and the Boyle/Fugro team has been selected by staff to prepare the plans and specifications for \$118,270.00. Expenses will be submitted to FEMA for reimbursement.

THEREFORE, BE IT RESOLVED AS FOLLOWS:

SECTION 1. The City Council of the City of El Paso de Robles does hereby appropriate \$118,300 from Account No. 100-820-5452-260.

SECTION 2. The City Council of the City of El Paso de Robles does hereby authorize the City Manager to enter an Agreement with Boyle/Fugro for preparation of plans and specifications to mitigate the springs and repair the parking lot damage caused by the December 22, 2003 earthquake for a not to exceed fee of \$118,270.

PASSED AND ADOPTED by the City Council of the City of Paso Robles this 6th day of April 2004 by the following vote:

AYES:

NOES:

ABSTAIN:

ABSENT:

Frank R. Mecham, Mayor

ATTEST:

Sharilyn M. Ryan, Deputy City Clerk