

SCAO-7000
ADM-13.00

June 2, 2005

MEMORANDUM

To: Files

From: William Rohwer
Planning Officer

Subject: Santa Margarita River Project Conjunctive Use Project, Recommendation of Alternatives for Further Investigation

On June 29, 2004, the plan formulation process was initiated at a workshop to identify alternatives for appraisal level analysis. Three concepts for diversion and delivery of Santa Margarita River water were identified, along with a number of additional features that could be added to these basic concepts to increase average annual yield or provide other benefits. Twenty-two alternatives were identified for evaluation at appraisal level. Concept 1 involved enhancement of the existing diversion, percolation, storage, and recovery facilities on Marine Corps Base Camp Pendleton (Camp Pendleton). Concept 2 involved new diversion facilities at Fallbrook and enhancement of the existing diversion, percolation, storage, and recovery facilities on Camp Pendleton. Concept 3 involved minimal improvements to the existing diversion and percolation facilities, construction of in-stream check structures for enhanced recharge, and installation of additional recovery wells.

During the workshop, criteria and weighting factors were developed to rate each alternative's ability to meet those criteria. This was called the "Alternatives Screening Matrix." The Screening Matrix is one of the tools used to identify the alternatives for further study.

Later, during the appraisal analysis, it became apparent that it would be advantageous to "bookend" the water treatment costs. In other words, cost estimates and net average annual yield needed to be prepared for advanced water treatment versus minimal water treatment. This resulted in 22 alternatives with advanced water treatment and 22 alternatives with minimal water treatment.

From July through November 2004, drawings were prepared, reconnaissance-level engineering was performed, and cost estimates were completed. Existing information regarding the other factors in the Screening Matrix was also collected.

In December 2004, each of the alternatives was evaluated using the Alternatives Screening Matrix and assigned points for its ability to meet each criteria element. Then the points were totaled for comparison against each of the other alternatives. It was apparent that the alternatives in Concept 3 resulted in lower point totals, principally due to lower average annual yields and more difficult environmental issues. Thus, none of the Concept 3 alternatives are recommended for further study.

Of the Concept 1 alternatives, 1B, 1C, 1D, and 1E had the highest Screening Matrix scores. Of the Concept 2 alternatives, 2B had the highest Screening Matrix score. The principal reason that these alternatives received the highest scores is the increased average annual yield from the development of surface and groundwater supplies outside of the Santa Margarita River basin. Public Law 108-7 specifically directed Reclamation to do a feasibility study to "...address the current and future municipal, domestic, military, environmental, and other water uses from the Santa Margarita River [emphasis added], California." Thus, it is clear that feasibility level studies for the development of water from other river basins is not within the feasibility study authority, nor within the intent of Congress. Therefore, all of the components of Alternatives 1B, 1C, 1D, and 2B involving San Mateo Creek basin sustained yield pumping or conjunctive use are not recommended for further study at feasibility level.

On January 26, 2005, Reclamation was informed by the Naval Weapons Station, Detachment Fallbrook (Detachment Fallbrook) that unexploded ordinance may be present at Depot Lake, which is the site of the treatment wetlands and storage dam in Alternative 1E. Detachment Fallbrook could not commit to a timetable for clearing the site for investigation or construction. Therefore, Alternative 1E is not recommended for further study.

The concept of "close proximity wells," contained in Alternative 1I, did not result in increased yield over more conventional extraction methods, and is therefore, not recommended for further study.

Advanced water treatment is recommended for further study for several reasons. First, advanced water treatment makes the issue moot of which water treatment rule applies to the project (e.g., groundwater versus groundwater under the influence of surface water). This has been a contentious issue for Camp Pendleton in the past and would be divisive for the Study Team. Second, ensuring all of the project water meets the definition of groundwater could reduce the average annual yield of the project. Third, advanced water treatment would reduce the total dissolved solids (TDS), which in turn, would improve the quality of the tertiary treated effluent from Camp Pendleton's and Fallbrook Public Utility District's (FPUD) waste water treatment plants. Fourth, advanced water treatment makes delivery of water to San Diego County Water Authority (SDCWA) a possibility (if the infrastructure is constructed) when supply exceeds the combined demand of Camp Pendleton and FPUD. Fifth, the project would be able to treat emerging contaminants of concern. And last, the project would be able to treat some of the known contaminants in the groundwater on Camp Pendleton.

To simplify the Pre-Feasibility analysis, Reclamation assumed for all alternatives with advanced water treatment that the brine concentrate would be disposed to the Pacific Ocean via a new

brine line outfall. Reclamation's discussions with its partners on the Southern California Water Recycling Projects Initiative Study, CH2M Hill, Geosoils, and City of Oceanside indicate that a new ocean outfall would be much more costly than brine disposal via Oceanside's existing ocean outfall. A new brine line outfall is not recommended for further study.

Putting brine into the Oceanside Outfall will require the creation of vacant capacity. Fortunately, Fallbrook Public Utility District (FPUD) has 2.4 million gallons per day (mgd) of outfall capacity for its wastewater disposal. FPUD currently treats its wastewater to recycled water quality standards that comply with Title 22 of California Code of Regulations. The "Title 22" recycled water is suitable for non-potable reuse. FPUD sells some of its Title 22 water to California Department of Transportation and other users, with the unsold portion delivered to the ocean via the Oceanside Outfall. FPUD's Outfall pipeline is 16 inches in diameter and follows an alignment through Detachment Fallbrook and Camp Pendleton to Oceanside. All alternatives for further study should include vacating FPUD's Outfall pipeline through full use of its Title 22 water in conjunction with full use of Camp Pendleton's Title 22 water from its P002 Wastewater Treatment Plant (currently under construction).

Alternative 1H, by far, would develop the highest cost water per acre foot. It also has no capability of vacating space in FPUD's Outfall pipeline for brine discharge. Including such capability would increase the cost per acre foot even further. Therefore, Alternative 1H is not recommended for further study.

However, Alternatives 1F and 1G proposed the use of about 2,000 acre-feet of Title 22 water as a seawater intrusion barrier to increase the project's average yield by about 1,000 acre-feet annually. Alternatives 1F and 1G also proposed the construction of treatment wetlands in Pueblitos Canyon or Newton Canyon, respectively. The purpose of the treatment wetlands would be to de-nitrify the Title 22 water prior to percolation in the lower Ysidora basin for the seawater intrusion barrier.

Pueblitos Canyon is a more favorable location for the treatment wetlands than Newton Canyon because (1) it is above the floodplain of the Santa Margarita River, (2) it is on the same side of the Santa Margarita River as the percolation area, and (3) it is on the same side of the Santa Margarita River as FPUD's and Camp Pendleton's pipelines for Title 22 water. Therefore, Alternative 1F is recommended for further study. (Note: Alternative 1F is essentially Alternative 1A plus Pueblitos Canyon treatment wetlands)

On February 18, 2005, Reclamation and FPUD met with the San Diego Regional Water Quality Control Board (SDRWQB) to discuss the need for a treatment wetland. Based upon the quality of FPUD's Title 22 water and the proposed quality of Camp Pendleton's Title 22 water, it was apparent that treatment wetlands would not be necessary for groundwater recharge. If the Title 22 water enters surface waters of the Santa Margarita River basin, then treatment wetlands would be necessary to reduce the total nitrogen, nitrate, and phosphorus levels. Further investigation of the need for treatment wetlands is recommended during the Feasibility Study. However, Pueblitos Canyon treatment wetlands and associated pipelines should be included in the EIS and EIR.

The Title 22 water proposed to be recharged to the groundwater aquifer must also meet the TDS standard of 750 milligrams per liter (mg/l) contained in the *Water Quality Control Plan for the San Diego Basin*. Thus, advanced water treatment of project water would be necessary to ensure this standard could be met by the Title 22 water from FPUD and Camp Pendleton. Preliminary studies indicate the TDS of project water would need to be reduced to approximately 425 mg/l to ensure the Title 22 water would not exceed a TDS of 750 mg/l. Advanced water treatment is recommended to be included in all alternatives for further study. In addition, the TDS target for advanced water treatment is recommended for further study to ensure FPUD's and Camp Pendleton's Title 22 water can be used for the seawater intrusion barrier.

Alternative 1F includes, among many other features, pumping plants and a bi-directional pipeline for delivery of project water to Fallbrook and imported water to Camp Pendleton during emergencies. It is prudent to recommend for further study at least one alternative, such as Alternatives 1C and 1D, that would provide Fallbrook another means of receiving project water. In these alternatives, project water would be delivered via a cross-Base pipeline to Municipal Water District of Orange County (MWDOC). Water would then be exchanged with SDCWA for delivery to Fallbrook. To provide Camp Pendleton water supply reliability, the cross-Base pipeline must be bi-directional. Advanced water treatment would be necessary to reduce the TDS of project water to a level comparable to MWDOC's current water supply.

It is recommended that either Alternative 1C or 1D be modified for further study, as follows:

1. Remove all features related to sustained yield pumping of the aquifer in San Mateo Creek, or conjunctive use of San Mateo Creek.
2. Include advanced water treatment to reduce the TDS of project water to a level comparable to MWDOC's current water supply.
3. Include a brine line from the advanced water treatment plant to the Oceanside Outfall.
4. To increase project yield and to make room in the Oceanside Outfall for the brine, include use of Title 22 water for a seawater intrusion barrier and Pueblitos Canyon treatment wetlands for de-nitrification, if necessary.
5. Include features necessary to make the cross-Base pipeline bi-directional.

It is also prudent to recommend for further study an alternative that would enable Fallbrook and Camp Pendleton to develop and use project water independently. Concept 2 alternatives would facilitate this.

Alternatives 2A, 2C, and 2D include a new pipeline from Morro Hill to Camp Pendleton for emergency water supply. However, it was learned after completion of the Pre-Feasibility analysis that there is insufficient capacity at Morro Hill to provide Camp Pendleton with emergency water. Therefore, Alternatives 2A, 2C, and 2D are not recommended for further study.

Alternative 2B includes a bi-directional cross-Base pipeline that provides water supply reliability, as well as a customer for project water during times when supply exceeds Camp Pendleton's demands. Therefore, Alternative 2B is recommended for further study, modified as follows:

1. Remove all features related to sustained yield pumping of the aquifer in San Mateo Creek, or conjunctive use of San Mateo Creek.
2. Include advanced water treatment to reduce the TDS of project water to a level comparable to MWDOC's current water supply.
3. Include a brine line from the advanced water treatment plant to the Oceanside Outfall.
4. To increase project yield and to make room in the Oceanside Outfall for the brine, include use of Title 22 water for a seawater intrusion barrier and Pueblitos Canyon treatment wetlands for de-nitrification, if necessary.

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