



Integrated Water Resources Program

May 2005

Butte County Department of Water and Resource Conservation

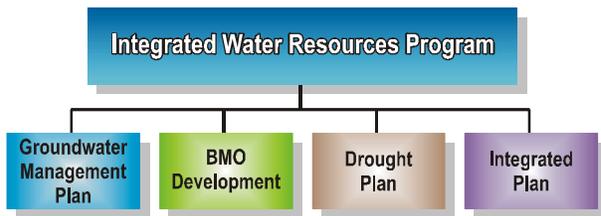
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Executive Summary

Executive Summary

In July 1999, the Butte County Board of Supervisors approved the formation of the Butte County Department of Water and Resource Conservation (DW&RC). The mission of the DW&RC is “to manage and conserve water and other resources for the citizens of Butte County.” Since its inception, the DW&RC has focused on coordinating local water resource management.

The DW&RC initiated an Integrated Water Resources Program (Program) that focuses on input from local stakeholders to improve water management and resource protection in the County. The Program includes multiple water resources-related components, including an AB 3030 Groundwater Management Plan (GMP), a



Groundwater Basin Management Objectives (BMOs) development program, a Drought Preparedness and Mitigation Plan (Drought Plan), and an Integrated Water Resources Plan (Integrated Plan) (see figure). These Program components provide the DW&RC with the tools to support proactive water

management. The DW&RC developed each of these components simultaneously, which allowed data and analyses to be shared between them. This executive summary reviews the purposes, planning processes, and policy recommendations (if applicable) of all the Program components.

AB 3030 Groundwater Management Plan

On August 26, 2003, the Butte County Board of Supervisors formally approved resolution 03-134, directing the DW&RC to develop a countywide AB 3030 Groundwater Management Plan (GMP). The DW&RC has been participating in groundwater management activities for several years. Through its programs, the DW&RC’s efforts focus on helping local users manage groundwater more effectively. During the last several years, the DW&RC has increased groundwater level and quality monitoring, and has worked with other entities to collect and disseminate water quality and quantity data. The GMP documents the County’s existing groundwater management programs, and explains potential future actions that could increase the effectiveness of groundwater management, if current efforts cannot meet the GMP objectives.

Purposes of the GMP Component

The GMP supports the long-term maintenance of high quality groundwater resources within the Plan Area for agricultural, environmental, rural domestic, and urban needs. Specifically, the Butte County GMP objectives include:

- Minimize the long-term drawdown of groundwater levels;
- Protect groundwater quality;

- Prevent inelastic land surface subsidence from occurring as a result of groundwater pumping;
- Minimize changes to surface water flows and quality that directly affect groundwater levels or quality;
- Minimize the effect of groundwater pumping on surface water flows and quality; and
- Facilitate groundwater replenishment and cooperative management projects.

Planning Process

The DW&RC developed the GMP according to the steps defined under California Water Code Sections 10753.2 through 10753.6. The process included public involvement prior to draft preparation and a public review period following completion of the draft. The Board of Supervisors will determine if they should adopt the GMP based on comments received from the public.

GMP Policy Recommendations

The DW&RC is already performing many of the groundwater management activities associated with an AB 3030 Groundwater Management Plan. Through plan implementation, the DW&RC is furthering efforts to achieve groundwater management objectives by elaborating on both current actions and planned future actions. Table ES-1 summarizes the GMP's policy action recommendations.

Table ES-1 Summary of GMP Recommendations		
Description of Action		Implementation Schedule
I.	Groundwater Monitoring	
1	Support the development and implementation of Basin Management Objectives (BMOs) in 16 sub-inventory areas overlying the groundwater basin.	Spring 2004 – Spring 2005
2	Work with local stakeholders and DWR to identify areas that may need additional groundwater level, groundwater quality, or subsidence monitoring based on identified data gaps or negative performance trends.	Annual
3	Work with state and federal agencies to secure funding for expansion of the monitoring grid.	Annual
4	Coordinate with DWR and local landowners to ensure that selected wells are maintained as part of a long-term monitoring program.	Annual
II.	Groundwater Resource Protection	
1	Support the development and implementation of BMOs in 16 sub-inventory areas overlying the groundwater basin.	Spring 2004 - Spring 2005
2	Participate in the review of and provide recommendation for permit applications submitted under the Groundwater Conservation ordinance.	Ongoing
3	Support the Butte County Department of Development Services during the policy update of the water resource section of the General Plan's Conservation Element.	Through Completion
4	Pursue implementation of Integrated Water Resource Plan policies, programs, and projects approved by the Board of Supervisors, including recommendations addressing protection of groundwater recharge areas and development of a cooperative management program.	2004 – 2005
5	Evaluate the need for a wellhead protection program in Butte County.	Fall 2004

Table ES-1 Summary of GMP Recommendations		
Description of Action		Implementation Schedule
III.	Groundwater Sustainability	
1	Provide technical support associated with development of BMOs in Butte County.	Spring 2004 - Spring 2005
2	Assist in coordination and management activities of the Water Advisory Committee.	Annual
3	Complete an update of the Butte Basin Water Users Association (BBWUA) groundwater model.	Spring 2004 - Spring 2005
4	Support maintenance of the BBWUA groundwater model.	Annual
5	Utilize the groundwater flow model to simulate proposed changes in groundwater management practices that may impact groundwater sustainability.	Annual
6	As directed by the Board, support the coordinated management of groundwater and surface water.	As Needed
7	Pursue funding from state agencies, federal agencies, and partnerships for groundwater sustainability activities.	Annual
IV.	Stakeholder Involvement	
1	Continue to work cooperatively with DWR headquarters and DWR Northern District on groundwater management activities.	Annual
2	Continue to work cooperatively with the Bureau of Reclamation and the USACE on groundwater management activities.	Annual
3	Continue to work cooperatively with the California Bay-Delta Authority on programs and policies that support groundwater management efforts in Butte County.	Annual
4	The Department will be responsive to the needs and requests of the Water Commission, Technical Advisory Committee, Water Advisory Committee, Butte Sutter Area Groundwater Users Association, and BBWUA.	Ongoing
5	The Department will continue to support locally-driven stakeholder groups.	Ongoing
6	Consider discussions to jointly develop a countywide coordinated AB 3030 GMP that would incorporate areas with existing AB 3030 plans.	2004 - 2005
V.	Integrated Water Resources Planning	
1	Assist in the development of plan recommendations for consideration by members of the public, the Water Commission, and the Board of Supervisors.	Summer/Fall 2004
2	Implement plan policies, programs, and projects approved by the Board of Supervisors.	Annual
3	Pursue funding sources for implementation of plan policies, programs, and projects.	Annual
VI.	GMP Implementation, Reporting and Updating	
1	Pursue funding for a web-based BMO Information Center to house BMO development, implementation, and reporting information.	Spring 2004
2	Consider opportunities to consolidate reporting of groundwater level, groundwater quality, and inelastic land subsidence information as currently required of BBWUA and BMO participants.	Spring 2005
3	Work cooperatively with local stakeholders, county government, and local advisory committees to assess needed GMP updates.	Annual
4	Sponsor an annual meeting of local districts with AB3030 GMPs to discuss the status of individual plans and opportunities for development of a countywide coordinated AB 3030 GMP.	Annual

Basin Management Objectives

The County Board of Supervisors enacted a Groundwater Management Ordinance (Ordinance 3869) in February 2004 that includes the development and monitoring of groundwater basin management objectives (BMOs) associated with groundwater levels, groundwater quality, and land subsidence. BMOs are locally-developed guidelines for groundwater management that describe actions to be taken by well owners in response to well-monitoring data.

Purposes of the BMO Component

The BMO method of management seeks to protect the groundwater basin from unacceptable depletion of groundwater in storage, degradation of groundwater

quality, and land subsidence. Groundwater, water quality, and subsidence data provide information that is necessary for BMO development and for compliance monitoring. The BMO concept overcomes many of the common difficulties associated with defining safe yield and overdraft in a groundwater basin. A feature of the BMO method includes the flexibility to modify management objectives as knowledge of the groundwater basin increases. Each area can set its own BMO for one or more wells within the area and pursue its specific groundwater management goals as long as the area does not negatively affect neighboring areas. This is a key concept of BMO development -- that water management practices or activities in one management area should not negatively affect the water management objectives of another area.

Planning Process

The emphasis of the BMO development process is local control, as representatives (including well owners) from each area will be developing their own BMOs. BMO planners will be citizens who reside, own property, or have principal places of business in the areas they represent, and will be selected by residents in each sub-area. The DW&RC will provide the BMO planners with their area-specific *BMO Development Packets*, and will offer technical assistance as the BMO planners develop management objectives, select key monitoring wells, and establish the alert levels and actions that will put local management into practice.

Drought Preparedness and Mitigation Plan

The DW&RC developed the Butte County Drought Preparedness and Mitigation Plan (Drought Plan) to protect the County from the effects of a drought. Drought affects the County's water supply and water demand associated with agricultural, urban, and environmental uses. The Drought Plan outlines an institutional framework to approach a drought, including monitoring, response, and mitigation plans.

Purposes of the Drought Plan Component

The Drought Plan provides an efficient and systematic process for Butte County that results in a short- and long-term reduction in drought impacts to the citizens, economy, and environment in Butte County. In addition, the Drought Plan identifies mitigation that can help with the reliability of water supply for other California communities when resources are available.

Planning Process

The DW&RC developed the public review draft Drought Plan. The DW&RC staff plans to conduct public outreach meetings throughout the community during the summer of 2004 beginning in July. After the DW&RC receives public comments, it will incorporate the comments into the Draft Drought Plan and present the plan to the Butte County Water Commission, then to the Board of Supervisors for future consideration and policy direction.

Drought Plan Policy Recommendations

The Drought Plan presents an approach, consisting of monitoring, assessment, response, and mitigation components, to address future drought effects. The Drought Plan recommends the formation of the following committees to carry out implementation.

- A Drought Task Force, responsible for continuous monitoring and reporting of hydrologic conditions throughout the water year with increased monitoring during drought.
- An Interagency Coordination Group (ICG), to be activated in Phase 2 of a drought event. The ICG will assess drought impacts, initiate general actions to respond to impacts, activate specialized working groups as necessary, and serve as the primary liaison with appropriate local, state, and federal agencies.
- Specialized working groups, activated by the ICG as needed to coordinate the assessment of drought impacts, as well as appropriate response and mitigation actions.

Integrated Water Resources Plan

The Integrated Water Resources Plan (Integrated Plan) documents the stakeholder-centered process used by Butte County to develop water resources policy recommendations for consideration by the Butte County Board of Supervisors.

Purpose of the Integrated Plan

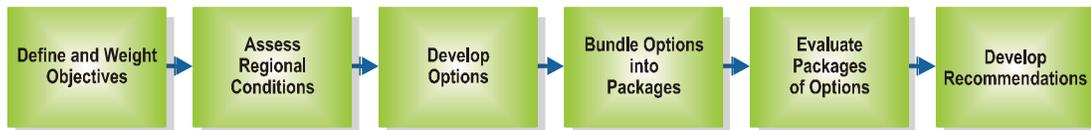
The Integrated Plan is a locally-developed plan that includes water management policy, programs, and projects that stakeholders have identified as important for maintaining and enhancing agricultural, environmental, and urban water uses in the County into the future. The DW&RC will implement policy recommendations following consideration by the Water Commission, recommendation by the Water Commission to the Board of Supervisors, and consideration and adoption of suggested policy by the Board of Supervisors.

The Integrated Plan includes both recommendations for future water management policies and descriptions of associated programs and projects that can be facilitated by adoption of plan policies by the Butte County Board of Supervisors. Consideration of the associated programs and projects described in the Plan was an informative step in policy development. Implementation of any specific project, however, would comprise only of those related activities within the direct authority of the County. Readers should note that the purpose of this planning effort was not to develop a capital improvement program; rather, it was to develop policy recommendations for consideration by the Butte County Board of Supervisors.

Planning Process

The DW&RC and its Study Team initiated a structured, 8-month planning process to develop the Integrated Plan. To begin, the DW&RC formed a Steering Committee composed of a small, focused group of stakeholders, representing a cross-section of interests (agricultural, urban, and environmental), water sources (groundwater and surface water), and service agencies (water districts and independent groundwater pumpers). The Committee met six times during the planning process.

PLANNING PROCESS



Objective Definition and Weighting

Planning objectives describe what the County should achieve with regard to water management. They serve as expressions of the ideas and concerns held by stakeholders, and they provide a reference for evaluation and comparison of packages. The Steering Committee created a complete set of planning objectives, which include the following primary categories: local control (indicating the County's desire to maintain local control of resources), water supply, economy, and natural resources. Because some objectives are more important to stakeholders than others, the Steering Committee weighted the objectives to show the relative importance of each.

Regional Conditions Assessment

Understanding the magnitude and location of future water demands, and any potential changes from existing water demands, allows the County to develop recommendations that will meet or manage demands for water quantity and quality into the future. Butte County water demand includes agricultural, urban, and environmental water uses. As part of this Integrated Plan, the County built upon the current demands in the *Butte County Water Inventory and Analysis* (CDM 2001) to develop agricultural and urban water demand forecasts and an initial environmental water demand assessment. These analyses are necessary information for water resource planning, and they provide context for water policy recommendations. The demand projections show that future agricultural water demand will decline slightly and urban demand will increase. Not enough information has been developed to date to project future environmental demand, but preliminary investigations show that an increase would be likely.

Option Development

Options represent potential policies, programs, and projects that could accomplish the planning objectives. The Study Team and the Steering Committee used the development and evaluation of options and option packages to identify potential

policies, which represent patterns of actions that Butte County can take with respect to integrated resources management. These policies are the ultimate outcome of the planning process described herein; the options are included with the Integrated Plan both to illustrate the development of the policies and to identify the actions that may be accomplished if the policies are approved.

Package Creation and Evaluation

Because no single option can meet all of the planning objectives, the Study Team and Steering Committee evaluated combinations of options, or “packages,” which have an increased ability to achieve multiple complementary objectives. The evaluation considered the performance of these packages, or groups of options, and examined how and why a package would be successful in meeting the objectives. These comparisons identified key interrelationships among various potential water resources actions, and provided the stakeholders a starting point for identifying the ways in which the DW&RC could facilitate problem solving efforts. The Steering Committee evaluated initial packages of options and found that several options within the initial packages clearly performed well related to certain objectives. The Study Team used this information to create a “hybrid package” that combined the high-performing option combinations from the initial packages. This hybrid package formed the basis for the Steering Committee’s policy recommendations.

Development of Recommendations

The final result of the integrated planning process was the development of recommendations that suggest future water resources policies for Butte County. The Study Team and Steering Committee considered the successful combination of potential programs and projects identified during option development and evaluation, and formulated policies that would provide the framework for

implementing the options, focusing on activities within the authority and capability of the DW&RC. The Steering Committee is recommending these policies (attached) to the Board of Supervisors for consideration.



The Steering Committee prepares to develop policy recommendations.

The strength and principal utility of this Integrated Plan is derived from the planning process. As described here, the local Steering Committee worked collaboratively to develop and prioritize water management objectives, potential options, and policies that can be adopted in support of the plan objectives. The Steering Committee members brought diverse opinions and preferences to the planning process, yet share a common vision of protecting a resource critical to sustaining the quality of life enjoyed by residents of Butte County.

Policy Recommendations

The Steering Committee composed the following recommendations for Butte County water resources policies. These recommendations are the outcome of a structured, eight-month planning process, as described in Sections 1 through 5. The policy recommendations are separated into two tiers. The First Tier represents policies that are derived from the options within the hybrid package; and the Second Tier includes policies that relate to the remaining options.

For each policy recommendation, the Steering Committee suggests a series of implementation steps. In most cases, the policy implementation steps reflect steps to implement options that are related to each policy. The steps are presented in chronological order, where possible.

First Tier Policies

The Steering Committee identified a group of policies that should be implemented to meet the County's planning objectives. Policies in the First Tier are those that should be the initial focus of the DW&RC.

Continue Ongoing Water Resources Efforts

Butte County has been working for many years to more effectively manage and protect its water resources. The existing efforts should continue, including:

- Groundwater Conservation Ordinance (Chapter 33);
- Well Spacing Ordinance;
- Update of Butte County Inventory and Analysis;
- Groundwater Management Plan (AB3030 Plan);
- Groundwater Monitoring Program;
- Update of Butte Basin Groundwater Model; and
- Urban Stormwater Management Plan.

The Integrated Water Resources Program has initiated the following efforts:

- Drought Management Plan;
- Water Resources update of the Conservation Element in General Plan;
- Environmental Monitoring Program (described below in more detail); and
- Basin Management Objectives.

Improve Water Management of the SWP Allocation

The County's current SWP contract amendment terminates in December 2004, and a majority of the County's allocation remains unused. The County must develop a mechanism for managing the unused portion of its SWP allocation and other water that may be available. This policy applies during the near-term, until the County implements projects associated with other policies that require use of the allocation (such as the policy to begin a coordinated management program). The Monterey Agreement specifies that SWP contractors may, on a short-term basis, transfer any unneeded supplies into a pool for purchase by other contractors; however, Turnback Pools A and B pay less than 50 percent and 25 percent, respectively, of the costs of the SWP allocation.

Implementation Steps

- Negotiate new mechanisms beyond the requirements of the Monterey Agreement regarding water management by an Area-of-Origin county.
- Evaluate uses of current allocation to develop estimates of the County's baseline needs in all water year types, including a firm estimate of the minimum amount of water needed in dry years.
- Negotiate new contracts with Del Oro Water Company, Paradise Irrigation District, and California Water Service Company based on the analysis above.
- Evaluate the amount of surplus water available in normal and wetter years that could provide additional water management improvements.
- Identify water management options that could generate revenue for the County.
- Develop financial goals associated with improved SWP allocation management.
- Analyze potential water management options; pricing ranges; various mechanisms for using the allocation; potential contractual requirements; and other legal and institutional requirements associated with managing the allocation.
- Evaluate existing infrastructure options and natural features (e.g., storage, conveyance) that could be necessary or beneficial for long-term water management improvement.
- Develop a method to project revenue by water year type and a means to provide consistent annual income to the County.
- Determine which other County water resources programs or policies currently supported by General Funds could be funded with proceeds from improved water management programs.
- Identify and pursue specific water management opportunities.

Increase Agricultural and Urban Water Use Efficiency

The County recognizes that improved water use efficiency (WUE) can provide additional supply for future drought protection or other in-County beneficial uses. Many water providers already work to improve water use efficiency. The County will investigate implementation of improved agricultural and urban WUE measures including best management practices, efficient water management practices, or quantifiable objectives. The County will cooperate with the Butte County RCD, the NRCS, the UC Cooperative Extension, and CSU-Chico (University Farm) to implement this policy.

Implementation Steps

- Identify areas where water use efficiency could improve and sponsor pilot projects to estimate the amount of potential water savings.
- Consult with urban and agricultural water suppliers to understand potential benefits and drawbacks of WUE measures.
- Provide funding and guidance for local public education regarding WUE and include WUE information in County publications, such as Water Solutions.
- Identify potential beneficial uses of saved water.
- Investigate the potential for a countywide WUE program to encourage the implementation of WUE measures. Identify potential program components such as: education; loans or grants for WUE implementation; other incentives; and design guidance assistance.
- Identify potential funding sources (e.g., Proposition 50) for implementation of agricultural and urban WUE programs. If appropriate, apply for funding for Countywide WUE programs.
- Provide guidance and assistance to local jurisdictions applying for funding.

Recommend that BMOs Support Native Vegetation

Sustaining natural vegetation above recharge zones is important for managing groundwater levels, because natural vegetation enhances riparian areas and wetlands that recharge the aquifer. When vegetation dies, water runs more quickly off of the wetland and vegetation areas, reducing recharge. The County encourages groundwater management units participating in the BMO development process to consider groundwater levels that locally support vegetation, and to establish BMOs that maintain vegetation.

Implementation Steps

- Initiate the Environmental Monitoring Program.
- Retain the services of groundwater and habitat experts to estimate groundwater levels required for local vegetation in different BMO management units.

- Create and distribute guidance document for BMO process participants that explains the benefits of sustaining vegetation, and that provides locally-specific information pertinent to groundwater levels that support vegetation.
- Cooperate with the Butte County RCD, the NRCS, the UC Cooperative Extension, and CSU-Chico (University Farm and Research Foundation) to implement this policy.

Protect Recharge Areas through Zoning

Land use practices on recharge areas can affect the quality and quantity of recharge into the aquifer. Protecting habitat areas and limiting activities that could degrade water quality would reduce the potential for these effects. The County will pursue zoning changes to define protection measures within recharge areas.

Implementation Steps

- Define and prioritize recharge areas.
- Identify measures that could help protect aquifer quality and quantity, such as prohibiting certain types of new industrial or commercial facilities, installing sanitary sewers, limiting impervious cover, or building detention basins for stormwater.
- Determine the effectiveness of the protection measures.
- Work with Butte County Department of Development Services and the Board of Supervisors to craft and approve changes to zoning in recharge areas.

Inform and Educate the Public about Water

Fostering public knowledge and understanding regarding water resources can help to create a culture of resource stewardship. The County will increase public education to inform residents about local water resources and issues.

Implementation Steps

- Prioritize education campaigns (e.g., information dissemination through publications; interaction with the public in meetings or other settings; provision of water data; and other methods) to determine which programs best meet Plan objectives.
- Develop specific tasks, budgets, and schedules for priority information programs.
- Identify and pursue potential funding sources, or use proceeds derived through improved management of SWP allocation.
- Roll out education program(s) in partnership with the NRCS, Butte County RCD, UC Cooperative Extension, CSU-Chico, Butte College, the Water Education Foundation, local watershed groups, and local water agencies.

Increase Support for Butte County Resource Conservation District

The Butte County RCD can play an important role in managing water resources by fulfilling its mission to “conserve the resources of Butte County for the benefit of its citizens, its environment and its economy.” The County will maintain administrative support for the RCD and help to coordinate activities with local watershed groups through the RCD.

Implementation Steps

- Assist the RCD to develop an annual and long-term plan as necessary.
- Identify and investigate funding for RCD activities.
- Help to obtain continued funding for a watershed coordinator within the RCD.
- Provide guidance and assistance for coordination with local watershed groups.

Support Solutions to Potential Future Water Shortages in the Ridge Community

The County will provide institutional support to help the Ridge community implement a solution to potential future water shortages.

Implementation Steps

- Continue efforts to coordinate with Paradise Irrigation District and Del Oro Water Company, as was initially implemented under the Paradise-Ridge MOU.
- Coordinate with Paradise Irrigation District and Del Oro Water Company as they update demand projections as part of their Urban Water Management Plans.
- Before the formal environmental documentation begins, assist local communities to develop local or regional environmental options to reduce environmental effects.
- Help secure funding for water supply reliability projects.
- Cooperate on use of County’s SWP allocation to improve water supply reliability.

Implement a Coordinated Management Program

A coordinated management program could improve the flexibility and reliability of county water resources. A coordinated management program would include a recharge component to place water into the aquifer, a recovery component to extract water from the aquifer, a monitoring program to assess the aquifer behavior, and an institutional framework within which the program would function. The County will study the feasibility of a coordinated groundwater-surface water management program, and will seek to implement programs that are feasible and environmentally beneficial.

Implementation Steps

- Refine the existing Butte Basin groundwater model for use in further studies of this program.
- Apply the Butte Basin groundwater model to perform a preliminary feasibility screening of a coordinated management program.
- If a coordinated management program appears feasible, conduct a study and pilot projects to identify prime recharge areas, examine potential recharge methods, including direct recharge and in-lieu recharge, to determine financial, technical, economic, political, and environmental feasibility. Examine the potential environmental benefits associated with various recharge methods, including enhanced natural recharge. Develop a preliminary understanding of the potential environmental benefits and impacts of the recharge methods.
- Conduct pilot studies of groundwater extraction methods to determine their financial, technical, economic, political, and environmental feasibility.
- Develop a program plan and budget, including costs of the recharge and recovery components and potential program revenue.
- Investigate the potential for partnerships with other local, regional, or statewide agencies to help fund program components.
- Form a management structure within which the program will function.
- Design and construct program components.

Take Steps to Understand and Improve Butte County Water Quality

Understanding threats to water quality and improving water quality in Butte County are important aspects of resource stewardship. Known constituents affecting the County's water quality include nitrates, organic chemicals, sediment, and heavy metals. The County will support investigations to improve understanding of Butte County surface water and groundwater quality.

Implementation Steps

- Support studies to investigate agricultural, rural, and urban water quality problems in Butte County.
- Coordinate among County, state, and federal agencies and groups to compile and share existing water quality data and develop a countywide water quality database to facilitate data sharing.
- Identify additional water quality monitoring needs and support monitoring programs as necessary.

- Enact land treatment (e.g., grading) and stormwater policies to protect and improve water quality.
- Identify and pursue potential funding sources for these water quality-related actions, or use proceeds from managing the SWP allocation.

Serve as an Advocate to Improve Understanding of and Conditions for Special Status Species in Creeks and Rivers

Many creeks and rivers in Butte County provide valuable habitat for special status species (i.e., state and federally-listed species). The presence of these species, their requirements, and the threats to their health are not fully understood. A need exists for a better understanding of these species' location-specific requirements, and for identification and implementation of actions to improve conditions for these species.

The County will use USFWS and CDFG documents to identify the type and location of special status species and the habitat needs of these species. The County will initiate actions and participate in ongoing efforts to protect special status species in creeks and rivers.

Implementation Steps

- Identify the special status species and their habitat needs.
- Coordinate with CDFG, NOAA Fisheries, USFWS, watershed groups, Butte County RCD, municipalities, and local agencies to determine how the County could assist in studies.
- Identify actions that can be taken to improve conditions for special status species.
- Identify and work to address concerns of private property owners that may be affected by potential actions.
- Assist CDFG and the Butte Creek Watershed Conservancy with their feasibility investigations of methods to protect the species.
- Develop partnerships with entities that have ongoing efforts to understand and improve conditions for special status species.
- Participate in the FERC relicensing processes on creeks and rivers and serve as an advocate for additional resources for special status species.
- Form an Environmental Committee to provide assistance in securing funding and implementing the environmental monitoring program.
- Identify potential funding sources for actions that support this policy, or use proceeds from managing SWP allocation.
- Share information gathered through implementation of this policy with the public.

Coordinate Regional Watershed Management

The County recognizes the efforts and progress made by the Butte County RCD and local watershed groups to meet distinct organizational and resource challenges. These local efforts could in some cases be enhanced through coordination and exchange of information, as well as through sharing of staff and funding resources. Likewise, at the regional level, coordination of watershed management planning among Butte, Plumas, Yuba, and Lassen Counties could achieve mutual benefits. The County will support watershed planning and management through the RCD.

Implementation Steps

- Create a forum (e.g., a series of meetings or an active committee) to exchange information and share expertise with watershed planners in neighboring counties and RCDs.
- Support development of a County-wide watershed model.

Implement an Environmental Monitoring Program

While the County has developed demand projections for municipal and agricultural water use, the County's environmental water needs are less well quantified. Better quantifying current and projected environmental water needs will allow the County to plan for its future water needs and to protect the potential for beneficial, in-county use of its water resources. The County will implement an environmental monitoring program to increase knowledge regarding environmental resources and water demands.

Implementation Steps

- Determine environmental monitoring objectives.
- Form an Environmental Committee to implement the program.
- Work with CSU-Chico and the Environmental Committee to refine program plans and budget.
- Identify potential funding sources for actions that support this policy, or use proceeds from managing the SWP allocation.
- Partner with State and Federal agencies in ongoing environmental monitoring activities.
- Conduct an ongoing environmental monitoring effort and use information gathered to develop detailed estimates of environmental water needs.
- Support instream flows that sustain appropriate fishery and terrestrial habitat.

Enhance a Multi-County Cooperative Outreach Effort

Because management of the County's water resources affects – and is affected by – resource management in adjacent counties, opportunities may exist for the County to improve local, statewide, and federal understanding of regional water management issues and needs through a multi-county, coordinated outreach effort. The County will initiate a multi-county effort to cooperate with neighboring entities that share water resources.

Implementation Steps

- Investigate which water resources management and outreach activities could benefit from dissemination of a consistent message at the local, statewide, and/or federal level.
- Determine whether an outreach effort could be completed in conjunction with other regional entities or efforts, such as the Northern Sacramento Valley Water Forum, Northern California Water Association, or the Sacramento Valley Water Management Agreement.
- Discuss the potential for an enhanced effort with neighboring counties, including Tehama, Glenn, Sutter, Colusa, Plumas, and Yuba.
- Identify or initiate, then participate in, an appropriate forum to exchange information, share expertise, jointly develop outreach themes and components, and implement outreach with representatives of other participating counties and federal agencies.

Second Tier Policies

The Steering Committee identified additional policies that do not need to be implemented immediately, but may be valuable policies in the future. These policies comprise the Second Tier.

Investigate the Potential for Water Storage in Former Mines

Mining activities leave a pit that may have potential for use as a water storage reservoir. The County will investigate the potential for future water storage projects in former mines.

Implementation Steps

- Investigate past and potential mining activities in the County that could leave excavations suitable for creation of water storage reservoirs.
- Investigate the amount of runoff or other potential sources of water in the vicinity of these excavations.
- Identify potential users for the stored water.

- Estimate project costs, and determine whether potential users have the ability to pay those costs.
- Examine potential environmental impacts and recreation benefits associated with creating the storage reservoir.

Expand Groundwater Level and Extraction Monitoring

Increased monitoring of the groundwater aquifer will help the County protect the resource for the future. Butte County DW&RC and DWR, Northern District have focused on characterizing the groundwater aquifer under Butte County, but additional information is needed in areas where significant volumes of groundwater are extracted each year. Increased groundwater level and extraction monitoring in these areas would provide information that could help the County and DWR better understand the aquifer. The County would increase monitoring efforts to further this goal.

Implementation Steps

- Investigate ways to monitor extractions that may be more affordable and politically acceptable than monitoring individual wells.
- Identify areas in the County where additional monitoring would help increase understanding of the aquifer.
- Determine the best methods to increase monitoring in these areas, including installation of new wells or increased monitoring at existing wells.
- Pursue long-term funding for the necessary monitoring.

Commit to a Periodic and Coordinated Update of Water Management Plans, Ordinances, Resolutions, and Policies

Water use and available supplies change regularly, especially with increasing development or changes in land use. Water management tools lose effectiveness if they are not updated as these changes take place. The County will commit to regularly updating water management plans, ordinances, resolutions, and policies, including management objectives.

Implementation Steps

- Identify the plans, ordinances, resolutions, policies, and management objectives that need to be updated, and develop a schedule for updates.
- Identify other agencies or groups that may have a stake in each tool, and determine the best way to coordinate the updates with these groups.
- Pursue steady funding for the updates.

Support Restoration of a More Natural Flow Regime on the Sacramento River

The flow patterns and geomorphology of the Sacramento River vary from historic patterns of high flows during rainfall and snowmelt. Fish and riparian vegetation use flows to cue various behaviors, such as spawning and migration. Channel geomorphology also plays an important role in the river's suitability for riparian species. Butte County will provide institutional and political support to restore a more natural flow regime and geomorphology on the Sacramento River.

Implementation Steps

- Identify agencies or non-profit groups that may be working to create these flow patterns.
- Coordinate with these agencies and groups to determine ways to lend support.
- Discuss concerns with local landowners that may be affected, and work with landowners and other interested parties to determine how these concerns could be addressed.

Dissenting Opinion

One member of the Steering Committee expressed reservations about the First Tier of policies because it includes an option to implement a coordinated management program. This stakeholder determined that he/she cannot fully support the set of policy recommendations because of environmental concerns associated with coordinated management.