Schlumberger
WATER SERVICES

Work Plan for a Groundwater Management Plan for the Sonoma Valley, California

Draft

Prepared for the Sonoma County Water Agency

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1.0 INTRODUCTION

Presented in this work plan is an approach to develop and implement a groundwater management plan for the Sonoma Valley, Sonoma County, California.

There is no statewide groundwater management plan in California, and historically, policy makers have continued to leave the regulation of groundwater to local control. Falling groundwater levels, impacts on surface supplies, regulation of storage, water quality degradation and protection, protection of small users, expense of adjudication, etc., have been cited in multiple reports as reasons to pursue more effective groundwater management. Sometimes referred to as the "no action alternative," in many areas of the state, local groundwater control or management means no control or management. Adverse impacts to groundwater such as water quality degradation from lowered groundwater levels and seawater intrusion, geothermal upwelling, or land subsidence are some of the potential results of the lack of effective groundwater management. The Sonoma Valley region would benefit from an active, effective basin-wide groundwater management program to address these kinds of issues and sustain the groundwater resource for future generations.

The work plan is organized into four main sections including an introduction, groundwater management overview, summary of the stakeholder assessment conducted in Sonoma Valley, and the description of the phased approach to the development of a groundwater management plan for the Sonoma Valley. Section 1.0, the introduction, includes the purpose, background information and setting for Sonoma Valley. Section 2.0, the groundwater management overview, provides information on groundwater management elements, groundwater legal, and groundwater management institutions. Provided in Section 3.0 is a summary of the stakeholder assessment conducted by the Center for Collaborative policy. Section 4.0, the phased approach to developing a groundwater management plan, includes eight tasks incorporating five phases to developing the groundwater management plan in Sonoma Valley, a schedule and budget.

Purpose

The purpose of this work plan is to provide a strategy and approach for developing a groundwater management plan using a collaborative process in the Sonoma Valley region of Sonoma County, California. The groundwater management plan will be developed in compliance with the Groundwater Management Act (Water Code Section 10750 et seq) commonly referred to as Assembly Bill 3030, and Senate Bill 1838 which amended Water Code Section 10750 (Statutes of 2002, Chapter 603). The approach proposed in this work plan is non-regulatory, and includes a cooperative, facilitated process through establishing a stakeholder group to provide input to the groundwater management plan as it is developed. Appendix A provides a list of the required and recommended components of a groundwater management plan.

Background Information

The Board of Directors of the Sonoma County Water Agency (SCWA) directed SCWA staff to develop a work plan for a groundwater management program in the Sonoma Valley. SCWA contracted with Schlumberger Water Services to prepare this work plan, and with the Center for Collaborative Policy to conduct an assessment of issues and concerns related to water supply and groundwater management in the Sonoma Valley, which is incorporated into this work plan.

Setting

The Sonoma Valley area, one of several basins in the Sonoma County that uses a combination of groundwater and surface water delivered from the Russian River for supply, is the subject of this work plan. The Sonoma Valley area, like the rest of Sonoma County and a good portion of the state, has experienced rapid population growth and accelerated urbanization in response to economic expansion over the past few decades. Sonoma Valley is a relatively small and well-defined hydrologic basin and has also experienced rapid agricultural (vineyard) development, as a result of its recognition worldwide for producing premium wines. The Sonoma Valley basin has some focused areas of adverse impacts to groundwater, which include declining groundwater levels, water quality degradation from seawater intrusion and upwelling of geothermal waters, and potential impacts to surface water along watercourses from groundwater/surface-water interaction. An effective, locally planned and implemented basin-wide groundwater management program would provide the tool for the Sonoma Valley basin to address these adverse impacts and to achieve long-term sustainability of groundwater resources.

2.0 GROUNDWATER MANAGEMENT OVERVIEW

The term groundwater means water beneath the surface of the Earth in the saturated zone. Frequently referred to as the hidden resource, groundwater is typically out-of-sight, out-of-mind, difficult to tell exactly where it is, how much of it there is, and who is using it.

The term groundwater management is used to define an integrated program of pumping and recharge, both natural and artificial, to achieve long-term sustainability of the resource. Groundwater management really means some level of supervision and coordination by some organization(s) over water of often-uncertain quantity, quality, recharge, and use. The future of the Sonoma Valley looks different depending upon whether or not there is an effective groundwater management program:

Table 1
The Future With or Without Groundwater Management

With collaborative, active groundwater management that achieves a sustainable yield, stakeholders can:	Without viable groundwater management measures, Sonoma Valley stakeholders can expect:
Ensure long-term viability of the groundwater aquifer	Possible permanent damage to aquifer
Maintain water quality	Poor groundwater quality due to accelerated seawater intrusion and geothermal upwelling
Prevent aquifer depletion and stabilize groundwater levels	Declining basin groundwater levels over time
Ensure safe drinking water	Increased water treatment costs
Meet existing and future water demands	Drilling deeper wells at greater expense
Diversify supply through conjunctive use	Potential land subsidence
Stakeholders decide and agree on groundwater management and maintain local control	Potential legal battles or adjudication for management control
Coordinate with and support Sonoma Creek restoration efforts	Possible decreased baseflows for Sonoma Creek and other creeks in the Sonoma Valley
Sustain groundwater quantity and quality for future generations through groundwater management	Uncertain quality and quantity of groundwater in the future without groundwater management
Increased opportunity for state funding for water projects.	Increased pumping costs

A groundwater management plan is a document that provides the framework to implement a groundwater management program in a basin or portion of a groundwater basin. A groundwater management plan may be short or long, simple or complex. Questions that need to be answered in developing a groundwater management plan

include who manages the resource, how much, when, where and why. A groundwater management plan is really a planning tool that assists overlying water providers in maintaining a safe, sustainable and high quality groundwater resource within a groundwater basin. Groundwater management plans are intended to be "living" documents that updated and refined over time to reflect changing conditions and to progress made in achieving groundwater management objectives.

Groundwater management plans have become a required "baseline" document for agencies seeking grant funds available from the State of California. The majority of the populated groundwater basins have some sort of groundwater management in place, with over 200 individual and joint agency groundwater management plans in the state of California and more are being developed. Sonoma County is one of the areas in the state that does not have a groundwater management plan. An adopted and implemented groundwater management plan, that is, a groundwater management program, is a minimum requirement for agencies seeking competitively awarded grant funds for the construction of groundwater projects or groundwater quality projects.

GROUNDWATER MANAGEMENT PLAN ELEMENTS

Effective, comprehensive groundwater management requires defining goals and basin management objectives, plans for action to meet management objectives, and a plan for implementation. A groundwater management plan provides a road map for solving problems and new opportunities by outlining the powers, procedures, actions, budget and timetable for a groundwater management program. An effective groundwater management plan and program will result in more effective use of the groundwater resource in conjunction with surface water. The five elements of groundwater management are:

1. Political – The political process is the collective means to legitimize and prioritize decision-making and value judgments. The local community makes authoritative choices among alternatives through political groundwater management. To help satisfy the political process, a groundwater management plan should be prepared in a collaborative, consensus-based stakeholder process, with representative stakeholder input during development of management objectives, conflict resolution, and during implementation of the resulting groundwater management program.
2. Legal – Water rights, the most controversial, fundamental issue in groundwater management is a legal issue. Groundwater rights, and in many cases, surface water rights must be addressed no matter what groundwater management approach is taken in a basin. The legal aspects of groundwater management are very complex and are explained in more detail in subsequent sections.
3. Institutional – The jurisdictional question of who is to govern and how management will be achieved is key to developing and successfully implementing a groundwater program. The institutional element of groundwater management is explained in more detail in subsequent sections.

4. Technical – Understanding the unique physical, chemical and hydrogeological characteristics is essential to developing an effective groundwater management plan. The US Geological Survey is conducting a groundwater basin assessment for the Sonoma Valley, which will assist in providing a technical understanding of the Sonoma Valley.
5. Economic – Determining and being able to afford the cost of groundwater management plan implementation is another basic requirement for developing a good plan and successfully implementing an effective groundwater management program. Intricately linked with the "determining and being able to afford the cost of groundwater management" is deciding who should pay and how much. Additionally, economic justification of groundwater management plan implementation should always include the cost of not implementing a groundwater management program, a much more difficult cost to factor.

GROUNDWATER LEGAL

California has a complex system of groundwater law, rights, and policy that has evolved through legislative and court battles over the last century and a half. The law has traditionally differentiated surface water and groundwater rather than regulating water resources through a system that fully integrates the two, in spite of nature and the Earth's hydrologic system. This differentiation of surface water and groundwater, regulation of surface and non-regulation of groundwater, has made groundwater vulnerable to adverse impacts from non-sustainable extraction, making effective and coordinated groundwater management a necessity in most basins.

Reasonable and Beneficial Use

All water resource use in California, including groundwater, is subject to the constitutional requirement of reasonable and beneficial use (California Constitution, Article X, Section 2). In general terms, beneficial use has been held to include domestic, agricultural, industrial, general municipal use, social, recreational, or instream use. Water rights holders must demonstrate that the use is both reasonable and beneficial.

Legal Character of Groundwater

"Groundwater" is technically defined as subsurface water that occurs in soils and the pore spaces or openings in geologic formations that are fully saturated at a positive pressure (Freeze and Cherry, 1979). In California, groundwater is classified based on its character and distribution as either:

1. Percolating groundwater – water that oozes, seeps, or filters through the soil by gravity; a vast mass of water confined in a basin, always moving toward some stream or outlet. Percolating groundwater is not subject to permitting by the State Water resources Control Board (SWRCB).
2. A subterranean stream flowing through known and defined channels – most frequently characterized by the State as moving through permeable material, typically

alluvium, which underlies or comprises the bed of a stream in its natural state and is essential to the existence of the stream; legally considered to be flowing within a subterranean stream because the beds and banks surrounding the subsurface channel deposits are relatively impermeable. Groundwater flowing with a subterranean stream is subject to regulation governing surface water and permitting jurisdiction of the SWRCB.

Nearly all groundwater in California is considered percolating groundwater. By legal definition, all groundwater that is not subsurface flow or groundwater within a known and defined channel is considered to be percolating groundwater. For groundwater to be classified as a subterranean stream flowing through a known and defined channel, the SWRCB has generally considered that the following four physical conditions must exist:

1. A subsurface channel must be present;
2. The channel must have relatively impermeable beds and banks;
3. The course of the channel must be known or capable of being determined by reasonable inference; and
4. Groundwater must be flowing in the channel.

Absent evidence of the existence of the four physical conditions listed above, groundwater is presumed to be percolating groundwater, and not a subterranean stream.

Groundwater Rights

California has developed a unique system of water rights in which overlying, appropriative and prescriptive rights are all recognized under specific conditions. Table 2 provides summary information on the principal groundwater rights in California and relative priorities of rights.

Table 2 California Groundwater Rights	
Overlying Right	Correlative between overlying owners. Prior and paramount to appropriative right.
	Arise solely from property ownership, and thus are generally not limited in quantity by the history or frequency of water use.
	Actual historic production maintained against prescription through doctrine of "self-help."
Appropriative Right	First-in-time, first-in-right as between appropriators.
	Junior to overlying right.
	Defined by the historical quantity of use.
	May be forfeited (i.e., lost) by non-use.
Prescriptive Right	Acquired by actual, open, notorious, adverse, exclusive and continuous use for a period of five years.
	Cannot be acquired against public utilities, municipalities, or other public entities.
	Limited to extent of maximum annual "self-help" (i.e., production by overlying owners during prescriptive period).

Overlying Rights

Overlying rights are incidental to the real property and allow the landowner extract groundwater from beneath the property for use on the overlying parcel. Overlying rights arise solely and exclusively from the property ownership, and therefore are not generally limited by historical record of past groundwater use, nor can they be lost by non-use. Overlying rights are correlative rights, that is, they are of equal priority to adjacent landowners, but are superior to appropriative rights. Basically, California landowners have a correlative right to extract as much groundwater as they can put to beneficial use. No state permit is required to drill a well and pump groundwater, however, ministerial permits may be required in regard to the construction of the well, for example from the Department of Health Services or pursuant to local building ordinances. Unless the basin has been adjudicated or other local ordinances apply, no governmental permission is required to produce groundwater.

Appropriative Rights

Appropriative rights involve the act of diverting the groundwater from its source and applying the water to a beneficial use, typically for municipal use, and do not attach to the overlying land. Appropriative rights are not considered overlying rights, and are junior to overlying rights, meaning that overlying rights have priority over appropriative rights. Further, the law only allows the appropriation of that quantity of groundwater that is a surplus in the basin or sub-basin to the present cumulative needs of overlying groundwater users. If no surplus groundwater exists, overlying landowners may bring

court action to stop the taking of water by appropriators. Priority of rights between appropriators is based on the rule "first-in-time, fist-in-right": when surplus groundwater supplies are exceeded, the most junior (youngest) rights are extinguished first, and most senior (oldest) rights are extinguished last. Appropriative rights are based on the historical quantity of use and may be forfeited (lost) by non-use.

Groundwater Rights, Safe Yield and Overdraft

The concepts of safe yield and overdraft become important when disputes arise within a groundwater basin, as all groundwater rights, whether overlying or appropriative, may be limited by the concept of "safe yield". Safe yield, which is a somewhat debated term, is generally considered to mean "the maximum quantity of water which can be withdrawn annually from a groundwater supply under a given set of conditions without causing an undesirable result" (GRA, 2005). Undesirable results are generally considered to refer to unwanted changes such as water quality degradation, seawater intrusion, land subsidence, uneconomic use of groundwater, caused by a gradual lowering of groundwater levels which may induce adverse basin impacts.

If the cumulative groundwater production exceeds the basin's safe yield, the basin is considered to be in a state of overdraft. Overdraft occurs where the trend of historic groundwater level measurements indicate a continual drop in groundwater levels over time, even after wet year conditions. If the cumulative production does not exceed the safe yield, the basin is considered to be in a state of surplus.

The concept of safe yield is typically the focal point of groundwater basin adjudication, and is used to establish the groundwater rights in the basin, although typically it is after groundwater levels have dropped significantly and the basin is in overdraft. Further, safe yield is the potential trigger for financing replenishments and the requirement for establishing prescriptive rights.

Prescriptive Rights

A party may claim prescriptive rights to groundwater once the basin has been in a condition of overdraft for a period of more than five years by showing that the groundwater use has been actual, notorious, adverse, exclusive and continuous for a period of at least five years. A prescriptive right is a right acquired by a party who openly uses the water to which another party has an existing prior right. The establishment of a prescriptive right may provide an appropriator with an equal or superior right to extract groundwater to that of overlying landowners, based on the record of extractions during the prescriptive period. Prescriptive rights cannot be acquired against public utilities, municipalities, or other public entities. Overlying owners can help preserve their overlying right by continuing to pump and use water for reasonable and beneficial uses under the doctrine of "self-help." Filing in court for "injunctive relief" as soon as overdraft begins is a legal means to fight prescription, although it can be very expensive and cost-prohibitive to an individual landowner.

GROUNDWATER MANAGEMENT INSTITUTIONS

In California, the regulation and management of groundwater has been left to local control at least partly because of a general preference for local, hands-on management. Virtually every legislative attempt to manage groundwater at a statewide level over the past 100 years has been met with significant opposition. State-level groundwater management is generally limited to the collection of groundwater level and pumping data in certain areas and the formulation of well construction and abandonment procedures. California groundwater management institutions include:

- Groundwater Management Plan (AB 3030 Plan)
- Statutory Authority in the California Water Code and Special Legislation
- City and County Ordinances
- Coordinated Agreements
- Adjudicated Groundwater Basins

The most common form of groundwater management by institution is through the development of an AB 3030 plan, which is a voluntary and non-regulatory approach. According to DWR, there are more than 200 agencies that have participated in AB 3030 plans, and more than 120 of those involve coordinated plans with other agencies. Groundwater management under an AB 3030 plan is the desired approach for the Sonoma Valley, and the procedure and requirements are described in more detail in the next section.

Another form of groundwater management is through the California Legislature enacting statutes establishing several special act agencies and groundwater management districts. These special act agencies and districts can enact ordinances to regulate the amount of groundwater that is extracted and limit its place of use within the district's boundaries. There are 22 kinds of general act districts or local agencies identified in the California Water Code with specific statutory provisions to manage surface water. Some of these agencies have specific statutory authority to exercise some form of groundwater management; some have exercised their authority and others have not.

Cities and counties have the right to regulate groundwater under their police power of the state, in an effort to promote the health, safety and welfare of citizens. For example, in one county ordinances were enacted prohibiting the mining of groundwater within the county, or extraction of groundwater for export without a permit granted by the County Board. Ordinances have been enacted in 28 counties in the state; Sonoma has no such ordinance.

Groundwater management can be accomplished among local water purveyors in a basin through a general coordinated agreement. Technical basin analysis and development of a groundwater basin model can be completed through such an agreement. Joint capital

projects and joint operational policies can also be accomplished through a coordinated agreement. Enforcement actions and fee collections may be jointly shared among the parties of a coordinated agreement.

Several challenges are associated with the coordinated agreement approach. While contractual arrangements are often useful in resolving individual issues between purveyors, these arrangements are much more difficult to utilize as groundwater management issues become more complex. More important, however, is the use of groundwater by other parties in the basin such as overlying owners. Effective groundwater management may require these parties to also become signatories to the coordinated agreement, and overlying owners' groundwater interests are often divergent from the interests of the purveyors. Consequently, complete representation of all of the basin users is more difficult under a contractual arrangement approach.

Adjudication is that form of groundwater management where the courts define the amount of groundwater that can be extracted under the landowners' correlative rights. Adjudication occurs when there have already been adverse impacts from extraction in a groundwater basin or sub-basin and landowners and other overlying parties have not been able to settle the dispute over how much groundwater can rightfully be extracted by each landowner and other party. The plaintiffs must pay for court-directed studies using the available data, in order to arrive at an equitable distribution of the groundwater that is available on an annual basis. These court-directed processes can be lengthy and very costly, although some have been resolved with a court-approved negotiated settlement, called a stipulated judgment.

Groundwater Management Act (AB 3030)

In response to mounting pressure for authorization for groundwater management legislation, a systematic procedure for an existing local agency to develop a groundwater management plan was added to the California Water Code Section 10750 et.seq., in 1992. The legislation is commonly referred to as AB 3030 and it provides authority and encouragement to local agencies to work cooperatively and engage in groundwater management programs on a regional or basin-by-basin approach. The legislation is applicable to all groundwater basins in California with some exceptions: areas previously subject to management by a local agency, special act district or water pursuant to court order. A local agency must first obtain the consent of another local agency water purveyor, a regulated investor-owned utility, or a mutual water company to manage groundwater within their boundaries. A groundwater management plan does not apply to the extraction of groundwater to serve a single-family residence, except in the case of basins previously identified as "critically over-drafted" in Department of Water Resources Bulletin 118-80.

If a local agency provides water service, the agency may adopt a groundwater management plan by resolution or by ordinance and implement the plan within its service

area. Prior to adopting a resolution of intention to draft a groundwater management plan, the local agency is required to hold a hearing after publishing notice pursuant to Government Code 6066. The notice must indicate that the agency is considering the adoption of a management plan pursuant to California Water Code Section 10750 et. seg. After conducting a hearing, the local agency may then draft a resolution of intention to adopt a groundwater management plan. Within two years of the date the initial resolution is adopted by the agency, the groundwater management plan must be prepared and adopted. After the plan is prepared, but prior to final adoption, a second hearing must be conducted with information available on the plan. If the groundwater management plan is not prepared and adopted within two years, a new resolution of intention must be adopted.

There are no legally required components of a groundwater management plan under AB 3030. Voluntary components that the plan may address and procedures for adopting rules and regulations to implement the plan are provided in California Water Code Section 10750 et. Seg. (Provided in Appendix A). However, the Amendments to Section 10750 et seq. (SB1938 [Stats 2002, Ch 603]) added the requirement that new groundwater management plans prepared under Section 10750 et seq. must include documentation that a written statement was provided to the public "describing the manner in which interested parties may participate in developing the groundwater management plan," which may include appointing a technical advisory committee (Water Code § 10753.4 (b)).

There are certain requirements to obtain state funding for groundwater projects. These requirements are provided in Appendix A, and include:

1) Provide documentation that a written statement was provided to the public "describing the manner in which interested parties may participate in developing the groundwater management plan," which may include appointing a technical advisory committee (Water Code § 10753.4 (b)).
2) Include a plan by the managing entity to "involve other agencies that enables the local agency to work cooperatively with other public entities whose service area or boundary overlies the groundwater basin." (Water Code § 10753.7 (a)(2)). A local agency includes "any local public agency that provides water service to all or a portion of its service area" (Water Code § 10752 (g)).
3) Provide a map showing the area of the groundwater basin, as defined by DWR Bulletin 118, with the area of the local agency subject to the plan as well as the boundaries of other local agencies that overlie the basin in which the agency is developing a groundwater management plan (Water Code § 10753.7 (a)(3)).
4) Establish management objectives (MOs) for the groundwater basin that is subject to the plan. (Water Code § 10753.7 (a)(1)).
5) Include components relating to the monitoring and management of groundwater levels, groundwater quality, inelastic land surface subsidence, and changes in surface flow and surface water quality that directly affect groundwater levels or

quality or are caused by groundwater pumping. (Water Code § 10753.7 (a)(1)). Consider additional components listed in Water Code § 10753.8 (a) through (l).

6) Adopt monitoring protocols for the components in Section 7 (Water Code § 10753.7 (a)(4)). Monitoring protocols are not defined in the Water Code, but the section is interpreted to mean developing a monitoring program capable of tracking changes in conditions for the purpose of meeting MOs.

3.0 SONOMA VALLEY STAKEHOLDER ASSESSMENT

As part of the initial assessment on the readiness of the Sonoma Valley to develop and implement a groundwater management program, a stakeholder groundwater issues assessment was conducted (CCP, 2006). The stakeholder assessment approach and process is summarized below, and a copy of the report is provided in Appendix B.

Introduction

SCWA enlisted the Center for Collaborative Policy, Sacramento State University, (CCP) to conduct an assessment of issues and concerns related to water supply and groundwater management and to learn if and how stakeholders might want to address these issues. The CCP provides impartial mediation services as part of its mission to build capacity of public agencies, stakeholder groups and the public to use collaborative processes to improve policy outcomes. CCP has provided the majority of facilitation services utilized by the DWR on water resources and groundwater management planning. One helpful tool is the situation assessment, in which an independent mediator meets with interested stakeholders to identify parties and issues, analyze potential areas of conflict and agreement, and make recommendations on how to proceed.

Interviews

CCP met with SCWA staff to identify an initial list of individuals to interview and then relied on interviewees for additional referrals to ensure a broad range of perspectives was presented. CCP staff conducted 16 interviews involving 30 people representing a range of water-related interests and viewpoints on groundwater management. This included conducting interviews with individuals and small groups when appropriate. Two meetings were conducted with grape growers from the region.

Questions focused on concerns related to water supply, stakeholder involvement, and information needs. CCP staff received permission to share interviewee comments without attribution in its summary report. Every effort was made to accurately represent the diversity of opinions, identify areas for substantive negotiation, and recommend steps for moving forward with groundwater management in the Sonoma Valley.

Sample interview questions included in the CCP Sonoma Valley Groundwater Assessment Report are provided in the appendix.

Interview Findings

Almost everyone interviewed agreed that groundwater shortages are on the rise. The primary question and dilemma is what to do about it. Since livelihoods and land values are often tied to water, knowing how much or little is available and used is sensitive information. The Sonoma Valley is largely rural, with people working the land and connected to the area for generations. Therefore, deciding who is appropriate to manage groundwater, something that, most perceive, has managed itself, is not a simple matter. While views differ about the information needed to make water management decisions, almost everyone agrees that water supply must be diversified and that the public needs to understand this.

- Water Supply - Stakeholders from many perspectives suggest it is time for residents of Sonoma Valley and Sonoma County to change their attitudes about water.
- Groundwater - Interviewees report that pumping existing quantities of groundwater is not sustainable.
- Groundwater - Quality is also a concern.
- Recycled Water - Recycled water is viewed favorably and expanded use is encouraged.
- Land Use - Linking land use and water, including housing and new vineyards, is an area of concern that should be considered as part of the groundwater management process.
- Diversify Supply - Interviewees who supply water or deal with water policy expressed strong support for the need to diversify the water supply.
- Information Gathering and Data Analysis - Any efforts at managing groundwater in the Sonoma Valley will have to negotiate issues related to well monitoring and data analysis.
- Information Gathering and Data Analysis - Interviewees feel that conducting an objective hydrologic assessment could provide a framework for planning.
- Groundwater Management Planning - Motivation for groundwater management planning exists.
- Goals and Scope - If a groundwater management plan were to move forward, some offered hopes it would prevent further depletion of the aquifer, limit quality or shortage issues, and increase recharge.
- Jurisdictions and Leadership - Multiple agencies have jurisdiction in the Sonoma Valley and an interest in water issues there.
- Water Resources Education - Most interviewees noted that there is a great deal of misinformation related to water supply and management and groundwater in Sonoma Valley.

Recommendations

Based on the results of the interviews, CCP made several recommendations:

1) The Sonoma Valley Region is ready for a groundwater management planning effort.
The primary purpose of the assessment was to make a recommendation on whether development of a groundwater management plan for the Sonoma Valley should proceed, and if so, how that work might be structured. Based on results of interviews with key stakeholder representatives in the Sonoma Valley, CCP recommended the Sonoma County Water Agency move forward with efforts to develop a groundwater management work plan by forming a Basin Advisory Panel to represent stakeholder interests and partner with SCWA to develop a groundwater management plan.

2) Use Collaboration to Address Groundwater Management Program Development
CCP recommended moving forward using a collaborative process and forming a Basin Advisory Panel to guide this effort. In making this determination, the CCP identified several conditions necessary to sustain a collaborative.

According to the CCP, almost all interview participants recognize that groundwater shortages exist and that current groundwater practices are not sustainable in the long term. Most groundwater users who participated in the interviews want to have a role in groundwater management decisions and would prefer not to relinquish control to any agency or to adjudication. As such, a role for the key stakeholders must be identified.

Another reason for recommending collaboration is that stakeholders articulated concern about sensitive issues, such as data collection and monitoring, while demonstrating room for negotiation about how to address these tasks. Although these issues could prove challenging, generating mutually acceptable and beneficial outcomes is most likely through direct, interest-based negotiation among stakeholders. Further, the California Department of Water Resources has several programs that provide possible funding for technical expertise and facilitation to support the work of stakeholder collaborative to reach the desired outcomes of this overall effort.

3) Convene a Basin Advisory Panel
The primary vehicle for stakeholder input would be a Basin Advisory Panel (BAP). The BAP would engage actively in planning and making decisions on the development of the Sonoma Valley Groundwater Management Plan. The plan would be developed under the Groundwater Management Act (Assembly Bill 3030). AB3030 processes are non-regulatory and voluntary. Developed in phases, the plan would include agreed-upon management objectives, protocols for monitoring and data collection, and implementation of adaptive management techniques.

The Basin Advisory Panel membership should meet a range of criteria through all its members (no one member is meant to meet all criteria). Members would represent the following interest groups:

- Economic interests

- Environmental interests
- Groundwater users: growers, dairies, water districts/suppliers, and domestic well users
- Government with jurisdiction in Sonoma Valley and expertise in water supply, land use and zoning

In addition, stakeholders would represent the following perspectives:
- County-wide perspective
- Geographic distribution throughout Valley
- Located in Sonoma Valley
- Political acumen
- Technical understanding

The CCP will work with interested parties to identify panel members in the next few months. The BAP would review and finalize its initial membership at an early meeting.

The CCP recommended that the BAP be a consensus-building body. The BAP would strive for consensus (agreement among all participants) in all its decisions. Reports or products of the BAP would reflect the outcome of the stakeholder discussions. All negotiated agreements, documented in reports, would be forwarded to the SCWA Board of Directors.

4) Design and Implement a Public Outreach Plan
Given the level of interest in groundwater and the importance of the Basin Advisory Panel's work, local citizens, decision-makers and elected officials must stay abreast of Panel deliberations and decisions. At the beginning of this effort, CCP recommends that the Basin Advisory Panel and appropriate SCWA staff or its consultant design a public outreach plan to keep interested parties informed and educated about decisions moving forward through the Basin Advisory Panel. The Panel would play an active role in implementing the public outreach plan. Panel members could help identify interested parties and conduct briefings with constituents and elected officials. Other outreach tools might include meetings and workshops, newsletters, and public information materials.

5) Develop a Phased Approach to the Work Plan
A phased approach to developing the groundwater management plan frames stakeholder discussion, creates clear milestones for briefing constituents and encourages the stakeholder group to evaluate progress and make a conscious decision to continue. For this reason, a phased approach to the work plan is recommended. As described below, it presents a preliminary framework for the negotiation: group organization, education and understanding, management objectives, a monitoring plan, and implementation. Schlumberger, the technical consultant, will develop the actual work plan with a timeline to complement the phased approach presented in this assessment report. The BAP would meet regularly to carry out the tasks defined below and in the development of the groundwater management plan.

4.0 PHASED APPROACH TO DEVELOPMENT OF A GROUNDWATER MANAGEMENT PLAN FOR SONOMA VALLEY

The development of a groundwater management plan will involve a facilitated, collaborative process, incorporating multiple, local stakeholders from the Sonoma Valley, and will include public agency representatives from the City of Sonoma, Valley of the Moon Water District, County of Sonoma, and Sonoma County Water Agency. The process will be lead and facilitated by a mediator from the Center for Collaborative Policy (CCP). The CCP is under contract with the California Department of Water Resources (DWR) and the SCWA is working to enter into a Memorandum of Understanding (MOU) with DWR to engage the services of CCP at little or no cost to SCWA.

As proposed in this work plan, SCWA and its consultant will develop the groundwater management plan with key input by the stakeholders through the facilitated process. The US Geological Survey, DWR, and SCWA and its consultant will provide technical support to the facilitated process.

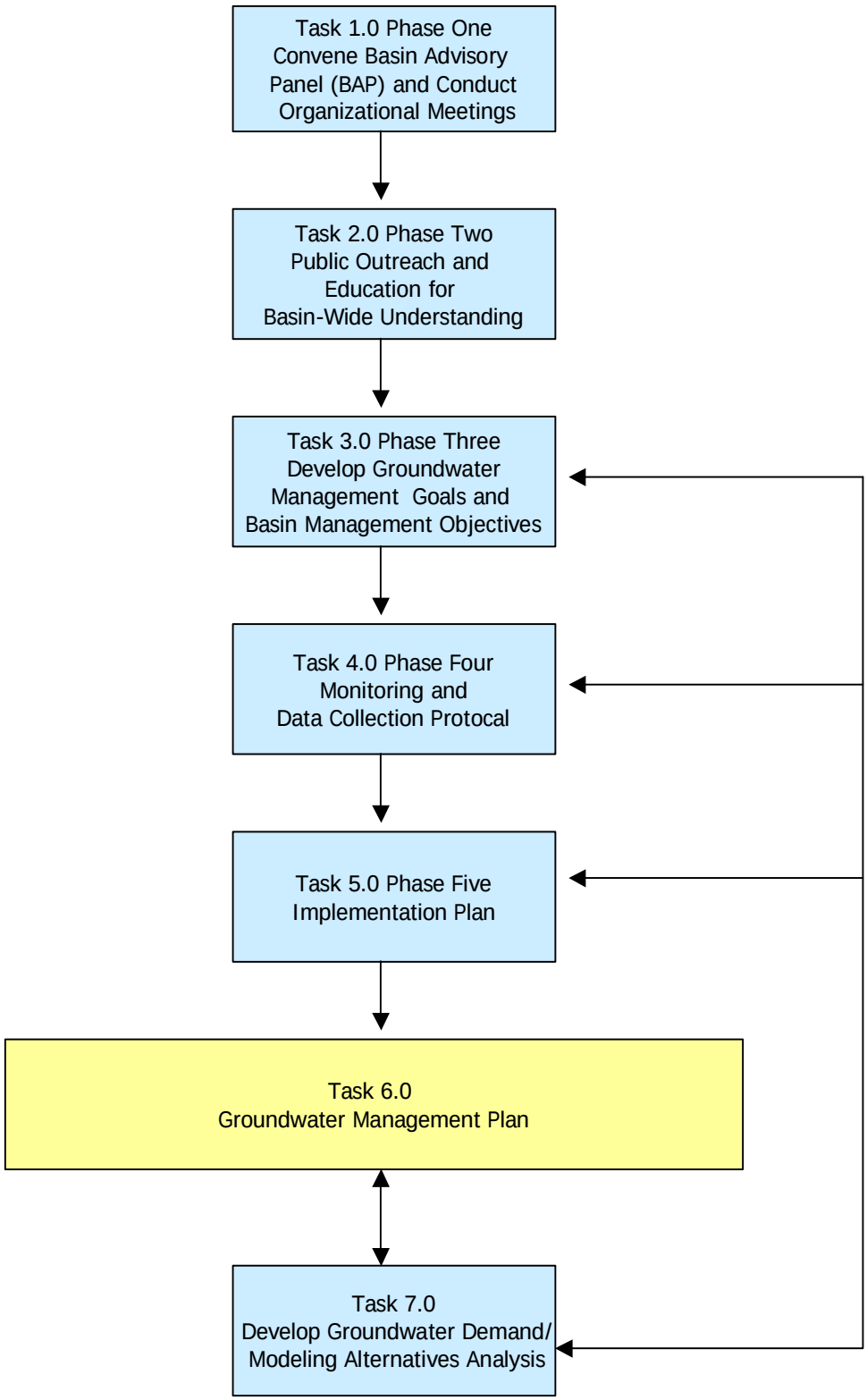
The primary core of this facilitated process will be a Basin Advisory Panel of representative stakeholders dominantly from the Sonoma Valley area. It is envisioned the Panel will meet monthly and perhaps more often on occasion over the one to two year period of developing the groundwater management plan for Sonoma Valley.

The development of a groundwater management plan is a somewhat complex process, and will be completed in phases as recommended by CCP:

- Phase One – Convene Basin Advisory Panel (BAP) and Conduct Organizational Meetings – Months 1 through 3
- Phase Two - Public Outreach and Education for Basin-Wide Understanding – Months 4 through 15
- Phase Three – Develop Groundwater Management Goal and Basin Management Objectives – Months 5 through 7
- Phase Four – Monitoring and Data Collection – Months 8 through11
- Phase Five – Implementation Plan and Final Draft Groundwater Management Plan – Months 12 through 15

Phases one through five are tasks one through five of the work plan, and consist of the contribution and participation of the BAP in the development of several major elements of the groundwater management plan. Task 6.0 is the actual development and production of the complete groundwater management plan by the SCWA and its consultant. Task 7.0 involves hydrologic analysis to assess spatial variation in groundwater pumping with differing water supply and water reuse scenarios. Task 8.0 describes the contracting process and timeline required for developing the groundwater management plan as described in this work plan. A flow chart illustrates the relationship between tasks below.

Figure 1 - Schematic Flow Chart
Development of Groundwater Management Plan
For the Sonoma Valley



Task 1.0 Phase One – Convene Basin Advisory Panel (BAP) and Conduct Organizational Meetings

Phase One Schedule: Months 1 through 3
Phase One Products: Group Charter, Mission, and Ground Rules

The first phase of developing a groundwater management plan for Sonoma Valley will be to develop a list of representative stakeholders to approach and convene in a Basin Advisory Panel. The BAP will meet monthly throughout the process of developing a groundwater management plan and will provide input to the process on behalf of their various stakeholder groups. During Phase One, the BAP will have two to three organizational meetings to discuss and form consensus on various processes including decision-making, membership, relationship to decision making entities, responsibilities for communicating with constituents, media relations, and overall work plan, including objectives and schedule. As mentioned above, the Basin Advisory Panel would also develop recommendations on the public outreach plan. The Panel would grapple with some decisions over the first few months of its work in parallel with technical work to be performed under Phase 2 for the basin assessment report. Some of these questions would include:

- What subcommittees or technical work groups might best support the Panel's work?
- What is the best method to educate the broader community on water supply issues?
- What types of financial resources are available through the California Department of Water Resources and how might the group obtain them?
- What structure would best support implementation of a groundwater management plan (Lead Agency, Joint Powers Agreement, or Memorandum of Understanding)?
- What is the binding nature of decisions reached in the groundwater management plan?

The Panel might determine that some of these questions would be better answered in a later phase once the group has a better understanding of the basin or once the basin management objectives are defined, for example. If so, the group may choose to defer those questions until the necessary information becomes available.

Task 1.1 Initial Internal Meetings and Telecoms

The first steps to be taken in this process will be a series of small meetings led by CCP involving SCWA, the consultant and some of the stakeholders. Once the list is fully developed and stakeholder representatives are identified, engaged and committed to the process, planning of organizational meetings will commence.

Task 1.2 Prepare BAP Initial Organizational Materials (charter, mission, ground rules and procedures)

CCP will develop a series of guiding documents for the BAP, including a BAP Charter, Mission, and BAP Meeting Ground Rules and Procedures. These documents will be prepared in draft form and made available to the BAP prior to the first initial organizing meeting.

Task 1.3 Prepare for BAP Initial Organizational Meetings

CCP will plan and prepare meeting agendas, provide communications to stakeholders regarding meetings, and materials for meetings. Consultant will provide assistance to CCP in planning as needed.

Task 1.4 BAP Initial Organizational Meetings

CCP will conduct and facilitate meetings. Consultant will provide assistance as needed and attend meetings.

Task 2.0 Phase Two - Public Outreach and Education for Basin-Wide Understanding

Phase Two Schedule: Months 3 through 5

Phase Two Products: Public Outreach Plan, Website, Workshop Handouts, Public's Guide to Sonoma Valley Water Resources

Public outreach, information dissemination, and education of the BAP and local citizens, elected officials, and decision-makers are key to the success of the process. CCP recommended a public outreach plan be developed and implemented by the BAP, staff and consultants to keep interested parties informed, based on the level of interest in groundwater in the Sonoma Valley and the importance of the BAP's work. Education and shared information provides the foundation for building understanding, trust and consensus. The basin assessment conducted by the US Geological Survey under a cooperative agreement with SCWA will provide a starting point for the education and basin-wide understanding of groundwater resources in the Sonoma Valley. Phase Two includes the development and implementation of a public outreach plan, setting up a project website, conducting a groundwater workshop, and development of a public's guide to water resources in the Sonoma Valley.

Task 2.1 Develop Public Outreach Plan

It is envisioned that the BAP, CCP, SCWA staff and its consultants would develop the public outreach plan. The purpose of the public outreach program is to:

- Educate and inform the public about water and groundwater resources in the Sonoma Valley and the purpose and need for the Groundwater Management Program.
- Engage a diverse group of interested parties and promote informed community feedback throughout the groundwater management plan preparation, and implementation processes.

- Coordinate communication and involvement among agencies, elected officials, and the general public in the groundwater management planning and implementation process.
- Employ a variety of outreach methods that make public participation easy and accessible. Hold meetings at convenient times and venues.
- Respond to public concerns and provide accurate and up-to-date information.
- Manage the public outreach program in a manner that minimizes cost and provides maximum value to the public.

Task 2.2 Implement Public Outreach Plan

Opportunities for the public to participate in the planning process of the Sonoma Valley Groundwater Management Program could include:

- Community Workshops - Open house style workshops to be held periodically for a variety of purposes, such as reporting on project progress and soliciting community feedback at project milestones.
- Community Group Briefings - Community group briefing to be provided selectively upon request to give an overview of water and groundwater resources and the groundwater management planning process, to report on progress, and solicit feedback. The BAP, CCP, SCWA staff and consultants could provide some of these briefings.
- Interactive Website - Providing the latest news about the project, information on upcoming activities, and links for contacting with questions and/or comments. Also include an online form to request email updates and information on upcoming public participation opportunities. The website is envisioned to be a key communication media for the groundwater management plan development process, and its development and implementation will be completed under individual Tasks 2.3 and 2.4 below.

Task 2.3 Setup Sonoma Valley Groundwater Website

A website for the Sonoma Valley Groundwater Management Plan will be set up as the information portal for the project. The website will include the following elements:

- Home Page – including a summary project description, process, and stakeholder information, location image, index link and "what's new.
- Project page – detailed project, and process description including stakeholders list , representative groups, contact information.
- Public Outreach page – including brief outreach plan, how to get involved, community meetings, briefings, hotline, interactive web page, comments link, and meeting summaries
- Calendar – graphical and tabular list of meetings and milestones
- Documents Listing or "File Cabinet" – listing and links to electronic copies of all pertinent information including: background technical information on groundwater, Sonoma Valley hydrogeology, groundwater legal, groundwater management, meeting agendas and summaries, BAP guiding documents, work plan drafts

- Team – Contacts list of public agency, stakeholder leads, and contractors
- FAQs – Develop list of frequently asked questions about project and process
- Links – Hypertext links to local groups and agencies, pertinent NGOs and state agencies

Task 2.4 Monthly Web Page Update

The Sonoma Valley Groundwater website will provide a key public outreach portal for the basin groundwater management planning process, and will help to eliminate the prevalent misinformation in the area. In order to make the website viable it will need to updated regularly with new information, from BAP meetings and activities as it becomes available. CCP will provide appropriate information from the facilitated process and meeting information to the webmaster to keep the website updated.

Task 2.5 Prepare for BAP Educational Meetings

The educational meetings will be used to provide understanding of the technical groundwater aspects and groundwater and water resources planning and management. CCP will plan and prepare meeting agendas, provide communications to stakeholders regarding meetings, and materials for meetings. Consultant will provide assistance to CCP in planning as needed.

Task 2.6 BAP Educational Meetings

CCP will conduct and facilitate meetings. Consultant will provide technical input and assistance as needed and attend meetings.

Task 2.7 Prepare for One-Day Groundwater Workshop

A full to one-half day groundwater workshop will be conducted to assist in accelerating the public outreach and education component for the process and stakeholders. Topics to be considered for the workshop include: the hydrologic cycle; basic groundwater concepts; groundwater quality; groundwater resource protection; groundwater in the Sonoma Valley; groundwater legal; groundwater management institutions; groundwater management planning, and implementation of a groundwater management program. The target audience of the workshop is the Basin Advisory Committee, with some ancillary community officials and staff. Staff from the CCP, SCWA, the US Geological Survey, DWR, and the SCWA Consultant would conduct the workshop.

The level of effort required to prepare for the workshop will depend upon the distribution of workload and resources available to conduct the workshop. At a minimum, it is planned to have representatives from SCWA, SCWA Consultant, DWR, and the US Geological Survey participate in planning the workshop, with input from either the BAP or a subgroup of the BAP.

Task 2.8 One-Day Groundwater Workshop

The workshop will be between one-half and one-full day. CCP will facilitate the workshop. Presenters will include SCWA, SCWA Consultant, DWR, and the US Geological Survey.

Task 2.9 Prepare Public's Guide to Sonoma Valley Water Resources

A guide to water resources in the Sonoma Valley will be prepared for distribution in hard copy to the BAP and general public interested in the project, and also made available for download on the website. The purpose of the guide is to provide basic technical information, legal and water rights overview, governance options, groundwater management primer, and basic facts, figures, and frequently-asked-questions (FAQs) on water and groundwater resources in the Sonoma Valley. A draft suggested outline of the public guide to groundwater is provided in Appendix C.

Task 3.0 Phase Three – Develop Groundwater Management Goals and Basin Management Objectives (BMOs)

Phase Three Schedule: Months 5 through 7

Phase Three Products: Sonoma Valley Groundwater Management Brief

Once the stakeholder group has sophisticated understanding of the groundwater basin, the next phase is to develop the groundwater management goal for the plan and basin management objectives. An example groundwater management goal is "to provide a sustainable groundwater resource for future generations." Basin management objectives are a required component of a groundwater management plan in order to apply for specific state funding. Basin management objectives should incorporate measures related to local control, long-term sustainability and reliability, and should address groundwater levels, groundwater quality degradation, inelastic land surface subsidence, and changes in surface flow and surface water quality that are somehow related to groundwater. These objectives could define the acceptable range of groundwater level fluctuations that would be allowed to occur within the management area and the acceptable range of groundwater quality change. Alternatively, instead of metric values, these objectives could be qualitative and narrative with a desired result, for example, maintain groundwater elevations that result in a net benefit to basin groundwater users. SCWA consultants will provide technical information and support for drafting the basin management objectives on behalf of the BAP.

The group may need to conduct a series of briefings with local elected officials and interested organizations. The purpose would be to educate and seek support of the groundwater management goals and basin management objectives, including how they were developed and their content and purpose. Based on the briefings, the BAP might choose to revise the basin management objectives to reflect insights gained through the briefings, but no major changes would be anticipated. The BAP would review its goals and work plan, evaluate its progress to date, and decide to move to the next phase.

Task 3.1 Prepare for BAP Groundwater Management Goals and BMOs Meetings
The BMO meetings will be used to discuss, understand and negotiate appropriate management goals for the basin. CCP will plan and prepare meeting agendas, provide communications to stakeholders regarding meetings, and materials for meetings. Consultant will provide assistance to CCP in planning as needed.

Task 3.2 BAP Groundwater Management Goals and BMOs Meetings
CCP will conduct and facilitate meetings. Consultant will provide technical input and assistance as needed and attend meetings.

Task 4.0 Phase Four – Development of Monitoring and Data Collection Protocol
Phase Four Schedule: Months 8 through 11
Phase Four Product: Monitoring and Data Collection Protocol Agreement

Well monitoring and data collection, instrumental for understanding groundwater basin levels and storage capacity, were clearly identified as big issues for most private landowners who rely upon groundwater. For this reason, the way that monitoring and data collection moves forward should be subject to careful negotiation among the Basin Advisory Panel. During this phase, it is envisioned that the Basin Advisory Panel will develop protocols and a system for groundwater monitoring and data management. Further, the outcome of any negotiated agreement would have to be coordinated and approved with other landowners in the basin. Participation would likely be voluntary; however, the negotiation could establish conditions upon which actions might be taken if certain conditions are not met. This is subject to negotiation and political feasibility.

Task 4.1 Prepare for BAP Monitoring and Data Collection Meetings
The monitoring and data collection meetings will be used to discuss, understand and negotiate a monitoring and data collection program and protocols. CCP will plan and prepare meeting agendas, provide communications to stakeholders regarding meetings, and materials for meetings. Consultant will provide assistance to CCP in planning as needed.

Task 4.2 BAP Monitoring and Data Collection Meetings
CCP will conduct and facilitate meetings. Consultant will provide technical input and assistance as needed and attend meetings.

Task 5.0 Phase Five – Implementation Plan
Phase Five Schedule: Months 12 through 15
Phase Five Product: Sonoma Valley Groundwater Management Plan

The final phase would concentrate on developing an implementation approach and plan in the groundwater management plan and deciding what actions are necessary in response to changing conditions in the groundwater basin. Agreements would be linked to external

decision-making and be monitored for compliance. The group might need to modify agreements in response to changing conditions. The Basin Advisory Panel would likely want to agree to some form of dispute resolution mechanism should conflicts arise. The implementation plan and management activities would be documented in the groundwater management plan. For example, the plan might address local agencies' construction or operation of recharge, storage, conservation, or water recycling. The plan could facilitate conjunctive use operations or measures to control saltwater intrusion. The plan would ultimately be a culmination of all the work completed during the different phases. Public outreach would take place to inform members of the public about the overall effort documented in the plan.

Task 5.1 Prepare for BAP Implementation Plan Meetings

The monitoring and data collection meetings will be used to discuss, understand and negotiate a monitoring and data collection program and protocols. CCP will plan and prepare meeting agendas, provide communications to stakeholders regarding meetings, and materials for meetings. Consultant will provide assistance to CCP in planning as needed.

Task 5.2 BAP Implementation Plan Meetings

CCP will conduct and facilitate meetings. Consultant will provide technical input and assistance as needed and attend meetings.

Task 6.0 Groundwater Management Plan Preparation

Schedule: Months 4 through 15
Product: Sonoma Valley Groundwater Management Plan

The SCWA consultant will prepare the groundwater management plan. The plan will contain an executive summary, and sections on the water resources setting, management plan elements, plan implementation, and appendices. A suggested outline for the plan is included as Appendix D.

The BAP will provide input on key areas of the plan including management goals, basin management objectives, monitoring and data collection program and protocols, and the implementation plan. Additionally, it is envisioned that here will be a subgroup of the BAP, a form of technical advisory committee, which will meet monthly to review progress and provide input to the groundwater management plan, although this will be a decision that the BAP will ultimately make. Developing the groundwater management plan will be an iterative process and some sections may require multiple iterations to satisfy all stakeholders.

Task 6.1 Hearing to Prepare Groundwater Management Plan (GMP)

Prior to adopting a resolution of intention to draft the groundwater management plan, a hearing must be conducted by the lead agency to publicly announce its intention to do so. The hearing must also be properly noticed in the newspaper according to Government Code section 6066. At the conclusion of the hearing the resolution of intention to adopt a groundwater management plan may be drafted, adopted and published appropriately.

Task 6.2 Prepare Groundwater Management Plan

This task involves preparation of the groundwater management plan. The SCWA consultant can prepare many sections of the plan with little or no input from the BAP. However, all pieces and the entire plan when completed will go though review by the BAP and SCWA.

Task 6.3 Prepare for GMP Preparation Meetings

The GMP preparation meetings will be used to discuss, and obtain feedback and input on the GMP as it is being developed. CCP will assist in planning and preparing meeting agendas, provide communications to attendees, and materials for meetings. Consultant will provide assistance to CCP in planning as needed.

Task 6.4 GMP Preparation Meetings

CCP will conduct and facilitate meetings. Consultant will provide technical input and assistance as needed and attend meetings.

Task 6.5 Miscellaneous Meetings for Issues Resolution

There are expected to be miscellaneous issues to resolve during the process, which will require additional meeting preparation and attendance.

Task 6.5 Hearing to Review GMP

Prior to adopting the groundwater management plan, a hearing is required to be conducted to provide a briefing on the plan and the opportunity for public comments. The hearing must be properly noticed and provide the location of available copies of the plan for public review. Any landowner within the local agency may file a protest prior to the conclusion of the review hearing, and the local agency must consider all protests. If protests represent more than 50 percent of the assessed value of land in the local agency, it is considered a majority protest and the local agency may not adopt the plan.

Task 6.6 Adopt GMP

Subsequent to the hearing to review the plan, and assuming there is not a majority protest to the plan, the plan can be adopted.

Task 7.0 Develop Groundwater Demand/Modeling Alternatives Analysis

Schedule: Months 5 through 7
Product: Output and Figures from Demand/Modeling Alternatives Analysis

Hydrologic analysis will be conducted for evaluation of effects of alternative pumping operations and water supply scenarios in the Sonoma Valley basin. The technical studies will be completed as a joint effort between the SCWA and the US Geological Survey with technical input from the consultant.

The efforts in this task may include the analysis of effects of spatially varying groundwater extraction with some differing water supply scenarios, and with and without the water reuse component, under an as yet to-be-determined level of development. In addition, the efforts will include analysis of alternative water supply scenarios to evaluate the effects on the groundwater and surface water resources in the area. The focus of the alternatives is to evaluate the effects of the future levels of development and pumping with different water supply scenarios on the groundwater and surface water resources in the Sonoma Valley basin.

Task 7.1 Internal Meetings and Discussions with SCWA and USGS

The consultant will meet with the SCWA, and the US Geological Survey two to three times over the course of this task to discuss the approach and subsequently results of the hydrologic and alternatives analysis.

Task 7.2 Review Model Output and Prepare Comments

The consultant will review and provide comments and input on the results of the hydrologic and alternatives analysis conducted by the US Geological Survey and SCWA.

Task 7.3 Prepare Materials for BAP and GMP Meetings

Materials including summary tables and figures will be prepared to illustrate the results of the alternatives analysis. Products will be prepared by the US Geological Survey and SCWA staff and may be modified if appropriate by the consultant for presentation purposes.

Task 8.0 Contracting & Funding

This task outlines the different steps necessary for contracting and identifying funding to conduct the tasks outlined in this work plan

Task 8.1 Center for Collaborative Policy Contracting

The plan is to engage the services of the CCP through an MOU between the Department of Water Resources, SCWA and Sonoma County. The MOU provides the mechanism for DWR to provide CCP facilitation services in-kind to SCWA and Sonoma County. This will involve meetings with DWR, developing a draft memorandum of understanding, and

having the SCWA and Sonoma County Boards sign the MOU. Additionally, this involve meetings between SCWA, Sonoma County, Valley of the Moon Water District (VoMD), and City of Sonoma (CoS) to develop a cooperative local funding agreement for implementation of the work plan.

Task 8.1.1 Meetings with Department of Water Resources
Two to three meetings will be conducted with DWR, SCWA, Sonoma County, CCP, and consultant to develop a draft MOU to provide to the Sonoma County and SCWA Boards.

Task 8.1.2 Meetings with SCWA, Sonoma County, VoMD and CoS
One to two meetings will be conducted between SCWA, Sonoma County, VoMWD, CoS, to discuss the work plan and to develop a local cooperative funding agreement to pay for implementation of the work plan.

Task 8.1.3 Draft MOU to SCWA and Sonoma County Boards
Once the language in the MOU is acceptable to all parties, the MOU will go the respective Boards for consideration and signature.

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Task 8.1.4 MOU Approved by SCWA and Sonoma County Boards
Milestone of approval of the MOU, signature by SCWA and Sonoma County, and submittal of the MOU to DWR for acceptance.

Task 8.2 Consultant Contract for Fiscal Year 2006-2007
The consultant contract for Tasks 2-7 should be approved by the SCWA Board in time to have a contract in place at the beginning of July 2006 to start work the beginning of July 2006. The contract development and approval process may involve meetings with SCWA, VoMWD and CoS, as VoMWD and CoS who will be providing part of the funds under the contract.

SCHEDULE

The schedule for the work plan development is included as a Microsoft Project diagram in both a task roll up Gantt chart and a detailed Gantt chart (Appendix E). The schedule is approximately 15 months for the project, and will be dependent upon the pace and success of the collaborative process, and stakeholders at the table.

COST

The cost for consultant services for Tasks 1 through 7 is estimated to be $150,000 over an approximately fifteen-month period (Appendix F).

REFERENCES

Center for Collaborative Policy (CCP) 2006. Sonoma Valley Groundwater Issues Assessment.

Freeze, R.A., and Cherry, J.A. 1979. Groundwater. P47. Prentice Hall, Inc., New Jersey.

Groundwater Resources Association of California (GRA). Second Edition, 2005. California Groundwater Management.

APPENDICES

Appendix A
Required and Recommended Components of Local Groundwater Management Plans

Required and Recommended Components of Local Groundwater Management Plans

Section 10750 et seq. of the Water Code, commonly referred to as Assembly Bill 3030, stipulates certain procedures that must be followed in adopting a groundwater management plan under this section. Amendments to Section 10750 et seq. added the requirement that new groundwater management plans prepared under Section 10750 et seq. must include component 1 below (SB1938 (Stats 2002, Ch 603)).

In addition, the amendments mandate that if the agency preparing the groundwater management plan intends to apply for funding administered by the California Department of Water Resources (DWR) for groundwater or groundwater quality projects, the agency must prepare and implement a groundwater management plan that includes components 2, 3, 6, 7 and 9 below. DWR recommends that all the components below be included in any groundwater management plan to be adopted and implemented by a local managing entity.

Consideration and development of these components for the specific conditions of the basin to be managed under the plan will help to ensure effective groundwater management. In developing these criteria, DWR recognizes that the goal of a groundwater management plan and the goal of an ordinance to manage groundwater should be the same—assurance of a long-term, sustainable, reliable, good quality groundwater supply. Such efforts can benefit greatly from cooperative management within the basin or region. None of the suggested data reporting in the components below should be construed as recommending disclosure of information that is confidential under State law.

1. Include documentation that a written statement was provided to the public "describing the manner in which interested parties may participate in developing the groundwater management plan," which may include appointing a technical advisory committee (Water Code § 10753.4 (b)).
2. Include a plan by the managing entity to "involve other agencies that enables the local agency to work cooperatively with other public entities whose service area or boundary overlies the groundwater basin." (Water Code § 10753.7 (a)(2)). A local agency includes "any local public agency that provides water service to all or a portion of its service area" (Water Code § 10752 (g)).
3. Provide a map showing the area of the groundwater basin, as defined by DWR Bulletin 118, with the area of the local agency subject to the plan as well as the boundaries of other local agencies that overlie the basin in which the agency is developing a groundwater management plan (Water Code § 10753.7(a)(3)).
4. Establish an advisory committee of stakeholders (interested parties) within the plan area that will help guide the development and implementation of the plan and provide a forum for resolution of controversial issues.
5. Describe the area to be managed under the plan, including:
    a. The physical structure and characteristics of the aquifer system underlying the plan area in the context of the overall basin.
    b. A summary of the availability of historical data including, but not limited to, the components in Section 7 below.

    c. Issues of concern including, but not limited to, issues related to the components in Section 7 below.
    d. A general discussion of historical and projected water demands and supplies.
6. Establish management objectives (MOs) for the groundwater basin that is subject to the plan. (Water Code § 10753.7 (a)(1)).
7. Include components relating to the monitoring and management of groundwater levels, groundwater quality, inelastic land surface subsidence, and changes in surface flow and surface water quality that directly affect groundwater levels or quality or are caused by groundwater pumping. (Water Code § 10753.7 (a)(1)). Consider additional components listed in Water Code § 10753.8 (a) through (l).
8. For each MO, describe how meeting the MO will contribute to a more reliable supply for long-term beneficial uses of groundwater in the plan area, and describe existing or planned management actions to achieve MOs.
9. Adopt monitoring protocols for the components in Section 7 (Water Code § 10753.7 (a)(4)). Monitoring protocols are not defined in the Water Code, but the section is interpreted to mean developing a monitoring program capable of tracking changes in conditions for the purpose of meeting MOs.
10. Describe the monitoring program, including:
    a. A map indicating the general locations of any applicable monitoring sites for groundwater levels, groundwater quality, subsidence stations, or stream gages.
    b. A summary of monitoring sites indicating the type (groundwater level, groundwater quality, subsidence, stream gage) and frequency of monitoring. For groundwater level and groundwater quality wells, indicate the depth interval(s) or aquifer zone monitored and the type of well (public, irrigation, domestic, industrial, monitoring).
11. Describe any current or planned actions by the local managing entity to coordinate with other land use, zoning, or water management planning agencies or activities (Water Code § 10753.8 (k), (l)).
12. Provide for periodic report(s) summarizing groundwater basin conditions and groundwater management activities. The report(s), prepared annually or at other frequencies as determined by the local management agency, should include:
    a. Summary of monitoring results, including a discussion of historical trends.
    b. Summary of management actions during the period covered by the report.
    c. A discussion, supported by monitoring results, of whether management actions are achieving progress in meeting MOs.
    d. Summary of proposed management actions for the future.
    e. Summary of any plan component changes, including addition or modification of MOs, during the period covered by the report.
    f. Summary of actions taken to coordinate with other water management and land use agencies, and other government agencies.
13. Provide for the periodic re-evaluation of the entire plan by the managing entity.
14. For local agencies not overlying groundwater basins, plans should be prepared including the above listed components and using geologic and hydrologic principles appropriate to those areas (Water Code § 10753.7 (a)(5)).

Appendix B
Sonoma Valley Groundwater Issues Assessment

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SONOMA VALLEY
GROUNDWATER ISSUES ASSESSMENT

Prepared for the Sonoma County Water Agency
Finalized February 27, 2006

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Sonoma Valley Groundwater Issues Assessment

GENERAL SUMMARY AND RECOMMENDATIONS

The Board of Directors of the Sonoma County Water Agency (SCWA) directed its staff to develop a work plan for a groundwater management program in the Sonoma Valley. As a first step, SCWA enlisted the Center for Collaborative Policy, Sacramento State University, (CCP) to conduct an impartial assessment of issues and concerns related to water supply and groundwater management and to learn if and how stakeholders might want to address these issues. CCP staff conducted 16 interviews involving 30 people representing a range of water-related interests and viewpoints on groundwater management. Based on the results of these interviews, CCP recommends that the Sonoma County Water Agency move forward with efforts to develop a groundwater management work plan by forming a Basin Advisory Panel to represent stakeholder interests and partner with SCWA to develop a groundwater management plan.

INTRODUCTION

The Center for Collaborative Policy provides impartial mediation services as part of its mission to build capacity of public agencies, stakeholder groups and the public to use collaborative processes to improve policy outcomes. One helpful tool is the situation assessment, in which an independent mediator meets with interested stakeholders to identify parties and issues, analyze potential areas of conflict and agreement, and make recommendations on how to proceed.

CCP met with SCWA staff to identify an initial list of individuals to interview and then relied on interviewees for additional referrals to ensure a broad range of perspectives was presented. The mediator conducted interviews with individuals and small groups when appropriate. Two meetings were conducted with grape growers from the region.

Sample interview questions are attached in the appendix. Questions focused on concerns related to water supply, stakeholder involvement, and information needs. CCP staff received permission to share interviewee comments without attribution in this report. Everyone interviewed will receive a copy of this report. Every effort has been made to accurately represent the diversity of opinions, identify areas for substantive negotiation, and recommend steps for moving forward with groundwater management in the Sonoma Valley.

INTERVIEW FINDINGS

Almost everyone interviewed agrees that groundwater shortages are on the rise. The primary question and dilemma is what to do about it. Since livelihoods and land values are often tied to water, knowing how much or little is available and used is sensitive information. The Sonoma Valley is largely rural, with people working the land and connected to the area for generations. Therefore, deciding who is appropriate to manage groundwater, something that, most perceive, has managed itself, is not a simple matter. While views differ about the information needed to make water management decisions, almost everyone agrees that water supply must be diversified and that the public needs to understand this.

Water Supply

Stakeholders from many perspectives suggest it is time for residents of Sonoma Valley and Sonoma County to change their attitudes about water. Many of those interviewed

expressed the view that Sonoma residents must learn to "live" within the constraints the Mediterranean climate of the Sonoma Valley naturally imposes. Lawns were mentioned repeatedly as out-of-sync with the climate and placing huge burdens on water supply. Several interviewees suggested lawns should be limited or eliminated for new housing. One interviewee reported that 50% of water in the Valley of the Moon Water District is used to irrigate lawns and that the district would not have water shortages for 20 years if lawn irrigation ended. Interviewees suggest that drains, holding cisterns and other innovations should be employed to capture water for appropriate uses.

Stakeholders are concerned that citizens do not really understand the issues of water supply, the threat of shortages, water quality issues, or the need for conservation. The lack of a "crisis" and "ignorance" were mentioned as problematic. Interviewees recommend changing water-use behavior and the need for education.

Groundwater

Interviewees report that pumping existing quantities of groundwater is not sustainable. Users who rely on groundwater for their economic livelihood and suppliers responsible for providing water to households expressed concern that groundwater pumping cannot continue to increase at the same rate it has been increasing. These users and suppliers recognize that a more holistic water supply portfolio (surface water, groundwater, recycled water, and conservation) must be developed. Interviewees suggest that controlling extraction is not adequate groundwater management. Reliable scientific information coupled with a diversified water supply and curtailing extraction are necessary to manage groundwater effectively.

Interviewees readily shared anecdotes and observations documenting groundwater shortages throughout the Sonoma Valley and region. Tales of drilling new and deeper wells, only to find no water, creek beds going dry in recent years, and thermal intrusion were common. One interviewee noted that new wells, regardless of size. require no form of environmental review. Another person expressed concern that domestic well users who might need to drill a new (deeper) well to increase groundwater supply could run into substantial obstacles since many regulations have changed over the years.

Quality is also a concern. Interviewees sighted water quality issues with their wells, including the presence of boron and saltwater and thermal intrusion. Interviewees also report a northward migration of saltwater intrusion and the presence of minerals in groundwater not seen historically. One interviewee is alarmed because once an aquifer is compromised by saltwater, correcting it takes a very long time.

Recycled Water

Recycled water is viewed favorably and expanded use is encouraged. Generally, interviewees view recycled water as a major part of the solution in overcoming supply shortages in the face of increasing demands. Interviewees mostly feel positive about the soon-to-be-available tertiary-treated water. However, interviewees view infrastructure as major constraints: both moving the water from the treatment facility through the Valley and storing it so water is available in the dry season. Interviewees feel that recycled water needs to become available immediately. There's "no need to keep studying groundwater, just start providing recycled water".

Concerns about using recycled water also exist, but no one seems to suggest they are insurmountable. Growers do not want to lose groundwater rights if they shift to recycled water.

Some are concerned about reliability and contract certainty since once they start using the water, they will be more dependent on it. The cost of the water, including treatment and transport, is another factor. Most project that costs will be much greater than pumping groundwater and express hope that cost sharing can be arranged (rather than the user bearing the full burden).

Another factor is public perception that recycled water might not be that "safe". One stakeholder urged that data on safety and quality be readily available and be part of a major public education effort. One interviewee felt that liability associated with public safety concerns would need to be addressed before widespread use begins.

Land Use

Linking land use and water, including housing and new vineyards, is an area of concern that should be considered as part of the groundwater management process. Many interviewees discussed the growth of vineyards in the area, and several mentioned visitor tasting rooms and large venues for consideration. Growth and development in the region are also a concern. An analysis by the University of California at Irvine and the Greenbelt Alliance, however, suggests that Sonoma County is growing responsibly. One interviewee felt strongly that water should not be used to limit growth. Rather, growth and development questions should be decided as part of a larger water supply strategy. Others urge that zoning ordinances and the location of new housing be integrated into water supply projections more directly (which is starting to occur under new Sonoma County ordinances). One interviewee mentioned that development had affected the watershed and led to increased flooding.

The draft General Plan is striving to address water issues through its water element, including quality, public water supply, conservation and reuse, export/import and watershed management. Jurisdictional issues complicate decisions and coordination between land use and water. For example, the Permit and Resource Management Department (PRMD), responsible for the General Plan, is responsible for land use, but water purveyors and land owners are ultimately responsible for the water underneath.

Interviewees repeatedly express concern about impervious surfaces on recharge areas, the need to identify recharge areas, and the role of open space.

The connection between water supply and land value is also an overarching concern. Since supply directly affects land value, interviewees hesitate to make well data public.

Diversify Supply

Interviewees who supply water or deal with water policy expressed strong support for the need to diversify the water supply. Some interviewees identify the impetus against building new surface storage facilities as an impediment to supply diversification. Several mentioned that water supply operations might need to shift due to climate change. One agency representative reported that Sonoma County has over 400 water purveyors; efforts need to be made to understand the long term supply plans for each. One interviewee hopes that conjunctive use in the Valley would improve his wells in the hills. One interviewee stated the groundwater management should be implemented through a wide context of curbing groundwater extraction demands through increased supply of recycled water, imported water, and water conservation.

Information Gathering and Data Analysis

Any efforts at managing groundwater in the Sonoma Valley will have to negotiate issues related to well monitoring and data analysis. Data gathering and sharing is an area of major concern for well users. They are concerned about the impact of public data on their relationships with neighbors, property values, and water rights. While many think data gathering should be voluntary, some feel regulations may be necessary to ensure adequate information is made available about groundwater in the Valley. These interviewees are more likely to say "information is a tool" or "information is power". The existence of wells, plans for new wells, well depth and the amount pumped are suggested variables.

Interviewees feel that conducting an objective hydrologic assessment could provide a framework for planning. Understanding and agreeing on data can also be challenging and important. The assessment could clarify water availability, identify and study recharge areas, and document the height and depth of water tables. Some think the region's geological complexity with its volcanic formations make it difficult, if not impossible, to do a hydrologic assessment. Several interviewees reported drilling wells just several feet apart, with one hitting and the other missing water at similar depths. It was noted that the assessment could also help everyone understand sustainable yields for the basin. Despite sensitivities about monitoring, interviewees suggest that groundwater quantities pumped by residences, agriculture, and the golf course should be documented as well as water quality and saltwater intrusion issues. The U.S. Geological Survey study on the Sonoma Valley, to be released in early 2006, might answer some of these questions.

Groundwater Management Planning

Motivation for groundwater management planning exists. Interviewees are aware that shortages exist, and pumping at current or increased levels is not sustainable in the long term. Some feel the need to be proactive before a crisis situation emerges. Others want to avoid adjudication that would remove control from local users. For others, maintaining quality is also at issue. The threat of saltwater intrusion gradually moving northward from the Bay, by some accounts, illustrates a detrimental impact that is not easily reversible. The overarching motivation for any type of groundwater management is that almost every person interviewed has a long-term commitment to the area and wants their livelihoods preserved for their descendants.

Goals and Scope

If a groundwater management plan were to move forward, some offered hopes it would prevent further depletion of the aquifer, limit quality or shortage issues, and increase recharge. Most anticipate that a groundwater management plan would provide a "fact-based" way to deal with groundwater. A few suggest that the ecological and biological issues all be considered.

Interviewees believe that a groundwater management plan could provide a comprehensive view of groundwater issues in the area, potential recharge areas, and identify a sustainable yield for the basin. One interviewee suggested that the plan should only be descriptive and not be used to direct policy. Most seem to think that any groundwater management plan would set some direction; however, the nature of that direction is up for negotiation. Some growers might support the Farm Bureau groundwater policy of 1) no infringement on another, 2) compensation for groundwater damage, and 3) no state control. Several others suggested strongly that users would be concerned about the impact of a management plan on their water rights.

Several suggest that regulation or mandatory reporting might be necessary at some point in the future, but express a willingness to explore a voluntary approach as long as measures were in place

to remedy the situation if it "did not work out." Measuring success or lack of it is clearly a critical item for discussion in the early stages of exploring a groundwater management plan. More than one interviewee suggested that all management options should be considered by a groundwater management plan. It was also suggested that a phased approach might be helpful in addressing these dilemmas.

Several interviewees suggest that analyzing groundwater conditions only in the Sonoma Valley is not really adequate; a more comprehensive water plan for the County needs to be developed.

Jurisdictions and Leadership

Multiple agencies have jurisdiction in the Sonoma Valley and an interest in water issues there. Relevant jurisdictions include the City of Sonoma, PRMD and the Board of Supervisors for Sonoma County, SCWA, and the Valley of the Moon Water District.

The Sonoma County Water Agency is viewed primarily as a forward thinking agency. A few interviewees feel that SCWA and its Board of Directors (the Sonoma County Board of Supervisors) have a conflict of interest because SCWA is both a water seller and water planner. In addition, SCWA operates the sanitation agency. Hesitancy is expressed in terms of SCWA serving as an "engine of growth," i.e. they have much to gain from selling more water. SCWA has a great deal of technical credibility among stakeholders, and the agency is characterized as politically astute. Overall, most interviewees support SCWA's active role in this effort.

Most suggest that the Board of Supervisors must provide leadership on these issues while acknowledging that dealing with water is politically risky for board members. Interviewees differed on their opinions related to who should lead groundwater management efforts, the county or land owners.

Water Resources Education

Most interviewees noted that there is a great deal of misinformation related to water supply and management and groundwater in Sonoma Valley. Interviewees expressed frustration that most citizens do not think about water supply or conservation issues. Nearly everyone suggested the need for widespread education on water supply issues (e.g., the water budget) generally in Sonoma County and specifically in the Sonoma Valley. Several interviewees urged focused and transparent information sharing about groundwater management as planning moved forward.

RECOMMENDATIONS

Use Collaboration to Address Groundwater Management

The primary purpose of this assessment is to make a recommendation on whether development of a groundwater management plan for the Sonoma Valley should proceed, and if so, how that work might be structured. Based on results of interviews with key stakeholder representatives in the Sonoma Valley, CCP recommends moving forward using a collaborative process and forming a Basin Advisory Panel to guide this effort. In making this determination, CCP has identified conditions necessary to sustain a collaborative.

Almost all interview participants recognize that groundwater shortages exist and that current groundwater practices are not sustainable in the long term. Most groundwater users who participated in the interviews want to have a role in groundwater management decisions and would

prefer not to relinquish control to any agency or to adjudication. As such, a role for the key stakeholders must be identified.

Another reason for recommending collaboration is that stakeholders articulated concern about sensitive issues, such as data collection and monitoring, while demonstrating room for negotiation about how to address these tasks. Although these issues could prove challenging, generating mutually acceptable and beneficial outcomes is most likely through direct, interest-based negotiation among stakeholders. Further, California Assembly Bill 303, the Local Groundwater Assistance Program, provides some funding for technical expertise and facilitation to support the work of stakeholder collaborative to reach the desired outcomes of this overall effort.

Convene a Basin Advisory Panel

The primary vehicle for stakeholder input would be a Basin Advisory Panel. The Panel would engage actively in planning and making decisions on the development of the Sonoma Valley Groundwater Management Plan. The plan would be developed under the Groundwater Management Act (Assembly Bill 3030).[1] AB3030 processes are non-regulatory and voluntary. Developed in phases, the plan would include agreed-upon management objectives, protocols for monitoring and data collection, and implementation or adaptive management techniques.

The Basin Advisory Panel membership should meet a range of criteria through all its members (no one member is meant to meet all criteria). Members would represent the following interest groups:

- Economic interests
- Environmental interests
- Groundwater users: landowners, growers, dairies, water districts/suppliers, and domestic well users
- Government with jurisdiction in Sonoma Valley and expertise in water supply, land use and zoning

In addition, stakeholders would represent the following perspectives:

- County-wide perspective
- Geographic distribution throughout Valley
- Located in Sonoma Valley
- Political acumen
- Technical understanding

The Center for Collaborative Policy would work with interested parties to identify panel members in the next few months. The Basin Advisory Panel would review and finalize its initial membership at an early meeting.

CCP recommends that the Basin Advisory Panel be a consensus-building body. The Panel will strive for consensus (agreement among all participants) in all its decisions. Reports or products of the Basin Advisory Panel would reflect the outcome of the stakeholder discussions. All negotiated agreements, documented in reports, would be forwarded to the SCWA Board of Directors.

[1] Sections 10750-10756 of the California Water Code

Design and Implement a Public Outreach Plan

Given the level of interest in groundwater and the importance of the Basin Advisory Panel's work, local citizens, decision-makers and elected officials must stay abreast of Panel deliberations and decisions. At the beginning of this effort, CCP recommends that the Basin Advisory Panel and appropriate staff or consultants design a public outreach plan to keep interested parties informed and educated about decisions moving forward through the Basin Advisory Panel. The Panel would play an active role in implementing the public outreach plan. Panel members could help identify interested parties and conduct briefings with constituents and elected officials. Other outreach tools might include meetings and workshops, newsletters, and public information materials.

Develop a Phased Approach to the Work Plan

Developing a phased approach to the work plan frames stakeholder discussion, creates clear milestones for briefing constituents and encourages the stakeholder group to evaluate progress and make a conscious decision to continue. For this reason, a phased approach to the work plan is recommended. As described below, it presents a preliminary framework for the negotiation: group organization, education and understanding, management objectives, a monitoring plan, and implementation. Schlumberjer, the technical consultant, will develop the actual work plan with a timeline to complement the phased approach presented in this assessment report. The Basin Advisory Panel would meet regularly to carry out the tasks defined below and in its work plan.

Phase 1: Group Organization and Work Plan

The primary purpose of the group would be to develop a groundwater management plan, as defined above. In this first phase, the Basin Advisory Panel would agree on its decision making, membership, relationship to decision making entities, responsibilities for communicating with constituents, media relations, and overall work plan, including objectives and schedule. As mentioned above, the Basin Advisory Panel would also develop recommendations on the public outreach plan. The Panel would grapple with some decisions over the first few months of its work in parallel with technical work to be performed under Phase 2 for the basin assessment report. Some of these questions would include:

- What subcommittees or technical work groups might best support the Panel's work?
- What is the best method to educate the broader community on water supply issues?
- What types of financial resources are available through the California Department of Water Resources and how might the group obtain them?
- What structure would best support implementation of a groundwater management plan (Lead Agency, Joint Powers Agreement, or Memorandum of Understanding)?
- What is the binding nature of decisions reached in the groundwater management plan?

The Panel might determine that some of these questions would be better answered in a later phase once the group has a better understanding of the basin or once the basin management objectives are defined, for example. If so, the group may choose to defer those questions until the necessary information becomes available.

PHASE 1 PRODUCTS: GROUP CHARTER AND WORK PLAN

Phase 2: Basin-Wide Understanding

Shared information is the place to start building agreement. In early 2006, the U.S. Geological Survey will release a study, underway for several years, on the Sonoma Valley. This will prove a good starting point for understanding the geology, quality, and historical and projected uses as well as the methodology used to measure and quantify information. Activities in this phase would be designed to address the basin's complexity frequently mentioned during interviews. Workshops by technical experts or learning about successful basin management programs would be possible activities. The agreed-upon information, i.e. "what we know," would be put together in an easy-to-read document entitled the "Public's Guide to Water Resources in the Sonoma Valley," for widespread circulation. The Basin Advisory Panel might want to hold meetings or educational forums to inform the general public about the basin assessment.

At the end of this phase, the stakeholder group would evaluate its progress to date, revisit its work plan, and decide to move to Phase 3.

PHASE 2 PRODUCT: PUBLIC'S GUIDE TO WATER RESOURCES IN THE SONOMA VALLEY

Phase 3: Basin Management Goals & Objectives

Once the stakeholder group has sophisticated understanding of the groundwater basin, the next phase would be to develop basin management goals and objectives. Basin management objectives could incorporate measures related to local control, long-term sustainability and reliability, groundwater quality, the economy, and the environment. These objectives could define the acceptable range of groundwater level fluctuations that would be allowed to occur within the management area and the acceptable range of groundwater quality change. The basin management objectives could be considered criteria for deciding what action would be taken if the basin management levels were exceeded. (White Paper, Toccoy Dudley, Department of Water Resources, Northern District, 9/18/2000)

SCWA or appropriate technical consultants would provide support for drafting the basin management objectives on behalf of the stakeholder group.

The group would likely need to conduct a series of briefings with local elected officials and interested organizations. The purpose would be to educate about and seek support of the basin management goals and objectives, including how they were developed and their content and purpose. Based on the briefings, the group might choose to revise the basin management objectives to reflect insights gained through the briefings, but no major changes would be anticipated.

The Basin Advisory Panel would review its goals and work plan, evaluate its progress to date, and decide to move to the next phase.

PHASE 3 PRODUCT: SONOMA VALLEY GROUNDWATER BASIN MANAGEMENT BRIEF

Phase 4: Monitoring and Data Collection

Well monitoring and data collection, instrumental for understanding groundwater basin levels and storage capacity, were clearly identified as big issues for most private landowners who rely upon groundwater. For this reason, the way that monitoring and data collection moves forward would be subject to careful negotiation among the Basin Advisory Panel. During this phase, the Basin Advisory Panel would develop protocols and a system for groundwater monitoring and data management.

Further, the outcome of any negotiated agreement would have to be coordinated and approved with other landowners in the basin. Participation would likely be voluntary; however, the negotiation could establish conditions upon which actions might be taken if certain conditions are not met. This is subject to negotiation and political feasibility.

The Basin Advisory Panel would again decide whether to move to the final phase of the work plan.

PHASE 4 PRODUCT: MONITORING AND DATA COLLECTION PROTOCOL AGREEMENT

Phase 5: Implementation and Adaptive Management

The final phase would concentrate on implementing the groundwater management plan and deciding what actions would be taken in response to changing circumstances in the groundwater basin. Agreements would be linked to external decision making and be monitored for compliance. The group might need to modify agreements in response to changing conditions. The Basin Advisory Panel would likely want to agree to some form of dispute resolution mechanism should conflicts arise. The implementation plan and management activities would be documented in the groundwater management plan. For example, the plan might address local agencies' construction or operation of recharge, storage, conservation, or water recycling. The plan could facilitate conjunctive use operations or measures to control saltwater intrusion. The plan would ultimately be a culmination of all the work completed during the different phases. Public outreach would take place to inform members of the public about the overall effort documented in the plan.

PHASE 5 PRODUCT: SONOMA VALLEY GROUNDWATER MANAGEMENT PLAN

CONCLUSION

The overarching goal of this effort would be to find innovative solutions to the complex policy dilemmas of groundwater management and build broad support for implementation. The keys to success for this effort are:

- Common understanding of basin geology, water supply and demand, and conjunctive use;
- Addressing basin management objectives, monitoring and data gathering;
- A diverse group of stakeholders collaborating on the Basin Advisory Panel to make planning decisions;
- Educating local citizens, decision-makers, and elected officials throughout; and
- An implementation and adaptive management plan to respond to changing conditions.

APPENDIX A: PERSONS INTERVIEWED FOR ASSESSMENT REPORT

1. Tom Atwood
2. Larry Barnett
3. Scott Bauer
4. Mark Bramfitt
5. Valerie Brown
6. Jim Bundshu
7. Greg Carr
8. Caitlin Cornwall
9. Richard Dale
10. Norman Gilroy
11. Susan Haydon
12. Peter Haywood
13. Ned Hill
14. Steve Hill
15. Jay Jasperse
16. Becky Jenkins
17. Clarence Jenkins
18. Bill Keene
19. Ray Larbre
20. Vickie Mulas
21. Mitch Mulas
22. Pete Parkinson
23. Del Rydman
24. Mel Sanchietti
25. Tito Sasaki
26. Philip Sayles
27. Pat Stornetta
28. Steve Thomas
29. Ignacio Vella
30. Joe Votek

APPENDIX B: SAMPLE INTERVIEW QUESTIONS

Introduction

- Please tell me about yourself and your organization(s) and how you are involved in water issues in the Sonoma Valley?

Issues to be Addressed

- What concerns and interests do you have regarding water supply in Sonoma Valley? And groundwater in particular? What concerns, if any, do you have about the future?
- What issues might others raise? Are any of these issues in conflict with yours? How might these differences be resolved?
- What types of coordination occur between users currently? What other opportunities for coordination would you foresee?
- If recycled water was available, how open would you be to using it?
- What potential benefits and potential drawbacks do you associate with developing some type of groundwater management plan?
- What issues would a successful groundwater management plan address? Avoid?
- What obstacles to developing a management plan might arise? Do you have suggestions to overcome them?
- What are your thoughts about the Sonoma County Water Agency's role/capabilities in developing the groundwater management plan?

Stakeholder Involvement

- If this effort goes forward, which individuals or groups do you think should be involved? How? Who doesn't usually participate in these types of public efforts that you believe should be involved?
- Would you or your organization/agency like to participate in developing a groundwater management plan if it were to go forward? How would you envision being involved?
- What kinds of outreach would you recommend?

Context and Information Needs

- What information would you like to have or what technical questions would you like answered as part of this effort?
- Do you feel that you have a good understanding of where Sonoma Valley's water supply comes from and how water is used in the valley?
- What other related efforts are underway that I should know about?

Conclusion

- Do you have any interests or concerns you have not yet mentioned?
- Is there anything else you think I should know or any advice you might offer?
- Who else, if anyone, do you think I should speak with?

APPENDIX C: INFORMATION ABOUT THE CENTER FOR COLLABORATIVE POLICY AND GINA BARTLETT

The Center for Collaborative Policy is a unit of the College of Social Sciences and Interdisciplinary Studies at California State University, Sacramento. The Center was established in 1990 as the California Center for Public Dispute Resolution, a joint program of California State University Sacramento and the McGeorge School of Law, University of the Pacific.

The mission of the Center is to build the capacity of public agencies, stakeholder groups, and the public to use collaborative strategies to improve policy outcomes.

Visit the Web Site: www.csus.edu/ccp

Gina Bartlett has served as a public policy mediator and facilitator for state and local governments, and business and interest groups working on forest management, water supply, public access, natural resource management, recreation, land use and cultural diversity. Recently, she facilitated community meetings on stewardship and fireshed assessment for a national forest in California and mediated a regional effort to update policies for a 23-mile riverfront trail passing through an urban core and multiple jurisdictions. She has served as mediator and facilitator regarding statewide water management and integrating ground and surface water use as a water management tool, frequently working with technical and scientific information. Ms. Bartlett also facilitated development of policy recommendations for the San Francisco Bay that integrate conservation and public access. Ms. Bartlett received her Master's degree in Conflict Analysis and Resolution from George Mason University and has worked in the field since 1991.

Appendix C Suggested Outline for Public's Guide to Sonoma Valley Groundwater

Suggested Outline
Public's Guide to Sonoma Valley Groundwater

Introduction
- Overview of Issues and Process for Groundwater Management Approach
- Frequently Asked Questions
- Document Organization

Facts and Figures

Water and Groundwater Management Institutions in Sonoma Valley (or How is Water and Groundwater Currently Managed in Sonoma Valley)
- Why Manage Groundwater?
- Primer of Groundwater Technical Terms and Concepts
- Where is the Sonoma Valley Groundwater Basin?

How Does a Basin Hold Groundwater?

How is a Basin Recharged?
- What Is the Current Status of the Groundwater Basin?
- How Does Land Use Relate to Water Demand?
- What Land Use Changes Are Planning for the Future?
- What Is Conjunctive Use?
- How Is Groundwater Removed from the Sonoma Valley Groundwater Basin?
- What is Sustainable Yield?
- Can Water Conservation Benefit Sonoma Valley Groundwater Basin?
- How Can Water Recycling Benefit Sonoma Valley Groundwater Basin?
- What Future Studies and Projects Are Planned for the Sonoma Valley Groundwater Basin?

Water Rights
- Overlying Landowner
- Correlative
- Appropriative
- Prescriptive
- Riparian

Governance
- Methods of Groundwater Management
  - AB3030
  - Special Act Agencies and Districts
  - City and County Ordinances
  - Coordinated Agreements
  - Adjudication

Groundwater Management Plan
- What is Groundwater Management?
- What Is a Groundwater Management Plan?
- Five Elements of a Groundwater Management Plan
- Local Comprehensive or General Plans and Groundwater Management Plans
- Groundwater Management Plan Procedural Requirements and Hearings
- What Are Groundwater Management Plan Goals and Objectives?
- What Is Required in a Groundwater Management Plan?
- How Long does it Take to Complete a Groundwater Management Plan?
- What Happens After the Plan Is Completed?
- How Much Does It Cost?

References and Suggested Reading

Appendix D
Suggested Outline for a Groundwater Management Plan

Suggested Outline for a Groundwater Management Plan

Executive Summary
Introduction
- Formation of SCWA
- Preparation of this GMP Under the Basin Advisory Panel
- Purpose of the Sonoma Valley GMP
- Authority to Prepare and Implement a GMP
- GMP Components

Water Resources Setting
- Groundwater Supplies
  - Hydrogeologic Setting
  - Groundwater Quality
  - Recharge and Extraction of Groundwater
- Surface Water Supplies
  - Water Rights/Contract Entitlements
  - Surface Water Conditions
  - Surface Water Quality
- Recycled Water Supplies
- Existing Facilities and Operations
  - Groundwater Facilities
  - Surface Water Facilities
- Future Facilities and Operations
- Water Year Types
- Water Use by Year Type

Management Plan Elements
- Groundwater Management Goal
- Basin Management Objectives
  - Examples:
    - Maintain or improve groundwater quality in the Sonoma Valley for the benefit of basin groundwater users
    - Protect against adverse impacts to groundwater from Thermal waters and seawater intrusion
    - Maintain groundwater elevations that result in a net benefit to basin groundwater users
    - Protect against adverse impacts to water quality resulting from the interaction between groundwater and surface water flows in the major watercourses
    - Protect against adverse impacts to surface water flows in Sonoma Creek and other watercourses
    - Protect against any potential inelastic land surface subsidence
- GMP Components
- Component Category 1: Stakeholder Involvement
  - Involving the public
    - Actions
  - Public education

    - Actions
- Involving other agencies within and adjacent to Sonoma Valley
    - Actions
- Utilizing advisory committees
    - Actions
- Developing relationships with state and federal agencies
    - Actions
- Pursuing partnership opportunities
    - Actions

Component 2: Monitoring Program

- Groundwater elevation monitoring
    - Actions
- Groundwater quality monitoring
    - Actions
- Land surface elevation monitoring
    - Actions
- Surface water-groundwater interaction monitoring
    - Actions
- Protocols for the collection of groundwater data
    - Actions
- Data management system
    - Actions

Component Category Three: Groundwater Resources Protection

- Well construction policies
    - Actions
- Well abandonment and destruction policies
    - Actions
- Wellhead protection measures
    - Actions
- Protection of recharge areas
    - Actions
- Control of the migration and remediation of contaminated water
    - Actions
- Control of saline water intrusion
    - Actions

Component Category Four: Groundwater Sustainability

- Demand Reduction
    - Water conservation
    - Water recycling
    - Actions
- Conjunctive management activities
    - Actions

Component Five: Planning Integration

- Existing integrated planning efforts
    - Water Efficiency
    - Urban water management
    - Regional sanitation

- DWSAP Program
- Land use planning
- Actions

Plan Implementation

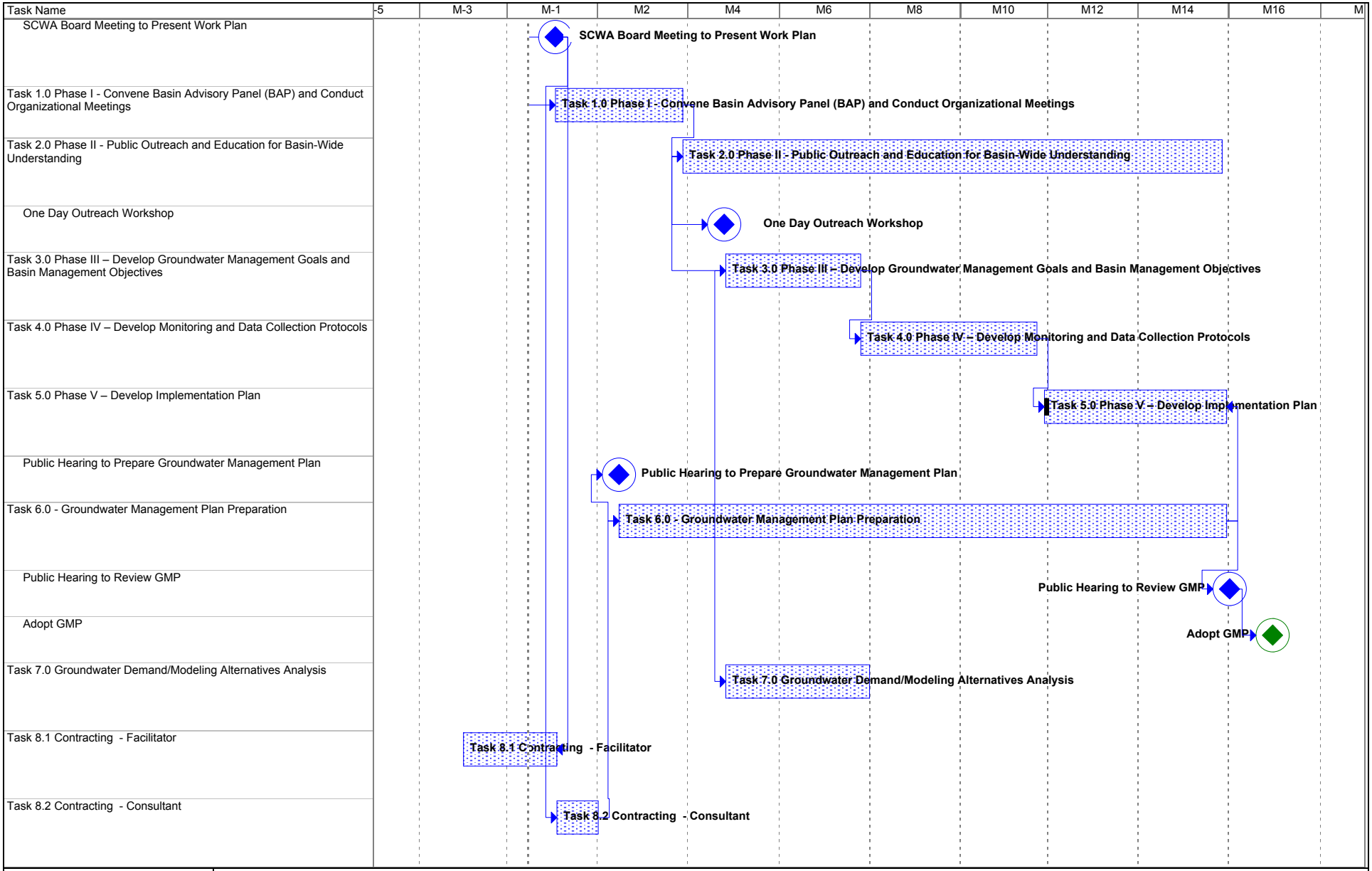
Annual GMP Implementation Report

Component-Action Implementation Schedule List

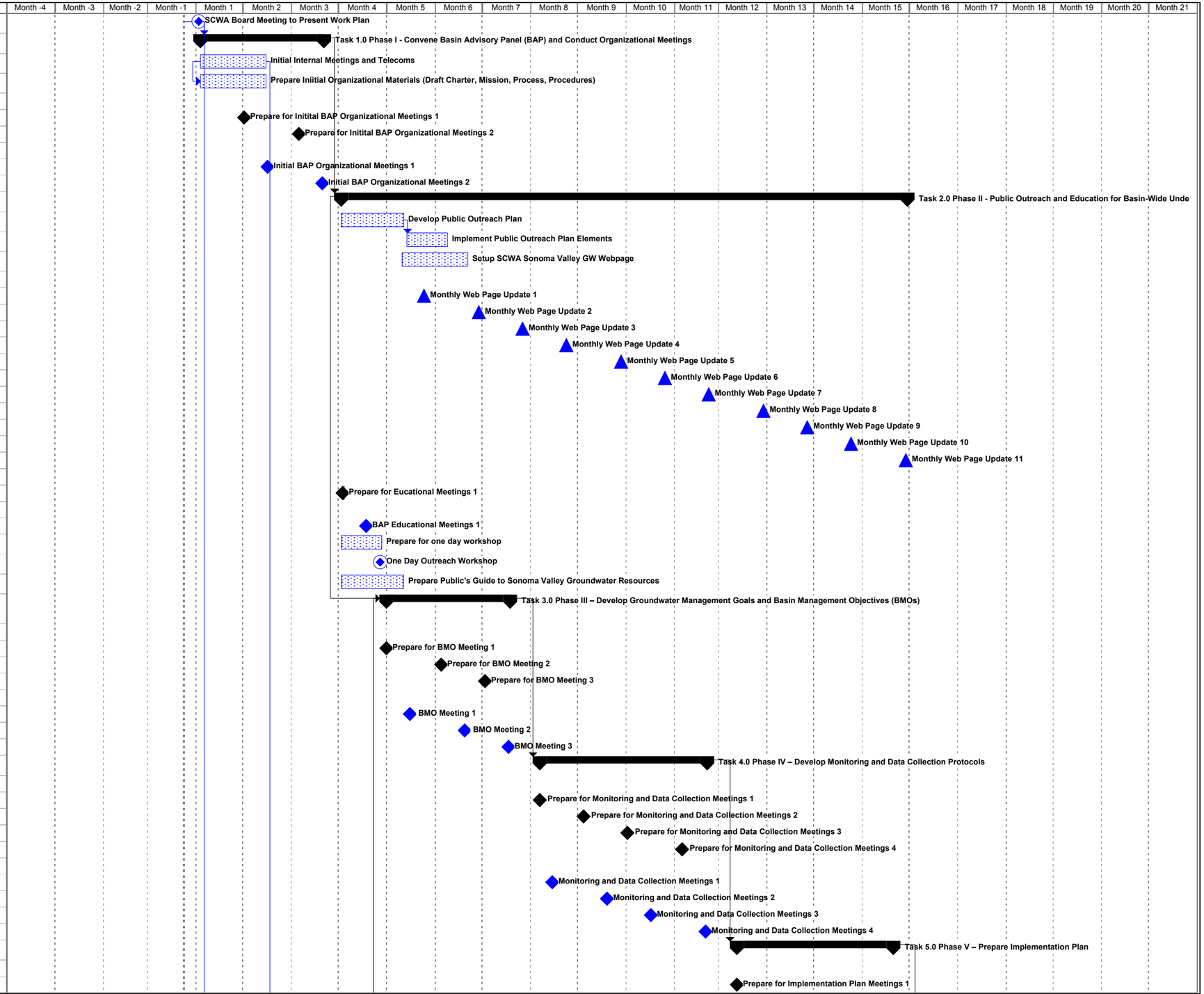
Future Review of GMP

Financing

Appendix E
Groundwater Management Plan
Schedule


Task Name
-5
M-3
M-1
M2
M4
M6
M8
M10
M12
M14
M16
M
SCWA Board Meeting to Present Work Plan
Task 1.0 Phase I - Convene Basin Advisory Panel (BAP) and Conduct Organizational Meetings
Task 2.0 Phase II - Public Outreach and Education for Basin-Wide Understanding
One Day Outreach Workshop
Task 3.0 Phase III – Develop Groundwater Management Goals and Basin Management Objectives
Task 4.0 Phase IV – Develop Monitoring and Data Collection Protocols
Task 5.0 Phase V – Develop Implementation Plan
Public Hearing to Prepare Groundwater Management Plan
Task 6.0 - Groundwater Management Plan Preparation
Public Hearing to Review GMP
Adopt GMP
Task 7.0 Groundwater Demand/Modeling Alternatives Analysis
Task 8.1 Contracting - Facilitator
Task 8.2 Contracting - Consultant
Project: GMP for Sonoma Valley
Date: 3/15/06
Task
Summary
Rolled Up Progress
Project Summary
Progress
Rolled Up Task
Split
Group By Summary
Milestone
Rolled Up Milestone
External Tasks

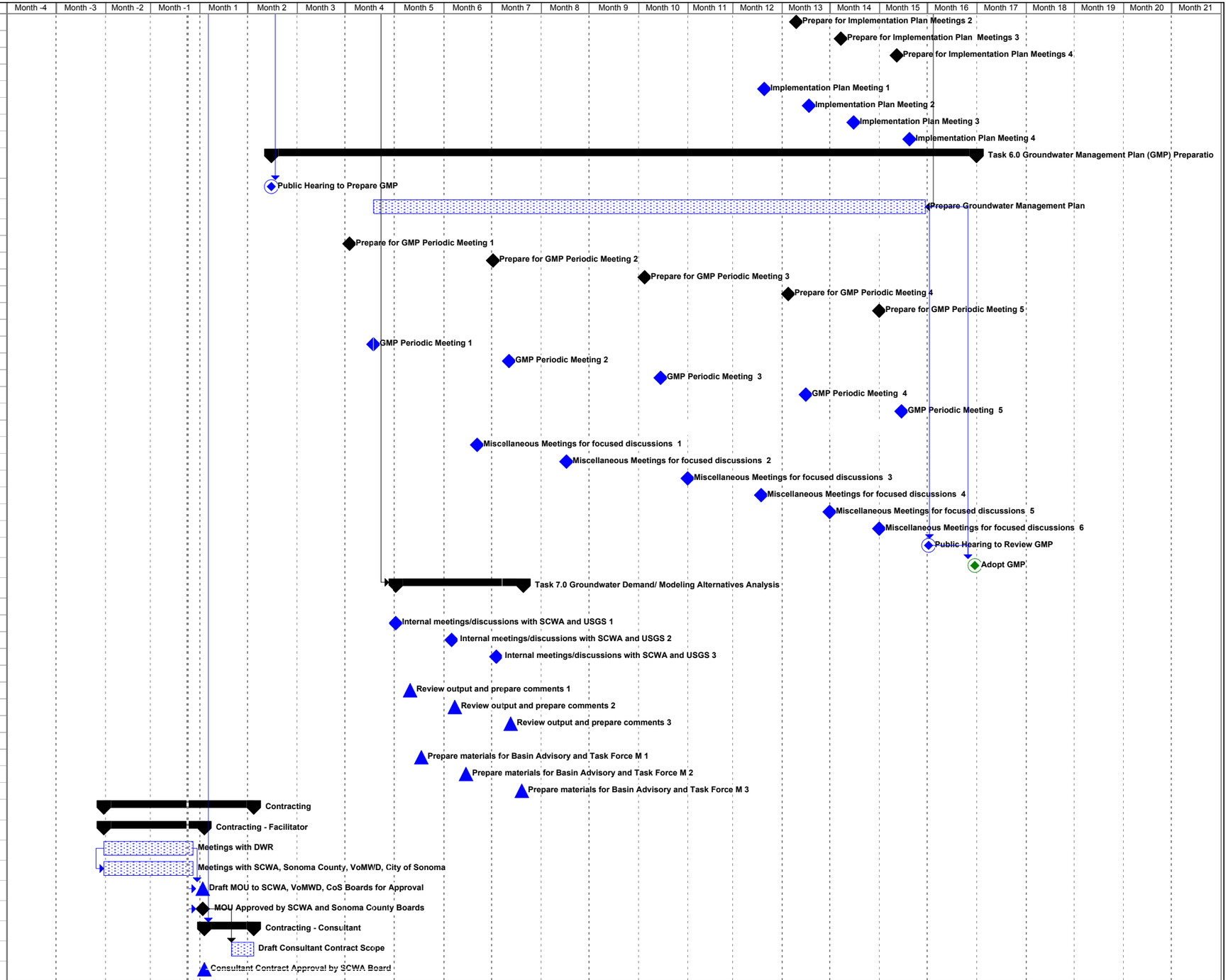
WBS	Task Name
	SCWA Board Meeting to Present Work Plan
Task 1	**Task 1.0 Phase I - Convene Basin Advisory Panel (BAP) and Conduct Organizational Meetings**
Task 1.1	Initial Internal Meetings and Telecoms
Task 1.2	Prepare Iniitial Organizational Materials (Draft Charter, Mission, Process, Procedures)
Task 1.5	**Prepare for Initital BAP Organizational Meetings**
Task 1.5.1	Prepare for Initital BAP Organizational Meetings 1
Task 1.5.2	Prepare for Initital BAP Organizational Meetings 2
Task 1.5.15	**Initial BAP Organizational Meetings**
Task 1.5.15.1	Initial BAP Organizational Meetings 1
Task 1.5.15.2	Initial BAP Organizational Meetings 2
Task 2	**Task 2.0 Phase II - Public Outreach and Education for Basin-Wide Understanding**
Task 2.1	Develop Public Outreach Plan
Task 2.2	Implement Public Outreach Plan Elements
Task 2.3	Setup SCWA Sonoma Valley GW Webpage
Task 2.4	Monthly Web Page Update
Task 2.4.1	Monthly Web Page Update 1
Task 2.4.2	Monthly Web Page Update 2
Task 2.4.3	Monthly Web Page Update 3
Task 2.4.4	Monthly Web Page Update 4
Task 2.4.5	Monthly Web Page Update 5
Task 2.4.6	Monthly Web Page Update 6
Task 2.4.7	Monthly Web Page Update 7
Task 2.4.8	Monthly Web Page Update 8
Task 2.4.9	Monthly Web Page Update 9
Task 2.4.10	Monthly Web Page Update 10
Task 2.4.11	Monthly Web Page Update 11
Task 2.5	Prepare for BAP Educational Meetings
Task 2.5.1	Prepare for Eucational Meetings 1
Task 2.6	BAP Educational Meetings
Task 2.6.1	BAP Educational Meetings 1
Task 2.7	Prepare for one day workshop
Task 2.8	One Day Outreach Workshop
Task 2.9	Prepare Public's Guide to Sonoma Valley Groundwater Resources
Task 3	**Task 3.0 Phase III – Develop Groundwater Management Goals and Basin Management Objectives (BMOs)**
Task 3.1	Prepare for BMO Meetings
Task 3.1.1	Prepare for BMO Meeting 1
Task 3.1.2	Prepare for BMO Meeting 2
Task 3.1.3	Prepare for BMO Meeting 3
Task 3.2	BMO Meetings
Task 3.2.1	BMO Meeting 1
Task 3.2.2	BMO Meeting 2
Task 3.2.3	BMO Meeting 3
Task 4	**Task 4.0 Phase IV – Develop Monitoring and Data Collection Protocols**
Task 4.1	Prepare for Monitoring and Data Collection Meetings
Task 4.1.1	Prepare for Monitoring and Data Collection Meetings 1
Task 4.1.2	Prepare for Monitoring and Data Collection Meetings 2
Task 4.1.3	Prepare for Monitoring and Data Collection Meetings 3
Task 4.1.4	Prepare for Monitoring and Data Collection Meetings 4
Task 4.2	Monitoring and Data Collection Meetings
Task 4.2.1	Monitoring and Data Collection Meetings 1
Task 4.2.2	Monitoring and Data Collection Meetings 2
Task 4.2.3	Monitoring and Data Collection Meetings 3
Task 4.2.4	Monitoring and Data Collection Meetings 4
Task 5	**Task 5.0 Phase V – Prepare Implementation Plan**
Task 5.1	Prepare for Implementation Plan and Final GMP Meetings
Task 5.1.1	Prepare for Implementation Plan Meetings 1



Project: GMP for Sonoma Valley
Date: 3/24/06

Task | Milestone | Rolled Up Task | Rolled Up Progress | External Tasks | Group By Summary
Progress | Summary | Rolled Up Milestone | Split | Project Summary

WBS	Task Name
Task 5.1.2	Prepare for Implementation Plan Meetings 2
Task 5.1.3	Prepare for Implementation Plan Meetings 3
Task 5.1.4	Prepare for Implementation Plan Meetings 4
Task 5.2	Implementation Plan Meetings
Task 5.2.1	Implementation Plan Meeting 1
Task 5.2.2	Implementation Plan Meeting 2
Task 5.2.3	Implementation Plan Meeting 3
Task 5.2.4	Implementation Plan Meeting 4
Task 6	**Task 6.0 Groundwater Management Plan (GMP) Preparation**
Task 6.1	Public Hearing to Prepare GMP
Task 6.2	Prepare Groundwater Management Plan
Task 6.3	Prepare for GMP Monthly Meetings
Task 6.3.1	Prepare for GMP Periodic Meeting 1
Task 6.3.2	Prepare for GMP Periodic Meeting 2
Task 6.3.3	Prepare for GMP Periodic Meeting 3
Task 6.3.4	Prepare for GMP Periodic Meeting 4
Task 6.3.5	Prepare for GMP Periodic Meeting 5
Task 6.4	Attend and Participate in GMP Periodic Meetings
Task 6.4.1	GMP Periodic Meeting 1
Task 6.4.2	GMP Periodic Meeting 2
Task 6.4.3	GMP Periodic Meeting 3
Task 6.4.4	GMP Periodic Meeting 4
Task 6.4.5	GMP Periodic Meeting 5
Task 6.5	Miscellaneous Meetings for focused discussions
Task 6.5.1	Miscellaneous Meetings for focused discussions 1
Task 6.5.2	Miscellaneous Meetings for focused discussions 2
Task 6.5.3	Miscellaneous Meetings for focused discussions 3
Task 6.5.4	Miscellaneous Meetings for focused discussions 4
Task 6.5.5	Miscellaneous Meetings for focused discussions 5
Task 6.5.6	Miscellaneous Meetings for focused discussions 6
Task 6.6	Public Hearing to Review GMP
Task 6.7	Adopt GMP
Task 7	**Task 7.0 Groundwater Demand/ Modeling Alternatives Analysis**
Task 7.1	Internal meetings/discussions with SCWA and USGS
Task 7.1.1	Internal meetings/discussions with SCWA and USGS 1
Task 7.1.2	Internal meetings/discussions with SCWA and USGS 2
Task 7.1.3	Internal meetings/discussions with SCWA and USGS 3
Task 7.2	Review output and prepare comments
Task 7.2.26	Review output and prepare comments 1
Task 7.2.27	Review output and prepare comments 2
Task 7.2.28	Review output and prepare comments 3
Task 7.3	Prepare materials for Basin Advisory and Task Force M
Task 7.3.1	Prepare materials for Basin Advisory and Task Force M 1
Task 7.3.2	Prepare materials for Basin Advisory and Task Force M 2
Task 7.3.3	Prepare materials for Basin Advisory and Task Force M 3
Task 8	**Contracting**
Task 8.1	Contracting - Facilitator
Task 8.1.1	Meetings with DWR
Task 8.1.2	Meetings with SCWA, Sonoma County, VoMWD, City of Sonoma
Task 8.1.3	Draft MOU to SCWA, VoMWD, CoS Boards for Approval
Task 8.1.4	MOU Approved by SCWA and Sonoma County Boards
Task 8.2	Contracting - Consultant
Task 8.2.1	Draft Consultant Contract Scope
Task 8.2.2	Consultant Contract Approval by SCWA Board



Project: GMP for Sonoma Valley
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Task | Milestone | Rolled Up Task | Rolled Up Progress | External Tasks | Group By Summary
Progress | Summary | Rolled Up Milestone | Split | Project Summary

Appendix F
Groundwater Management Plan
Consultant Cost Estimate

Budget Estimate for Consultant Services

Development of a Groundwater Management Plan for Sonoma Valley through a Faciltiated Process

Task	*Description*	*Estimated Cost - US Dollars*
Task 1	**Phase One – Convene BAP and Conduct Organizational Meetings**	
Task 1.1	Initial Internal Meetings and Telecoms (assume 30 - 40 hours)	5400
Task 1.2	Prepare Iniitial Organizational Materials	CCP
Task 1.3	Prepare for Initital BAP Organizational Meetings (8 hours)	1400
Task 1.4	Initial BAP Organizational Meetings (assume 30-40 hours plus materials)	4000
TE	Travel expenses (assume three trips)	300
	Task 1 Subtotal (to be included in an amendment this fiscal year)	**11100**
Task 2	**Phase Two - Public Outreach and Education for Basin-Wide Understanding**	
Task 2.1	Develop Public Outreach Plan	NA
Task 2.2	Implement Public Outreach Plan	NA
Task 2.3	Setup SCWA Sonoma Valley GW Webpage (assistance 2 meetings total 8 hours)	NA
Task 2.4	Monthly Web Page Update (3 hours/month)	CCP
Task 2.5	Prepare for BAP Educational Meetings (2 @ 5hour/meeting, total 10 hours)	1800
Task 2.6	BAP Educational Meetings (2 @ 8 hour/meeting, total 16 hours)	2880
Task 2.7	Prepare for one day workshop (20hrs)	3600
Task 2.8	One Day Workshop (10 hours, excludes materials reproduction)	1800
	(Assume Consultant, CCP, County, USGS and DWR conduct workshop)	
Task 2.9	Prepare Public's Guide to Sonoma Valley Groundwater Resources	20,000
	(does not include reproduction $5-10K)	
TE	Travel expenses (assume four trips)	400
	Task 2 Subtotal	**30480**
Task 3	**Phase Three – Develop Groundwater Management Goal and BMOs**	
Task 3.1	Prepare for BMO Meetings (3 @ 5 hour/meeting, total 15 hours)	2700
Task 3.2	BMO Meetings (3 @ 8 hour/meeting, total 24 hours)	4320
TE	Travel expenses (assume three trips)	300
	Task 3 Subtotal	**7320**
Task 4	**Phase Four – Monitoring and Data Collection**	
Task 4.1	Prepare for Monitoring and Data Collection Meetings (4 @ 5 hour/meeting, total 20 hours)	3600
Task 4.2	Monitoring and Data Collection Meetings (4 @ 8 hour/meeting, total 32 hours)	5760
TE	Travel expenses (assume four trips)	400
	Task 4 Subtotal	**9760**
Task 5	**Phase Five – Implementation Plan and Final Draft Groundwater Management Plan**	
Task 5.1	Prepare for Implementation Plan (4 @ 5hour/meeting, total 20 hours)	3600
Task 5.2	Implementation Plan Meetings (4 @ 8 hour/meeting, total 32 hours)	5760
TE	Travel expenses (assume four trips)	400
	Task 5 Subtotal	**9760**

Budget Estimate for Consultant Services

Development of a Groundwater Management Plan for Sonoma Valley through a Faciltiated Process

Task	*Description*	*Estimated Cost - US Dollars*
Task 6	**Groundwater Management Plan (GMP) Preparation under Task Force**	
Task 6.1	Hearing to Prepare GMP	***
Task 6.2	Prepare Groundwater Management Plan	50,000
Task 6.3	Prepare for Periodic Meetings (5 meetings, total 60 hours)	10800
Task 6.4	Attend and Participate in Periodics Meetings (5 @ 4 hour/meeting, total 20 hours)	3600
Task 6.5	Miscellaneous Meetings for focused discussions	5000
Task 6.6	Hearing to Review GMP (10 hours prep, 6 to attend, 16 hours total)	2880
Task 6.7	Adopt GMP	NA
TE	Travel expenses (assume five trips)	500
	Task 6 Subtotal	**72,780**
Task 7	**Work with SCWA and USGS to Develop Model Alternatives Analysis**	
Task 7.1	Internal meetings/discussions with SCWA and USGS (assume 3 mtgs, 12 hours total)	2160
Task 7.2	Review output and prepare comments (assume 16 hours total)	2880
Task 7.3	Prepare materials for Basin Advisory and Task Force Meetings (approximately 20 hours)	3560
TE	Travel expenses (assume two trips)	200
	Task 7 Subtotal	**8800**
Task 8	**Contracting**	
Task 8.1	Collaborative Policy Center MOU with DWR	***
Task 8.1.1	Meeting with DWR	***
Task 8.1.2	Meetings with SCWA, VoMWD, City of Sonoma	***
Task 8.1.3	Draft MOU - SCWA, VoMWD, CoS and DWR	***
Task 8.1.4	Draft MOU to SCWA, VoMWD, CoS Boards for Approval	***
Task 8.1.5	MOU Approved by Boards	NA
Task 8.2	Consultant Contract	NA
	Task 8 Subtotal	**NA**
	Total	**150000**

*** - under existing scope/fund