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2008 - San Antonio and Nacimiento Rivers Watershed Management Plan

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Prepared by
the Nacitone Watersheds Steering Committee and
Central Coast Salmon Enhancement, Inc.

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the Monterey County Water Resources Agency and
the State Water Resources Control Board

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Ann Beckett, *Lockwood resident*

Marilyn Breland, *Heritage Ranch resident*

Bill Capps, *Nacimiento Regional Water Management Advisory Committee*

Terry Chavis, *Heritage Ranch resident*

Ken Ekelund, *Program Manager, Monterey County Water Resources Agency*

Letty French, *Nacimiento watershed resident*

Adrienne Greve, *Assistant Professor, City & Regional Planning Department, Cal Poly San Luis Obispo*

Michel Hardoy, *Lockwood resident*

Wally Haussamen, *Fort Hunter Liggett, Natural Resources Manager*

Phil Humfrey, *Nacimiento Regional Water Management Advisory Committee*

Mary Ann Martinus, *Lockwood resident*

David Osgood, *Nacimiento watershed resident; Chair, Adelaide Farm Center*

Dennis Palm, *Ventana Wilderness Alliance*

Lester Patterson, *Lockwood resident*

Eric Peterson, *Lime Mountain Mining Company*

Bill Phillips, *MCWRA Deputy General Manager*

Kim Roth, *Lockwood resident*

Tom Shepherd, *Monterey County Parks & Recreation*

Scott Smith, *Vice Chair, Adelaide Farm Center*

Lisa Wallender, *Water Systems Chemist, Public Works Department, County of San Luis Obispo*

Mark Williams, *Camp Roberts, Environmental Chief*

Duane Wolgamott, *Lockwood resident*

The members of the Technical Advisory Committee made themselves available for the betterment of this document and are listed below.

Ann Beckett, *Historian and Lockwood resident*

Rob Atwill, *Doctor, UC Davis, School of Veterinerian Medicine*

John Bradford, *US Forest Service, District Ranger*

James Caruso, *Senior Planner, SLO County*

John D'Ornellas, *Heritage Ranch Community Service District Manager*

Ken Ekelund, *Monterey County Water Resources Agency*

Jill Falcone, *Environmental Resource Specialist, County of San Luis Obispo, Dept. of Public Works*

Joy Fitzhugh, *San Luis Obispo County Farm Bureau*

Howard Franklin, *Hydrologist, Monterey County Water Resources Agency*

DJ Funk, *Executive Directory, Upper Salinas Las Tablas Resource Conservation District*

Steve Knudsen, *San Luis Obispo County Farm Bureau*

Robert LaFluer, *Natural Resources Conservation Service, U.S. Dept. of Agriculture (Salinas Service Center)*

Royce Larsen, *UC Cooperative Extension, Area Natural Resources, Watershed Advisory*

Margy Lindquist, *Natural Resources Conservation Service, U.S. Dept. of Agriculture (Templeton Service Center)*

Danny Marquis, *Natural Resources Conservation Service, U.S. Department of Agriculture*

Steve Mason, *Land Use Technician, Planning Department, County of Monterey*

Kay Mercer, *Agriculture Water Quality Consultant, Kay Mercer, Inc.*

Donna Meyers, *Big Sur Land Trust*

Elizabeth Painter, *Botanist*

Margaret Paul, *California Department of Fish and Game*

Paul Robins, *Executive Director, Resource Conservation District of Monterey County*

Mary Root, *Conservation Partnerships Coordinator, U.S. Fish & Wildlife Service*

Bob Schubert, *Senior Planner, Planning Department, County of Monterey*

Kelly Sorenson, *Ventana Wilderness Society*

Ken Tate, *Rangeland Watershed Specialist, Cooperative Extension, Department of Plant Sciences, UC Davis*

Kathy Thomasberg, *Water Quality Specialist, Monterey County Water Resources Agency*

Lisa Wallender, *Water Systems Chemist, SLO County Public Works*

Mark Williams, *Environmental Chief, Camp Roberts*

Duane Wolgamott

Phil Humfrey

Executive Summary

There are two aspects to the development of any watershed plan. Dedicated people spent countless hours discussing concerns, issues and potential solutions to problems. This dedication leads to the production of documents that hope to articulate the outcome of the dialog in a way that is useful for the community. The executive summary identifies the Nacitone Watersheds Management process and products, and attempts to capture the major core findings arising out of both efforts.

The Vision

The Nacimiento/San Antonio River Watersheds Management Plan should protect water quality and watershed uses for all stakeholders.

The Purpose

The purpose of the Nacitone Watersheds Management Plan is to identify the existing conditions of and stresses in these watersheds as they relate to water quality, and recommend methods for reducing or eliminating those stressors such as alternative land use practices.

The Process

The Nacitone Watersheds Management planning process is a stakeholder driven process that represents the interests of residents, agencies and businesses that work and live in the watersheds. The stakeholder process used to produce these products presents an investment of 8800 volunteer hours of time in meetings, field trips, community outreach and planning. The magnitude of the effort includes far more than this if one includes the hundreds of contacts made through flyers, press releases and web-site visits. Each of the products was placed on the web-site for public review. Public comment periods were held for the Goals and Strategies document and the Watershed Management Plan. There were Steering and Technical Advisory Committees as well as a staff team guiding the process and development of the products. The members of each are listed in the acknowledgement section of the plan and referenced in Part 1 "How the Plan was Prepared."

The Products

The Nacitone Watersheds Plan was initiated by the Monterey County Water Resources Agency (MCWRA) and funded by a grant from the Regional Water Quality Control Board. As part of the grant, several products were produced to assist the watershed stakeholders in gathering and analyzing existing information about the watersheds to discern critical issues facing the watersheds and potential remedies. These products include:

Watershed Resources Inventory (WRI)—Existing watershed information was identified including reports, studies, maps, Geographic Information System (GIS) files, and technical data covering land use, water supply, water quality, ecology, hydrology, habitat and vegetation, agricultural and grazing practices, and planning efforts. The inventory is comprised of a spreadsheet file containing over 300 entries as well as an annotated bibliography of a select number of the entries.

Analysis of the WRI (Analysis)— Existing information was compiled in order to establish a baseline describing existing watershed conditions including land use, major water features, water quality, water supply, designated beneficial uses, point and nonpoint sources of water pollution, population, infrastructure, vegetation and habitat, and agricultural and grazing practices. Trends were identified for those items that had sufficient historical data. The Analysis did not include a technical review of compiled information.

Grazing Land Management Plan—the Upper Salinas/Las Tablas Resource Conservation District conducted an assessment of the 24,000 acres of grazing land owned and managed by the MCWRA at the Nacimiento and San Antonio Reservoirs to determine impacts on water quality, maintenance of ecological communities, and management of sustainable and restorative grazing.

Watershed Goals and Strategies—The WRI and Analysis were utilized by the stakeholder group to articulate goals and planning strategies for future watershed activities that focus on water quality improvements. These include non-regulatory approaches to watershed protection, integration of watershed planning with existing government planning activities, land use planning strategies for watershed protection and potential partnership scenarios which could serve to protect the health of the watershed. In addition, the stakeholders identified research and monitoring opportunities to fill data gaps to address issues of concern, identified many roles and associated responsibilities of stakeholders in implementation of the proposed actions and strategies as well as draft time frames for implementation.

Watersheds Management Plan—The Plan is an integration of the above products and includes the geographic boundaries of the watershed, a description of the natural resource conditions within the watershed, a series of goals, objectives and implementation measures for achieving and sustaining water quality improvements, and description of how to monitor, update and maintain the Plan as a living document. The plan is divided into four sections.

- Part 1 includes purpose and need for the plan and plan preparation.
- Part 2 is the Existing Conditions section which identifies physical and current conditions of the watersheds.
- Part 3 is the Watershed Strategy which identifies roles, responsibilities and potential implementation measures for protecting watershed health.
- Part 4 includes the jurisdictional and regulatory framework.

Appendices to the Plan include complete auxiliary supporting documents (The Grazing Lands Management Plan and the Nacitone Watershed Resources Inventory Final Technical Memorandum—Water Resources, Water Quality and Sediment Supply prepared by Swanson Hydrology and Geomorphology), WRI Spreadsheet and Annotated Bibliography, public and Technical Advisory Committee (TAC) comments, Low Impact Development (LID) primer, Resources for Residents and Landowners, Community Services Area (CSA) 7 Interceptor Bypass Study Executive Summary, Watershed Strategy Priorities Chart and maps.

The Core Findings

There is an abundance of information about the watersheds and while there is great concern about present and future water quality, the Klau/Buena Vista Mines Mercury situation appears to be the only documented water quality issue in either watershed. Stakeholders have become aware that while there may be additional water quality problems, there is no coordinated monitoring approach to determine level of concern.

The complexity of landownership and cross-jurisdictional authority of both San Luis Obispo and Monterey Counties present unique challenges for resolving present and future water quality concerns. The addition of state and federal regulations for source water supply and water quality can add further complexity to local efforts in that finding solutions to water quality issues can lead residents and landowners to conflicting regulations.

The interests of stakeholders living and working in the watersheds and the interests of the MCWRA and other agencies have not always been well aligned. This plan attempts to, in part, rectify this situation as the MCWRA and the stakeholders begin to share responsibility in finding ways to effectively manage watershed resources.

The Watershed Strategy (Part 3) is structured toward partnership approaches to water quality protection.

Legacy landowners (those who have been stewards of the land for generations and may date back to original land grants) play a central role in establishing desired outcomes in terms of defining future trends within a watershed.

The Steering Committee considered the following list to be the top priorities for action in the Nacitone Watersheds over the short and long term. (See table on following page.)

Prioritization of Plan implementations (recommended actions)

Top priorities that emerged from the stakeholder process :	
Short term (1-2 years)	**Long term (5-10 years)**
Continue the Nacitone Watersheds Steering Committee by seeking funding and contracting with a watershed coordinator/grant writer.	
Support the development and maintenance of Round Tables with an Inter-county Task Force on land use and water resources planning as the top priority Round Table (Issue 7)	
Monterey County, San Luis Obispo County and resident associations should work together to develop and implement programs to control invasive species. (Issue 11, Implementations 1C)	
Water quality monitoring, interpretation, and coordination across multiple entities. Continue existing water quality monitoring. In addition, establish a comprehensive water quality monitoring program with uniform collection, analysis and reporting protocols across pertinent jurisdictions for technical and public sector use. As part of this information gathering, encourage EPA to conduct a lake bottom sediment study of Nacimiento reservoir to better understand mercury contamination.	Support for SLO County to eliminate the risk to water quality of the Oak Shores Interceptor line at Nacimiento reservoir.
Support the work of existing Local Fire Safe Councils (Issue 5, Implementation 1B)	
Conduct road system survey to prioritize needs for erosion control. Include a focused survey on the Tank Road in coordination with military, etc. (Issue 9, Implementations 1B and 2B)	Implement proposed upgrades to the Tank Road and others within these watersheds in coordination with others. (Issue 9, Implementation 2B)
Collaborate on the design and implementation of educational stewardship campaigns targeting watershed residents and visitors with customized messages such as “Be A Watershed Citizen.”	

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PART 1
Introduction

A. Purpose and Need for the Plan

The purpose of the Nacitone Watersheds Management Plan is to identify the existing conditions of and stresses in these watersheds as they relate to water quality, and recommend methods for reducing or eliminating those stressors such as alternative land use practices.

The Monterey County Water Resources Agency (MCWRA) has an interest in creating a plan for the following reasons:

- The reservoirs and their respective watersheds are the source for water recharging the Salinas Valley groundwater basin.
- There is a direct correlation between the health of these watersheds and the supply and quality of water for the Salinas Valley.
- The Salinas Valley's population and economy are dependent on a long-term supply of high quality water from those watersheds, and on protection from floods.
- The reservoirs also provide ancillary benefits of recreation and habitat enhancement.

The communities around the reservoirs have an interest in insuring that the watersheds remain healthy. The land around San Antonio Reservoir, also known as Lake San Antonio, is located in Monterey County and is mostly owned by Monterey County. While Nacimiento Reservoir, also known as Lake Nacimiento, is located in San Luis Obispo County, it is managed by the Monterey County Water Resources Agency. About half of the land around Nacimiento Reservoir is owned by approximately 5,000 private owners who want to make sure the watersheds and reservoir remain healthy to protect property values and business interests that depend on the reservoir. Another reason to keep the watersheds healthy is that San Luis Obispo County will soon annually draw up to 17,500 acre feet of water from Nacimiento Reservoir as "raw" water to be treated and used as drinking water.

Source water supply and water quality are increasingly regulated by the State of California and the United States government. The MCWRA expects that trend to continue, while believing that locally based initiatives are preferable to regulatory actions imposed by higher levels of government. The MCWRA believes it should lead efforts to involve local landowners and other stakeholders in the watersheds to identify methods by which high quality water supplies can be maintained over the long-term, rather than merely react to studies and organizational efforts conducted by others.

B. How the Plan was Prepared

Following submittal of a watershed management plan grant request by MCWRA to the Regional Water Quality Control Board, MCWRA staff was invited to several community meetings in Lockwood. At these meetings, community members had the opportunity to ask about the purpose of a plan, what it might mean for property owners, and what the role of the MCWRA

and other government agencies already engaged would be in regards to plan development. A Steering Committee (SC) of stakeholders was formed who negotiated an agreement with MCWRA that the Steering Committee would have the final decision on how the plan was developed and that, if need be, local residents would have greater influence over decisions for the plan than other Steering Committee members and other stakeholder interests.

The Steering Committee then selected a facilitator for the process and a plan writer. MCWRA provided the necessary contracts for the facilitator and plan writer. The Steering Committee, Facilitator, and Plan Writer developed a Technical Advisory Committee (TAC). The SC and TAC were then facilitated to generate guidance for the staff team for the production of each of the work products described in the Executive Summary. The staff team generated agendas, meeting notes and draft documents for SC and TAC review. The staff team was comprised of the SC Co-chairs, Facilitator, Plan Writer and MCWRA Grant Administrator. Over the course of two years an extended dialog within the SC and TAC, as well as outside these committees through public review, led to the formulation of the Plan. A portion of the watershed area included in this Plan was previously covered by the Upper Salinas River Watershed Action Plan (2004).

NOTE TO READER: Quoted material from authors and sources compiled in the Watershed Resources Inventory and presented in the Nacitone Watersheds Management Plan is credited to the source, italicized and indented.

C. Vision Statement and Guiding Principles of the Nacitone Steering Committee

The Vision Statement developed by the Steering Committee acknowledges the importance of all uses of these watersheds.

The Nacimiento/San Antonio River Watersheds Management Plan should protect water quality and watershed uses for all stakeholders.

The following are guiding principles important for effective protection of water quality and watershed uses for all stakeholders.

- Manage human watershed uses and natural watershed resources and functions to co-exist over the long-term.
- Foster trust and a stewardship ethic among all watershed users.
- Encourage and facilitate voluntary and incentive-based efforts rather than additional regulation to protect water quality and watershed uses and functions.
- Protect the quality and quantity of surface water and ground water
- Seek to balance the use of watershed resources in order to protect those uses including homes and communities, infrastructure, farming, ranching, recreation, military, and others.
- Facilitate greater understanding within our communities of how watersheds function and how individuals, entities, and groups with jurisdiction can protect both watershed uses and watershed health.

D. Balancing Watershed Uses Through Thoughtful Communications

The Watersheds Management Plan recognizes the potential for competition among diverse demands on the natural resources and functions of these watersheds. It is important to understand and acknowledge the challenge of finding an equitable and effective way to balance the uses of watershed resources while protecting the critical natural functions of these watersheds that make the resources available. Water, soil, forests, other plant life and animal communities should be respected for their intrinsic worth as well as carefully used and managed for a variety of human uses such as the creation of homes, communities with infrastructure, recreational enjoyment of the resources, farming and ranching, support of military needs, etc.

The Plan attempts to summarize what is known about these watersheds, their uses and resources. The plan also lays the groundwork for improved communication and coordination across these uses and among watershed residents, government agencies, pertinent jurisdictions, and other watershed users.

There are several recommendations in this Plan to form water quality and watershed use-based, problem-solving roundtables. These roundtables would provide an opportunity for agencies responsible for managing watershed resources or uses to communicate with watershed users including landowners and others to clarify and understand varying mandates, voice concerns, assess available time, talents, and funding. A critical function of these roundtables would be to facilitate cooperative agreements for coordinated management of these watershed uses and the dissemination of information to the public.

Specific recommendations from the Steering Committee and others engaged in this planning process may include the establishment or continuation of roundtables such as the following:

- **Fire Safe Councils**
- **Livestock Grazing Coordinating Committee**
- **Lake Recreation and Public Safety roundtable**
- **Cross-county Land Use Planning Task Force**
- **Water Quality Information Sharing roundtable**
- **Community Road Associations**

Descriptions of these roundtables and the tasks envisioned for them are in the following chapters.

E. Water Quality and Watershed Health by Identifying and Preventing Impacts

Unfortunately, water quality and watershed uses can be threatened when watershed uses are not well managed or when naturally occurring conditions exist that negatively impact water quality or watershed health. Examples of naturally occurring conditions include total dissolved solids (TDS) and selenium in the San Antonio River. Increase in population (watershed usage) and new watershed uses requires the ability to improve protection measures, including the creation of innovative management measures. The Steering Committee has assessed and compiled existing information on current water quality and explored potential negative impacts arising from current uses in the watersheds.

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PART 2
Existing Conditions

The existing conditions section is a depiction of relevant descriptive data on the physical, natural and cultural resources of the Nacimiento and San Antonio River watersheds. This information is important to understand the context for water quality changes over time. To a large extent, the authors have relied on data and descriptions of resource conditions contained in prior reports. This information has been reviewed and incorporated into this section of the plan. The prior reports were not subjected to technical or peer review in preparing this plan.

In addition, the Steering Committee elected to have an independent analysis of water quality, water supply, erosion and sediment supply, and historic conditions of the channel and riparian corridor performed by an outside consultant, Swanson Hydrology and Geomorphology (SH+G). The product, Nacitone Watershed Resources Inventory Final Technical Memorandum—Water Resources, Water Quality and Sediment Supply, will be included with this report in Appendix D. Contents of the technical memorandum have been excerpted and integrated into the hydrology, water quality and reservoir features and management sections of Part 2.

It is anticipated that this information about existing conditions will serve as a baseline for future investigations in the watershed.

I. PHYSICAL FEATURES OF THE WATERSHED

A. Location, Overview and Topography

The Nacitone watersheds include the two adjacent watersheds trending southeast from the Santa Lucia Range to the Salinas River in San Luis Obispo and Monterey Counties (Figure 1). Comprised of the Nacimiento and San Antonio River watersheds, the term Nacitone originates from the Dust Bowl days when the US Soil Conservation Service formed the Nacitone Soil Conservation District.

Portions of the Nacimiento River and San Antonio River watersheds are located in San Luis Obispo and Monterey counties. Approximately 53% of the Nacimiento River watershed lies in San Luis Obispo County and almost 97% of the San Antonio River watershed lies in Monterey County. The headwaters of both the Nacimiento and San Antonio Rivers are located in the Los Padres National Forest. The San Antonio River watershed originates at an elevation of 3,060 feet above sea level and is characterized by a 'V-shaped' valley. The San Antonio River Valley consists of a series of northwest-southeast trending drainages with scattered brush, oak trees and relatively steep sides. In the eastern part of the watershed, Jolon Valley merges with Lockwood Valley and forms an area characterized by a large, relatively flat, southeasterly sloping surface (Geotechnical Consultants, Inc, 1984). The Nacimiento River watershed originates at an elevation of approximately 3,350 feet above sea level and its valley is also characterized by a 'V-shaped' valley.

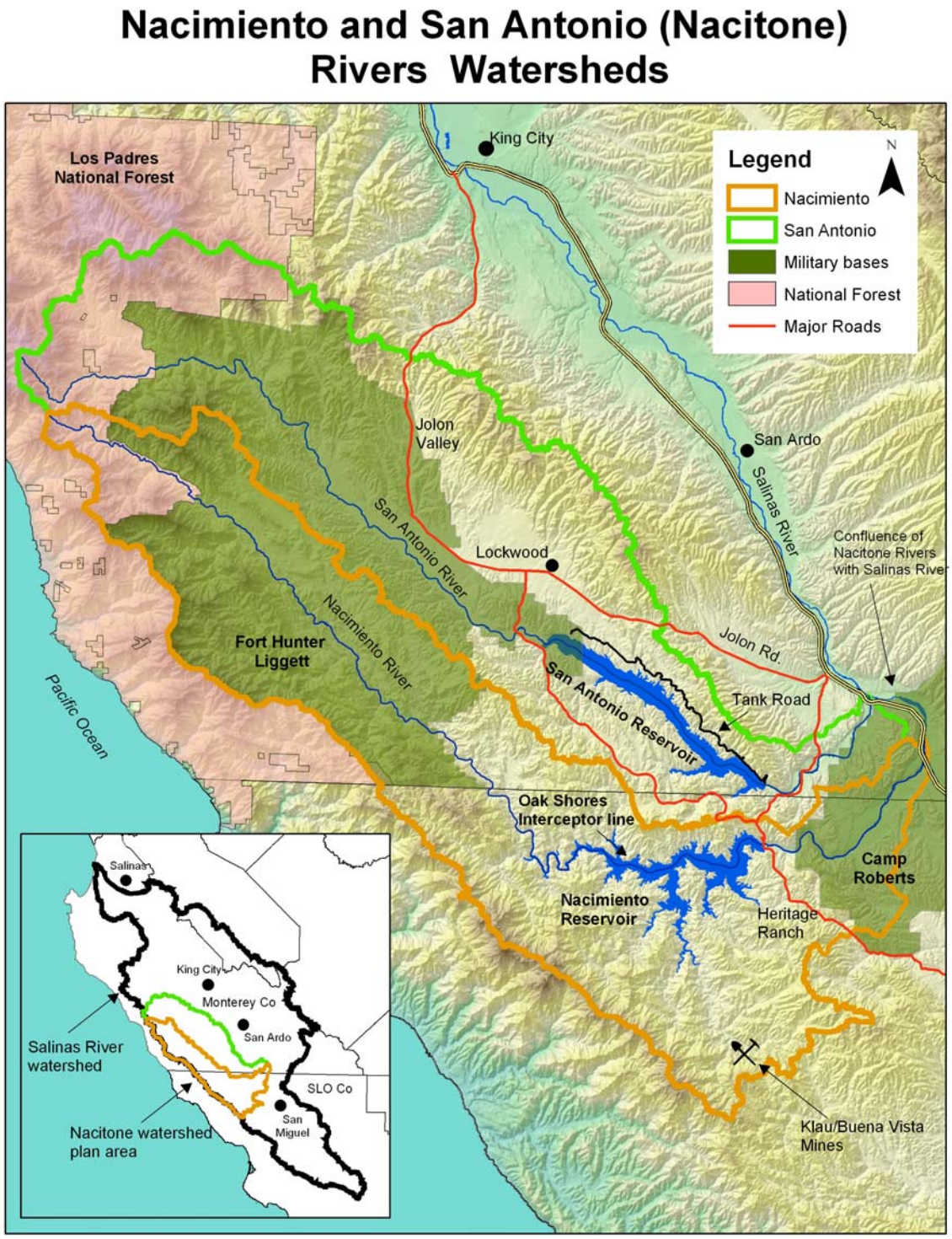

Figure 1. Nacimiento and San Antonio River Watersheds

Watersheds Description

The Nacimiento and San Antonio River watersheds cover 705.3 square miles from the ridges within the Santa Lucia Range to each river's confluences with the Salinas River. The Monterey County Water Resources Agency has estimated the San Antonio River watershed to contain

343.8 square miles or 220,003 acres and the Nacimiento River watershed is 361.5 square miles or 231,373 acres (Ken Ekelund, 2007). Both watersheds are impounded creating reservoirs. The San Antonio River is impounded at river mile 5 and the Nacimiento River is impounded at river mile 10. The reservoirs are operated by the Monterey County Water Resources Agency and both are managed as a unit for the control of seawater intrusion, groundwater recharge and groundwater quality enhancement for the Salinas Valley, recreational opportunities for the adjoining and regional communities, flood control, drought protection, and preservation of aquifer storage (RMC, 2003). Nacimiento Reservoir began operating in 1957 and San Antonio Reservoir in 1965 (Montgomery Watson, 1997). The drainage area controlled by the two dams is approximately 650 square miles .

Although adjacent watersheds, Nacimiento and San Antonio are very different geologically and metereologically, which affects how each functions hydrologically. These differences have led to the framework upon which the reservoirs are managed. Management, in turn greatly influences existing watershed conditions. The Nacimiento River watershed, although only slightly larger, receives much higher rainfall than the San Antonio River watershed, and experiences more runoff due to its higher rainfall and geologic features. Because of these features, Nacimiento Reservoir fills more quickly. The San Antonio watershed generates less runoff due to both lower rainfall and the storage of rainwater as groundwater in an alluvial basin situated upstream of the San Antonio Reservoir. A steering committee discussion occurred regarding safe yield of the watersheds above their respective dams. Safe yield is a term used to express the amount of water an aquifer or well can yield for consumption without producing unacceptable negative effects. Safe yield information is not available for these watersheds.

Watershed Features

San Antonio River Watershed

The San Antonio River has its headwaters in the Santa Lucia Mountains between Cone and Junipero Serra peaks, in the Ventana Wilderness of Los Padres National Forest. The stream flows in a southeasterly and easterly direction through the Los Padres National Forest and Fort Hunter Liggett Military Base (FHL) to its confluence with the Salinas River. The river is 58.2 miles in length, of which the first 8.6 miles of the south fork and 6.7 miles of the north fork are located within the Los Padres National Forest. With the exception of the upper section including the headwaters, the drainages are normally dry during late summer and fall months, with the exception of Mission Creek, which historically has exhibited surface flow year-round. Spring-fed water flows through the upper portion of the San Antonio River throughout the year, while lower reaches have intermittent flow. San Antonio waterways include Carrizo Creek, Santa Lucia Creek, lower Rattlesnake Creek, Mission Creek, and Sulphur Spring (Las Tablas Creek and Lake Nacimiento TMDL, 2003)(Figure 2).

Nacimiento River Watershed

The Nacimiento River, located about five miles southwest of the San Antonio River, originates in the Santa Lucia Mountains south of Cone Peak, also within the Ventana Wilderness of Los Padres National Forest. The stream also flows southeasterly through the Los Padres National Forest, FHL and Camp Roberts and a few private parcels as well as the Nacimiento reservoir before it reaches its confluence with the Salinas River. The river is 54.2 miles in length of which 9.5 miles are located within the Los Padres National Forest. With the exception of the upper section including the headwaters, much of the Nacimiento River surface remains dry during

the summer. However, year round water can be found in various pools along portions of the river (FHL Special Resource Study, 2006).

Nacimiento River drainages can be divided into two groups: the lower basins that drain directly to the reservoir, and the upper basins that drain to the Nacimiento River, which then flows into the reservoir. The lower basins include Las Tablas, Franklin, Town, Dip, Snake, and Kavanaugh creeks. The upper basins include Little Burnett, Tabacco, Salmon, Las Berros, San Miguel, Stony, El Piojo, Waller, and Sapaque Creeks. The crest of the Santa Lucia Range forms the southwestern boundary of the Nacimiento River watershed, and the San Antonio River watershed divide bounds it on the northeast (Clean Lakes Assistance Program for Lake Nacimiento, 1994). Additional main stem creeks include: Carrals Spring, Slickrock Creek, Stony Creek, San Miguel Creek, Upper Los Berros Creek, N. Fork Los Burros Creek, San Miguelitos Ranch, Gabilan Creek, Los Bueyes Creek, Lower Los Burros Creek, Oak Flat, Waller Creek, Mesa Coyote, Pozo Honda Creek, Turtle Creek and Gulch House Creek (Las Tablas Creek and Lake Nacimiento TMDL, 2003)(Figure 2).

Figure 2. Nacimiento and San Antonio River Subwatersheds

B. Geology

The significance of geology to an understanding of watershed health relates to the physical changes that occur based on the underlying rock structures, their constituent elements and their juxtaposition within the watershed. Geologic information was derived from previously published sources collected for the WRI. Figure 3 was produced by SH+G for this project.

San Antonio River Watershed

The San Antonio River Watershed lies within Salinian Block of the Pacific plate. The Lockwood basin occupies a valley in southwestern Monterey County between the Santa Lucia range to the west and the Lockwood-San Ardo hills to the east. The Los Ojitos Hills form the southern boundary.

Marine sediments of Miocene age are assigned to the Vaqueros, Monterey and Santa Margarita formations. Overlying a granitic basement, they are as thick as 825 feet in the west and thin to the east. The Monterey Formation progressively truncates the Vaqueros in an easterly direction.

The youngest sandstone of the Miocene sequence is referred to as the Santa Margarita Formation. Of these units, only the Monterey Formation crops out in the Lockwood area. It forms the bulk of the Lockwood-San Ardo hills and is extensively exposed in the hills southwest of the San Antonio River (Logan, 1987).

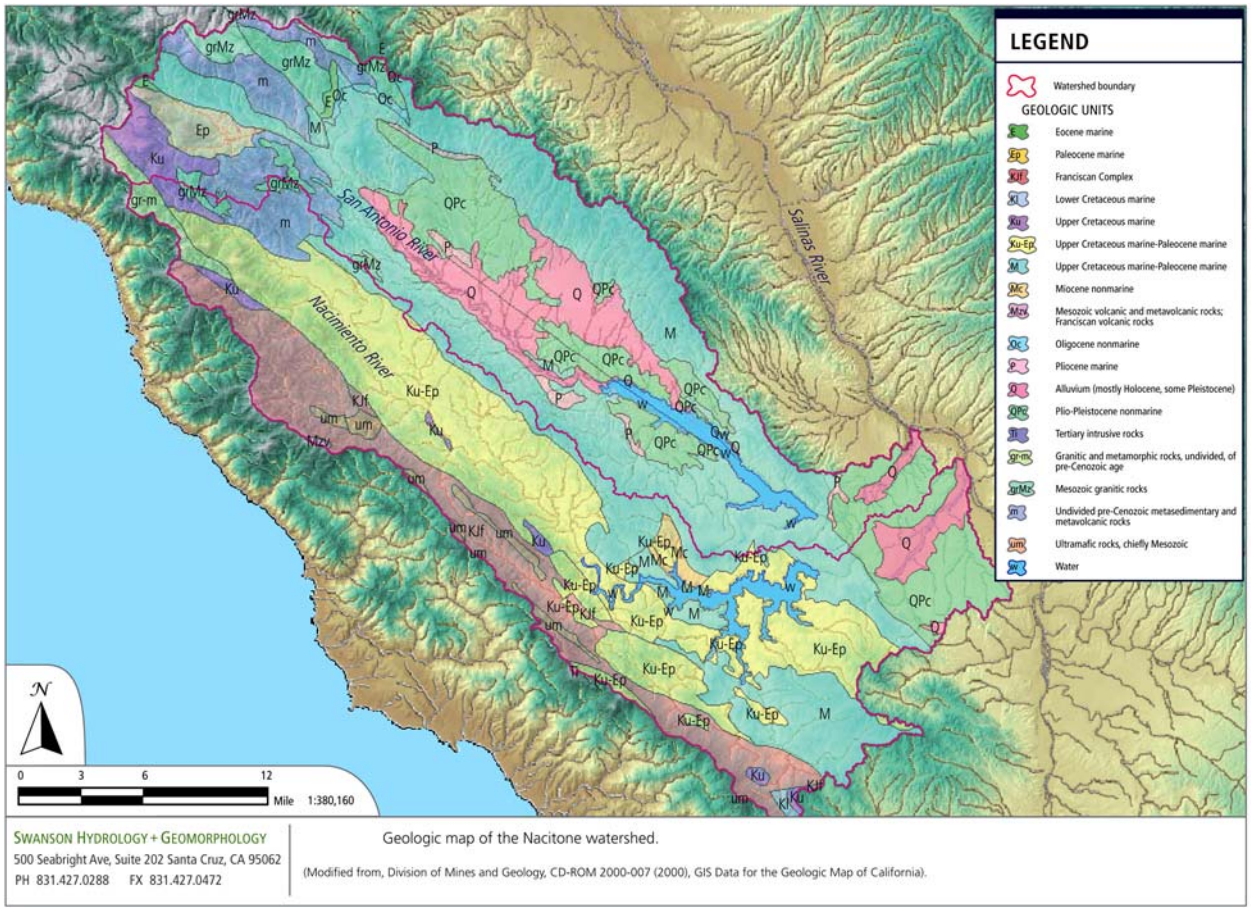

Figure 3. Geologic map of Nacitone watersheds

Nacimiento River Watershed

The Nacimiento River watershed lies within Salinian Block of the Pacific plate. The Salinian Block, which is bounded on the east by the San Andreas Fault Zone and is underlain at depth by a basement of extensively folded and faulted Franciscan rocks of Jurassic age. Sedimentary rocks of Cretaceous to Late Tertiary age are commonly exposed at the surface in this province and are extensively folded and faulted. Pleistocene and recent sediments are offset along the San Andreas Fault (NWP EIR, 2003).

Paso Robles Formation – The nonmarine, Plio-Pleistocene-age Paso Robles Formation consists of massive to locally cross-bedded, poorly exposed, weakly consolidated mixtures of gravel, sand, silt, and clay.

Santa Margarita Formation – The Miocene-age, Santa Margarita Formation predominantly consists of poorly stratified, sandy, marine sediments that conformably overlie the Monterey Formation and are locally unconformably overlain by the Paso Robles Formation. The arkosic sandstone of this formation is typically massive to coarsely crossbedded and locally contains abundant shell beds and reefs. The thickness of the Santa Margarita Formation ranges from approximately 200 feet west of Atascadero to a maximum of 2,000 feet northeast of Santa Margarita.

Monterey Formation – The Miocene-age Monterey Formation consists of well-bedded, marine, siliceous and calcareous shale. That shale includes interbeds of chert along with diatomaceous, porcelaneous, tuffaceous, and dolomitic units. Local interbeds of sandstone are also present within an upper member of that formation, where distinguishable. The shale ranges in thickness from approximately 200 feet to more than 2,000 feet.

Tierra Redonda Formation – The Miocene-age Tierra Redonda Formation consists of nonfossiliferous, thickly bedded to massive sandstone located southwest of the Jolon fault. That formation locally is composed of granitic boulder conglomerate with clasts ranging in size from 1 to 8 feet in greatest dimension. The Tierra Redonda Formation conformably overlies the Vaqueros Formation and intertongues with the Sandhodt Member of the Monterey Formation. The Tierra Redonda Formation has a thickness of approximately 1,650 feet in the type area.

Unnamed Tertiary/Cretaceous Unit – This unit is located west of Paso Robles, specifically southwest of the Jolon fault, and consists predominantly of sandstone and conglomerate with locally abundant mudstone. The thickness of this unit is unknown because the base of the unit is obscured; however, the unit is at least 2,500 feet thick.

Franciscan Formation – The Franciscan Formation consists of a mélange of sandstone, mudstone, and greenstone, with lesser amounts of chert, serpentinite, diabase gabbro, and blueschist facies metamorphic rocks. Those materials are thinly bedded to massive, locally highly fractured and discontinuous, and poorly to well indurated. Serpentinite-rich zones withinmthe Franciscan Formation may locally contain a magnesium-silicate mineral called chrysotile. Chrysotile typically occurs in veins of silky fibers and is an important source of commercial asbestos (NWP EIR, 2006).

Information on soil and vegetation types is briefly discussed in Appendix C (Agency Grazing Land Management Plan). Appendix C includes soil and vegetation information for Agency Grazing leases around both reservoir. More detailed information for other location in these watersheds can be obtained from the Natural Resources Conservation Service in either Monterey or San Luis Obispo counties.

II. DESCRIPTION OF CURRENT CONDITIONS OF THE WATERSHED

The current conditions section is a depiction of relevant descriptive data on the natural and cultural resources of the Nacimiento and San Antonio River watersheds. Status and reference information from the Watershed Strategy section of the plan may be in part repeated here and expanded in more detail.

A. HYDROLOGY

Hydrology is defined as the study of water and its properties, including its distribution and movement in and through the land areas of the earth. Understanding the hydrology of these watersheds is important to understanding water quality and quantity changes over time.

Surface Water

The Nacimiento and San Antonio Rivers together contribute more than 75 percent of the flow of the Salinas River at Monterey Bay (Clean Lakes Assistance Report, 1994), specified in acre-feet that is approximately 200,000 acre-feet per year (AFY) and 70,000 AFY to the Salinas River, respectively. In order to maintain minimum flow requirements in the river channels below the Nacimiento and San Antonio dams, a 25 cubic feet per second and 3 cubic feet per second flow requirement at the site of the dams, respectively, is required (SVWP EIR, April 2002).

The average annual inflow to Nacimiento Reservoir is about three times that of San Antonio Reservoir, on average. The MCWRA has operated the reservoirs so that releases from the two reservoirs also maintain an approximate 3:1 ratio in stored water between the reservoirs. Pursuant to the Nacimiento Dam Operation Policy (MCWRA, 2000), whenever possible, a release schedule is to be adopted that results in an empty space being created in the Nacimiento Water Conservation Pool that is three times that of the San Antonio Water Conservation Pool empty space on November 1st of each year.

SH+G prepared a water budget to analyze the available surface water supply. A water budget reflects the relationship between input and output of water through a region The water budget for the Nacitone watersheds takes into account all aspects of the hydrologic cycle as well as the operational aspects of the Nacimiento and San Antonio Reservoirs (discussed below in Reservoir Features and Management). Graphic representation of the water budgets is provided in (Figures 4, 5 & 6). This information can be used by stakeholders as they work together to protect beneficial uses of the watershed as well as in meeting the MCWRA interests of groundwater recharge targets for the Salinas Valley.

Lake Nacimiento Watershed

	Before Reservoir [volumes in af]		→	Reservoir [volumes in af]					
Water Year	Precipitation	ET + Groundwater Recharge	Runoff[1] → Reservoir	Oct. 1 Reservoir Capacity	Direct Precipitation	Evaporation	Dam Relase	Direct Use + Percolation[2]	Net Change in Storage
1959	267,134	152,903	114,231	250470	4,400	16,623	231,874	30,170	-160,035
1960	302,935	212,466	95,400	90435	5,071	8,730	155,232	16,089	-79,580
1961	289,241	242,437	51,513	10855	4,842	4,777	35,764	10,713	5,100
1962	575,476	244,329	340,515	15955	9,633	13,492	159,981	80,739	95,935
1963	578,816	276,048	312,190	111890	9,689	16,368	135,769	54,992	114,750
1964	338,673	271,974	72,212	226640	5,669	13,846	214,326	11,498	-161,790
1965	419,500	193,353	232,976	64850	7,022	13,717	144,220	39,736	42,325
1966	398,792	223,821	181,463	107175	6,675	14,526	171,493	-17,426	19,545
1967	819,962	290,323	542,987	126720	13,725	17,168	280,600	155,120	103,825
1968	265,527	229,075	40,775	230545	4,445	14,376	189,614	13,834	-172,605
1969	1,052,089	324,223	744,993	57940	17,611	11,722	622,366	131,055	-2,540
1970	299,595	87,526	216,946	55400	5,015	10,907	134,225	58,048	18,780
1971	364,056	186,964	183,019	74180	6,094	12,428	149,911	43,014	-16,240
1972	255,507	189,622	70,044	57940	4,277	7,280	83,187	8,719	-24,865
1973	762,514	272,049	502,878	33075	12,764	16,853	168,934	128,251	201,603
1974	575,142	223,833	360,671	234678	9,627	19,886	255,201	82,364	12,847
1975	375,412	18,875	362,648	247525	6,284	19,849	238,149	117,414	-6,480
1976	309,281	302,143	12,173	241045	5,177	15,795	179,080	-629	-176,895
1977	252,167	248,166	8,106	64150	4,221	6,492	44,055	2,620	-40,840
1978	850,021	93,231	770,628	23310	14,228	18,135	306,803	231,838	228,080
1979	470,601	295,526	182,736	251390	7,877	20,666	184,665	-20,966	6,248
1980	658,975	220,205	449,498	257638	11,030	18,096	360,145	96,211	-13,923
1981	372,072	276,734	101,395	243715	6,228	19,245	167,667	11,061	-90,350
1982	528,049	198,709	337,935	153365	8,839	18,379	138,881	51,420	138,095
1983	876,073	10,545	879,790	291460	14,664	17,653	733,710	200,526	-57,435
1984	285,233	156,425	133,451	234025	4,774	17,342	215,895	6,194	-101,205
1985	310,283	209,138	106,196	132820	5,194	12,964	165,620	17,286	-84,480
1986	571,134	165,391	415,040	48340	9,560	17,596	142,360	62,285	202,360
1987	246,155	201,725	48,438	250700	4,120	17,861	133,575	-1,542	-97,335
1988	461,249	417,072	51,686	153365	7,721	12,808	161,173	1,231	-115,805
1989	311,953	270,994	46,037	37560	5,222	4,639	68,267	4,563	-26,210
1990	241,146	224,030	21,042	11350	4,036	4,479	5,538	1,161	13,900
1991	464,255	324,522	147,291	25250	7,771	9,929	87,886	31,559	25,688
1992	479,285	346,858	140,230	50938	8,023	10,054	116,420	14,222	7,557
1993	837,663	372,993	478,306	58495	14,021	16,761	267,227	104,270	104,069
1994	382,426	324,115	64,537	162564	6,401	11,812	158,767	17,108	-116,749
1995	997,314	527,899	485,650	45815	16,694	18,209	190,776	51,919	241,440
1996	459,579	217,104	249,956	287255	7,693	20,950	321,352	-2,484	-82,169
1997	586,164	216,394	379,312	205086	9,812	17,693	462,615	-35,348	-55,836
1998	894,109	271,346	637,318	149250	14,966	18,218	379,448	101,215	153,403
1999	312,955	197,166	120,883	302653	5,238	19,361	151,339	26,441	-71,020
2000	441,209	187,985	260,406	231633	7,385	18,976	206,291	56,257	-13,733
2001	515,357	358,521	165,225	217900	8,626	19,047	142,558	26,625	-14,378
2002	277,885	196,407	86,002	203522	4,651	15,881	155,732	15,387	-96,347
2003	459,579	263,424	203,637	107175	7,693	15,659	127,785	31,025	36,860
2004	317,631	224,796	98,005	144035	5,317	14,510	112,076	16,196	-39,460
2005	938,530	456,155	497,653	104575	15,710	19,677	229,170	94,751	169,765
2006	519,365	205,700	322,119	274340	8,694	23,731	214,143	88,107	4,830

[1]Runoff was estimated using daily USGS gage data which may underestimate large flows.

[2]Direct use, percolation and other losses were back-calculated using runoff data and other known parameters, which may explain the occurence of negative values.

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Water budget for the Lake Nacimiento watershed and reservoirs.

Figure 4. Water Budget Table for Lake Nacimiento Watershed (post dam construction)

San Antonio Watershed

	Before Reservoir [volumes in af]		→	Reservoir [volumes in af]					
Water Year	Precipitation	ET + Groundwater Recharge	Runoff[1] → Reservoir	Oct. 1 Reservoir Capacity	Direct Precipitation	Evaporation	Dam Relase	Direct Use + Percolation[2]	Net Change in Storage
1967	807,493	617,941	189,552	20475	11,352	10,711	2,102	69,136	110,495
1968	261,490	245,541	15,949	130970	3,676	13,834	7,176	-2,346	-1,425
1969	1,036,091	737,808	298,282	129545	14,566	20,891	31,698	77,091	177,580
1970	295,039	216,589	78,450	307125	4,148	23,026	76,467	47,437	-64,645
1971	358,520	311,321	47,199	242480	5,040	19,300	15,523	19,303	-2,625
1972	251,622	240,523	11,099	239855	3,538	16,972	142,217	-1,875	-144,025
1973	750,919	579,579	171,340	95830	10,557	14,457	10,580	56,670	94,995
1974	566,396	412,406	153,990	190825	7,963	19,254	4,104	75,168	61,625
1975	369,704	246,102	123,602	252450	5,198	21,140	23,478	49,323	35,205
1976	304,578	300,203	4,375	287655	4,282	19,721	45,717	-3,778	-54,217
1977	248,333	248,327	5	233438	3,491	13,250	188,733	-16,655	-183,288
1978	837,096	508,963	328,132	50150	11,769	15,626	34,360	107,057	176,780
1979	463,445	383,594	79,851	226930	6,516	19,162	18,902	31,220	16,430
1980	648,955	442,916	206,039	243360	9,124	20,474	73,043	75,445	45,558
1981	366,414	322,017	44,398	288918	5,151	21,059	38,696	9,606	-20,498
1982	520,019	384,132	135,887	268420	7,311	19,252	65,300	49,471	8,160
1983	862,751	372,546	490,205	276580	12,129	18,969	116,340	361,369	7,105
1984	280,896	213,653	67,243	283685	3,949	20,383	85,769	24,389	-60,855
1985	305,565	276,254	29,311	222830	4,296	17,054	20,319	18,479	-23,480
1986	562,449	272,896	289,554	199350	7,907	18,435	62,418	148,328	67,410
1987	242,412	215,257	27,156	266760	3,408	18,216	74,245	-4,206	-57,695
1988	454,235	433,222	21,013	209065	6,386	15,954	49,716	10,374	-51,002
1989	307,209	292,661	14,548	158063	4,319	10,255	145,269	-992	-138,243
1990	237,479	232,791	4,688	19820	3,339	3,227	2,154	1,270	-1,397
1991	457,196	410,212	46,984	18423	6,428	4,403	21,731	16,205	5,527
1992	471,997	425,336	46,661	23950	6,636	4,997	16,794	13,654	12,457
1993	824,926	620,611	204,315	36407	11,598	11,247	15,677	75,934	105,043
1994	376,611	361,309	15,302	141450	5,295	10,704	83,468	2,109	-78,130
1995	982,148	725,354	256,794	63320	13,808	11,959	25,859	84,472	139,250
1996	452,591	325,433	127,158	202570	6,363	17,499	35,887	52,780	26,020
1997	577,251	357,418	219,832	228590	8,116	16,780	71,207	159,046	-22,030
1998	880,513	571,885	308,627	206560	12,379	16,914	25,020	193,130	83,115
1999	308,196	267,247	40,949	289675	4,333	18,651	29,802	17,214	-21,015
2000	434,500	327,494	107,007	268660	6,109	20,612	29,276	46,975	15,025
2001	507,520	444,049	63,471	283685	7,135	19,377	24,016	24,153	2,228
2002	273,660	231,202	42,458	285913	3,847	18,309	89,155	24,933	-86,563
2003	452,591	381,253	71,338	199350	6,363	15,641	28,427	13,351	18,600
2004	312,801	273,468	39,333	217950	4,398	13,713	NO DATA	111,278	-82,782
2005	924,259	701,625	222,634	135168	12,994	17,056	NO DATA	93,936	118,182
2006	511,467	349,826	161,641	253350	7,191	24,574	17,296	69,602	56,950

[1]Runoff was estimated using daily USGS gage data which may underestimate large flows.

[2]Direct use, percolation and other losses were back-calculated using runoff data and other known parameters, which may explain the negative values.

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Water budget for the Lake San Antonio watershed and reservoirs.

Figure 5. Water Budget Table for Lake San Antonio Watershed (post dam construction)

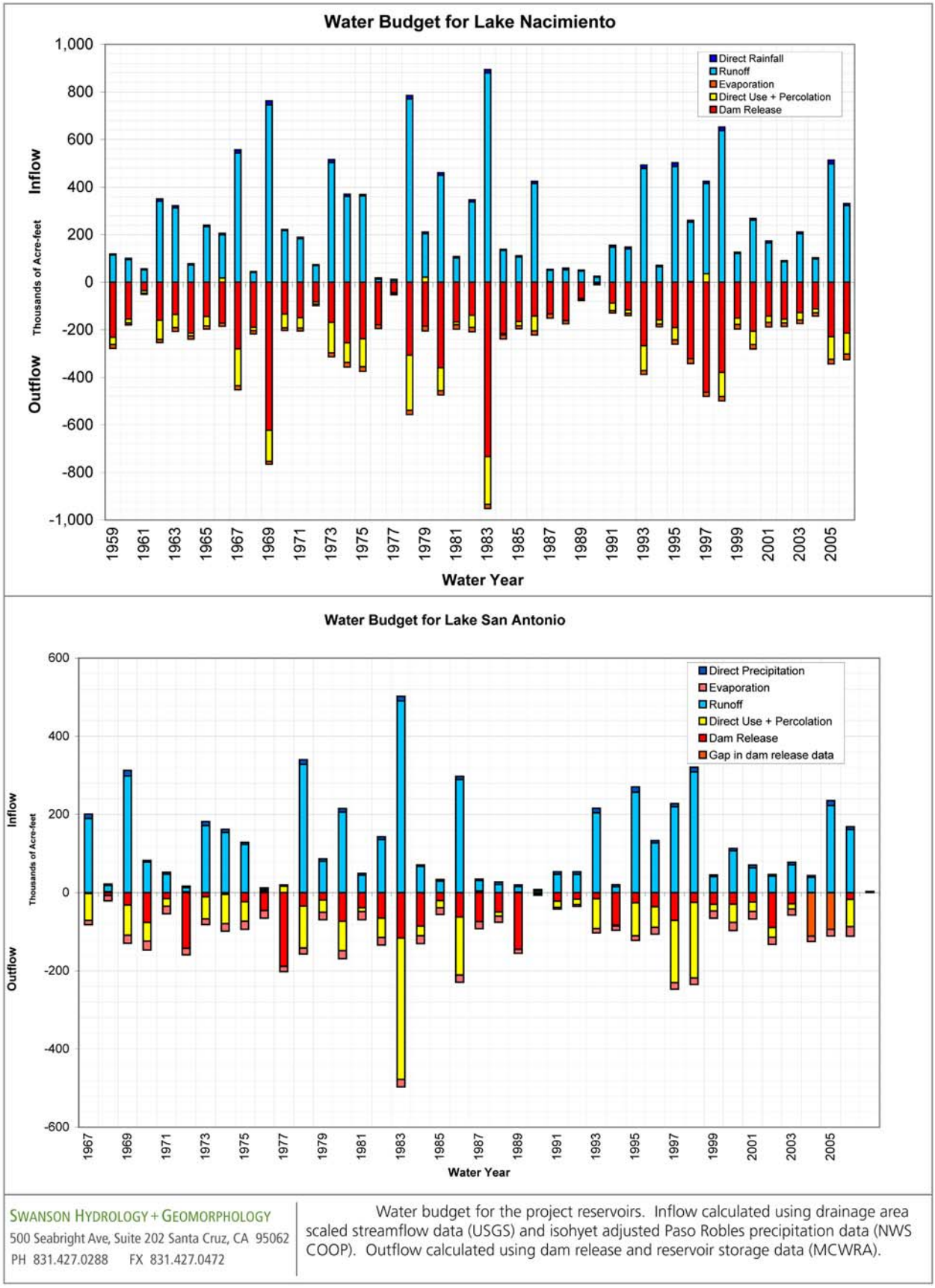


Figure 6. Graphic Water Budget for Lakes Nacimiento and San Antonio

Groundwater

The groundwater basins underlying the Nacitone watersheds include parts of the Paso Robles and Lockwood Groundwater Basins (Figure 7). The groundwater basins do not neatly underlie the watersheds' surface waters but instead conform to geologic features of the landscape. Examining these groundwater basins permits an understanding of the Nacitone water budget of the watersheds for consideration of overall water availability over time.

While it is the main groundwater basin within the Nacitone area, the Lockwood Valley Groundwater Basin is the least studied of the two primary groundwater basins that occur within the Nacitone Watersheds study area. The other two are parts of the Paso Robles Groundwater Basin and the Salinas Groundwater Basin. The Paso Robles Basin has been studied extensively by Fugro as part of a two-phase analysis of the basin (Fugro West, 2002; Fugro West et al, 2005). Similarly, extensive analysis of the Salinas Groundwater Basin, which historically experienced overdraft conditions and seawater intrusion, resulted in development of Nacimiento and San Antonio Reservoirs to provide winter storage of rains that are released during the dry season to recharge Salinas basin aquifers and limit seawater intrusion into the lower Salinas Valley near Salinas.

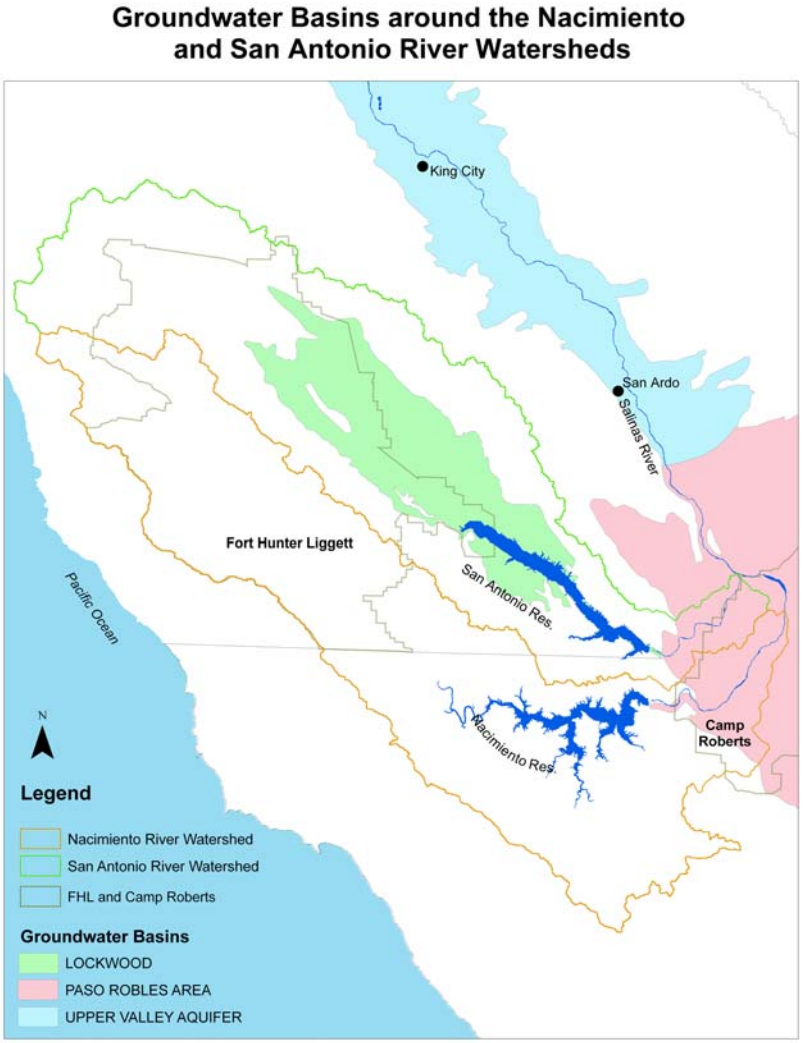
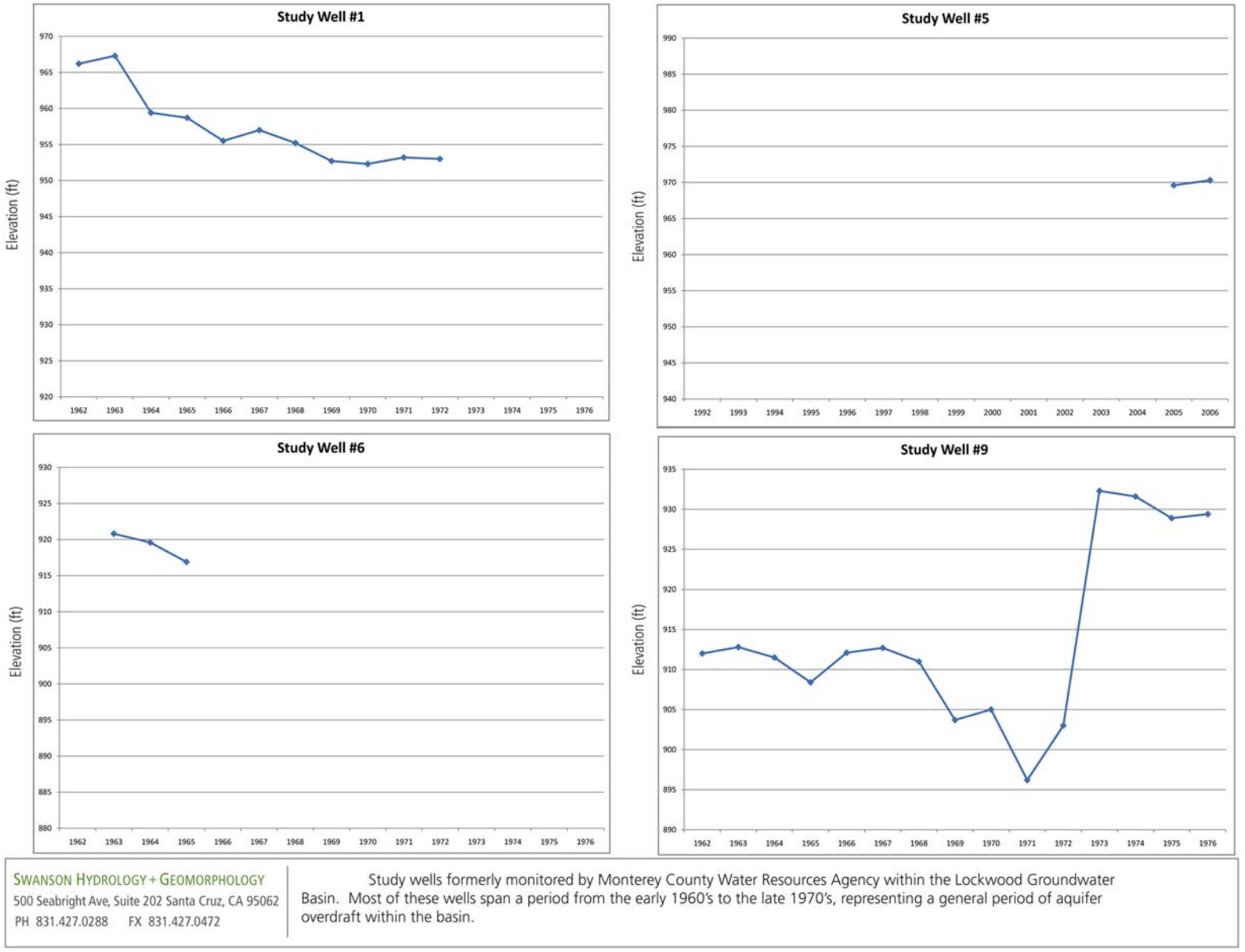


Figure 7. Groundwater Basin Map
Source: DWR GIS layer B118vNAD27UTM10



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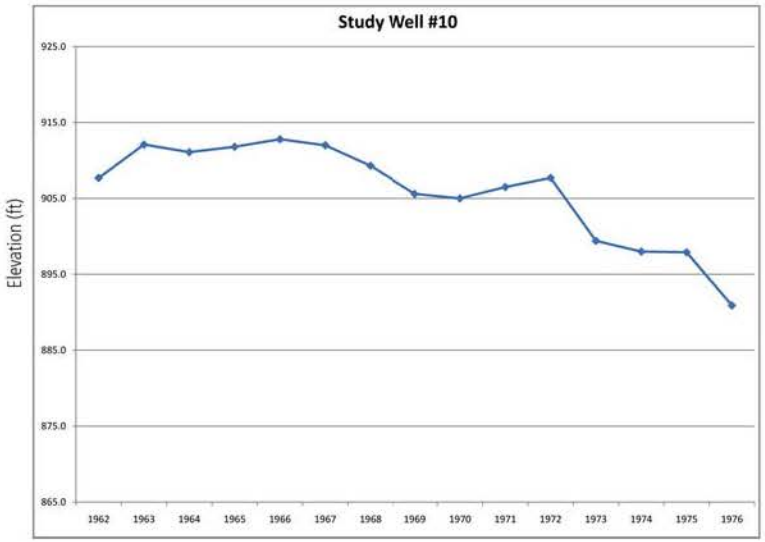
Study wells formerly monitored by Monterey County Water Resources Agency within the Lockwood Groundwater Basin. Most of these wells span a period from the early 1960's to the late 1970's, representing a general period of aquifer overdraft within the basin.

Figure 8a. Study Wells in the Lockwood Groundwater Basin, 1960-1979



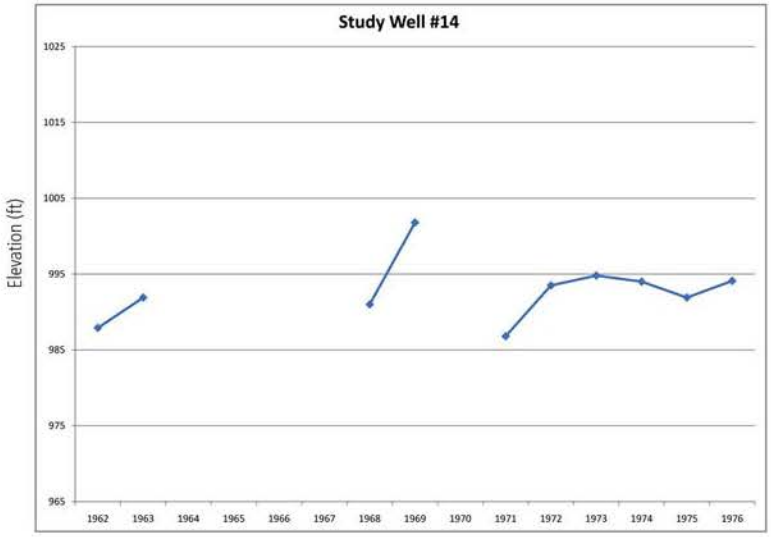


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Figure 8b. Study Wells in the Lockwood Groundwater Basin, 1960-1979

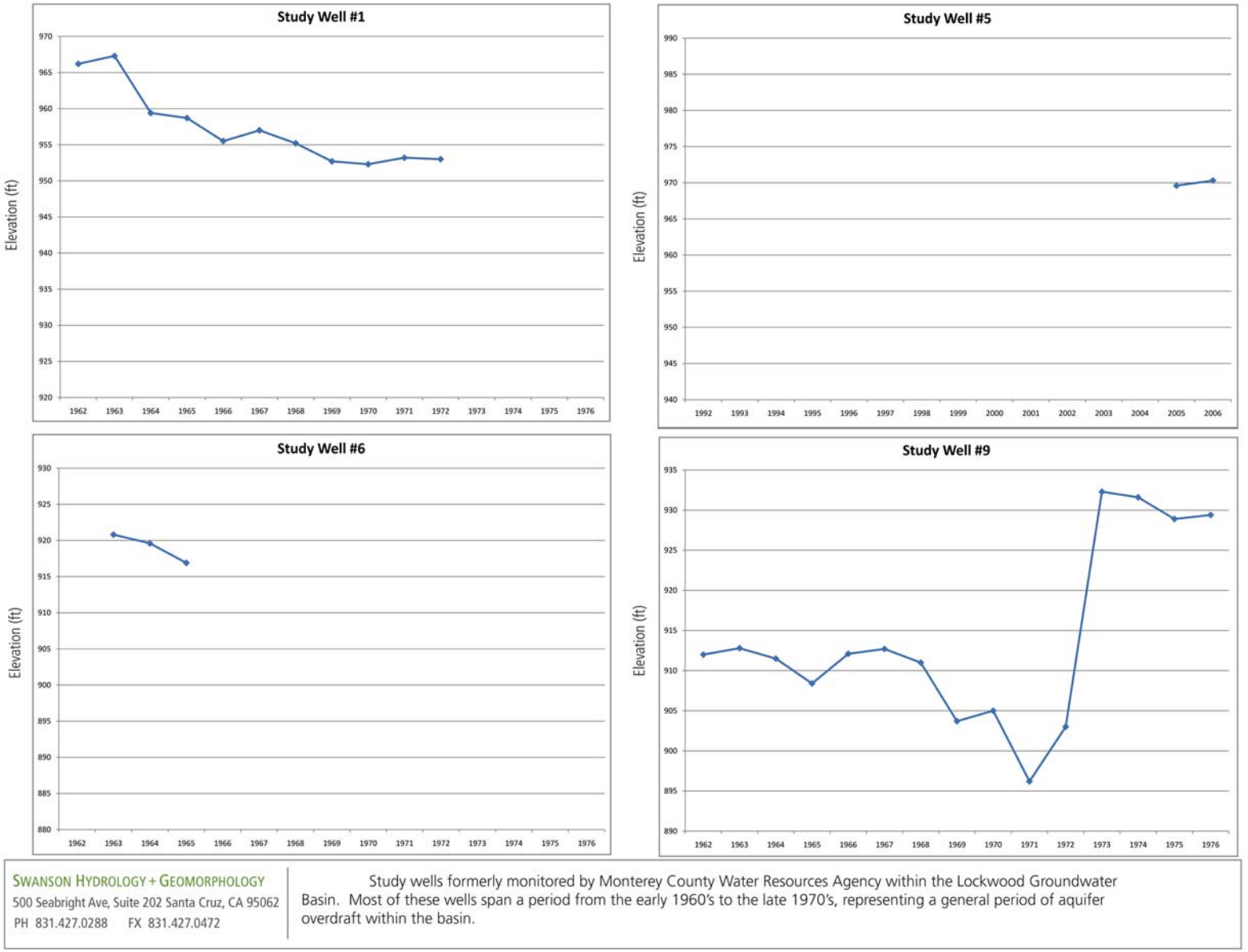


Figure 9a. Study Wells in Lockwood Groundwater Basin, 1960-present

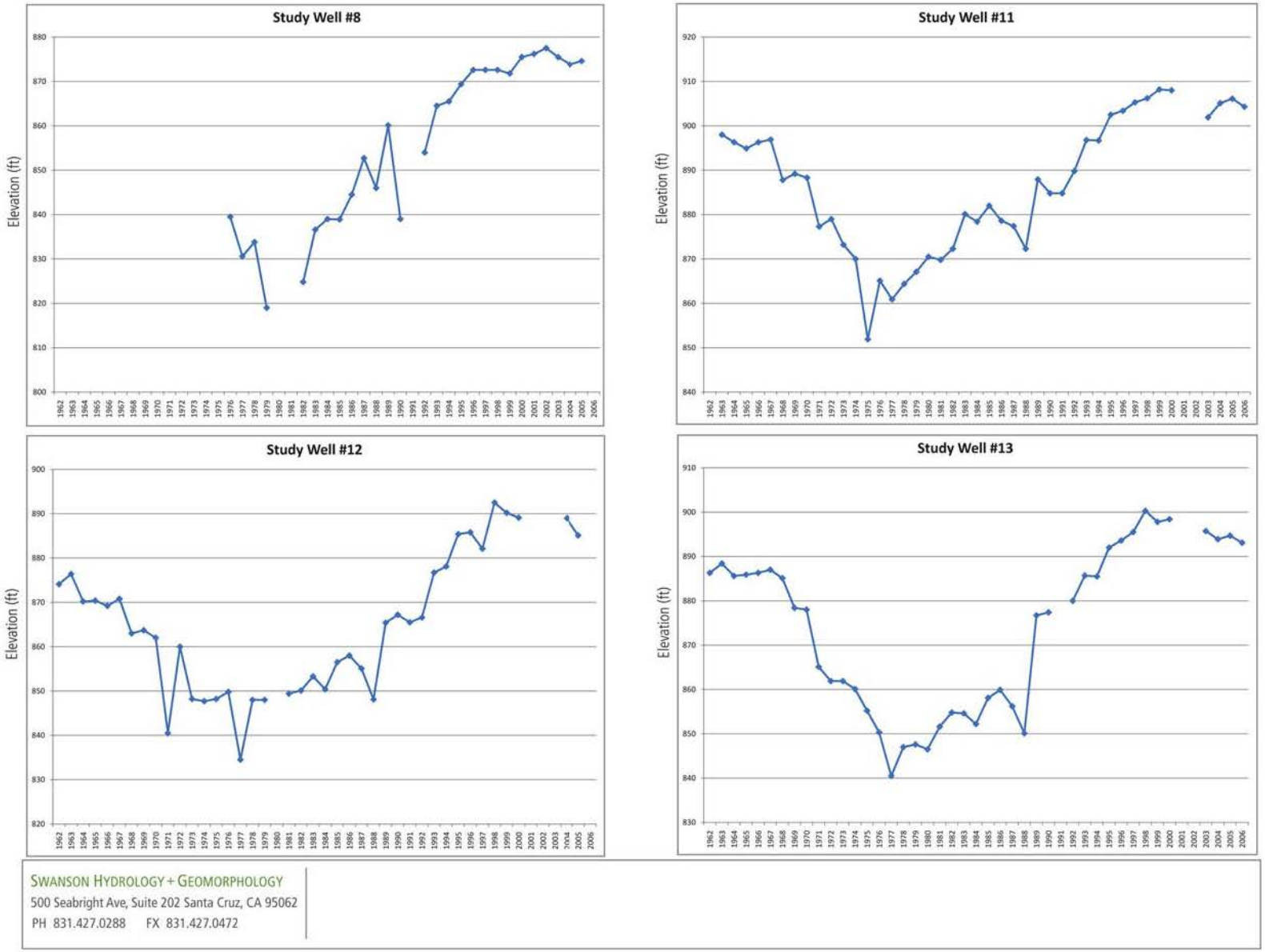


Figure 9b. Study Wells in Lockwood Groundwater Basin, 1960-present

B. Vegetation and Habitat

Descriptions of the Nacitone watersheds' habitats and vegetation are provided as gleaned from WRI information (For more detailed information, please refer to WRI Analysis posted at www.nacitonewater.org.) As the basis for much of watershed function, vegetation and habitats includes special status species and habitats within the watersheds that possess characteristics considered special by various jurisdictions.

Headwaters

Los Padres National Forest and the Ventana and Silver Peak Wilderness

The upper watersheds of the Nacimiento and San Antonio Rivers consist of remote undeveloped wildland with deep canyons and mountain peaks approaching 6000 ft which are part of the geologically complex Santa Lucia Mountains. Marked vegetation changes partition the watersheds into well-defined ecosystems. Much is chaparral with grass meadows, oak woodlands, pine forests and stunning rock formations creating a mosaic across the rugged landscape.

The Cone Peak Gradient Research Natural Area is located near the source of the Nacimiento River and is an area unusual for its ecological diversity and presence of the rare Santa Lucia Fir. The Valley Oak Research Natural Area is located on the North Fork of the San Antonio River and has one of the few remaining examples of valley oak woodland on public lands in California. Other vegetation types within the area include blue oak woodlands, California annual grasslands, chamise chaparral, coastal sage scrub, and riparian vegetation along the San Antonio River (USDA-Land Management Plan Part 2 Los Padres National Forest Strategy, Sept. 2005).

A review of the WRI documents revealed that the ecologically diverse landscape of the watersheds supports a variety of threatened and endangered species including the Arroyo Toad, Western Pond Turtle, Red-legged frog and the California Condor. The area also supports populations of mountain lion, bobcat, fox and deer.

Figure 10. River Upstream of Nacimiento Reservoir (Source: USLT RCD)

Redonda Mountain Sensitive Resource Area

Tierra Redonda Mountain is a major landmark in the planning area, and this broad table-top mountain encompasses approximately 1,300 acres with 320 acres under Bureau of Land Management (BLM) ownership. The mountain is of outstanding ecological importance and has been given a high priority for preservation by the State Department of Parks and Recreation. Most of the public lands are generally designated for open space use only. The San Luis Obispo County Land Use Ordinance indicates that emphasis should be placed on maintenance of the entire mountain as an undisturbed ecosystem rather than several small isolated preserve areas. Uses should be carefully regulated because of fire hazard problems and potential damage to fragile ecosystems (Oak Shores EIR, 2007).

Fort Hunter Liggett

The number of rare and sensitive plant species on FHL is among the highest for similar sized areas in California. This diversity of species can be attributed to the well-preserved landscape and unique geologic resources that underlie FHL. FHL encompasses extensive oak woodland and savanna communities, including valley oak, blue oak, coast live oak and native grassland under story vegetation. It offers the widest diversity of oak taxa of any area of its size in California. Oak woodlands and savanna on FHL include the largest known contiguous valley bottom stands of valley oak. The native oak savanna provides important habitat for many rare, threatened, and endangered species, including purple amole, Tule elk and San Joaquin kit fox. FHL has the highest concentration of oak savanna-specializing birds of any location in the nation.

Chaparral, vernal pools and riparian areas are additional rare habitat types on FHL that support nationally significant species. (FHL Special Resource Study, NPS, 2006).

Valley oak woodlands, valley needlegrass grasslands, and sycamore alluvial woodlands occur on FHL and are considered special status communities by CDFG. Special status communities are defined as biological communities that are rare or restricted in occurrence, provide important habitat for wildlife and unusual plant assemblages, or are jurisdictional waters or wetlands of the United States. Additional valuable communities on FHL include wetlands, riparian communities, oak woodlands and savannas, native bunch grass (especially valley needlegrass) grasslands, and rock outcrops. Section 7.6 through 7.12 of the FHL Integrated Natural Resources Management Plan (INRMP) includes Plant communities, threatened, endangered and other sensitive species, game species, fisheries, non-game species, migratory birds and exotic/invasive plants and wildlife.

Plant Community	San Antonio Watershed			Nacimiento Watershed		
	ha	ac	% of watershed	ha	ac	% of watershed
Grasslands	4299	10623	13	2508	6196	8
Oak woodlands and savannas						
Valley oak woodland	636	1571	2	727	1796	2
Valley oak savanna	2596	6415	8	2986	7378	9
Blue oak woodland	10690	26415	32	7835	19362	24
Blue oak savanna	1714	4235	5	1073	2652	3
Coast live oak woodland	577	1427	2	146	360	0.5
Coast live oak forest	547	1351	2	804	1987	2
Chaparral						
Mixed chaparral	3868	9559	12	10905	26947	33
Chamise chaparral	6274	15503	19	4928	12177	15
Riparian						
Mixed riparian	1263	3121	4	276	681	1
Willow riparian	3	7	0.01	2	4	0.01
Cottonwood riparian	0	0	0	62	153	0.2
Valley oak riparian	12	28	0.03	16	40	0.05
Sycamore riparian	2	6	0.01	273	674	1
Seasonal and perennial wetlands						
Vernal pool	11	26	0.03	0	0	0
Vernal swale	135	334	0.4	0	0	0
Wet meadow	59	146	0.2	63	155	0.2
Pond	37	91	0.1	43	106	0.1
Developed areas	150	371	0.5	0	0	0
Unclassified	78	194	0.2	65	161	0.2
Total	**32950**	**81421**	**100**	**32711**	**80830**	**100**

Adapted from JSA (1994). Total acres differ from deeded acres due to minor boundary inaccuracies in database. (Source: FHL, INRMP, 2004)

Figure 11. Fort Hunter Ligget Communities in Each Major Watershed

Reservoir Environment

Habitats in the vicinity of the reservoirs include annual grassland, blue oak woodland and chaparral. Open areas on the hillsides surrounding the Nacimiento and San Antonio Reservoirs are dominated by annual grassland used for livestock grazing. Grasslands adjacent to the Nacimiento spillway are disturbed (i.e., ruderal) from previous dam construction activity. A large percentage of the plant species that occur in this habitat are non-native.

Non-native grasses and other herbaceous annuals that are common in this habitat include wild oat (*Avena fatua*), soft chess (*Bromus hordeaceus*), foxtail chess (*Bromus madritensis*), black mustard (*Brassica nigra*), sky lupine (*Lupinus nanus*), and Italian ryegrass (*Lolium multiflorum*). Immediately below the spillway, coyote brush (*Baccharis pilularis*) and Fremont cottonwoods (*Populus fremontii*) are scattered along the banks of the Nacimiento River; however, no mature riparian habitat is present directly below the spillway.

The area provides habitat for many of the animals that are common in the grasslands of southern Monterey and northern San Luis Obispo County. Wildlife species observed in this habitat during field surveys conducted for the Salinas Valley Integrated Regional Water Management

Functionally Equivalent Plan Update (2006) include California ground squirrel (*Spermophilus beecheyi*), mourning dove (*Zenaida macroura*), lark sparrow (*Chondestes grammacus*), and savannah sparrow (*Passerculus sandwichensis*).

Blue oak woodland, dominated by open stands of mature blue oaks (*Quercus douglassii*) and foothill pines (*Pinus sabiana*) is the predominant plant community in the vicinity of the reservoirs. Shrubs scattered in the understory include poison oak (*Toxicodendron diversilobum*), toyon (*Heteromeles arbutifolia*), and California buckeye (*Aesculus californicus*). Blue oak woodland provides important habitat for many of the wildlife species that occur in the foothills surrounding the Salinas Valley. Common species observed during field surveys include western scrub-jay (*Aphelocoma californica*), western bluebird (*Sialia larkia*), and western fence lizard (*Sceloporus occidentalis*).

Dense patches of chaparral occur on some of the steeper south- or east-facing slopes in the area. Chaparral is usually dominated by chamise (*Adenostoma fasciculatum*).

Shoreline and open water habitat on Nacimiento Reservoir and San Antonio Reservoir provides suitable habitat for a number of terrestrial and semi-aquatic wildlife species such as great blue heron (*Ardea larkia*) ruddy duck (*Oxyura jamaicensis*), western grebe (*Aechmophorus occidentalis*), and Clark's grebe (*Aechmophorus larkia*) (Salinas Valley Integrated Regional Water Management Functionally Equivalent Plan Update, 2006).

Downstream of Reservoirs

Habitat in the lower Nacimiento River is controlled largely by water releases from the reservoir above. The lower Nacimiento River is characterized by a low gradient and long, wide sections with sparse riparian vegetation. Typical substrate consists of gravel with lesser amounts of sand and cobble. Water temperatures in the River are highly variable; depending on reservoir releases, air temperature and reservoir storage. Prior to construction of the San Antonio Dam, the San Antonio River normally did not reach the Salinas River in late summer (Monterey County Flood and Water Conservation District, 1989). Conditions in the lower San Antonio River are dependent on releases from San Antonio Dam. The lower San Antonio River was characterized as a small permanent stream with a large quantity of submerged aquatic vegetation and some emergent aquatic vegetation. The aquatic habitat consists primarily of shallow-run habitat, and lesser amounts of pool and riffle habitat. The channel substrate is primarily composed of equal parts of sand and gravel with lesser amounts of cobble and silt (SVWP EIR, April 2002).

Figure 12. River Downstream of Nacimiento Dam

In general, water released through the Nacimiento Reservoir outlet is at a relatively constant temperature of 52 to 54° F (11.1° Celsius I to 12.2 ° C). The water warms rapidly as it moves downstream, generally in relation to fluctuation in daily air temperature. At minimum release levels (25 to 30 cfs), water temperature can increase to as much as 73°F (22.8° C) within 5 miles of the dam, and 75°F (23.9° C) within 10 miles of the dam. During the summer conservation release period (with flows of 300 cfs or more), water temperature is generally maintained at less than 64°F (17.8° C) within 5 miles of the dam, and 68°F (20° C) or less within 10 miles of the dam (SVWP EIR, April 2002).

Steelhead Habitat

NMFS has noted the paucity of data on steelhead in the Salina River System in its 2007 Biological Opinion.

> *Givern that there are very few data available on steelhead in the Salinas River, NOAA's Natinal Marine Fisheries Service has utilitzed data from nearby watersheds which tend to be similar to the Salinas River. (*NMFS, SVWP Flow Proposal for the Biological Needs of Steelhead in the Salinas River, April 2005)

The following information is excerpted from the Salinas Valley Water Project Biological Opinion, 2007.

> *Much of the habitat in the lower Nacimiento River is potentially usable for steelhead. Several potential spawning areas have been documented in the lower river and there are many deep pools. At times, there may be unfavorably warm water temperatures in the lower Nacimiento River, but deep pools may provide thermal refuge for steelhead. One area of the river continues to contain aquatic habitat in relatively good condition for steelhead. Reconnaissance level habitat surveys conducted immediately downstream of the Dam in spring 2000 documented the presence of steelhead spawning and rearing habitat with good cover, relatively cool water temperatures and dense riparian vegetation, and less fine sediments than found downstream. Even with these relatively better habitat conditions, habitat value for steelhead in this area is heavily influenced by flow levels and quality of water released from the reservoir .*

Figure 13. Steelhead Trout

> *Areas above the present sites of the Nacimiento and San Antonio dams comprised some of the best historical spawning and rearing habitats in the watershed. The Salinas Dam, which forms the Santa Margarita Reservoir in San Luis Obispo County, and the Nacimiento and San Antonio dams were constructed without fish passage*

facilities, and, therefore, the historic habitats above these dams are no longer available to steelhead. As a result, 286 miles of spawning and rearing habitat for steelhead have been lost; an estimated 149 miles of spawning and rearing habitat remain in the watershed (NMFS 2005c). Critical habitat for steelhead in the watersheds has been designated below both of the dams to the confluence to the Salinas River.

The current steelhead population in the Nacimiento River is likely at very low abundance. A redd survey conducted on February 26, 2003, between river mile 0 and approximately river mile 7 resulted in zero redds observed. The three miles of river closest to the dam were not surveyed. This un-surveyed area is thought to have the best spawning and rearing habitat based on sightings in 1998 and an unconfirmed sighting in 2001, steelhead are believed present within the Nacimiento River during years with high winter flow events in the Salinas River.

Steelhead Spawning and Rearing Habitat

The San Antonio River was one of the three most important spawning and rearing tributaries for Salinas River steelhead. The confluence of the Salinas and San Antonio Rivers is approximately 107 miles upstream from the mouth of the Salinas River. Following construction of the San Antonio Dam, the pattern of flow releases from the dam was not predicted to provide perennial flow conditions in the lowermost San Antonio River, and CDFG decided against developing a fishery downstream from the dam. Although the availability of steelhead spawning and rearing habitat was limited in the lower San Antonio River even before dam construction, CDFG still identified steelhead as inhabitants of the San Antonio River below the reservoir as of 1981. Presumably, it was assumed that steelhead still entered the lower river from the Salinas River when runoff was sufficient to provide a continuous migration corridor. However, lack of access to historic spawning and rearing habitats in the perennial headwaters greatly limits steelhead use of the San Antonio River. Currently, hydrologic conditions downstream of San Antonio Dam and other habitat conditions do not favor steelhead. NMFS staff walked the lower San Antonio River in August 2004, and noted riparian vegetation, gravels, and shading that could likely provide suitable spawning and rearing habitat. Nonetheless, surveys of the lower San Antonio River completed after the placement of San Antonio Dam show steelhead use is low.

Oak Shores Area

Two sensitive habitats were identified during a California Natural Diversity Database (CNDDB) search as occurring within the search area: sycamore alluvial woodland and valley oak woodland. Valley oak woodland occurs within the study area. The CDFG considers valley oak woodland to be a sensitive habitat (CNDDB, 2007) and of high inventory priority (CDFG, 2003) (Oaks Shores EIR, 2007).

Camp Roberts

At Camp Roberts, the Grassland Ecosystem, which includes the nutrients, soils, vegetation, plants and animals, and all the processes that have an influence on them, such as erosion, grazing, drought, flood, predation, as well as effects from humans covers roughly 20,634 acres (48 percent) of the training site. The Oak Woodland Ecosystem covers roughly 17,622 acres (41 percent) of the training site. The Riparian Ecosystem covers roughly 2,266 acres (5 percent) of the training site. The Chaparral/Scrub Ecosystem covers roughly 539 acres (1 percent) of the training site (Camp Roberts Integrated Natural Resource Management Plan, 2000). Natural Vegetation Communities and Ecosystems on Camp Roberts are provided in Figure 13.

Ecosystem/ Community or Habitat	Vegetation*	Wildlife*
Ecosystem		
Mixed Chaparral	Bigberry manzanita, buck brush, toyon, chamise, California sagebrush, black sage, hollyleaf cherry, poison oak, bedstraw, California peony, fiesta flower, deer weed, and grasses	Orange-crowned warbler, wrentit, California thrasher, brush rabbit, California mouse, western fence lizard, southern alligator lizard, western spotted skunk, and gray fox
Coastal scrub	Sticky monkeyflower, California sagebrush, black sage, California buck-wheat, and various grasses and forbs	Similar to those listed for grassland and chaparral
Closed-cone pine/cypress	Shrubby understory, manzanita, poison oak, and some forbs	Similar to those listed for coastal scrub
Grassland Ecosystem		
Annual Grassland	Slender wild oats, brome grasses, pacific fescue, purple needlegrass, clover species, lupine species, goldfields, fiddleneck, popcorn flower, blue dicks, common plantain, filaree, tocalote, soft chess, and tarweed	California vole, California ground squirrel, western meadowlark, California horned lark, savannah sparrow, western kingbird, coyote, American badger, San Joaquin kit fox, and red-tailed hawk
Blue oak savanna	Blue oak, soft brome, ripgut brome, holly-leaf redberry, toyon, valley oak	Wild turkey, mule deer, acorn woodpecker, band-tailed pigeon, western bluebird, American kestrel, bushtit, gray fox, and bobcat
Oak Woodland Ecosystem		
Blue Oak woodland	Blue oak, coast live oak, annual grassland species	Wild turkey, mule deer, acorn woodpecker, band-tailed pigeon, western bluebird, American kestrel, bushtit, gray fox, and bobcat, dusky footed woodrat, California ground squirrel
Valley Oak Woodland	Valley oak, poison oak, toyon, coffeeberry, grasses, and forbs	
Coastal Oak woodland	Coast live oak, poison oak, crimson sage, miner's lettuce, California buttercup, and annual grasses	
Riparian Woodland Ecosystem		
Mixed riparian woodland	Fremont cottonwood, western sycamore, valley oak, box elder, elderberry, willow, mule fat, coyote brush, and mugwort	Wood duck, wild turkey, California quail, red-shouldered hawk, Nuttall's and downy woodpeckers, Bewick's wren, rufous-sided towhee, raccoon, Virginia opossum, long-tailed weasel, Pacific chorus frog, southwestern pond turtle, bald and golden eagles, and tule elk
Riparian scrub	Sandbar willow, coyote brush, and mule fat	
Valley foothill riparian[l] (includes sycamore alluvial woodland)	Valley oak, poison oak, toyon, coffeeberry, grasses, and forbs, sycamore	

Figure 14. Natural Vegetation Communities and Ecosystems on Camp Roberts

Ecosystem/ Community or Habitat	Vegetation*	Wildlife*
Wetland/Aquatic Ecosystem		
Seasonal wetlands (including vernal pools and artificial seasonal wetlands)[2]	Water pygmy-stonecrop, Vasey's coyote thistle, Mediterranean barley, small stipitate popcorn flower, popcorn flower, annual hairgrass, woolly marbles, crassula, spikerush, water starwort, filaree, vinegar weed, tarweed, Mediterranean barley, rabbitsfoot grass, curly dock, and toad rush	Vernal pool fairy shrimp, western spadefoot toad, western toad, Pacific chorus frog, mallard, cinnamon teal, killdeer, great blue heron, black phoebe, barn swallow, bullfrog, gopher snake, common garter snake, striped skunk, raccoon, and bats
Clay flats[2]	Annual hairgrass, Mediterranean barley, popcornflower, adobe navarretia, dwarf flax, and turkey mullein	Similar to that described for annual grassland habitat
Perennial Streams[2]	Generally unvegetated, but some support blue wildrye, Mediterranean barley, spreading rush, rabbitsfoot grass, curly dock, and popcorn flower	Similar to those described for annual grassland habitat
Intermittent Stream Drainages[2]	Slender wild oats, brome grasses, pacific fescue, purple needlegrass, clover species, lupine species, goldfields, fiddleneck, popcorn flower, blue dicks, common plantain, filaree, tocalote, soft chess, and tarweed	Same as annual grasslands.
Rivers[2]	None.	Pacific lamprey, Sacramento sucker, hitch, Sacramento squawfish, speckled dace, unarmored threespine stickleback, coastal rainbow trout, and prickly sculpin
Ponds and Reservoirs[2]	Cattails, bulrush, rush, willow, smartweed, lesser duckweed, streamside monkeyflower, white sweetclover, rabbitsfoot grass, and curly dock	Mallard, ring-necked duck, ruddy duck, cinnamon teal, and other waterfowl, great blue heron, great egret, greater yellowlegs, killdeer, red-winged blackbird, raccoon, coyote, gray fox
Freshwater marsh[2] (includes springs)	Cattails, bulrush species, rush species, willow species, smartweed, lesser duckweed, streamside monkeyflower, white sweetclover, rabbitsfoot grass, curly dock	Mallard, ring-necked duck, ruddy duck, cinnamon teal, and other waterfowl, great blue heron, great egret, greater yellowlegs, and killdeer.

*Scientific names are cataloged in Appendix B and C
[1]Sensitive natural communities (NDDB, 1999)
[2]A habitat type; not a natural community type.

Figure 14 (continued). Natural Vegetation Communities and Ecosystems on Camp Roberts

Water habitats

Three rivers, the Nacimiento, the Salinas, and the San Antonio traverse Camp Roberts covering a total of about 264 acres. The species listed in Figure 14 are those commonly associated with the rivers on Camp Roberts; however, the rivers also supply a drinking water source for many other animals on the training site.

Camp Roberts has 13 ponds and reservoirs (65 acres), which are either natural or artificially-created for use as livestock ponds and for flood control. These areas are now fenced to exclude livestock. Some medium and larger ponds support emergent wetland vegetation and riparian species along the receding water line or low water edge. These areas typically are inundated for a long duration and are considered jurisdictional wetland by the U. S. Army Corps of Engineers. Unvegetated portions of ponds are typically considered other waters of the United States because they lack hydrophytic vegetation. The low water zone, which is also dominated by hydrophytic species, would be considered jurisdictional wetland; however, unvegetated and vegetated components were not delineated separately in a Jones and Stokes Associates 1996 survey (CR INRMP, 2000).

A total of 120 aquatic species representing 64 families of organisms were recorded from rivers, ponds, and reservoirs on Camp Roberts. Three stations on the Nacimiento River (Twin Bridges, High Water Bridge, and Low Water Bridge) had the highest diversity of aquatic organisms. The greatest diversity of aquatic insects (28 species, representing 21 families) was recorded at a relatively undisturbed site on the Salinas River in the northeast region of the camp. Two families of mayflies (Ephemerellidae and Siphlonuridae), one family of aquatic bugs (Naucoridae, creeping water bugs), and one family of stoneflies (Isoperlidae) were uniquely surveyed at this downstream Salinas River station on Camp Roberts. An additional sensitive wildlife species occurring in the Nacimiento River is the southwestern pond turtle (CR INRMP, 2000).

Eight species of fish, comprising approximately 44 percent of the species native to the Salinas River drainage have been recorded at Camp Roberts from the Nacimiento River: Pacific lamprey, Sacramento sucker, hitch, Sacramento squawfish, speckled dace, unarmored three-spine stickleback, coastal rainbow trout, and prickly sculpin (CR INRMP, 2000).

Introduced species (either to North America and/or California) found were: goldfish, common carp, western mosquito fish, green sunfish, bluegill, largemouth bass, black crappie, and black bullhead. White bass and catfish have also been caught during the sport fishing program in the Nacimiento River (CAEV-CR database). Only one of the 10 ponds surveyed (Pond #8—Twin Ponds West) was inhabited by fish (introduced bluegill and black bullheads).

Plants of Camp Roberts

The Oklahoma Biological Survey (1997) undertook a post-wide floristic inventory in 1993 and 1994. Several specimens of each plant were collected, vouchered in a local herbarium, and laminated for a reference collection at Camp Roberts. Since that time, Land Condition Trend Analysis crews have collected and vouchered undocumented plants for inclusion in the reference collection each year during annual surveys.

As of September 2000, more than 613 plant species have been identified at Camp Roberts. The CR INRMP included the following on introduced species of plants.

> *Using the known species in 1998, Bern (1999) calculated that approximately 23 percent of known plant species at Camp Roberts (378 species) were introduced (i.e., non-native, exotic, or alien). Most of the introduced species were grasses (96 percent) (Bern, 1999). All floristic data collected in these surveys are included in the Camp Roberts Environmental Office database and are currently being update* (CR INRMP, 2000).

C. WATER QUALITY

The existing water quality conditions of the Nacitone watersheds are summarized here by inspection of documents that describe past water quality assessment as well as the Nacitone Watershed Resources Inventory Final Technical Memorandum—Water Resources, Water Quality and Sediment Supply. No new data was generated for this study. State designated beneficial uses and point and nonpoint sources of pollution are also addressed in this section as established by Cal EPA and SWRCB regulatory authority.

General Regulatory Setting for Water Quality

The 1970 Porter-Cologne Water Quality Control Act gives the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCB) authority to perform water quality regulatory oversight regardless of the source. Water quality control is defined by the Act as "the regulation of any activity or factor which may affect the quality of the waters of the state and includes prevention and correction of water quality or nuisance." Federal Clean Water Act Section 208 funds have been used to assess water quality conditions in California's 16 hydrologic basins and create water quality management plans, familiarly known as "Basin Plans" (Range Water Quality Management Plan, 1995).

The water quality objectives listed in the Basin Plan for the Central Coast region are intended to protect the beneficial uses of the reservoir, which include the following elements:

- Municipal and domestic water supply,
- Agricultural water supply,
- Groundwater recharge,
- Water contact recreation,
- Non-contact water recreation,
- Wildlife habitat,
- Cold fresh water habitat,
- Warm fresh water habitat,
- Fish spawning,
- Rare, threatened, or endangered species,
- Freshwater replenishment,
- Navigation, and
- Commercial and sport fishing

Waterbody Name	MUN	AGR	PRO	IND	GWR	REC1	REC2	WILD	COLD	WARM	MIGR	SPWN	RARE	FRESH	NAV	POW	COMM	BIOL	EST	AQUA	SAL	SHELL
San Antonio R. downstream from Res.	X	X		X	X	X	X	X		X	X	X	X				X					
San Antonio Reservoir	X	X			X	X	X	X	X	X		X	X	X	X	X	X					
San Antonio R. upstream from Res.	X	X		X	X	X	X	X	X	X	X	X	X	X			X					
Salinas R. Nacimiento R.- S. Margarita Res.	X	X	X		X	X	X	X	X	X	X	X	X				X					
Nacimiento R. upstream of Res.	X	X			X	X	X	X	X	X		X	X	X			X					
Salmon Creek	X					X	X	X	X		X	X	X				X					
Nacimiento Reservoir	X	X			X	X	X	X	X	X		X	X	X	X		X					
Nacimiento R. downstream of Res.	X	X		X	X	X	X	X	X	X	X	X	X				X					
Las Tablas Creek	X	X			X	X	X	X	X	X		X	X				X					
Las Tablas Creek, north fork	X	X			X	X	X	X	X			X	X				X					
Las Tablas Creek, south fork	X	X			X	X	X	X	X			X	X				X					
Franklin Creek	X	X			X	X	X	X									X					

The following is a list of codes associated with beneficial uses:
MUN = municipal and domestic supply,
AGR = agricultural supply,
PROC = industrial process supply,
IND = industrial service supply,
GWR = groundwater recharge,
REC1 = water contact recreation,
REC2 = non-contact recreation,
WILD = wildlife habitat,
COLD = cold fresh water habitat,
WARM = warm fresh water habitat,
MIGR = migration of aquatic organisms,
SPWN = spawning, reproduction and/or early development,
RARE = rare threatened or endangered species,
FRESH = freshwater replenishment,
NAV = navigation,
POW = hydropower generation,
COMM = commercial and sport fishing

Figure 17. Identified Uses of Inland Surface Waters per the Central Coast RWCQB Basin Plan

Further, under Section 303(d) of the 1972 Federal Clean Water Act, states are required to develop a list of water quality-limited stream segments that do not meet water quality standards, commonly referred to as the 303d list. The law requires that the states establish priority rankings for water on the lists and develop action plans, called Total Maximum Daily Loads (TMDL), to improve water quality. The RWQCBs are primarily responsible for developing the list, which is approved by both the SWRCB and the U.S. Environmental Protection Agency (Central Coast Water Quality Data Synthesis, Assessment, and Management [SAM] Project, Central Coast Water Quality Data Assessment Report, 2008.)

Total Maximum Daily Loads (TMDLs) in the Watersheds

Las Tablas Creek and Nacimiento Reservoir are listed as impaired for Metals on the 2006 Clean Water Act 303(d) list. In a RWQCB 1996 Water Quality Assessment Report, the RWQCB reports the Nacimiento Reservoir as impaired for metals (mercury) in fish tissue, and mainstem Las Tablas Creek and the north and south forks impaired for metals (mercury) associated with sedimentation as well as being high in total dissolved solids, electrical conductivity, sulfate, and nickel. The RWQCB's 2002 Watershed Management Initiative Report also indicates, "It is likely that nitrates in groundwater will increase in the future unless preventive measures are taken" (RWQCB WMI, 2002). As a result of the Clean Water Act 303(d) listing for Metals, the RWQCB adopted a TMDL for Las Tablas Creek and Nacimiento Reservoir in 2003; however, it was not approved by the SWRCB and is pending the results of the Record of Decision for the Klau Buena Vista Superfund Site.

Mercury TMDL and EPA Superfund Status

In many parts of the Nacimiento River watershed, the natural mercury levels in soil tend to be relatively high, since the area has numerous naturally occurring cinnabar (mercuric sulfide) deposits and mine sites. Estimates from the Regional Board Lake Nacimiento Loading Model indicate that approximately 77 to 93 percent of the total mercury loading into the reservoir enters from the Las Tablas Creek drainage area. (Las Tablas Creek and Lake Nacimiento, TMDL, 2002).

The Buena Vista and Klau mines in the Nacimiento River watershed have been identified as the primary point and nonpoint sources of mercury contamination in the watershed. Studies leading up to the total maximum daily load (TMDL) described the movement of mercury from the mines to Nacimiento Reservoir.

> *Below Buena Vista and Klau mines, mercury contaminated materials are primarily found in Las Tablas Creek sediments. It is presumed that coarser materials containing mercury are to be found throughout the sediment between the mines and Lake Nacimiento, and thus will continue to flow to the lake even if the mine facilities and surrounding hills cease to be a source of mercury pollution. Annual mercury loadings will depend on the proportion of this sediment stockpile that reaches the lake in any given year. It is possible that a high-level flood event (100-year storm or larger) could scour a very significant portion of this sediment from the Las Tablas Creek floodplain, although much sediment would be re-deposited in the floodplain channel as waters recede. Fine sediments would move more efficiently, so a very large percentage of the mercury-contaminated fines (silts and clays) will likely reach Lake Nacimiento. The level of Lake Nacimiento is seldom allowed to reach maximum stage, causing Harcourt Reservoir, a small impoundment located on Las Tablas Creek, adjacent to the reservoir and Nacimiento Reservoir waters to merge.*

Sediment-rich waters from Las Tablas Creek will deposit their fine suspended sediment load in the still waters of the lake. When the lake is at a low level, but receives high level floodwaters via the Las Tablas Creek Arm, previously exposed old lake floor sediments will be re-transported further north into the Las Tablas Arm and eventually into the main lake channel (Clean Lakes Assistance Program, 1994).

The TMDL identified control measures that were to be implemented at Buena Vista and Klau mines. Since the TMDL, the Buena Vista and Klau mines have been listed on the National Priority List (also known as the Superfund site list), which supersedes the TMDL. Remediation of the sites is under authority of the Environmental Protection Agency. A May 2007 EPA Newsletter for Klau and Buena Vista mines indicated that in June of 2006, EPA initiated a removal action. In 2007, the EPA installed several monitoring probes in streams to measure the effects of acid mine drainage on pH levels. An assessment will begin in spring 2008 to identify any endangered, threatened or sensitive plants or animals that may be affected by site contamination. EPA anticipates that a sampling plan for collecting soil samples and surface water samples will be completed by summer 2008.

Point Sources

The following are point sources, Leaking Underground Tank Clean up Sites, and permitted dischargers in the Watersheds.

Discharge	Point Source	Reference
Mercury	Buena Vista and. Klau Mines	Las Tablas Creek and Lake Nacimiento TMDL 2003
Potential Contaminants of Concern	**Leaking Underground Tank Clean Up Site (LUST)**	
Gasoline	Lake Nacimiento Resort boat launch	Geotracker RWQCB Case 3652
Gasoline	Lake San Antonio Resort Store and Fuel Station	Geotracker RWQCB Case 2905
	Dischargers with NPDES Permits	Reference permit #
	San Antonio River Watershed	
Sanitary wastewater	San Antonio Recreation Area South Shore Wastewater Facilities	RWQCB Order No. 01-131
Solid waste	Lake San Antonio North Shore Closed Class III Landfill	RWQCB Order No. R-32002-0056
Winery process wastewater	Winery	Waiver granted by RWQCB 9/17/03
Sanitary wastewater	San Antonio Recreation Area North Shore WWTP	RWQCB Order No. R3-2004-54
	Nacimiento River Watershed	
Solid Waste	Fort Hunter Liggett Class III Landfill Waste Disposal Site	RWQCB Order No. 87-149
	North shore Ski and Boat Club	RWQCB Order No. 89-74
Domestic wastewater	Heritage Ranch CSD WWTP	RWQCB Order No. R3-2006-0012
Domestic sanitary wastewater	Oak Shores Development Wastewater Treatment Plant – San Luis Obispo County Service Area No. 7	RWQCB Order No. 01-130
Domestic wastewater	Lake Nacimiento Resort	RWQCB Order No. 96-26

Figure 15. Point source Clean up Orders and Permitted Dischargers in the Watersheds

Heritage Ranch Community Service District (NRCSD) Discharge Permits

The CSD holds a Waste Discharge permit and an NPDES (National Pollution Discharge Elimination System) permit from the California Regional Water Quality Control Board, Central Coast Region for discharge of treated effluent. According to Heritage Ranch CSD Nacimiento Watershed Sanitary Survey (2005) the waste discharge permit is for discharge of Heritage Ranch treated effluent. The discharge point is an unnamed ephemeral creek. The discharge location is is on the district's 220 acre along G-14 (also known as Lake Nacimiento Drive), about 1.5 miles south of the entrance to Heritage Ranch and approximately 4 miles from the confluence with the Nacimiento River. Treated effluent entering the unnamed tributary flows approximately one mile downstream then percolates into the soil. The NPDES is required because during very heavy rain periods, discharge to the ephemeral creek could reach the Nacimiento River. The basic effluent limitations set by the RWQCB are that the discharge must be treated to a degree that protects groundwater, streams and riparian habitat. The current five-year permit held by Heritage Ranch Community Service District expires in 2011. Daily, monthly and annual testing is required of wastewater effluent. The State Water Resources Control Board must license district employees operating the wastewater treatment plant as Wastewater Treatment Plant Operators. The District has four employees currently certified as Operators (Heritage Ranch Sanitary Survey, 2005).

The quality of the Heritage Ranch Community Service District's wastewater influent is very good. This is characteristic of an influent that comes from almost all residential homes. There are few businesses in Heritage Ranch. The effluent is also correspondingly of high quality. The District has a history of compliance with all RWQCB limitation requirements. Summarized below are key effluent monthly limitations in the Discharge Order.

Parameter	Units	Limitation	Average
BOD	mg/L	30	20.09
TSS	mg/L	30	21.18
Settleable Solids [a]	ml/L	.1	0.01
Oil and Grease	mg/L	10	2.3
pH	--	6.5 – 8.3	7.15
Nitrate [a]	mg/L (as N)	8.0	non detect
Chlorine	mg/L	non detect	non detect
Copper [b]	µg/L	25.0	9.2
Mercury [b]	µg/L	0.07	.006

[a] Settleable solids and nitrates are daily maximum limitations.

[b] Copper and mercury limitations are interim until 4/1/10.
Reported data includes 2006 results.

Figure 16. Key effluent monthly limitation for the Heritage Ranch Wastewater Discharge

Nonpoint Sources

San Antonio River watershed

Analysis of the WRI documents did not reveal specific information on nonpoint sources within the San Antonio River watershed.

Nacimiento River watershed

The Heritage Ranch CSD's Nacimiento Watershed Sanitary Survey (2005) identified two primary potential nonpoint sources of contamination: (1) people who recreate on and around Nacimiento Reservoir and (2) cattle that have unrestricted access to almost the entire shoreline. Both of these conditions have existed either before or since the reservoir was created over 50 years ago.

A secondary source of potential contamination was identified in the form of wild-land fires, with the resulting erosion and debris affecting the reservoir. The resulting water runoff and sedimentation caused by fire burning of natural vegetation causes the contamination. The California Department of Forestry is responsible for fire suppression within the watershed. An accidental fire or a controlled burn that becomes out of control is of concern in this area (HR Sanitary Survey, 2005).

Mercury, while it has a definable point source, also behaves as a nonpoint source as it is carried from the point source, the mines, in sediment as it runs off in rain events. It has thus contaminated the food chain of Nacimiento Reservoir. Fish throughout Nacimiento Reservoir, including the Narrows, were found to have high levels of mercury. Mercury is a metal that can be harmful to the human nervous system when it is present in a form called "methylmercury." Methylmercury can affect human development. When mercury is in the sediment of a reservoir, small organisms transform it into methylmercury in their bodies. When small fish eat these small organisms they consume the methylmercury in the organisms. Predatory fish such as white and spotted bass that eat smaller fish consume all the methylmercury in their prey; therefore predatory fish have the highest levels of methylmercury (Oak Shores EIR, 2007). This has led to a San Luis Obispo County Environmental Health Division fish advisory for Nacimiento Reservoir that advised limited consumption of bass from the reservoir.

According to the Heritage Ranch CSD Sanitary Survey, studies and samples of reservoir sediment deposits revealed that mercury contamination exists in the water and bottom sediments of the reservoir and were highest in the Las Tables Creek arm of the reservoir. The water samples contained lower mercury concentrations than the bottom sediment samples. Of the 10 surface samples and 13 bottom samples measured, all were below the MCL (maximum contaminant level) for mercury of 2 micrograms/liter. The County of San Luis Obispo has sampled near the dam for mercury concentration. There have been 60 samples taken near the dam and all results have been <1 µg/L. The HRCSD sampling at its water intake facility at the Nacimiento River has also not detected mercury concentrations.

According to the Heritage Ranch CSD Sanitary Survey (2005) samples taken in 1995 in the following locations contained both *Giardia* and *Cryptosporidium*: at the dam, near a cattle grazing area, in the Nacimiento River upstream of the Heritage Ranch CSD well and downstream of the Heritage Ranch CSD final effluent entry site. Cattle were present only near the cattle grazing area. Both Giardia and Cryptosporidium were present at all of these locations and are generally expected in any surface water. However, it should be noted that reservoir water samples collected near the dam in 2002 by San Luis Obispo County Water Quality Lab did not contain *Giardia* or *Cryptosporidium* cysts (HR Sanitary Survey, 2005).

Humans carry both of these microorganisms and can contribute to their presence in water. *Giardia* and *Cryptosporidium* concentrations have the potential to be greatly increased by certain activities in a watershed. Fecal contamination from mammals greatly increases *Giardia* and *Cryptosporidium* loading to a water body compared to background levels as well as coliforms, *E. coli*, and other contaminants. Livestock in particular are significant sources of these microorganisms, especially *Cryptosporidium*. Beavers are especially known to carry *Giardia*.

Consumption of water with these microorganisms present can cause severe, long lasting (sometimes for a lifetime) gastrointestinal illness, sometimes with lethal consequences. It is important to note that consumption can be intentional (water users) or unintentional (swimming, water skiing) (summarized by L. Wallender, personal communication 2007).

While a comprehensive sediment budget was not found in documentation for the WRI, sediment yield in the watersheds was studied relative to mercury in the Las Tablas tributary to the Nacimiento Reservoir by the Coastal Resources Institute for the RWQCB and published in the Clean Lakes Assistance Program for Lake Nacimiento (1994). The value of 1,000 tons/square mile/year (about 1.56 tons/acre) was chosen as a relatively conservative sediment yield value for the entire Nacimiento River watershed basin. The figure was applied to the entire watershed, for although slope steepness was greater on the west side of the river, rocks are generally softer and more erodable on the east side of the river. With a watershed area of about 82 square miles (about 52,480 acres), sediment yield data from nearby watersheds would suggest a typical year's production of about 1,000 tons/square mile (Clean Lake Assistance, 1994). Sediment yield information is relevant in determining a rate at which mercury could be entering into Nacimiento Reservoir from Las Tablas Creek specifically and from the larger watershed generally. Sedimentation rate information would also provide an understanding of the expected life-spans of the reservoirs. SH+G has conducted a preliminary sediment budget for both watersheds which is discussed below in the Reservoir Features and Management section of Part 2.

Illegal drug production is also a threat to watershed health. As described by journalist Kera Abraham:

> *On the Los Padres site alone I discover three different brands of fertilizer, a hand-pump pesticide product and gopher killer pellets made with highly toxic zinc phosphide. Once introduced to the environment, these kinds of pesticides can ripple up the food chain, poisoning cougars, coyotes and condors that eat the tainted varmint. Totally unregulated in the hands of illegal growers, ag chemicals can do serious damage to the air, soil, water and wildlife.* (Wasted Wilderness from Monterey County Weekly, 2007).

The article also reported trash heaps associated with areas that had been used to grow marijuana. The Ventana Wilderness Alliance in coordination with the Forest Service is pursuing clean-up efforts.

San Antonio Reservoir Water Quality

Temperature and Dissolved Oxygen

Thermal stratification may occur in San Antonio Reservoir during spring, summer and fall. During the stratification period, surface water temperatures may range between 68 degrees F and 81 degrees F, while at depths greater than about nine meters water temperature is typically between 55 and 63 degrees F. Temperature profiles show a pronounced thermocline between approximately 13-30 feet in depth. These temperatures would be suitable for trout and other cold-water species, except trout also need relatively high dissolved oxygen (DO) concentrations. During summer months, the DO falls to very low levels below the thermocline, negating the possibility of trout habitat (SVWP EIR, April 2002).

Constituents

The Monterey County Parks Department utilizes San Antonio Reservoir water for public use. One measure of overall water quality that has been collected (October 13, 1997, MCWRA) is electrical conductivity (EC). The measured levels of EC of San Antonio Reservoir water ranged from 100 to 400 μmhos/cm, with an average value of approximately 300 μmhos. According to the SVWP EIR, this translates into an approximate total dissolved solids (TDS) level of 210 mg/l. The TDS secondary drinking water quality standard upper limit is 1,000 mg/l. Manganese levels, reported at 210 to 470 micrograms/liter, exceeded the Secondary Drinking Water Standard, as established by U.S. EPA, which is 50 micrograms/liter. The highest nitrate reported by the MCWRA is 4 mg/L as NO3, which is below the drinking water MCL of 45 mg/L as NO3 (SVWP EIR, April 2002).

Nacimiento Reservoir Water Quality

The Nacitone Steering Committee elected to contract with Swanson Hydrology and Geomorphology to review information compiled in the WRI Analysis and water quality data collected by the San Luis Obispo County Public Works Water Quality Lab between October 1995 and 2007 at the log boom in Nacimiento Reservoir. The remainder of the Nacimiento Reservoir Water Quality section is excerpted from a technical memorandum produced by SH+G.

> *Analysis of the Water Quality Lab data is useful as a cursory screening of water quality trends in the reservoir and watershed. Because these data were only collected at the log boom, their applications to understanding water quality issues that affect human health are limited. A much more comprehensive and long-term sampling effort within the reservoir, especially within the various arms and inlets of the reservoir where recreational use is high, would be necessary to develop a more complete picture of water quality and its potential impact to beneficial uses and human health.*
>
> *In the summer months, Lake Nacimiento is thermally stratified. Thermal stratification results in two distinct zones within the reservoir that have implications on water quality, reservoir circulation, and biological productivity. The upper layer, referred to as the epilimnion is well mixed and interacts with the surface water. The lower layer, referred to as the hypolimnion tends to be cooler, is not well mixed, and tends to have lower dissolved oxygen due to lack of replenishment from the upper layer. The thermocline, a transitional layer between the epilimnion and hypolimnion, varies seasonally and with changes in wind and temperature patterns, but typically occurs at depths ranging from 20- 30 feet. Samples were collected by SLO County in both the epilimnion and hypolimnion of the reservoir. The SLO County data includes sampling and analysis for the following constituents:*
>
> - *Physical parameters including temperature, pH dissolved oxygen (DO) and turbidity;*
> - *Inorganics including various metals;*
> - *General mineral content including chloride, sulfate and sodium.*
> - *Nutrients including various forms of nitrogen and phosphorus*
> - *Organics including volatile organic compounds (VOCs), synthetic organic chemicals (SOCs) and Methyl tert-butyl ether (MTBE); and*
> - *Micro-organisms including total coliform and E. coli*

Selected constituents in the SLO County data, collected at the "log boom", were evaluated for trends throughout the period of record and individual measurements that exceed the water quality objectives listed in the Basin Plan for the Central Coast region (RWQCB, 1999). In general, the analysis of the existing water quality data focuses on the key beneficial uses that are of concern to the NWSC, although discussion is provide for other beneficial uses if the observed impact on water quality in notable. A general discussion of water quality as it relates to water supply is also provided.

Physical Parameters

Physical water quality parameters influence numerous beneficial uses including, but not limited to, wildlife habitat, cold and warm fresh water habitat, and fish spawning. Figure 18 shows the trend in physical water quality parameters for the period of record. Seasonal temperature fluctuations in the epilimnion are significant, varying approximately 15°C annually; temperature flux in the in hypolimnion is less pronounced, though the data show it can be significant. The Regional Water Quality Control Board (RWQCB) has not established a temperature threshold for the "cold fresh water habitat" beneficial use, but 20°C is often considered the maximum limit for salmon and trout habitat. Epilimnion temperatures in the late summer and early fall exceed this threshold, but the hypolimnion generally remains below 20°C. In the hypolimnion, dissolved oxygen (DO) concentrations are a limiting factor for salmon and trout habitat; the stated water quality objective is e"7.0 mg/L, which is often not met (Figure 18). Dissolved oxygen is a measure of the amount of oxygen dissolved in water. This oxygen is absorbed by fish and other aquatic species through their gills.

The data show turbidity in the reservoir often spikes with the influx of sediment during large winter storms (Figure 18). The sediment settles out in the summer and turbidity is not thought to be a limiting factor for aquatic wildlife-related beneficial uses. Water pH was generally recorded in the range of the water quality objectives.

Inorganics

Inorganic constituents, which include heavy metals, can be toxic to aquatic organisms and wildlife. High concentrations of metals can degrade or limit wildlife-oriented and domestic beneficial uses. Heavy metals are of particular concern for wildlife species that are consumed by humans because they accumulate in the tissue of organisms higher in the food chain. Figure 19 shows the trend for selected inorganic water quality parameters for the period of record. There are no major exceedances of the established water quality objectives, nor are there any obvious trends that would suggest beneficial uses will be adversely impacted by inorganic constituents.

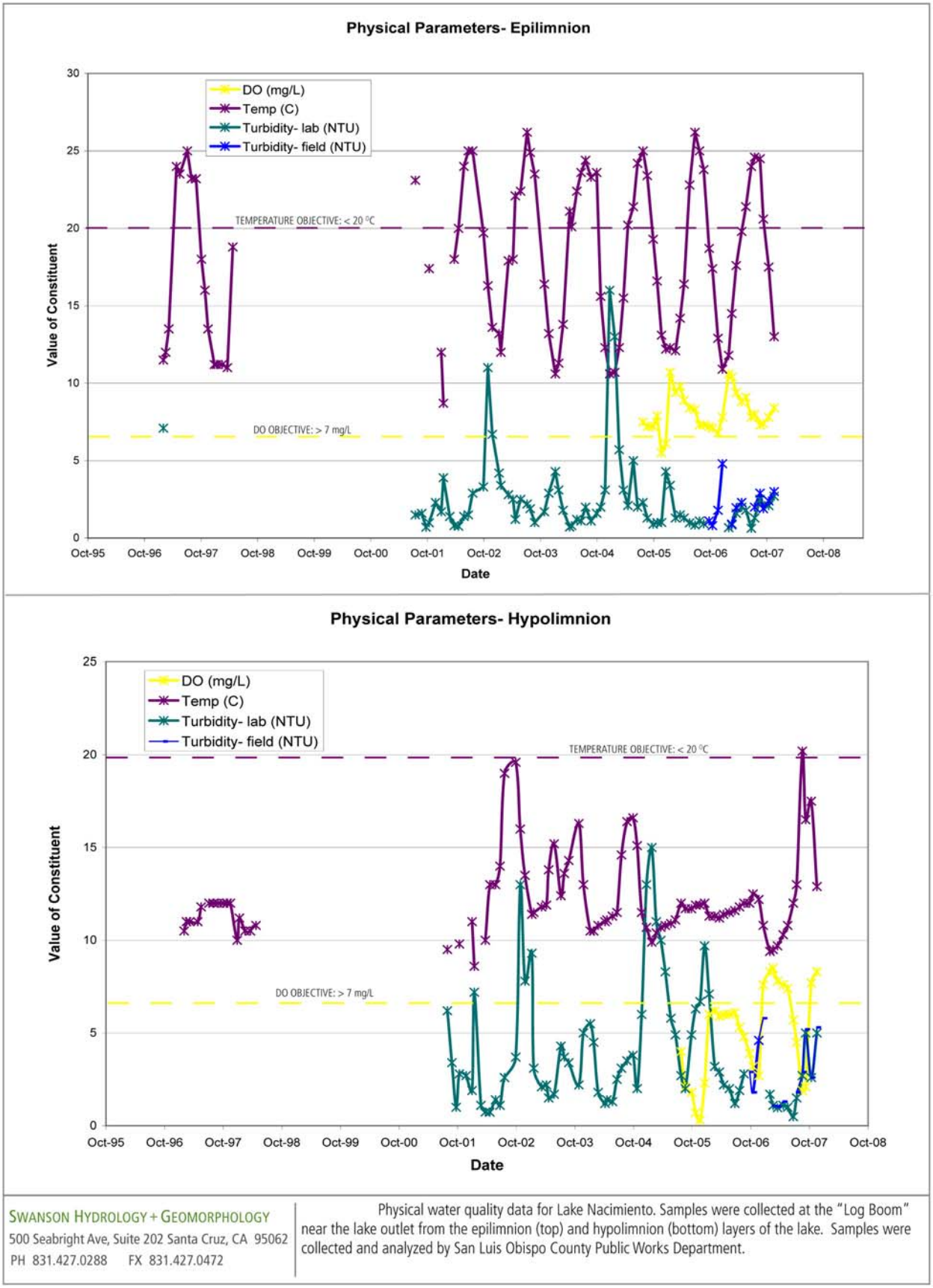


Figure 18. Physical Water Quality of Lake Nacimiento

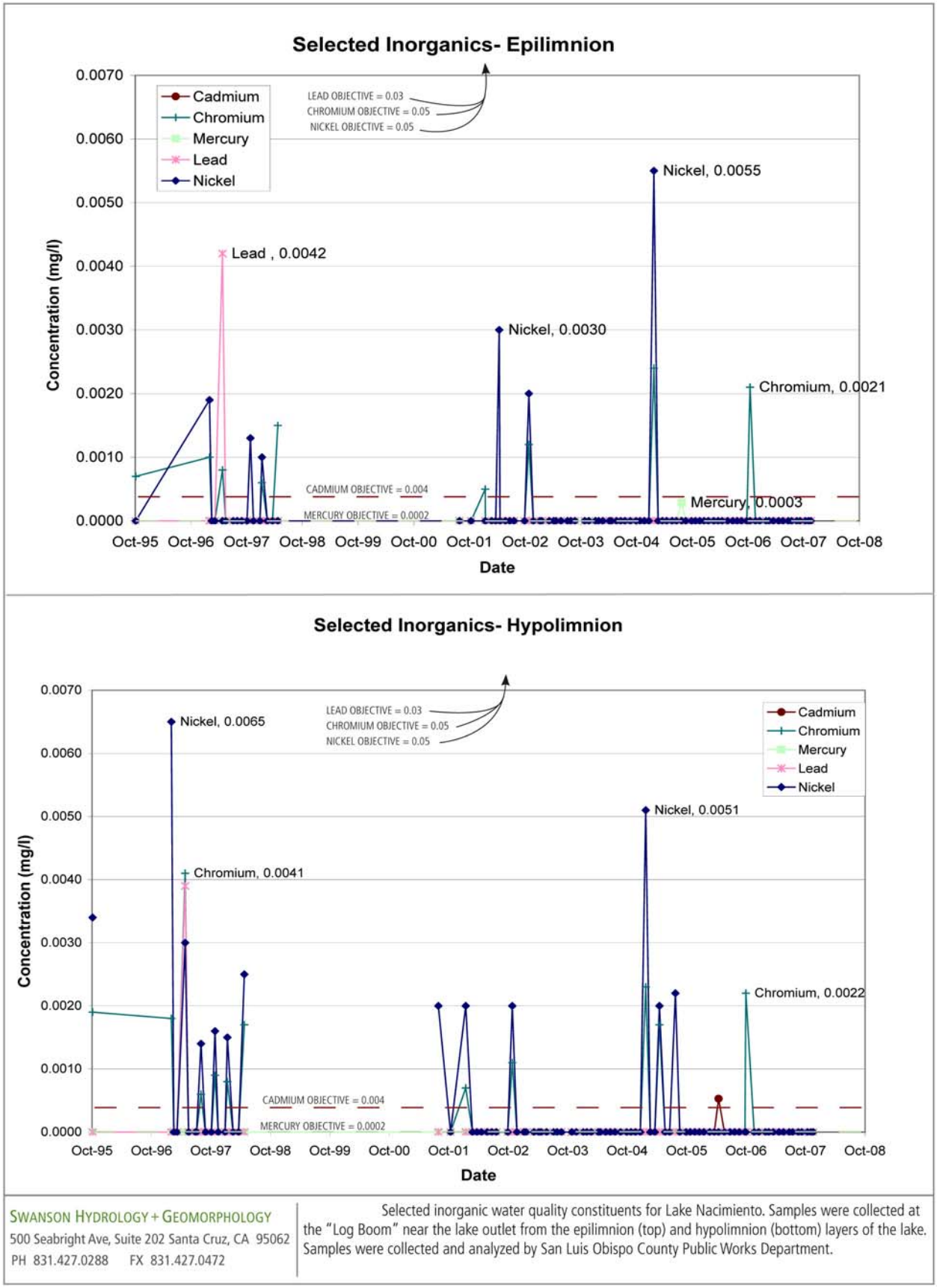


Figure 19. Selected Inorganic Water Quality Constituents from Lake Nacimiento

Mercury is a known contaminant of concern in the watershed. A sample collected from the epilimnion in August 2005 show mercury concentrations that exceed the established water quality objectives by 0.0001 mg/l (the water quality sample that recorded mercury levels above the detection limit represents 1 out of 118 samples collected at the log boom). Although mercury is toxic at low concentrations, this level of exceedance probably does not constitute a water quality concern. A more thorough analysis of mercury is being conducted by the Environmental Protection Agency (EPA) due to the presence of abandoned mercury mines in the Las Tablas watershed, a tributary of the Nacimiento River that directly enters Nacimiento Reservoir. EPA is preparing a wide variety of analyses as part of a Superfund Site (Remedial Investigation/Feasibility Study) *to evaluate the delivery and fate of the mercury from the mines. Because mercury binds to sediment and is transported downstream via erosion and sediment transport processes, it is difficult to trace the ultimate fate and amount of mercury that is directly reaching the reservoir.*

General Minerals

Minerals or salts dissolved in water contribute to the total dissolve solid (TDS) load. TDS is typically considered an important measure of water quality from a domestic or agricultural use standpoint. Specific water quality objectives have been established for the waters of the Nacimiento River for various mineral concentrations and TDS. Figure 20 presents the data for these parameters for the period of record, as measured at the "log boom". Overall, the individual constituents that contribute significantly to TDS are within the established water quality objectives. However, there appears to be a slight trend of increasing TDS concentration in Nacimiento Reservoir, especially in the epilimnion. Although it is difficult to determine the causes of an increase in TDS within the reservoir, one possibility to consider is the high evaporation rate off of the lake which may be increasing its long-term salinity as salts and other minerals accumulate in the reservoir. Prior to the reservoir being constructed, these minerals would be transported downstream and either discharge to the ocean or be deposited in floodplain areas. Following dam construction, the reservoir acts as a sink for these minerals and salts, which accumulate in the bottom sediments. A longer period of measurement is needed to determine if there truly is a trend of increasing TDS and what the potential causes may be. The possible trend observed in the existing data may be the result of year-to-year variations in reservoir inflow and seasonal variability.

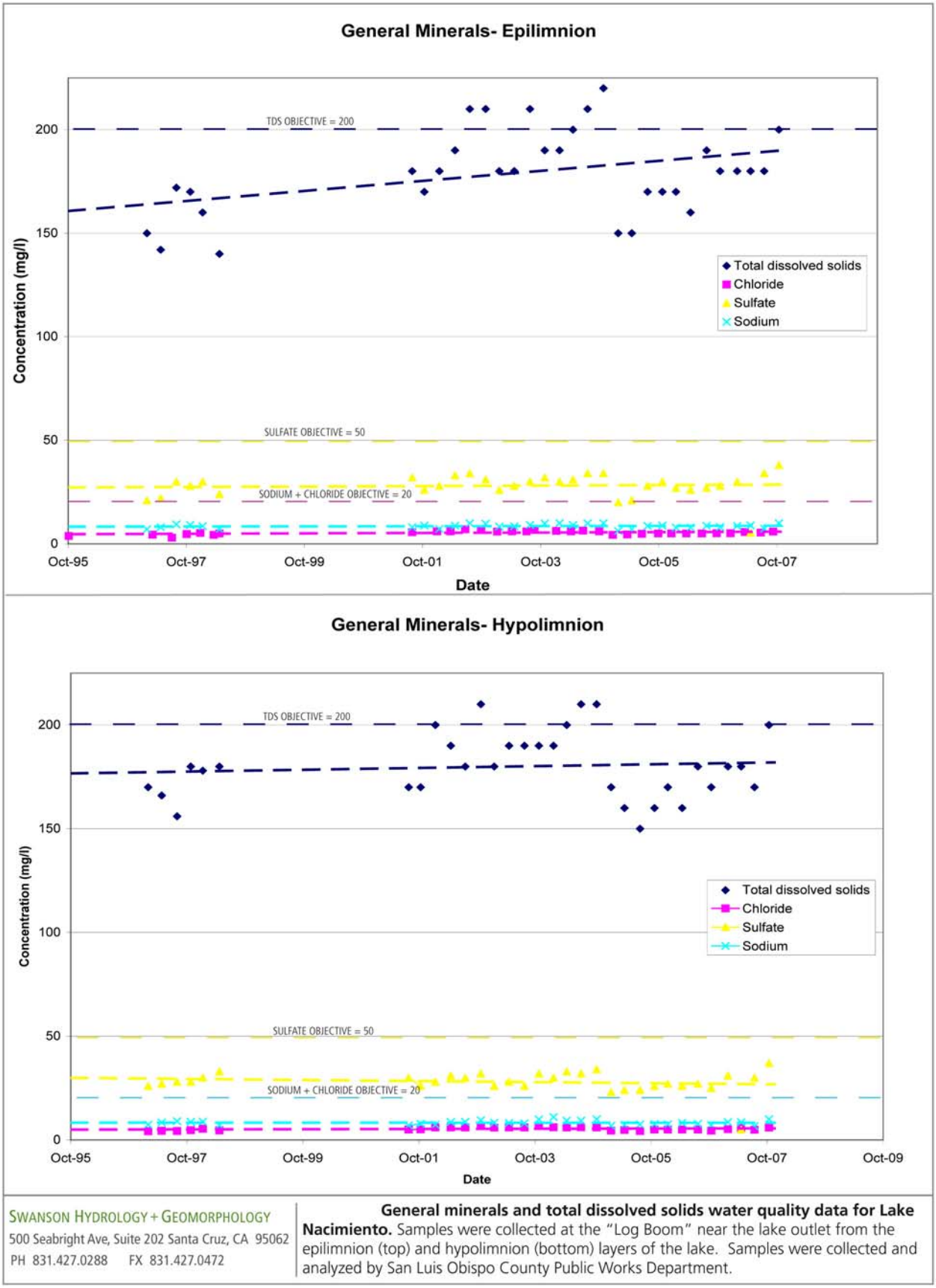
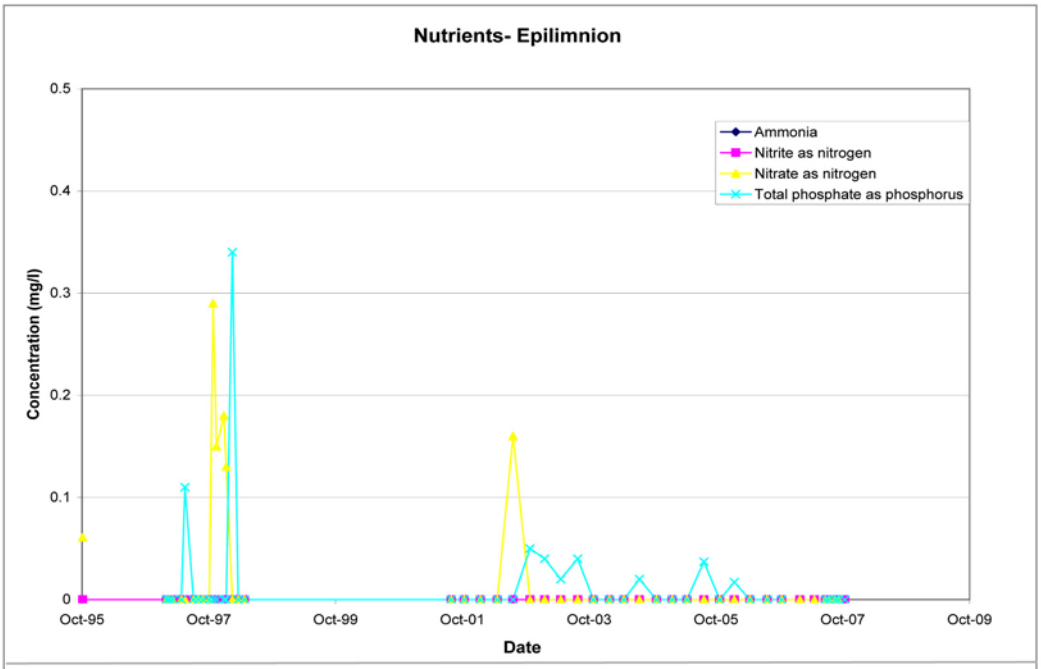
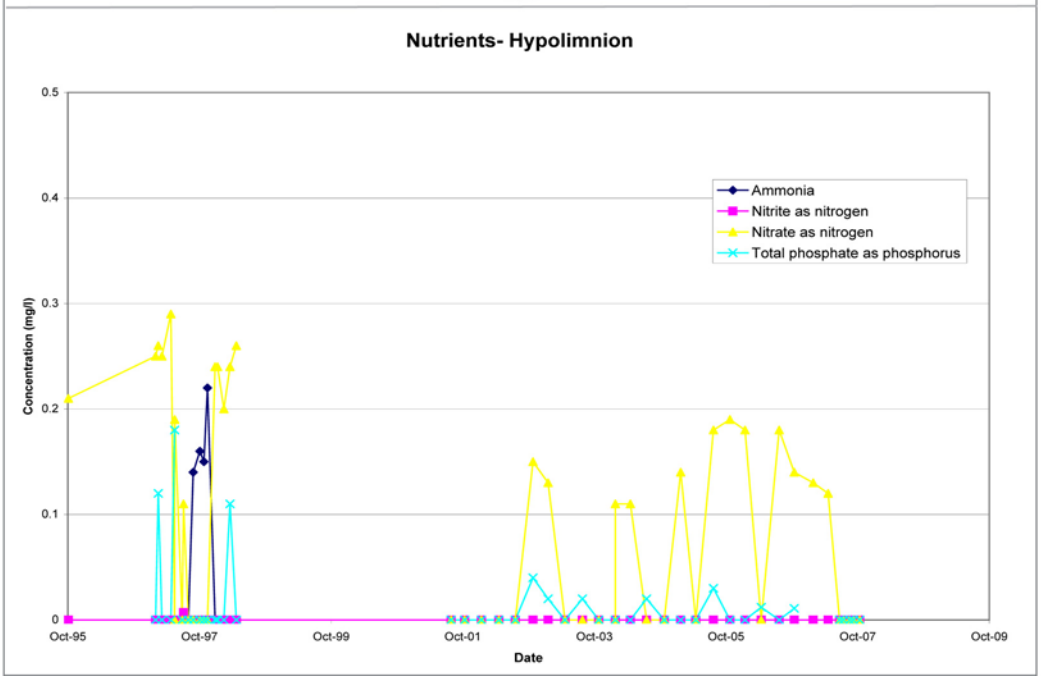


Figure 20. General Minerals and Total Dissolved Oxygen for Lake Nacimiento

Nutrients

High nutrient concentrations in water can degrade or limit nearly all beneficial uses, including aquatic and wildlife-oriented, domestic and agricultural beneficial uses. Figure 21 shows the nutrient data for these parameters for the period of record. There are no established water quality objectives in the Basin Plan for nutrients, but the levels detected in samples taken at the log boom are not likely to adversely impact the beneficial uses listed for the lake.





SWANSON HYDROLOGY + GEOMORPHOLOGY
500 Seabright Ave, Suite 202 Santa Cruz, CA 95062
PH 831.427.0288 FX 831.427.0472

Nutrient water quality data for Lake Nacimiento. Samples were collected at the "Log Boom" near the lake outlet from the epilimnion (top) and hypolimnion (bottom) layers of the lake. Samples were collected and analyzed by San Luis Obispo County Public Works Department.

Figure 21. Nutrients for Lake Nacimiento

Anthropogenic Organics

The San Luis Obispo County sampling program tested samples, taken from the epilimnion, for atrazine (an herbicide), simazine (an algicide), MTBE, SOC's (e.g., pesticides, PCBs) and VOC's (volatile organic compounds). MTBE was detected during two sampling events in 2001, but has not been detected since. Bis(2-ethylhexyl)phthalate (DEHP) was detected during two sampling events in 2004, but has not been detected since. The MTBE was detected at relatively low concentrations (5.5 to 14 parts per billion- ppb); [DEHP was detected at 3.2 ug/L and 4/6 ug/L in late 2004. The Maximum Contaminant Level (MCL) for DEHP in finished drinking water is 6 ug/L; this is the highest level of a contaminant that is allowed in drinking water. Both values were below this MCL (Lisa Wallender, personal communication, 2008).] *The data suggest that there is no chronic MTBE or DEHP contamination at this sampling station.*

Microorganisms

The SLO County sampling program tests samples taken from the epilimnion and hypolimnion at the log Boom for microbial contamination including total coliform and E. coli concentrations. High coliform and E. coli counts in recreational water bodies can cause human health problems. Figure 22 shows the data for microbial contamination for the period of record. The data show that there are some spikes in total coliform count, but E. coli counts are relatively low.

SH+G indicated that a more robust data set is needed to evaluate the potential impact of microorganisms on the recreational use of Nacimiento Reservoir. They also indicated that sampling locations should be added to test high use swimming areas, especially in the summer months and within lake inlets where poor water circulation is likely.

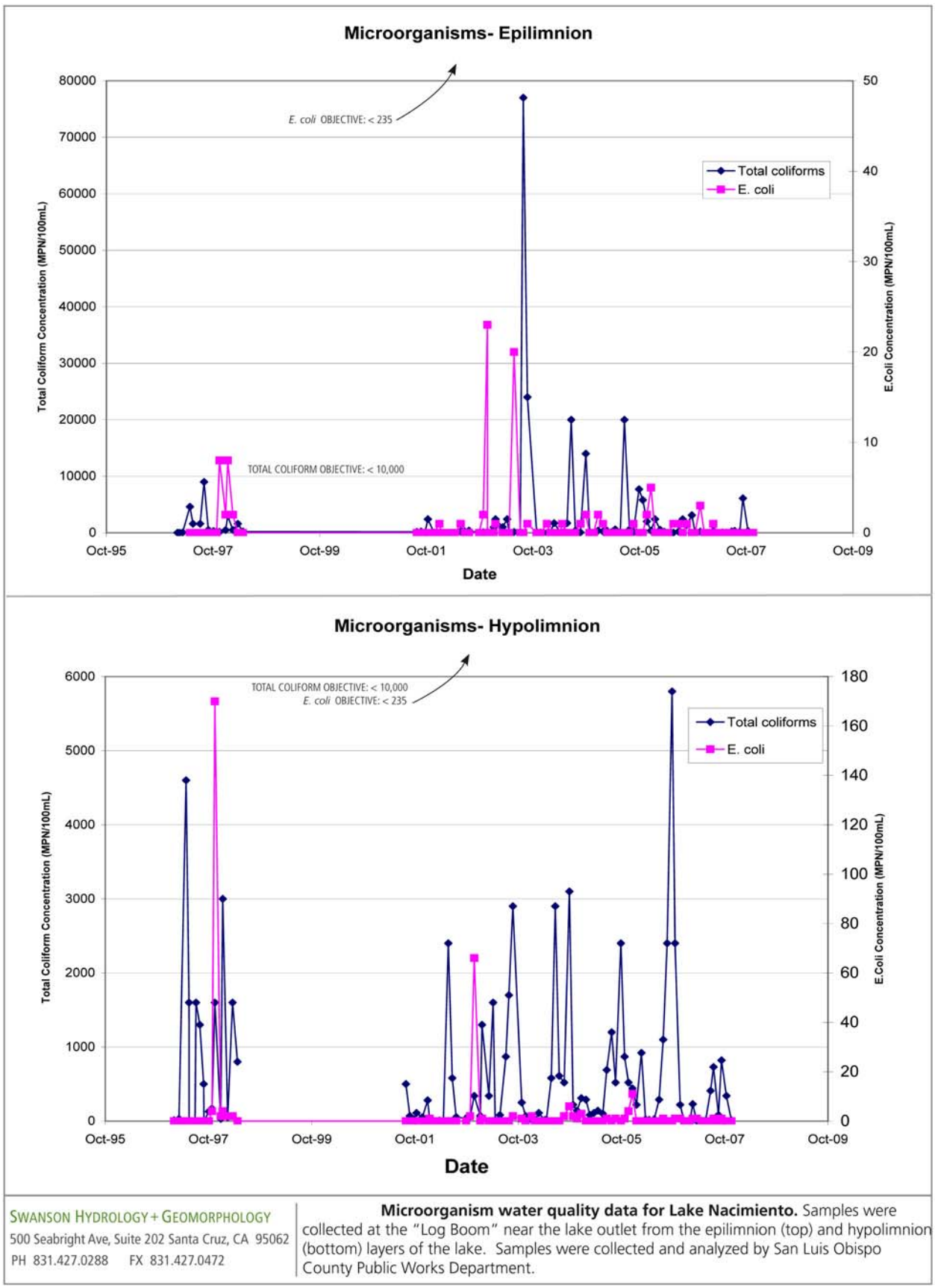


Figure 22. Microorganism Water Quality for Lake Nacimiento

Summary

The log boom data set provides a limited picture of water quality conditions within Lake Nacimiento. Given these limitations, the data suggests that the reservoir supports most of the designated beneficial uses. Temperature and DO concentrations limit the "cold fresh water habitat" beneficial use, but this is due to the physical structure of the lake and remediating this condition would be difficult, if not impossible. The data set collected at the log boom should be extended to other areas of the reservoir to provide a more comprehensive view of water quality conditions in Nacimiento that is both spatial and temporally relevant.

It is important to note that the data analyzed by Swanson Hydrology and Geomorphology was from samples taken at the log boom. Values for many constituents could be different for samples collected at other reservoir locations. An absence of problems in samples collected at the log boom does not necessarily mean there is an absence of problems in other areas of the reservoir.

Surface Water Monitoring Programs

The following is a synopsis of water quality monitoring programs that are either currently occurring or have occurred in the past.

San Antonio River watershed

The Monterey County Water Resources Agency (MCWRA) twice annually monitors reservoir surface water at the dam for dissolved oxygen (DO), temperature, nutrients and general minerals. Tributary surface water is also monitored for general mineral, nutrient, DO and metals (Conrad, 2001). Sampling for bacteria does not currently occur for San Antonio Reservoir.

Nacimiento River watershed

The MCWRA twice annually monitors reservoir surface water at the dam for dissolved oxygen (DO), temperature, nutrients and general minerals. Tributary surface water is also monitored for general mineral, nutrient, DO and metals (Conrad, 2001).

Heritage Ranch Community Services District

Testing for the presence of Methyl Tertiary-Butyl Ether (MTBE) at the Nacimiento River intake downstream of the dam has been part of the Heritage Ranch Community Service District's test protocol since 1996 for organic chemicals.

San Luis Obispo County Flood Control and Water Conservation District

The SLO County Flood Control and Water Conservation District (SLO District) through the Public Works Department Water Quality Lab monitors for physical parameters, general minerals, inorganics, volatile organic compounds (VOC),semi-volatile organic compounds (SOC), and other parameters at the log boom (about 1000 feet out from the dam).

Other Monitoring

Central Coast Regional Water Quality Control Board

The Central Coast Ambient Monitoring Program (CCAMP) is the Central Coast Regional Water Quality Control Board's (CCRWQCB) regionally scaled water quality monitoring and assessment program. Water quality data for the watersheds from CCAMP is available on the CCAMP web site (http://www.ccamp.org/ca300/3/3.htm). In addition, CCAMP staff is developing a multi metric "Health Index" that can be used to describe riparian and overall watershed health. Finally, the RWQCB groundwater clean-up program is ledged on Geotracker, which is a statewide environmental data information management system that tracks Leaking Underground Storage Tanks (LUST) sites.

Citizen Monitoring Programs

The Upper Salinas Watershed Coalition, the Coastal Watershed Council and the Ventana Wilderness Alliance are monitoring in surrounding subwatersheds according to the 2001 Salinas River Watershed: Status of Citizen Monitoring by the Coastal Watershed Council. (http://www.coastal-watershed.org/).

Central Coast Water Quality Data Synthesis Assessment and Management Project

The Monterey Bay National Marine Sanctuary is currently engaged in developing the Central Coast Water Quality Data Synthesis Assessment and Management Project (SAM). Implementation of the SAM project began on June 1, 2006, in order to facilitate region-wide water quality monitoring coordination, data dissemination, data management, and data analysis on the Central Coast of California. A 14-member Technical Advisory Committee (TAC) of water quality experts from around the state was formed to direct the activities of the SAM project. Water quality data was collected from 13 monitoring programs on the Central Coast and collated into a water quality relational water quality database with spatial fields that are coupled to a Geographic Information System (GIS). The database facilitates data dissemination and data analysis; including mapping and comparison with other spatially referenced data sets (Central Coast Water Quality Assessment, Conley, 2008). This program is listed here to alert those conducting water quality monitoring in the Nacitone watersheds so that they can consider collaborating with SAM to enter existing and future water quality data sets for the Nacimiento and San Antonio River watersheds.

Fort Hunter Liggett Water Quality Monitoring

Much of the Fort Hunter Liggett (FHL) installation boundary on the western side follows the coast ridge, so that virtually all rainfall to the installation is within the Nacimiento River or San Antonio River watersheds. Under the State Water Resources Control Board (SWRCB), Water Quality Order No. 97-03-DWQ, National Pollutant Discharge Elimination System (NPDES), General Stormwater Permit No. CAS000001, FHL monitors storm runoff for pH, specific conductivity (SC or EC), total organic carbon (TOC), total suspended solids (TSS), plus volatile and semi-volatile organic compounds, and heavy metals. This monitoring is in accordance with the Storm Water Monitoring Plan, U.S. Army, Fort Hunter Liggett, February 8, 1995 (FHL INRMP, 2004). Runoff is monitored at five points within the Cantonment area for petroleum, pH, volatile organic compounds, and total suspended solids. Points that are monitored for stormwater events are located on the San Antonio River at Nacimiento Road and at Sam Jones Road. Monitoring of total suspended solids, in particular, is important because it reflects erosion.

Surface water and groundwater quality has been measured to some extent since at least 1984 when the current hydrogeological study was completed (FHL INRMP, 2004). Water quality data prior to 1984 are intermittent and are not suitable for comparisons. Water samples obtained during the 1984 study, for several areas of the installation, may be used as a baseline. In order to infer whether water quality has changed since that study, we must focus on analytical parameters that were monitored during and subsequent to that baseline event.

Camp Roberts Water Quality Monitoring

As of a 2000 Camp Robert's Integrated Natural Resource Management Plan, eight monitoring sites at Camp Roberts were being monitored for pH, total suspended solids, specific conductance, oil and grease; one site was monitored for Total Kjeldahl nitrogen; one site was monitored for iron; and five sites were monitored for total and soluble lead. The annual report to the RWQCB was to be prepared and submitted by July 1 of each year. The report was to document the program results for the previous water year (July 1 through June 30). In addition, a water quality monitoring study is to be completed by Camp Roberts during their five-year planning period in concert with Stormwater monitoring program and aquatic habitat surveys.

Water quality was monitored by the USGS on the Salinas River (USGS 11150500 Salinas River near Bradley, California), 7.6 miles downstream of Bradley. Bradley is located near the northwestern corner of Camp Roberts at the confluence of the Salinas and San Antonio Rivers, both of which run through the training site. In general, water quality is acceptable for most uses. Nitrate levels range up to 5 mg/l as N. Calcium and sodium are the predominant cations. Levels of total dissolved solids and selenium are relatively high and approach the maximum acceptable levels determined by the Regional Water Quality Control Board and EPA. However, these constituents occur naturally in the Salinas and San Antonio Rivers. Intensive surveys of both rivers are needed (Camp Roberts Integrated Natural Resource Management Plan, 2000).

Groundwater Monitoring Programs

<u>San Antonio River watershed</u>

Monterey County Water Resources Agency, formerly known as the Monterey County Flood Control and Water Conservation District (MCFCWCD) collected data on a monthly basis for 10 wells in the Lockwood Valley area. General mineral water quality analyses were performed on two to three of these wells annually (Geotechnical Consultants, Inc., 1984).

The primary water type in the Lockwood groundwater basin is bicarbonate type with calcium and magnesium cations (DWR Bulletin 118, 2004 Update). The Monterey County General Plan (1982) describes the water in the area as being both good and plentiful, although the water is highly mineralized. The water is not contaminated by nitrates or tainted by sulfur.

<u>Nacimiento River watershed</u>

The 2003 San Luis Obispo General Plan Land Use Element/Circulation annual resource summary report indicated that the Paso Robles Basin groundwater quality is exhibiting increasing total dissolved solids (TDS) along the urbanized Salinas corridor, near San Miguel, and near the confluence of the Salinas River and Nacimiento Rivers. Increasing chlorides are also noted near the Salinas/Nacimiento River confluence. An understanding of whether upstream land uses are contributing to increasing chlorides would be useful.

Fort Hunter Liggett

According to the FHL INRMP, groundwater monitoring was reported for the period of 1997-2002 with a baseline established in 1984. Many chemical and physical parameters were analyzed for samples taken from shallow well 236 and provided in Table 9 of the INRMP.

> *For these general chemical and physical parameters, there has been no significant change in the shallow groundwater quality. Those compounds that have established Maximum Contaminant Levels (MCLs) for drinking water are present in concentrations far below those MCLs. Data for organic and metal compounds are not presented, due to the lack of baseline data. However, there are no known occurrences of organic compounds in the groundwater from Well 236 and only minor detections of normally occurring metals. This would indicate that military activities are not currently affecting groundwater quality.*

The INRMP section on groundwater quality concludes that:

> *Although military activities within the Cantonment and in field training areas have the potential to impact both surface and groundwater, data available to date suggest that water quality on FHL has not been impaired. Further data may be needed to define sediment and the nutrient loads in the headwaters (outside of FHL influence) of both the San Antonio and the Nacimiento rivers in order to assess effects of military activities for those parameters. Normal ongoing review and implementation of the Stormwater Monitoring Program will continue to identify and reduce possible contaminant sources of storm-water.*

Camp Roberts

Groundwater quality is generally considered to be acceptable for its designated uses (see designated beneficial uses for Camp Roberts below). No bacteria have been detected in water pumped from the wells at Camp Roberts; however, well water that is used for domestic purposes is treated with chlorine as a precaution. No other treatment has been necessary.

Calcium and sodium are the predominant cations found in the Camp Roberts training site's groundwater. Groundwater is also high in total dissolved solids (boron, calcium, sodium, magnesium, and iron).

Thirty groundwater monitoring wells are located at potential sources of contamination, such as the landfill and the Wastewater Treatment Plant. A number of these test wells are associated with remediation sites, such as a fuel facility, Building No. 936, where underground storage tanks have been removed. Most are monitored quarterly. Under regulations by the Regional Water Quality Control Board, wells to the north and south of the Wastewater Treatment Plant are tested monthly (CR INRMP, 2000).

Fish Tissue Monitoring

The California Department of Fish and Game sampled Nacimento Reservoir as part of the Statewide Lakes Study during the summer of 2008. The sampling consisted of one composite sample of carp tested for organochlorine pesticides, PCBs and PPDEs. Also collected were composite samples of small mouth bass and carp for mercury analysis. Final data will be available by the end of 2008 (Mary Adams (RWQCB), personal communications, 2008.)

D. Watershed Uses

General land use descriptions

In 1994, land use in the Nacimiento River watershed was cited as about 50% grazing, 47% open space, 1% housing, 1% camping and 1% inactive mines (Clean Lakes Assistance Program for Lake Nacimiento, 1994).

Agriculture is the primary land use in the watersheds with grazing and dry land farming as the primary agricultural land use. Vineyards and wineries are becoming increasingly economically vital. Residential suburban development is primarily located around Nacimiento Reservoir within the communities of Heritage Ranch and Oak Shores. Residential suburban development varies in density from low to high density with some areas of Heritage Ranch and Oak Shores having residential suburban zoning lots sizes as small as 10,000 or less square feet.

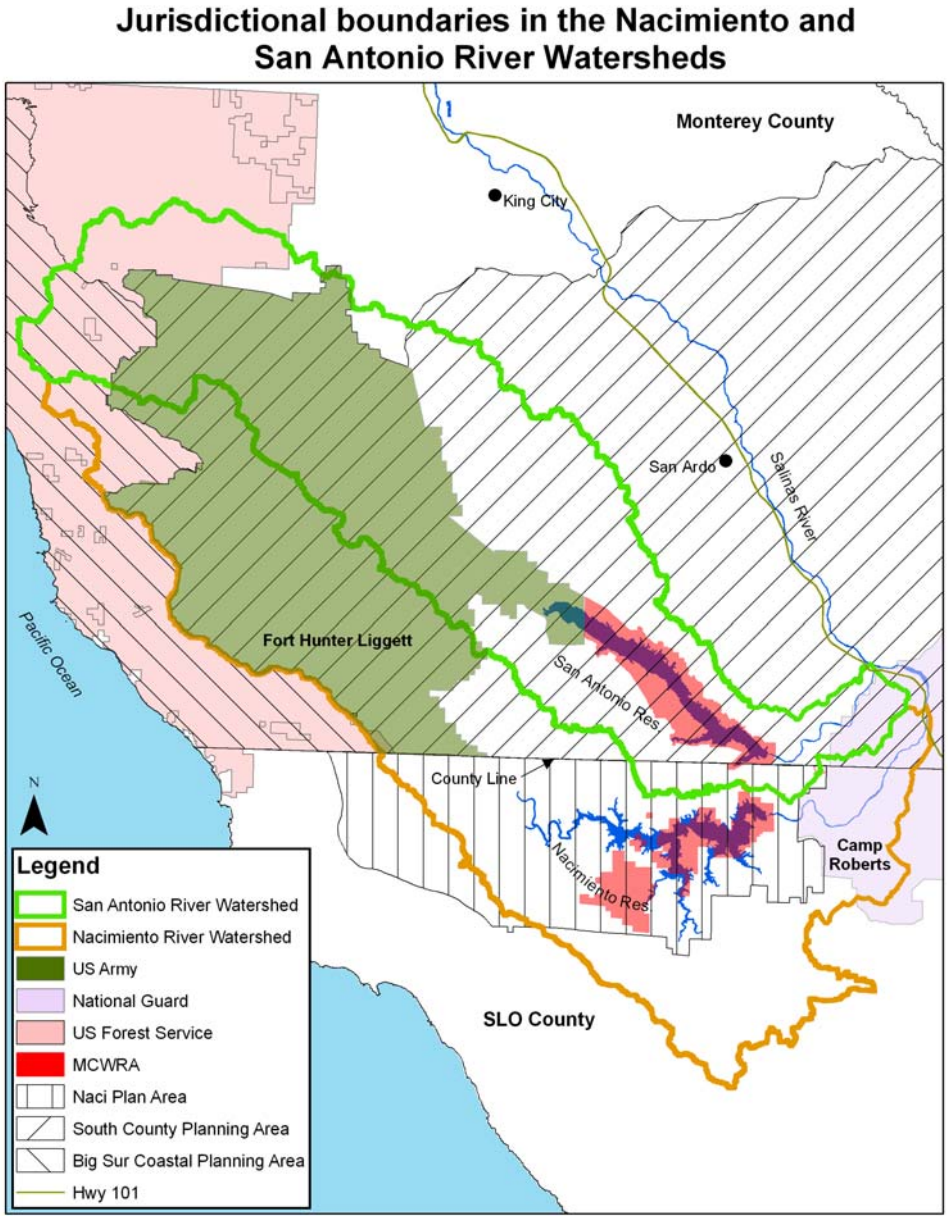


Figure 23. Planning areas in the Nacimiento and San Antonio River Watersheds

Despite the rugged terrain of most of the Nacimiento Planning Area and the concentration of recreational activities at the reservoir, the economy of the region surrounding Nacimiento Reservoir remains based upon agriculture. Grazing is the primary agricultural pursuit, though some dry farming occurs in limited areas as does raising horses and commercial hunting on private property (French, personal communication, 2008). Commercial activities around the reservoir are mostly visitor-serving, and oriented toward peak-use periods. While the role of recreational and visitor-serving commercial activities will experience gradually increasing importance in the planning area economy as development around the reservoir intensifies, the planning area is unlikely to develop a discrete employment base within the term of this plan (Nacimiento Area Plan, 2003).

Farming and Ranching

The San Antonio Valley and the Adelaide portion of the Nacimiento watershed are the primary cultivated agriculture areas of these watersheds. Rangeland used for animal grazing and in some areas hunting and fishing, covers approximately 50% of the land in these watersheds including military and MCWRA lands. This section describes the existing conditions of cultivated agriculture and rangeland management as they relate to water quality and watershed health. It is important to understand how this vital part of the local economy and environment operates in order to identify implementations or recommendations that might be effective to meet the goal of protecting water quality in these watersheds.

AGRICULTURAL CROP PRODUCTION

Agriculture in these watersheds continues to change just as it does statewide. However, rangeland comprises the majority of agricultural acres with grain crops, wine-grapes, and tree crops making up the bulk of the acres. Other crops are also grown with acreage varying depending on the year. These other crops can include: spring salad mix, spinach, tomatoes, cantaloupe, herbs, lettuce, strawberries, almonds, apples, apricots, artichokes, olives, pumpkins, and outdoor plants. Vineyard production in these watersheds has changed over the past 10 years. The San Antonio Valley wine appellation was established in 2007 with approximately 15 vintners (wine makers) and growers. Between the San Antonio reservoir dam and the Salinas River lies the Hames Valley with vineyards and several hundred acres of vegetable crops.

	Acres recorded by Monterey County Agricultural Commissioner	**Grains**	**Grapes**	**Rangeland**	**Tree crops**	**Acreage represented by these crops**
2006	**58,317**	1,556	1,283	45,957	79.5	
		2.67%	2.2%	78.8%	0.14%	**99.08%**

Source: Monterey County Agriculture Commissioner's office

Figure 24a. Acres of Top Agricultural Commodities in the San Antonio Valley, Monterey County

	Total Crop Acres	Grains	Wine grapes	Rangeland	Tree crops	Uncultivated/ non crop acres	Rotational	Pastureland
2006	8,926.92	1,686	1,010	3,507	954	650	820	210
2007	8,186.92	none recorded	1,040	none recorded	1,003	3,987*	1,906	210

* 3,147 of these acres are categorized as "undeclared"
Source: Crop report data provided by San Luis Obispo County Agricultural Commissioner's office

Figure 24b. Acres of Top Agricultural Commodities in the Nacimiento Watershed, San Luis Obispo County

Water quality regulation in place throughout the Central Coast applies to all commercially sold, irrigated agricultural crops. As of July 2004, operators of these croplands were responsible for enrolling into a Conditional Agriculture Waiver program and complying with conditions to prevent the cause, or contribution to, the degradation of water quality. Between 2001 and 2005, in both Monterey and San Luis Obispo counties approximately 90% of irrigated agricultural operators completed 15 hours of continuing education specifically focused on water quality protection practices across the following four management areas:

- Irrigation (management, efficiency)
- Fertilization (management, handling)
- Sediment (erosion control, soil health)
- Pesticides (integrated pest management, handling)

Under the Conditional Waiver Program, each irrigated agricultural operator is required to have a Farm Water Quality Plan and provide updated information to the Regional Water Quality Control Board on an annual or bi-annual basis. The Regional Board began conducting field visits to randomly selected program enrollees in 2007 and will subsequently focus on non-enrolled operators. Participants in the Conditional Agricultural Waiver also pay annually for monthly water quality data collection and interpretation conducted by a third party entity and submitted to the Regional Board. None of the current monitoring locations under this program are in the Nacitone watersheds since none of their waterways or water bodies are listed as impaired for agriculturally related pollutants. There is some irrigated agricultural land immediately adjacent to the San Antonio River below the dam. Farmers in the San Antonio Valley and Adelaide area have completed their Conditional Agricultural Waiver requirements and are actively engaged with their local Farm Bureau and Farm Centers to receive any additional information as it becomes available.

Williamson Act Agricultural Lands

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to enter into contracts with private landowners for restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments that are much lower than normal because they are based upon farming and open space uses as opposed to full market value. Nearly 16.9 million of the state's 29 million acres of farm and ranch land are currently protected under the Williamson Act. Land in Williamson Act protection for the Nacitone watersheds for which information was available is provided in Figure 25a.

Monterey County	Land Use	Acres
	Grazing	24,693
	Vineyards/Orchards	796
	Row Crops	1,032
	TOTAL	26,521
San Luis Obispo County	Conservation Acreage,	81.75
	Transfer of Development Credit (TDC) Program—	5,600
	Grizzly Bend to Monterey Co. line	8,000
	TOTAL	13,682

Sources: SLO County Land Conservancy, Ventana Wilderness Society

Figure 25a. Williamson Act Lands for the Nacitone Watersheds

GRAZING

Cattle, sheep and horse grazing began in the San Antonio Valley when Mission San Antonio de Padua was founded by Fray Junipero Serra in 1771; growing crops began at the same time. The cattle were raised for their hides and tallow which were shipped to Spain. The missions were secularized by the government of Mexico in 1831, and the mission lands were taken from the Franciscan friars and given to the church. Between 1834 and 1846 soldiers and friends of the Mexican government were given land grants. Three had the San Antonio River flowing through them: Milpitas (a milpa is a planted field, milpitas means little fields or gardens), Los Ojitos (little eyes or springs), was granted to Mariano Soberanes, and El Plieto (litigation or dispute). El Piojo (louse) and San Miguelito de Trinidad were near the Nacimiento River. These lands encompassed 115,000 acres of land, used for grazing. The "Californios" lived a colorful life, with vast herds of cattle roaming the rich grasslands. When the Americans took over California in 1848, the grants were open to litigation and some went to heirs of the Californios, some were bought up by rich outsiders. Some ranchos were bought piece by piece by William Pinkerton, James Bolton, William Earl, Faxon Atherton and others. A drought in the mid-1860's killed many cattle. Homesteaders arrived in the late 1870's and more land was devoted to crops. Descendants of homesteaders Ethelbert Sanders Harris, Jan Henry Martinus, Willlian Augustus Weferling, George Christian Heinsen, B. F. Patterson, Edward Gillett, Gottlieb Roth, John Park Hamilton Smith and others farm and ranch in the area today (Raycraft and Beckett, 2006 and Fisher, 1945).

Grazing now occurs on both private and public lands. The acreage of land use dedicated to grazing is approximately 50% of the Nacimiento and San Antonio watersheds including military and MCWRA ground (Coastal Resources Institute, 1994). Currently available data on cattle numbers, location and grazing and land management practices on private lands in these watersheds are spotty. More and better information is needed to maximize improved resource management benefits.

Grazing as a Management Tool

Grazing can be a beneficial tool for the management of invasive and native plant species, for fire management and for improving habitat for threatened and endangered species, all of which contributes to a healthy watershed.

According to a University of California Cooperative Extension (UCCE) article entitled "UC Cooperative Extension Helps Bring Cattle Grazing Back to Bay Area Grassland" (February 2007), farm advisor Sheila Barry, who has researched the modern evolution of California grasslands and low impact rangeland management techniques, discusses the benefits of grazing.

> *…a major benefit of grazing open grassland is fire fuel management, Barry said. However, she believes an even more important driver is improving the habitat for threatened and endangered species, such as the red-legged frog, the California tiger salamander, the Western burrowing owl and the golden eagle.*
>
> *Even insects profit from grazing. Barry considers the Bay Checkerspot Butterfly to be the "poster child of grazing benefits."*
>
> *"It's a classic story," she said. "The only remaining populations of this butterfly are on grazed lands. In areas that were specifically set up for conservation and where cattle grazing was eliminated, the butterfly populations have disappeared."*
>
> *Grazing is managed by controlling season of use and intensity, especially in sensitive areas. Livestock water, supplemental feed and salt are used to control grazing distribution. Barry has been collaborating on a USDA-funded research project with other advisors and UC range specialist Mel George to further understand the effectiveness of livestock distribution in working towards resource management objectives. The project, known as "Cows in Space," uses global positioning collars to monitor the location of livestock on rangeland pastures at the Sierra Foothill Research and Extension Center in Browns Valley, Yuba County.*
>
> *Barry credits ranchers' efforts over the years to implement conservation-minded management practices for illustrating the benefits of grazing to control vegetation and preserve wildlife habitat on public land. "These land management agencies are conscientious about the total ecosystem impact from grazing," Barry said, "just as ranchers have been for decades."*

According to nativehabitat.org, cattle stimulate plant growth and increase annual forage yield by grazing. Through their urine and feces, cattle recycle nitrogen, phosphorus, potassium and other plant nutrients and return them to the soil. By trampling plants that have grown too coarse and brittle to eat, cattle increase the amount of litter on the ground. (This reduces soil and water erosion and helps increase the amount of water that enters the ground and aquifers.) When properly managed cattle convert solar energy captured by native grasses into a sustainable source of meat, leather and other valuable products for human consumption.

According to an article entitled "Good Grazing? Advocates say free-range Cattle Can Have Environmental Benefits," in E: The Environmental Magazine (Nov-Dec 2002), and attributed to Steve Rich, a consultant with Higher Ground Associates in Salt Lake City, Utah which works to build bridges between ranchers and environmentalists,

> *"A hoof print is a hole and holes are wonderful things in nature. They collect water, seeds and nutrients. They are shadier and less windy and a heck of good place for seedlings to start. I have done thousands and thousands of samples and hoof prints make up more than 90% of seedling germination sites."*
>
> *This claim is backed by such evidence as a 1998 Colorado State University study that found biodiversity to be highest in moderately grazed lands and lower under heavy grazing, but lowest of all on ungrazed lands* (Proctor, 2002).

In addition to providing traditional products as meat, leather, tallow and more, well managed range lands and private ranch lands support healthy watersheds, recreational opportunities and wildlife habitat.

According to an article depicting a speech by R.L. Dahrymple at the Missouri Forage and Grassland Council 2000 Annual Meeting entitled "Fringe Benefits of Rotational Grazing",

> *Rotational grazing, with adequate recovery periods, increases forage production. Runoff water and water contained in streams and impoundments is clearer and presumably of higher quality for stock and human use.* (Dahrymple, 2000)

Local cattle ranchers in the Nacimiento and San Antonio who practice healthy rotational grazing would like to see more public entities implement and or expand rotational grazing programs, i.e. FHL, Camp Roberts, Monterey County and the U.S. Forestry.

Given the above information and in light of current conditions such as increased urbanization and a threatened food supply, ranchers and environmentalists will need to find a balanced perspective in order to sustain a healthy environment and safe and abundant food supply. The Nacitone watersheds provide an opportunity to develop positive collaborative resource management efforts among ranchers, environmental groups and public agencies.

Grazing in the Nacitone

The grazing areas for which information was reviewed for this Plan include the MCWRA leases around Nacimiento and San Antonio Reservoirs, FHL and Camp Roberts military installations, Los Padres National Forest and private land.

The table below was constructed to further understand the acreages involved with agriculture. For their "rangeland" category, the county Agricultural Commissioners include a mix of private and public ground and may not include all properties actively being grazed. From a total of approximately 451,386 acres in the two watersheds combined, 50% is entrusted to the listed public entities.

Grazed Acres in Both Watersheds					
	Total grazed and non-grazed acres (including acres not in these watersheds)	**Total grazed and non-grazed acres in watersheds**	**GRAZED acres in watersheds**	**GRAZED acres in Nacimiento river watershed**	**GRAZED acres in San Antonio river watershed**
Camp Roberts	42,615	22,975	22,975		
Los Padres	315,510	28,965	2,150	0	2,150
Fort Hunter Liggett	162,355	162,065	0	0	0
Monterey County Water Resources Agency (MCWRA)	23,617	23,617	16,692	8,865	7,827
SubTotal PUBLIC	**543,807**	**237,912**	**41,817**	**8,865**	**9,327**
PRIVATE LAND	NA	213,464 *	?	?	
Totals	NA	451,386			

Figure 25b. Grazed Acres in Both Watersheds

Sources: Geographic Information Systems calculations; information provided by Los Padres National Forest Monterey District (leaseholder).
An alternative source states that Camp Roberts has a total of 26,100 grazed acres which may include land outside of these watersheds.
* This number is the difference between the public acres in this table and total acres of both watersheds combined.

Monterey County Water Resources Agency

The MCWRA owns approximately 24,000 acres (38 square miles) or approximately 5 percent of the land in the Nacitone watersheds. 16,000 of these acres are located around the reservoirs and make up eight separate parcels leased out for cattle grazing since the land was purchased in the 1950's and 1960's. The remainder of the 24,000 acres is in recreational camping areas, grassland and oak forest (USLT RCD, 2008). In 2007, when the MCWRA renewed its grazing leases, they required all lessees to attend a *Ranch Water Quality Short Course* developed and administered by UC Cooperative Extension. The Short Course was conducted in November 2007 by UC Cooperative Extension and contributing partner entities such as the USLT RCD, the Natural Resources Conservation Service (NRCS), UC Davis researchers, the Ag Watershed Coalition of Northern SLO and Southern Santa Barbara counties, and the Nacitone Steering Committee. Current leases on MCWRA land will expire in 2010. The MCWRA Board of Directors may decide to incorporate new requirements into future lease agreements as recommended in a ***Grazing Lands Management Plan*** prepared by the *Upper Salinas Las Tablas Resource Conservation District* (USLT RCD) which is further described later in this section.

Currently, MCWRA grazing lease contracts contain the following Conservation Goals and Objectives:

1. Protect the water quality and quantity of reservoirs. A goal of the MCWRA is to eliminate access by cattle to reservoir waters as soon as possible.

2. Minimization of fire hazards through vegetative fuel management and responsible livestock management.

3. Preservation of open space for recreation, scenic beauty and education, and preservation of native plants and animals, and biotic communities. All or portions of the MCWRA land, including the Premises, may be made open to the public subject to reasonable restrictions determined by Landlord.

4. Maintenance of rich and productive grassland and oak woodland communities with healthy populations of rare, threatened or endangered vertebrates, significant native grasses, and for components and minimal exotic pest plants.

5. Restoration of degraded vegetation and wildlife habitat.

6. Maintenance of livestock distribution over the premises, to achieve uniform range utilization, reduce overall fire hazard, minimize sacrifice forage areas and meet conservation objectives.

7. A key requirement for any lease will be the completion of a ranch plan within one year of execution of a contract, which will lay out specific measures that will be used on each lease to protect the water quality and quantity of the reservoirs.

At both reservoirs, MCWRA owns four parcels, leased for grazing, located along the shores of the Nacimiento reservoir. There are also other privately held lands with a variety of uses around that reservoir. In contrast, the land around the San Antonio reservoir is owned by MCWRA except for a portion held by FHL, and is divided into another four separate parcels of leased land. Some existing fencing is located below the high water mark. During certain times of the year this means that range livestock and wildlife currently have access to shorelines of

both reservoirs and their tributary streams. Rugged terrain and arid climate make centralized feedlot areas infeasible (Nacimiento Water Supply Report on Recreational Use at Lake Nacimiento, 2002). Seasonal and release-related water level changes result in significant fluctuations in the amount of land available for grazing on these properties.

A ***Grazing Lands Management Plan*** was prepared for lands owned by the MCWRA by the Upper Salinas Las Tablas Resource Conservation District (USLTRCD), 2008 and is included in its entirety in Appendix C. The Plan was funded through the same grant that funded the Nacitone Watersheds Management Plan and is expected to help the MCWRA establish land management measures for rangeland health and water quality protection on their 16,000 acres of grazed lands located around both reservoirs.
The Grazing Lands Management Plan assesses current grazing and rangeland management practices on those lands and recommends a mix of existing and alternative practices. The Nacitone *Watershed Strategy* contains some of these recommendations that owners of private grazing lands may also find useful as they consider how best to protect downstream water quality and other watershed resources.

The ***Grazing Lands Management Plan*** recommends livestock grazing as the primary management tool for MCWRA land.

> *The Plan finds that cattle grazing, if conducted properly, can have the following benefits:*
>
> - *Reduces fuel load for potential fires,*
> - *Improves grass regeneration,*
> - *Improves habitat for many animal and plant species,*
> - *Reduces encroachment of noxious weedy species, and undesirable types of plants, and improved maintenance of grasslands and oak woodland diversity.*
>
> (Grazing Lands Management Plan, USLT RCD, page 2)

Fort Hunter Liggett

Grazing has been a significant land use for more than 200 years, since settlement during the Mission Era. Grazing continued on the Hunter Liggett Military Reservation beginning in 1942 with the issuance of leases that did not specify management or conservation practices. The first land management plan was developed in 1948 and periodically revised from 1948 to 1972. Grazing was discontinued in 1991 after a prolonged drought and over-use that resulted in significant resource damage to herbaceous vegetation (Stechman, 1995). In October 1993, land management responsibility for FHL was transferred from Fort Ord to Fort Lewis, Washington. Early in 1994, FHL and Fort Lewis contracted with The Nature Conservancy to produce a comprehensive grazing assessment with recommendations for grazing management consistent with an overall natural resources management plan (Stechman, 1995 and FHL INRMP, 2004). In 2003, a plan for livestock grazing was developed for FHL (Bartolome et al. 2002, 2003). This document was not reviewed by the Nacitone Steering Committee.

The ***Integrated Natural Resources Management Plan*** prepared for FHL in 2004 and amended in April 2007 describes current challenges with re-establishing grazing on FHL.

> *Livestock grazing was discontinued on FHL in 1991 due to resource degradation from over stocking and utilization combined with six years of extreme drought conditions from 1984 through 1990. Livestock grazing has*

not been allowed since that time because a clear livestock grazing strategy had not been developed that would prevent resource degradation from re-occurring.

Additional complicating issues have emerged which pose significant resource management conflicts, especially with endangered species management and associated critical habitat designations and proposals. Cultural resource protection issues are also present. Additions and rebuilding of existing fence is likely to cause conflicts with the military training mission. Additional staff will be required to adequately plan, conduct, and monitor a grazing program. Funding of a livestock grazing program through lease agreements may be problematic because out-lease revenues are deposited in a Department of Army account and are not dedicated to the installation where the revenue is generated. ***(INRMP, 2007, page 136).***

Fort Hunter Liggett (FHL) is a military installation with a primary mission to train military personnel to fight war. Training is conducted in an individual and collective environment. The Installation mission has significantly changed and grown since commercial livestock grazing was last allowed in the early 1990's. Training activity has increased from an average of 150,000 training days in the early 1990's to approximately 700,000 training days in training year 2008 (October 2007- September 2008). Training levels have spread out throughout the entire year to all parts of the installation and are projected to exceed 1.2 million training days in FY10 and beyond (an 800% increase since 1992).

"The Army's environmental mission is to sustain the environment to enable and support the Army mission and secure the future." Environmental stewardship is conducted through the Integrated Natural Resource Management Plan (INRMP) conservation programs which are coordinated with the Director of Plans Training, Mobilization and Security (DPTMS) to determine optimal mission landscape requirements for supporting mission purposes (AR 200-1). Conservation reimbursable agricultural/grazing out-lease programs are to be compatible with mission requirements and provide a direct benefit to mission and environmental goals.

As the FHL mission continues to expand it is expected that commercial livestock grazing or similar activities would pose unacceptable conflicts with training activities for the foreseeable future. Based on the FHL senior staff's evaluation of the 2004 INRMP goals and objectives and the current/forecasted FHL training mission, commercial livestock grazing is incompatible with that mission. The FHL Command will not pursue further evaluation of a commercial livestock grazing program on FHL during the next INRMP cycle 2009-2013.

Camp Roberts

Livestock grazing has been an important component of the multiple land uses on Camp Roberts for many years. Cattle and sheep have grazed much of the acreage since the military's resumption of livestock grazing in 1942. Livestock grazing has been known to occur on the property for at least 200 years prior to the military's acquisition.

Agricultural lands just east of Camp Roberts are in Conservation Reserve Program contracts with the USDA. These contracts are used to control erosion on highly erodible lands.

Approximately 20,500 acres on the Main Garrison, with a carrying capacity of 5,400 AUM's* each lease year, will be available for sheep grazing for a six-month period between January 1

and June 30. Approximately 5,600 acres on the East Garrison, with a carrying capacity of 2,000 AUM's each lease year, will be available for cattle grazing for a five-month period between January 1 and May 31.

Recent changes to the grazing program have removed 1,500 acres of riparian areas and the river terrace between East Bradley Road and the Salinas River, which contains sensitive cultural sites within the East Garrison, and 6,320 acres of land from the high country along the southwest border of the Main Garrison from grazing. An additional 4,700 acres (Training Area O, north of the Nacimiento River, portions of TA's P and L between the rivers and the impact area, and portions of the cantonment area were formally incorporated into the Main Garrison sheep lease) were added to the lease.

Grazing Restrictions on Camp Roberts

In many areas, banks along the Nacimiento River are steep and unstable. The Nacimiento River riparian ecosystem also contains numerous cultural resource sites. To preserve and protect the integrity of cultural resource sites and riverbanks from degradation, maintain water quality, and preserve native species biodiversity, sheep grazing will not be permitted in the Nacimiento River or in adjacent riparian habitat. Sheep will cross the Nacimiento River only by using the Low Water Bridge. Soils in these locations are steep, rocky and erosive, lack adequate forage, and are not suitable as sheep bedding sites. The majority of known sensitive plant locations on Camp Roberts are located in this region.

Rotational grazing will continue to be practiced on the Main Garrison by limiting sheep pens and shepherd trailers to a 3-day maximum stay in any one location. Rotational grazing distributes grazing more evenly throughout the Main Garrison and prevents overgrazing or overuse of specific areas.

Revenue generated through the grazing leases is reinvested on the installation, usually through maintenance of firebreaks, repair/replacement of fencing, cattle guards, water appurtenances, etc. Supplemental agreements for projects or work to be done are drafted up and made part of the grazing lease, and work is accomplished by the lessee in partial lieu of rent. Grazing revenue collected covers administrative costs of the program, and the program will adhere to appropriate Army Regulations (CR INRNP, 2000)

Camp Roberts Grazing BMPs

- Implement rest-rotation grazing strategies on both garrisons.
- Change livestock entry date to January 1 of each lease year.
- Limit number of animal unit months (AUM's) available.
- Define an AUM equivalent as follows: 1 ovine ewe, ram or weaned lamb = 0.2 AU (un-weaned lambs are not counted); 1 weaned calf to yearling = 0.65 AU; 1 yearling steer or heifer (1-2 years old) = 1.0 AU; 1 cow with (or without) un-weaned calf, heifer > 2years old = 1.0 AU; 1 bull > 2 years old = 1.5 AU.
- Use herding techniques (herders, range riders) to improve animal distribution and use of forage.
- Place salt blocks and feed supplements less than ¼ mile from watering sources and surfaced roads.
- Remove and dispose of dead livestock near watering sources immediately.
- Exclude or intensively manage grazing in sensitive areas (riparian zones, reservoirs, and fairy shrimp plots) and steep and highly erodible areas.

- Maintain intact boundary fences and remove trespassing livestock immediately upon discovery.
- Prohibit cattle and sheep access to Camp Roberts rivers and riparian areas except at designated crossing sites. Provide/develop watering sites away from these areas.
- Maintain adequate plant and ground cover at all times (maintain 75% cover and a minimum of 1000-1200 lbs. Per acre of residual dry matter).

Camp Roberts Rangeland Improvements

Rangeland improvements on the Main Garrison include cool prescribed burn areas for thistle in the southwesterly and Nacimiento River drainage areas. "Cool" burns are preferred for rangeland improvement. Using fire as a tool at Camp Roberts on rangeland should neither take acreage out of forage production nor defer the grazing season and the Camp Roberts Fire Department supports it.

"Cool fire" burns are executed on cooler days with higher levels of humidity and the area burned is done so without a contiguous effect, thereby creating a patchwork appearance between burned and non-burned areas. In a cool burn, the effects of the fire allow for faster recovery of plant populations, less damage is done to seed banks, and the same desired affect of biomass and species composition control can be achieved. Rebuilding of soil mulching and plant cover is improved and takes fewer seasons than with conventional control fires or accidental burns.

Los Padres National Forest

Grazing is also permitted in the Los Padres National Forest including in the Ventana Wilderness in the upper San Antonio River watershed. According to the Assistant Resource Officer for the Monterey District of the United States Forest Service (USFS) and documented in USFS Grazing Permits Parts 1 and 2 on file with the District, there is one active permitted grazing allotment in the San Antonio River watershed and some vacant allotments on the books. The active allotment is referred to as the Upper Milpitas Allotment., It contains two pastures, the Milpitas Pasture and the Wagon Caves Pasture. This allotment includes approximately 2,150 acres. The maximum head as of September 7, 2007 was 90 cows, 90 calves and 6 bulls, with stock on the land seasonally, typically from February to May. The permit for the allotment is effective until September 2017.

There is an Allotment Management Plan that is 40 or more years old. The District utilizes Forest Plan Standards for residual dry matter (RDM) to monitor range conditions and generates allotment-monitoring reports. There is also approximately 10 head of livestock on the Merle Ranch, which is operated by the Forest Service.

Mining

Mining in the watersheds has a long history. The Clean Lake Assistance Report (Coastal Resources Institute, 1994) includes detail of historical districts for mining. The MCWRA has produced a map using a Geographic Information System (GIS) showing mine locations in both watersheds and is included in electronic format in Appendix J (maps). Currently operating mines are limited to the Lime Mountain Quarry. This is an open pit mine located at the top of Lime Mountain in the Nacimiento River watershed. The mine produces high quality limestone and is permitted to mine up to 200,000 tones per year. Williams Hill Mine produces sandstone and shale for decorative rock and is located in the San Antonio River watershed. As mentioned above in the Water Quality section, the Buena Vista and Klau mercury mines are no longer in operation and will require lengthy remediation by the U.S. EPA.

Recreation

Both Nacimiento and San Antonio reservoirs are used for recreational purposes, including fishing, motorized and sail boating, camping, hiking and water skiing/wakeboarding, swimming, wading, and day use (picnics). The Lake Nacimiento Resort, which is owned by Monterey County Water Resources Agency, is zoned recreational.

Nacimiento Reservoir has 165 miles of shoreline that provide a variety of opportunities for day and overnight recreational activities. Although the peak recreational season at the reservoir is between Memorial Day and Labor Day, year-round activities include picnicking, camping, fishing, hiking, swimming, boating, sailing, water-skiing, jet-skiing, and sunbathing. There are several developed recreational areas, both private and public, along the shoreline. The Monterey County Parks Department provides law enforcement and regulation of boating activities. The Parks Department also manages in-lake facilities such as buoys, shallow markers, and floating restrooms. The largest public recreational facility at Nacimiento is the Lake Nacimiento Resort (SVWP EIR, April 2002).

Current facilities managed by the Monterey Parks Department and a private management company at Nacimiento Lake Resort include: a full-service marina, 21 lake shore lodges, 360 improved campsites, a playground, swimming pool, restaurant, hiking trails, hot tubs, country store, picnic area, and boat moorage facilities with approximately 120 marina slips.

There are also privately managed facilities along Nacimiento Reservoir's shoreline. The two largest are the Heritage Ranch and Oak Shores developments, each providing 50 campsites and marinas with approximately 100 boat slips. The facilities are available only to property owners and their guests. In addition to these two developments, a total of approximately 300 additional private docks are provided by the following: Running Deer Ranch, Tri-Counties Boat and Ski Club, Cal-Shasta Boat and Ski Club, South Shore Village, North Shore Boat and Ski Club, and several private individual lakeshore property owners (SVWP EIR, April 2002).

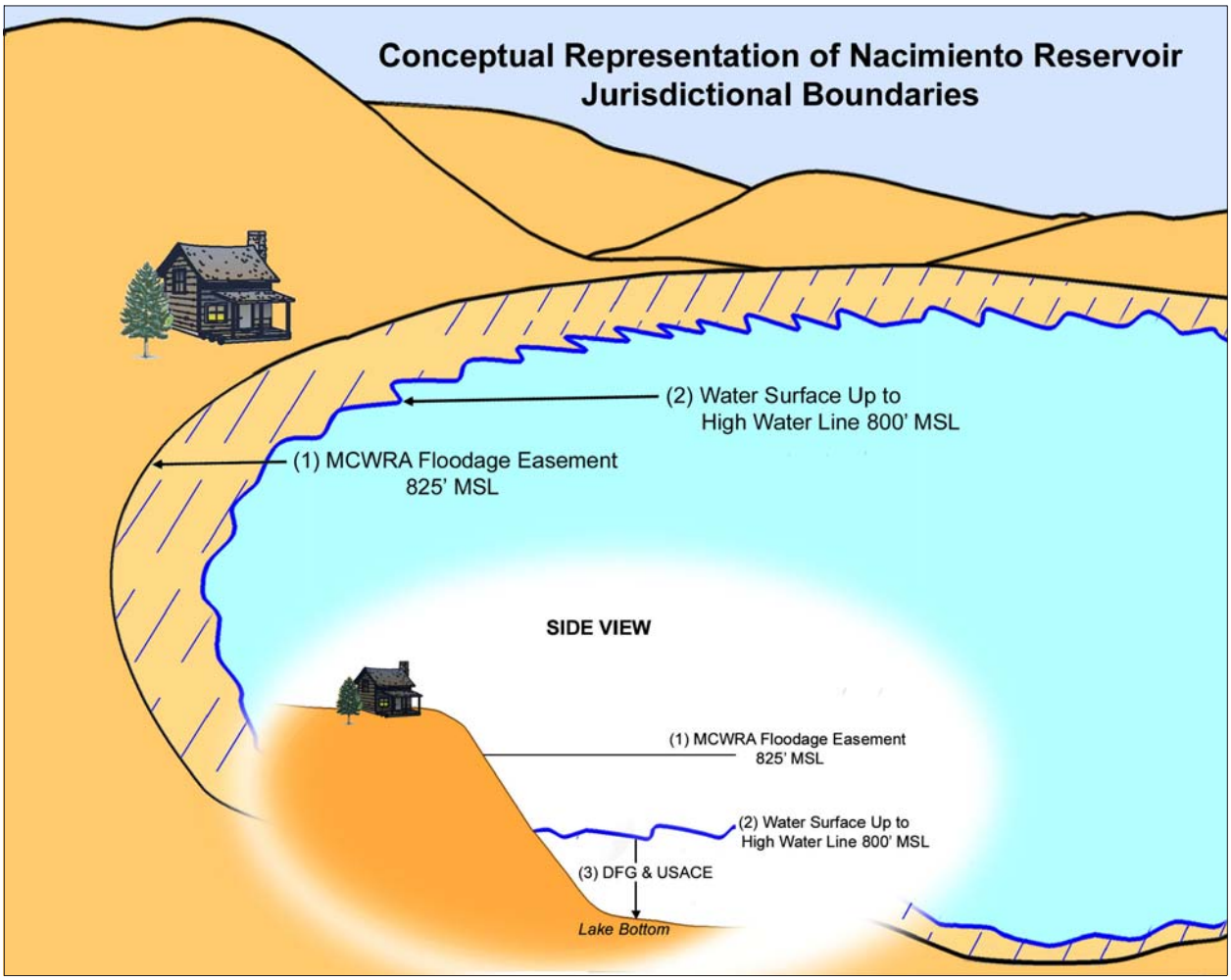


Figure 26. Nacimiento Reservoir Jurisdictional Boundaries

(1) MCWRA owns easement to flood all properties up to 825'Mean Sea Level (MSL) around Nacimiento Reservoir.
(2) Water Surface and on MCWRA land – Monterey Co Parks has law enforcement powers.
(3) State Dept of Fish and Game and U.S. Army Corps of Engineers have permit authority for all work below 800' MSL.

SLO Sheriff Dept has law enforcement powers at all elevations.
SLO Planning Dept has permit authority at all elevations.

Note: Throughout the state the State Water Resources Control Board is charged with preventing water pollution including silt originating at any elevation.

Disclaimer- this diagram is a simplified representation of overlapping jurisdictions which apply to private property located around the Nacimiento Reservoir and is not intended to present a definitive legal opinion.

Private property owners immediately adjacent to Nacimiento Reservoir are subject to a confusing set of multiple jurisdictional boundaries, additional responsibilities, regulations, and reduced property rights. MCWRA owns a floodage easement up to and including the 825' MSL elevation on all lands around the Nacimiento reservoir. Because the property is located in San Luis Obispo County, law enforcement, health, building and planning regulation falls under that County's jurisdiction. Because the reservoir is designated as "waters of the United Sates", lands around them are subject to California Department of Fish and Game and U.S. Army Corps of Engineers regulation. Disturbance of reservoir bottom or construction below the high-water mark (800' elevation) requires a consultation with California Department of Fish and Game and might require a permit. Structures, which could impinge on flows of water, may require a U.S. Army Corps of Engineer's permit. It is important to remember that all properties in these watersheds, as well as all lands in the state, are subject to state regulation through the State Water Resources Control Board and the Regional Water Quality Control Board in regards to the protection of water quality. Federal Clean Water Act and various state regulations prohibit the discharge of any pollutant (including silt) into any body of water designated to be "waters of the United States".

Although the landowner does own their entire parcel, some of their property rights were purchased in the 1950's by the Monterey County Water Conservation and Flood Control District (now MCWRA), so that the reservoir could be constructed. The property right held by MCWRA precludes the construction of any development in the easement which would prevent that land from being inundated by reservoir waters. Property owners must allow MCWRA staff entry to the floodage easement located on their property so that they can conduct reservoir maintenance.

San Antonio Reservoir and its 65 miles of shoreline offer year-round recreational activities for the public. Activities at the reservoir include: picnicking, camping, nature study, games at open playfields, fishing, and baseball, horse shoes, hiking, swimming, rafting, boating, sailing, waterskiing, jet-skiing, and sunbathing. Monterey County Parks Department also conducts special events such as the Wildflower Festival and Triathalons, and eagle watch boat tours (January through February).

Recreational facilities at San Antonio's south shore include 3 campground complexes that provide over 500 campsites. A museum, visitor center, park administration office, the Oak Room Group Building and Barbecue area, and over 26 miles of hiking and mountain bike trails can also be found in the south shore area. The South Shore Marina has boats, boat motors, jet skis, and houseboat rentals, as well as bait, tackle and ski accessories. A full service resort at the reservoir has cabin rentals, a store, restaurant, gas station, and marina with boat launch ramps, fish cleaning facilities, and docks. San Antonio's north shore provides opportunities associated with shoreline camping (over 4 miles), the McCandless activity area and outdoor amphitheater, and equestrian activities. The Monterey County Parks Department manages the boating and camping facilities along the lakefront, and a private management company manages the South Shore resort cabins, marina, boat rental, and snack bar facilities.

Los Padres National Forest lands are suitable for a variety of uses. General outdoor recreation activities available in the Nacitone watersheds component of Los Padres Unit includes: hunting, fishing, hiking and camping. Campgrounds with the Nacimiento River watershed include Nacimiento Camp, Ponderosa Camp, ABC and Redwood Spring. San Antonio River watershed campgrounds include Fresno and Carrizo Springs. These campgrounds have primitive facilities including vault toilets, picnic tables, fire rings and barbeque grills. The trail system within the Monterey District of the National Forest is extensive. Portions of the Forest within the Monterey District are designated Wilderness (Ventana Wilderness Area). Motorized vehicles and mountain

biking are not permitted in Wilderness. Additional uses within National Forest lands within the watersheds include watershed function, livestock grazing, and conservation education and stewardship (Part 1 Draft Land Management Plan, USFS, 2004).

During the 1990s, the Army delineated areas within FHL that were excess and deemed surplus. The National Park Service undertook a study to determine the suitability of those lands for inclusion in the National Park System. Though the Army rescinded the order delineating the excess land and subsequent action was not taken for determining National Park status, recent legislation gives the Department of Agriculture (US Forest Service) the right of first refusal on any properties that are determined to be excess to the Army's needs at any time in the future. Thus management for public use and recreation could occur in the future if FHL land is not needed for military use (FHL Special Resource Study, 2006).

The Nacimiento Fergusson Road makes the Nacimiento River one of the few streams in the mountain range easily accessible for recreation, including scenic driving, hiking, swimming, angling and camping. Two roadside Forest Service campgrounds provide good opportunities to explore the river.

Natural and Cultural Attributes

Because their upper watersheds are largely undisturbed, the Nacimiento and San Antonio Rivers are an important source of clean water for Monterey and San Luis Obispo residents, farmers and industries. Their highly productive ecology includes rich riparian habitat, the state's southernmost redwood forests, and the rare Santa Lucia fir (Cone Peak Research Natural Area). Much of the Santa Lucia Range is protected as wilderness which prohibits roads, mechanical/ motorized use and resource extraction. It also requires federal managers to actively preserve the free-flowing nature of the rivers and their unique qualities. There has been a call for additional protection provided by the National Wild and Scenic Rivers System (Ventana Wilderness Alliance, 2007).

The importance of preserving watershed function as source of clean water is further identified in *The Role of Headwater Streams in Downstream Water Quality.*

> *"The results reported here are consistent with the notion that pollutant sources and hydrological and biogeochemical processes in headwaters are physically and bio-chemically connected to the water-quality conditions in downstream waters of widely varying sizes, including navigable waters and their tributaries".*
>
> Alexander, et. al., 2007

Mission San Antonio de Padua, which was founded in 1771 by Father Junipero Serra, is one of the most significant cultural resources in the watersheds. (http://missiontour.org/sanantonio/index.htm) W. R. Hearst's ranch headquarters, the Milpitas Hacienda, situated on a 21-acre site known as "Hacienda Hill" is another significant cultural resource in the area. The architect was Julia Morgan, who designed Hearst Castle. It is located within FHL within walking distance of the Mission San Antonio (FHL Special Resource Study, 2006).

According to the Ventana Wilderness Alliance (VWA) and Friends of the River (FOR), approximately 8.6 miles of the San Antonio River and 9.0 miles of the Nacimiento River are considered suitable for designation as a Wild, Scenic or Recreational River as described in their 2007 pamphlet prepared for the Nacitone Watershed Committee based on heritage and cultural

resource values listed by the US Forest Service (Part 2 USFS, 2004). The VWA and the FOR are actively campaigning for their Ventana Wild and Scenic Rivers Proposal to be introduced into Congress. The Nacimiento and San Antonio Rivers are included in the proposal. Values considered on the Nacimiento River include recreation, wildlife and botanical. Cultural resources, scenery, wildlife, geology and ecology are identified values on the San Antonio. The Forest Service has analyzed these rivers for Wild and Scenic status. They were not recommended as they did not qualify for Wild and Scenic status based on USFS evaluation criteria (FEIS Los Padres National Forest Land and Resource Management Plan, 2005).

The Los Padres Forest Plan established the Milpitas Special Interest Area (SIA), which encompasses 9,948 acres of the upper San Antonio River watershed including both the main stem and North Fork and several tributaries. The area was designated due to its pre-historic and historic cultural resources and ethno-graphic landscape.

The Valley Oak Research Natural Area (108 acres) was also proposed and is within the boundaries of the SIA. It is one of the last remaining stands of Valley Oak savannah on public lands in California. The U.S. Forest Service and the Ventana Wilderness Alliance are collaborating in the development of management plans for these areas.

FHL Land Use

FHL is evenly split between the two watersheds with each comprising approximately 50% of the installation area. Approximately 36% of the watersheds, as measured from headwaters to the confluence of the Salinas River, lie on Fort Hunter Liggett (Ken Ekelund, personal communication, 2007).

Fort Hunter Liggett is an Army Reserve installation and has approximately 150,000 acres of maneuver area suited for vehicle and non-vehicular military training. Fort Hunter Liggett hosts training by all types of Army units as well as units from the Navy, Marines and Air Force and has been designated as a Combat Support Training Center (CSTC). Fort Hunter Liggett has a wide variety of training land available, and includes shrub lands, grasslands, and forests in plains and mountainous settings (DP EIS, 2007).

FHL is currently under federal ownership, managed as part of the Western Training Center for the US Army Reserve. Military bases are included in the Public/Quasi-public land use category in the Monterey County General Plan (Monterey County 1995 and 2004). As federal land, FHL is not subject to local zoning (FHL Special Resource Study, 2006).

The installation provides large expanses of land required for military training. Some other land uses may be allowed if they do not conflict with the designated and primary land use of military training and are compatible with responsible natural resource stewardship. The many vegetation communities and water resources on FHL are managed to sustain current and future military training through responsible land stewardship and environmental compliance with federal laws such as the Sikes Act, Endangered Species Act, Bald and Golden Eagle Protection Act, Migratory Bird Protection Act and the National Environmental Policy Act. Army Regulation 200-1 guides the implementation of land stewardship and environmental compliance with all mission related activities on the installation. Fort Hunter Liggett Regulation 200-3 requires environmental review of all activities that may affect natural and cultural resources (2007 Annual Report, February 2008).

Military training on FHL that relates to natural resources includes live-fire exercises, field maneuvers, fixed-range firing, aviation, weapons testing, and use of the tank trail that runs

between FHL and Camp Roberts. Operations and maintenance activities that relate to natural resources include road maintenance, fire protection and prescribed burning, pest control, and new construction and ranges (2007 Annual Report, February 2008).

Developed areas of FHL include about 152 ha (H" 376 acres; 0.23%) of the FHL land area. Historic disturbances from training, FHL activities, and pre-military activities are evident in some areas and include the following:

- Presence of roads, facilities, and water developments and impoundments;
- Remnants of historic established bivouac sites and associated use;
- Erosion primarily associated with roads;
- Historically cultivated areas that may alter plant composition;
- Intentional reduction in oak stands in isolated areas during the 1950s;
- Unintentional loss of oak trees in isolated areas, primarily from fires;
- Wetlands created by excavations conducted for concealment (*i.e.* tank hull-down positions);
- Evidence of compacted soils at the Multi-Purpose Range Complex as well as in training areas 2, 3, 12, 15, and 20;
- Evidence of military maneuvers in the Nacimiento River Valley;
- Presence and spread of the noxious weed yellow star-thistle; and
- Conversion of chaparral to grassland and scrub in isolated areas from repeated burning. (FHL INRMP, 2004)

In August 2007, the Army released the Draft Programmatic Environmental Impact Statement (DP EIS) for Army Growth and Force Structure Realignment. A growth scenario for FHL, which may have also affected Camp Roberts, was analyzed for impacts to the environment. Pertinent concerns to this planning effort included water quality, water supply, point and nonpoint sources of pollution, population, and vegetation and habitat. At this writing in September 2008, the Army has elected not to move forward with large-scale FHL expansion but may instead expand on a smaller scale.

There are several non-military in-holdings within the installation: property within the old town of Jolon and the Mission San Antonio de Padua. In-holdings at Jolon include the Tidball Store structure, Saint Luke's Episcopal Church, and Saint Luke's Cemetery. The Tidball Store structure is owned by Monterey County Parks Department, but approximately 1 acre of land under and adjacent to the store is presently owned by the Army and was part of the former excess BRAC property. Mission San Antonio de Padua is on the north side of the cantonment area (which supports urban and administrative functions). The site occupies approximately 85 acres and includes the Mission, residences for clergy, a cemetery, and outbuildings. The Monterey Diocese of the Catholic Church owns the Mission (FHL Special Resource Study, 2006).

Non-military uses on military land include hunting and fishing, non-military housing rentals, and visitation to the non-military in-holdings. FHL is rich in cultural resources including recorded archeological sites, which is on the National Register, and the historic trails of the early Spanish explorers, Portola, Serra and De Anza.

E. Reservoir Features and Management

The MCWRA has licenses, permits and orders from the State Water Resources Control Board to store and/or divert water from the Nacimiento, San Antonio and Salinas Rivers. Those

rights recognize dam storage capacities of 377,900 and 350,000 acre-feet respectively in Nacimiento and San Antonio Reservoirs. Those rights also recognize the agreement between MCWRA and the San Luis Obispo District giving the latter the right to use 17,500 acre-feet annually from Nacimiento Reservoir, less than five percent of that reservoir's storage capacity. A total of 1,750 acre-feet annually is allocated by San Luis Obispo County for use around the reservoir. Additionally, MCWRA has an agreement with the Nacimiento Water Company to allow the Company to use up to 600 acre-feet annually. The Nacimiento Water Project will utilize the balance of the County's allocation in the near future.

San Antonio Reservoir

The San Antonio Reservoir, located in southern Monterey County on the San Antonio River, began operations in 1967. San Antonio Dam is five miles west of Bradley and three miles north of Nacimiento Dam. At full pool, the reservoir has a volume of 335,000 acre-feet, surface elevation of 780 feet, and a maximum depth of 180 feet. There is 65 miles of shoreline. San Antonio Reservoir yields on average about 13% of the total water in the Salinas River System. Average annual release is about 63,000 acre-feet but has been as high as 310,000 acre-feet (SVWP EIR, April 2002).

San Antonio Dam

This earth-fill dam has a height of 201 feet above the streambed and a crest length of 1,433 feet. The crest of the dam is 802 feet above mean sea level (msl) with a spillway crest elevation of 780 feet; the spillway has the capacity to pass a maximum flow of 35,400 cfs. The dam has an outlet works consisting of an 84-inch diameter, 1,085 foot- long steel conduit located near the center of the Dam. The conduit leads through the dam embankment from a small intake structure to an outlet structure, which contains a Howell-Bunger type valve enclosed in a concrete house. The outlet has a maximum capacity of 2,200 cfs when the reservoir elevation is 780 feet. The log boom on the San Antonio Reservoir is intended to prevent boats and debris from becoming trapped in the dam spillway; it is approximately 250 feet in length.

San Antonio Release Information

The MCWRA reports that variable releases from San Antonio Reservoir are made to augment releases made from Nacimiento Reservoir. Together, those releases provide river flow to the Agency's Target Area for end of flow, at approximately River Mile 17 to River Mile 13. Since its construction, the water level in San Antonio Reservoir has only reached the spillway once, in 2006.

Nacimiento Reservoir

Nacimiento Reservoir is located on the Nacimiento River about 18 miles northwest of Paso Robles in San Luis Obispo County. It was created by the construction of the Nacimiento Dam, completed in 1957. The reservoir's irregular shoreline when full comprises about 165 miles. At maximum pool, the reservoir's storage capacity is 377,900 acre-feet with a surface elevation of 800 feet and a surface area of 5,400 acres. The maximum depth of the reservoir is 175 feet, with annual water surface elevations usually ranging from 30 to 70 feet. Nacimiento Reservoir yields on average about 62% of the total water in the Salinas River System.

The key elevations of Nacimiento Reservoir, depicted in the chart below, were compiled by the Monterey County Water Resources Agency and provided to attendees of the Public Advisory Meeting on September 19, 2007. The information provides specific operational components of the reservoir and dam that can occur at various water elevations. There is no corresponding key elevation chart for San Antonio Reservoir.

ELEVATION (feet)	STORAGE (acre-feet)	DESCRIPTION
670.0	10,300	Minimum elevation water can be released from the Low Level Outlet Works, physical minimum pool; lowest possible reservoir elevation water can flow from by gravity.
687.8	22,300	Minimum pool, lowest reservoir elevation at which water is available to the MCWRA for release. The balance remaining up to a maximum of 17,500 acre-feet is reserved for use by the San Luis Obispo County Flood Control and Water Conservation District pursuant to its agreement with MCWRA.
730.0	92,150	Elevation above which most boat ramps around the reservoir are operational
748.0	144,200	Elevation defined in Memorandum of Agreement (MOA) with Fish & Game, below which drought conditions are defined to exist, and the minimum release can be reduced from 25 cfs to 10 cfs
755.0	168,350	Minimum elevation at which water can be released from the High Level Gates
766.5	212,700	Both launch ramps at Nacimiento Reservoir are operational in a range of two to three feet above this elevation
777.3	260,000	Top of the Water Conservation Pool, bottom of the MCWRA Flood Pool
782.5	285,050	Bottom of the Federal Energy Regulatory Commission (FERC) Flood Pool, minimum water surface elevation during January and February without maximum releases being made for post spill way modification construction 2008/2009.
800.0	377,900	Elevation at which Nacimiento Reservoir is considered full, top of spillway, maximum physical permanent water elevation

Figure 27. Key Elevations of Nacimiento Reservoir

Reservoir Infrastructure

(Sources include NACIMIENTO DAM OPERATION POLICY and SAN ANTONIO DAM OPERATION POLICY and "Survey of the San Antonio and Nacimiento Dams and Reservoirs" Prepared by Thomas L. Perry, May 10, 2001 for the Monterey County Water Resources Agency Board of Directors)

Nacimiento Dam

Completed in 1957, this earth-fill dam has a height of 215 feet above the streambed and a crest length of 1,650 feet. The crest length is defined as the length along the top of a dam. The crest elevation is 825′ above mean sea level (msl) with a spillway elevation of 800′. The spillway has the capacity to pass flows up to 70,000 cfs. The High Level Outlet Works (HLOW) is composed of twin 8′ x 8′ square steel slide gates and cast concrete tunnels located under the center of the spillway at an elevation of 755′ (NGVD 1929 datum for all elevations based on this datum).

The HLOW has a maximum capacity of 5,500 cfs when the reservoir elevation is 800'. The Low Level Outlet Works (LLOW) is a 53" diameter pipe located near the southern side of the Dam. The inlet to the LLOW consists of three 42" butterfly valves set in a concrete structure at an elevation of 670'. Releases from the LLOW can be made from either a manifold of six 24" manually operated valves or the Hydroelectric Power Plant. The LLOW has a maximum capacity of 460 cfs when the reservoir elevation is 800'.

An existing 1,900-foot Log Boom on the Nacimiento Reservoir is intended to prevent boats and debris from becoming trapped in the intakes or the spillway. A new log boom, 2413 feet in length, will be installed in 2008 to accommodate a slightly larger exclusion area that will also include the Nacimiento Water Project intake structure.

Floodage Easement

MCWRA holds a "Floodage Easement" on those portions of all private land around the Nacimiento Reservoir, therefore MCWRA has an easement to flood up to 825' mean sea level and provide MCWRA staff access to private property to perform routine reservoir maintenance.

Nacimiento Release Information

Releases at present range between 120,000-acre-feet and 180,000-acre-feet per year. Releases are utilized for groundwater recharge, reduction of seawater intrusion, and steelhead habitat enhancement. The actual amount released varies with weather conditions groundwater elevations, pumping, system hydrology, and other factors.. Whenever the reservoir level rises above 782.5, the high level gates located on the spillway have been used to release water.

The low level outlet is the primary outlet for releases. The capacity of the outlet is approximately 400 cubic feet per second (cfs), when releases flow through the hydroelectric power plant. At water surface elevation 800 feet, maximum capacity is about 460 cfs and at elevation 700 feet, maximum capacity is about 390 cfs.

When the need for releases exceeds the 400 cfs capacity of the low level outlet, releases are made from the high level gates. When the elevation is below 755 feet, releases are not possible from the high level gates and releases are then made from San Antonio Reservoir, if possible and necessary.

Combined Reservoir Features

Nacimiento and San Antonio Reservoirs have water conservation pools that are relatively similar in size: Nacimiento – 245,000 acre-feet (AF) and San Antonio – 282,000 AF. While they are similar in storage capacity, the rate at which they fill is very different. The fill rate, or inflow into the respective reservoir depends on a number of variables, including but not limited to orientation of watershed, amount of rainfall, geology, and weather. Nacimiento Reservoir receives a greater amount of inflow than San Antonio, therefore in an average year; more water is released from Nacimiento than San Antonio. This way, there is room in Nacimiento for the next year's storms. In addition, because there is a power plant below Nacimiento Dam, there are federal limits on how much water can be stored behind the dam (this maximum elevation changes throughout the year, depending on the month). This maximum elevation, or Rule Curve, is in place for the protection of the dam itself, as well as the power plant below, and through application, minimizes the occurrences of reservoir spill, thus saving the captured

water for other beneficial uses. The minimum storage levels or minimum pools of the reservoirs are 22,300 AF for Nacimiento and 23,000 AF for San Antonio. The difference between full capacity and the conservation and minimum pools on each reservoir is called the flood pool, which is 110,600 AF for Nacimiento and 30,000 AF for San Antonio (Rob Johnson, 2008).

Reservoir Management

The Reservoir Release Schedule is a guide to assist the MCWRA in making water conservation releases from both Nacimiento and San Antonio Dams. Prior to cessation of natural flow in the Salinas River each year, MCWRA staff drafts a Preliminary Reservoir Release Schedule which considers various factors contained in the Dams' Operations Policies. The schedule considers the following priorities: 1) provide maximum groundwater recharge for the entire Salinas Valley, 2) operate the reservoirs to provide recreation benefits, 3) provide for the needs of fish and wildlife, and 4) waste as little water as possible to evaporation or to the ocean. Each spring, usually at its annual April meeting, the Reservoir Operations Committee reviews the Preliminary Release Schedule and recommends a Proposed Release Schedule to the Board of Directors for adoption. The Reservoir Operations Committee reviews the adopted Release Schedule monthly and makes recommendations or changes as needed.

Sediment Supply and Transport

SH+G conducted a preliminary sediment budget for the watersheds to provide insight into the mechanisms and rates for sediment delivery to the reservoirs. This can, in turn, provide watershed stakeholders with information to assist future management scenarios regarding sediment delivery and runoff and for the MCWRA to consider the life spans of the reservoirs. The technical content of the sediment budget is contained in the SH+G technical memorandum (Appendix D). The following are the observations SH+G made regarding the sediment budget.

> *The difference in rates of sediment transport between the two watersheds is striking. San Antonio was estimated to have twice the rate, per unit area, of sediment transport than Nacimiento. Although a complete assessment of sources of sediment in the watershed and a complete accounting of sediment delivery through the use of a sediment budget is out of the scope of this project, some preliminary observation were made using aerial photos and a general understanding of the geology and geomorphology of the watersheds.*
>
> *Landscape Morphology: The morphology of the two watersheds are completely different. The Nacimiento watershed abuts the divide between the Big Sur Coast and the Salinas Valley, reaches higher elevations in the upper watershed, and generally has higher precipitation. Consequently, the Nacimiento watershed has a more dense vegetation canopy dominated by oak. The lowland valleys are generally narrow and more confined. Conversely, the San Antonio Creek watershed is dryer, and has less vegetation. The lowland areas are dominated by a large alluvial plain known as Lockwood Valley and the San Antonio River valley is less confined.*
>
> *Sediment Supply: The quantity of sediment passing a particular point in the watershed is dependent upon the supply of sediment from the adjacent landscape to the channel. In the case of San Antonio, the readily available supply of sediment on the adjacent landscape far exceeds the quantity of sediment that is available in Nacimiento. Most of the sediment available for erosion in Nacimiento consists of recently weather colluvial*

material and a narrow band of alluvial material within the river valleys. In San Antonio, Lockwood Valley provides a huge source of highly erodible material that consists of unconsolidated alluvial fan deposits emanating from the mountains from the north and east. In addition, there are extensive, recent alluvial deposits within the San Antonio River floodplain that are easily reactivated during a high flow event or as a result of bank erosion.

Land Use: Land uses in the San Antonio watershed tend to be higher intensity and more prone to create conditions that increase sediment supply to channels. Agriculture, grazing, and residential development within Lockwood Valley all provide a mechanism for sediment delivery that isn't as prevalent in the Nacimiento watershed.

Under natural conditions, assuming anthropogenic inputs were not a factor; the San Antonio River would have a higher sediment load than the Nacimiento River. The geologic differences, morphology of the basin, and a good supply of highly erodible material make the watershed more productive for sediment. The most significant sources of sediment within both watersheds appear to be reactivation of previously deposited alluvial materials and fire-dependent influxes of sediment from the upper watershed. San Antonio also has a significant land use component that adds additional sediment to the channels, although calculating the exact contribution from these sources would require a thorough evaluation.

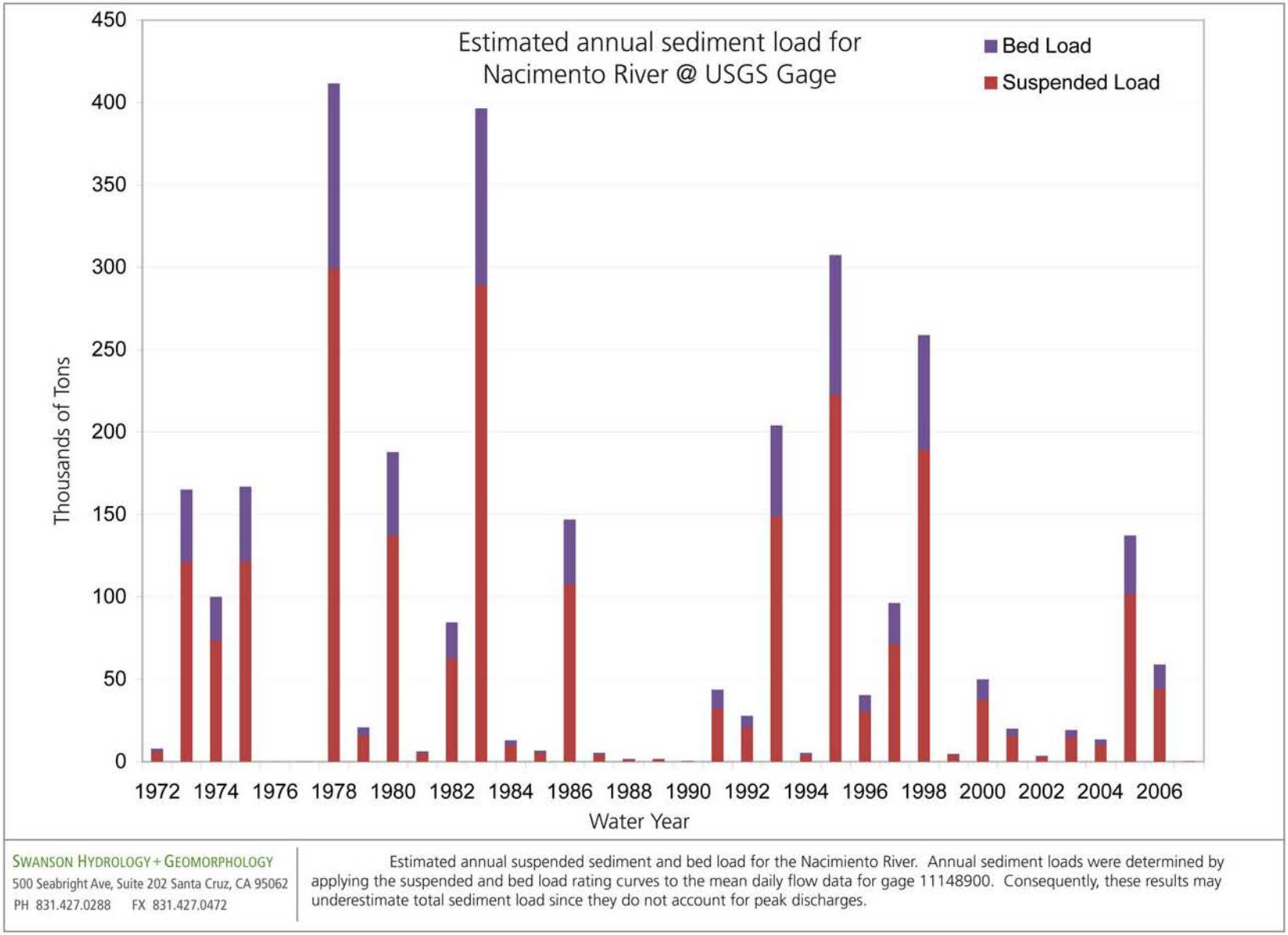


Figure 28. Estimated Annual Sediment Load for Nacimiento and San Antonio Rivers

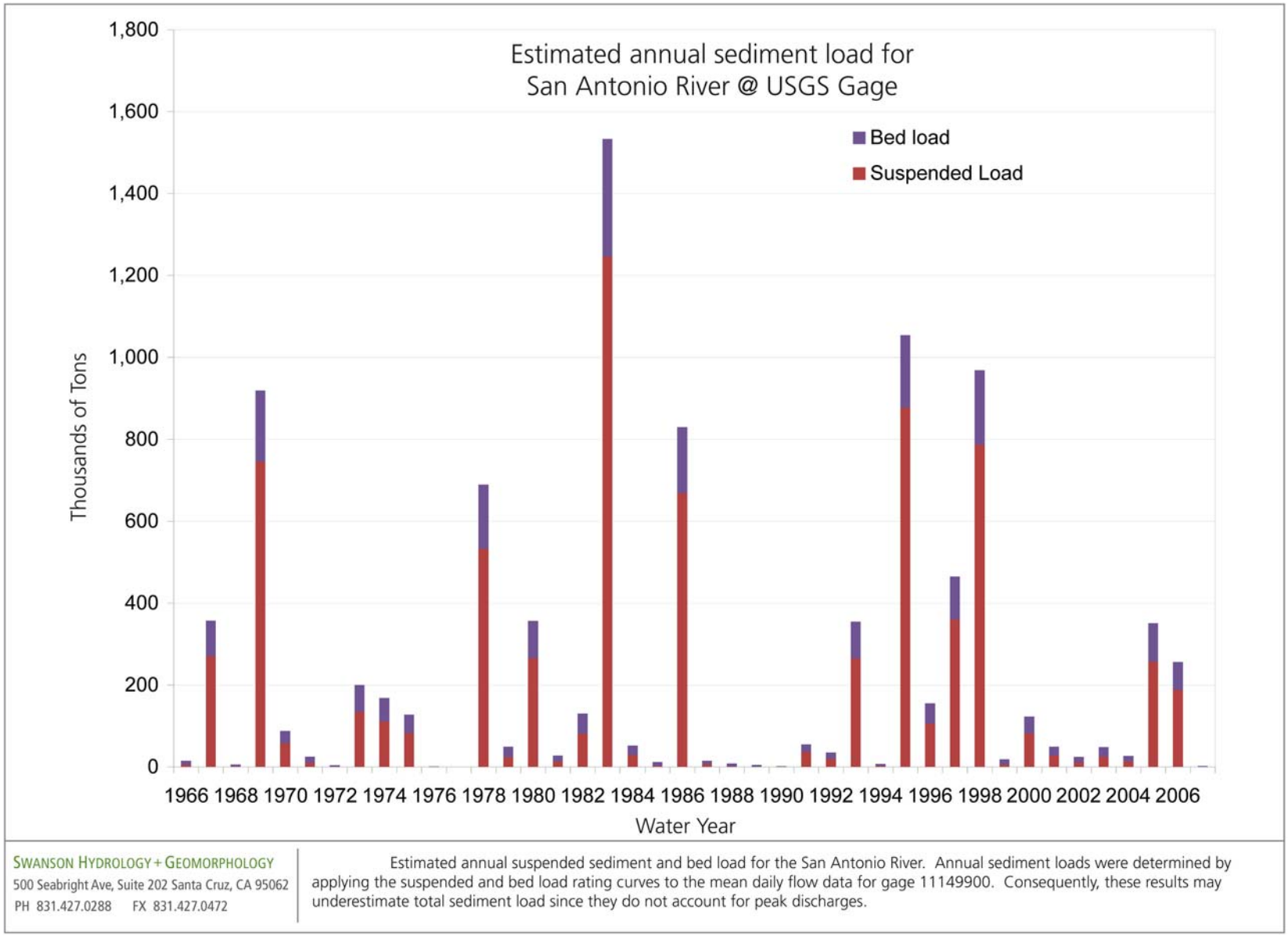


Figure 28. Estimated Annual Sediment Load for Nacimiento and San Antonio Rivers

F. DEMOGRAPHICS

The primary population centers in the watersheds are Heritage Ranch and Oak Shores, Lockwood and the military installations. Prior to the creation of Nacimiento Reservoir, the population of the planning area was widely dispersed, with most residing and employed on farms and ranches. However, a special census in 1976 indicated that less than 1% of household heads in the Nacimiento Planning Area were employed in agriculture. The permanent population of the planning area was 271 in 1976, while housing units totaled 632 (based on pre-1990 planning area boundaries). Though future residential development is anticipated to continue to be oriented primarily toward second homes, a modest continuing increase is expected in permanent residents; primarily the retired. Use of homes in the area for leisure activity is reflected in the 80% residential vacancy rate during the winter months (Nacimiento Area Plan, 2003). However, this demographic is likely outdated given that it was originally cited in the 1973 version of the Nacimiento Area Plan. The Steering Committee has elected to collect updated information via the Heritage Ranch and Oak Shores Homeowner's Association as well as CSD water delivery records.

San Antonio River Watershed

The population of South County has increased significantly since 1960, when the population was only 1,702. The population had grown to 2,989 by 1970, an increase of 75.6%. In 1980 the number of South County residents was 3,597, an increase of 20.3% in ten years. The Planning Area's 20% increase in population ranks seventh among Monterey County's eight planning areas (South County Area Plan of the Monterey County General Plan, 1987 with updates). The Nacitone Watersheds comprise 33% of the South County Planning Area. This planning area includes the communities of Lockwood, Bradley, Parkfield and San Ardo; although only Lockwood is located inside the Nacitone area.

Population Change, 1960 – 1980

Location	1960 Population	1970 Population	% Change 1960-1970	1980 Population	% Change 1970-1980
South County Planning Area	1,702	2,989	75.6	3,597	20.3
Monterey County	198,351	247,450	24.8	290,444	17.4

Sources: 1960, 1970 and 1980 U.S. Census of Population

Figure 28a. 20-Year Population Changes

South County is the largest planning area in Monterey County and has the lowest population density – 2.8 persons per square mile in 1980, compared with 87 persons per square mile countywide. It should be noted that 68% of the South County Planning Area is devoted to agriculture and 28% of the Planning Area is under public land ownership. Thus, the density throughout South County is not uniform. South County's ethnic composition is very close to that countywide. South County has a slightly higher proportion of Caucasians and persons of Spanish origin and a lower proportion of Asians. South County has a higher percentage of teens and young adults between 15 and 24 years of age and a lower percentage of children, adults, and elderly. The age structure reflects the presence of Fort Hunter Liggett, where 60% of the population is between the ages of 18 and 24. Without Fort Hunter Liggett, South County's age composition is very close to that of the County. The South County Planning area encompasses almost 40% of the area of the entire county.

TABLE A
POPULATION PROJECTIONS NACIMIENTO PLANNING AREA

Year	Population of Planning Area	Percentage of Total County Population
1989	1,918	.90
1990	2,076	.93
1995	2,618	1.00
2000	3,186	1.07

Source: Nacimiento Area Plan (2003)

Figure 29. Population Projections for the Nacimiento Planning Area 1989-2000

Figure 29 (Table A) contains population projections for the Nacimiento Planning Area. Due to the small number of people and the seasonal nature of the population, individual population projections were not included in the 2003 update of the Nacimiento Area Plan for either the Oak Shores or Heritage Village areas. For comparison, Figure 30 Table B contains the projected population absorption capacity which is the potential planning area population resulting from unconstrained growth and fully-occupied development to the maximum permitted in each land use category.

It is not possible to accurately project future population growth for the Nacimiento Planning Area because of its small population and the seasonal or recreational nature of the population. Future growth in the area is based primarily on migration, which bears little relationship to current local economic conditions. Figure 33 contains population projections based on 4%, 8% and 10% annual growth rates. The 4% projection is a simple extrapolation of the 1970-1979 average growth rates. This is nearly double the total growth projection of 2% for the entire county between 1980 and 1985. The 10% growth rate is a high figure based on sustained growth patterns similar to the late 1979's. The absorption capacity figures in Table B are estimates based on permanent occupancy of the residential units in the planning area. However, since the planning area is also a major recreational attraction, the absorption capacity could be increased by as many as 30,000 under peak weekend conditions (estimate from previous Lake Nacimiento-San Antonio General Plan). This could result in as many as 55,000 to 60,000 people being in the planning area under maximum peak conditions.

TABLE B
ABSORBTION CAPACITY NACIMIENTO PLANNING AREA

Land Use Categories	Rural Area	Heritage Village	Oak Shores	Total
Agriculture	1,036	-	-	1,036
Rural Lands	900		-	900
Residential Rural	1,087	705	-	1,792
Residential Suburban	-	-	-	
Residential Single Family	-	16,477	5,810	22,287
Residential Multi Family	-	11,213	576	11,798
ABSORPTION CAPACITY	3,023	28,395	6,386	37,813
Existing Population 1989	*	*	*	1,918
POTENTIAL ADDED POPULATION	-	-	-	35,895

Source: Nacimiento Area Plan, (2003)

Figure 30. Absorption Capacity of the Nacimiento Planning Area

	1990	2005	New Units	% increase	Average Annual % increase
Heritage Ranch	1047	1425	378	36.10	2.08
Rural Nacimiento	761	861	100	13.14	0.83

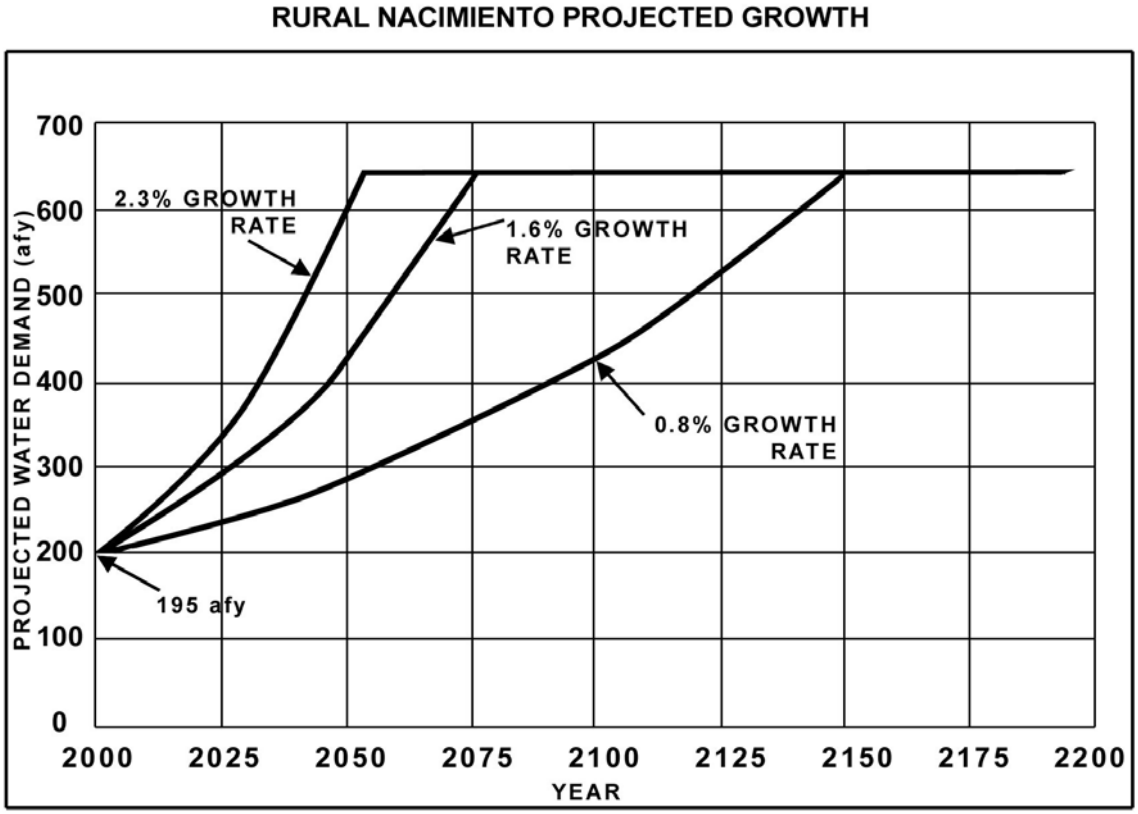
Source: Annual Resource Summary Report, SLO County, 2006

Figure 31. Dwelling units in Nacimiento Planning Area

Population in households							
Year	2000	2005	2010	2015	2020	2025	2030
Nacimiento Planning area	2778	3147	3357	3563	3782	4015	4261

Source: 2005 Urban Water Management Plan Central Coast Water Authority

Figure 32. Projection of population in households within Nacimiento Planning Area



Source: Nacimiento Lake Lakeside User Set Aside, 2004

Figure 33. Projected Growth for Rural Nacimiento 2000-2200

Oak Shores Population

The current County Service Area 7A (CSA-7) includes the community of Oak Shores which is located on the north shore of Nacimiento Reservoir within the Nacimiento Planning Area. The County Land Use Element, the Nacimiento Area Plan, and the standards in Chapter 22.102 serve as the specific plan for the development of Oak Shores. The 1974 Oak Shores Specific Plan originally provided for 4,000 units for the entire community. Since then, the Land Use Element has significantly reduced anticipated land uses. The reductions in development potential are primarily adjustments in the village boundary to exclude northern portions of the Lynch

Flat area. The resultant maximum allowable number of dwelling units within the Oak Shores village reserve line is 1,786, including RV sites. The village is 1,576 acres in area. Just to the north of the village reserve line is the Tierra Redonda Mountain sensitive resource area (SRA) which encompasses approximately 1,300 acres with 320 acres under Bureau of Land Management ownership. Oak Shores has been envisioned as a resort community of vacation and retirement homes with various recreational uses (Oak Shores EIR, 2007).

Development Entity	Number of Units	Cumulative Units
Existing CSA-7A Dwellings*	583	583
Future CSA-7A Dwellings	269	852
Davis/King Tract 2162 Phase 1	60	912
Davis/King Tract 2162 Phase 2-6	285	**1197**
Bean/Lynch Canyon Properties (Hughes) Tract 2520	307	1504
Munari	134	1638
Vaughn/Taylor/Crawford	25	1663
Lynch Canyon Properties (Hughes)	50	**1713**

* *taken from Garing Taylor & Assoc. as of 2005*

Source: Oak Shores EIR, 2007

Figure 34. Proposed Oak Shores Development

Both Watersheds

The following visitor numbers do not reflect people entering the reservoirs through private communities.

Visitor Numbers for San Antonio Reservoir

Based on County attendance data for San Antonio Reservoir, the following counties account for nearly 70% of the visitation to the reservoir: Monterey, San Luis Obispo, San Benito, and Santa Barbara Counties. The population of the market area as of 2006 was 1.1 million people. Total annual visitation is estimated to be about 380,000 persons (visitor days) (RFI #11047 Concessionaire Lake San Antonio and Lake Nacimiento, 2007).

Visitor Numbers for North Shore San Antonio

Peak visitor months on the reservoir are June, July and August with visitor numbers for 2006/ 2007 ranging from a high on July 4th of around 100,000 to a low of 35,000 at the beginning and end of the summer season. Peak visitor days are July 4th, Labor Day and Memorial Day with July 4th and Memorial Day often having 100,000 to 140,000 visitors. Over the course of the last three years visitor attendance has increased with the year 2006/2007 seeing a total of approximately 2,708,000 visitors.

Visitor Numbers for Nacimiento Reservoir

Based on records of the most recent lessee, Lake Nacimiento Resorts, annual attendance at Nacimiento Reservoir was estimated at approximately 180,000 persons. The market area for the reservoir that accounts for about 70% of visitation includes the trade area for San Antonio Reservoir and the counties of Fresno, Kings, Tulare, Kern, Los Angeles (may account for approximately 30%) and Ventura.

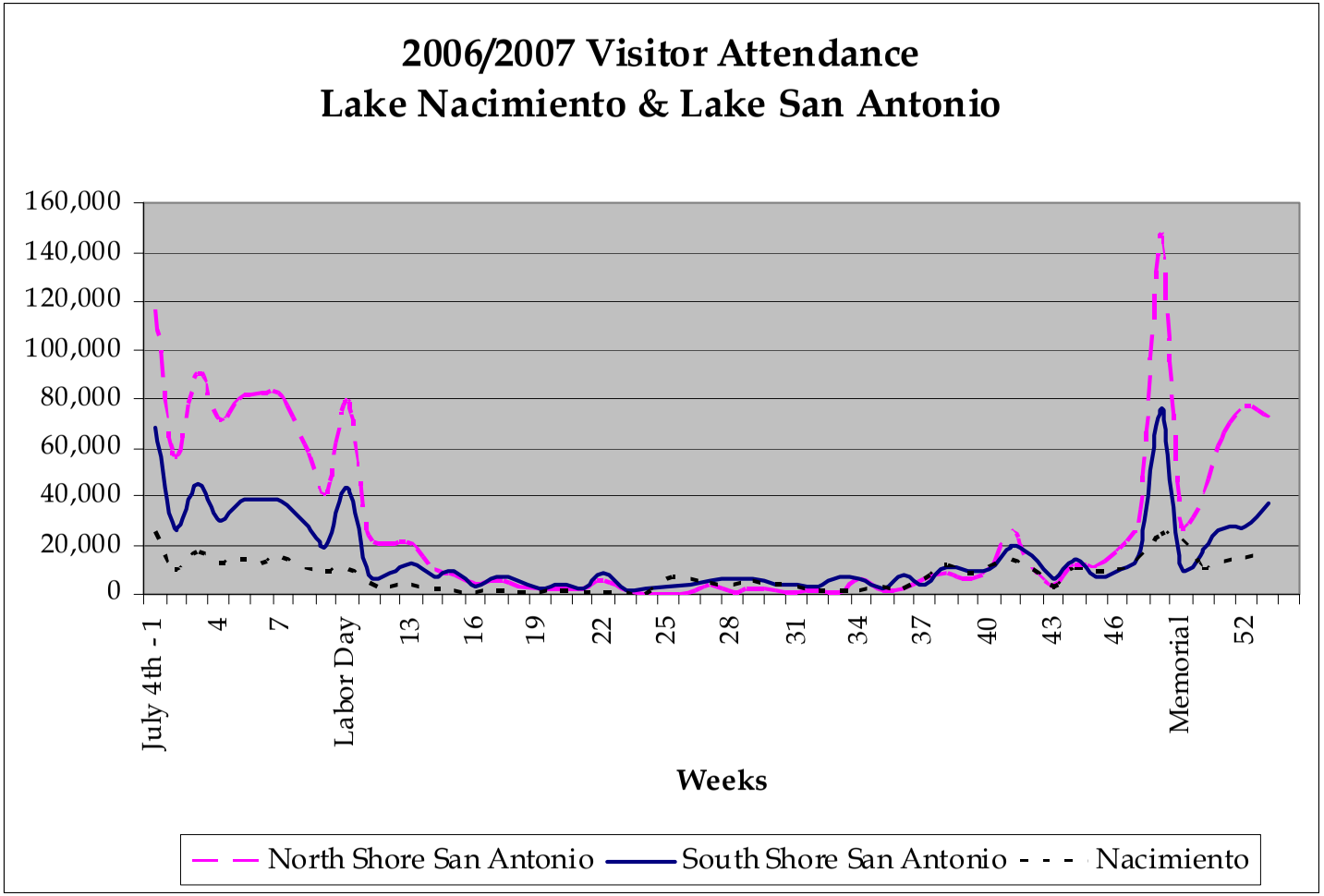


Figure 35. 2006/2007 Visitor Attendance to Nacimiento and San Antonio Reservoirs

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PART 3
Watershed Strategy

A. From Issues to Recommendations:

The issue statements developed by the Steering Committee emerged over a series of discussions and activities progressing from one-word statements of a concern to complex, underlying issues and ultimately into reasoned statements of the core issues as they relate to these watersheds. These issue statements in turn enabled the Steering Committee to set goals, objectives and implementation measures that reflect upon the issues. The issues are not presented in priority order.

ISSUE 1 – Recreation
ISSUE 2 – Gaps in Knowledge: Monitoring and Information Needs
ISSUE 3 – Preventing Pollution from Point and Nonpoint Sources
ISSUE 4 – The Role of Agriculture
ISSUE 5 – Fire in the Watersheds
ISSUE 6 – Taking Enforcement Action
ISSUE 7 – Communication & Coordination
ISSUE 8 – Watershed Health: Plants & Animals
ISSUE 9 – Roads and Culverts
ISSUE 10 – Education and Outreach Needs
ISSUE 11 – Invasive Species

As Steering Committee members learned more about their watersheds and read through the inventory of source documents compiled into the Watershed Resources Inventory (WRI) they began to realize that there are few documented water quality problems in these watersheds. Some Steering Committee members think that recommendations need to be based upon data documenting existing problems in these watersheds. Others think that problems may exist that have not been documented and that potential problems should be addressed in the recommendations of this Plan.

This discussion led to an agreement that baseline information is needed to improve our ability to understand current water quality and prevent problems.

Recommendations (implementations) you will find in this part of the Nacitone Watersheds Management Plan are designed to protect water quality and watershed uses by:

A. Sharing and coordinating the use of existing information

B. Engaging watershed residents, project proponents, private contractors, environmental groups, appropriate agencies, and others to learn about and protect watershed uses on a voluntary basis and in light of existing laws.

C. Gathering, sharing, and coordinating additional information and set water quality baselines to track change over time where possible.

An over-arching recommendation of the Plan is to seek funding for and contract with a watershed coordinator/grant writer who would develop grant proposals to conduct some of the implementations in the Plan and act as staff for the Nacitone Steering Commmittee.

IMPORTANT NOTE:

The remainder of this Chapter is broken into ISSUES each starting with a statement. The issue statements are not all science-based but were identified and described by stakeholders and refined by the Steering Committee. The issue statements reflect the opinions of watershed users and are a result of multiple community meetings, Steering Committee discussions, and learning about the watersheds.

The basis of all issue statements is the use of sound reasoning to promote voluntary protection of water quality and watershed uses in accordance with the Vision Statement adopted by the Steering Committee.

For each ISSUE, background information is provided under STATUS AND REFERENCES where there are references to the *Watershed Resources Inventory* and the *Analysis and Appendices.* These documents can be found at www.Nacitonewater.org website or upon request. *Goals, Objectives, and Implementations* are then described for each ISSUE.

Many of the recommendations (implementations) in this chapter are meant to provide support for future potential funding should a group or entity desire to carry out the recommendation. There is no intention to create additional costs for watershed residents or others. Potential partners for implementations are suggestions only and intended to supply ideas for future groups to consider in carrying out recommendations.

The implementation recommendations will need to be tracked and updated, beyond the timeframe of developing the Final Plan (October 2008), as new information is made available. There may be success stories to tell and lessons learned from attempting some of these implementation measures. There may also be new measures recommended or reasons for a shift in the order of priorities. A table of the recommendation and indicators of progress toward fulfilling the recommendations is included in Appendix I.

B. Prioritizing Recommendations

The ranking criteria below were used by the Steering Committee and Technical Advisory Committee to prioritize recommended implementation actions.

Ranking criteria are designed to address recommendations that are not science-based but reflect a community observation or concern. The word "project" used below is for simplicity although many of our recommendations are not actual, on-the-ground projects. This list is not in any specific order.

1. Cost / Benefit Analysis: projects that are the least costly way to provide benefits are preferred under this criterion.

2. Types of Benefits: projects that provide these benefits are preferred under this criterion.

- Direct water quality benefit: (directly reduces the amount of a pollutant entering waterways)
- Community economic benefit: (protects property values, protects livelihood within the watershed,
- Social capital benefit: (Builds trust, Develops partnerships, Improves communication/coordination, Engages and educates watershed users)
- Environmental / Watershed function benefit: (erosion control, fire prevention/ management, flood control, water quality protection / improvement)

3. Long-lasting Benefits: projects with the ability to protect and ensure benefits over a long term are preferred under this criterion.

4. Likelihood of Success: projects that have less risk or uncertainty (i.e.: political, technical) are preferred under this criterion.
This criterion considers factors affecting the likely success of a project.
Among the criteria to consider is the ability to monitor and evaluate any proposed project's success as well as the ability to correct problems that arise during implementation and the qualifications of companies or individuals expected to implement the project. Also under this criterion could be readiness timing, landowner willingness, access and engineering.

5. Technical or Scientific basis: projects based on solid, scientific evidence are preferred under this criterion. This criterion assesses the type of information upon which the project proposal is based. **(NOTE: scientific evidence can include 1) studies conducted in other places which provide lessons learned, mistakes, successes, and 2) measures or "indicators" other than water quality data.)**

6. Addressing Watershed Issues: projects that address an identified watershed issue are preferred under this criterion.
As the critical issues have not been ranked in terms of priority in the plan, this criterion must consider the extent to which an implementation measure or project resolves or addresses the issue.

7. Strengthens existing efforts: projects linked to existing efforts in a positive way, giving them strength and potentially a higher likelihood of success is preferred under this criterion.

8. Knowledge gap: projects that will fill an identified gap in knowledge for these watersheds are preferred under this criterion.

9. Opportunities for cost sharing: projects for which there are good opportunities for partnerships across entities that could leverage the resources needed and/or to solicit funds (grant writing etc.) to conduct the project.

Prioritization of Plan implementations (recommended actions)

Top priorities that emerged from the stakeholder process :	
Short term (1-2 years)	**Long term (5-10 years)**
Continue the Nacitone Watersheds Steering Committee by seeking funding and contracting with a watershed coordinator/grant writer.	
Support the development and maintenance of Round Tables with an Inter-county Task Force on land use and water resources planning as the top priority Round Table (Issue 7)	
Monterey County, San Luis Obispo County and resident associations should work together to develop and implement programs to control invasive species. (Issue 11, Implementations 1C)	
Water quality monitoring, interpretation, and coordination across multiple entities. Continue existing water quality monitoring. In addition, establish a comprehensive water quality monitoring program with uniform collection, analysis and reporting protocols across pertinent jurisdictions for technical and public sector use. As part of this information gathering, encourage EPA to conduct a lake bottom sediment study of Nacimiento reservoir to better understand mercury contamination.	Support for SLO County to eliminate the risk to water quality of the Oak Shores Interceptor line at Nacimiento reservoir.
Support the work of existing Local Fire Safe Councils (Issue 5, Implementation 1B)	
Conduct road system survey to prioritize needs for erosion control. Include a focused survey on the Tank Road in coordination with military, etc. (Issue 9, Implementations 1B and 2B)	Implement proposed upgrades to the Tank Road and others within these watersheds in coordination with others. (Issue 9, Implementation 2B)
Collaborate on the design and implementation of educational stewardship campaigns targeting watershed residents and visitors with customized messages such as “Be A Watershed Citizen.”	

C. Watershed Issues, Goals and recommendations

ISSUE 1 – Recreation

ISSUE:

As a land use, recreation has, for many years, been an important factor in the watersheds. Recreation contributes to property values, community economics, and allows residents, as well as thousands of visitors each year, to enjoy the varied beauty of the watersheds. Nacimiento and San Antonio Reservoirs offer a variety of water activities including boating, swimming, fishing, waterskiing, and wakeboarding. In addition, the Los Padres National Forest and Fort Hunter Liggett within the watershed provide camping, hiking, swimming, hunting, fishing, equestrian, and wilderness experiences. These areas of the watersheds also provide for interpretation and study of archeological and historic sites, nature study and enjoyment, and artistic and esthetic appreciation of a natural landscape. Unfortunately, recreation also presents the opportunity for harm to the watershed due to trash, vandalism, point and nonpoint pollution, damage to public and private property, crime and other inhibitors to water quality. The continuation of recreational opportunities and the community economic benefits they provide is a high priority for these watersheds while preventing any negative impacts from those activities.

STATUS and REFERENCES:

Much of the recreation in these watersheds occurs in the mid-watershed area in and around the two reservoirs. Many people have purchased property around the reservoirs because of the recreational uses available and rely on those uses to maintain their property values. The following is excerpted from the Salinas Valley Water Project EIR to provide insight into the economic benefit derived thereof.

> *The Monterey County Department of Parks quantifies and tracks use of the reservoir through "units." A unit constitutes any of the following: 1 camping fee, 1 day use fee for a vehicle or boat, yearly boat permits, or a set dollar amount of concession intakes. Units are different than visitor-days, but it can be assumed that an increase in units is equivalent to an increase in visitation, and vice versa. Although there appears to be a general relationship between lake levels and the number of units bought, historical data shows that there is not always a direct correlation. For example, Table 5.9-2 shows that in 1987 the average surface elevation at Nacimiento was 754 feet with 28,137 units bought. In 1992 the average elevation was substantially lower (696 feet) and more units were purchased (30,538). Still, there is a general trend that suggests visitation increases as lake levels increase.*
>
> *An average of 23,452 units per year is sold at Nacimiento, based on years 1985 through 1994. The range in annual units sold for this period was between 9,885 in 1989 and 32,896 in 1993. At San Antonio Reservoir during the same period of time, 99,660 units were sold on average per year, with very large fluctuations. The annual high and low sales points during this period were 25,983 units in 1990 and 185,751 units in 1987 (the north shore of San Antonio Reservoir was closed 6 months in 1990, all of 1991, and for 6 months in 1992, which likely affected units purchased). Table 5.9-4 shows combined number of units sold for the two reservoirs. As described above and shown in Tables 5.9-2 and 5.9-3* [tables are within SVWP EIR], *although there appears to be some correlation between unit sales and lake levels, this relationship is not linear and only reflects a general relationship. There may be many factors influencing recreational use, including among other things, facilities availability, weather conditions, and trends in rainfall over a several year period, etc.*

An increase in year-round and visitor populations around both reservoirs and the surrounding areas may have increased recreational pressures in the watersheds. The infrastructure of the watersheds, specifically during the periods of heavy recreational use, may not have kept up with the increase in population. Additionally, increased usage and development may impact the rural character of the watershed. Prevention of negative impacts from recreational uses is a high priority for these watersheds. The large numbers of people during the height of summer can, and often does, result in an increase of illegal activity including pollution of reservoirs, trespass on private property, vandalism and theft.

Specific concerns for water quality related to recreational use include: a wide variety of trash and debris in the reservoir and inlets, increased use of toilet facilities, vandalizing of toilet facilities, improper disposal of camper waste, unsafe boat speeds exacerbating erosion along the shoreline, petroleum leaks from boat engines, overcrowding of Nacimiento Resort parking areas at the 'Point' and launch ramp marina, and vandalizing of boat docks. While there is little data available, there are concerns that aging or inadequate onsite wastewater systems could contribute negatively to water quality. Nutrient loading which can lead to algal blooms and pathogen loading has serious impacts on water quality. There is significant documentation of these impacts from other watersheds. While there is insufficient water quality data for these watersheds, it will be important to assess and document the extent to which there are existing water quality problems or potential problems that can be prevented, These types of pollutants can make water unsuitable for recreational and other watershed uses. All of these concerns and others as well, are greatly exacerbated when recreational use is heavy.

Hiking, camping, hunting, fishing, equestrian, and other wilderness experiences within the Los Padres National Forest, Fort Hunter Liggett and the Ventana Wilderness Area can be impacted due to problems such as trash, trespassing, vandalism, improper disposal of camper waste, erosion from unclassified/unauthorized (non-system) roads utilized for camping/hiking, intentional and un-intentional damage to archaeological resources, etc.

GOAL: Ensure the continuation of the economic benefits and attractive and enjoyable recreational experiences available to residents and visitors with a focus on water quality and watershed protection.

OBJECTIVE 1: Focus recreational uses in existing public areas where there is supportive infrastructure. Reduce/eliminate trespass on private property within the watersheds.

Implementation 1A: Support the use of passive and active deterrents to trespass on private property as well as public property not designed for public use. Passive deterrents should include but not be limited to: signs, education and outreach. Active deterrents should include but not be limited to: fencing and log booms where these would effectively protect the public resource.

Implementation 1B: Support the efforts of Monterey County Parks Dept., the Monterey County Water Resources Agency, and the Sheriff's Departments in both counties in efforts to deter and punish illegal activities that affect watershed health.

OBJECTIVE 2: Minimize soil disturbance and threats of erosion (campgrounds, parking lots, boat ramp areas, non-system roads etc.) in public areas and on public lands.

Implementation 2A: Provide informational signs and support efforts of recreational clubs to inform the public of erosion problems, their related impacts and erosion prevention measures.

Implementation 2B: During the summer season (May through September), minimize soil disturbance from vehicles in unpaved areas by posting signs, patrolling, and providing information to visitors about erosion and water quality.

Implementation 2C: During the off-season (October through April) restrict vehicle access in unpaved areas by posting signs and patrolling the area. (Possible Sign Examples: "Access to marina only", "No overnight camping")

Implementation 2D: Ensure that future, or expanded, recreational areas are carefully planned to protect watershed resources (water quality, habitat, etc.)

OBJECTIVE 3: Promote protection of water quality and respect for the watersheds by visitors and residents in recreational areas. Examples include but are not limited to: reducing incidents of parking in un-marked areas, littering, camping in non-camping areas, and improperly disposing of waste.

Implementation 3A: Work with multiple community groups and agencies to promote campaigns that are customized to the target audience such as: "Be a Watershed Citizen", "Welcome to our Watershed", "Party On: Keep Your Lake Clean", "Keep Nacimiento/San Antonio Blue" and others.

Implementation 3B: Encourage enforcement of existing ordinances prohibiting overnight camping on land not designated for overnight camping by the appropriate county's Sheriff's Department or Monterey County Parks Rangers.

Implementation 3C: Encourage SLO and Monterey counties to review existing ordinances and to adopt severe fines for littering, dumping, or polluting in the watersheds. These ordinances would need to be enforced by the appropriate entity for either land or water activities.

Implementation 3D: Encourage Monterey County Water Resources Agency and Monterey County Parks Department to provide an increased number of parking, restroom, and trash facilities at strategic public recreation sites. Homeowners associations should be encouraged to provide additional facilities for their own, private users. New or improved parking areas should be designed as permeable surfaces to minimize runoff potential.

Implementation 3E: Promote a campaign to report vandalism of restroom facilities, boat docks, and other private or public facilities.

Implementation 3F: Consider raising funds to support the development of a comprehensive recreational guidebook and map of both watersheds that includes a foldout map with details of recreational activities and facilities that exist within the reservoir area and that exist outside of the reservoir areas, and lists rules and regulations in place to protect the natural resources for current and future use. Utilize existing guidebooks to ensure this product is unique and valuable.
Implementation 3G: Work with County Parks on the possibility of posting "Lake Watch" signs at boat docks and floating toilets in a "Neighborhood Watch" attempt to deter negative behavior.

Implementation 3H: Encourage the US Forest Service to promote dispersed car camping in already impacted areas rather than creating new camp-sites in pristine areas of the Los Padres National Forest.

Figure 36. Recreation at the San Antonio Reservoir
(Source: Monterey County Parks, 2007)

ISSUE 2 – Gaps In Knowledge: Monitoring & Information Needs

ISSUE:

Protecting the water quality of these streams and reservoirs is a high priority for all watershed uses. However, there are few documented water quality problems in these watersheds. This may mean there are not water quality problem or that we are currently not aware of existing problems or potential problems. Establishing a baseline of water quality from which to track change over time is a priority for these watersheds.

STATUS and REFERENCES:

Water quality concerns of the Regional Water Quality Control Board for these watersheds are:

Nacimiento reservoir – Mercury in fish tissue;
Las Tablas Creek – Excessive mercury, sedimentation, total dissolved solids (TDS), electrical conductivity (EC), sulfate, and nickel.

A Total Maximum Daily Load (TMDL) clean up plan was developed by the Regional Water Quality Control Board for mercury from mine runoff in Las Tablas Creek (which drains into the Nacimiento Reservoir). In addition, the U.S. Environmental Protection Agency (USEPA) has listed the mines on the National Priority List of Superfund Sites which triggered Federal clean up measures superseding the TMDL. The Klau/Buena Vista mines are non-operational and are considered to be significant sources of mercury entering downstream waterways.

Below is a brief summary of water quality findings that are more thoroughly described in the **Existing Conditions** section of this Plan. Most of the statements below are based on very little data and do not signify water quality problems. Rather, they are areas to consider in the establishment of baseline monitoring data. Establishing baseline conditions of local water quality may be important to maintaining good water quality over time.

Information Source	San Antonio River Watershed :
Camp Roberts INRMP, 2000	Camp Roberts found total dissolved solids (TDS) and selenium **at levels that occur naturally in the river**.
LOW	Monterey County Water Resources Agency found nitrate levels in the reservoir that are **below the maximum allowable for drinking water**.
Jenks and Adamson, 1970	Monterey County Parks has had reservoir samples with **high levels** of manganese.
Camp Roberts INRMP, 2000	Camp Roberts' monitoring found a **potential problem** with cadmium in the San Antonio river.
Logan, 1987	Monterey County Flood Control and Water Conservation District found **high level** of nitrates in a Lockwood well
	Nacimiento River Watershed:
Heritage Ranch Sanitary Survey Update, 2005	The source water for the Heritage Ranch CSD wells is the Nacimiento River. The water quality in these wells, located in the Nacimiento River one mile downstream of the dam, **meets primary drinking water standards** and except for occasional detection of high iron and manganese levels also **meets secondary drinking water standards**.
Appendix E **of WRI Analysis**: Report by SLO County Public Works, Water Quality lab report summarizing history and results of the Nacimiento Water Project (NWP) water quality monitoring program	San Luis Obispo County Public Works Department has collected some data at the intake location for the Nacimiento Water Project. Results vary, and can be a function of different factors. Most notable are **high values** found for total coliforms, algae, turbidity, aluminum, iron, and manganese. The monitoring program was initially designed to provide information for water treatment plant design, and will be revised to meet ongoing operational needs. Concerns for ongoing operations include invasive species, runoff, pathogen loading, nutrient loading, carbon loading, suspended solids and metals deriving from various watershed uses, to name a few.
Regional Water Quality Control Board, WMI, 2002	Nacimiento Reservoir is **listed as impaired** for mercury in fish tissue
	Las Tablas Creek: (in the mid 1990's)
Salinas Valley Water Project, EIR, 1998	Low nitrate levels
Salinas Valley Water Project, EIR, 1998	High aluminum and iron levels

These sources are found in the WRI and WRI Analysis, Nacitone 2008.

Figure 37. Possible Water Quality Concerns

It will be important to determine the best way to assess and document the extent to which these are existing water quality problems or potential problems that can be prevented. For example, one water quality concern voiced often by several Steering Committee members is that of trash in streams, creeks, and reservoirs. Although there is anecdotal information from watershed residents, there are no data available to consider this issue. It may be possible to detect such a problem by establishing an indicator or monitoring for toxins created by degrading plastic, metals, or volatile organic compounds that might be residuals from trash and debris.

GOAL: Maintain and protect the quality of surface water and groundwater found in these watersheds.

OBJECTIVE 1: Establish baseline water quality data of relevant constituents for water bodies in these watersheds to ensure water quality is protected, that early detection to prevent problems is possible, and to track changes in water quality over time.

Implementation 1A: Continue to compile a list of other entities conducting water quality and invasive species monitoring in these watersheds and determine: constituents monitored, frequency, locations, and purpose of the monitoring.

Implementation 1B: Support the coordination of water quality monitoring and interpretation in these watersheds through use of mechanisms such as compatible Quality Assurance Project Plans (QAPP), database formats, and facilitation of roundtable discussions to understand the data.

Implementation 1C: Encourage responsible agencies to work together to provide funding for establishing a comprehensive monitoring program that will provide data to all agencies, and eliminate redundancies. This data could then be used to identify problems and recommend corrective actions.

Implementation 1D: Partner with the water purveyors, Resource Conservation Districts, Natural Resources Conservation Service, Cal Poly, and others to monitor the effectiveness of voluntary management practices for protecting water quality; ensure that data is kept confidential and summaries of the information do not identify any landowner.

Implementation 1E: Support the initiation of a volunteer water quality monitoring program including monitoring at the confluences of creek to main stem and creeks to reservoirs.

Implementation 1F: Encourage EPA to conduct a reservoir bottom sediment study of Nacimiento Reservoir to better understand mercury contamination.

OBJECTIVE 2: Identify potential contaminant sources, magnitude of threat to water quality, possible preventive or mitigation measures, and gaps in knowledge**.**

Implementation 2A: Develop a thorough, comprehensive, quantitative as well as qualitative, description of all current and projected watershed uses that can harm water quality. Evaluate these uses for potential to degrade water quality. Identify remaining gaps in knowledge and develop mechanisms to address these.

Implementation 2B: Working with watershed users, identify possible preventive or mitigation measures for problems or potential problems identified in the study described above.

Implementation 2C: Collaborate with entities required to conduct sanitary surveys including SLO County Public Works Department Water Quality Lab, and Heritage Ranch Community Service District.

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ISSUE 3 – Preventing Pollution from Point and Nonpoint Sources

ISSUE:

Making all watershed users aware of point and nonpoint sources of pollution and how to recognize and prevent them is a high priority for these watersheds.

STATUS and REFERENCES:

Point and nonpoint source pollution negatively affect water quality measured by the ability of the water body to support state designated beneficial uses. See a detailed discussion of beneficial uses in the **Existing Conditions** section of this Plan.

Point source pollution results when water conveys pollutants into a waterway from a discrete, potentially identifiable source. Point sources such as domestic wastewater and commercial / industrial waste discharges can be identified and controlled and are regulated with discharge permits. Existing point sources in these watersheds are allowed to discharge regulated amounts of: wastewater, solid waste, and processed water. There is a complete list of point sources permitted to discharge in these watersheds in the **Existing Conditions** section of this Plan.

Nonpoint sources of pollution are difficult to see, measure, or regulate. They result when water (including stormwater and non-stormwater) moves across the landscape and picks up pollutants such as nutrients, sediment, chemicals, oil and grease, bacteria, etc. and conveys them into water bodies (rivers, streams, reservoirs, and groundwater). Nonpoint sources may occur at many different locations spread over a large area and are regulated by waste discharge requirements, conditional waivers in the public interest, or prohibitions (2004 Nonpoint Source Implementation and Enforcement Policy, State Water Resources Control Board; webpage: http://www.waterboards.ca.gov/water_issues/programs/nps/#programs).

Potential nonpoint sources of pollution relevant to land uses in these watersheds:

- **Fertilizers and pesticides from careless application or improper disposal;**
- **Bacteria and nutrients from malfunctioning septic systems; human and animal feces;**
- **Sediment from erosion due to poorly designed or maintained roads and construction sites, streambank, shoreline, and rangeland erosion, abandoned mines, off-road vehicles, recreational trails, burned areas;**
- **Stormwater conveyance of grease, oil, metals, nitrogen/phosphorus-based fire suppression chemicals; nutrients, organic carbon, sediment, chemicals, and trash. Sources of these materials may be legal activities, or they may be from illegal activities such as unpermitted grading, methamphetamine labs and marijuana growing areas.**

It may be possible to determine which of these are causing water quality problems, or pose potential problems that can be prevented. However, an effective watershed-wide approach, emphasizing cooperative solutions, increased education, and development of partnerships, will be more likely to reduce all types of nonpoint source pollution in these watersheds.

Oak Shores Interceptor line:

A specific example of a known, potential source of pollution is the Oak Shores Interceptor line. The sewage collection system for this Nacimiento Reservoir community consists of nearly 10,000 feet of pipeline and several manholes located up to approximately 40 feet below the high water line of the reservoir. Exposed lateral pipelines coming from houses to the interceptor line may be vulnerable to breakage and vandalism. The sewage from residences could then flow into the reservoir. There are also challenges for maintenance and repair staff to gain access to the interceptor line when the line is under water. There is a program in place to ensure that no annexed parcels will be allowed to connect to the Interceptor line. Refer to existing conditions discussion for more examples of potential sources of point and/or nonpoint pollution.

GOAL : Reduce point and nonpoint source pollution in support of designated beneficial uses of local water bodies.

Objective 1: Encourage and provide incentives and information for public and private landowners and homeowners to protect ground and surface water while protecting both property and water rights.

Implementation 1A: Offer homeowner and small business owners water quality protection workshops regularly that detail safe pesticide product use and disposal; septic system maintenance; preventing pollutants from paved and unpaved roads from entering waterways, and generally increase the awareness about the potential impacts of residential areas on surface and groundwater quality.

Implementation 1B: Obtain or develop a flyer and distribute to all watershed residents detailing how we all have a role in protecting water quality and watershed uses.

Implementation 1C: Sponsor educational programs for farmers and ranchers specific to issues in these watersheds at which participants can earn continuing education units. Continue to sponsor Ranch Water Quality short courses.

Implementation 1D: Develop interpretive signage in strategic locations around the watersheds describing how each person has a role in protecting water quality. This could include explaining that Nacimiento Reservoir is a source of raw water that will be treated for drinking water and should be cared for.

Implementation 1E: Educate the public on the watershed and water quality impacts of illegal drug production such as marijuana farming on public lands and meth labs in our communities.

Objective 2: Reduce mercury sedimentation and acid mine drainage in the Nacimiento River watershed**.**

Implementation 2A: Continue to provide community support to US Environmental Protection Agency (EPA) for remediation of the Klau/Buena Vista Superfund Site through participation in the Community Advisory Group and public review and comment throughout the Superfund remediation process. Community support and support from our elected officials is critical to ensure that Congress allocates adequate federal funds to complete the project once the Superfund remediation assessment and design phases are complete.

Implementation 2B: Encourage the MCWRA to request that EPA conduct a comprehensive reservoir bottom sediment study of Nacimiento Reservoir to provide detail to decision makers about future management decisions to include the extent of contamination and the timeframe involved that would reduce mercury level in fish tissue to acceptable levels.

Objective 3: Improve erosion and sediment control for new development and redevelopment in both counties and support the use of Low Impact Development (LID) (integrated management measures that mimic the natural hydrology of the watershed) for stormwater management and road design in urbanized area.

Implementation 3A: Conduct community outreach in the Nacimiento River watershed of San Luis Obispo County to increase awareness about the County's Stormwater Management Programs including informing the public that there will be more frequent, comprehensive grading/stormwater inspections and enhanced enforcement of violations. The new inspection programs, provided for in the revised San Luis Obispo County ordinances, are scheduled to be implemented between 2010 and 2011.

Implementation 3B: Community road associations or other local entities could partner with county departments in the relevant county, Resource Conservation Districts, water purveyors, and other entities to provide annual trainings for private contractors and county maintenance and road crews that would include instruction on the use of management practices that minimize pollutant runoff and erosion damage caused by roads and construction projects.

Implementation 3C: Encourage SLO County Planning and Building through existing regulation to adequately condition new development to ensure infrastructure keeps pace with increased recreational use which may impact shoreline erosion and to determine cumulative impacts of operational launch ramps when water is below High Water Mark.

Implementation 3D: Provide community support for LID methods to reduce the volume and velocity of urban stormwater runoff to downstream lakes and streams by commenting on draft county ordinances as required by the County Stormwater Management Programs.

Goal: Reduce the potential for contamination of the reservoirs by domestic wastewater.

Objective 1: Reduce the potential for sewage leaks from the Oak Shores 'Interceptor line' into the Nacimiento Reservoir.

Implementation 1A: Encourage SLO County (County Service Area 7A) to continue monitoring for leaks and explore other options to fund project which would eliminate this risk to water quality. Institute recommendations #2 through #5 from the 2004 Interceptor Bypass Study.

Implementation 1B: Design and build modified collection system to minimize chance of leakage into the reservoir and to facilitate maintenance and repairs. Ensure that all laterals as well as the collection line are buried and are not vulnerable to vandalism.

Objective 2: Reduce the potential for sewage contamination from public areas to both reservoirs.

Implementation 2A:
Ensure that floating toilets and any other non-plumbed public toilets are routinely pumped and kept clean. Ensure that spills are cleaned up immediately.

Implementation 2B:
Ensure that public, plumbed toilets are properly operating and kept clean. Ensure that spills are cleaned up immediately (Steering Committee requested more detail here).

Implementation 2C: Ensure that public toilet facility capacity matches usage needs.

Objective 3: Reduce the possibility of contamination from septic tanks to both reservoirs.

Implementation 3: Encourage homeowners and residents in these watersheds to do regular septic system maintenance and educate them about "septic safe" practices and cleaning products.

Objective 4: Reduce the possibility of contamination from residential and commercial sewage collection infrastructure to both reservoirs.

Implementation 4A: Ensure that home owners and business owners know who to call for immediate repair of broken, leaking or backed up sewage lines.

Implementation 4B: Ensure that home owners and business owners know who to call if they observe a leaking sewage line that has not been repaired in a timely manner.

Objective 5: Ensure that wastewater treatment facilities operate pursuant to their waste discharge permit.

Implementation 5: Properly design, site, and maintain wastewater treatment facilities and all associated infrastructure.

Figure 38. Impacts of culvert on the Tank Road
(Source: US-LT RCD, 2007)

ISSUE 4 – The Role of Agriculture

ISSUE:

Agriculture in these watersheds is an important contributor to the local economy and is the base of livelihood for many multi-generational families and emerging businesses. Consistent private property rights, and the ability to make decisions internally rather than by an external entity, are what make agricultural endeavors viable in these watersheds. Stewardship of agricultural lands and watershed functions is also crucial to the viability of agricultural operations.

STATUS and REFERENCES:

Agriculture is desired in these communities for many reasons. Farming and ranching operations in these watersheds bring dollars to the local and state economy through the production and marketing of vegetable row crops, fruit and nut orchards, wine and table grapes, cow-calf operations, and contract grazing. These operations also create jobs such as crop care consultants, ranch managers, field foreman and crews, equipment and supply vendors. Beyond these direct, economic benefits, it has been said that, "if you eat food and wear clothes, you are involved in agriculture."

Farming and ranching in these watersheds is also the backbone of property values based upon the rural character and aesthetic views that exist here. More and more Californians and others seek places with a rural feel that are far from urban activity. For many, a move to places like these watersheds symbolizes a personal success in having escaped the hussle and bussle of urban living. Although they come to enjoy this rural paradise, some who move here do not anticipate but discover a vibrant, working landscape of farming and ranching businesses. They discover large, slow-moving farm implements and livestock carriers on roads; wild pig and deer hazards on the roads; dust; noise; and wine tasting and leisure traffic all due to the rural character they sought. This influx of urbanites can cause misunderstandings or accusations about how agriculture impacts the watersheds. There is a need to establish and maintain neighborly communication and information sharing.

Well managed agriculture can provide specific water quality benefits compared to some other land uses. The ground required for raising crops or livestock allows rainwater to saturate the soil keeping organic matter alive, and providing recharge areas to ground water. The soil and vegetation that agriculture requires protects surface water quality by filtering out excess nutrients or other pollutants as water crosses the land. Well managed agricultural operations can do a better job of preventing erosion than some other land uses. In addition, some wildlife species can benefit from agricultural operations and the open spaces provided.

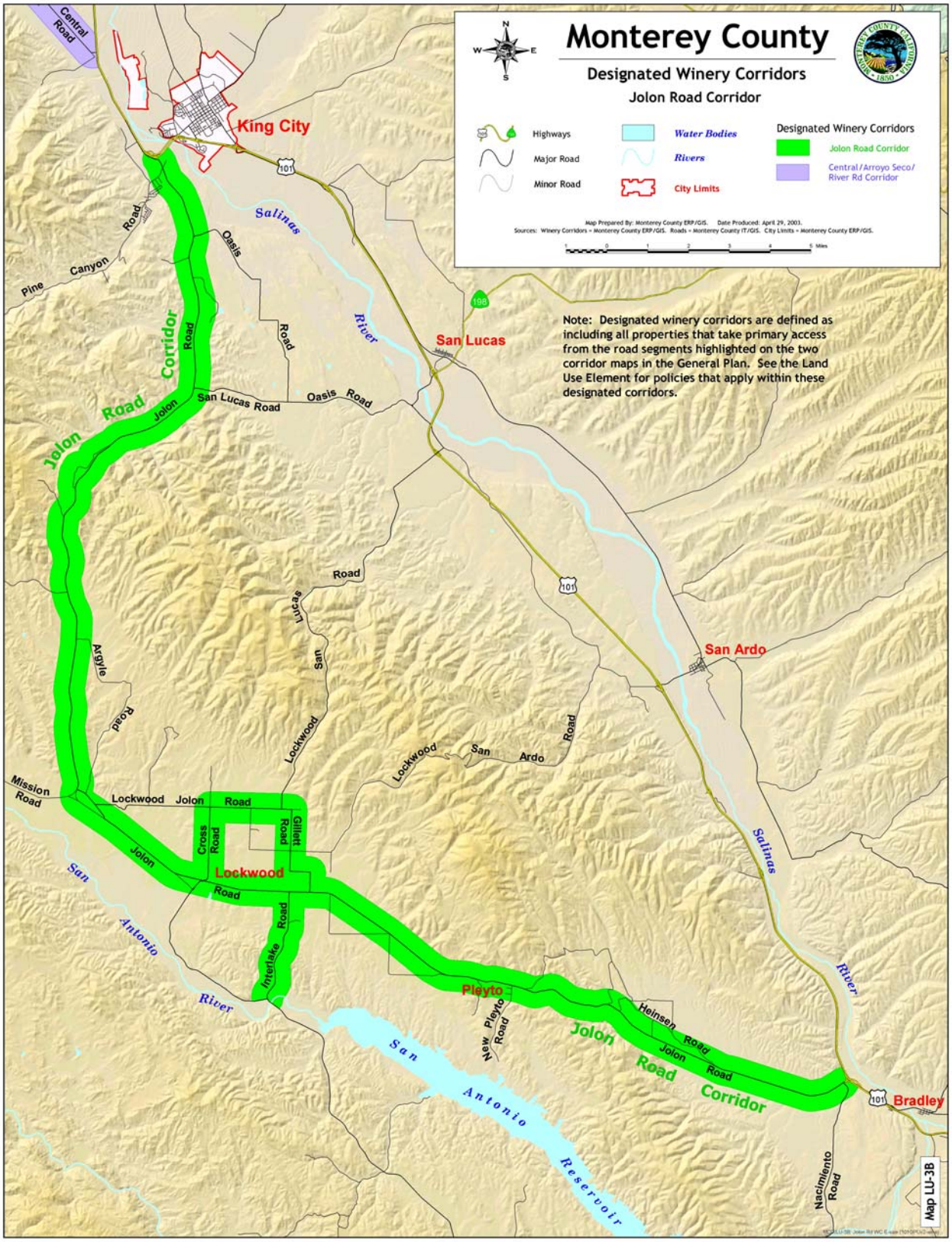

Figure 39. Designated Winery Corridor

GOAL: Ensure that agriculture (farming and ranching) remains a vibrant and economically viable part of these watersheds.

OBJECTIVE 1: Encourage and support the efforts of landowners, farmers, and ranchers to protect soil, water, and air resources critical for keeping agricultural operations a productive part of the economy through the promotion of research, education, and outreach.

Implementation 1A: Monterey County Water Resources Agency (MCWRA) should work with UC Cooperative Extension, Resource Conservation Districts, Farm Bureaus and others to offer the "Ranch Water Quality Short Course" periodically to existing leaseholders on MCWRA land and to other, local rangeland owners / operators. Prepare and distribute DVDs of the November 2007 course conducted in the San Antonio watershed.

Implementation 1B: The Monterey and San Luis Obispo County Farm Bureaus should work with UC Cooperative Extension, Resource Conservation Districts, County departments, water agencies and others to offer water quality protection trainings and workshops to farmers and ranchers in these watersheds on a regular basis. Both implementation 1A and 1B should include bringing in innovative researchers and land managers to share their knowledge and experience with local farmers and ranchers.

Implementation 1C: Encourage watershed specific research through collaborative efforts with private and public landowners to develop strategies to protect natural resources as part of profitable agricultural operations.

Implementation 1D: Assist the Natural Resources Conservation Service (NRCS), Resource Conservation Districts and others with outreach to ensure information on conservation incentive programs through the Farm Bill and other mechanisms are well known to local landowners, farmers, and ranchers.

Implementation 1E: Utilize the Resource Conservation District of Monterey County's Livestock and Lands program to provide educational workshops, materials, and planning assistance for qualified livestock owners in these watersheds.

Implementation 1F: Utilize the general strategies (those not specific to the lands owned by the MCWRA) contained in the Grazing Management Plan as an example for management of grazing in the two watersheds.

Implementation 1G: Create an open dialog about the use of grazing for controlling noxious weeds, improving habitat and improving the health of the grasslands of the Nacitone watersheds.

Objective 2: Educate the public about agricultural operations, its role in the local economy and efforts in environmental protection.

Implementation 2A: Develop an agricultural speaker's bureau through local chambers of commerce, Farm Bureau and farm centers to provide presentations and farm/ranch tours upon request.

Implementation 2B: Encourage local farmers and ranchers to offer their perspective and experience as part of AgKnowledge, an emerging program to educate community leaders about the role agriculture in our communities. The program began in 2007 as part of a joint effort by Monterey County Ag Education and the Grower-Shipper Foundation.

Implementation 2C: Encourage and support local communities to pass to younger generations the importance of protecting watershed uses and watershed resource through schools, farm days and 4H.

Objective 3: Improve coordination and communication among regulatory entities, private, and public entities to manage land and water resources in an effective and environmentally conscious manner.

Implementation 3: Consider creating a Grazing Advisory Committee made up of members of the ranching community, RCD, NRCS and UC Cooperative Extension that would meet periodically to advise public agencies on their grazing programs.

Objective 4: Encourage ranch managers to monitor grazing land on a continuing basis.

Implementation 4A: In order to evaluate effectiveness of management strategies on grazed land, it is recommended that the Residual Dry Matter (RDM) is monitored each fall to ensure that grazing lands and facilities are in good order. Seasonal variations and rainfall should be considered in the RDM evaluation.

Implementation 4B: Encourage ranchers to attend periodic Ranch Water Quality Short Courses.

Implementation 4C: Support private landowners to prepare and implement with assistance from CAL Fire and the local fire districts, an integrated fire plan that addresses the use of managed fires and grazing to accomplish objectives of reducing understory and the potential for hotter, more destructive wildland fires.

ISSUE 5 – Fire in the Watersheds

ISSUE:

The risk of large, unplanned fires in these watersheds is very high due to an abundant fuel load.

> *Far from being the disasters that the media frequently portray them to be, fires in California are essential in maintaining the state's spectacular biodiversity. Not only do fires engender the diversity of California's ecosystems, they directly and indirectly affect the services and products these ecosystems provide to the state's human residents; these include clean water, timber, and recreation opportunities. This is not to say that all fires are beneficial or that they now burn as they did historically. Some fires may be disasters from both an ecological and a social perspective (California Watershed Assessment Manual, 2005).*

The risk to loss of life and property from wildfires has been substantially increased because of the encroachment of residential uses within and adjacent to fire-prone woodlands. Alterations of the period an area burns due to fire suppression and other changes in the natural fire cycle as well as changes in climate on fire behavior are just starting to be understood. Managed burns (often called prescribed burns) and mechanical thinning can be used to safely reduce fuel load and also to manage invasive vegetation. Only Fort Hunter Liggett currently uses prescribed burns in these watersheds as a regular tool. Judicious grazing can also reduce vegetation fuel load. Educating the public, preventing catastrophic wildfires, and safely utilizing fire to conduct land management are priorities for these watersheds.

Fire management is important to preventing negative water quality impacts though not all of these impacts can be avoided. Loss of vegetative ground cover after a fire increases runoff sending eroded soil and nutrients, and other pollutants into the water. Included in this runoff can also be the nitrogen –phosphorus based fire suppression chemicals used by the Cal Fire (also known as the California Department of Forestry and Fire Protection) and other fire agencies. One of the most common of these fire chemicals is Phos-Chek which is dropped as a fire retardant from aircraft.

STATUS and REFERENCES:

There have been several major fires in the upper watersheds since this area was first settled. Significant watershed impacts occur including very large amounts of sediments which caused significant problems. The 1977 Marble cone fire was in part the result of a heavy "sticky snow" which fell in winters just prior to the fire which broke so many trees and large shrubs that fuel load increased by 80%. Similar conditions have occurred in the winter just prior to the 2008 Indians Fire which could have played a large part in the severity of the burn. Most large fires in these watersheds are lightning caused. However, fires may also be caused by people where sufficient fuel load and oxygen are available. Therefore, an educational approach to fire will be the most effective in preventing catastrophic events.

While this plan was being completed, two large fires called the Basin/Indian Complex and the Chalk Fire occurred in June/July 2008 and September/October 2008 respectively. The Indians Fire burned over 30,000 acres (approximately 14% of the entire San Antonio River watershed).

Final numbers for the Chalk Fire were not available before this plan went to press. The portion of the Indians Fire that burned in the San Antonio River watershed occurred in the upper watershed area primarily on the Los Padres National Forest and FHL land. Final Findings of facts and specific recommended treatments of the fire impacts were developed too late in the process to be used in this plan; however, the following is a summary of major initial findings. USFS analysis indicates that the "south side of the Indians Fire contains a large portion of high soil burn severity". More than 75% of the area that burned in the San Antonio watershed was classified as moderate to high severity; compared to the overall proportion of moderate to high severity in the entire Basin/Indians Fire which was approximately 60%. The hot nature of the fire is expected to create significantly increased runoff rates that could result in a doubling of the runoff that would have normally occurred from a storm of the same magnitude. Hazards are expected to be primarily related to flooding and debris flows. The fire was most severe in the Bear Canyon and Coleman Canyon (Mission Creek) sub-watersheds. Lessons learned from this fire should be incorporated in future updates to this plan. (USFS Draft BAER report August 2008, MCWRA 2008)

Following the Basin/Complex fire that occurred during the development of this Watersheds Management Plan, an interesting observation was made by a member of the Steering Committee. Understory had burned so hot as to damage mature oak woodlands in some parts of the burned area. However, on the Los Padres National Forest grazing allotment which has been nearly continuously grazed for 40 years, Valley Oaks emerged unscathed. It was suggested that this area could be monitored over time to better understand grazing for fire management.

Causes of California Fires 2000 - 2005	
Lightning	5%
Arson	7%
Debris burning	10%
Miscellaneous	13%
Undetermined	14%
Vehicles	14%
Campfire	3%
Equipment Use	27%
Power Line	3%
Playing with fire	2%
Smoking	2%

Source: www.cdfdata.fire.ca.gov/incidents/incidents_statsevents

Figure 40. Causes of California Fires 2000 - 2005

A fire policy of suppression in these watersheds has allowed substantial increase in fuel loads and can have significant economic costs. Statewide fire suppression expenditures for 2005-06 were approximately $105 million (3/2006 www.fire.ca.gov). If fire frequencies increased, fire intensity and damage would be expected to decrease. Fire suppression is a strategy that only temporarily avoids severe wildfires that endanger human life and property as well as water quality and watershed health. The following paragraph clearly states the importance of local involvement in fire management and is relevant for these watersheds:

> *"Californians need to embrace a different model of how to view fires on these landscapes. Our response needs to be tempered by the realization that these are natural events that cannot be eliminated from (Southern) California. In this respect we can learn much from the science of earthquake or other natural disaster management. No one pretends they can stop them, rather they engineer infrastructure to minimize impacts, and in this respect there is much that can be done at the local level".* Jon E. Keeley in *Fremontia.*

In addition, consideration of differential suppression in different habitats is warranted as depicted by Zeke Lunder, Chief Fire Planner/Fire Management/GIS Planner for North Tree Fire International.

> *Suppression damage is not equal across the landscape. Some areas are more susceptible to damage than others. Some pastureland and chaparral areas recover quickly from bulldozer impacts while others do not.*

Mr. Lunder also suggests that suppression using dozer lines and other disturbances could be avoided in areas of serpentine soils in the watersheds which are rich in endemic species. Further Mr. Lunder suggests that a holistic approach for determining suppression techniques is needed to address the best suppression methods for specific situations. For example, while mechanized fuel treatment is to be avoided in erosion prone areas, this same treatment may inadvertently act to spread invasives species when used elsewhere in the watersheds.

A discussion of fire suppression, fire management strategies, and water quality concerns caused by fires should be part of the improved communication and coordination effort suggested below as a recommendation of this Plan.

GOAL: Reduce the risk associated with catastrophic wildfire impacts on life, property, and natural resources through increased public awareness and understanding of what causes these events.

OBJECTIVE 1: Work with California Department of Forestry and Fire Protection, US Forest Service, Camp Roberts, Fort Hunter Liggett, Bureau of Land Management, Fire Safe Councils and other appropriate parties to address fire protection and fuel load reduction while enhancing watershed health.

Implementation 1A: Encourage all agencies and landowners to reduce fuel loads using a diverse set of vegetation management tools such as grazing, prescribed burning, and mechanical equipment where erosion hazard is not severe. This would reduce the cost and losses in the residential interface zones caused by devastating wildfires.

Implementation 1B: Support Local Fire Safe Councils to include, but not be limited to, the following activities:
a) provide a forum for the community to give input and provide local knowledge to policy makers.
b) organize workshops on fire safe topics such as creating a defensible space and providing defensible space rebates
c) review, discuss, distribute and comment on Cal Fire's plan for the watersheds with particular attention to the following:

- ❖ Conditions of burn permits
- ❖ Roadside fuel reduction
- ❖ Coordination of public and private fuel breaks
- ❖ Community evacuation plans
- ❖ Effect on streams and riparian habitat

Implementation 1C: Gather information among all parties on methods available for managing risks for preventing destructive wildfires in the watersheds and distribute this information to appropriate watershed users.

Implementation 1D: Encourage wildland firefighting agencies to develop appropriate mitigation for the impact of fire suppression materials.

Implementation 1E: Obtain flyers for local distribution and plan educational workshops for watershed residents on topics such as :

Maintaining a defensible space,
Ensuring a sufficient water source for fire prevention
Landscape with fire resistant trees and shrubs
Other fire prevention landscaping techniques
Safety and emergency protocol development for the home
Evacuation plans for humans and animals

Implementation 1F: Develop and use GIS and other mapping technologies to establish prioritized sensitive areas to target appropriate fire suppression techniques and treatments.

Objective 2: Work with all agencies within the watersheds to consider elements of future development that would recognize the inevitability of fire and protect infrastructure property and vital watershed cover.

Implementation 2A: Encourage participation by residents in both watersheds to provide comments to future planning documents related to fire and fire management for carefully planned development away from forested areas and to ensure adequate defensible space is incorporated. This can be done on an individual basis or through existing or newly established Fire Safe Councils or other community associations.

Implementation 2B: Work with county and fire management entities to carefully plan any future development near or adjacent to areas of high fire potential and in areas that are difficult to provide fire protection. Support and/or conduct documentation of the increased damage that occurs when housing/other buildings are in proximity to forests and work with county planning departments to incorporate guidelines.

Implementation 2C: Encourage the Monterey District of the Los Padres National Forest to develop a Wilderness Areas Fire Management Plan for the Monterey District.

Implementation 2D: Encourage the cooperation of the fire departments and air pollution control districts in allowing controlled fire as a management tool on agricultural and rural lands in the watersheds. Work with agricultural land owners to permit the use of controlled burns to address excessive and overgrown underbrush.

Objective 3: Work with CalFire and US Forest Service (in light of the Basin and Indians fires) to include the community in rehabilitation of burned areas and to work toward increased preparedness for post-fire work.

Implementation 3A: Encourage fire agencies to include knowledgeable watershed residents in the planning of rehabilitation of burned areas. Encourage these agencies to work with watershed residents to prevent the premature mandatory evacuation of individuals who have the local knowledge needed by fire agencies to protect watershed residents and resources.

Implementation 3B: Encourage watershed residents to actively participate in Fire Safe Council and ensure information is passed to residents of the watershed to help them prepare for future fires.

Implementation 3C: Encourage Fire Safe Councils, fire agencies and residents to be prepared to contend with post-fire water quality issues that are as inevitable as the fire themselves.

Figure 41. CALFire aircraft dropping flame retardent
(Source: CALFire, 2008)

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ISSUE 6 – Taking Enforcement Action

ISSUE:

Inadequately enforced regulations result in negligent practices and illegal activities that can negatively impact water quality and watershed uses.

STATUS and REFERENCES:

In some cases, the most efficient and cost effective method for protecting water quality from point and nonpoint sources of pollution is to enforce existing regulations. Lack of adequate enforcement can lead to the following types of activities that may cause harm to water quality.

- grading without a permit causing erosion, sedimentation and transport of other pollutants
- littering and dumping of trash
- abandoned methamphetamine labs and hillside marijuana gardens
- vandalized public toilet facilities
- careless boat operation causing fuel leaks or shoreline erosion
- vandalized boat docks spreading Styrofoam and other debris in the reservoir

Activities that do not necessarily affect water quality, but that are priorities to prevent in these watersheds include:

- removal of oak trees under certain conditions and in specific locations
- disturbance or destruction of cultural resources

GOAL: Enforce existing regulations, laws and ordinances that will help protect water quality and watershed health.

Objective 1: Support jurisdictional entities to use their existing authority rather than develop new regulations.

Implementation 1A: Encourage cross-jurisdictional communication to identify barriers to and potential improvement of enforcement.

Implementation 1B: Communicate boating regulations and watershed protection measures at each entrance to the reservoirs through handouts, signage, etc.

Implementation 1C: Encourage MCWRA and San Luis Obispo county to work together with local groups to develop materials (pamphlet, brochure) explaining existing regulations, jurisdictional areas, and available services and resources for use by residents and visitors.

Implementation 1D: Encourage San Luis Obispo County to do more to educate homeowners about existing grading and erosion control regulations and to better enforce those regulations.

Implementation 1E: Support the development of a management plan that involves community input and participation as required for the Milipitas Special Interest Area. This Area was designated by the US Forest Service in the Los Padres National Forest Plan in order to protect cultural resources and cultural landscape of the upper watershed.

Implementation 1F: Encourage landowners to consult with UC Cooperative Extension, Resource Conservation Districts, Farm Bureaus and others for erosion and sediment control programs.

Objective 2: Encourage the public to become familiar with and utilize Cal Fire Standards for protecting homes and properties.

Implementation 2: Include Cal Fire Standards 1 – 8 (methods for defending residential properties against fires) in a 'Watershed Citizens' guide which is recommended under other Goals in this Chapter. These standards include: maintaining a defensible space, ensuring a sufficient water source for fire prevention, landscape with fire resistant trees and shrubs, other fire prevention landscaping techniques, safety and emergency protocol development for the home, evacuation plans for humans and animals.

Objective 3: Encourage the public and all jurisdictional entities to become familiar with existing laws that protect cultural resources such as California Environmental Protection Act (CEQA) for local and state projects and the National Environmental Protection Act (NEPA) for federal projects or projects on federal lands. Cultural resources can include archaeological sites, historic sites, actual locations, landscape features, and specific plants.

Implementation 3A: Recommend funding for a CEQA workshop to be made available to local county staff, landowners, and private consultants working on both private and public projects to cover all aspects of the law and implementation, not just the cultural resource aspects.

Implementation 4A: Because of the prevalence of archaeological and historic sites in these watersheds, develop a user friendly manual on how to comply with CEQA when cultural resources may exist in a project area and how to handle burial sites if found with reference to the governing laws.

The following two Objectives are specific to the enforcement of the San Luis Obispo County Stormwater Management Programs and Ordinances:

Stormwater Management Objective 1: Improve erosion and sediment control for new development and redevelopment as part of County Stormwater Management Programs.

Implementation 1: Conduct community outreach regarding new County Stormwater Management Program requirements that include more frequent, comprehensive grading/ stormwater inspections and enhanced enforcement of violations as provided for in new County ordinances and new inspection programs scheduled to be implemented between 2010 and 2011.

Stormwater Management Objective 2: Detect and eliminate illicit discharges within urban areas according to the new County ordinance.

Implementation 2: Enforce the new County Stormwater Pollution Prevention and Discharge Control Ordinance. Agriculture is specifically exempted.

ISSUE 7 – Coordination & Communication

ISSUE:

Ineffective coordination and communication between and among counties, jurisdictional entities, regulatory entities, community groups and residents in the watersheds can negatively impact water quality and watershed uses.

STATUS and REFERENCES:

Lack of coordination and communication between large public land managers (such as the military, national forest, MCWRA) and local community's presents challenges in protecting water quality and watershed uses. Coordination and communication among agencies and communities can deter the spread of invasive species from one location to another (Yellow star thistle, Quagga mussels, certain algae species, white bass, other invasives) and pool resources and information to cooperatively manage resources (possible examples include: Tank Road use and impacts, grazing lands, fire management, water quality monitoring, clean up of marijuana growing sites in upper watersheds).

Increasing communication and coordination among the various parties in these watersheds can prevent the loss of watershed uses and ensure protection of water quality. Public agencies and governmental representatives such as County Supervisors should maintain a watershed-wide perspective and strive to be responsive to issues and conditions in smaller, sub-watersheds.


Members of Steering Committee, TAC and members of the public rank their top issues and concerns in the watersheds

Figure 42. (Source: MCWRA, 2007)

From the public agency perspective, cooperative partnerships are the most cost effective way to manage public resources with limited funding. These two watersheds are in two counties. In both watersheds there are large landowners whose actions can have a significant effect on the management of watershed resources. In both watersheds, private landowners are largely dependent on the Monterey County Water Resources Agency's water resources for the development and enhancement of their investments. Those water resources in turn, are dependent upon good stewardship of other lands in the watersheds. By working in a more coordinated and cooperative manner, the two counties can identify issues and develop solutions before a regulatory action is considered necessary by outside agencies.

An important tool that will enable counties and other entities to discuss and address issues that arise is an inventory of existing data sources and programs for these watersheds. The *Watershed Resources Inventory* (WRI) of this Plan located in Appendices A is a step in that direction with over 200 source references concerning water supply, water quality, extent and condition of natural resources. The MCWRA is the repository for the documents contained in the WRI where source materials will be maintained as a discrete collection so that it can be systematically added to with the additions tracked over time.

GOAL: Achieve coordinated efforts between and among jurisdictional entities, regulatory entities, community groups, residents, and other individuals in the watersheds to manage watershed resources in the most effective manner transcending political boundaries and protecting property rights.

OBJECTIVE 1: Bring regulatory and jurisdictional entities together in conversation with local watershed users through "roundtable" discussions to develop cooperative guidelines, achieve common goals and exchange perspectives for the management of watershed resources and protection of water quality.

OBJECTIVE 2: Achieve improved and effective working relationships by determine appropriate nexus for partnerships to obtain funding in support of these roundtables.

Implementation 2A: Function and Objectives of proposed Roundtables:
Each of the roundtables is proposed as an implementation measure and could integrate with others as cross-over of issues becomes important and individual liaisons are no longer adequate for collaboration. Roundtables could function to:

- Identify roles and responsibilities for managing the watersheds cooperatively, for the purpose of protecting water quality and watershed uses.
- Develop and implement cooperative guidelines that commit the agencies to a formal cooperation leading to a comprehensive public process.
- Ensure cooperative guidelines will achieve common goals using common terminology.
- Explain and understand regulatory mandates, jurisdictions of each entity, and existing laws
- Host community forums to gather concerns and explain cooperative guidelines
- Provide a forum for project proponents to explain projects and potential watershed and water quality impacts
- Develop liaison relationships with other roundtable groups to share information and coordinate as needed
- Conduct education and outreach to the community (Example: develop Watershed Stewardship Guide modules for use by all watershed users).
- Discuss methods for the cooperative management of watershed uses and resources and the prevention of point and nonpoint source pollution
- Review and incorporate technical information provided by scientists and engineers

Implementation 2B: Inter-County Task Force on land use and water resources planning:
Staff of appropriate county departments and elected officials work to identify opportunities for coordination and resolve existing or potential future conflicts related to watershed management, water quality protection, and water supply issues.

Develop goals, strategies and actions that each county can agree to by taking the following cooperative steps:

- Clearly identify roles and responsibilities for effective management of Nacimiento Reservoir and the surrounding lands.
- Each county lists their needs related to the watersheds;
- Overlay each county General and Specific Area Plans and Elements along with its land use and grading ordinances, Integrated Regional Water Management Plans and Stormwater Management Plans, etc for the watersheds. Identify operational gaps or unnecessary overlaps and discuss alternatives. Example: a cooperative effort to correlate land use designations between the two counties took place to develop the GIS data for this Nacitone plan.
- Discuss disagreements or miscommunications regarding each jurisdictional entity's role and responsibility

Topics that could be addressed by this group: Preventing nonpoint source pollution; design standards for roads and culverts in the watersheds proper marina and dam operations, etc.

Implementation 2C: Water Quality Monitoring & Information Exchange:
Increase opportunities for coordination among the various groups conducting water quality monitoring in the watersheds through development of common protocol and sharing of data. Compile an inventory of monitoring efforts noting frequency of sampling, parameters, and locations. *See the Water Quality Monitoring goals and objectives section for more specifics.*

Implementation 2D: Recreation roundtable:
Expand the existing information exchange between Monterey County Park Rangers and watershed residents on enforcement issues to include Monterey County Water Resources Agency (MCWRA) and the Nacimiento Regional Water Management Advisory Council (NRWMAC) to:

- Address invasive species threat and work with counties to coordinate prevention efforts
- Provide updates on the water projects (Salinas Valley Water Project and the Nacimiento Water Project);
- Provide more timely reservoir release schedule information;
- Update county entities on study of alternative release scenarios;
- Keep county informed on issues or conditions related to recreational use of the reservoirs.
- Address water quality impacts of recreational activities

Implementation 2E: Livestock grazing roundtable
Bring together private and public owners/operators of grazing lands to discuss their various livestock grazing goals and develop options consistent with common goals for water quality protection. Encourage involvement of other interested parties. A first step might be to evaluate the possibility of developing a coordinated grazing program for both watersheds in order to stimulate positive, working relationships with local land and livestock owners. Possible steps are:

- Develop livestock grazing options consistent with common goals
- Inventory the available grazing acreage and steps that would need to be taken to expand that acreage.

- Evaluate the options
- Implement the options in a cooperative agreement committing agencies to an open public process.

Implementation 2F: Neighborhood Road Associations

Groups of residents along county or non-county roads meet to determine short and long-term goals and objectives and take cooperative actions such as periodic clean-ups. Support to these groups could be provided through Resource Conservation District and/or Natural Resources Conservation Service programs. These groups could provide community support to RCDs/NRCS or county departments in seeking funds to conduct road improvement projects. These associations could also be community forums for learning about other issues such as fire management, water quality protection practices, etc.

- **Review county design standards for roads and culverts**
- **Review Low Impact Development methods for roads and proper installation and maintenance of culverts**
- **Identify and plan for the management of roadside vegetation where needed**
- **Conduct roadside clean-ups**

Implementation 2G: Invasive Species Roundtable

Aquatic: This would be a formalization of the existing cooperative efforts taking place between the two counties and with the Department of Fish & Game, residents, and visitors to prevent the invasion of Quagga/Zebra mussels into Nacimiento and San Antonio Reservoirs.

Terrestrial: This group would work in conjunction with the county Weed Management Areas to coordinate activities and funding to eradicate invasive plant species and animal species as needed.

OBJECTIVE 3: Continue the Nacitone Watersheds Steering Committee by seeking funding and contracting with a watershed coordinator/grant writer.

ISSUE 8 – Watershed Health: Plants & Animals

ISSUE:

The ecological interactions among plants, animals and the physical environment are integral to the maintenance of water quality and watershed uses. As the watersheds experience changes through development, ecological interactions may be impaired as habitats are altered. Woodlands for example provide important soil production and water retention services vital to the recharge capability of the local hydrology. They also provide important habitats for possible threatened species dependent upon them. The available documentation on the biota of the watersheds is almost entirely from federal lands. There is a need to inventory and track cumulative impacts to the watershed to ensure that water quality and watershed uses are not impaired.

STATUS and REFERENCES:

According to several studies between 1991 and 1997 (Pavlik et al.) the presence of oak trees increases soil productivity and may enhance water quality, forage quality, species diversity, and wildlife habitat. Both Monterey and San Luis Obispo counties have existing ordinances to protect oak trees. The US Forest Service has designated an area in the upper San Antonio watershed as the Valley Oak Research Natural Area since it contains the last stand of Valley Oak savannah on National Forest land. This area is open for scientific study on a multitude of topics including why there has been poor oak tree regeneration. The designation of this research area does not change any uses of the land.

The Blue Oak Woodland habitat of FHL comprises about 32% of the installation. It occurs in pure stands and in open savanna communities. Blue oak is the most frequently recorded and dominant species in all three types of blue oak communities.

The Nacimiento Reservoir is home to at least three of multiple active bald eagle nesting sites on the Central Coast. It also has a viable large and smallmouth bass population and is the only reservoir in California stocked with white bass. The Nacimiento River watershed has habitat that is capable of supporting the California Tiger Salamander. The Nacimiento River below the dam is listed as a steelhead river.

The San Antonio reservoir is one of the largest eagle winter habitats in Central California. Over 60 eagles, both bald and golden, have been counted around the reservoir. The upper San Antonio watershed is a nesting site of the protected California condor with a range from the Pacific Ocean to the Pinnacles National Monument. The Department of Fish and Game is responsible for enforcing a current no-lead bullet law within Condor habitat pursuant to Assembly Bill 821 enacted into law in 2007 establishing section 3004.5 of the Fish and Game Code relating to Ammunition Certification for big game and nongame bird and nongame mammal hunting in Condor Range. The ultimate purpose of using ammunition and projectiles certified to contain no lead is to ensure that hunters are not exposing condors to secondary lead poisoning.

San Antonio reservoir has a variety of fish species with catfish and largemouth bass being two of the most popular amongst fishermen. The San Antonio watershed provides habitat for several species designated as either threatened or endangered by the U.S. Fish and Wildlife

Service including the endangered Arroyo Toad, San Joaquin Kit Fox and the threatened California Tiger Salamander.

Vernal pools, which are seasonal wetlands, are also found in the San Antonio watershed and provide habitat for species like the California Tiger Salamander. Statewide, over 90% of these small, valuable and threatened vernal pool ecosystems have already been lost. The San Antonio Valley contains 84 mapped pools in areas with vehicle and ground disturbance limitations or they are located in Fort Hunter Liggett Sensitive Resource Protection Areas (SRPs). (Additional information about resource protections in place is contained in Part 4: Jurisdictional and Existing Regulatory Framework).

Goal: Maintain ecological and watershed functions that support water quality by increasing awareness of all stakeholders

Objective 1: Establish scientific basis for recognizing cumulative impacts to watershed health.

Coordinate with private and public land owners/managers, Camp Roberts, Fort Hunter Liggett, Los Padres National Forest, RCDs, county planning staff, county Agricultural Commissioners' Weed Management Area efforts to do the following:

Implementation 1A: Identify suitable models for tracking and calculating cumulative impacts of human activity and natural changes upon plant and animal communities.

Implementation 1B: Develop and maintain an inventory of plants and animals in these watersheds.

Implementation 1C: Provide biological surveys on lands owned by parties interested in scientifically documenting the present status as part of the above-mentioned inventory.

Implementation 1D: Recognize the effectiveness of Monterey County's oak tree ordinance and work with San Luis Obispo county landowners and planners to determine possible protection needs in Nacitone watersheds in that county.

Objective 2: Establish outreach and education programs to protect watershed health.

Implementation 2A: Support entities responsible for enforcing the use of non-lead bullets for hunting in the watersheds by distributing information on the law and the effects of lead bullets on wildlife, especially California condors, and upon people if animals shot with lead bullets are consumed.

Implementation 2B: Develop and provide, to interested landowners, balanced information about the Williamson Act, conservation easements and projects proposed by land trusts. This information would hi-light the legal commitment on the part of the landowner; types of conservation easements; and options for negotiating allowable activities on any contemplated conservation easement.

Implementation 2C: Foster and support a stewardship ethic among watershed users by incorporating information on all of the above into a "Watershed Stewardship Guide" module within a series of guides. This module might be named for the title of this section, *Watershed Health: Plants & Animals* and would be developed in coordination with Monterey County Parks and other appropriate entities.

Implementation 2D: Encourage and support local communities to pass to younger generations the importance of protecting watershed uses and watershed resources.

Implementation 2E: Provide factual information to make the public aware of how a "wild and scenic" designation under the federal Wild and Scenic Rivers Act affects public and private lands along the north and south fork of the San Antonio River through the Ventana Wild and Scenic Rivers Proposal and the Final Environmental Impact Statement for the Southern California Forest Plan Revisions.

Figure 43. Oak Woodlands on USFS grazing alottment in San Antonio Valley

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ISSUE 9 – Roads & Culverts

ISSUE:

Roads have been identified as a major source of water pollution in watersheds throughout the United States. In addition to water quality impacts, poorly built roads result in higher maintenance costs to landowners, can cause significant property damage and can be less safe than properly built roads. Some roads and culverts in these watersheds were built or designed to handle less runoff than they are receiving and are therefore in need of re-design and/or more regular maintenance.

STATUS and REFERENCES:

Erosion and resulting sedimentation is a natural process often accelerated by human activities. Excessive sedimentation clouds water, which reduces the amount of sunlight reaching aquatic plants; covers fish spawning areas and food supplies; and clogs the gills of fish. In addition, other pollutants such as phosphorus, pathogens and heavy metals are often attached to the soil particles and end up in downstream water bodies.

A significant but manageable source of erosion and sedimentation in most watersheds is roads. Paved and unpaved roads exist throughout the upper, mid and lower Nacitone watersheds both on private and public land. Road and culvert design, construction, and maintenance practices, if not well planned, can concentrate water, causing accelerated erosion and possibly road washouts sending sediment downstream.

Unpaved roads can generate more sediment than paved roads and are higher priorities for design, construction and maintenance to minimize erosion. There are unpaved roads in all portions of these watersheds. The largest amount of unpaved roads occurs on the two military installations. However, there are areas throughout the two watersheds on both private and public lands with higher road densities than the averages listed in figure 40. In a 2001 study of erosion sources, Lewis Et. Al (California Agriculture 55(4):32-8) found that roads were a larger sediment source on ranches than grazing.

A brief assessment of roads was conducted by the MCWRA for this watersheds plan. The assessment consisted of two parts. The roads of both watersheds were assessed using GIS and roads on MCWRA land were assessed by the US-LS RCD.

The GIS assessment found many old roads and firebreaks that do not appear to have been used for many years, and appear to be possible sources of sediment to stream channels in both watersheds. Data sets were created to calculate the number of linear miles of roads. Road surface material and ownership classification as either public agency or private roads was also collected. Ground truthing was limited and was only done on a few easily accessible roads. The two watersheds contain a little over 2,300 linear miles of roads. There are 315.3 miles of paved roads and 1,985.8 miles of dirt roads and fire breaks that exist in these two watersheds. Given a watershed area of 705.3 square miles, this yields a road density (linear miles of road per square mile of area) of 3.26.

In addition to MCWRA analysis of roads, the US-LT RCD visited the eight agency leases and did a quick assessment of road impacts. The RCD determined that the Tank Road (or "Tank Trail") and ranch roads on MCWRA parcels around both reservoirs are potentially significant sources of erosion and sedimentation into the reservoirs that could have negative water quality impacts. Both military facilities in the Nacitone have easements to use the Tank Road which is owned by MCWRA and is an important route between the two facilities.

Existing Road Infrastructure

	Total (linear miles)	Paved Roads (miles)	Dirt Roads & Fire Breaks (miles)	Road Density (square miles)
Both Watersheds	**2,301.2**	**315.3**	**1,985.8**	**3.26**
San Antonio River Watershed	1,272.3	183.5	1,088.8	3.70
Nacimiento River Watershed	1,028.9	131.8	897.1	2.84

Source: MCWRA, 2008

Figure 44. Existing Road Infrastructure

culverts and developing a plan to reduce their negative impacts. Such surveys have been done in many other watersheds using aerial maps and field work to ground truth locations of highly erodible soils, steep slopes, and other conditions to prioritize roads for upgrade, maintenance, or re-routing.

GOAL: Maintain or enhance water quality and watershed health by minimizing accelerated erosion resulting from roads and culverts in these watersheds.

Objective 1: Fund the development of a roads survey through a coordinated effort among the two counties, military, and forest service staff and willing private landowners. Include in this project the development of a watershed-specific guidebook and workshop for private contractors, landowners, and staff of public entities.

Implementation 1A: Request that the two counties evaluate current design standards for roads and drainage structures to ensure they are sufficient to protect water quality in these watersheds and that these standards are provided to contractors, developers, and landowners in a clear and understandable format.

Implementation 1B: Seek funding to conduct road system surveys, prioritize potential problem areas, and prepare projects to be "ready for implementation" as funding becomes available.

Objective 2: Rebuild, properly maintain, and repair existing roads and prudently develop and build any new roads.

Implementation 2A : Provide road and culvert design, construction and maintenance educational materials and/or workshops for private contractors and landowners / land managers using already developed materials such as the "Handbook for Forest and Ranch Roads" by Pacific Watershed Associates for private roads.

Implementation 2B: Seek funding to conduct a focused survey on the Tank Road which runs from Fort Hunter Liggett to Camp Roberts and passes over MCWRA land on the north shore of the San Antonio reservoir. The survey and proposed upgrades to the road should be developed in a coordinated effort among the MCWRA, the RCD, the U.S. ARMY and the California National Guard at Camp Roberts.

Implementation 2C: Encourage landowners to seek technical assistance from various agencies, private consultants, or groups such as the Natural Resources Conservation Service (NRCS) and the Resource Conservation Districts (RCDs) to minimize accelerated erosion resulting from roads and culverts on their private lands. Ensure landowners are aware of cost-share, incentive programs that may be available for road improvement projects.

Implementation 2D: Encourage the US Forest Service to develop a management plan for the Milpitas Special Interest Area that addresses unauthorized/unclassified (non-system) roads on their lands in that area. (A map of these roads is included in Appendix J).

Figure 45. Dirt road on MCWRA property
(Source: MCWRA, 2006)

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ISSUE 10 – Education & Outreach

ISSUE:

Information about existing conditions within these watersheds, watershed functions, how human uses can affect water quality and how we can protect the watersheds are important for everyone living in, working in, and visiting these watersheds.

GOAL: Increase the awareness and understanding of water quality, watershed uses, and watershed functions by those living in, working in, and enjoying the watersheds.

Objective 1: Work with other entities and their existing publications to ensure there are effective materials and programs made available to all watershed users.

Implementation 1A: Develop a catalogue of existing printed material and websites that are available for watershed residents and visitors with information on the following: (this list is not intended to be exhaustive and will be added to over time).

- How to identify methamphetamine labs, marijuana growing sites and who to contact or what to do about them
- Invasive, exotic plant species and plant disease hit list and control measures
- Invasive, exotic insect / animal species hit list and transfer prevention measures
- Shoreline erosion processes – how you can prevent it
- Boat and boating laws
- Information on the prosecution of vandals
- Fire prevention – Cal Fire standards for defensible homes
- The water projects : what, where, why, and how for the Salinas Valley Water Project and the Nacimiento Water Project
- Water conservation measures and new technologies for homeowners and farmers
- Cultural resources – why they are important and how to appreciate them
- Historic resources – biking map with narratives on adobes, classic views, streams, the mission, wineries, etc.
- Plants & Animals of the watersheds
- What is "wild and scenic" and what could it mean to you?
- Ecological diversity and cattle grazing
- Mercury: why should you care? (water, soil, fish tissue, air)
- Trash in streams/lakes: life cycle of a Styrofoam cup
- How to keep petroleum and other pollutants out of streams/lakes
- Septic Safe education – how to use septic-safe household chemicals and soap; doing your own regular inspections
- Stormwater pollution prevention
- Low Impact Development measures for new and significant re-development projects
- Homeowners guide to preventing nonpoint source pollution
- Wildfire prevention
- Fire evacuation plans for humans and animals
- Low Impact or Zero Impact Camping

Implementation 1B: Encourage and support local communities to pass to younger generations the importance of protecting watershed uses and watershed resource through schools, farm days and 4H. *(**Note:** Annual "Farm Day Experience" events have occurred in King City for approximately the past 10 years. This event hosts 1,000s of third graders to learn about farming, ranching, and the resources they depend upon).*

Implementation 1C: Periodically offer Grazing and Irrigated Ag Water Quality Short Course as a cooperative program of the UC Cooperative Extension Services, Farm Bureau, RCDs, NRCS and the MCWRA.

ISSUE 11 – Invasive Species

ISSUE:

Non-native exotic species have historically entered these watersheds. Some exotics are invasive as they rapidly out-compete native species for habitat and can degrade watershed uses. Invasive species threaten the diversity or abundance of native species through competition for resources, predation, and parasitism, interbreeding with native populations, transmitting diseases, or causing physical or chemical changes to the invaded habitat. Through their impacts on natural ecosystems, agricultural and other developed lands, water delivery and flood protection systems, invasive species may also negatively affect human health and/or the economy. Examples of direct impact to human activities include the clogging of navigable waterways and water delivery systems, weakening flood control structures, damaging crops, introducing diseases to animals that are raised or harvested commercially, and diminishing sport fish populations. Management of invasive plants and animals through grazing, cultivation techniques, and physical/chemical eradication methods often occurs in an independent and uncoordinated manner by individual landowners or by land managers within differing jurisdictions.

GOAL: Maintain or enhance water quality and watershed health by increasing cooperative efforts among landowners and managers regarding invasive exotic plants and animals.

Objective 1: Prevent the introduction of invasive species and diseases into the watersheds including the reservoirs (examples: sudden oak death, Quagga/Zebra mussels, giant bamboo, tamarisk, etc.)

Implementation 1A: Encourage interagency cooperation on measures required to prevent the introduction of invasive species.

Implementation 1B: State and local agencies, and resident associations should continue to provide information through informational brochures and signage to incoming boaters and other watercraft users or other recreationalists on the problems associated with specific invasive species, the potential consequences, and how they can help prevent the introduction of these species.

Implementation 1C: Monterey County, San Luis Obispo County and resident associations should work together to develop and implement programs to control invasive species.

Implementation 1D: Provide factual, educational materials about the potential to spread Sudden Oak Death by transporting firewood from areas where the disease occurs, i.e. along the Big Sur coastline.

Implementation 1E: Prevent the entry and spread of exotic and invasive species.

Objective 2: Control the spread of invasive species in the watersheds including the reservoirs (example: yellow star thistle).

Implementation 2A: Encourage landowners and homeowners to control the spread of exotic and invasive plant and animal species.

Implementation 2B: Work with each county's weed management area and the California Department of Fish and Game's Invasive Species Program.

Implementation 2C: Create an open dialog about the use of mechanical and chemical means as well as burning and grazing for controlling noxious weeds, improving habitat and improving the health of the grasslands of the Nacitone watersheds.

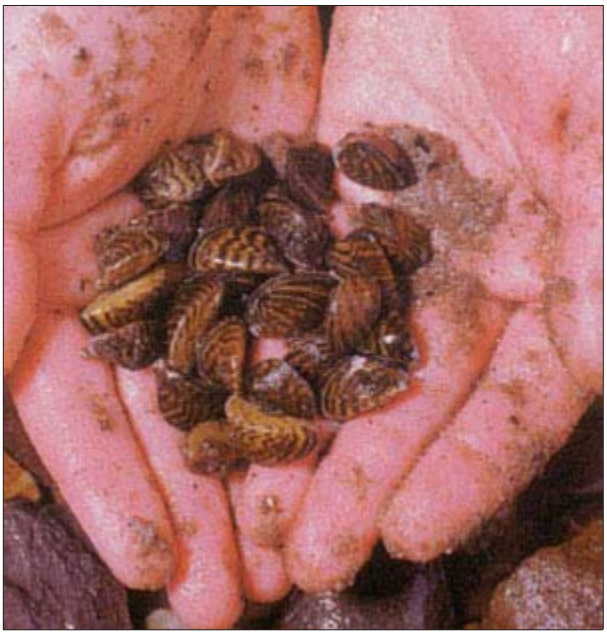

Figure 46. Zebra mussels
(Source: CA Dept. Fish and Game)

E. From recommendation to Action: A Living Plan

The Nacitone Watersheds Management Plan represents a written plan demonstrating an accumulation of facts, figures, and implementation recommendations. Less evident are the myriad relationships that have grown out of the process of stakeholder meetings. The interactivity and relationship building that has occurred will be a critical component of the success and longevity of the plan.

As the Steering Committee reflects on the efforts thus far extended to produce the plan, it has considered the following methods for better ensuring the plans contents are utilized to the fullest extent possible.

Immediate Steering Committee Actions

The Steering Committee has agreed to begin setting into motion the following tasks:

1. Presenting the plan to both County's Boards of Supervisors
2. Identifying subsequent grant opportunities to capitalize on implementation recommendations
3. Configuring a Watersheds Advisory Committee (WAC) which would shepherd the plan forward until such time as a staff position is identified and funded to work with the WAC to support water protection efforts in the Nacitone watersheds.
4. Distributing this plan in coordination with the Monterey County Water Resources Agency
5. Consideration of a user-friendly format for the plan to encourage wider public appeal
6. Facilitating the prioritization and forward momentum of implementation actions. Determining which of the implementations to facilitate and/or implement.
7. Choose a date for the next stakeholders meeting to be convened by the WAC

Method for Plan Distribution

Public Outreach

To the extent possible, Steering Committee members may 'shop the plan around' to groups and associations whose missions have a nexus with the plan. The Steering Committee has been contacting those identified as potential partners for implementation recommendation and will continue to solicit participation in the form of idea exchange and generation of next steps to kick off implementation recommendations.

Targeted Entities

The following groups will receive copies of the plan.

- Technical Advisory Committee members representing jurisdictional agencies in the watersheds
- Representatives of jurisdictional agencies identified in the jurisdictional section of the plan
- Chairpersons of each County Board of Supervisors

- Specific staff members of each County such as Public Works Directors, Planning and Building Department Directors, Reservoir Operations Committee of MCWRA
- People providing public comment
- Steering Committee members
- Members of the public upon request

In addition, the following electronic venues will be used to distribute the plan.

- Nacitone Watershed Group website
- Monterey County Water Resources Agency web site
- Request links on jurisdictional web sites

Strategic Planning

The goals and objectives of this plan may be beneficial starting places for both Counties when they pursue up-dates of General Plan elements relative to these watersheds. Future groups should refer to County General Plans for policies that may support or prevent implementing the Plan's goals and objectives.

Future of the Nacitone Watershed Group Funding

The following is a list of potential strategies for consideration.

1. MCWRA and SLO County Public Works to collaborate on a grant to fund a watershed coordinator.
2. Current watershed group to draft a Memorandum of Agreement (MOA) of potentially involved parties and identify roles and responsibilities of involvement. MOA could be structured to include public agency, local non-governmental organization (NGO), and local sponsoring agency (existing water quality interests) for each county. MOA could be structured to include local, regional, state and federal organizations and agencies that hold a stake in the health of the watersheds. MOA could be structured with signatories' agreement to financially contribute to support a scope of work derived from the MOA.
3. Pursue Supplemental Environmental Projects arising out of RWQCB or other agency violations. For example, Tract 1990 has been levied a fine, some portion of which could be assigned to projects arising out of the NWMP.

Future Plan Updates

As new information on the condition of the watersheds becomes available and new actions to protect and enhance watershed health are agreed upon by stakeholders, the plan could be updated based upon the guidance and direction of the WAC. This plan is not intended to be modified or revised by entities other than a stakeholder or similar group. In addition, as implementation recommendations are acted upon, successes will be accumulated. There will be a need to track the outcomes of the recommendations, monitoring for water quality improvements over the long term.

F. Pending Changes to the Watershed

At this time, the Nacimiento and Salinas Valley Water Projects are being built and will be operational by 2010. A synopsis of both projects is provided below.

Salinas Valley Water Project (SVWP)

The SVWP has several components. Only part of Phase1 would be included in the infrastructure of the Nacitone Watersheds, including spillway modifications to the Nacimiento Dam and re-operation of the reservoirs. Modification of the spillway will increase the capacity of the spillway so it would be able to pass the probable maximum flood (PMF) event. Construction of the Nacimiento Dam spillway modifications include lowering the existing spillway crest approximately twelve feet to an elevation of 788 feet, installing a twelve and a quarter-foot high inflatable rubber dam and raising and strengthening the side walls of the existing spillway chute. Although the maximum capacity of the reservoir would not be altered, larger storm flows can be passed by the spillway. The spillway modification at Nacimiento would allow the MCWRA to're-operate' the reservoir to increase the amount of water stored during the winter and released during the spring and summer months for conservation (i.e., groundwater recharge through the Salinas River bed) and, ultimately, for downstream diversion. The MCWRA currently operates both reservoirs, and although no physical modifications at San Antonio would occur, both reservoirs are operated as a system such that more water would be available for release (SVWP EIR, 2002; SVWP 100% Design Submittal, Boyle Engineering, Feb 2007).

The following significant impacts were found to be unavoidable regarding the SVWP: potential effects on largemouth bass spawning in Nacimiento Reservoir; a reduction in aesthetic values and recreation at the reservoirs; and short-term, construction-related air emissions. The MCWRA Board of Supervisors determined that the benefits of the project overrode the need to avoid those impacts. Therefore, on June 4, 2002, the Board of Supervisors issued a Statement of Overriding Considerations as provided in CEQA Guidelines section 15093 (SWRCB Notice of Petition to Change the Place of Use and Add Points of Diversion 2004).

Nacimiento Water Project

In 1959, San Luis Obispo County Flood Control and Water Conservation District obtained entitlement to 17,500 acre-feet of water per year from Nacimiento Reservoir by an agreement with the Monterey County Water Resources Agency. The project to convey raw water from the reservoir to contracting entities involves a 45-mile pipeline, three tanks, and a multi-port intake facility at the reservoir. Only the intake structure and a small portion of the pipeline lie in the watershed study area. The project is intended to supplement the San Luis Obispo County water supply (SLO County Public Works brochure, 2007). Contracting communities include Paso Robles, Templeton, Atascadero, San Luis Obispo, and County Service Area 10, Benefit Zone A.

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Part 4
Jurisdictional and Existing Regulatory Framework

The NACITONE watershed falls under the jurisdiction of many local, state and federal government agencies. In addition, there are numerous non-regulatory entities that exist and have various missions and functions. A first step toward cooperative management of these watersheds across regulatory and non-regulatory entities is to understand the jurisdictions, roles and responsibilities of these entities. The following section gives a brief overview of regulatory agencies and non-regulatory entities that function in one or both of these watersheds.

A. Regulatory Agencies

Regulatory refers to policies that are forms of legal restrictions that are carried out by the government. The following lists regulatory agencies that have jurisdiction within the NACITONE Watershed and which have a substantial regulatory presence.

Federal Agencies

Federal Energy Regulatory Commission (FERC)

Mission: The Federal Energy Regulatory Commission regulates and oversees energy industries in the economic, environmental, and safety interests of the American public.

Authority: The Federal Energy Regulatory Commission is an independent agency that regulates the interstate transmission of natural gas, oil, and electricity, as well as natural gas and hydropower projects. FERC is responsible for licensing and inspecting private, municipal, and state hydroelectric projects. FERC also oversees environmental matters related to natural gas and hydroelectricity projects and major electricity policy initiatives. The Energy Policy Act of 2005 gave FERC additional responsibilities as outlined in FERC's Top Priorities and updated Strategic Plan.

Guiding Document: FERC Strategic Plan

FERC is responsible for all regulations related to dam/spillway safety requirements at Nacimiento Reservoir. The FERC is headquartered in Washington, DC and also has a regional office in San Francisco.

Relevant websites: http://www.ferc.gov/about/about.asp and http://www.ferc.gov/industries/hydropower/safety.asp

National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service

NOAA Fisheries is a division of the National Oceanic and Atmospheric Administration (NOAA).

Mission: Stewardship of living marine resources through science-based conservation and management and the promotion of healthy ecosystems

Authority: Several major statutes or laws form the legal basis for the programs of the National Oceanic and Atmospheric Administration; Coastal Zone Management Act, Endangered Species Act, Magnuson-Stevens Fishery and Management Act, Marine Mammal Protection Act, National Marine Sanctuaries Act.

Enforcement activities are carried out in cooperation with other State and Federal agencies in the Southwest Region to ensure compliance with various federal regulations relating to stewardship of fishery and protected species resources. For example, NOAA Fisheries works locally with the Army Corps permitting process by providing "Biological Opinions" on proposed projects. These opinions describe potential impacts to protected species and contain restrictions and appropriate mitigations that assure protection of these species during project implementation. Private land owners can work with NOAA Fisheries to develop Habitat Conservation Plans in order to obtain incidental take permits under the Endangered Species Act.

Guiding Document: The NOAA Fisheries Strategic Plan contains three goals: rebuilding and maintaining sustainable fisheries, promoting the recovery of protected species, and protecting and maintaining the health of coastal marine habitats.

The NACITONE Watershed is located in the NOAA Fisheries' Southwest Region which includes California, Hawaii, and the Pacific Trust Territories; the headquarters are located in Long Beach, California. The region is responsible for managing fisheries off the coast of California for salmon, ground fish, and anchovies; and/or conducting enforcement, marine mammal and habitat programs to protect fishes, marine mammals and endangered species within the region. The Southwest Region Field Office is located in Santa Rosa, California. The field office's primary purpose is the administration of the Endangered Species Act, particularly the protection of listed salmonids including Coho, Chinook Salmon, and Steelhead Trout. NOAA Fisheries is also responsible for administering the Clean Water Act, Federal Power Act, Fish and Wildlife coordination Act and the Magnuson-Stevens Act.

Relevant websites: http://swr.nmfs.noaa.gov/ and http://www.lib.noaa.gov/noaainfo/heritage/heritage.html

United States Army Corps of Engineers (ACOE)

Mission: The Army Corps of Engineers' missions include five broad areas of water resources, environment, infrastructure, homeland security and warfighting. The water resource mission is 'in support of Nation's interests, build broad-based relationships and alliances to collaboratively provide comprehensive, systems-based, sustainable and integrated solutions to water resources national and international challenges'. The Corps environmental mission has two major focus areas: restoration and stewardship. Efforts in both areas are guided by the Corps environmental operating principles, which to balance economic and environmental concerns.

Authority: The legislative origins of the program are in the Rivers and Harbors Acts of 1890 (superseded) and 1899 (33 U.S.C. 401, et seq.). The Congress of the United States has assigned the U.S. Army Corps of Engineers the responsibility for regulation and construction and other works in the waters of the United States. The Corps is charged with protecting our nation's harbors and navigation channels from destruction and encroachment, and with restoring and maintaining environmental quality. The principal regulatory mechanisms of the Army Corps that relate to watershed enhancement are the Clean Water Act, Section 404(b)(1) Guideline;

Marine Protection; Research and Sanctuaries Act; Endangered Species Act; National Historic Preservation Act; Coastal Zone Management Act; National Environmental Protection Act; and others as they relate to the regulatory actions of the District. Army Corps of Engineers permits are needed for any work done below the ordinary high water mark of a freshwater entity, discussion with an Army Corps of Engineers representative must be done prior to applying for a permit. According to the Army Corps of Engineers website, responsibilities are accomplished by regulating activities in three areas (1) discharge of fill or dredged materials in coastal and inland waters and wetlands; (2) construction and dredging in navigable waters of the United States; and (3) transport of dredged materials for dumping into ocean waters. The Army Corps of Engineers defines Navigable Waters on their website as the following "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity".

Guiding Document: Civil Works Strategic Plan

The NACITONE Watersheds lies within the San Francisco District of the South Pacific Division of the Army Corps of Engineers. The local Army Corps of Engineers office is located in San Francisco, California.

Relevant websites: http://www.spn.usace.army.mil/ and http://www.iwr.usace.army.mil/

United States Bureau of Land Management (BLM)

Mission: The mission of BLM is to "sustain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations"

Authority: The Bureau of Land Management is responsible for managing all federal lands in the public domain. (http://www.blm.gov/wo/st/en/info/About_BLM.html). BLM was given the charge of multiple-use management by Congress, which is defined as management of public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people. There are numerous legislative acts and regulations which apply to BLM lands and can be found at http://www.blm.gov/wo/st/en/info/regulations.html.

Guiding Document: BLM Manual

BLM operates at both the federal and state levels. The following are BLM lands within the Nacimiento and San Antonio River watersheds: Redonda Mountain Sensitive Resource Area, Rocky Butte Botanical Area, Tierra Redonda, and Waterdog Creek. Any action affecting the above stated lands must be reviewed by an interdisciplinary team to determine if they are in conformance with the existing planning base, this includes all current BLM law, executive order, regulation, policy and land use plans. The NACITONE Watershed falls under the jurisdiction of the Bakersfield Field Office.

Relevant websites: http://www.blm.gov/ca/st/en/fo/bakersfield.html

United States Environmental Protection Agency (EPA)

Mission: The EPA gives the following mission statement on its website, "research, standard setting, monitoring and enforcement with regard to five environmental hazards: air and water pollution, solid waste disposal, radiation, and pesticides". Founded in 1970 as an independent agency, the Environmental Protection Agency is generally responsible for protecting human health and safeguarding the natural environment in the United States. While presiding over the entire country, the EPA also coordinates and supports research and pollution mitigation activities by state and local governments as well as private and public groups, individuals and educational institutions.

Authority: The California Environmental Protection Agency is responsible for implementing Federal Acts, such as the Clean Air Act and the Clean Water Act, that align with corresponding State Laws in an effort to streamline the agency's tasks.

Guiding Document: The Pacific Southwest's Strategic Plan (Plan) sets out the Region's goals for the next five years and describes how the EPA intends to achieve a cleaner, healthier environment.

The NACITONE Watershed lies in the US EPA's Southwest Region (Region 9). This region contains Arizona, California, Hawaii, Nevada, and the Pacific Islands and the headquarters are in San Francisco.

Relevant websites: http://www.epa.gov/region09/ and http://www.epa.gov/cfo/plan/plan.htm

United States Fish and Wildlife Service (USFWS)

Mission: The U.S. Fish and Wildlife Service is the principal federal agency for conserving, protecting, and enhancing fish, wildlife, plants, and their habitats for the continuing benefit of the public.

Authority: The Service enforces federal wildlife protection laws such as the Endangered Species Act, and works in consultation with the Army Corps of Engineers to ensure that permitted projects protect fish and wildlife. The Service evaluates impacts and appropriate mitigations for endangered species that may be impacted by proposed projects. When protected species are involved, the Service prepares "Biological Opinions" on the project to assess the potential impacts and restrict potentially harmful activities and also is responsible for issuing any incidental take permits under the Federal Endangered Species Act. In order for an incidental take permit to be issued a habitat conservation plan is required. The issuance of these permits is contingent on the applicant obtaining a State permit.

Fish and Wildlife Service receives authority to engage applicants early in the project planning process and to make any necessary changes to the project, from the Fish and Wildlife Coordination Act, National Environmental Policy Act, and Endangered Species Act. In regards to Military Lands, the Service reviews the specific entity's management of natural resources and provides guidance on endangered species and the management of their critical habitat.

The NACITONE Watershed lies in the Service's Pacific Region (Region #1). This region headquarters is located in Portland, OR and the region contains the states of Washington, Oregon, California, Idaho, Nevada, Hawaii, and the Pacific Islands.

Relevant websites: http://www.fws.gov/pacific/ and http://www.fws.gov/policy/.

United States Forest Service (USFS)

The U.S. Department of Agriculture Forest Service is a Federal agency that manages public lands in national forests and grasslands. The agency was established by Congress in 1905 to provide quality water and timber for the Nation.

Mission: The mission of the USDA Forest Service is to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations. The Forest Service strives to manage resources under the best combination of uses to benefit the American people while ensuring the productivity of the land and protecting the quality of the environment.

The agency accomplishes its mission through five main activities:

- Protection and management of natural resources on National Forest System lands.
- Research on all aspects of forestry, rangeland management, and forest resource utilization.
- Community assistance and cooperation with State and local governments, forest industries, and private landowners to help protect and manage non-Federal forest and associated range and watershed lands to improve conditions in rural areas.
- Achieving and supporting an effective workforce that reflects the full range of diversity of the American people.
- International assistance in formulating policy and coordinating U.S. support for the protection and sound management of the world's forest resources.

Authority: The Forest Service is responsible for managing national forests for multiple uses and benefits and for the sustained yield of renewable resources such as water, forage, wildlife, wood, and recreation.

Guiding Document: The Forest Service Directive System consists of the Forest Service Manual and Handbooks, which codify the agency's policy, practice, and procedure. The system serves as the primary basis for the internal management and control of all programs and the primary source of administrative direction to Forest Service employees.

The Forest Service is organized into National Forests in ten different regions. The NACITONE Watershed is located within Region 5, Pacific Southwest Region, Los Padres National Forest.

Relevant websites: http://www.fs.fed.us/r5/ and http://www.fs.fed.us/publications/

United States Department of Defense (DoD)

Mission: U.S. Pacific Command, in concert with other U.S. government agencies and regional military partners, promotes security and peaceful development in the Asia-Pacific region by deterring aggression, advancing regional security cooperation, responding to crises, and fighting to win.

The NACITONE watersheds are in the Pacific Command of the DoD.

Relevant websites: http://www.pacom.mil/about/mvp-statements.shtml

State Agencies

State Resources Agency

Mission: To restore, protect and manage the state's natural, historical and cultural resources for current and future generations using creative approaches and solutions based on science, collaboration and respect for all the communities and interests involved.

The Department of Fish and Game, the Department of Forestry and Fire Protection, the Department of Water Resources, and the Department of Boating and Waterways all fall under the direction of the State Resources Agency.

California Department of Fish and Game (CDFG)

Mission: The Department of Fish and Game mission is to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public.

Authority: To meet this responsibility, the law requires any person, state or local government agency, or public utility proposing a project that may impact a river, stream, or lake to notify the CDFG before beginning the project. If the CDFG determines that the project may adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement (1602 Agreement) is required. The principal enforcement mechanism for the CDFG is the California Fish and Game Code, Section 1602. Exclusions include projects conducted by a governmental agency and permit requirements from the Army Corps of Engineers.

The CDFG is responsible for reviewing the management of natural resources on military lands and provides guidance on federally listed species and the management of their critical habitat. The CDFG currently owns two land allotments adjacent to Camp Roberts which comprise the Big Sandy Wildlife Area which totals 865 acres. The CDFG is responsible for riparian habitats located within both watersheds and with support of USFWS adopted a no-net-loss policy for California riparian habitats.

Guiding Documents: The Fish and Game Strategic Plan emphasizes the directions CDFG needs to establish and follow to meet future challenges. It does not describe all of the things the Department currently does. The Fish and Game code identifies the agency's enforcement and regulation purview.

The NACITONE Watershed is located within CDFG's Central Region, a region that includes Fresno, Kern, Kings, Madera, Mariposa, Merced, Monterey, San Benito, San Luis Obispo, Stanislaus, Tulare and Tuolumne counties. The region's main office is located in Fresno, California and there is a local office in San Luis Obispo.

Relevant websites: http://www.dfg.ca.gov/regions/4/ , http://www.dfg.ca.gov/about/resource-mgmt.html and http://www.dfg.ca.gov/habcon/1600/

California Department of Forestry and Fire Protection (CAL FIRE)

Mission: The Department of Forestry and Fire Protection "protects the people of California from fires, responds to emergencies, and protects and enhances forest, range, and watershed values providing social, economic, and environmental benefits to rural and urban citizens" (http://www.fire.ca.gov/). A majority of the CAL FIRE workforce responds to all types of emergencies.

Authority: CAL FIRE crews and equipment are responsible for the protection of over 31 million acres of California's privately-owned wildlands. In addition, they provide emergency services of all kinds within 36 of California's 58 counties through local government contracts (http://www.fire.ca.gov/).

CAL FIRE's Resource Management Program strives to protect California's natural resources including 85 million acres that are classified as wildlands. These wildlands provide the state with timber, watershed, wildlife habitat, and recreation resources. The goal of the CAL FIRE Resource Management Program is to maintain the sustainability of all these natural resources. The Department achieves this goal by "administering state and federal forestry assistance programs for landowners, demonstrating sound management practices on eight demonstration state forests, enforcing the California Forest Practice Act on all non-federal timberlands, providing research and educational outreach to the public on forest pests, and coordinating efforts for fuel reduction to reduce the risk of fire and improve the quality of California ecosystems" (http://www.fire.ca.gov/).

Guiding Documents: The California Fire Plan is the state's road map for reducing the risk of wildfire. By placing the emphasis on what needs to be done long before a fire starts, the Fire Plan looks to reduce fire fighting costs and property losses, increase firefighter safety, and to contribute to ecosystem health.

San Luis Obispo County (CDFSLO)

The California Department of Forestry and Fire Protection has provided fire protection for the County of San Luis Obispo by cooperative agreements since 1929. Cal Fire/San Luis Obispo County 's mission is "t**o serve and safeguard the community from the impacts of fire, emergency injury and illness, and other physical dangers by providing emergency fire/ rescue response, public education, planning, and prevention for the County of San Luis Obispo and its residents".**

CDFSLO has two fire stations within the NACITONE Watershed; the Heritage Ranch Fire Station in Paso Robles and the Oak Shores Fire Station in Bradley.

Relevant websites: http://www.cdfslo.org/ and http://www.fire.ca.gov/communications/communications_factsheets.php

Department of Water Resources (DWR)

Mission: The Department of Water Resources provides dam safety and flood control services, assists local water districts in water management and conservation activities, promotes recreational opportunities, and plans for future statewide water needs. The DWR also operates and maintains the State Water Project, including the California Aqueduct. The mission of the

Division of Flood Management is to prevent loss of life and reduce property damage caused by floods, and to assist in recovery efforts following any natural disaster.

Authority: California Water Code, Sections 10004-10013.

Guiding Document: California Water Plan provides a framework for water managers, legislators, and the public to consider options and make decisions regarding California's water future. The Plan, which is updated every five years, presents basic data and information on California's water resources including water supply evaluations and assessments of agricultural, urban, and environmental water uses to quantify the gap between water supplies and uses. The Plan also identifies and evaluates existing and proposed statewide demand management and water supply augmentation programs and projects to address the State's water needs.

The NACITONE Watershed falls within two districts of the DWR: the Upper Salinas Groundwater Basin is under the San Joaquin District's jurisdiction and the Paso Robles Groundwater Basin is within the Southern Coast Jurisdiction.

Relevant websites: http://www.sjd.water.ca.gov/ and http://www.dpla.water.ca.gov/sd/index.html

Division of Safety of Dams (DSOD)

The Division of Safety of Dams was created by the State Legislature in 1929 under the California Department of Water Resources. The mission of the Division of Safety of Dams is t**o protect people against loss of life and property from dam failure. The California Water Code entrusts this regulatory power to the Department of Water Resources which delegates the program to the Division of Safety of Dams.** Division engineers and engineering geologists review and approve plans and specifications for the design of dams and oversee their construction to insure compliance with the approved plans and specifications. The dams at both the Nacimiento and San Antonio Reservoirs are inspected yearly by the DSOD. The Division of Safety of Dams main office is located in Sacramento, California and the dams at both the Nacimiento and San Antonio Reservoirs fall into the Central Region for Field Engineering.

Relevant websites: http://www.water.ca.gov/damsafety/ and http://www.water.ca.gov/damsafety/FAQuestions/index.cfm

Department of Boating and Waterways

Mission: To provide safe and convenient public access to California's waterways and leadership in promoting the public's right to safe, enjoyable, and environmentally sound recreational boating.

Authority: In 1959, the State Legislature, under authority of the Federal Boating Act of 1958, added Chapter 5 to Division 3 of the Harbors and Navigation Code. This act provided for the registration of most undocumented vessels by the State. It also established a comprehensive set of State laws and regulations governing the equipment and operation of vessels on all waters of the State. Since then the Departments responsibilities have grown.

Guiding document:

Relevant website: http://www.dbw.ca.gov/ and http://www.dbw.ca.gov/Environmental/

Regional Water Quality Control Board (RWQCB)

The Regional Water Quality Control Board is the local administrative unit of the State Water Resource Control Board.

Mission: The mission of the RWQCB is to develop and enforce water quality objectives and implementation plans that will best protect the beneficial uses of the State's waters. Each RWQCB has nine part-time Board members appointed by the Governor and confirmed by the State Senate. RWQCB's are responsible for developing "basin plans" for their hydrologic areas, governing requirements, issuance of waste discharge permits, enforcement actions against violators, and monitoring water quality.

Authority: The focus of the RWQCB is water quality; the Clean Water Act is the primary enforcement tool. The RWQCB also maintains the State's 303 d. list of impaired water bodies (section 303 d. of the Clean Water Act). When a water body is listed on the 303 d. list, regional offices prepare studies and remediation plans to bring water quality within the State's standards and to reduce the Total Maximum Daily Loads to acceptable levels.

The RWQCB becomes involved in watershed enhancement projects as part of Section 401 of the Clean Water Act. The Board works in coordination with the Army Corps of Engineers to issue compliance documents for this section of the CWA. The RWQCB has a bulk of the regulatory responsibility for the cleanup of releases from military facilities.

The RWQCB recently modified discharge permits associated with irrigated agriculture requiring landowners and farm operators to enroll in the Conditional Ag Waiver program which requires the development and implementation of a farm water quality management plan for the reduction of water quality impacts. The RWQCB is currently enrolling landowners and farm operators in the program.

The California Water Code provides regulatory guidance.

Guiding Documents: Central Coast Basin Plan

State Defined Designated Beneficial Uses for Water Quality

RWQCB Basin Plans identify the designated beneficial uses for water bodies within each hydrologic basin and the water quality objectives (stated as physical and/or chemical parameters) to be achieved or maintained to protect each beneficial use. Beneficial uses for a particular water-body include municipal, agricultural and industrial supply, power generation, recreation, aesthetic enjoyment, navigation and preservation, and enhancement of fish, wildlife and other aquatic resources.

The Central Coast Region Water Quality Plan (Basin Plan), adopted by the Regional Water Quality Control Board (RWQCB) in 1989 and approved by the state board in 1990, defines beneficial uses for water bodies in the Central Coast, defines water quality objectives to protect these uses, and outlines implementation and monitoring plans. Amendments to the Basin Plan were approved by the RWQCB on February 11, 1994 and September 8, 1994.

The state defines pollution as impairment to beneficial uses in terms of the physical, chemical, or biological characteristics of water. There is also an "anti-degradation" directive in both state and federal law. EPA requires a biennial water quality assessment that describes the level to

which a water body can support its designated beneficial uses: fully supporting, fully supporting but threatened, partially supporting and not supporting (Range Water Quality Management Plan 1995).

When activities occur that adversely impact water quality and a beneficial use is no longer being supported, remediation actions may occur to restore beneficial uses. One way to approach goals and strategy development is to consider what actions could be planned to preserve or restore impacted beneficial uses. Those actions could be configured into a strategy to preserve/ restore beneficial uses. The Regional Water Quality Control Board has also removed designated beneficial uses for particular water bodies. This happens in rare instances when it is determined that the beneficial use is no longer appropriate for that water body.

The Central Coast Basin Plan provides a list of designated beneficial uses for many of the water bodies in these two watersheds.

None of the rivers in the watershed have beneficial use designations of aquaculture (AQUA), estuarine habitat (EST), marine habitat (MAR), inland saline water habitat (SAL), preservation of biological habitats of special significance (BIOL), shellfish harvesting (SHELL) or areas of special biological significance (ASBS).

Relevant websites: http://www.swrcb.ca.gov/rwqcb3/index.htm and http://www.swrcb.ca.gov/rwqcb3/WMI/Index.htm

Office of Environmental Health Hazard Assessment (Cal/EPA)

Mission: To protect and enhance public health and the environment by scientific evaluation of risks posed by hazardous substances.

Authority: The Department is responsible for developing and providing risk managers in state and local government agencies with toxicological and medical information relevant to decisions involving public health.

Guiding Document: OEHHA's Strategic Plan
Relevant websites: http://oehha.ca.gov/about/description.html and http://oehha.ca.gov/ fish.html

California National Guard

Mission: The California Army National Guard organizes, trains, equips, and resources community based land forces. On order, mobilizes to support state and/or federal authority.

Authority:

Guiding Document: California National Guard Strategic Plan

Relevant websites: http://www.calguard.ca.gov/Pages/default.aspx

Local Agencies

The primary local resource agencies related to watersheds jurisdiction are included. In addition, the following local agencies may be involved in the protection of water quality and watershed health but are not further described in this section: county agriculture commissioner offices, county health departments, cooperative extensions and law enforcement agencies and departments.

Monterey County Parks Department

Mission: The Monterey County Parks Department maintains stewardship over a system of county parks. These outdoor recreation resources are managed to preserve, promote, and interpret the natural, historical, and cultural values of Monterey County. They are operated to provide opportunities for the public's enjoyment, inspiration, education, personal development and cultural enrichment.

Relevant websites: http://www.co.monterey.ca.us/parks/nacimiento.html and http://www.co.monterey.ca.us/parks/sanantonio.html

Monterey County Resource Management Agency - Planning and Building Services Departments

Mission: The Mission of the Resource Management Agency – Planning and Building Services Department is to efficiently process planning permits, provide quality long-range planning and consistently develop and administer land use policies.

Authority: California state law requires each city and county to adopt "a comprehensive, long-term general plan for the physical development of the county or city, and any land outside its boundaries which bears relation to its planning" (Government Code section 65300).

Guiding Document: Monterey County's General Plan identifies standards and programs for the development of unincorporated areas.

A majority of the NACITONE watershed falls within the South County Planning Area which has its own set of development standards and regulations with the South County Area Plan. Lands surrounding the San Antonio Reservoir are designated within the Monterey County General Plan as Public/Quasi-public and Rural Grazing, with smaller surrounding areas designated as Farmlands and Permanent Grazing. A small area north of the San Antonio Reservoir is designated for Rural Residential use with a minimum of 5 acres per unit. The NACITONE Watershed is partially located in unincorporated Monterey County.

General Plan (2006)

The General Plan is currently being updated.

Relevant websites: http://www.co.monterey.ca.us/rma/services.htm and http://www.co.monterey.ca.us/planning/gpu/draftNov2007/default.htm

County of San Luis Obispo, Planning and Building Department

Mission: The Planning and Building Departments mission is 'promoting the wise use of land helping to build great communities.'

Authority: California state law requires each city and county to adopt "a comprehensive, long-term general plan for the physical development of the county or city, and any land outside its boundaries which bears relation to its planning" (Government Code section 65300).

Guiding Document: The San Luis Obispo County General Plan expresses the county's development goals and embodies public policy relative to the distribution of future land uses. It identifies county's land use, circulation, environmental, economic, and social goals and policies as they relate to land use and development.

Part of the NACITONE Watershed is located within unincorporated San Luis Obispo County, and falls within the area covered by the Nacimiento Area Plan. The County's General Plan identifies standards and programs for the development of unincorporated areas and the Nacimiento Area Plan provides specific development regulations for the area. Lands surrounding Nacimiento Reservoir are for the most part designated as Agricultural and Open Space within the SLO County General Plan. Land uses adjacent to the reservoir primarily include Rural Residential, Recreation, Agriculture, and Open Space, with some Residential Suburban.

Conservation Element

This element is in the process of an update initiated in 2006. There is an existing Conservation Element included in the "Environment Plan" from 1974. The draft plan is scheduled to be released in October 2008 with Planning Commission hearings in February 2009 and Board of Supervisors hearings in August 2009.

Relevant websites: http://www.slocounty.ca.gov/planning.htm and http://www.slocounty.ca.gov/planning/General_Plan__Ordinances_and_Elements.htm

County of San Luis Obispo, Public Works and Transportation Department

Provides public services related to the safe and efficient movement of traffic on the 1,310 miles of County maintained roadways; engineering and surveying review of proposed land development; administration and operation of various water and waste water wholesale and retail facilities, including the Nacimiento Water Supply and Los Osos Waste Water Projects; long term master water planning; franchise administration for the unincorporated areas. The Public Works Department is also responsible for managing the County's Storm Water Management Program. The San Luis Obispo County Water Quality Laboratory is part of the Utilities Division of the Public Works Department.

Relevant websites: Website for SLO Co. PWD: http://www.slocounty.ca.gov/PW.htm
Website for Nacimiento Water Project: http://www.slocounty.ca.gov/PW/NacWP.htm

B. Legal regulatory Framework

California Environmental Quality Act (CEQA) is the foundation of environmental law in California; it strives to protect all aspects of the environment through thorough analysis. CEQA requires state and local agencies to prepare Environmental Impact Reports for most projects. These reports are then analyzed and used to make decisions about the severity of the impacts on the environment. CEQA also requires that mitigation measures are identified for all impacts. If an action is identified as a project an Initial Study is required, after analysis of the initial study occurs the decision is made to either make a Negative Declaration of environmental impacts or to prepare an Environmental Impact Report. If impacts are found mitigation measures and project alternatives must be discussed. The responsible agency can decide to go forward with a project despite environmental impacts with a Statement of Overriding Consideration, which explains why the benefits of a project outweigh the environmental impacts.

National Environmental Protection Act (NEPA) is the federal law that requires all federal agencies to prepare Environmental Impact Statements for actions that have a significant impact on the environment. NEPA is also a model for several policies at the state level, including CEQA. Environmental Impact Statements are very similar to EIRs and require that any environmental impacts be identified as well as creating mitigation measures to address the impacts.

Clean Water Act (CWA) is the cornerstone of surface water quality protection in the United States. (The Act does not deal directly with ground water or with water quantity issues.) The statute employs a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters so that they can support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water.

The Porter-Cologne Water Quality Control Act establishes the State Water Resources Control Board and each Regional Water Quality Control Board as the principal State agencies for having primary responsibility in coordinating and controlling water quality in California.

C. Resources Agencies - Non-Regulatory Entities

Non-regulatory entities can operate on the Federal, State and Local levels and are designed to perform necessary functions that do not involve direct policy. These entities do not enforce laws. Their focus is generally on education, voluntary landowner participation, and landowner assistance.

Federal Agencies

National Oceanic and Atmospheric Administration (NOAA) Restoration Center

The National Oceanic and Atmospheric Administration perform many non-regulatory tasks through its Restoration Center which plans, implements, and funds coastal restoration projects throughout the United States.

Mission: The NOAA's website identifies that the Restoration Center's mission is to "enhance living marine resources to benefit the nation's fisheries by restoring their habitats". The NOAA Restoration Center accomplishes its mission by restoring degraded habitats, advancing the science of coastal habitat restoration, transferring restoration technology to the private sector, the public and other government agencies and by fostering habitat stewardship and conservation ethics.

Three primary programs allow the Restoration Center to restore fisheries habitat. The first is the Community-based Restoration Program which takes a grass-roots approach to restoration and engages communities to participate in hands-on local habitat restoration projects. The second program is the Damage Assessment Remediation and Restoration Program, which brings in scientists and managers after oil spills, toxic releases, or ship groundings to restore injured marine resources. The Restoration Research Program works to advance new science and technology within the restoration field.

Relevant websites: http://www.nmfs.noaa.gov/habitat/restoration/

Natural Resources Conservation Service (NRCS)

Originally called the Soil Conservation Service, the Natural Resources Conservation Service was established in 1935 and has provided leadership in a partnership effort to help America's private land owners and managers conserve their soil, water, and other natural resources.

Mission: The NRCS has six mission goals: high quality and productive soils, clean and abundant water, healthy plant and animal communities, clean air, adequate energy supply, and working farms and ranchlands. In order to achieve these goals, the NRCS implements the following strategies:

- Cooperative conservation: seeking and promoting cooperative efforts to achieve conservation goals.
- Watershed approach: providing information and assistance to encourage and enable locally-led, watershed-scale conservation.
- Market-based approach: facilitating the growth of market-based opportunities that encourage the private sector to invest in conservation on private lands.

Service offices serving the Nacitone watersheds are located in Templeton and Salinas.

Relevant websites: http://www.ca.nrcs.usda.gov/

United States Fish and Wildlife Service (USFWS) Partners for Fish and Wildlife Program

The United States Fish and Wildlife Service participates in a cooperative conservation program called Partners in Wildlife.

Mission: The Program's mission is to efficiently achieve voluntary habitat restoration on private lands, through financial and technical assistance, for the benefit of Federal Trust Species. The USFWS's website lists the program's four main objectives: Promote and implement habitat improvement projects that benefit Federal Trust Species, Provide conservation leadership and promote partnerships, Encourage public understanding and participation, Work with U.S. Department of Agriculture to implement conservation programs. The Partners program has locally based field biologists who work directly with private landowners and other partners to plan implement and monitor their projects in an environmentally friendly manner.

Relevant websites: http://www.fws.gov/partners/

Local Agencies and Organizations

Cal-Shasta Club

Cal-Shasta Club is a private recreation club consisting of 120 members, located on 340 acres, situated along the southern shoreline of Nacimiento Reservoir. Amenities consist of approximately 6 miles of private roads, launch ramp, helicopter pad (day and night), ice machines, clubhouse, a park and BBQ facility.

Relevant websites: http://lakenacimientosouthshorearea.com/Cal-Shasta.htm

Heritage Ranch Community Service District

Mission: The purpose and mission of Heritage Ranch CSD is to provide municipal services to the Village of Heritage Ranch in a manner that is efficient, safe and in accordance with applicable law. These services include the supply of drinking water, the disposal of wastewater, removal of solid waste, parks and recreation and retail gasoline.

The Heritage Ranch CSD is responsible for the operation and maintenance of the Heritage Ranch sewer and for allocating the 1100 acre feet per year allotment from the Nacimiento Reservoir for the Community of Heritage Ranch. The District's service area includes 5,361 acres; the Heritage Ranch CSD is bounded on the west by Nacimiento Reservoir, on the north by Nacimiento River, on the east by Camp Roberts, and on the south by certificated parcels. The Heritage Ranch CSD is located in Paso Robles, within the Community of Heritage Ranch.

Relevant websites: http://www.heritageranchcsd.com/

Home Owner's Associations

Heritage Ranch Owner's Association

The Heritage Ranch Owner's Association is responsible for managing 9,150 acres of land including 2,104 single-family residential lots and 5,100 acres of open space. Heritage Ranch is located along the southern shoreline of the Nacimiento Reservoir.

Relevant websites: http://hroa.us/main.htm

Oak Shores Community Association

The Oak Shores Community Association is responsible for the management of the Oak Shores Community and its facilities, which include a marina, clubhouse, boat slips and campground. The Association consists of five committees, Finance, Recreation, Architectural Review, Oak Leaves and Private Docks. The Finance Committee creates an annual operating budget for the community. The Oak Shores Community Association is managed by a Board of Directors, but also employs staff to carry out general management, business operations, code enforcement and maintenance.

Relevant websites: http://oakshores.us/

Santa Lucia Cabinowners Association

The Santa Lucia Cabinowners are a tract of recreational residences within the Los Padres National Forest and the upper San Antonio and Arroyo Seco River watersheds. They are sanctioned by the National Forest Homeowners Association.

Laguna Vista Boat Club

Laguna Vista Boat Club is located on the north shore of Nacimiento Reservoir at the end of Bee Rock Road. The club was established in 1964 and has 21 members on 10 acres. The members share a common area referred to as "The Point".

Lake Recreation and Public Safety Roundtable

The Lake Recreation and Public Safety Roundtable is an informal group of representatives from communities around Nacimiento Reservoir that meets with Monterey County Park Rangers to discuss issues of common concern to the Rangers and communities around the reservoir. The group works together to provide communication and support to goals and initiatives of Monterey County and the various private organizations.

Monterey County Farm Bureau

Monterey County Farm Bureau is a private, nonprofit association of farmers and ranchers throughout Monterey County. The Farm Bureau serves as a collective voice for farmers and ranchers and provides information, benefits and services. Farm Bureau cooperates with other agricultural organizations to fulfill its purpose of working for the solutions to the problems of the farm, the farm home and the rural community.

Relevant website: http://www.montereycountyfarmbureau.org/

Monterey County Water Resources Agency (MCWRA)

Mission: The Monterey County Water Resources Agency manages, protects and enhances the quantity and quality of water and provides specified flood control for present and future generations of Monterey County.

Specific information regarding reservoirs, precipitation, stream flow and groundwater are provided on the MCWRA website, or can be found at the office located in Salinas. The MCWRA carries out all County of Monterey Flood Control and Water Conservation District actions.

Relevant websites: http://www.mcwra.co.monterey.ca.us/

Nacimiento Regional Water Management Advisory Committee (NRWMAC)

NRWMAC represents visitors, property owners and enthusiasts of all sorts that enjoy Nacimiento Reservoir. NRWMAC acts as the collective voice of reservoir area property owners at the Monterey County Reservoir Operations Committee meetings held monthly in Salinas. This is where decisions are made which control the outflow of water from the reservoir. NRWMAC's goal is to maximize the water level in Nacimiento Reservoir from May 1st through October 1st.

Ranchos Del Lago

Ranchos Del Lago is an area of 21 privately owned parcels ranging in size from 7 to 268 acres. The parcels are located on the south side of Nacimiento Reservoir. Amenities include a community launch ramp.

Resource Conservation District of Monterey County (RCDMC)

Resource Conservation Districts are organized under the California Public Resources Code. The Monterey Resource Conservation Districts located within the Central Coast Region and is responsible for carrying out natural resource conservation programs within its boundaries, which cover 2,141,430 acres.

Mission: The mission of the RCDMC is to conserve and improve natural resources, integrating the demand for environmental quality with the needs of agricultural and urban users. The Monterey Resource Conservation District provides direct assistance to Monterey County farmers and landowners to protect soil, water, and natural habitats. The RCDMC mainly does public education work but also provides technical assistance to land users, schools, groups, organizations and the general public in conjunction with the Natural Resources Conservation Service. The RCDMC also partners with agricultural and natural resource protection organizations and agencies throughout the Central Coast.

Relevant websites: http://www.rcdmonterey.org/

Running Deer Ranch

Running Deer Ranch is an area on the south side of Nacimiento Reservoir in the area of Frankln and Las Tablas creeks. The Ranch consists of 138 property owners. Parcels range in size from 3 to 40 acres. The owners have a common area called "The Point" where they have a picnic area and boat launch ramp.

San Luis Obispo County Water Resources Advisory Committee

Mission: The San Luis Obispo County Water Resources Advisory Committee's purpose is to advise the County Board of Supervisors concerning all water resources policy decisions of the San Luis Obispo County Flood Control and Water Conservation District.

The Committee is also responsible for making recommendations for specific water resource programs and methods of financing these programs to the Board of Supervisors. The Committee includes members from the County at Large, every City in San Luis Obispo County, every local Community Service District, Resource Conservation Districts, Agriculture and the County Farm Bureau, Environmental representatives, and Water Agencies and Institutions. The committee meets once a month in San Luis Obispo.

Relevant websites: http://www.slocountywater.org/site/Water%20Resources/Advisory%20Committee/index.htm

San Luis Obispo County Farm Bureau

The San Luis Obispo County Farm Bureau is a non-governmental, non-profit, voluntary membership corporation that's purpose is to protect and promote agricultural interests throughout San Luis Obispo County and to find solutions to the problems of the farm, the farm home and the rural community. Farm Bureau strives to protect and improve the ability of farmers and ranchers engaged in production agriculture to provide a reliable supply of food and fiber through responsible stewardship of California's resources.

Relevant website:
http://www.slofarmbureau.org/About-Us/About-Us.htm

South Nacimiento Road Association (SNRA)

The South Nacimiento Road Association represents more than 500 property owners who maintain approximately 11 miles of private roads that come from Chimney Rock road along the shore of Nacimiento Reservoir. This area covers approximately 8000 acres.

Relevant websites: http://lakenacimientosouthshorearea.com/SNRA%20ROAD%20REPAIR%20PRIORITY%20LIST%202008%20REV2.13.08.pdf

South Shore Village Vacation Club

South Shore Village Vacation Club is located on the south shore of Nacimiento Reservoir at the west end of the reservoir in an area often referred to as "The Narrows". The club owns approximately 560 acres, and has 40 members. Amenities include consist of launch ramps, bathroom facilities, ice machines, and a daytime heliport.

Tri-Counties Boat Club

Tri-Counties Boat Club is located on the south side of Nacimiento Reservoir in the Las Tablas bay area. The Club owns 40 acres and has 86 members. Facilities include a BBQ area and boat launch ramp.

Upper Salinas Las Tablas Resource Conservation District

Resource Conservation Districts are organized under the California Public Resources Code. The Upper Salinas Las Tablas Resource Conservation District is responsible for carrying out natural resource conservation programs within its boundaries, which covers approximately 1.5 million acres of the Central Coast area of California, extending from southeastern Monterey County to northwestern, central, and eastern San Luis Obispo County. About 700,000 acres are grazing lands and 400,000 are cropland; livestock production and dry farmed grains and hay are the major income producers for large landowners. The district includes 1,365,000 acres in San Luis Obispo County (about three-quarters of the county area) and 138,000 acres within Monterey County. The largest landowners are the federal government (Forest Service, BLM and U.S. Army (Camp Roberts), Hearst Corporation (Hearst Ranch and the Jack Ranch: *not located within the NACITONE Watershed*), and the Monterey County Water Resources Agency (Nacimiento Reservoir and the lands surrounding the reservoir).

In addition, the US-LT RCD has some purview over grading permits in the watersheds inside San Luis Obispo County plus the areas of Camp Roberts and Parkfield in Monterey County. Under the Alternative Review Program, landowners that neglected to obtain a County grading permit are referred to the RCD. The landowner can apply for an ARP grading permit or be referred back to the San Luis Obispo County Code Enforcement and District Attorney's Office. The Erosion Control Assistants Program, available to all landowners in San Luis Obispo County voluntarily, also connects to Code Enforcement and /or the District Attorney similar to the ARP. These alternative options for grading and erosion control enforcement provide with a second chance to meet permitting requirements and ensure that Best Management Practices are implemented.

Guiding Document: Upper Salinas Watershed Action Plan, Annual Plan and Long Range Plan

Relevant websites: http://www.us-ltrcd.org/ and http://www.mcwra.co.monterey.ca.us/Agency_data/USLS%20RCD%20Watershed%20Action%20Plan/USLS%20RCD%20Watershed%20Action%20Plan.htm

D. Relationship to Other existing Plans

The NACITONE Watersheds Management Plan is a non-regulatory document. This section reviews regulatory and non-regulatory plans that focus on or include these watersheds. Recommendations of the NACITONE Plan attempt to complement these existing plans where there is relevance to issues identified for these watersheds.

Central Coast Region Basin Plan (1994)
California Regional Water Quality Control Board

The goal of the Central Coast Region Basin Plan is to show how the quality of the surface and ground waters in the Central Coast Region should be managed to provide the highest water quality reasonably possible. The plan lists the various water uses and describes the water quality level that must be maintained to allow those uses. The Regional Board implements the Basin Plan by issuing and enforcing waste discharge requirements to individuals, communities, or businesses whose waste discharges can affect water quality. The Basin Plan is implemented by encouraging water users to improve the quality of their water supplies. Public works or other projects that affect water quality are reviewed and their impacts identified. The Central Coast Regional Board has jurisdiction over a 300-mile long by 40-mile wide section of California's central coast. Its geographic area encompasses all of Santa Cruz, San Benito, Monterey, San Luis Obispo, and Santa Barbara Counties.

Central Coast Regional Water Quality Control Board Vision (2008)

The Central Coast Regional Water Quality Control Board is moving in a fundamentally new strategic direction, based upon a Vision of Healthy Functioning Watersheds. This new Vision represents a refocusing of their approach providing a new framework for how they conduct business and achieve measurable results. The Vision structures their work towards their highest water quality priorities and more strategically aligns them with the anticipated challenges and opportunities in water quality and positions the agency to respond more nimbly to unexpected ones. For more information visit:
http://www.waterboards.ca.gov/centralcoast/publications_forms/publications/vision/index.shtml

Nacimiento Area Plan, San Luis Obispo County (2003)

The Nacimiento Area Plan is a supplemental plan to the County's General Plan. The plan deals specifically with 97,665 acres that comprise the planning area which is adjacent to the Monterey County line to the North, the Adelaida planning area to the South, Camp Roberts to the East and the Santa Lucia Range to the West. Nacimiento Reservoir is the center of the planning area. This plan describes County land use policies for the Nacimiento Planning Area, including regulations which are also adopted as part of the Land Use Ordinance.

Water Supply Programs (WSP-14, 15, 16, 17)
The Plan identifies issues related to water supply, the first refers to reservoir water use and the need to identify properties illegally taking water directly from the reservoir and removing all equipment used for this purpose. The second addresses the possibility of using reclaimed water and returning it to the reservoir to allow "equivalent amounts of water to be taken from reservoir supplies" (p.3-10). The last issue deals specifically with Oak Shores and Heritage Ranch, "if total water use reaches 1,100 acre feet per year, a moratorium should be placed on further development within the affected project"(p.3-10).

Rural Area Programs
The following programs apply to portions of the Nacimiento Planning Area outside of village reserve lines, in the land use categories listed.

Areawide *(RAP-1)*
The Plan states that the county should continue to encourage owners of eligible lands to participate in the agricultural preserve program.

Open Space (RAP-2)
The Plan states that the County will work with Monterey County Flood Control and Water Conservation District to create plans "for a wilderness park with appropriate passive recreational uses" (p.6-13).

Village Programs
The following program applies to all land use categories within the Heritage and Oak Shores village reserve lines.

Phasing Plans (VP-1)
The Plan states that the County will work with developers and Monterey County to update current project phasing plans and will include them within the Land Use Element.

Combining Designations
The Plan refers to combining Designations as "special overlay land use categories applied in areas of the county with potentially hazardous conditions or special resources, where more detailed project review is needed to avoid or minimize adverse environmental impacts, or effects of hazardous conditions on proposed projects" (p.7-1).

The Santa Lucia Range and Foothill Areas
For the Village portion of the Planning Area the combined designation refers to those lands having moderately high and high landslide risk potential. The designation only refers to areas with high landslide risk that are located within the Rural portion of the Planning Area.

Nacimiento River and Canyon; Dip, Franklin, Las Tablas, Snake and Town Creeks; and Lake Nacimiento

This designation refers to water courses that are "identified as having potential flood hazards and development proposals must incorporate mitigation measures" (p.7-1). Specifically for Nacimiento Reservoir, "the 800 foot elevation constitutes the lake's high water level and no habitable structures are permitted below the 825 foot elevation" (p.7-1).

Tierra Redonda Mountain
This mountain is a major area landmark and is under Bureau of Land Management ownership. The mountain is considered to have high preservation priority by the State Department of Parks and Recreation and is of ecological importance. The mountain is considered to be public land and preservation of the entire mountain is the best strategy for conserving the ecosystem.

Lake Nacimiento Drive-Interlake Road
This road has been adopted as a State scenic highway route from Chimney Rock Road northwest to the Monterey County line; all visual impacts in this area should be minimized.

Rocky Butte Botanical Area
The Plan identifies this area as having botanical and scenic value. The Bureau of Land Management owns approximately 460 acres of this area, the remaining acres are privately owned and the County will encourage open space easements for these portions.

In addition, the following apply to specific Land Use Ordinances for the Nacimiento Area Plan:

Section 22.102.040

Site planning and development standards
Proposed development shall be designed and constructed in compliance with the following standards.

Snake and Dip Creeks**.** Retain Snake and Dip Creeks in their natural state, except for stock ponds and low intensity recreational uses such as trails and picnic areas.

Vegetation Protection**.** Site new development to avoid areas of dense brush and oak woodland vegetation.

Section 22.102.060

Protection of native vegetation**.** New parcels and development shall be sited where possible to avoid areas of dense brush and oak woodland vegetation, and locate building sites along ridges or hilltops where development would not be silhouetted against the sky, as seen from existing and proposed collector and arterial streets.

San Luis Obispo Integrated Regional Water Management Plan (2005)
San Luis Obispo County

The San Luis Obispo Integrated Regional Water Management Plan identifies five water management planning objectives which include water supply, water quality protection and improvement, ecosystem preservation and restoration, groundwater monitoring and management and flood management. The Nacitone watersheds fall in the Salinas and Nacimiento Water Planning Areas.

The Nacitone Watershed Management Plan will aid in meeting the objectives and regional solutions defined in the IRWMP (Section H3). Related objectives include to "protect and improve source water quality" and "protect and improve groundwater quality from point and nonpoint source pollution, including nitrate contamination; MTBE and other industrial, agricultural, and commercial sources of contamination; naturally occurring mineralization, boron, radionuclide, geothermal contamination; and seawater intrusion and salts." In addition, the IRWMP states that "projects recommended in sub-regional plans have already been coordinated at the sub-regional level and can be considered excellent candidates for implementation of the IRWMP" (Section M1.3). The Regional Priorities section provides a process for modifying priorities in response to change. It is anticipated that the Nacitone Plan, as a local watershed planning document, will be incorporated into the IRWMP using the adaptive management strategy (Section F4).

Nacitone Watershed Management Plan Issues	Salinas Valley Integrated Regional Water Management Plan Categories	San Luis Obispo Integrated Regional Water Management Plan Categories
1. Recreation 2. Gaps in Knowledge: Monitoring and Information Needs 3. Preventing Pollution from Point and Nonpoint Sources 4. The Role of Agriculture 5. Fire in the Watersheds 6. Taking Enforcement Action 7. Communication & Coordination 8. Watershed Health: Plants & Animals 9. Roads and Culverts 10. Education and Outreach 11. Invasive Species	1. Water Supply 2. Water Quality 3. Flood Protection 4. Environmental Enhancement	1. Water Quality 2. Water Supply 3. Ecosystem Preservation and Restoration 4. Groundwater Monitoring and Management 5. Flood Management

Figure 47. Comparison of issues addressed in the Nacitone WMP to the categories covered in the SV IRWMP and the SLO IRWMP

Salinas Valley Integrated Regional Water Management Plan (2006) Monterey County Water Resource Agency

The Salinas Valley IRWMP provides goals and objectives that address water supply, water quality, and other environmental issues at a regional scale. The planning area is defined by the Salinas Valley Groundwater Basin and describes a Long Term Regional Priority (Section 6.3.4) to implement integrated watershed management in the Nacimiento and San Antonio River watersheds in order to improve the water quality in the reservoirs as well as the riparian habitat and aquatic ecosystems of the Salinas River and the Salinas River Groundwater Basin. The Nacitone Plan will provide the essential local level of knowledge, planning and project prioritization to assist MCWRA in meeting this long term priority.

South County Area Plan, Monterey County (2007)

The South County Area Plan supersedes the General Plan for the South County Area. The plan consists of 1,281 square miles of the southernmost section of Monterey County. The area is bordered by the Central Salinas Valley Planning Area to the North, the San Benito, Fresno and Kings County lines to the East, the Coast Planning Area makes up the western border and the San Luis Obispo County line is the Southern boundary.

Land Use (SC-1.2, 1.3)
The Plan encourages clustered development in order to preserve agricultural land and open space and to make the most efficient use of land; and any policy or program (including large lot zoning and agricultural land trusts) that enhance the competitive capabilities of farms and ranches.

Safety (SC-4.1)
The Plan requires that any channelization or realignment work on the Salinas River may not be permitted unless an assessment by the Monterey County Water Resources Agency is done to ensure that the work will not increase flood hazards downstream.

Public Services (SC-5.2, 5.3, 5.5, 5.6)
The South County Area Plan will strive to protect and preserve natural and artificial groundwater recharge areas, water quality, natural resources, soils and watersheds. All New Development shall not occur on or in close proximity to the main channels and associated floodways of the Nacimiento, San Antonio, and Salinas Rivers. The Plan states that all commercial recreation facilities for camping and boating shall be compatible with surrounding uses, of moderate size, and consistent with all resource protection and hazard avoidance policies. The County also hopes to establish a park site along the Salinas River at Camp Roberts.

Stormwater Management Program - National Pollution Discharge Elimination System (NPDES)
San Luis Obispo County

The County Stormwater Management Program encompasses the designated unincorporated urbanized areas of San Luis Obispo County. The program complies with all of the US Environmental Protection Agency, National Pollutant Discharge Elimination System Phase II Final Rule and State Water Resources Control Board "Waste Discharge Requirements for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems". This program was developed to reduce stormwater pollutants to receiving waters to the maximum extent practicable through the use of Best Management Practices.

Relevant website: http://www.slocounty.ca.gov/PW/Stormwater/SWMP.htm

Existing Management Objectives of Military Installations and the United States Forest Service

The United States Army at the Fort Hunter Liggett training base, the National Guard at Camp Roberts, and the US Forest Service, Monterey District at Los Padres National Forest are important watershed partners for the Nacitone Steering Committee and any future efforts that might arise from this Watersheds Management Plan. The public lands entrusted to those three entities represent approximately 48.1% of the combined San Antonio and Nacimiento Rivers watersheds.

In the Fort Hunter Liggett April 2007 amended Integrated Natural Resources Management Plan (INRMP, 2007) an ecosystem management philosophy is set forth.

> *In accordance with that philosophy, FHL is developing partnerships with various agencies to support management of its natural resources. Major partners in implementing this plan (INRMP 2007) are the USFWS and the CDFG. Other partners include other Department of Defense agencies, other Federal and State agencies, universities, contractors, and private citizens. An emphasis of the INRMP is to strengthen existing partnerships and to identify and develop new partnerships (INRMP, 2007, pg.5).*

The development and strengthening of partnerships with all the parties noted in the above paragraph was also a strong emphasis of the Nacitone Steering Committee across all issue areas identified in the *Watershed Strategy.* A representative from the Fort Hunter Liggett Environmental Division participated with the Steering Committee and Technical Advisory Committee. Camp Roberts staff met with the Nacitone Facilitator and was also an early partner

with the MCWRA in preparing the grant proposal for the watersheds management plan. US Forest Service, Monterey District staff contributed to several Steering Committee meetings, provided background information and helped review sections of the *Watershed Strategy.*

Nexus with the Nacitone Watershed Strategy:

Environmental documents from the two military installations and the US Forest Service contain goals that are similar to those in the *Watershed Strategy* as well as identify opportunities for additional data collection.

For example, the military Land Condition Trend Analysis (LCTA) process for both military installations could be useful in tracking long-term trends in the watershed. LCTA was initiated in the mid-1980s by the Department of Army for uniform data collection. LCTA collects physical and biological resources data to relate land conditions to training activities. These data are intended to provide information to effectively manage land use and natural resources.

Below are six, selected issues from the Fort Hunter Liggett INRMP, 2007 with goals that are very similar to those in the *Watershed Strategy* thereby presenting opportunities for collaboration to achieve common goals.

Selected Issues, Goals, and Actions from the Fort Hunter Liggett INRMP, 2007 (pages 159-184)

WATER QUALITY - Issue: *Although water quality is high in both major river drainages, the potential for point source and nonpoint source contamination from sedimentation and nutrients exists.* ***Goal:*** *Maintain high quality surface waters to support viable populations of aquatic and terrestrial life.*

Actions

1. Continue to implement the storm-water pollution prevention plan (Radian Corporation 1995).

2. Maintain vegetation in watersheds and at reservoirs to promote natural filtering of sediments.

3. Continue to monitor surface water quality. Collect total suspended solids data from the San

Antonio River at Nacimiento Road and at Sam Jones Road for determination of overall impacts of Cantonment area use stations on tributary streams to better pinpoint sources of suspected sediment loadings.

4. Continue groundwater monitoring that includes drinking water monitoring and monitoring for suspected pollution sources.

5. Continue reservoir and initiate river water chemistry data collection (dissolved oxygen, pH, temperature, and nitrates).

OAK WOODLANDS - Issue: *Recruitment of mature oak trees is poor throughout California and will eventually result in the loss of the mature component of the oak population.*

Goal: *Maintain and enhance mature oak woodland stands and enhance oak woodland seedling regeneration.*

Actions

1. Minimize oak loss resulting from mechanical removal and controlled burns.

2. Continue study to determine effects of different fire regimes on mature valley oak trees.

3. Continue FHL Training Regulation 350-2 restrictions that protect oak woodlands.

4. Use existing GIS data to develop large-scale management units by classifying areas by dominant vegetation (e.g., valley oak savanna, blue oak woodland). Within these, identify locations most frequently used for military training, annual burn sites, potential future grazing sites, and endangered species habitats.
5. Identify management and monitoring requirements in the management units, such as exotic species control, propagating and replanting oaks, and assessing effects of frequent fire.
6. Identify the status of stands in management units, such as recruitment occurrence, stand density, and health of trees in the stand.
7. Identify areas where oaks historically occurred that might support restored oak stands.
8. Identify areas where oak recruitment is most likely to be successful and focus efforts at those locations.
9. Continue to collect acorns from FHL; propagate acorns; and use these for replanting efforts on FHL.

NATIVE BUNCH GRASSLANDS
Issue: *Most native bunchgrasses have been replaced with less desirable exotic annual species of grasses.* ***Goal****: Maintain and promote widespread and diverse native bunchgrass grasslands.*
Actions
1. Continue reseeding projects by the LRAM (Land Rehabilitation and Maintenance) program using a mixture of native grass seeds.
2. Investigate the potential for livestock grazing and fire to be used in promoting and enhancing native bunchgrasslands.

RARE NATURAL COMMUNITIES - Issue: *CNDDB rare natural communities occurring on FHL include sycamore alluvial woodland, valley needlegrass grassland, and valley oak woodland. FHL should ensure that they remain viable and intact components of the FHL ecosystem.* ***Goal:*** *Protect rare natural communities through measures described for individual vegetation communities.*
Action - *Continue to implement protective measures described for individual vegetation communities.*

FIRE - Issue: *Wildland fire is a relatively common event that affects the landscape of FHL. The effects of wildland and prescribed fire on natural resources are not well documented or understood.* ***Goal:*** *Assess the impact of fire on species of interest, vegetation communities, and animal and plant populations of interest.*
Actions
1. Evaluate fire history and species information with GIS
Goal: *Use fire as a tool to achieve natural resource management and training goals and objectives.*
2. Use prescribed fire to manipulate vegetation to achieve natural resource and training goals and objectives.
3. Coordinate with Directorate of Fire Services of prescribed burns through environmental review.
4. Complete and implement the Wildland Fire Management Plan.

GRAZING - Issue: *Livestock grazing was terminated on FHL in 1991 due to excessive forage utilization and unacceptable resource damage associated with poor livestock management and drought.* ***Goal:*** *Evaluate the possibility of developing a grazing program that promotes biological diversity, provides minimum impact to the military mission, is*

tailored to the native flora and fauna of FHL, does not conflict with Endangered Species Act compliance, and protects and maintains cultural resources.

Actions

1. Develop a livestock grazing options that are consistent with the goal.

2. Complete an environmental assessment to determine whether the grazing program should be reinitiated.

3. Implement the grazing management plan option selected.

(INRMP, 2007 – Fort Hunter Liggett).

Camp Roberts has developed Land Rehabilitation and Maintenance (LRAM) goals and objectives and an Environmental Awareness program that could be assessed for possible collaborative opportunities with the Nacitone Watersheds Management Plan. Below are two of the goals listed for *Riparian Ecosystem Management and River, Pond and Reservoir Ecosystem Management in the Camp Roberts* INRMP, 2000.

GOAL: Protect and enhance riparian habitats to ensure healthy, functioning systems.

GOAL: Protect and maintain aquatic ecosystems in accordance with state and federal laws and regulations and adhering to the principles of ecosystem management for the purposes of a training resource and each river's designated beneficial uses.

The U.S. Forest Service, Monterey District staff are key partners for a future Nacitone community group to identify shared goals for these watersheds. There is a ***Land Management Plan***, prepared in September 2005, covering the entire Los Padres National Forest which reaches into Santa Barbara County. That document is not specific to the Nacitone watersheds portion of the Los Padres National Forest, but includes general strategies that may yield opportunities for collaboration in the Nacitone. For example, a Conservation Strategy Emphasis for the next 3-5 years on page 112 of the September 2005 Plan includes the following under *Education/ Information/Interpretation:*

- Importance of riparian and aquatic species habitat
- Value of vegetation management
- Importance of keeping vehicles on roads
- Importance of keeping foot traffic on wilderness trails
- Species linkages and corridors and biological diversity
- Importance of reducing exposure of wildlife to lead poisoning

There is also a Draft Environmental Impact Statement (EIS) Revised Land Management Plan. These documents should be reviewed for goals, objectives, or guiding principles that may align with Nacitone Watersheds Management Plan goals and objectives.

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References

Abraham, Kera. 2007, September 13. Wasted Wilderness. *Monterey County Weekly*.

Adams, Mary. 2008. RWQCB Personal Communication.

Alexander, R.B., Boyer, E. W., Smith, R.A, Schwarz, G.E. and Moore, R.B. 2007. The Role of Headwater Streams in Downstream Water Quality. *Journal of American Water Resources Association, 43(1).*

Barry, Sheila, Stephanie Larson and Melvin George. 2006. California Native Grasslands: A Historical Perspective. *Grasslands.*

Bartolome, J.W., B.H. Allen-Diaz, and E. Gray. 2003. *Grazing management plan, Fort Hunter Liggett, California – Supplementary analysis*. The Nature Conservancy final report, FHL project # HY-20010-0J.

Brennan. J., Central Coast Water Authority and Rodriguez Consulting, Inc. 2005. Draft Urban Water Management Plan. Prepared for The Central Coast Water Authority.

California Army National Guard. 2001. Camp Roberts Training Center Monterey and San Luis Obispo Counties, California Final Draft Integrated Natural Resources Management Plan.

California Department of Water Resources. 2004. *California Groundwater, Bulletin 118*.

California Department of Fish and Game. 1999. California Natural Diversity Database.

California Department of Fish and Game. 2003. California Natural Diversity Database.

California Department of Fish and Game. 2007. California Natural Diversity Database.

Central Coast Regional Water Quality Control Board. 2003. *Las Tablas Creek and Lake Nacimiento Total Maximum Daily Load (TMDL).*

Conrad, Maya, Coastal Watershed Council. 2001. *Status of Citizen Monitoring, Salinas River Watershed.*

Coastal Resources Institute. 1994. *Clean Lakes Assistance Program for Lake Nacimiento.* Cal Poly, San Luis Obispo.

Conley, G.L., Hoover, B.H., DeBeukelaer, S. 2008. *Central Coast Water Quality Data Assessment*. Monterey, CA. NOAA Monterey Bay National Marine Sanctuary Report, pp. 174.

Dahrymple, RL. 2000. *Fringe Benefits of Rotational Grazing*. Forage and Grassland Council Annual Meeting.

Department of the Army Installation Management Command-West Region. 2007. *Draft Environmental Assessment and Finding of no Significant Impact Interim Army Reserve Mission Changes for the United States Army Combat Support Training Center at Fort Hunter Liggett, Monterey County, California*. Prepared for United States Army Combat Training Center Environmental Division.

D'Ornellas, John. 2005. *Heritage Ranch Sanitary Survey, Five Year Update*.

Ekelund, Ken. 2007. Personal communication. Monterey County Water Resource Agency, Salinas, CA.

Fisher, Anne B. 1945. *The Salinas – Upside Down River*.

Fort Hunter Liggett. 2004. *Integrated Natural Resource Management Plan (2004-2007*).

Fort Hunter Liggett. 2008. *Fort Hunter Liggett 2007 Annual Report for Implementation of the 2004-2008 Integrated Natural Resources Management Plan*. Fort Hunter Liggett Environmental Office, Directorate of Public Works, US Army Combat Support Training Center, Monterey County, California.

French, Letty. 2008. Personal Communication. Nacimiento Landowner, Paso Robles, CA.

Fugro West Inc. 2002. *Paso Robles Groundwater Basin Study*.

Fugro West Inc, Etic Engineering and Cleath and Associates. 2005. *Paso Robles Groundwater Basin Study Phase II.*

Geotechnical Consultants, Inc. 1984. *Hydrogeologic Update, Fort Hunter Liggett Military Reservation.*

Humfrey, Phil. 2008. Personal communication. Steering Committee Co-chair & Nacimiento Regional Water Management Advisory Committee Director, Paso Robles, CA.

Johnson, Rob. 2008. Personal communication. Hydrologist. Monterey County Water Resource Agency, Salinas, CA.

Jones & Stokes Associates, Inc. 1991. *Distribution of Wintering Bald Eagles at Nacimiento Reservoir Compared to Surrounding Areas*

Logan, John. 1987. *Hydrogeology of a Part of the Lockwood Area*.

Mangi Environmental Group, Inc. and Kristin M. Snyder of EcoLogik, Inc. 2001. *Camp Roberts Integrated Natural Resources Management Plan*

Marine Research Specialists. 2003. Nacimiento Water Project Environmental Impact Report. Prepared for San Luis Obispo County Department of Planning and Building.

Monterey County Contracts/Purchasing Division. 2007. *Request for Interest #11047 To Provide Concessionaire Service for Lake San Antonio and Lake Nacimiento.*

Monterey County Planning and Building Department, 2007. *South County Area Plan*.

Monterey County Planning and Building. 1995 and 2004. *Monterey County General Plans.*

Monterey County Water Resources Agency. 1998. *Salinas Valley Water Project, Draft Master Environmental Impact Report.*

Monterey County Water Resources Agency. 2002. *Salinas Valley Water Project Responses to the DEIR/EIR*.

Monterey County Water Resources Agency. 2000. *Nacimiento Dam Operations Policy.*

Monterey County Water Resources Agency. 2004. *Notice of Petition to Change the Place of Use and Add Points of Diversion.*

Monterey County Water Resources Agency. 2006. *Salinas Valley Integrated Regional Water Management Functionally Equivalent Plan Update*.

Montgomery Watson. 1997. *Salinas Valley Historical Benefits Analysis Draft Report.*

National Park Service, Park Planning and Environmental Compliance Pacific West Regional Office. 2006. *Final Fort Hunter Liggett Special Resource Study.*

National Marine Fisheries Service. 2007. *Salinas Valley Water Project Biological Opinion*.

Native Habitat Organization. 2008. Web-site www.nativehabitat.org.

Perry, Thomas L. 2001. *Survey of the San Antonio and Nacimiento Dams and Reservoirs.*

Proctor, Rachel. 2002. *Good Grazing?* E: The Environmental Magazine.

Raycraft, Susan and Beckett, Ann Keenan. 2006. *Images of America, San Antonio Valley*.

Rice, T., Chipping, D., Eatough, N., Nakamura, R. and Bigley, D. of the Coastal Resources Institute, California Polytechnic State University. 1994. *Clean Lakes Assistance Program for Lake Nacimiento.*

RMC Water and Environment. 2003. Salinas Valley Water Project Engineer's Report.

RMC Water and Environment. 2006. *Salinas Valley Integrated Regional Water Management Functionally Equivalent Plan Update.*

RWQCB. 1994. Water Quality Control Plan (Basin Plan) Central Coast Region. California Regional Water Quality Control Board.

RWQCB. 1996. Water Quality Assessment Report (Central Coastal Region).

Regional Water Quality Control Board. 2002. *Watershed Management Initiative.* Central Coast.

San Luis Obispo County. 2005. Stormwater Management Program - National Pollution Discharge Elimination System (NPDES).

San Luis Obispo County Department of Planning and Building. 2007. County of San Luis Obispo Growth Management Ordinance.

San Luis Obispo County Department of Planning and Building. 2006. Land Use and Circulation Element: Resource Management System Annual Resource Summary Report.

San Luis Obispo County Department of Planning and Building. 2003. Nacimiento Area Plan. San Luis Obispo County.

San Luis Obispo County Department of Planning and Building. 2003. San Luis Obispo County General Plan: Land Use and Circulation Elements. San Luis Obispo County

San Luis Obispo County Department of Planning and Building. 2007. Title 22, Land Use Ordinance, Nacimiento Planning Area.

San Luis Obispo County Flood Control and Water Conservation District. 2005. Urban Water Management Plan.

San Luis Obispo County Flood Control and Water Conservation District. 2002. *Nacimiento Water Supply Project: Report on Recreational Use at Lake Nacimiento.*

State Water Resources Control Board, Division of Water Quality. 1995. *California Rangeland Water Quality Management Plan*. Non point Source Program.

Stechman, John: La Cuesta Consulting, The Nature Conservancy and U.S. Army Fort Lewis and Fort Hunter Liggett. 1995. *Grazing Assessment and Management Recommendations.*

Swanson Hydrology and Geomorphology. 2008. *Nacitone Watershed Resources Inventory Final Technical Memorandum – Water Resources, Water Quality, and Sediment Supply.*

University of California Cooperative Extension. 2007. Agriculture and Natural Resources, Agricultural Experiment Station. *UC Cooperative Extension Helps Bring Cattle Grazing Back to Bay Area Grassland.*

Upper Salinas Las Tablas Resource Conservation District. 2008. *Grazing Management Plan.*

U.S. Army Environmental Command for the Department of the Army Headquarters. 2007. *Draft Programmatic Environmental Impact Statement for Army Growth and Force Structure Realignment.*

USDA U.S. Forest Service. 2004. *Draft Land Management; Parts 1, 2 & 3.*

USDA Watershed Science Institute. 2000. Principal Pathogens of Concern Cryptosporidium and Giardia (ftp://ftp-fc.sc.egov.usda.gov/WSI/pdffiles/Pathogen_Information_Sheet-Cryptosporidium_and_Giardia.pdf).

Ventana Wilderness Alliance and Friends of the River 2007. *Ventana Wild Rivers Proposal.*

Wallace Group. 2007. *Oak Shores Community Service Area 7A Wastewater Treatment Plant Expansion.*

Wallender, Lisa. 2008. Personal Communication. Water Systems Chemist. San Luis Obispo County Water Quality Lab, San Luis Obispo, CA.

Agency and Organization Websites

Nacitone Watershed
www.nacitonewater.org

Bureau of Reclamation
http://www.usbr.gov/main/about/
http://www.usbr.gov/mp/aboutus.html

California Department of Forestry and Fire Protection
http://www.fire.ca.gov/

California Department of Water Resources
http://www.water.ca.gov/

California Department of Water Resources Division of Safety of Dams
http://www.damsafety.water.ca.gov/

California Environmental Protection Agency
http://www.calepa.ca.gov/

CAL FIRE- County of San Luis Obispo
http://www.cdfslo.org/

Heritage Ranch Owner's Association
http://hroa.us/main.htm

Monterey County Water Resources Agency
http://www.mcwra.co.monterey.ca.us/

National Oceanic and Atmospheric Administration (NOAA) Restoration Center
http://www.nmfs.noaa.gov/habitat/restoration/

Oak Shores Community Association
http://oakshores.us/

Regional Water Quality Control Board (RWQCB)
http://www.swrcb.ca.gov/index.shtml

San Luis Obispo County Water Resources Advisory Committee
http://www.slocountywater.org/site/Water%20Resources/Advisory%20Committee/

San Luis Obispo County Public Works Department
http://www.slocounty.ca.gov/PW.htm

Nacimiento Water Project
http://www.slocounty.ca.gov/PW/NacWP.htm

Upper Salinas Las Tablas Resource Conservation District
http://www.us-ltrcd.org/long-range.html

United States Bureau of Land Management
http://www.blm.gov/wo/st/en/info/About_BLM.html

United States Fish and Wildlife Service
http://www.fws.gov/habitatconservation/wrda.htm

USFWS Partners Program
http://ecos.fws.gov/partners/viewContent.do?viewPage=home

Glossary

Alluvial - clay, silt, sand, gravel, or similar sediment material deposited by running water

Beneficial use – Historical, present, and potential uses of water in the Basin as defined by the RWQCB. The intent is to ensure the continuance of beneficial uses and establish compatible water quality standards as well as the level of treatment necessary to maintain the standards.

Confluence - the meeting place of two streams

Critical habitat – a specific area, identified by the NOAA Fisheries and/or USFWS, in which are found physical or biological features essential to the conservation of the species, and which may require special management considerations or protection. Multiple impacts are considered when designating critical habitat.

Electrofishing – a common fish population monitoring technique that uses electricity to stun fish before they are caught and counted. The survey determines abundance, density and species composition.

Epilimnion – the water layer overlying the thermocline of a lake

Evaporation – dissipation of water into vapor usually caused from heating by the sun groundwater basins

Habitat - the place or environment where a plant or animal naturally lives

Hydrophytic – a plant that grows in water or very moist ground; an aquatic plant

Hypoliminion – the water layer below the thermocline of a lake

Mean daily discharge – average stream flow per day

Mitigation – an action that results in a smaller impact or a compensates for an unavoidable impact

mg/L – milligrams per liter; a unit of measurement to express the concentration of a substance in a solution; same as "parts per million (ppm)" for aqueous solutions

Non-point source – pollution arising from many unidentifiable sources i.e. agriculture

Point source – pollution arising from a single identifiable source i.e. wastewater outfall

Redd – salmon nest

Riparian - area on the bank of a watercourse

Thermal refuge – stream area, usually a tributary or confluence, used by Steelhead for its cooler waters as refuge from warmer waters of the main channel.

Thermocline - the region in a thermally stratified body of water which separates warmer surface water from cold deep water and in which temperature decreases rapidly with depth

Turbidity – opaqueness/ clarity of water due to suspended sediment loads

Unincorporated – areas falling outside of city limits such as County lands and towns

Urban reserve lines – designated line beyond city limits where development will focus in the future

Watershed – the land area that contributes runoff to a particular water body

Wild and scenic - selected rivers that possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values that are preserved in free flowing condition with their immediate environments for the benefit and enjoyment of present and future

Abbreviations

BMP	Best Management Practice
BRAC	Base Realignment and Closure
CCAMP	Central Coast Ambient Monitoring Program
CCRWQCB	Central Coast Regional Water Quality Control Board
CEQA	California Environmental Quality Act
Cfs	cubic feet per second
CNDDB	California Natural Diversity Database
CSD	Community Service District
DO	Dissolved Oxygen
EIR	Environmental Impact Report
EPA - (US)	Environmental Protection Agency
FHL	Fort Hunter Liggett
GIS	Geographic Information Systems
INRMP	Integrated Natural Resources Management Plan
IRWMP	Integrated Regional Water Management Plan
IWMP	Integrated Watershed Management Plan
LID	Low Impact Development
LRMP	Land and Resource Management Plan
MCFCWCD	Monterey County Flood Control and Water Conservation District
MCWRA	Monterey County Water Resources Agency
MOU	Memorandum of Understanding
MSL	Mean Sea Level
MTBE	Methyl Tertiary-Butyl Ether
NEPA	National Environmental Protection Act
NGVD 29	National Geodetic Vertical Datum of 1929
NMFS	National Marine Fisheries Service
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resource Conservation Service
NRWMAC	Nacimiento Regional Water Management Advisory Council
NWP	Nacimiento Water Project
RCD	Resource Conservation District
RWQCB	Regional Water Quality Control Board (Central Coast Region)
SAM	Central Coast Water Quality Data Synthesis Assessment and Management Project
SH&G	Swanson Hydrology & Geomorphology (a private company)
SVWP	Salinas Valley Water Project
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
VOC	Volatile Organic Compounds
WRI	Watershed Resources Inventory

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Resources for Residents and Landowners

Water Quality

- Facts about Cyanobacteria & Cyanobacterial Harmful Algal Blooms

Center for Disease Control and Prevention
http://www.cdc.gov/hab/cyanobacteria/facts.htm

- Klau/ Buena Vista Mine Superfund Site

U.S. Environmental Protection Agency
http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/95831d90484434d7882574260072fadf/dcb0a4770abe6b618825746e0060ae01/$FILE/Klau6_08%2091kb.pdf
http://www.epa.gov/superfund/sites/npl/nar1732.htm

- Mercury Impacts/ Fish Advisories

http://www.dnr.state.wi.us/org/caer/cea/mercury/impact.htm
http://www.ehib.org/topics/BifoldForWeb.pdf
http://www.ehib.org/topic.jsp?topic_key=173

- Alternative Review Process

Upper Salinas Las Tablas Resource Conservation District
http://www.us-ltrcd.org/review.html

- Handbook of Agricultural Conservation Practices

Monterey Resource Conservation District
http://www.rcdmonterey.org/pdf/AgHandbook.pdf

- Cover Up Story: Erosion Control Handbook

Upper Salinas Las Tablas Resource Conservation District & SLO County
Copies available from:
US/ LT Resource Conservation District
(805) 434-0396 ext. 4

Water Projects

- Salinas Valley Water Project

http://www.mcwra.co.monterey.ca.us/welcome_svwp_n.htm

- Nacimiento Water Project

http://www.slocounty.ca.gov/PW/NacWP

Rangeland Management & Grazing

- California Rangeland Resolution

http://www.rangelandtrust.org/RangelandResolution6-24-08.pdf

- California Rangeland

UC Davis Extension
http://californiarangeland.ucdavis.edu/

- Grazing Handbook

Sotoyome Resource Conservation District
http://sotoyomercd.org/GrazingHandbook.pdf

- Riparian Area Management: Grazing Management for Riparian-Wetland Areas, TR 1737-14 1997

Bureau of Land Management and the Forest Service
Copies available from:
BLM, National Business Center, BC-650B
PO Box 25047
Denver, Colorado 80225-0047

- Management reduces E. coli in irrigated pasture runoff

Knox, Tate, Dahlgren and Atwill, 2007
http://calag.ucop.edu/0704OND/pdfs/IrrigationEcoli.pdf

- Significant Escherichia coli attenuation by vegetative buffers on annual grasslands

Tate, Atwill, Bartolome, Nader, 2006
http://jeq.scijournals.org/cgi/reprint/35/3/795

Fire

- Homeowner's Checklist: How to Make your Home Fire Safe

California Department of Forestry and Fire Protection
http://www.fire.ca.gov/communications/downloads/fact_sheets/Checklist.pdf

- Residential Burning

http://www.slocleanair.org/programs/residential.asp

Roads

- Low Maintenance Roads for Ranch, Fire and Utilities Access

Wildland Solutions
http://nohvcclibrary.forestry.uga.edu/SCANNED%20FILES/T-0028.pdf

Agricultural Water Quality

- Agriculture Management Series includes cover crops, access roads, filter buffer strips, self-monitoring of farm or ranch, rock energy dissipaters, and grassed waterways (GW 101 through 106-2006)

San Luis Obispo Farm Bureau, Natural Resource Conservation Service

Contact:
The San Luis Obispo Farm Bureau
651 Tank Farm Rd.
San Luis Obispo, CA 93401

Recreation

- ABC's of California Boating Law

CA Department of Boating and Waterways, 2007
http://www.dbw.ca.gov/Pubs/Abc/

Species and Habitat

- How to Grow California Oaks

McCreary, UC Cooperative Extension
http://danr.ucop.edu/ihrmp/oak04.htm

- Wildlife Among the Oaks

Johnson, Integrated Hardwood Range Management Program
http://danr.ucop.edu/ihrmp/allpubs.html