November 6, 2008
Project No. 06-0024
Monterey Peninsula Water Management District
Post Office Box 85
Monterey, California 93942
Attention: Mr. Joe Oliver, Water Resources Manager
Subject: Proposal for Professional Hydrogeologic and Engineering Services; Phase 1 ASR Project, Fiscal Year 2008-2009 Assistance
Dear Joe:
In accordance with your request, Pueblo Water Resources, Inc. (PWR) is pleased to present this proposal for hydrogeologic and engineering services for the District's Aquifer Storage and Recovery (ASR) Project. Presented in this proposal is a detailed scope of work, schedule, and estimated costs to assist the District with various ASR-related tasks during the remaining period of Fiscal Year 2008-2009 (FY 2008-09).

## BACKGROUND

The water supply for the Monterey Peninsula is derived from the Carmel River and Seaside Groundwater Basin (SGB) systems. These two sources of supply have been constrained by recent regulatory decrees resulting from environmental considerations. ASR has been pursued by the District since 1996 as means to augment water supplies on the Peninsula. The overall objective of the ASR project is to further enhance the conjunctive use of water supplies in the Carmel River and SGB systems, to the benefit of both systems.

ASR on the Monterey Peninsula involves the diversion of excess flows from the Carmel River System for recharge, storage and subsequent recovery in the SGB. The excess water is captured by California American Water Company (CAW) wells in the Carmel Valley during periods when flows in the Carmel River exceed fisheries bypass flow requirements, treated to potable drinking water standards, and then conveyed through CAW's distribution system to Seaside. Recharge is accomplished via injection of the excess flows into specially designed ASR wells in the SGB. The injected water is stored in the SGB aquifer system until dry/high demand periods when it is recovered by the ASR wells and/or CAW production wells in the SGB. ASR benefits the resources of both systems by raising water levels in the SGB during the recharge and storage periods and reducing extractions from the Carmel River System during dry periods

PUEBLO WATER RESOURCES, INC • 4478 Market Street, Suite 705 • Ventura, CA 93003

The Phase 1 ASR Project consists of expanding the successful Santa Margarita Test Injection Well (SMTIW) project to include the addition of a second well and associated facilities in an expanded site area contiguous to the existing SMTIW site. As designed, the Phase 1 ASR Project will be capable of diverting and storing (on average) approximately 920 acre-feet per year (AFY).

For the Phase 1 ASR Project, the original SMTIW well and the second ASR well have been given the designations ASR-1 and ASR-2, respectively. Drilling and construction of ASR-2 (previously known as SMTIW No. 2) and an on-site monitoring well (MW-1) were completed in May 2007, and preliminary site grading and construction of underground utilities at the site were completed in April 2008. The remaining Phase 1 ASR Project site facilities are scheduled to be completed in 2009 in order to be ready for full scale injection operations at both ASR wells during the Water Year 2010 recharge season.

## PURPOSE AND SCOPE

The purpose of this project to provide hydrogeologic and engineering services related to the following aspects of the District's ASR program during FY 2008-09:

1. WY2009 ASR operations;
2. Project permitting;
3. Completion of the remaining Phase 1 ASR site facilities; and,
4. Evaluation of a Phase 2 ASR Project.

We understand that the District anticipates that it will be able to obtain water for recharge operations from the CAW system during Water Year 2009 (WY2009), beginning as soon as excess Carmel River system water is available, as per State Water Resources Control Board (SWRCB) permit allowance. The District has also planned and budgeted for the completion of the remaining permanent site facilities during FY 2008-09. We also understand that the District has submitted to the SWRCB a Petition for Change of water rights for an expanded ASR project (i.e., Phase 2) and desires assistance with further evaluating and defining a Phase 2 ASR Project. Based on our understanding of the District's needs, and our experience with this and similar ASR projects, we have prepared the following scope of services to assist the District with these aspects of the ASR project during the remainder of FY 2008-09.

## Scope of Services

## Task 1 - Water Year 2009 Operations Support

Task 1.1 - Project Management and Meetings This task includes the development of the WY2009 ASR operations program, attendance at various meetings during the course of the project, and overall project management.

PWR will review existing conditions at the site and meet with District and CAW staff at a kick-off meeting to discuss WY2009 program goals and scheduling. In addition, it is anticipated that on-going "ASR Coordination" meetings between the District and CAW will continue during the FY 2008-09 period. Consistent with past practice, it is assumed that meetings will be held on an approximate monthly basis and will be attended by a PWR Principal Engineer and/or Hydrogeologist, depending on meeting agenda and project needs at the time. To the extent feasible, PWR attendance at meetings will be coordinated with other project tasks. For budgetary purposes, it is assumed that PWR participation in about 50 percent of these meetings will be via conference call.

Task 1.2 - ASR Program Implementation and Field Assistance This task includes providing assistance to District staff with on-going ASR operations, data collection, and water sampling during the WY2009 program.

This will include assistance with the startup of WY2009 ASR operational phases and periodic downloading and maintenance of project dataloggers. This task also includes the provision of field assistance on an as-needed/requested basis to address critical project needs as they arise. For budgetary purposes, we have assumed this task will involve one two-day field visit per month by a Senior and/or Project Hydrogeologist.

Task 1.3 - Water Quality Program This task consists of implementation of the on-going water quality data collection program at the Phase 1 ASR Project site, which now includes monitoring at the new ASR-2 and MW-1 wells, as well as the existing ASR-1 (SMTIW No. 1) well. The WY2008 Sampling and Analysis Plan (SAP) will be revised for WY2009 to reflect experience gained during WY2008 in various sampling protocols, as well as recent requests made by the Regional Water Quality Control Board (RWQCB).

Specific water quality testing and analyses to be performed as part of the WY2009 water quality program include the following:

- Weekly monitoring and tracking of field water quality parameters during recharge, and monthly monitoring during recovery phases;
- Bi-Weekly sampling during the recharge and recovery phases for analysis of disinfection by-products (DBPs) and chloride ion to assess DBP formation/degradation and mixing of the injectate and native groundwater in the subsurface (recovery phase sampling may decrease if recharge phase volumes are small);
- Monthly sampling for analysis of the full suite of general mineral, general physical, organic carbon, and other constituents necessary for characterization and geochemical interaction assessment of injectate and

C:\Documents and Settings\Robert C. Marks\My Documents\Project Files\MPWMD\06-0020 Phase 1 ASR Project\06-0024 FY08-09\06-0024 pro.Nov08.doc
stored/backflushed waters to supplement field water quality and DBP data.

PWR will retain the services of a State Certified Analytical Laboratory for grab sample analyses (e.g., Monterey Bay Analytical Services, located near the District's office in Ryan Ranch). It is assumed that District staff will perform the bulk of the routine field parameter monitoring and grab sampling at the wells and delivery of samples to the laboratory. PWR will assist with these efforts on an asneeded/requested basis.

Task 1.4 - WY2008 Data Analysis and Reporting This task includes preparing a WY2008 Summary of Operations Report (SOR) summarizing the recharge operations and analysis of the well performance, water quality and level data collected during the WY2008 recharge season.

Special Note: As the District is aware, there is a "disconnect" between Fiscal Year cycles and Water Years (i.e., Fiscal Years run July through June, whereas Water Years run October through September). Past practice during the SMTIW project was for assistance contracts to coincide with Water Years, which resulted in an "overlap" or "carryover" from one Fiscal Year cycle to the next and sometimes complicated project and contract accounting.

In order to achieve consistency with the District's Fiscal Year cycles, our most recent contract amendment (Amendment No. 2) was limited to addressing project needs during the FY 2007-08 period, which ended before the WY2008 season was complete; therefore, detailed analysis and reporting of the complete WY2008 injection/storage/recovery (ISR) cycle was intentionally deferred until this Fiscal Year (the WY2007 SOR was completed under the FY 2007-08 project budget). Accordingly, WY2009 ends after the FY 2008-09 cycle (i.e., September 2008 versus June 2008) and the WY2009 SOR is planned to be completed during FY 2009-10.

## Task 2 - Permitting Support

Task 2.1 - Site Facilities Permitting As discussed above, the remaining Phase 1 ASR Project site facilities are scheduled to be completed during FY 200809. This task includes permitting support for these facilities in compliance with the City of Seaside's Conditional Use Permit (CUP) for the Phase 1 ASR Project. Specifically, CUP Condition No. 7 requires that prior to issuance of a building permit, the District shall submit an application to the City's Board of Architectural Review (BAR) for design approval of the site's perimeter fencing, landscaping, and buildings. It is our understanding that the BAR application will require the following:

1. Site Plan
2. Landscape and Irrigation Plan
3. Fencing Plan
4. Elevations of the Chemical/Electrical Building

In addition to the above, PWR will provide the required color and materials samples/presentation boards, as well as general assistance with the BAR application and permitting process.

Task 2.2 - RWQCB Permitting Assistance This task includes assisting the District in obtaining permits and/or cooperation with the Central Coast Regional Water Quality Control Board (RWQCB). Currently, there are no RWQCB permitting requirements that have been established for ASR projects in the region, as the injection of potable drinking water has not been considered a discharge of "waste". Accordingly, RWQCB permitting of the project under their Waste Discharge Requirements (WDRs) program has not been considered applicable and the RWQCB issued a waiver to the District for such requirements in July 2007.

The RWQCB has expressed their full support of the ASR project, citing its potential benefits in restoring the Carmel River and Lagoon habitats and offsetting overdraft conditions in the SGB (letter to the District and CAW, dated April 14, 2008). However, the RWQCB did express concerns about the potential for the leaching of metals (e.g., arsenic, nickel, uranium) from aquifer minerals as a result of injection. They also expressed concerns about attenuation of disinfection byproducts (DBPs) in the subsurface. To address these concerns, the RWQCB requested mineral leaching analyses, additional geochemical interaction modeling, and continued monitoring for DBPs in accordance with the WY2008 SAP. They further required that the results of this work be provided for their review no later than February 1, 2009.

PWR recently completed a report documenting the leaching and geochemical modeling analyses, which was transmitted to the RWQCB by the District for their review on October 14, 2008. The results of WY2008 SAP will be included in the Task 1.4 WY2008 SOR, which will also be transmitted to the RWQCB prior to their February 2009 deadline. The RWQCB indicated that, based on their review of this information, they will likely formally require monitoring and reporting via a projectspecific waiver resolution or a region-wide general ASR waiver resolution (for a waiver of WDRs) adopted by the RWQCB at a public hearing.

Given its evolving nature, it is anticipated that the District will need additional assistance from PWR in further dealing with the RWQCB on this issue. This will likely include attendance at various meetings, preparation of technical memoranda, modifications to the SAP, etc., in support of these efforts. For budgetary purposes, we have included 120 and 80 hours of Principal and Senior Professional time, respectively, for this task.

[^0] pro.Nov08.doc

## Task 3 - Engineering and Construction Management

Task 3.1 - PG\&E Upgrade Coordination This task includes ongoing engineering and PG\&E coordination assistance to upgrade the existing PG\&E service at the site for the new ASR-2 pump and upsized ASR-1 pump horsepower requirements. The objective of this task is to have all parties ready to implement the PG\&E upgrade no later than June 2009.

Task 3.2 - Engineering and Construction Management for Final Site Facilities
As mentioned previously, preliminary site grading (including an expanded backflush pit) and installation of underground facilities for the Phase 1 ASR Project site facility were completed earlier this year. The final design and installation of the remaining above ground facilities, including electrical switchgear, instrumentation, disinfection station, Chemical and Electrical Building, and above ground piping are scheduled for completion in FY 2008-09.

Our scope and budget for this task assume that the remaining site facilities will be completed in accordance with the Basis-of-Design (dated July 10, 2007) for the project. The Basis-of-Design has been the subject of on-going discussion at various ASR Coordination meetings with CAW since it was issued. Although there remain some unresolved design issues with regards to the future integration of the Phase 1 ASR Project into the Coastal Water Project (e.g., whether both wells would be pumped simultaneously for recovery), CAW has committed to certain infrastructural improvements to its distribution system (outside of the CWP) with the goal of providing the full Phase 1 ASR Project design injection flows (up to $3,000 \mathrm{gpm}$ ) by December 2009. It is our understanding that the District intends to have the ASR site facilities completed no later than that date in order to be ready to put the project into operation for the WY2010 recharge season.

In order to achieve that goal, the following services will be required:

1. Finalize facilities engineering and design,
2. Prepare plans and specifications,
3. Provide bidding support, and,
4. Construction management.

Specific task items in support of these items included in our scope of work for this task are as follows:

1. Base Survey of existing site conditions
2. Geotechnical soils investigation for building foundation
3. Structural \& Architectural design for Chemical / Electrical Building
4. Civil / final grading-paving- drainage for site
[^1]Monterey Peninsula Water Management District
ASR Project, Fiscal Year 2008-2009
November 6, 2008 (Project No. 06-0024)
5. Utilities engineering
6. Site electrical and instrumentation
7. Landscaping \& Fencing design
8. Mechanical / Process piping
9. Specifications and Bid Document Preparation
10. Assist District with bidding and contract award process.

To expedite the work and complete the design engineering in an efficient and cost-effective manner, various sub consultants will be used to complete some of the above tasks.

During the development of project design, progress meetings will be held with District staff and various stakeholders to ensure project goals and community and regulatory standards are maintained. The City of Seaside, State Department of Public Health, and CAW will be regularly kept abreast of the project design and polled for preliminary approval and input as needed.

The plan set for construction drawings is envisioned to include approximately 44 sheets, in the following general areas:

- General information - 4 sheets
- Civil, grading, paving drainage - 5 sheets
- Structural / Architectural - 7 sheets
- Mechanical / piping-10 sheets
- Chemical Feed System - 3 sheets
- Electrical - 6 sheets
- Instrumentation - 4 sheets
- Landscape / Irrigation - 3 sheets
- Fencing - 2 sheets

Specifications will be prepared in CSI general format, and will be incorporated into the District's standard 'boilerplate' construction contract provisions.

Although facility design will be closely coordinated with CAW, the facility will be capable of operating as a "stand-alone" ASR plant, independent of potential future CAW and/or Coastal Water Project facilities. Where feasible, the facility will utilize CAW-compatible components, including piping, valving, controls, and instrumentation. Direct SCADA intertie to CAW operating systems is not included in our scope of work, however.

Construction observation services will also be provided once a construction contract has been awarded. Only periodic observation is envisioned, as the project is relatively straight-forward in nature. Project engineer-level inspection is budgeted for an overall average of $50 \%$ time for a 90 -day construction period.

In an effort to maintain an expedited schedule and provide better control of major equipment product selection, PWR proposes to have MPWMD pre-purchase certain facility components, including the major electrical switchgear and drives and the upsized ASR-1 well pump/motor assembly. PWR will prepare separate bid solicitations for these items early in the design work.

## Task 4 - Phase 2 ASR Project Evaluation

This task includes evaluation of an expanded ASR project in the SGB. The District recently submitted a Petition for Change of water rights from the Carmel River System for a Phase 2 ASR Project with a maximum additional annual diversion of approximately 2,900 acre-feet. Although the technical feasibility of ASR wells in the SGB has been demonstrated through years of operational testing at the SMTIW, advancing a Phase 2 ASR Project requires further evaluation and definition of a variety of factors, including the following:

1. Timing and availability of excess Carmel River flows;
2. CAW infrastructural capacity to divert, treat, and convey additional flows to the SGB;
3. Availability of storage space in the SGB aquifer system for recharge;
4. Hydrogeologically preferred locations in the SGB for ASR wells; and,
5. Identification of potential ASR well sites;

This task includes the evaluation of the above factors for a Phase 2 ASR Project. It is understood that the District will make available recent CVSIM modeling results (e.g., performed for the Phase 1 Project EIR/EA and/or the CWP) that reflect the current "rules-of-the-river". It is also understood that hydraulic modeling analysis of the CAW conveyance system will require the cooperation of CAW and its consultants. PWR will coordinate these efforts and identify infrastructural improvements that may be required to divert, treat, and convey the desired flows for Phase 2 ASR Project.

Assuming no "fatal flaws" are identified by the above evaluation, up to three potential specific sites will be identified and ranked. Preliminary well designs and site layouts will be prepared. The overall objective of this task is to develop a formal Project Description for the Phase 2 ASR Project that will form the basis for preparing an Environmental Impact Report (EIR), City of Seaside permitting, and site acquisition efforts.

## Services Not Included

Completion of the FY 2008-09 ASR program may require the services of other entities as well as additional costs or fees, which are not included in our scope of services. These items are assumed to be provided by District staff, contractors retained by the District, CAW, or others. Items that are not a part of our services include the following:

- Data-loggers and transducers for the Phase 1 ASR Project wells and other existing SGB monitoring wells (assumed District provided);
- PG\&E application or processing fees for initiation of upgraded electrical service for ASR-2;
- Water quality sampling and analysis of any offsite wells (assumed CAW provided);
- Construction of the site facilities;
- Permit fees;
- Cost of water, electricity, or other utilities;
- Any others items not specifically included in PWR's scope of services.


## SCHEDULE

Our proposed scope of services addresses the anticipated project needs during the remainder of FY 2008-09. The anticipated schedule for key project milestones is presented below:

- WY2009 ASR Operations - It is anticipated that the WY2009 recharge season will begin as early as December 2008 and extend through May 2009 (i.e., 6 months).
- WY2008 Summary of Operations Report - Completed in January 2009.
- Site Facilities Completion - Actual construction of the remaining site facilities is estimated to take three months; therefore, in order to complete the project by June 2009, the following schedule is anticipated:

1. Preliminary Engineering, Design, and Permitting: Beginning in December 2008 and completed by February 2009.
2. Preparation of Final Designs, Plans, Specifications and Bidding Documents: Completed by March 2009.
3. Contractor Solicitation and Bidding Period: April 2009.
4. Facilities Construction: May through June 2009.

- Phase 2 ASR Project Evaluation - Project Description completed by June 2009.


## ESTIMATE OF COSTS

Our estimated costs for services related to the FY 2008-09 ASR program were developed based on the proposed scope of work and our 2008 Fee Schedule (attached). Our services are provided on a time plus expense basis. The estimated labor costs for the major tasks, and the costs for the equipment, outside services, and other direct costs that will be required for completion of the project are fully itemized in the attached spreadsheet, with overall task budget subtotals summarized in the table below:

## Phase 1 ASR Project, FY 2008-09 Program Estimated Costs

| Task | Estimated Cost |
| :--- | ---: |
| 1 - WY2009 ASR Operations Support | $\$ 59,600$ |
| 2 - Permitting Support | $\$ 48,965$ |
| 3 - Engineering and Construction Management | $\$ 189,875$ |
| 4 - Phase 2 ASR Project Evaluation | $\$ 65,525$ |
| Other Direct Costs | $\$ 10,850$ |
| Outside Services | $\$ 215,579$ |
| Subtotal | $\$ 590,394$ |
| Project Contingency (10\%) | $\$ 59,039$ |
| TOTAL ESTIMATED COST | $\$ 649,433$ |

As shown in the above table, the estimated labor, other direct costs and outside services for FY 2008-09 totals $\$ 590,394$, not including project contingency. The total cost estimate for PWR's services shown in the table above is $\$ 649,433$, which includes a ten percent contingency should unanticipated project needs arise. In accordance with previous District projects, we recommend that the project contingency be held for authorization by District staff upon written notice and justification by PWR.

Monterey Peninsula Water Management District
ASR Project, Fiscal Year 2008-2009
November 6, 2008 (Project No. 06-0024)
We understand that in order to authorize this work, your Board must first approve a formal contract amendment. Based on our current workload, we believe that we can commence work within 14 days of your authorization.

We appreciate the opportunity to provide continued assistance to the District on this important project, and look forward to a timely and successful completion of the work. As always, please do not hesitate to contact us if you have any questions or require any additional information.

Sincerely, Pueblo Water Resources, Inc.


Principal Hydrogeologist


Stephen P. Tanner, P.E. Principal Engineer
RCM.SPT
Attachments: 2008 Fee Schedule
Cost Estimation Spreadsheet

## PUEBLO WATER RESOURCES, INC 2008 FEE SCHEDULE

Professional Services
Principal Professional ..... \$155/hr
Senior Professional ..... \$135/hr
Project Professional ..... \$125/hr
Staff Professional ..... \$ 100hr
Technician ..... \$ 90/hr
Drafting ..... \$ 70/hr
Word Processing ..... \$ 55/hr
Other Direct Charges
Subcontracted Services Cost Plus 15\%
Outside Reproduction Cost Plus 15\%
Per Diem ..... \$ 150/day
Vehicle \$ 75/day




MONTEREY PENINSULA WATER MANAGEMENT DISTRICT Professional Services for Phase 1 ASR Project
Pueblo Project No.: 06-0024
ESTIMATED FEE SUMMARY


[^0]:    C:\Documents and Settings\Robert C. Marks\My Documents\Project Files\MPWMD\06-0020 Phase 1 ASR Project\06-0024 FY08-09\06-0024

[^1]:    C:\Documents and Settings\Robert C. Marks\My Documents\Project Files\MPWMD\06-0020 Phase 1 ASR Project\06-0024 FY08-09\06-0024 pro.Nov08.doc

