

January 25, 2007

**Work Effort Estimate  
Follow-on Questions and Report Revisions for  
Monterey Peninsula Water Management District  
Desalination Alternatives Analysis Report**

The tasks below are taken from Board and public comment at the June 29, 2006 Board Workshop on the Desalination Alternatives report by Bookman-Edmonston, Separation Processes, and Malcolm Pirnie, and from supplemental material submitted by project proponents. A cost estimate for addressing these questions is included. The B-E team has incurred costs up to the \$55,000 cap in the current agreement for professional services, so all costs to revise the report will be in addition to that amount.

Since the June 29<sup>th</sup> Board meeting, a fourth alternative has been identified. This alternative would involve fitting an ocean-going vessel with desalination process equipment, and shuttling the desalinated water to shore using tankers or barges. This alternative is being promoted by a consortium of interests being led locally by the engineering firm PBS&J in association with the Water Standard Company (WSC). At the request of WSC, B-E entered into a November 7, 2006 Non-Disclosure Agreement for information to be provided for a comparative analysis. To date, the following eight documents have been received:

- Quote from General Electric for turbine-generator set
- Insurance estimate from B&P International
- Operating cost estimate for 20 mgd seawater conversion vessel
- Capital cost estimate for 20 mgd desalination equipment
- Capital cost estimate for 20 mgd seawater conversion vessel & barges
- Tanker barge cost estimate
- Estimate to purchase & refurbish ship and barges
- GE fuel cost estimate

Absent from these materials is any analysis of the distribution system improvements needed to move water to the MPWMD area, and the docking and transfer facilities for the barges bringing desalinated water to shore. A design for these facilities is planned by project proponents, but it is unclear whether it will be available timely to this scope of services. Nonetheless, the B-E team will make use of all information available during the course of this assignment to produce the best alternatives comparison practicable. The unique maritime features of this alternative (vessel cost,

retrofitting, and operation) will be evaluated based on the quality and detail presented – the B-E team will not undertake a verification of the maritime costs. This scope does not include development of water distribution engineering, and will rely exclusively on an analysis of information provided by project proponents.

For this supplemental scope of work, the Bookman-Edmonston/Separation Processes/Malcolm Pirnie team will perform the following tasks:

1. Review CWP data sources and compare costs for the Basic versus the Regional projects, esp. O&M costs
2. Compare CWP per-acre-foot cost to current CalAm cost (MPWMD to provide current cost)
3. Perform analysis of unit cost of entire CWP, including ASR element (Klein)
4. Prepare more detailed side-by-side cost comparison. Include consideration of ROW, and size, capacity, and life of pipelines (Lehman, Edwards)
5. Prepare more detailed unit (per acre-foot) cost comparison, to the limit of available data (potentially including data gaps, uncertainties, contingencies, sunk costs, mitigation and monitoring, etc.)
6. Correct as necessary the characterization of P/SM water quality data, both data included in NPDES Application Appendix C, and regular sampling P/SM asserts has occurred since then (using conceptual design report on the MBRSDP that purportedly states pesticides were not detected in the intake water -- Poseidon Resources to provide the detailed supporting data to B-E/GEI)
7. Describe process for determining feasibility for SCDP project large enough to meet Order 95-10 deficit and legal lots of record (Edwards)
8. Incorporate and elaborate on (as appropriate) answers provided at the Workshop into the revised report:
  - a. Seasonal storage might be needed for the Sand City Desalination Project if it is projected that during a high flow period the amount of flow would exceed the outfall.
  - b. Paul Finley, representing RBF Consulting, project managers for the Coastal Water Project, stated that water quality information provided for the Coastal Water Project was obtained from intakes in Moss Landing Harbor for testing required for a National Pollution Discharge Elimination System (NPDES) Permit.
  - c. Peter MacLaggan, representing Poseidon Resources, project manager for the MBRSDP stated that the NPDES permit for the intake and outfall at the National Refractories site expired in May 2006. A renewal application is in process. Consideration of renewal of the permit for the full-scale plant should occur following permitting of the pilot project. He noted that the pilot project includes an innovative measure to reduce the rate at which water flows to the intake, so that when fish hit the screens they can swim away. Also planned, is the installation of a series of screens at the intake that will capture organisms and flush them back into the ocean.
  - d. David Laredo stated that California American Water (Cal Am) does have a limited right to acquire property through a process established by the

Public Utilities Commission. The MPWMD or Pajaro/Sunny Mesa Community Services District could utilize the power of eminent domain.

9. Address Pajaro Sunny Mesa/Poseidon comments transmitted to MPWMD District Engineer via e-mail July 14, 2006.
10. Address California American Water comments transmitted to MPWMD District Engineer via e-mail August 30, 2006.
11. Provide analysis for the Water Standard Company Seawater Conversion Vessel proposal to a level comparable to that performed on the CWP, MBRSDP, and SCDP
12. 20 copies of revised final report

Our estimate to perform these tasks is \$27,200 under the terms of our existing contract. Travel to Monterey and presentation at a Board Workshop are included in this fee. The work, including District review, will be completed within ten weeks of notice to proceed. This proposal and fee estimate will be valid for 90 days.

Sincerely,

BOOKMAN-EDMONSTON/GEI  
Mark S. Williamson

**Cost Estimate**  
**2006 Monterey Peninsula Seawater Desalination Projects Evaluation**  
**Supplemental Tasks**  
**Bookman-Edmonston/Separation Processes/Malcolm Pirnie**

	Principal Engineer	Project Manager	Project Engineer	Clerical	Expenses	Total
Refine Comparable Costs	6	12	8			\$4,572
Regional CWP		6				\$1,038
Expanded SCDP		6				\$1,038
WSC Seawater Conversion Vessel	6	16	32			\$9,224
Refine Unit Costs	4	8				\$2,168
Water Quality	4	10	8			\$3,834
Report Revisions	8	4		4	\$800	\$3,428
Board Workshop	8				\$300	\$1,898
<b>Total</b>	<b>36</b>	<b>62</b>	<b>48</b>	<b>4</b>	<b>1100</b>	<b>\$27,200</b>
Cost per hour	196	173	165	72	1.10	
<b>Total Cost</b>	<b>\$7,056</b>	<b>\$10,726</b>	<b>\$7,920</b>	<b>\$288</b>	<b>\$1,210</b>	<b>\$27,200</b>

1/25/07