



SOUTH FEATHER WATER & POWER AGENCY

TO: Board of Directors

FROM: Matt Colwell, Water Division Manager

DATE: November 20, 2007

RE: Miners Ranch Water Treatment Plant Expansion Project

Agency staff has engaged in planning activities for the **Miners Ranch Water Treatment Plant Expansion Project**. The long term project goal is to expand the Miners Ranch Water Treatment Plant (MRTP) in an economical and efficient manner from the current capacity of 14.5 million gallons per day (MGD) to a level that meets long-term (25-30 years) projected growth and water-quality requirements.

The need has been defined by the current and projected demands of treated water from MRTP. In the past couple of years MRTP has realized a maximum single day demand that is approximately 80-85 percent of the current capacity. It is reasonable to anticipate that MRTP could realize capacity limitations within the next five to seven years. Considering the timeline to achieve the stated goal, it is now time to start the expansion project.

The objective is to implement a phased project that will maximize the existing facilities and implement optimal technologies in the newly expanded facilities. The project will consist of multiple phases ranging from evaluations of the existing facilities to development of expansion opportunities, and then final construction and start-up. I anticipate the following four phases to achieve these objectives:

1. Pre-engineering and Feasibility Study;
2. Engineering Report;
3. Design; and,
4. Construction

The Miners Ranch Water Treatment Plant Expansion Project is anticipated to be completed by mid-2012 at an estimated cost range of \$9 to \$11 million.

Attached is the proposal for the first phase of the MRTP expansion project requesting proposals from qualified consulting engineering firms for preparing a Pre-engineering and Feasibility Study. The study will provide for the selection of a preferred alternative and will include a refined schedule and cost estimate for the entire project.

The cost for the phase I study is estimated to be near \$100,000. This study and the additional engineering costs for the project will be funded by the utilization of the System Capacity Funds, currently at an approximate balance of \$1.1 million. I anticipate that the system capacity funds will be expended on this

project within the next 2 to 3 years. The main construction expenses will likely occur after 2010. When the System Capacity Fund is depleted, the remainder of the project could be funded from other sources including power-marketing revenues, state or federal infrastructure low interest loans, and/or certificates of participation (COP). Other funding mechanisms are available and could be explored when necessary.

Please review the attached proposal. During our discussion at the meeting I will eagerly attempt to answer any questions, concerns, or requests for additional information you may have.

The requested action is:

"I move approval of the Request for Proposals for the Miners Ranch Treatment Plant Expansion Project's Pre-engineering and Feasibility Study, and authorization for its publication."

South Feather Water and Power Agency

REQUEST FOR PROPOSALS

Miners Ranch Water Treatment Plant Expansion Project



**SUBMIT PROPOSALS TO: SOUTH FEATHER WATER AND POWER AGENCY
2310 ORO-QUINCY HIGHWAY
OROVILLE, CALIFORNIA 95966
530.533.4578**

SUBMIT PROPOSALS BY: 5:00 P.M., JANUARY 8, 2008

**DIRECT INQUIRIES TO: Matt Colwell, Water Division Manager
mcolwell@southfeather.com
530-533-4578, ext. 212**

**Request for Proposal
Miners Ranch Water Treatment Plant Expansion Project
Pre-engineering and Feasibility Study**

Purpose

Miners Ranch Water Treatment Plant Expansion Project is a phased project to complete the expansion of the Miners Ranch Water Treatment Plant in an economical and efficient manner from the current capacity of 14.5 MGD to a level that meets long-term (25-30 year) projected growth and water-quality goals.

The objective is to implement optimal technologies to maximize existing facilities and to construct new facilities to meet projected demands while continuing to meet current and foreseeable regulatory standards. The project will consist of multiple phases ranging from evaluations of the existing facilities to development of expansion opportunities, and final construction and start-up. The project is anticipated to be completed in 4 phases:

1. Pre-engineering and Feasibility Study;
2. Engineering Report;
3. Design; and,
4. Construction

South Feather Water and Power Agency (SFWPA) is currently requesting proposals from qualified consulting engineering firms for the preparation of a Pre-engineering and Feasibility Study for the expansion of the Miners Ranch Water Treatment Plant. An overview of the anticipated project is provided in the following text.

History and Background

SFWPA is located in Oroville, California, 70 miles north of Sacramento in the Sierra foothills of Butte County and, in addition to other infrastructure, owns and operates the Miners Ranch Public Water System (DPH PWS# 0410006). The Agency's infrastructure is comprised of six reservoirs, nine dams, four hydroelectric powerhouses, six tunnels, four major conveyance canals, two water treatment plants, and the treated-water pipeline distribution network.

The Agency has a plentiful and excellent-quality surface-water supply and is permitted to store 172,145 acre-feet of runoff from the watersheds of the South Fork of the Feather River and Slate Creek (tributary of the North Yuba River). The water is conveyed to the hydro-electric powerhouses, to agricultural consumers, and to the water treatment plants for subsequent domestic-use distribution. During the summer months influent turbidities are low - in the 1.0 NTU to 2.0 NTU range - and during the winter months range from 1.0 NTU to 10 NTU and a rarely seen 70 NTU.

SFWPA's primary water treatment plant is the Miners Ranch Water Treatment Plant (MRTP). Completed in 1981, it has the capacity to treat 14.5 million gallons per day (MGD) of water. Recently, during peak demand periods, the plant has treated as much as 11.8 mgd, with the maximum monthly treatment volume being 313 million gallons (July, 2003).

To date, steady growth in treated water quantity demand has been offset by significant improvements in distribution system and treatment plant operational efficiencies. With anticipated continued growth and limited opportunities for additional water conservation improvements, SFWPA considers it prudent to begin the Miners Ranch Water Treatment Plant Expansion Project.

Current Plant Operations

Three raw-water pumps with a capacity of 25 MGD manifold into a 36-inch pipe and deliver water from the Miners Ranch Reservoir to the water treatment plant (14.5 MGD capacity). Under normal low-turbidity levels (which occur in late spring through fall and accounts for approximately 80% of the annual volume), the entire raw-water flow can be treated through the Inline Filtration System (coagulation, pre-filter chlorination, filtration and post-chlorination). Under high turbidity conditions (which occur normally in the winter months), approximately 2 to 5 MGD can be processed through the Full Treatment System (coagulation, flocculation, sedimentation, pre-filter chlorination, filtration, and post-chlorination). In either mode the treatment facility provides continuous control over varying water turbidities and assures the constant delivery of finished water that meets all parameters of the State Drinking Water Standards.

Both the sedimentation basin sludge and the filter backwash water are discharged to a 320,000-gallon wastewater basin. Sludge removal from the sedimentation basin is done once a year by washing the basin through four 10-inch drains. The clarified supernatant water in the wastewater basin is discharged to Miners Ranch Reservoir (NPDES permitted discharge). The accumulated sludge in the wastewater basin is then transferred to a 100,000-gallon sludge basin where the drying and mechanical removal process occurs.

Filtration facilities include four multi-media gravity filters with an aggregate area of 1,682 square feet. The maximum filtering rate is 6 gallons per minute per square foot. Each filter has 20 inches of anthracite coal on top of ten inches of sand, with three inches of garnet on top of 13 inches of graded gravel to support the filter media. The under drain system installed in the filter support gravel includes a series of three-inch perforated pipe laterals that manifold into the 24-inch main filter effluent line.

The treated water is piped by gravity to the adjacent 1.49 MG clearwell. Treated water is then pumped to the high-elevation distribution system as well as piped by gravity to the 2 MG tank and on to the distribution system.

Scope of Work

SFWPA staff and selected consultant will jointly develop the final scope of work. The scope of work is anticipated to include, but may not be limited to the following efforts.

Document Review and Data Collection

The consultant shall review Agency documents related to the MRTP expansion. This information will be made available to the successful firm and includes the original construction drawings, drawings of significant modifications, aerial photographs of the WTP site, existing treatment-plant expansion reports (March 1985 and August of 1987), MRTP Operations Manual, miscellaneous studies and reports, water quality information, and water production and other operational data.

Treatment Plant Facilities Review

The consultant shall review the existing facilities for adequacy of meeting additional expansion capacity. The following are some of the major issues that should be assessed for expansion and considered for modification prior to the addition of new filter capacity.

1. **Inline to Full Treatment:** This minor assessment should evaluate the necessity to split operations into the existing Inline or Full Treatment flow paths. Operations and the existing plant configuration should be evaluated and recommendations made regarding the advisability and feasibility of converting the Inline flow path to an expanded Full Treatment flow path.
2. **Inline to Direct designation:** Recently, the California Department of Public Health (CDPH) reclassified the summer operations as Inline Operation. The Agency has requested clarification of this designation and understands that the prior Direct Operations designation is preferable. If continuation of the Inline flow path (seasonal flow split) is recommended, the assessment should include recommendations for modifications of existing facilities back to Direct Operations.
3. **Assessment of coagulation/flocculation/sedimentation facilities:** The flocculation-sedimentation facility is designed for a flow of 3 MGD. The chemically treated water enters the 46,200-gallon rectangular concrete flocculation basin with a variable-speed three-paddle flocculator. After flowing through a short transition zone, the flocculated water enters the 77,500-gallon sedimentation section. The clarified water overflows the sedimentation basin through two trough weirs. Once a year the accumulated sedimentation is washed to the filter backwash basin. The existing pretreatment and sludge collection methods shall be evaluated and assessed for opportunities to increase capacity and utilize more efficient clarification methods and equipment.
4. **Assessment of the Filter-to-Waste Facilities:** The existing Filter-to-Waste configuration has never been used and filter spiking does not appear to be a significant problem. This assessment should provide recommendations to

eliminate or include Filter-to-Waste capabilities.

5. **Filter Backwash Recycle:** The existing plant discharges filter backwash water into the Miners Ranch Reservoir and is regulated through the NPDES permit. The Agency is strongly considering recycling the discharge into the raw water influent stream. The consultant should evaluate the benefits, feasibility, and modifications to implement filter backwash recycling.
6. **Assessment of the High Service Pumping Capacity:** The existing lift pump capacity is approximately 7.7 MGD. However, the combined pumping efficiency is significantly reduced at levels near 5.0 MGD. The current average maximum demand is approximately 4 MGD. The capacity of the existing 14" pipeline manifold and the distribution system pump curve should be investigated for adequacy for current and future expansion needs.

Development of Treatment Plant Alternatives

The Agency is interested in developing a cost-effective surface water treatment plant expansion capable of meeting all of today's water quality as well as anticipated future treatment requirements. The following items are some of the major issues that will need to be addressed as part of developing expansion alternatives:

1. **Size of Expansion:** SFWPA's domestic-water service is still predominantly rural. Reaching the buildout potential of the service area is not likely to occur within the proposed expansion's useful lifetime. Therefore, the size of expansion will have to be determined based on engineering economics such as life-cycle costs and population growth. Since 1983, when MRTP started production, the Agency has realized an average annual growth rate of 1.3% in service connections. Localized and more densely populated pockets within the Agency's boundaries have experienced as much as 4% growth rate in population. The consultant should evaluate the most economical and feasible level of expansion to meet reasonable future demands.
2. **Alternative Filtration Technologies:** The MRTP multi-media filtration system has been successfully producing excellent water quality and is expected to continue to meet health and water quality goals. However, SFWPA realizes that since 1983 there have been significant advancements in filter technologies. This Pre-engineering and Feasibility Study shall consider in the expansion alternatives the potential for implementation of newer technologies to achieve expansion goals.
3. **Filter Backwash and Sludge production disposal:** Both the sedimentation basin sludge and the filter backwash water are discharged to a 320,000-gallon wastewater basin. As part of the Pre-engineering Study for the plant expansion alternatives the filter backwash volumes, sludge collection, processing, and disposal methods will need to be evaluated.

4. **Cryptosporidium:** The implementation of the Long Term 2 Enhanced Surface Water Treatment Rule established to protect public health from microbial contaminants, such as Cryptosporidium, is of particular importance to the Agency because it could dictate the type of treatment technologies. SFWPA is beginning the testing of its source supply to determine the exposure of microbial contaminants. Preliminary information suggests that the surface water supply (South Fork Feather River) may not pose a health concern from Cryptosporidium. The proposed study will have to address the effects of LT2ESWTR on treatment expansion options.
5. **Plant performance monitoring and automation:** The Agency desires to have a highly automated treatment plant and monitoring system that can be operated in a fully manual mode as well. The consultant shall consider the existing implementation of Allen-Bradley Programmable Logic Controllers and RSlogix software in future expansion instrumentation.
6. **Constructability:** The MRTP will have to remain operational during the expansion project in order for the Agency to meet typical water demands. Any proposed expansion alternative will need to take this into account.
7. **Cost Estimates and Schedule:** For project and financial planning purposes and based on the knowledge and understanding gained in the Pre-engineering study, the consultant shall provide preliminary cost estimates and schedules for the Miners Ranch Water Treatment Plant Expansion Project.
8. **Environmental:** SFWPA does not plan to address environmental issues as part of this contract. The Agency may hire an environmental firm (under a separate contract) to start the CEQA process during the pre-design effort. However, if there are any particularly difficult environmental issues specific to an individual expansion alternative, these issues should be identified and discussed in detail as part of the evaluation of the alternatives (as part of this pre-design effort).

Project Management

The project shall include progress reporting, scheduling, office administration, meetings, general correspondence, and invoicing. Regular contact with Agency staff shall be maintained to incorporate staff decisions and suggestions regarding the direction of the project.

Meetings

The selected consultant project manager and key staff should provide up to four (4) meetings with Agency staff for progress reporting, Agency Board of Directors presentation, and other project related issues.

Deliverables

At the consultant's option, the deliverables may be in the form of a single report for all issues involved, or may be broken down into a report and any appropriate number of technical memorandums. The consultant shall provide four copies of draft documents (pre-design report and technical memorandums) for Agency review and 12 copies of the final pre-design report (with any technical memorandums included as appendixes).

Schedule

The Agency desires to have the Pre-engineering and Feasibility Study completed by September 2008

Proposal Submittal

Twelve (12) bound copies of a written proposal based on the Scope of Work, above, must be delivered by 5:00 p.m., January 8, 2008 to:

South Feather Water and Power Agency
2310 Oro-Quincy Highway
Oroville, CA 95966

Proposal Format:

Please limit the submittal to a total of **15 pages**, not including appendices, using the following format.

1. Cover Letter- provide a two page cover letter summarizing an understanding of the project, any exceptions take to the Agency's standard form of agreement (attached), and the signature of an authorizing representative of the lead consultant firm.
2. Project Qualifications- provide a description of the lead consulting firm and any sub-consultants to be used on the project. Provide a description of a least five similar projects undertaken by the lead firm in the past three years including project size, cost, schedule, unique features, and a reference contact (provide phone number and e-mail).
3. Project Team- Provide an organizational chart of the project team including all key staff assigned to the project. For the key staff, provide a brief synopsis of their relevant experience and involvement in the projects outlined in the qualifications section. Include resumes of key staff in an appendix.
4. Project Approach- Provide a project approach to the scope of work outlined by the Agency and identify any changes or exceptions to this scope.
5. Project Cost – Provide an itemization of all services to be provided and the estimated number of hours to complete each task, including any sub-

consultant tasks. Provide a schedule of hourly rates and fees as an appendix.

6. Project Schedule- Provide a detailed schedule for completing the study that meets the time schedule of the Agency. Please show the various work tasks along with the important intermediate dates (meetings, submittals, reviews, etc.)
7. The Agency's standard consultant agreement is attached as part of this RFP. The consultant shall identify, as part of this proposal, any exceptions to the agreement it would like the Agency to consider.

Selection Criteria

The Agency intends to select a consultant based on demonstrated competence and professional qualifications for the types of services to be performed at a fair and reasonable price to the public. The Agency will review all proposals and rank them according to the following criteria:

- Project understanding and approach
- Firm qualifications and experience with similar projects
- Qualifications of Project Manager and key staff
- Budget and competitive hourly rates
- Scheduling and responsiveness

If necessary, the consultants whose proposals are rated most favorably may be invited to make an oral presentation to Agency staff that will make the final recommendation for award of this consultant contract to the Agency's Board of Directors. The contract amount will be negotiated with the selected consultant.

Insurance

The Agency will require the selected consultant to provide the following policies of insurance:

1. Workers' Compensation Insurance to cover its employees.
2. Public Liability Insurance, including Personal Injury and Property Damage Insurance, in an amount not less than \$1,000,000 naming the Agency as additionally insured.
3. Professional Liability, Errors and Omissions Insurance in an amount not less than \$1,000,000.

Inquiries

Please direct all inquiries regarding this RFP to:

Matt Colwell, P.E.
Water Division Manager

2310 Oro-Quincy Highway
Oroville, CA 95966
(530) 533-4578, ext. 212
mcolwell@southfeather.com

Attachments:

Location Map

Aerial Photo of Site

Process Schematic

Design Criteria

Description of Facilities Operation (from Operations Plan)

TTHM and HAA Data

Professional Services Agreement