

GLENN COUNTY WATER ADVISORY COMMITTEE

Glenn County Department of Agriculture
720 North Colusa St., P.O. Box 351, Willows, CA 95988
Phone: (530) 934-6501 Fax: (530) 934-6503

E-mail: wateradv@countyofglenn.net Web Page: www.glenncountywater.org

MEETING MINUTES

Meeting Date: Thursday, July 21, 2016

Time: 10:30 AM

Place: Glenn County Department of Agriculture
720 North Colusa Street
Willows, CA 95988

Water Advisory Committee Members Present:

Bruce Roundy	Resource Conservation District
John Amaro	GCID
Rob Vlach	Private Pumper
Larry Domenighini	Glenn County Farm Bureau
Mike Alves	TC Canal Authority Districts
Ted Trimble	Western Canal Water District
Darin Titus	Private Pumper

Others in Attendance:

Lisa Hunter	Glenn Co. Ag Dept.
Chip Meriam	Assessor's Office
Mardy Thomas	Glenn Co. Planning & Public Works

Water Advisory Committee Members Absent:

David Alves	Central River Irrigation Districts
Terry Bressler	East County Rec & Irr Districts
Ken Sullivan	Orland Water Users Association
Mike Vereschagin	TC Canal Authority Districts
Mark Lohse	Private Pumper
Del Reimers	Private Pumper

Technical Advisory Committee Members Present:

Kevin Backus	Glenn County Environmental Health
Marcie Skelton	Glenn County Dept. of Agriculture
Anjanette Shadley	At-Large, East Area
Erin Smith	DWR

I. INTRODUCTIONS:

Those in attendance are shown above.

II. AGENDA ITEMS:

A. Public Comment:

None

B. Discussion and/or Action Items:

1. Letter to Board of Supervisors

As requested at the May 24, 2016 meeting, a draft letter to the Board of Supervisors was developed by the TAC using the following statement as a guideline: *The WAC cannot*

recommend that the well moratorium be continued based on lack of sound data/science and further studies are needed to be done to gather data by a third party consultant and funding is needed to complete these studies. The letter was discussed at the June 12 meeting. A second draft has developed and included in the agenda packet for further review and discussion.

The group revised the letter during the meeting, the final version of which is attached.

A comment was made that a member felt the data and science support lifting the moratorium, not that there is a lack of science and data. Some felt that it could be beneficial to let the moratorium remain in stage 3 areas of the county. Some were still concerned that the WAC should not be providing an opinion on the moratorium issue to the Board; the instruction to the WAC was to develop a comprehensive monitoring program and that a minute order should be referenced. Other comments and suggestions are captured in the final letter.

Ultimately, Darin Titus provided a motion to approve the letter with the changes made at today's meeting. The motion was seconded by Ted Trimble and passed unanimously.

Further direction was given that Lisa Hunter will send the letter to the Board of Supervisors and request it be included in the agenda item regarding the well permit moratorium on August 2. Darin Titus would be the spokesperson for the WAC at the August 2 Board of Supervisors meeting.

III. NEXT MEETINGS:

The next WAC meeting will tentatively be held August 9 2016 to discuss the Supervisor response to the letter and a potential presentation to the Board if necessary.

The next TAC meeting has not scheduled.

IV. ADJOURN:

The meeting was adjourned at 11:46 AM.



Water Advisory Committee

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July 21, 2016

Dear Board Members:

Pursuant to Minute Order 7 of the May 17, 2016 meeting, The WAC and TAC members have held numerous meetings to discuss the groundwater conditions in Glenn County in order to develop actions necessary to achieve sustainable groundwater conditions within the County. We have the following concerns and recommendations for the Glenn County Board of Supervisors with regard to the development of the Groundwater Management/Well Permitting Ordinance:

1. The committee recommends the well permit moratorium not be extended due to a lack of comprehensive data that supports the science for such actions.
2. The WAC and TAC recommend that funding is made available by the County to fund a consulting firm to complete a county-wide water budget (water balance) and additional work to provide credible science to support groundwater management actions.

Items of importance are listed below:

- a) County-wide water budget (water balance)—approximately \$130,000 to be covered by a variety of sources including a portion covered under a grant administered by the County's Agricultural Department and additional funding from the County and possibly other participating agencies. A water budget is fundamental in providing useful recommendations regarding well permitting and BMO revisions. Furthermore, a detailed water budget is also essential in moving the Sustainable Groundwater Management Act discussions forward, including the formation of Groundwater Sustainability Agencies and Plans.
- b) Items from the Preliminary Plan for Groundwater and Coordinated Water Management (Adopted by the Supervisors in 2003, incorporated into Ordinance 1237 in August 2012)
 - Formulate countywide water management goals
 - Perform water needs analysis (initially completed in 2007, due for an update)
 - Prepare water delivery and distribution infrastructure map (initially completed in 2007)
 - Determine groundwater utilization opportunities and constraints
 - Complete comprehensive groundwater monitoring program (initially completed in 2007, currently updating BMO revisions)
 - Formulate potential projects (ongoing)
 - (Formulate) evaluate water transfer guidelines (completed 2012, incorporated into Ord. 1237)
 - Formulate drought preparedness plan
 - Formulate public information and education program (ongoing)
 - Prepare Groundwater and Coordinated Water Management Plan



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- c) Items from the Report on Groundwater Level Declines in Western Glenn County (Adopted by the Supervisors in May 2014)
- Groundwater/Surface Water Modeling and Water Budget (Prop 1 grant beginning July 2016 will start this process, also see County-wide water budget listed above)
 - Cost study analysis
 - Recharge activities
 - Surface water use
 - Coordination, Outreach, and Education (ongoing)
 - Mapping (initial mapping completed; this task is ongoing)
 - Basin Management Objectives (this task is ongoing)
 - County Governance Options (Portions of this task have been reviewed/discussed/implemented. This task requires further engagement.)
3. The committee recommends re-evaluating the well permitting process to collect information to aid in the construction of new wells to support sustainable groundwater in the county.
4. Groundwater conditions vary widely within the County and a one size fits all approach will not work for well construction criteria such as sealing wells at various levels. In some areas this will lead to the inability to find a usable source of groundwater.
5. The committee recommends that the work on updating the current BMOs be continued as planned. This process could be helped by consultant review and recommendations.

Thank you in advance for your careful consideration of these recommendations.

Sincerely,

A handwritten signature in blue ink, appearing to read "Rob Vlach", with a long, sweeping underline.

Rob Vlach
WAC Chairman

Attachments:

Preliminary Plan for Groundwater and Coordinated Water Management
Report on Groundwater Level Declines in Western Glenn County

MEMORANDUM

TO: Glenn County Water Advisory Committee

FROM: Francis E. Borcalli, P.E.

DATE: November 13, 2003

SUBJECT: Preliminary Plan for Groundwater and Coordinated Water Management – Discussion Document

INTRODUCTION

The Glenn County Water Advisory Committee (WAC) retained the services of Wood Rodgers, Inc. in February 2003, to assist in facilitating a planning process to document and preserve what has been accomplished and provide a direction for the future of the WAC.

In carrying out this assignment, Wood Rodgers interviewed representatives of water districts, agricultural support entities, and agriculturists; reviewed documents describing completed as well as relevant work in progress, city/county general plans, and county codes and ordinances. Additionally, Wood Rodgers attended meetings of the WAC and Technical Advisory Committee (TAC).

Based upon information assimilated, Wood Rodgers prepared this Memorandum to initiate discussion aimed at facilitating the management of water resources “available” to Glenn County. Use of the term “available” is purposeful in that Glenn County, not necessarily as a jurisdiction but as a community, has the innate responsibility of being stewards of those resources for the community of Glenn County as well as the region and State as a whole.

By virtue of the geographic and hydrologic setting of Glenn County and the foresight and actions of people in years past, Glenn County is in an enviable position in relation to many other areas of the State. More importantly, Glenn County has, in recent years, continued to demonstrate foresight by virtue of measures implemented to safeguard its groundwater resources. Measures that are being implemented in Glenn County are being used to set standards statewide by virtue of being incorporated into legislation of statewide significance.

The efforts of Glenn County relative to formulating and codifying measures to safeguard its groundwater resources and the progress made in implementing stipulated monitoring programs are commendable. This effort to chart the “next” step to facilitate improved management of the available water resources is commendable as well.

BACKGROUND

Glenn County is clearly an agricultural community with nearly 30 percent of its 850,000 acres in agriculture and one percent devoted to urban uses (Table 1). Over the 10-year period from 1988 to 1998, land devoted to agricultural use decreased from 283,517 acres to 263,503 acres, or seven percent, while land devoted to urban use increased from 6,114 acres to 11,314 acres, or 85 percent. Virtually all land suitable for irrigated agriculture is developed, thus, increases in water use for agriculture would be attributed to changes in crop mix and/or intensity of farming or improved reliability in supply.

The land within the incorporated cities of Orland and Willows is approximately 3,400 acres although the land within the planning area or Sphere of Influence of the two cities is approximately 12,400 acres. The latter represents approximately 4.7 percent of the land in agriculture in 1998. The total county population in 2012 is projected at 47,000, which represents an increase of nearly 22,000 people above the 1993 population.

In establishing the WAC and TAC; adopting Ordinance No. 1115; developing and adopting initial Basin Management Objectives (BMOs); and implementing programs to monitor groundwater levels, water quality, and land subsidence monitoring programs represents very significant accomplishments that separates Glenn County from most other counties. Having “tested” the BMO process for addressing conflicts reinforces the utility of the process established for safeguarding groundwater resources.

GOALS FOR WATER MANAGEMENT

To identify the goals for water management in Glenn County, certain documents were reviewed to determine the extent to which the community is unified in this regard. The respective documents and specified goals are presented below. Where deemed appropriate, some commentary or comments are provided that relate to the purpose of this assignment.

Basin Management Objective (BMO) for Groundwater Surface Elevations in Glenn County, California, August 21, 2001

The vision set forth by the WAC in submitting the Basin Management Objectives to the Board of Supervisors for adoption, is *“that sufficient and affordable water of good quality be available on a sustainable basis to meet the needs of agricultural, industrial, recreational, environmental, residential, and municipal users within the County, both now and in the future.”*

The intent of the vision is well meaning; however, at this time the water needs and affordability of the respective users are not known. Absent some quantification of the needs and affordability, it is very difficult to formulate water resource projects and programs to fulfill the vision.

Policy Plan Glenn County General Plan Volume I, June 1993

Goals and policies are set forth in the General Plan that relate to the subject of this Memorandum. A relevant goal and policies were selected from the document and are presented below.

Goal:

NRG-2 Protection and management of local water resources.

Policies: It shall be the policy of Glenn County to:

NRP-22 Oppose the exportation of groundwater resources outside the county.

NRP-23 Support legislation which will provide for a locally controlled Glenn County groundwater management district.

NRP-24 Recognize the following local priorities when dealing with questions of ground and surface water use:

- Highest*
- (1) Household/Domestic
 - (2) Agriculture
 - (3) Industrial/Commercial
 - (4) Wildlife/Conservation

Lowest (5) Exportation

NRP-25 Protect groundwater recharge areas in the county from overcovering and contamination by carefully regulating the type of development that occurs within these areas.

Other policies and implementation strategies are presented in the General Plan, however, are not presented here.

It is recognized these policies were developed in 1993, and that a great deal of work and effort were expended since then to better understand and manage water resources available to the Glenn County. Nevertheless, these policies are not necessarily consistent with current management strategies.

Feasibility Report, OUWUA AND TCCA Regional Water Use Efficiency Project, January 2003

The long-term management goals for the OUWUA and TCCA as stated in the feasibility report include the following:

- Insure a long-term reliable water supply to the OUWUA, and improve conveyance system and on-farm water use efficiency by modernizing the existing open channel distribution system
- Support the long-term Stony Creek environmental restoration and fishery resource management objectives of the various state and federal resource agencies
- Provide supplemental water supply to the TCCA service area
- Provide supplemental water supply and operating flexibility to support other beneficial water uses within the Sacramento Valley

Glenn-Colusa Irrigation District Water Transfer Policy, February 16, 1995

The Glenn-Colusa Irrigation District (GCID) adopted its water transfer policy in February 1995. The policy articulates a priority to allocate its water supplies. Summarized below is GCID's policy to allocate water supplies available after meeting the needs within the District. Water available in excess of the District's needs would be marketed as follows:

1. A portion of the available water to other agricultural areas within the Sacramento River watershed with consideration given to the buyers "ability to pay,"
2. To environmental purposes.
3. To urban water agencies north of the Delta.
4. To agricultural or urban water users south of the Delta.
5. To the USBR/DWR on a case-by-case basis with the same priority as south of the Delta water users.

It is not essential that goals and policies of entities involved with water management be the same, however, it is important from the standpoint of the message delivered to people within and outside the county, that:

- The goals and policies from a countywide perspective be consistent.
- The goals and policies at the countywide level facilitate sound water management by local entities.

ORGANIZATION FOR WATER MANAGEMENT

Existing organization for addressing water-related issues in Glenn County includes the WAC and TAC, the membership of which are both appointed by the Board of Supervisors. The WAC and TAC have been instrumental in implementing groundwater monitoring programs to address groundwater levels, water quality, and land subsidence and in assessing compliance with the BMOs. Additionally, meetings of the respective committees have provided a forum for discussing a variety of water-related matters. More important, or at least equally important, to the work accomplished, is the strength of the organization, which comes from successfully dealing with contentious and controversial issues. The WAC is comprised of 22 members, 17 of which represent specific geographic subareas, four individually representing the cities of Orland and Willows, the Resource Conservation District, the Glenn County Farm Bureau, and one ex-officio member from the Board of Supervisors. The subareas and geographic locations are identified on Map 1. The area of each subarea is presented on Table 2. A further definition of each subarea in terms of land use for years 1993 and 1998 is presented on Table 3. The TAC is a nine-person committee nominated by the WAC and appointed by the Board.

Work of the WAC/TAC is at a threshold in that a milestone has been reached in terms of the initial focus of groundwater management being achieved. This is not to say that the work is completed but rather, the program for groundwater monitoring, an important element of the BMOs, is being implemented. This will be an ongoing effort in terms of the monitoring network and the data compiled.

The question being addressed at this time is, "What is the next step toward advancing the management of water resources available to Glenn County?" In other words, what is the role of the WAC/TAC and what activities should be implemented to build on the good works completed to date. Improved water management is accomplished one step at a time. Each step should build on work completed from the previous step. Clearly, each step will be followed by another, as the task of water management is never completed. Instead, it becomes more refined with well-directed effort over time. An essential element of ongoing success is the unconditional cooperation and partnerships formed to implement well-conceived programs and projects. Accordingly, the roles and responsibilities of the involved parties need to be clearly defined.

A specified purpose of the County in adopting the BMOs is to work cooperatively with interested local agencies to further develop and implement joint groundwater management practices. To this end, to the extent efforts are directed to facilitate improved management of available water resources by local agencies or entities, the people of Glenn County will be well served.

Management of available water resources by local agencies or entities can be improved with information that is more global in scope or countywide, readily accessible, and provides the foundation for monitoring conditions and identifying opportunities for improved water management and partnerships for implementing particular programs and projects.

For purposes of advancing the management of water resources available within Glenn County, it is suggested that the role of the WAC be expanded to include the coordination of other water resources activities that are countywide. Thus far the effort of the WAC has been directed

primarily at administering the BMOs. The composition of the existing committees, although considered by some as not well balanced, does provide a good cross section of the water community of Glenn County. Furthermore, the ability to work together to deal with contentious issues has been demonstrated.

The water resource activities or tasks should be aimed at formulating a Glenn County Groundwater and Water Coordination Plan. The activities undertaken that are of a countywide nature should in no way interfere with the day-to-day operations of local entities, long term planning, or management of resources. On the other hand, the effective implementation of such activities should facilitate more effective planning, implementation, and management of local entities individually and/or jointly.

To reflect a broader role, the WAC could be referred to as the Water Advisory and Coordination Committee or other name as may be deemed appropriate. The duties related to the BMOs would not change.

PROGRAM TO FACILITATE GROUNDWATER AND COORDINATED WATER MANAGEMENT

Tasks have been identified as components of a program to facilitate the management of water resources by local entities within Glenn County. The product from the respective tasks would provide information that can be used to facilitate improved water management and benefit Glenn County. It is suggested implementing the tasks with oversight of the WAC in its expanded role as discussed above. The respective tasks, together with a brief description, are presented below.

A. Formulate Countywide Water Management Goals

As noted previously, goals for water management at the county level are not consistent and in some sense contradict the goals and policies of local entities. For the benefit of the community at large and entities responsible for water management, it would be beneficial to revisit this matter to develop water management goals that would serve to unify the governing and regulatory bodies and those responsible for water management.

B. Perform Water Needs Analysis

Having the water needs of Glenn County as a priority for water management is certainly endorsed by all parties. A difficulty is that the water needs for Glenn County are not identified. Addressing this priority in a responsible manner could be done if the water needs for the various water uses were quantified in terms of amount, location, timing, and quality. Addressing the water needs, or better stated, unmet water needs, dictates that water supplies also be quantified.

C. Prepare Water Delivery and Distribution Infrastructure Map

Having a map that displays all existing infrastructure for the delivery and distribution of irrigation water would be beneficial for identifying opportunities to interconnect or extend

facilities to exchange or transfer water within the county. This information would be helpful to identify opportunities meeting water needs in particular areas, and/or providing service in the event of an emergency situation.

D. Determine Groundwater Utilization Opportunities and Constraints

BMOs have been set for various sub-areas in the county. To a large extent the BMOs were established using historic groundwater level data. The BMOs and the applied methodology provides safeguards for protecting the groundwater basin, however, it may also be limiting the opportunity for managing the available water resources. A better understanding of the extent to which the groundwater basin can be utilized without causing adverse impacts could aid substantially in meeting the water needs of the county under normal or emergency conditions.

Glenn County is fortunate to have a groundwater model that was prepared for the Orland-Artois Water District, the Orland Unit Water Users' Association, and Glenn-Colusa Irrigation District. Water Resources & Information Management Engineering, Inc. (WRIME) developed the Stony Creek Fan Integrated Groundwater and Surface Water Model (SCFIGSM) in coordination with the California Department of Water Resources. By virtue of having the model, Glenn County, again, sets itself apart from most other counties. Although the model was developed for the Stony Creek Fan Conjunctive Water Management Program, the model is a "public domain" model and it is understood that the model is available for use by other entities in Glenn County.

The SCFIGSM is a "tool" that can be used to simulate groundwater flow, streamflow, reservoir operations, rainfall runoff processes, land use processes, unsaturated zone flow, and land subsidence. The utility of the SCFIGSM, as stated in WRIME's report, is that it can be used to:

1. Re-examine the assumptions made during the development of the BMOs.
2. Enhance the information background of an existing decision or a revised decision related to the Groundwater Management Ordinance or the BMOs.
3. Identify sensitive areas where additional monitoring may be required to check compliance with the BMOs.
4. Develop general response characteristics and/or sensitivity ranges among different physical and operational elements.
5. Enhance the understanding of the groundwater system behaviors, characteristics, and constraints.

The SCFIGSM can perform "what if" scenarios that can greatly improve the overall understanding of the groundwater basin and general response to hypothetical changes in land use and water management.

E. Complete Comprehensive Groundwater Monitoring Program

Through the efforts of the WAC and TAC, Glenn County has initiated a sound groundwater monitoring program consistent with the BMOs that includes groundwater levels, groundwater quality, and land subsidence. The program is not complete and will be improved and refined with time as additional information is obtained and the needs and understanding of the basin are better known. This program should be completed to the extent existing data and information permits to expand and refine the program and network over time as funding permits. The groundwater model discussed above could be useful in refining the program.

F. Formulate Potential Projects

It would be useful to conduct “brainstorming” sessions to identify, at a conceptual level, potential projects and programs that could help to improve water reliability, quality, or mitigate the impact of extended droughts. Attention should be given to seeking multiple benefits such as reducing impacts from flooding/storm drainage, environmental enhancements, etc.

The benefit of such an exercise would be twofold. First, it would establish a potential list of projects that could be considered for advanced study when funding opportunities are available. Second, it would provide a broader understanding of the potential projects in which participants might consider being a partner in at a future time.

G. Formulate Water Transfer Guidelines

Glenn County, by virtue on its physical and hydrologic setting and foresight of its residents in the past, enjoys an enviable water supply situation in relation to many counties in California. The fact that water transfers within and/or outside the county can be considered is a fortunate circumstance.

As stewards of the water resources available to Glenn County the resource should be managed to meet the needs of Glenn County, the Sacramento Valley, and California, to the extent practicable. Water law and guidelines or parameters for water use exist. It would be helpful to the community to have guidelines documented that represent established water law and water use parameters that represent the basis for particular types of water transfers. Types of water transfers that should be considered include:

- Surface water with groundwater substitution.
- Surface water with fallowing.
- Groundwater.

To the extent water transfers are configured consistent with adopted guidelines, there should be no need for discussion of a mitigation fund or third party impacts. Having water transfer guidelines in place can facilitate the management of water resources within the county.

H. Formulate Drought Preparedness Plan

The results of tree-ring studies performed on behalf of DWR indicate the occurrence of dry periods of greater duration and severity than the recorded history much of the water planning is based upon. It is not practical to develop or have water supplies available to cover severe events. Nevertheless, such events should be anticipated and measures identified in advance to prepare a community for managing the resources for the well being of the community.

The groundwater model provides an excellent tool by which "what if " scenarios can be examined to identify the most sensitive areas from the standpoint of potential adverse impacts to the groundwater basin. Measures and protocol for response in such events can be used to refine the BMOs.

I. Formulate Public Information and Education Program

The WAC, with an expanded role, could be very effective in disseminating water resource information on a regular basis and facilitating public involvement for projects in which local agencies are involved. Utilizing the excellent relationship with the U.C. Extension Service and DWR could be very effective as a cooperative effort.

J. Prepare Groundwater and Coordinated Water Management Plan

Implementing the tasks described above could help to facilitate the management of water resources available to Glenn County.

These activities lend themselves to being addressed at a countywide level and will support the work of local entities and facilitate management of supplies for which each is responsible. Opportunities for partnerships to improve water management could emerge from the work as well.

SUMMARY

The information presented above is intended to provide a basis for discussion of items Wood Rodgers views as important to strengthen and build on the product of very significant efforts expended by numerous individuals in the county to date. From Wood Rodgers' standpoint, the work product from the program can facilitate improved management of water resources for the overall benefit of the county.

Glenn County Water Advisory Committee-Ad hoc Committee Report on Groundwater Level Declines in Western Glenn County

"It is the desire of the people of Glenn County that sufficient and affordable water of good quality be available on a sustainable basis to meet the needs of agricultural, industrial, recreational, environmental, residential and municipal users within the county, both now and in the future."—Goal of the Glenn County Water Advisory Committee

The ad hoc committee was formed at the July 8, 2013 Water Advisory Committee (WAC)/Technical Advisory Committee (TAC) joint meeting. The committee met July 18, 2013, November 7, 2013, January 10, 2014, February 27, 2014, and April 17, 2014. The purpose of this committee is to:

1. Research the declining groundwater levels observed on the west side of Glenn County.
2. Develop potential solutions including stabilizing and/or reversing the downward groundwater level trend in that area.
3. Develop a list of projects.
4. Determine potential funding opportunities.
5. Develop additional ideas to investigate.
6. Make recommendations to the WAC.

It is the intention that the committee will develop an "Action List" to present to the Water Advisory Committee. The committee's expectation is to develop potential solutions, actions, and additional ideas to investigate that will help maintain a reliable water source for the people in Glenn County (County).

The committee has discussed many topics that have been broken down into eight general categories in relation to the groundwater levels in western Glenn County. The general topics are as follows:

1. Groundwater/Surface Water Modeling and Water Budget
2. Cost Study Analysis
3. Recharge Activities
4. Surface Water Use
5. Coordination, Outreach, and Education
6. Mapping
7. Basin Management Objectives
8. County Governance Options

Recommendations and work completed by the committee under these general topics are discussed below.

Modeling and Water Budget

Use of groundwater and surface water modeling is suggested for Glenn County. It would also be reasonable to include Tehama and/or Colusa Counties if funding is available due to the similarities in hydrology and location. An end result of the modeling effort would be a county-wide water budget.

It is this committee's opinion that surface and groundwater modeling that is coupled with other types of field monitoring is one element of a cost-effective approach to managing water supplies in Glenn County. It is the recommendation of this committee that the WAC and TAC seek funding for this item. While funding is being sought, the committees should research and investigate the types of models available, the extent of field calibration that has already been completed, and the appropriateness of their application to Glenn County and the surrounding northern Sacramento Valley area. A summary report should be encouraged. In addition, the committees must determine the criteria to be used and what questions the model should seek to answer (e.g. best places for recharge, water flow, sustainability at current use). The ultimate goal of modeling would be to establish a water budget in Glenn County in order to make more informed management decisions based upon good science. This should be considered a foundational item.

Cost Study Analysis

A cost study analysis to determine the cost of groundwater use versus the cost of surface water use would help understand incentives and constraints to improving coordinated use of surface and groundwater resources. This would entail total costs of groundwater use including fixed capital costs and variable operating costs. Capital costs would include the cost of drilling, well construction, well development, power transmission costs, and costs for the pumping plant. Variable operating costs would include energy costs giving consideration to Time of Use (TOU) rates for electric motors and alternative fuels for engines, maintenance, and filtration. In a similar way, total costs of surface water will be evaluated to include operation, maintenance, wheeling charges, and water charges. Additional costs of filtration and treatment so water is of suitable quality for use in drip and microsprinkler irrigation will be included.

It is the recommendation of this committee to further improve the concept of this study and develop a plan to implement the study. Funding options should also be evaluated. Statewide specialists from University of California should be engaged in the development and execution of this study with Allan Fulton, TAC representative for the UC Cooperative Extension, being the lead for the TAC. The cost study would be designed upfront with direction from the TAC so that it would produce a cost range recognizing that each area would be different based on a variety of inputs such as groundwater levels, desired pumping capacity, well and pumping plant design, etc. A preliminary estimate of groundwater costs is \$60-120 per acre-foot which would be confirmed and further refined from this study.

Previous cost studies should also be researched in conjunction with this project such as the study used for the cost analysis presented in the Department of Water Resources, California Water Plan.

Recharge Activities

The committee recommends continued investigation of potential recharge activities including in-lieu recharge, active recharge, and detention basins. It is this committee's opinion that active or in-lieu recharge with surface water is a critical piece of stabilizing groundwater levels and improving the overall water supply reliability in the area of concern. If successful, it could lessen the need for some of the measures described in the "County Governance Options".

A summary report of previous local studies should be developed. This report would include studies by the Colusa Basin Drainage District, the WAC's Stony Creek Pulse Flow study, the Stony Creek Fan Project Recharge study that was done by GCID, OAWD, AND OUWUA, and others. Areas summarized would include Wilson Creek, Walker Creek, gravel pits, ponding areas, and Stony Creek. Funding opportunities for project implementation would be researched.

New potential studies and sites should also be evaluated and funding researched. This would also include incorporating the possible reoperation of the T-C project to potentially make more water available for recharge. This would require coordination with water districts and water users in the areas being researched. In addition, naturally occurring groundwater recharge areas in the County should be identified and steps taken to protect them from future threats.

Surface Water Use

A fundamental objective is to use all available surface water supplies for beneficial uses within our area. By doing this, there is potential to lessen demand on groundwater during wet and normal hydrologic years and reserve groundwater for when surface water is critically short in supply. Although this may have a higher up-front cost to the water users, it will help ensure long-term sustainability of the groundwater supplies. The committee recommends continuing to investigate the ways in which all the available supplies can be utilized in an efficient manner. This includes a vast amount of outreach and coordination with both districts and landowners, which is also included in the outreach section.

Many of these tasks include coordination and cooperation with other agencies, water districts, and water managers. This could include inter-district transfers locally within the basin, potential transfer from a district to local groundwater-dependent landowners outside of the district, possible expansion of a current water district, or formation of a new district.

A list of possible water sources should be developed. It could include Orland-Unit Water Users, Orland-Artois Water District, Glenn-Colusa Irrigation District, regional or out-of-area suppliers, and others. Types of water must also be considered such as Central Valley Project contract water, base supplies, winter water, etc. Obstacles should be researched and noted as well. This could include water availability, infrastructure capacity, legal and political hurdles including state-wide actions, environmental interests, cost, district policies, timing, as well as others. A list of water uses (irrigation, domestic, recharge, etc.) should accompany these items as well. A report detailing these items is recommended.

One example of these types of surface water use and recharge activities was the Glenn County Groundwater Reliability and Recharge Pilot Project. Developed as a response to public concern, the County applied for and obtained a grant to investigate the opportunity for in-lieu recharge in the groundwater dependent area in the Capay region in North-eastern Glenn County. This study investigated the potential to purchase surface water to irrigate the area's crops leaving the groundwater available for years in which the surface water was not available. This would create a more reliable water system that could use both surface water and groundwater as needed. The end result indicated that it is not currently feasible to move forward with the project due to cost, but now there is a plan that can be built upon in the future if some hurdles are minimized or removed to bring the cost down. It also provided an excellent opportunity for outreach in that area.

Coordination, Outreach, and Education

It is essential for water management throughout the County to include a robust coordination, outreach, and education program. Partnerships need to be developed and maintained for the ultimate good of the citizens in this County. These partnerships should be considered a long-term investment in the resources as the partnerships created should be maintained indefinitely. It is recommended that a coordination, outreach, and education program be formulated and implemented.

A list of potential partners should be developed including state agencies, local agencies, regional partners, and potentially other counties with similar resources and challenges. Examples are the Glenn County Farm Bureau, the Cities of Willows and Orland, local and regional water districts, managers, and users, the general public, the Glenn County Resource Conservation District, neighboring counties, the University of California and other academia, the California Public Utilities Commission (CPUC), the U.S. Bureau of Reclamation, the USDA's Natural Resource Conservation Service, and others. This could provide for increased coordination in a multi-faceted approach to locally managing our precious water resources. The knowledge base and understanding between the groups would grow and also provide an increased level of outreach.

In addition to creating a list of partners, it should be considered fundamental to provide more information and ask for increased participation from our partners. This would also include more informational reports given by the WAC to groups such as the Glenn County Board of Supervisors, local City Councils, Farm Bureau, and other interested groups. It would also include creating more outreach materials in the form of articles in existing newsletters, such as Farm Bureau newsletters, and local newspapers. Additionally, the WAC website should also be updated on a regular basis. Examples of some topics could include efficiency versus conservation, encouraging surface water use to the extent possible in order to reserve groundwater use in areas with surface water availability for times in which surface water is not available, and the WAC and its role and the public's ability to participate.

Some additional areas of coordination include working with the University of California to develop potential studies that would benefit the management of water resources in the County. An example of a potential study is discussed previously under the Cost Study Analysis section.

Outreach to the groundwater-dependent, private pumper areas should include information regarding protection of the groundwater, coordination throughout the area and the County, potential district formation or other formal organization, the idea of a water users' cooperative in which there could be a voluntary cooperative pumping schedule to minimize the interference from one well to another, and other ideas as they become relevant.

It may become necessary to coordinate with California's Public Utilities Commission (CPUC) regarding "time of use" incentives and the unintended consequences it has on other natural resources. Due to people generally being conscious of spending, they tend to pump their water when the rates are less expensive. Because everyone tends to pump at the same time, it seems to create a regional cone of depression causing some wells to operate inefficiently or cause them to dewater for a period of time. It also increases pumping costs since the water table is lowered at those times. Perhaps coordinating with the CPUC would lessen the impacts of the "time of use" issues.

Mapping

This section will address the importance of creating resource mapping. It is essential to have the ability to manage the County, area by area, depending on the particular needs of that area recognizing that each is unique. One task the committee completed was a draft map of the County indicating areas that have reached historic lows in groundwater levels. It is the recommendation of this committee that mapping of wells and associated data continue and expand. The following will summarize the efforts that have taken place so far.

Data in reference to groundwater levels has been collected from both private and dedicated monitoring wells located within Glenn County, in some cases dating as far back as the 1920's. The lowest levels in these wells were most frequently associated with measurements from the 1976-77 monitoring period, which coincided with one of the more severe droughts in California's history. In the years following the 76-77 drought, groundwater levels often approached these historic lows but rarely fell below them. However, recent (2012-13) data indicate levels in many wells have declined below those historic thresholds and are now at the lowest levels observed since monitoring began. It is important to note that the period of record for each well is different and not all wells include the previous drought years. Some of the newer monitoring wells may have less than ten years of data.

Although these declining water levels have been observed to some extent throughout the county, the effect seems to be somewhat regionalized, with the highest density of low-level wells concentrated in the Orland and Artois areas. This clustering of low-level wells has led to the region being recognized as an "area of concern" that will be of particular interest for monitoring, and potential efficiency and management strategies. To more fully assess the extent and severity of the issue, a preliminary review of available data concerning the area was conducted.

The area, as defined for the preliminary review, contains most of the area south of Orland and west of Road M, extending as far west as Road B, as far north as Wyo Road, and as far south as Road 48, with its southeastern portion between Roads 27 and 45 extending as far east as Road T (a map is included in the

attachments). These borders are not presented as conclusive, but are intended to encompass most of the affected area based on the initial review of the available well data. The County's well database is a combined effort of the Department of Water Resources (DWR) well completion reports and County well drilling permit information. The database shows over 1000 total wells in the area, mostly domestic or irrigation wells, and the most common depth being 100-200 feet.

Readily available monitoring data obtained through DWR's California Statewide Groundwater Elevation Monitoring (CASGEM) is available for 100 wells, and of those 100, 21 still show their lowest levels as occurring in 1977, while 21 had an all-time low water surface elevation level in 2013, and an additional 15 wells reached their lowest point in 2009-2012. Therefore, one out of every five monitored wells in the area was at its lowest-ever recorded level in 2013, and one out of every three wells monitored in the area was at its lowest-ever recorded level between 2009 and 2013. Decade-by-decade comparisons using this data are problematic due to inconsistencies in monitoring records, depth, well design and timing. The data suggests that the area identified is suffering from a regional depression in groundwater levels.

This scenario is not unexpected given the information provided by large-scale groundwater monitoring programs already underway within the state. Given the increased demand in the area, a general decline in groundwater levels in the absence of precipitation has been anticipated. However, area-specific information detailing the effects of the current water shortage on a regional or even individual level will identify the areas of greatest concern, and will be useful in developing and promoting local management strategies. It is the recommendation of this committee to produce a more thorough summary of available data and incorporate that information into a comprehensive and ongoing discussion of water resources in the county.

Basin Management Objectives

This section discusses the Basin Management Objectives (BMOs) set forth in Glenn County Ordinance 1237 adopted in 2012, which replaces Ordinance 1115 adopted in 2000. This ordinance is the Glenn County Groundwater Management Plan and stands as the backbone to managing our groundwater. It is essential to continually review and update the plan as new information becomes available and new or unusual situations arise.

It is the recommendation of this committee that the WAC direct the TAC to review the current BMOs and update if necessary. It will be important for these levels to accurately represent the wells and conditions in the area to best manage the groundwater.

New ways to view water management may become necessary to keep the aquifers of Glenn County healthy and sustainable. Some ideas to further investigate while reviewing the BMOs could be:

- a. Are the current BMO groundwater levels set at the appropriate levels?
- b. How do we distinguish different aquifer zones (shallow, intermediate, deep)?
- c. Do we need BMO zones?

- d. Should the BMOs be based on the current political boundaries or is it time to manage the groundwater more cooperatively with neighboring entities and “blur” the BMO lines to better reflect the conditions of the aquifer in that region?
- e. Are the wells selected for BMOs representative of the area? Do they provide useful data?
- f. Should only dedicated monitoring wells be used rather than including irrigation and domestic wells?
- g. Consider using the cumulative frequency curve and well data to analyze the level of risk associated with BMO levels.

County Governance Options

The County has many potential opportunities to help ensure long-term sustainability of groundwater, the encouragement of using groundwater and surface water most efficiently, and has the ability to reach out broadly to the public and other entities. This committee chose to look at many potential government actions that can be taken if it becomes necessary. It is the committee’s desire that these ideas be thoroughly vetted at the WAC and the Board of Supervisors as well as through outreach to others while being more thoroughly developed.

County Efforts in Other Regions

San Luis Obispo County is currently dealing with severely declining groundwater levels in the Paso Robles Groundwater basin. A summary of the challenges and the actions occurring in that county were presented to the committee. It is this committee’s recommendation that the actions occurring in other counties be considered and evaluated informally while evaluating Glenn County’s position on groundwater management.

San Luis Obispo’s management strategy for the Paso Robles groundwater basin presents an interesting case study for other primarily agricultural counties contemplating emergency water conservation measures. The basin is an 800 square mile area in San Luis Obispo County, which provides the sole source of water for a significant portion of the county’s residents and an estimated 40% of its agricultural production. Monitoring data, modeling studies, and numerous reports of dry wells in the area all indicate that the basin is being drawn down beyond its ability to recharge. Faced with the prospect of a continually diminishing groundwater supply and no other major water source, the county was compelled to initiate a number of aggressive conservation and management strategies.

A Blue Ribbon Steering Committee, consisting of municipal water companies and governmental agencies along with several public organizations and landowner groups, was formed in 2011 to develop and implement the county’s basin management plan. As part of the development process, the committee collected and reviewed a number of proposed solutions, ranging from immediate emergency measures to long-term solutions, determining the best submissions by means of a weighted point system. The committee released a list of its top ranked solutions in August 2013 (see attachment).

The county also adopted an urgency ordinance in August 2013. The ordinance is intended to minimize additional water use from the basin by prohibiting new or expanded crop production or the conversion of dry farmland into irrigated crop production, requiring all new wells to be metered, and requiring new development to be water neutral (via offset clearances issued by the department of planning). This ordinance provides for the immediate implementation of some of the adopted solutions, while others (such as the creation of a water district) are being phased in incrementally, with a large emphasis on education, outreach, and involvement of all affected parties.

While the effectiveness of these management efforts will not be apparent for some time, the process itself may be informative for other counties anticipating similar water issues. In the absence of existing emergency measures, outreach efforts and organizational structures, counties may find themselves inadequately prepared for severe water shortages. But pre-emptive discussion of such strategies, referencing the ones established in other areas but modified to reflect local needs, may minimize the damages if such shortages were to occur locally, and allow water use apportionment to occur cooperatively through defined parameters rather than through litigation.

Glenn County Options

While considering actions being taken in other regions, it is imperative that Glenn County actively engage in managing the resources that exist within our County. This is a cooperative effort between other water managers, such as water districts and municipalities, as well as private well owners. It is important that all involved are aware of the value of our resources and do what we can to protect them. While some of these ideas will not be popular and will be controversial, to benefit the citizens of this County, an open discussion should ensue. The ideas presented in this section must be further developed and vetted through the WAC, the Glenn County Board of Supervisors, and the public.

It is the intent of this committee to present a wide variety of potential ideas and solutions to the issues of declining groundwater levels. Not all may be feasible in the short-term, but should be considered to more fully discuss the options. Generally these options include changes to the County Ordinance governing water management, changes in well permitting, updating the water element in the Glenn County's General Plan, and addition of fees for management, coordination, and programs, or programs that could potentially be implemented. In reality, it should be a combination of the above listed factors to most effectively manage the resource.

The current County ordinance or a separate ordinance could be developed to include additional management strategies and clarify and update the adaptive management procedures. The updated ordinance could also include "emergency measures" similar to those used in San Luis Obispo County. It may become essential to stop using additional groundwater resources until some potential solutions can be implemented. This could potentially include a moratorium on new wells drilled with specific exemptions.

In conjunction with potential ordinance actions, well drilling permits issued by the Glenn County Environmental Health Department should be updated to include more information and potentially more requirements. Additional information or requirements that should be collected through permitting

could include pumping test data, water quality testing, including testing for saline water intrusion, whether the well is a replacement well or new, and potential additional requirements if drilling is occurring in an area of concern or a BMO area that is in a Stage Alert status. The permits should also include an updated mapping interface which builds upon the current mapping that the County has already developed. This would provide for more easily collected and accurate data.

Additional possible revisions in an updated well drilling permit in areas of concern could include such things as requiring meters on new wells, with data being submitted to the County, higher fees for monitoring, studying, and oversight of areas with groundwater decline and sustainability of water throughout the County, restrictions on well locations (well spacing), requiring mitigation plans, and/or additional monitoring requirements. It is also suggested to consider types of use such as domestic wells versus production wells when determining potential requirements for each.

In addition to the updated ordinance and well permitting requirements, it would be beneficial to update the water element in Glenn County's General Plan. This would allow for greater coordination between land use decisions and water resource decisions, which is essential to Glenn County's economy. A stronger water element coupled with the additional changes mentioned would allow for a more robust analysis of water resources and developing responsibly while protecting the current users of groundwater.

Generating local revenues to support local water resource management is a concern. Financial resources are necessary to support real-time monitoring and reporting of water resource conditions. Currently, Glenn County is under-funded to support the level of water resource management that is in the interest of the county as a whole. Potential fees for water management should be considered. It is crucial to the well-being of this County to provide funding to support the management of water county-wide. Fees could potentially include a county-wide water assessment for Water Protection per parcel, fees based on public benefit in areas of concern, revisit the water transfer fees in the Export Water Transfer Guidelines, in addition to well drilling permit fees. These ideas would need to be vetted more fully to determine the potential for these or other fee types to be implemented.

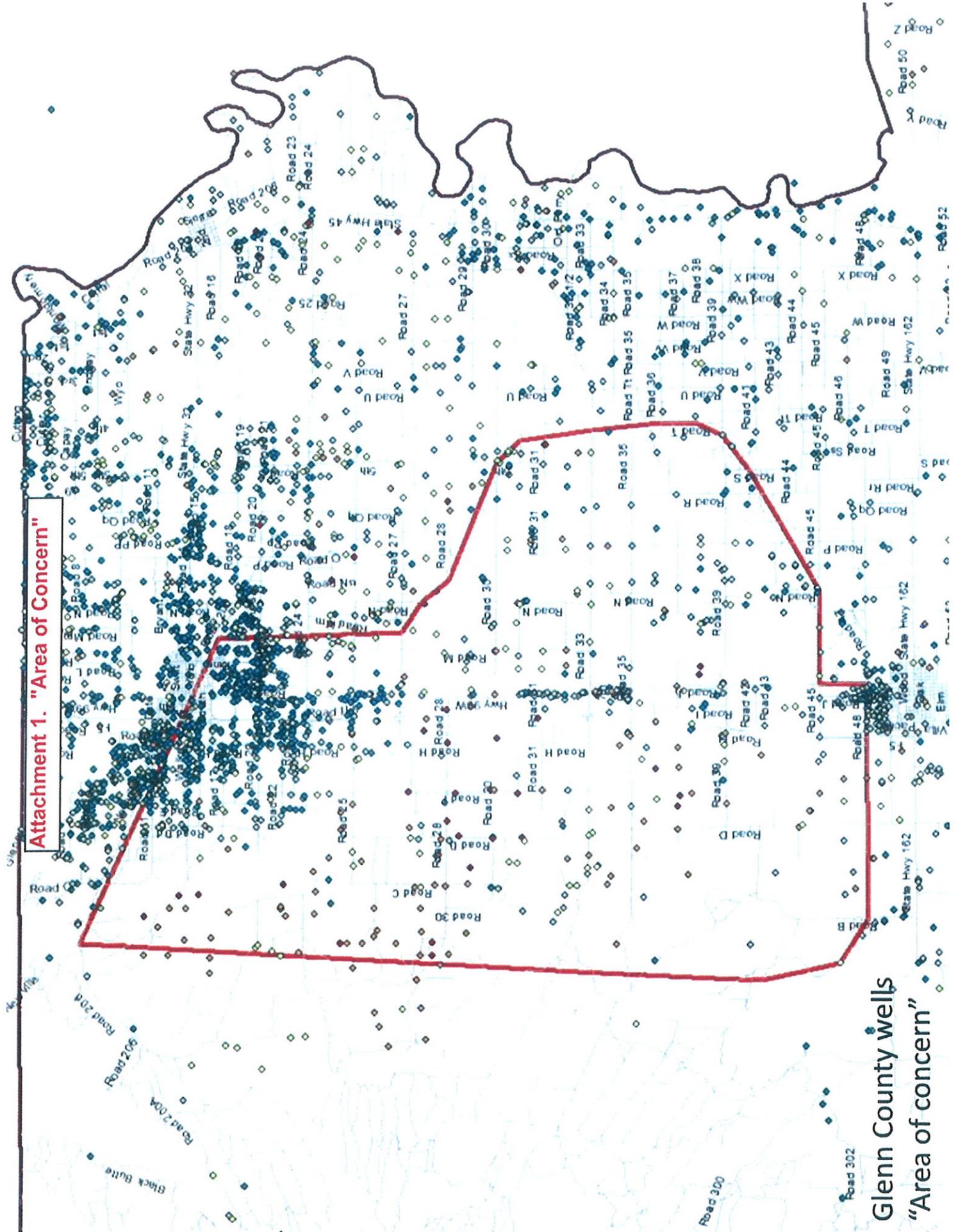
Monies collected through these venues should be used to fund a water coordinating department whose responsibilities would include data collection and management, implementation of the Groundwater Management Plan, and coordination of water programs. Some of these programs are state mandated, while others may be voluntary.

One potential program that could be implemented include the development of a mapping based Local Groundwater Users Program (Cooperative) for pumpers to voluntarily coordinate their pumping with others in the area. Another might be to create a program to help water users control and coordinate their costs (energy costs) associated with water use, for both surface water and groundwater. This could include projects to help fund alternative energy such as solar projects, or surface water filtration projects for micro and drip irrigation. Another potential program could be outreach and organizational efforts in groundwater dependent areas. This could initiate either informal or formal organization, such

as a district, by the group. This would give groundwater users a collective voice for their region allowing for more local control.

Summary

It is the hope of this committee that the ideas discussed in this report be a beginning point for an open discussion and potential updating of the management of water within Glenn County, especially in the western area exhibiting signs of groundwater decline. This report summarized several general categories and will be used to create an "Action List" through the listed recommendations. Many of the ideas must be further developed and will need to be prioritized. Most have restrictions on implementation due to funding constraints. The committee introduced the draft report to the Water Advisory Committee on February 11, 2014, and the Technical Advisory Committee on April 23, 2014. It is the intent of this committee to present a final draft of this report to the Water Advisory Committee at the May 6, 2014 special meeting for additional discussion and potential approval.



Attachment 1. "Area of Concern"

Glenn County wells
"Area of concern"

**Attachment 2. Paso Robles Groundwater Basin--
Blue Ribbon Steering Committee Top Ranked Solutions**

**Paso Robles Groundwater Basin Management Plan
Blue Ribbon Steering Committee
Top Ranked Solutions
August 21, 2013**

Solution Number	Solution Category	Water User	Solution
Emergency Solutions			
E-1	Management	Rural Residential	Provide a potable water source for use in trucking water to homes for emergency purposes.
E-2	Management	All areas	Create a structure to achieve an equitable allocation of safe yield for all Basin water users.
Short Term Solutions (Implementation in 1 to 5 years)			
ST-1	Management	All areas	Create a Basin-wide groundwater management structure(s). Create water districts or other management authorities to convey water to agricultural users and create small community systems for rural communities.
ST-2	Conservation	All areas	Identify, implement, and make available appropriate Best Management Practices.
ST-3	Management	Rural Residential, Agriculture and Rural Non-Domestic	Encourage projects that detain or slow runoff to recharge the Basin.
ST-4	Conservation	Rural Residential and Rural Non-Domestic	Maximize water use efficiency as appropriate to achieve water use reduction.
ST-5	Conservation	All areas	Meter all new and replacement wells and measure all well outputs and report.
ST-6	Conservation	Urban - Templeton and San Miguel	Participate in California Urban Water Conservation Council policies and practices as appropriate.
ST-7	Conservation	Rural Residential, Agriculture and Rural Non-Domestic	Conduct regular outreach activities.
ST-8	Management	Rural Residential, Agriculture and Rural Non-Domestic	Require new development to be water neutral.
ST-9	Management	All areas	Annually monitor status of Basin to determine whether solutions are effective.
ST-10	Management	Rural Residential	Require disclosure when land is sold that Basin is in decline and may not be suitable to rely on for intensive use.
ST-11	Conservation	Urban - Paso Robles, Atascadero, Templeton, San Miguel	Reduce per capita consumption to offset growth in service area where appropriate.
ST-12	Supplemental	All areas	Exchange or bank Nacimiento water with Santa Margarita Lake to benefit Basin.
ST-13	Supplemental	Paso Robles	Structure operations to use alluvial water first, Nacimiento water second and Basin last.
Medium and Long Term Solutions (Implementation in 6-10 years (Medium) and greater than 10 years (Long Term))			
MLT-1	Supplemental	All Areas	Implement water supply options associated with State Water and the Salinas River Corridor (may include use of Nacimiento & other areas of Basin & increasing the capacity of Santa Margarita Lake).
MLT-2	Supplemental	Monterey County	Explore opportunities with Monterey County including Lake Nacimiento / Lake San Antonio intertie (tunnel).
MLT-3	Supplemental	All areas	Direct delivery of unsubscribed Nacimiento or State Water Project allocation water.
MLT-4	Management	All areas	Prohibit groundwater exports from the Basin.
MLT-5	Management	All areas	Establish mechanisms to protect recharge areas and maximize watersheds.
MLT-6	Recycling	All areas	Incentivize the installation of grey water reuse systems onsite.
Completed or Already in Progress Solutions			
C-1	Supplemental	Atascadero	Utilize the full allocation (2,000 AFY) by fully utilizing the existing percolation ponds.
C-2	Conservation	Urban - Paso Robles and Atascadero	Participate in California Urban Water Conservation Council policies and practices.
C-3	Conservation	Agriculture - Irrigated Crops	Conduct outreach for County's groundwater level monitoring program.
C-4	Management	Agriculture & Rural Residential	Implement ordinances to prohibit subdivisions of land or General Plan Amendments in the Basin.
C-5	Management	Rural Residential	Implement landscaping ordinance.
C-6	Management	All areas	Establish baseline conditions of Basin through updated model.
C-7	Management	All areas	Implement landscaping ordinance (ag processing).
C-8	Management	Rural Residential	Implement Low Impact Development standards.
C-9	Supplemental	Templeton	Maximize or increase the use of the full Nacimiento allocation (250 AFY).
C-10	Supplemental	Shandon	Connect Shandon to State Water Project and set up distribution system (100 AFY).

Glenn County Water Advisory Committee-Ad hoc Committee
Groundwater Level Declines in Western Glenn County
Action List

"It is the desire of the people of Glenn County that sufficient and affordable water of good quality be available on a sustainable basis to meet the needs of agricultural, industrial, recreational, environmental, residential and municipal users within the county, both now and in the future."—*Goal of the Glenn County Water Advisory Committee*

Modeling/Water Budget (foundational)

- Pursue the use of groundwater and surface water modeling for Glenn County (possibly include Tehama and/or Colusa Counties).
 - Research and investigate the types of models available
 - Research the extent of field calibration that has already been completed
 - Research the appropriateness of their application to Glenn County
 - Determine the criteria to be used
 - Develop questions the model should seek to answer (e.g. best places for recharge, water flow, sustainability at current use).
- Develop county-wide water budget
- Couple modeling with other types of field monitoring
- Seek funding
- Summary report

Cost Study Analysis (moderate)

- Further improve the concept of this study
- Develop a plan to implement the study
- Evaluate funding options
- Engage statewide specialists from University of California in the development and execution of this study with Allan Fulton, TAC representative for the UC Cooperative Extension, being the lead for the TAC.
- Research previous cost studies
- Summary report

Recharge Activities (critical)

- Continued investigation of potential recharge activities
 - In-lieu recharge
 - Active recharge

- Detention basins
- Develop summary report of previous local studies
- Research funding opportunities for project implementation
- Evaluate new potential studies and sites
 - Research funding
- Coordinate with water districts and water users
- Identify naturally occurring groundwater recharge areas in the County
 - Take steps to actively protect them from future threats
- Summary report

Surface Water Use (critical)

- Continuing to investigate ways in which all available surface water supplies can be utilized in the region efficiently
 - Outreach, coordination, cooperation
 - Water districts, other agencies, water managers, landowners
 - Examples: Inter-district transfers locally within the basin, potential transfer from a district to local groundwater-dependent landowners outside of the district, possible expansion of a current water district, or formation of a new district.
- Develop a list of possible water sources
- Consider types of water such as Central Valley Project contract water, base supplies, winter water, etc.
- Research and note potential obstacles including water availability, infrastructure capacity, legal and political hurdles including state-wide actions, environmental interests, cost, district policies, timing, as well as others.
- Develop a list of water uses (irrigation, domestic, recharge, etc.)
- Summary report

Coordination, Outreach, and Education (foundational)

- Formulate and implement a robust coordination, outreach, and education program
 - Develop a list of potential partners
 - Provide more information and ask for increased participation from our partners.
 - Provide informational reports
 - Create outreach materials
 - Update the WAC website
- Specific coordination: University of California - develop potential studies that would benefit the management of water resources in the County.
- Specific outreach: Groundwater-dependent, private pumper areas - include information regarding protection of the groundwater, coordination throughout the area and the County,

potential district formation or other formal organization, the idea of a water users' cooperative in which there could be a voluntary cooperative pumping schedule to minimize the interference from one well to another, and other ideas as they become relevant.

- Specific coordination: California's Public Utilities Commission (CPUC) - "time of use" incentives and the unintended consequences it has on other natural resources.

Mapping (critical)

- Prepare draft map of the County indicating areas that have reached historic lows in groundwater levels. (Complete)
- Continue, expand mapping of wells and associated data
 - Location
 - Depth, screening
 - Drill date
 - Capacity
 - Construction details
- Produce summary of available well data

Basin Management Objectives (foundational)

- Request the WAC direct the TAC to review and update the current BMOs
- Ideas to further investigate while reviewing the BMOs could be:
 - a. Are the current BMO groundwater levels set at the appropriate levels?
 - b. How do we distinguish different aquifer zones (shallow, intermediate, deep)?
 - c. Do we need BMO zones?
 - d. Should the BMOs be based on the current political boundaries or is it time to manage the groundwater more cooperatively with neighboring entities and "blur" the BMO lines to better reflect the conditions of the aquifer in that region?
 - e. Are the wells selected for BMOs representative of the area? Do they provide useful data?
 - f. Should only dedicated monitoring wells be used rather than including irrigation and domestic wells?
 - g. Consider using the cumulative frequency curve and well data to analyze the level of risk associated with BMO levels.

County Governance Options (foundational to moderate)

County Efforts in Other Regions

- Evaluate and consider actions occurring in other counties
 - San Luis Obispo County summary (Initial complete, ongoing)
 - Blue Ribbon Steering Committee

➤ Urgency ordinance adopted - August 2013

- Stanislaus County

Glenn County Options

- Actively engage, further develop and vet through the WAC, the Glenn County Board of Supervisors, and the public.
- Develop options to consider changes to the County Ordinance governing water management
 - Current ordinance
 - New ordinance
 - emergency measures
 - moratorium on new wells
 - specific exemptions
- Develop options to consider changes in well permitting
 - update well drilling/abandonment permit form
 - additional requirements for all new well permits
 - additional requirements for wells in areas of concern
 - mapping interface
 - fee update (in areas of concern)
 - restrictions on location, size, or screening
- Develop options to consider update of water element in Glenn County General Plan
- Develop options for addition of fees for management, coordination, and programs
 - county-wide assessment for Water Protection per parcel
 - Public benefit assessment
 - Water transfer fees in Export Water Transfer Guidelines
 - Well drilling permit fees
- Develop programs that could potentially be implemented
 - Development of a mapping based Local Groundwater Users Program (Cooperative) for pumpers to voluntarily coordinate their pumping with others in the area.
 - Development of a program to help water users control and coordinate their costs (energy costs) associated with water use, for both surface water and groundwater such as projects to help fund alternative energy such as solar projects, or surface water filtration projects for micro and drip irrigation.
 - Develop outreach and organizational efforts in groundwater dependent areas. This could initiate either informal or formal organization, such as a district, by the group.