Colusa Sub-basin
Sub-basin-level Review of Proposed Projects

Sub-basin Water Requirements and Sources

The Colusa Sub-basin (see Figure 1 in the Introduction and Figure 1 at the end of this sub-basin review) is located west of the Sacramento River in Glenn, Colusa, and Yuba counties. Agricultural uses (primarily rice) dominate the sub-basin with needs totaling approximately 2 million acre-feet per year (maf/yr) and accounting for 95 percent of the water demand. Wildlife refuges (primarily the Sacramento, Delevan, and Colusa national wildlife refuges) account for most of the remaining 5 percent of demand. Municipal and industrial use is very limited given lack of development in the sub-basin. The majority of water users in the sub-basin are Central Valley Project (CVP) contractors (settlement and water service); the remaining users either utilize groundwater, drainwater, or possess riparian rights.

Surface water (mainly the Sacramento River via CVP contracts) is the primary source of supply currently utilized, with groundwater accounting for between 15 percent (in average conditions) and 25 percent (in dry conditions) of supply. Drainwater use is extensive in the Colusa Sub-basin given the high degree of agriculture (rice in particular) and supplies from 350 to 450 thousand acre-feet (taf), which is equivalent to 15 to 20 percent of the total sub-basin requirement.

Water Requirements/Shortages

Water availability in the sub-basin generally exceeds current total requirements (by approximately 300 taf) in average conditions. CVP water service contractors within the Tehama-Colusa Canal Authority (TCCA) may experience some decrease in available supply in average years, but generally are able to meet the majority of requirements in such years. In critically dry conditions (years when the Sacramento River Settlement Contractors' [SRSCs] supply is reduced by 25 percent and water service contractors' supplies are further reduced [historical maximum has been 65-percent reduction]), requirements are projected to be deficient by approximately 300 taf. Opportunities exist through transfers (e.g., CVP water and Forbearance Agreement) or other means for SRSCs to assist in years when water service contractors' (both north and south of the Delta) CVP contract quantities are reduced and SRSC receive full supplies.

Proposed Projects

As shown in Table 1 and on Figure 1 (at the end of this review), twelve projects (not including three institutional "projects") were evaluated in the Colusa Sub-basin, ranging from short- and long-term programs to short-term feasibility studies. Of these twelve, six were identified that could potentially produce water by 2003. Total cost of implementation for these short-term projects was estimated at approximately $8.7 million for conjunctive water management and $8.8 million for system improvement projects. A total of 200 to

400 taf was identified as potentially available from full implementation of the six long-term projects that could supply water, with an associated cost totaling approximately $1 billion. In addition, three of the "projects" are investigations to assess and inventory countywide water resources or district facilities. Proponents include Glenn-Colusa Irrigation District (GCID), TCCA, Maxwell Irrigation District (MID), Orland Unit Water Users' Association (OUWUA), Orland-Artois Water District (OAWD), Reclamation District No. 108 (RD 108), and Glenn County.

TABLE 1
Short-term Projects Proposed to Produce Water by 2003 in the Colusa Sub-basin

Project / Proponent	Project Type	Supply (acre-feet/year)	Capital Cost ($)	Issues
GCID Development of Conjunctive Water Management Facilities (Project 5B; short-term component utilizing landowner wells)	Conjunctive Water Management	50,000 to 60,000	300,000 (for short-term landowner project); 2.6 million (for pilot study/wells in support of long-term project)	Some local concern regarding impacts to adjacent groundwater users
RD 108 Pilot Well Development/Conjunctive Management Project (Project 10A)	Conjunctive Water Management	15,000 to 20,000	1.3 million	Coordination among public and private entities, public perception, regulatory compliance
MID Conjunctive Use Program (Project 6A)	Conjunctive Water Management	8,000 to 13,000	2.0 million	Funding
Stony Creek Fan Conjunctive Water Management Program (Project 8A)	Conjunctive Water Management	5,000	2.5 million	Public perception, funding, institutional arrangements between project proponents and potential transfer partners
Total Conjunctive Water Management		**78,000 to 98,000**	**8.7 million**	
GCID Flow Measurement and Existing Automation Program (Project 5C/D)	System Improvement	40,000	8.7 million	Water would not be available to downstream users; potential impacts to adjacent groundwater users
TCCA Development of Conveyance Alternatives for TCCA Emergency Water Supplies (Project 13C)	System Improvement	0 to 38,000	100,000	Stony Creek fishery issues, environmental impacts, permitting, coordination among participants
Total System Improvement		**40,000 to 78,000**	**8.8 million**	

Management Program (Project 8A) is a joint effort between OAWD, OUWUA, and GCID. Phase 1 of this project is underway and scheduled for completion in early 2003. The RD 108 (Project 10A) project has been under evaluation for a number of years. RD 108 was part of a pre-feasibility-level investigation of potential conjunctive use in the lower Colusa Basin. This effort was completed by the Department of Water Resources (DWR) in 1997. Since this time, RD 108 has continued to cooperate with DWR in further investigating conjunctive use opportunities, collecting data to support further study, including monitoring groundwater conditions. The MID project is in a position to move forward. MID has completed geological testing and is prepared to move forward on well construction and dry-year arrangements.

GCID Flow Measurement and Existing Automation Program (Project 5C/D) is a system improvement project that is ready for design and installation immediately upon funding. Siting issues have been resolved, and there should be little to no environmental documentation required by this project. TCCA Development of Conveyance Alternatives for TCCA Emergency Water Supplies (Project 13C) proposes to implement an interim solution to operate a constant head orifice (CHO) and develop a feasibility study for Stony Creek conveyance options. The study could proceed immediately.

Existing Funding

The Glenn County Monitoring Program received AB 303 funding for $250,000. The GCID Glenn County Groundwater Monitoring Program and Model Development (Project 5E) and Project 8A are being funded through the DWR Integrated Storage Investigation Program. Project 5E is not projected to produce water by 2003. Minimal supplies (<5,000 ac-ft/yr) could potentially be generated by Project 8A during the 2001/2002 water year, although these supplies could be limited to meeting local needs. None of the other projects evaluated have received outside funding support.

Institutional Projects

Also under discussion for the workplan are several projects that would facilitate transfers within the sub-basin, particularly between SRSCs and the water-deficient water service contractors. These projects are designed to resolve transfer and conveyance issues, including rescheduling of water, ability to pay, use of project power, tiered pricing policy, and other policies affecting cost and conveyance of transferred water.

Interrelationship of Projects

The majority of the projects proposed in the Colusa Sub-basin focus on the conjunctive management of surface- and groundwater sources (including groundwater assessments and monitoring programs) as well as agricultural system improvement/modernization projects. Short- and long-term projects proposed by GCID and OUWUA/TCCA, and MID would need to be evaluated in terms of maximizing potential supply opportunities while ensuring minimal impacts, given the potential proximity of the projects particularly with regard to groundwater effects.

Certain projects share many common elements such as Projects 8A, 5B, 5E, and 9A (Orland Unit Water Users' Association and TCCA Regional Water Use Efficiency Project). These projects have been developed independently from one another and therefore may

collectively overstate the long-term yield capability of the basin. Subsequent efforts would need to be made to more clearly identify the interrelationship among these projects to develop a more accurate cumulative estimate of yield.

Benefits

Implementation of both the short- and long-term projects would assist in meeting the proponent's and other in-basin needs (including managed environmental uses, i.e., wildlife refuges) in dry years, as well as out-of-basin needs both north and south of the Delta depending on which user was determined to be the beneficiary. However, as described under Implementation Challenges below, the short-term projects that are proposed to provide water by 2003 would have potential impacts including decreased availability of drainwater to downstream users (Project 5D) as well as perceived impacts to groundwater levels (Project 5B). Long-term projects are anticipated to have greater long-term benefits in terms of greater overall supply quantity and reliability, as well as increased operational flexibility at the district and sub-basin level in addition to CVP operations.

Implementation Challenges

Short-term Projects

The projects proposed to produce water by 2003 are by definition anticipated to face relatively minor implementation issues. Some concerns have been raised in the past about the amount of water GCID's landowner well program (Project 5B) produced related to potential impacts to adjoining users including OAWD and OUWUA. Accordingly, production could be affected to secure stakeholder acceptance and ability to implement projects without the need for an extensive environmental documentation process. The proposed RD 108 and MID projects are not anticipated to encounter substantial implementation issues, but should be monitored in conjunction with Project5B as determined appropriate. GCID's system improvement project would likely generate concerns from downstream users (e.g., Colusa Basin Drain Mutual Water Company) related to decreased availability of drainwater. Depending on the quantity of water at issue, downstream users would likely be seeking to revise their current agreement with GCID to ensure adequate supplies. A number of short-term components of long-term projects were also identified across the sub-basin. These components represent the initial (or next step for projects already initiated) steps toward ultimate future implementation and would require stakeholder involvement throughout their development.

Long-term Projects

As discussed above, many of the long-term projects (e.g., Projects 8A, 5B, 5E, and 9A) are potentially linked in a number of ways and it would be best it they were coordinated. Projects 8A and 9A in particular are likely to require substantial capital investments and extensive stakeholder involvement including environmental review. In general, project benefits and impacts would need to be evaluated to account for district, sub-basin, basin, and south-of-Delta needs and to determine how best to coordinate the operation of related projects to maximize benefits.

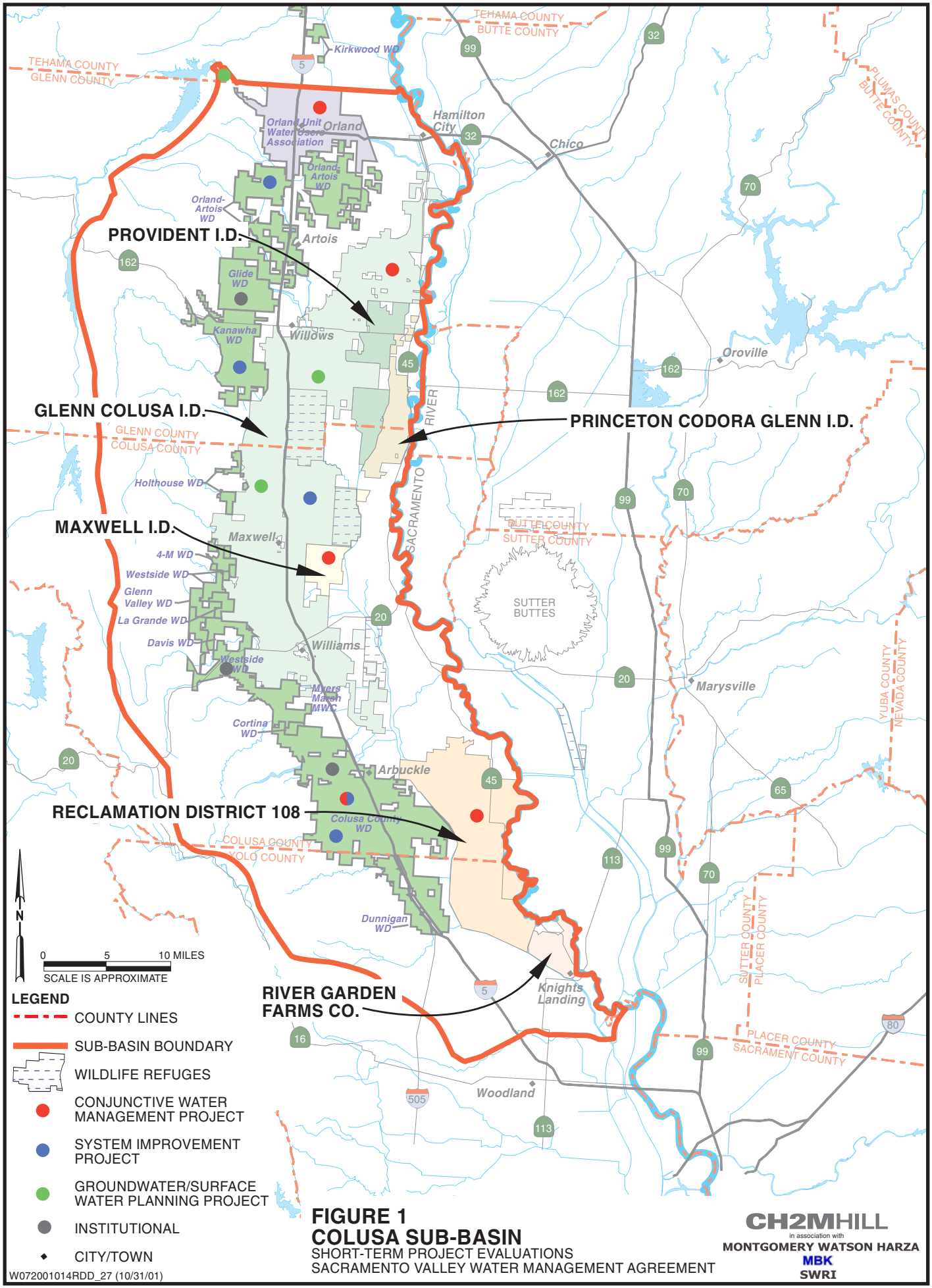

FIGURE 1
COLUSA SUB-BASIN
SHORT-TERM PROJECT EVALUATIONS
SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT

CH2MHILL
in association with
MONTGOMERY WATSON HARZA
MBK
SWRI