

# FINAL

# LASSEN COUNTY GROUNDWATER MANAGEMENT PLAN

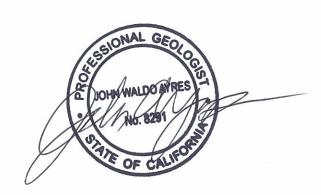
Prepared for Lassen County Board of Supervisors June 2007



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BROWN AND CALDWELL

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#### LIST OF ACRONYMS

AB 3030 Assembly Bill 3030

BMO Basin Management Objective
BVFCD Big Valley Flood Control District

CWC California Water Code
DAU Detailed Analysis Unit

DHS California Department of Health Services
DWR California Department of Water Resources

F° degrees Fahrenheight
gpm gallons per minute
gpd/ft gallons per day per foot
GPS Global Positioning Satellite
GWMP Groundwater Management Plan

HLRCD Honey Lake Resource Conservation District IRWMP Integrated Regional Water Management Plan

MO Management Objective msl mean sea level

PRCD Pit Resource Conservation District
Plan Groundwater Management Plan
PUC Public Utilities Commission

TCE Trichloroethylene
TDS Total Dissolved Solids
SB 1938 Senate Bill 1938

SWQL secondary water quality threshold
SWRCB State Water Resources Control Board
TAC Technical Advisory Committee
USGS United States Geological Survey
WAC Water Advisory Committee
WHPA Wellhead Protection Area

## FINAL GROUNDWATER MANAGEMENT PLAN

#### **EXECUTIVE SUMMARY**

Groundwater resources have long played an important role in the development, growth, and sustainability of Lassen County and its residents. Local groundwater management continues to increase in complexity and scope, driven by evolving demands for groundwater resources both within and adjacent to Lassen County. The need for the Groundwater Management Plan (GWMP or Plan) is twofold. First, the GWMP must formalize and direct the County's ongoing commitment to pursue sustainable and beneficial groundwater development and use by its residents. Second, the GWMP must clearly articulate the County's expectations for groundwater management by entities beyond the County's jurisdiction that share groundwater resources with the County. Each of these needs will be met through the implementation of Basin Management Objectives (BMOs), as included in the GWMP and described in Appendix C. BMOs represent a locally-driven, proactive method of groundwater management supported by the Board of Supervisors, County staff, and the local groundwater users who participated in the development of this Plan. Development and adoption of a BMO ordinance will be a priority during initial Plan implementation.

The Lassen County GWMP follows the California Water Code (CWC) Sections 107450 et.seq, by using plan components to support groundwater management objectives which in turn meet a countywide groundwater management goal. The GWMP contains the required components from Senate Bill 1938, the voluntary components from Assembly Bill 3030, and contains suggested components from the Department of Water Resources (DWR) Bulletin 118-2003.

The Lassen County GWMP seeks to achieve its goal through the following objectives:

- Maintain and protect historic groundwater uses;
- 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, quality, seeps and springs, and natural vegetation.
- Facilitate groundwater replenishment and cooperative management projects;
- Maintain springs, seeps and riparian habitat; and
- Provide a mechanism for mutual management of interstate groundwater basins with Washoe County and the State of Nevada.

GWMP development was supported by a Working Group comprised of individuals with extensive knowledge of local groundwater-related issues, objectives, conditions, and needs. The Working Group assisted plan development by serving in an advisory role. The County convened four meetings of the Working Group during GWMP development. The Lassen County Board of Supervisors held a public hearing to adopt the GWMP on March 13, 2007, and unanimously adopted the Plan following the public hearing.

Lassen County is a topographically diverse area in northeastern California. The county has a mountain climate, and much of the county is arid, with less than 15 inches of precipitation annually. Lassen County is at the confluence of four geomorphic provinces and has 24 groundwater basins. Four of the 24 groundwater basins have been identified as priority basins. The four priority basins identified by County staff and the Working Group represent basins where current and future groundwater management will support agricultural and/or municipal needs. Hydrogeology in the four priority groundwater basins is understood on a large scale.

Groundwater levels in the four priority basins indicate that groundwater levels are generally stable, with declines during drought periods, and recovery during wet periods.

Lassen County is already performing many of the groundwater management activities associated with a GWMP. Through plan implementation, the County is formalizing its groundwater management goal, management objectives, and plan components that both elaborate on current actions and detail future actions, and GWMP implementation actions and the associated schedule are included in Table ES-1. The Lassen County GWMP contains the following plan implementation components:

- Basin Management Objectives. BMOs are flexible guidelines for the management of groundwater resources that describe specific actions to be taken by stakeholders to meet locally developed objectives at the basin or sub-area scale. A BMO program will be developed and implemented under direction provided by the Board of Supervisors within an anticipated BMO ordinance.
- Groundwater Monitoring. Ongoing groundwater monitoring provides information needed to document current conditions, assess long-term trends, and to support development and implementation of GWMP components.
- Groundwater Resource Protection. Groundwater resource protection activities prevent degradation of groundwater quantity or quality. Lassen County has taken actions to promote the protection of groundwater resources, including: groundwater well ordinances, groundwater management districts, and adoption of a groundwater conservation ordinance (export ordinance).
- Groundwater Sustainability. Lassen County is working to continue groundwater sustainability through representing Lassen County interests in Nevada groundwater exportation projects that include interstate groundwater basins, and collaborating with state and federal agencies on groundwater studies. Lassen County is also planning to develop Basin Management Objectives to support and achieve of groundwater sustainability.
- Stakeholder Involvement. Stakeholder involvement is key to the success of the GWMP, and the GWMP was developed under guidance of the Working Group, comprised of individuals with extensive knowledge of local groundwater-related issues, objectives, conditions and needs.
- Integrated Water Resource Planning. Integrated water resource planning and management is intended to address multiple issues or objectives concurrently, thereby maximizing limited financial and staff resources. The state has identified 20 different water management strategies that can be combined to form an integrated project (DWR, 2004b). Examples from the list of 20 water management strategies include water supply reliability, flood control, water quality protection and improvement, ecosystem restoration, and groundwater management. Proposition 50, Chapter 8 and Proposition 84, going before voters in the fall 2006 election, contain significant funding for integrated water resources planning and project implementation. Lassen County has not developed and is not signatory to a regional integrated water management plan.
- **GWMP** Implementation, Reporting, and Updating. GWMP implementation actions and the associated schedule are included in Table ES-1. Many of the actions are a continuation of existing County activities. New actions are highlighted by the development of quantitative Basin Management Objectives to further advance proactive local groundwater management that documents local needs and objectives. Appendix C includes a white paper, *Introduction to the BMO Process of Groundwater Management* that describes this process. Annual reporting and periodic updates of the GWMP will report current groundwater conditions and wall document progress in implementing actions to accomplish Plan objectives.

Table ES-1. Summary of GWMP Actions		
Descr	iption of Action	Implementation Schedule
Basin M	anagement Objectives	
	g the BMO concept through the development of a sideration and adoption by the Board of Supervisors.	2007
Formalize and proceed with the four pl 2 Process of Groundwater Management	nases identified in the <i>Introduction to the BMO</i> summary in Appendix C.	2007
	ndwater Monitoring`	
Identify "key" groundwater monitoring vidata.	well locations utilizing existing groundwater monitoring	2007
Develop and implement annual summa and inelastic land subsidence at "key"	ary report of groundwater level, groundwater quality, well locations.	2007
5 Secure funding for annual groundwate	r summary report.	2007
groundwater level, groundwater quality	t to identify areas that may need additional r, or subsidence monitoring based on identified data Request that DWR be alert and report anecdotal ring well locations.	Annual
7 monitoring grid.	o secure funding for expansion of the Lassen County	As needed
Maintain agreements with DWR for groat activities.	oundwater monitoring and database management	Ongoing
Coordinate with DWR and local landov 9 part of a long-term monitoring program	wners to ensure that selected wells are maintained as . entation of quantitative BMOs in priority groundwater	Ongoing
basins.	mation of quantitative bivies in priority groundwater	2007 - 2009
of California, State of Nevada, Washoe		Ongoing
Support efforts to map and compile info 1 vegetation.	ormation on riparian habitats and phreatophyte	Ongoing
I. Groundwa	ater Resource Protection	
3 Resources Element (Water Resources		Ongoing
Support existing Ordinance 488 assoc destruction.	ated with well construction, repair, modification, and	Ongoing
5 under Ordinance 539, Groundwater Ex		Ongoing
Support County Environmental Health reports to DWR Northern District.	Department submittal of received well completion	Ongoing
·	s necessary a wellhead protection, groundwater (and other) programs in Lassen County.	2007-2008
	function of the Long Valley Groundwater lemorandum of Agreement with Sierra County.	Ongoing
9 directed by the Board of Supervisors.	ske Groundwater Management District, if enacted and	As Needed
Participate in activities of the Willow Conference of the William Conference of the Willow Conference of the William Conference of the Willia	reek Valley Groundwater Management District when	As Needed
1 requested.	Valley Groundwater Management District when	As Needed
Support activities of the Lassen-Modoo  District.	County Flood Control and Water Conservation	Ongoing
Coordinate and collaborate with the W	ashoe County Regional Water Planning Commission	

Table ES-1. Summary of GWMP Actions		
Description of Action Implementation Schedule		
IV.	Groundwater Sustainability	
24	Participate in the evaluation of local projects to improve groundwater sustainability (e.g. groundwater recharge).	As Needed
25	Provide support associated with development of quantitative BMOs in Lassen County.	2007-2009
26	Pursue funding from state agencies, federal agencies, and partnerships for groundwater sustainability activities.	Ongoing
27	Coordinate and collaborate with the Washoe County Regional Water Planning Commission, Washoe County Board of Commissioners, Washoe County Planning Commission, and the Nevada State Engineer on interstate groundwater management issues to encourage a groundwater management method consistent with the BMO process detailed in the Lassen County GWMP.	Ongoing
28	Participate in the development and adoption of agreements, special legislation, or compacts pertaining to sustainable groundwater management between the State of California and the State of Nevada and encourage groundwater management using the BMO method.	Ongoing
29	Collaborate with state and federal (e.g. USGS) agencies in the completion of groundwater projects and studies.	Ongoing
٧.	Stakeholder Involvement	
30	Assist in coordination and management activities of the Working Group.	Ongoing
31	Be responsive to the needs and requests of the Board of Supervisors and other Departments.	Ongoing
32	Continue to work cooperatively with local stakeholders on groundwater management activities.	Ongoing
33	Continue to work cooperatively with DWR headquarters and DWR Northern District on groundwater management activities.	Ongoing
VI.	Integrated Water Resources Planning	
34	Establish an effective approach for participation in or development of an Integrated Regional Water Management Plan.	2007
35	Support water resource-related policies, programs, and projects approved by the Board of Supervisors.	Ongoing
36	Pursue funding sources for implementation of plan policies, programs, and projects.	As Needed
VII.	GWMP Implementation, Reporting and Updating	
37	Formalize and institute a Working Group to meet quarterly or as needed on GWMP implementation activities.	2007
38	Lassen County to schedule and facilitate Working Group meetings	Quarterly or As Needed
39	Work cooperatively with local stakeholders, county government, and local advisory committees to assess needed GWMP updates.	Annual
40	Develop and implement annual summary report of 1) groundwater level, groundwater quality, and inelastic land subsidence at "key" well locations, and 2) status of GWMP implementation in cooperation with DWR.	Annual
41	Secure funding for annual groundwater summary report.	2007

### FINAL GROUNDWATER MANAGEMENT PLAN

#### 1. INTRODUCTION

Groundwater resources have long played an important role in the development, growth, and sustainability of Lassen County and its residents. It is a source of drinking water, irrigation water for the agricultural community, and supports important environmental needs through its interaction with surface water and related habitat. Local groundwater users and the County work collaboratively to manage and protect groundwater resources for current and future generations. Local groundwater management continues to increase in complexity and scope, driven by evolving demands for groundwater resources both within and adjacent to Lassen County. Specifically, past and current projects to develop and export groundwater in Nevada from interstate basins shared with Lassen County may impact Lassen County residents reliant on these groundwater basins. As a result, the Board of Supervisors is pursing the development of a Groundwater Management Plan (GWMP or Plan).

The need for the GWMP is twofold. First, the GWMP must formalize and direct the County's ongoing commitment to pursue sustainable and beneficial groundwater development and use by its residents. Second, the GWMP must clearly articulate the County's expectations for groundwater management by entities beyond the County's jurisdiction and share groundwater resources with the County. Each of these needs is met by the introduction of Basin Management Objectives (BMOs) in the GWMP. BMOs represent a proactive method of groundwater management that is supported by the Board of Supervisors, staff, and local groundwater users who participated in the development of this Plan. The BMO concept is explained in detail in Appendix C of this Plan.

The purpose of this Groundwater Management Plan is to provide guidance in managing the County's groundwater resources and to document the necessity for proper management within interstate groundwater basins where mismanagement can impact Lassen County residents. The GWMP documents groundwater conditions, management goals and objectives, and plan implementation activities to achieve the Plan purpose. The GWMP serves to improve the understanding and management of the water resources in Lassen County, providing a framework for the County and other water users to implement effective and sustainable groundwater management programs.

# 1.1 Plan Authority and Administration

On March 28, 2006, the Lassen County Board of Supervisors formally approved Resolution 06-018 directing the development of a countywide GWMP. The resolution is included as Appendix A. Lassen County is an authorized groundwater management agency within the meaning of the California Water Code (CWC) § 10753 (a). This GWMP does not conflict with existing groundwater ordinances and groundwater management plans within the County. Lassen County includes three Special Act Districts (Groundwater Management Districts), no other existing Groundwater Management Plans, and no adjudicated groundwater basins (DWR, 2004a).

# 1.2 Groundwater Management Goal

The goal of the Lassen County GWMP is to maintain or enhance groundwater quantity and quality, thereby providing a sustainable, high-quality supply for agricultural, environmental, and urban use into the future that remains protective of the health, welfare, and safety of residents.

### 1.3 Groundwater Management Objectives

The Lassen County GWMP seeks to achieve its goal through the following objectives:

- Maintain and protect historic groundwater uses;
- 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, quality, seeps and springs, and natural vegetation.
- Facilitate groundwater replenishment and cooperative management projects;
- Maintain springs, seeps and riparian habitat; and
- Provide a mechanism for mutual management of interstate groundwater basins with Washoe County and the State of Nevada.

### 1.4 Plan Components

The California legislature and DWR developed groundwater management plan components over the 11 years from 1992 to 2003. In 1992, the Legislature enacted the California Groundwater management Act, Assembly Bill 3030 (AB 3030) to encourage local public agencies to adopt plans to manage groundwater resources within their jurisdictions. Provisions were created in the CWC Sections 107450 et.seq. with the intent to manage the safe production, quality, and proper storage of groundwater. AB 3030 codified 12 voluntary components of a GWMP. In 2002, Senate Bill 1938 (SB 1938) was signed into law. SB 1938 amended the CWC with seven required components of a GWMP for any public agency seeking State funds administered through the DWR for groundwater projects. In 2003, DWR published *Bulletin 118 – Update 2003, California's Groundwater*. Bulletin 118-2003 contains seven recommended components of a GWMP.

Lassen County's GWMP is a stand-alone document that meets the requirements set by SB 1938, and addresses the voluntary and recommended components codified by AB 3030 and recommended in Bulletin 118-2003. GWMP components and their location in the GWMP are summarized in Table 1-1.

Table 1-1. Groundwater Management Plan Components	
GWMP Components	Lassen County GWMP Section
Required Components: (10753.7.)	
Establish Basin Management Objectives (BMOs)	3.4, 3.5, 3.7
Include components relating to the monitoring and management of: groundwater levels, groundwater quality, inelastic land subsidence	3.5
Prepare a plan that enables the County to work cooperatively with other public entities whose service area falls within the plan area and overlies the groundwater basin	1.5, 3.8
Prepare a map that details the area of the groundwater basin, the area subject to the GWMP, and the boundaries of other local agencies that overlie the basin	1.5
Adopt monitoring protocols that detect changes in: groundwater levels, groundwater quality, inelastic land subsidence, and surface water flow or quality that affects groundwater or groundwater pumping that affects surface water flow or quality	3.5

Table 1-1. Groundwater Management Plan Components		
GWMP Components	Lassen County GWMP Section	
If the GWMP area includes areas outside a groundwater basin as defined in Bulletin 118, the County will use the required components, and geologic and hydrologic principles appropriate for the area	Not applicable	
Voluntary Components (10753.8.)		
Control of saline intrusion	3.5.2	
Identification and management of wellhead protection areas and recharge areas	3.6.5	
Regulation of the migration of contaminated groundwater	3.5.2	
Administration of a well abandonment and well destruction program	3.6.1	
Mitigation of conditions of overdraft	3.7	
Replenishment of groundwater extracted by water producers	3.7	
Monitoring of groundwater levels and storage	3.5	
Facilitating conjunctive use operations	3.7	
Identification of well construction policies	3.6.1	
Construction and operation by the County of groundwater contamination cleanup, recharge, storage, conservation, water recycling, and extraction projects	3.7	
Development of relationships with state and federal regulatory agencies	3.8.1	
Review of land use plans and coordination with land use planning agencies to assess activities that create a reasonable risk of groundwater contamination	3.8.1	
Recommended Components (From bulletin 118-2003 Appendix C)		
Document public involvement and ability of the public to participate in development of the GWMP, this may include a Technical Advisory Committee (TAC)	1.6, 1.7, Appendix B	
Establish an advisory committee of stakeholders within the plan area that will help guide the development and implementation of the plan and provide a forum for the resolution of controversial issues	1.6, 3.8.2	
Describe the area to be managed under the GWMP including		
The physical structure of the aquifer system		
A summary of available historical data and issues of concern related to groundwater levels, groundwater quality, inelastic land subsidence, and surface water flow or quality that effects groundwater or groundwater pumping that effects surface water flow or quality	Section 2	
A general discussion of historical and projected water demands and supplies		
Establish management objectives (MOs) for the groundwater basin subject to the GWMP	1.3, 3.3	
Describe the GWMP's monitoring program	3.5	
Describe efforts to coordinate with land use, zoning, or water management planning agencies or activities	3.6, 3.8.1	

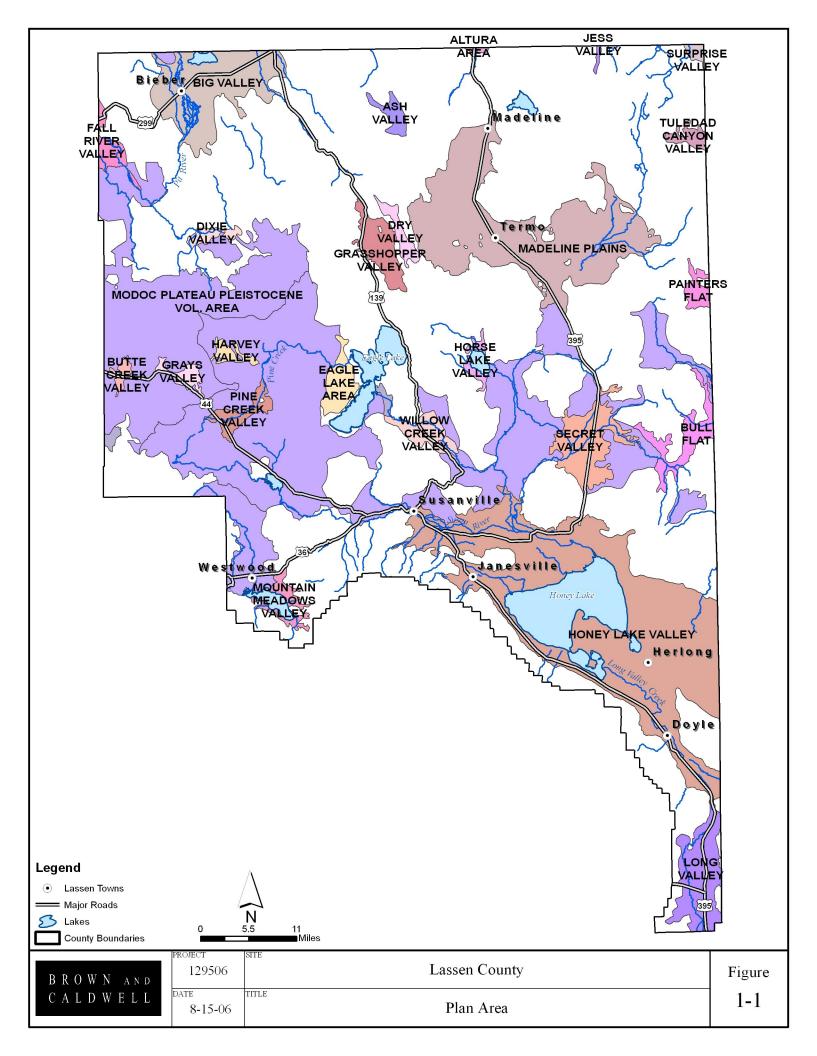
Table 1-1. Groundwater Management Plan Components	
GWMP Components	Lassen County GWMP Section
Create a summary of monitoring locations with frequency of wells monitored	3.5
Provide periodic reports summarizing groundwater conditions and management activities including:  A summary of monitoring results, with a discussion of historical trends.  A summary of management actions during the period covered by the report.  A discussion of whether actions are achieving progress towards meeting MOs.  A summary of proposed management actions for the future.  A summary of any GWMP changes that occurred during the period covered by the report.  A summary of actions taken to coordinate with other water and land agencies and other government agencies.	3.10
Provide for the periodic re-evaluation of the entire plan by the managing entity	3.10.3

### 1.5 Area Covered by Plan

The Lassen County GWMP includes those areas in Lassen County overlying a groundwater basin not within the service area of another local agency, water corporation regulated by the Public Utilities Commission (PUC), or mutual water company without the agreement of the overlying agency (CWC § 10750.7 (a)). Figure 1-1 shows the Lassen County GWMP plan area. Areas within Lassen County not overlying a groundwater basin as defined in Bulletin 118-2003 are not explicitly included in the GWMP.

Local agencies (e.g. Community Service Districts), PUC-regulated water purveyors, or mutual water companies can select to gain coverage under the Lassen County GWMP through adoption of the Lassen County GWMP. Table 1-2 provides a listing of overlying agencies and the groundwater basins overlain.

Table 1-2. Overlying Agencies and Agreement to Join GWMP	
Agency	Groundwater Basin
City of Susanville	Honey Lake
Clear Creek Community Services District	Modoc Plateau Pleistocene Volcanic Area
County Service Area #2, Johnstonville Water System	Honey Lake
Herlong Utilities Inc.	Honey Lake
Lake Forest Mutual Water Company	Honey Lake
Lassen County Waterworks District Number 1	Big Valley
Leavitt Lake Community Services District	Honey Lake
Little Valley Community Services District	None
Sierra Army Depot	Honey Lake
Susan Hills Mutual Water Company	Honey Lake
West Patton Village Community Services District	Honey Lake
Westwood Community Services District	Modoc Plateau Pleistocene Volcanic Area



### 1.6 Plan Development Process

The GWMP development was supported by a Working Group comprised of individuals with extensive knowledge of local groundwater-related issues, objectives, conditions, and needs. The Working Group assisted plan development by serving in an advisory role. The County convened three meetings of the Working Group during GWMP development. Working Group participants and the agency represented or the individual's expertise is presented in Table 1-3.

Table 1-3. Lassen County GWMP Working Group		
Working Group Participant	Representing or Expertise	
Maurice Anderson	Community Development Department	
Bob Anton	Honey Lake RCD	
Joe Bertotti	Community Development Department	
Noel Eaves	DWR Northern District – Groundwater Section	
Paul Herman	Long Valley Groundwater Management District	
Tim Garrod	Agricultural groundwater user – Honey Lake basin	
Rob Hill	City of Susanville; Lassen County Fish and Game Commission	
David Lile	Lassen County Farm Advisor; UC Cooperative Extension	
Dan McManus	DWR Northern District – Groundwater Section	
Kevin Mitchell	Agricultural groundwater user – Big Valley basin	
Rick Simon	Community Development Department	
Bob Sorvaag	Community Development Department	
Todd Swickard	Agricultural groundwater user – Honey Lake and Willow Creek basin	

The County is following CWC guidance on GWMP development. There are five main steps in the development of a GWMP, as defined under CWC§10753.2 through 10753.6. The five steps and the County's actions to follow the five steps are shown in Figure 1-2 and are summarized below:

**Step 1** – Provide public notification of a hearing on whether or not to adopt a resolution of intention to draft a GWMP and subsequently complete a hearing on whether or not to adopt a resolution of intention to draft a GWMP. Following the hearing, draft a resolution of intention to draft a GWMP. The County provided public notification and held a hearing on whether or not to adopt a resolution of intention on March 28, 2006.

**Step 2** – Adopt a resolution of intention to draft a GWMP and publish the resolution of intention in accordance with public notification. The Lassen County Board of Supervisors adopted the resolution of intention to develop a GWMP on March 28, 2006. The resolution is included as Appendix A.



Figure 1-2. Plan Development Process

Step 3 – Prepare a draft GWMP within two years of resolution of intention adoption. Provide to the public a written statement describing the manner in which interested parties may participate in developing the GWMP. The County provided notification and held three meetings where meeting attendees gave input on management objectives for the GWMP. The public draft of the GWMP was available to public at Susanville library and on compact disk at the County's office, and the University Extension from January 9 through March 13, 2007.

Step 4 – Provide public notification of a hearing on whether or not to adopt the GWMP, followed by holding a hearing on whether or not to adopt the GWMP. The County provided public notice of the hearing to adopt the GWMP in the Lassen County Times newspaper on February 27 and March 6, 2007.



Photo 1-1. Groundwater management plan meeting attendees.

**Step 5** – The plan may be adopted within 35 days after the completion of Step 4 above if protests are received for less than 50 percent of the assessed value of property in the plan area. If protests are received for greater than 50 percent of the assessed value of the property in the plan area, the plan will not be adopted. The County held a public hearing to adopt the GWMP on March 13, 1997. During the hearing the Board received public comment, which was incorporated into the GWMP following the hearing. Public comment was supportive of the GWMP, and no protests against the GWMP were received. The Board of Supervisors unanimously adopted the GWMP following public comment. Board meeting minutes reflecting GWMP adoption and public comment with responses are provided in Appendix D.

#### 1.7 Public Outreach and Education

The County developed a Public Outreach Plan to guide development of the GWMP. Public outreach included the formation of a Working Group to provide input on GWMP development and noticed public hearings on the intent to draft and adopt the GWMP. The Public Outreach Plan is included in Appendix B.

# 1.8 Document Organization

The Lassen County GWMP is organized into the following sections:

- Section 1 Introduction: discusses GWMP goals, objectives, plan area, and development process
- Section 2 Physical Setting: describes the physical setting of Lassen County including items such as geologic setting, land use, water sources, and physical hydrogeologic infrastructure
- Section 3 Plan Implementation: discusses the individual components of the Lassen County GWMP as listed in Table 1-1.
- Section 4 References
- Appendices