



**CALIFORNIA POLYTECHNIC STATE UNIVERSITY
SAN LUIS OBISPO**

**WATER QUALITY MANAGEMENT PLAN FOR
CAL POLY LAND IN SAN LUIS OBISPO CREEK AND CHORRO
CREEK WATERSHEDS**



**Prepared for:
Regional Water Quality Control Board
Central Coast Office, Region 3**

**Prepared by:
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SUMMARY

In July 2003, the Regional Water Quality Control Board approved a new Waste Discharge Requirement (WDR) for the University which adopted the Cal Poly Water Quality Management Plan hereafter referred to as WQMP. WDR Order No R3-2003-035, replaces existing orders 94-1 (Dairy Unit), 91-44 (BCEC) and 86-74 (Swine Unit). Changes incorporated into this version (January 2004) of the WQMP are representative of the new WDR, including changes to the monitoring requirements for each program. As a living document, the WQMP has also been updated to provide the most accurate information available. This document has been updated to include changes from the Regional Board adoption of WDR R3-2003-035.

The Risk Management Department has replaced Facilities Planning as the department which manages and implements the WQMP. In Fall 2004, the groundwater gradient was analyzed around the fields which are designated as wastewater disposal spray fields. In January 2005, new monitoring wells were installed and monitoring of these additional wells will begin in Winter 2005.

The Water Quality Management Plan (WQMP) represents a voluntary and cooperative implementation approach between Cal Poly and the Regional Water Quality Control Board (Regional Board) to address water quality management issues and permit requirements. It seeks to meet permit/waste discharge requirements specified by the Regional Board and is exempt from CEQA under CA Water Code Section 13389. Development of the WQMP was lead by the Facilities Planning Department with input from various cross campus departments. The WQMP is implemented for campus-wide use by the Risk Management Department, and is intended to meet various permitting requirements of the Regional Board related to maintaining and improving the quality of water passing through the campus. The WQMP is administered by the Vice President for Administration and Finance, and is subject to review and approval by the Regional Board.

The WQMP directs the use of Best Management Practices (BMPs) in service and construction activities to manage water resources. The term BMP is used in this document as it is commonly used in industry. The term is synonymous with “management measures” and “management practices” and does not imply that the practice listed is the “best” or that other practices are inferior. Water quality management issues are addressed in Point, Nonpoint, and Storm Water Pollution Prevention Programs of the WQMP. To assure water quality objectives are being implemented the WQMP calls for monitoring BMPs, identifying any problems associated with implementation, solving implementation problems, and reporting results to the Regional Board. The WQMP as such is considered a “living document” and will be evaluated annually and updated every 4 years, or as determined necessary through monitoring and assessment processes. The BMPs that are being implemented on campus were derived from existing permits, the Central Coast Region Basin Plan, Natural Resources Conservation Service and EPA’s 1993 publication, “Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters.” In addition we have taken the opportunity of using EPA’s 1993 publication and “California Storm Water Best Management Practice Handbooks” (2003) for construction, industrial/commercial, and municipal BMPs to expand the current water quality management operations on campus.

A Program Recommendations section is included in the Appendix. This section is designed to document the practices not currently in place and appropriate BMPs that could be examined for implementation in the future. These recommendations came from campus faculty and staff currently involved with water quality management at Cal Poly.

California Polytechnic State University, San Luis Obispo (Cal Poly), is a comprehensive, polytechnic, undergraduate teaching institution. It is located on the central coast of California midway between Los Angeles and San Francisco. The campus is composed of the Main Campus and six ranches (appx. 6,000 acres). Various habitats exist on the campus and include urban (instructional core), agriculture, range, riparian, wetland, and aquatic. Water resources include streams, reservoirs, springs, ponds, wetlands, wells, and storage tank facilities. Maintenance and enhancement of water resources and associated habitats is part of the University in carrying out its educational mission.

WATER QUALITY MANAGEMENT PLAN CERTIFICATION

The Water Quality Management Plan was commissioned by:

Name: Lawrence Kelley
Vice President
Administration and Finance Division
California Polytechnic State University, San Luis Obispo

Certification of WQMP:

I certify under penalty of law that this document and all attachments were prepared under my direction of supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: _____ Date: _____
Lawrence Kelley

(AMENDMENTS TO THE WATER QUALITY MANAGEMENT PLAN WILL BE AVAILABLE IN THE RISK MANAGEMENT DEPARTMENT AND INCLUDE THE DESCRIPTION AND DATE OF EACH AMENDMENT TO THE ORIGINAL)

PART I: PROJECT SETTING

INTRODUCTION

California Polytechnic State University, San Luis Obispo (Cal Poly), is a comprehensive, polytechnic, undergraduate teaching institution, whose mission is to discover, integrate, articulate and apply knowledge. Cal Poly is located on the central coast of California midway between Los Angeles and San Francisco. The campus is composed of a Main Campus and six ranches, which total approximately 6,000 acres (Figure 1). The campus is composed of various habitats, which include urban (Campus Instructional Core), agriculture, range, riparian, wetland, and aquatic. These habitats contribute to the wide variety of activities and uses associated with Cal Poly's undergraduate and graduate teaching programs and the "Learn-by-Doing" teaching philosophy.

The University, in carrying out and administering its educational functions, has the potential to affect water quality on campus as well as the lower watersheds. Water resources located on campus include streams, reservoirs, springs, ponds, wetlands, wells, and storage tank facilities. Maintenance of water resources and associated habitats is very important to the University in carrying out its educational mission.

The Water Quality Management Plan (WQMP) represents a voluntary and cooperative implementation approach between Cal Poly and the Central Coast Regional Water Quality Control Board (Regional Board) to address water quality management issues and permitting requirements as Cal Poly implements its educational mission. As a regulatory document, the WQMP is subject to review and approval by the Regional Board. Cal Poly is the first campus within the California State University system to take a comprehensive approach to water quality management, and this document serves as a model for other campuses to follow.

The WQMP was developed and implemented for campus-wide use by the Facilities Planning Department. As a stand-alone resource management and implementation tool, it is intended to meet various permitting requirements of the Regional Board, and to maintain and improve the quality of water passing through the campus.

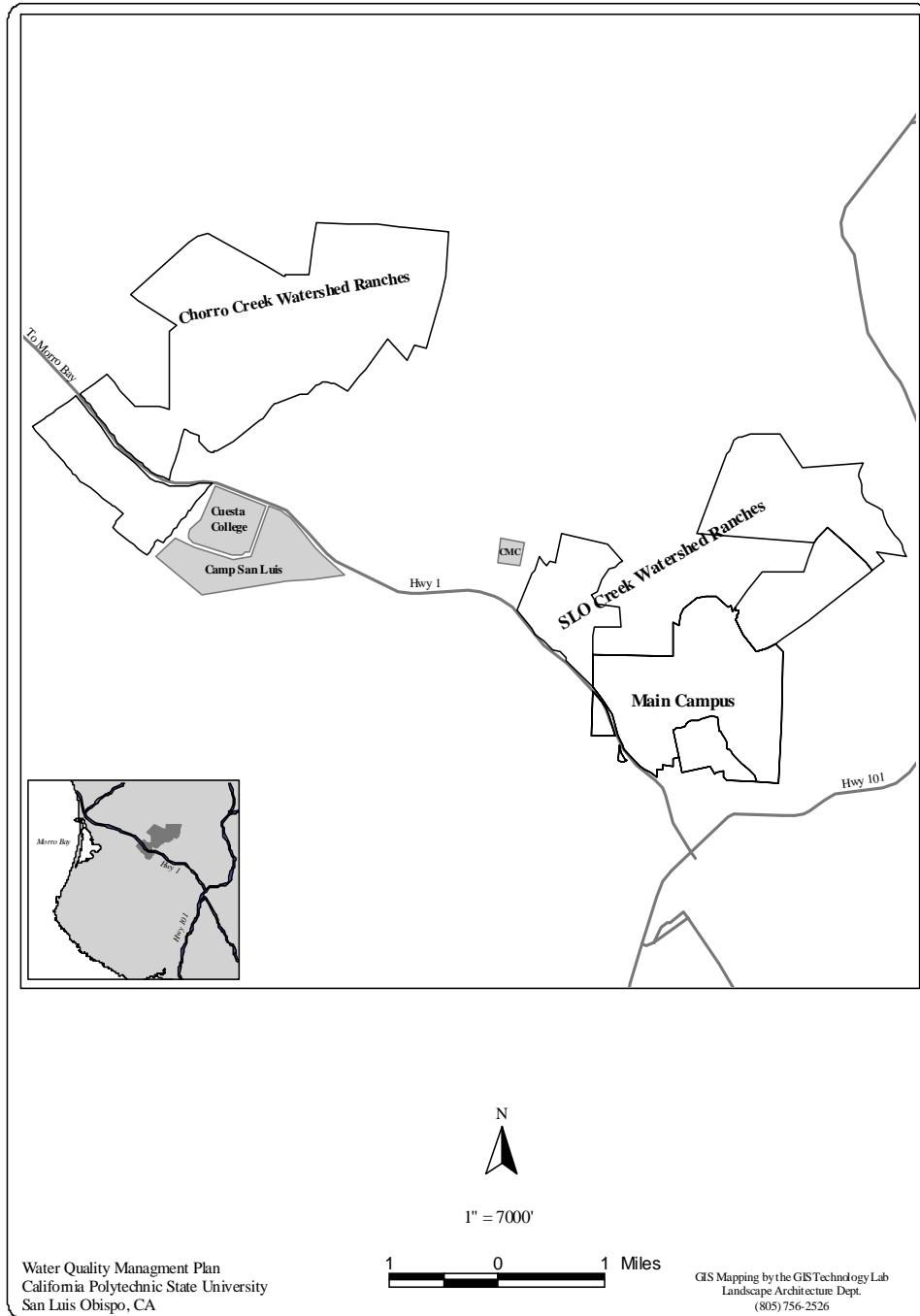
The WQMP is essential for directing campus use of water resources, as various departments manage service and construction activities. It also will guide implementation of Best Management Practices (BMPs) for the various Pollution Prevention Programs.

Cal Poly will implement the BMPs in land use activities on campus that are described in the WQMP. However, state resources may not always be available to implement BMPs in the necessary or intended period, and the technology behind the BMPs themselves can be expected to change. Therefore, reasonable adjustments to implementing the WQMP must be expected. The WQMP is considered a "living document" and will be evaluated annually and updated every 4 years, or as determined necessary through monitoring, assessment and reporting process. Major adjustments to the WQMP, such as inclusion of additional facilities or changes in discharge patterns, will be subject to Regional Board review and approval. Minor changes, such as technical updates of cited BMPs, will not require such review; however, the Regional Board will be notified in writing of any changes. The Implementation, Reporting, and Training section of the WQMP describe the policies that the University is undertaking to assure the Regional Board that water quality objectives are being addressed. The descriptions of the campus facilities herein are based on best available information. Cal Poly has updated its Master Plan in 2001, the descriptions and terminology within the WQMP are consistent with the final Master Plan/EIR.

The WQMP is organized into three parts. Part I introduces the project setting and the context and basis for the development and implementation of the WQMP. Part II delineates the Point and Nonpoint Source Pollution Prevention Programs and the Storm Water Pollution Prevention Program. Part III addresses Implementation, Reporting and Training. A list of definitions is provided in the Appendix.

While developing the WQMP, recommendations for extended programs that would help enhance water quality in the areas of wastewater management, training, and land and ranch management was brought forth. A Program Recommendations section is included as an Appendix to guide the implementation of practices not currently in place. The recommendation section is organized by program and will be used internally to guide management practices not currently in place.

Figure 1: California Polytechnic State University, San Luis Obispo



PURPOSE AND NEED

The primary purpose of the WQMP is to enhance water quality on campus and in surrounding areas influenced by campus activities. This is accomplished by identifying potential impacts associated with existing operational services and/or construction activities; and implementing BMPs to address potential impacts, assess them for effectiveness, and adjust them to meet WQMP objectives. Through implementation of the WQMP, methods for achieving Regional Board requirements can be evaluated and improved. In addition, the comprehensive nature of the WQMP should eliminate the need to gain Regional Board approval for future operational services and/or construction activities that may affect water quality.

Goals of the WQMP are:

- Enhance the quality of water on the Cal Poly Campus and surrounding areas;
- Streamline the Regional Board permit and approval process;
- Guide administration and management activities and services related to water and water quality on campus.

WQMP OBJECTIVES

Objectives of the WQMP include:

- Ensuring that water quality is properly managed;
- Guiding assessment of water quality operation and maintenance issues through inspection and evaluation of site conditions;
- Assessing the effectiveness of implementing BMPs in the field;
- Providing for inspection of operational services and/or construction activities to ensure compliance with the WQMP;
- Adjusting or adding BMPs or other land management practices when necessary to enhance water quality;
- Allow for reporting incidents of non-compliance and achieving compliance with the WQMP;
- Update the WQMP and various programs as needed.

CAMPUS WATER PHILOSOPHY

Cal Poly views campus waters as sustainable, reusable and renewable resources for use by the University and the community. All planning and management activities are directed at meeting the values and beneficial uses of water now and into the future, and in turn furthering the educational mission of the University.

WQMP ADMINISTRATION

The Vice President for Administration and Finance is responsible for administering the Water Quality Management Plan. Four other campus entities are involved with implementation and monitoring:

General

- The Risk Management Department manages and implements the WQMP, submits quarterly, semi-annual, and compliance reports to the Regional Board, and serves as the repository for all documentation related to the WQMP. Risk Management is responsible for updating the WQMP, and coordinating the development, and distribution of the related documents and inspection forms. Risk Management is also the campus contact for regulatory agencies. The department promotes health and safety issues on campus, implements and/or oversees BMPs associated with health and safety for point and nonpoint sources of pollution, and promulgates regulations for waste and wastewater on campus.

Urban

- The Facilities Department is responsible for the operations and maintenance of instructional facilities, landscaping and irrigation, and improved campus roads. In addition, the department is responsible for design and construction activities. In some cases, the university may contract out work, in this event; contractors are provided a copy of the WQMP and are made aware of its provisions.

Farm

- The Farm Operations Unit in the College of Agriculture is responsible for compiling and organizing information that is used in quarterly/semi-annual/annual reports related to wastewater retention ponds, disposal spray fields and compost within the campus farm. Information is forwarded to the Facilities Planning Department for reporting and approval. Individual farm units (Dairy, Swine and Beef) are responsible for collecting relevant data for their unit and submitting it to the Farm Operations Supervisor. Farm Operations will also oversee the monitoring of the individual Ranch Water Quality Management Plan and will forward results to the Facilities Planning Department.

Ranch

- Ranch Managers are responsible for developing and implementing Ranch Water Quality Management Plans, overseeing the identified monitoring programs, and forwarding quarterly reports to the Risk Management through the Farm Operations Unit.

LEGAL REQUIREMENTS

In developing the WQMP, Cal Poly seeks to meet Waste Discharge Requirements as outlined in Order No. R3-2003-035 approved by the Regional Board on July 11, 2003 and is therefore exempt from CEQA under CA Water Code Section 13389. The WQMP identifies procedures necessary to comply with the order, and other applicable water quality regulations.

Some existing and/or anticipated permits associated with major building construction activities on the Cal Poly campus are independent of the WQMP requirements; however, the WQMP does not diminish any obligations existing under current or future discharge permits, which require each discharger to prepare, retain at the construction site, and implement a Storm Water Pollution Prevention Plan (SWPPP) if the project disturbs an area of one acre or larger. Each SWPPP is available to the public under Section 308 (b) of the Federal Water Pollution Control Act (or Clean Water Act [CWA]) and to the Regional Board. Storm water issues including those required by the WQO 2003-0005-DWQ for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4) (General Permit) and those related to operational services and/or construction activities are addressed in the Storm Water Pollution Prevention Program in Section II of the WQMP. The WQMP does not authorize discharge of fill or excavated material regulated by the U. S. Army Corps of Engineers under CWA Section 404 and does not constitute a waiver of water quality certification under CWA Section 401.

The Risk Management Department provides guidance to the Facilities Planning Department, Project Managers regarding implementing the Construction Storm Water Pollution Prevention Program and filing a Notice of Intent (NOI) with the Regional Board for all activities associated with clearing and grading that are greater than one (1) acre. When an NOI is sent and implemented, Risk Management will notify the Regional Board so that a notice of completion can be filed with the Regional Board. Cal Poly intends to comply with Regional Board requirements for projects not requiring an NOI and will implement the BMPs identified in this WQMP on all applicable activities.

ISSUES

Cal Poly developed the WQMP for approval by the Regional Board as a single permitting document for all water quality management issues associated with land use activities on the Cal Poly campus. In July 2003, the Regional Board adopted a new WDR which included language that binds the implementation of the WQMP. The WQMP addresses water quality issues, current operations and regulations, and associated BMPs. The affected area of campus is defined as the Main Campus and six ranches. The WQMP is intended to provide long-range planning and technical support directives for the water quality management activities to be implemented under the Clean Water Act, Porter Cologne Act, and the Coastal Zone Management Act. The water quality management issues are addressed in three programs: Point Source Pollution Prevention Program, Nonpoint Source Pollution Prevention Program, and Storm Water Pollution Prevention Program.

Campus water quality issues and associated programs addressed in this document include:

Farm and Ranch

- Point Source Pollution - can be measured at and treated at a point, and potentially include materials from the Dairy and Swine Units, the Beef Cattle and Evaluation Center (BCEC), agricultural wastewater irrigation to disposal spray fields, and dredging of wastewater ponds and reservoirs. Point source pollutants are addressed through regulated wastewater management, which include installation of BMPs, monitoring and reporting results, and adjusting BMPs to meet management objectives in the Point Source Pollution Prevention Program. Selected BMPs were primarily a function of former WDR orders 94-1 (Dairy Unit), 86-74 (Swine Unit), 91-44 (Beef Cattle Evaluation Center).
- Nonpoint Source Pollution - occurs over a wide area and is usually associated with runoff from agricultural land uses, such as cultivation and grazing, and stream bank alterations and repairs. Nonpoint pollutants are addressed primarily through water quality management plans for each of the campus ranches (pursuant to Clean Water Act Section 319 and consistent with the statewide Rangeland Water Quality Management Plan), which specify implementing and monitoring of BMPs. Specifics are identified in the Nonpoint Source Pollution Prevention Program. Ranch plans are in place for all six ranches. An additional water quality ranch plan was developed that addresses the beef areas on campus and is summarized within the Point Source Pollution Prevention Program. These ranch plans were developed under a voluntary program and specifically address the activities outlined in the Central Coast Region's Basin Plan.

Urban

- Storm Water Pollution – focuses on runoff from construction and the campus core through a Storm Water Pollution Prevention Program that specifies means to mitigate the impact. The primary objectives of the program are to eliminate unauthorized non-storm water discharges, and identify, construct and implement control practices through the use of BMPs to reduce impacts associated with storm water runoff. In addition, the Storm Water Pollution Prevention Program was designed and updated to meet future NPDES, Phase II requirements of the Regional Board.

MONITORING INTENT AND OBJECTIVES

The current monitoring activities for water quality on campus are a function of WDR Order No. R3-2003-035. The monitoring aspects of the WQMP identified in the Point and Nonpoint Source Pollution Prevention Programs and Storm Water Pollution Prevention Program go beyond those identified in existing permits. Although the BMPs associated with the three programs overlap, they are identified separately to allow implementation by different departments within the University. Each program is intended to evaluate operational services and/or construction activities and BMPs associated with a major water quality issue to facilitate the management of water quality. The intent of the monitoring is to determine if the BMPs were implemented correctly and are achieving their intended function of enhancing water quality, and whether additional control practices are needed to care for water quality. The information obtained from the ongoing assessment of the monitoring programs will be used to update the WQMP and make it a more effective management tool.

Monitoring objectives include:

- Inspection of sites that have potential to impact water quality (three times a year);
- Detecting and identifying any sources of unauthorized discharges that may affect the water quality of the campus creeks (Stenner, Brizzolara, Chorro, etc.)
- Identifying and modifying BMPs which are not achieving the WQMP goals and objectives.
- Reporting results to the Regional Board.

WQMP DESIGN AND DEVELOPMENT

The Facilities Planning Department, under the direction of the Vice President for Administration and Finance, designed the WQMP and the Risk Management Department manages and implements it. During the development of the WQMP (May 2001), baseline data and information related to campus resources (i.e., waters, wetlands, ranches, and farm practices) was collected from knowledgeable campus sources and field reconnaissance. The baseline data has been recorded in a Geographic Information System (GIS) at Cal Poly. The resource database contains information regarding vegetation, soils, habitats, hydrology, wetland determinations (using the Corps of Army Engineers wetland delineation protocol), as well as photographs of wetland sites.

Information related to the WQMP, Main Campus, ranches, etc., can be accessed through <http://www.afd.calpoly.edu/risk/ehs/ehs.html>. Bound volumes of this report are located in the Risk Management Department, Cal Poly, San Luis Obispo, CA.

CAMPUS LANDS AND WATERS

INVENTORY OF CAL POLY LAND

Cal Poly campus consists of the Main Campus, the San Luis Obispo Creek Watershed Ranches (approximately 3,000 acres), and the Chorro Creek Watershed Ranches (approximately 3,000 acres). The Main Campus is made up of the Campus Instructional Core and Extended Campus (Figure 2a). The Cheda, Peterson, and Serrano Ranches are contiguous to the Main Campus in the San Luis Obispo Creek watershed, they are collectively referred to as the San Luis Obispo Creek Watershed Ranches. The Chorro Creek, Walters, and Escuela Ranches are in the Chorro Creek watershed (Figure 2b), these areas are collectively referred to as the Chorro Creek Watershed Ranches. This terminology is consistent with the Campus Master Planning activities on campus.

Main Campus

Campus Instructional Core

Site Description: The Campus Instructional Core was established in 1901 during the founding of the campus. This area is described as the academic and administrative center of the University (Figure 2a). It is comprised of approximately 155 acres. The Campus Instructional Core is the area bounded on the south by the property line on the edge of the City of San Luis Obispo (Slack and Campus Way), on the west by the Union Pacific Railroad tracks, on the north by Highland Drive and the extension of Highland Drive easterly to a point due north of the present Building 70, and on the east by a portion of Perimeter Road and Grand Avenue. (Note: the northeast boundary is based on the realignment of Highland Drive proposed in the Master Plan.) The Campus Instructional Core is the academic and administrative center of the University (Figure 2).

Water: The area within the Campus Instructional Core is a built environment and, as such, retains little natural resources. Water tanks on P-hill provide the University with domestic water. No streams run through the Campus Instructional Core.

Operations: This area holds the bulk of the educational infrastructure for Cal Poly. It includes approximately 100 buildings, the largest of which include the Performing Arts Center, Recreation Center, University Union, Kennedy Library and Parking Structure. Cal Poly employs maintenance, custodial, and grounds staff for day-to-day university operations. This includes building maintenance (cleaning, painting, and repairs), completion of department work orders, daily cleaning of common buildings, grounds maintenance, small construction jobs, and various repair and maintenance activities. University staff and outside contractors perform electrical, plumbing, utility, roofing, asphalt repairs, exterior building painting, sewer line cleaning, and janitorial duties. The Facility Services Department is primarily responsible for these activities.

Extended Campus

Site Description: Most of the extended campus area was established in 1918 when Cal Poly acquired 628 acres from landowner R. Johnson (Figure 2a). Additional acreage was added through the purchase of land in 1929 from M. Fiscalini. Currently, the extended campus is approximately 1166 acres. This area surrounds the Campus Instructional Core on three sides, extending on the west from the Union Pacific Railroad along the Cal Poly property line to Highway 1, west across Highway 1 to include the two parcels adjacent to the City of San Luis Obispo, then north along Stenner Creek Road to the Cal Poly property line. The northern boundary goes east along the property line to the intersection with the Peterson Ranch property, then southeast across Brizzolara Creek to the Cal Poly property line, and south to the City of San Luis Obispo City limits. The Extended Campus includes educational facilities associated with the campus farm, some parking, the on-campus student residential community, and recreational facilities, as well as some rangelands, creeks, and foothills.

Water: Four of the campus reservoirs (Indonesian, Drumm, Shepard, and Smith) are located within the Extended Campus area. Four wastewater discharge ponds are located at the Dairy Sciences Instructional Center (Dairy Unit), two are located at the Swine Unit, and one is located at the Beef Cattle Evaluation Center (BCEC). Brizzolara Creek and Stenner Creek run through the Main Campus. Water storage for the Main Campus is located on P-hill behind the dormitories.

Operations:

Facilities: There are four main facilities with potential to impact water quality located in the Extended Campus, including the Dairy Unit, the BCEC, the Swine Unit, and the Poultry Unit. In addition to the confined animal areas described above, there are several departmental facilities. These facilities include the Environmental Horticulture Science Unit and the Horse Unit and Crops Unit. Operational facilities found within the Extended Campus include the Foundation offices along Mt. Bishop Road, as well as the Sports Complex, Research Center, Parker Barn, Vegetable Storage Shed, Veterinary Clinic, Rodeo Arena, and Crops House.

Red Rock Pit: One open pit gravel mine exists within the Extended Campus and is located adjacent to the decommissioned Solid Waste Disposal Site/Landfill. The mine was active before January 1, 1976 when it produced about 3000 cubic yards annually. The mine is approximately three acres in size with one acre actively excavated. Current production is about 5000 cubic yards per year for campus road maintenance. The red rock pit and road leading to it contribute to erosion and sediment loading of Brizzolara Creek. Currently the area has been treated with hay bales and a small catch basin to prevent sedimentation and erosion from reaching Brizzolara Creek. More permanent management practices are required. EPA 319(h) grant has been received and erosion and sediment controls will be implemented during 2004-05.

Solid Waste Disposal Site/Landfill: The 4-acre site near the red rock pit in Poly Canyon was used for disposal of all campus waste from approximately 1950 to 1972 when it was closed. The refuse included paper, cardboard, tree trimmings, lawn cuttings, scrap tin and lumber, cans, building materials, wire and glass. The volume is estimated at 300,000 cubic yards with a cap depth which averages over 50 feet. Temporary storage of clean fill materials on top of the landfill is permitted until they are used in construction activities; this includes soil, rock gravel, and pieces of concrete and asphalt less than 6 inches in diameter.

Access controls to the area include a locked gate with vehicle barriers. “No Dumping” signs are posted and keys are issued to Facility Services personnel on a per-use basis.

Due to the potential impact to ground water resources from this facility, the County of San Luis Obispo inspects the site quarterly, and the State Department of Health and Human Services inspects the site periodically, as scheduled. Further monitoring of this site is provided for in the Nonpoint Source Pollution Prevention Program in Section II.

San Luis Obispo Creek Watershed Ranches and Extended Unit

In addition to the Main Campus, three ranches are located in the San Luis Obispo Creek watershed (Figure 2a). Two of these, Peterson and Serrano, are adjacent to the Campus Instructional Core. Cheda Ranch is primarily located in this watershed, although a small portion of the ranch extends into the Chorro Creek watershed. In addition, a specific water quality plan has been developed for a unit that includes the Bull Test Site, Beef Feedlot, Beef Unit, and P-hill Pastures. This is called the Extended Unit. (Figure 3: Confined Animal Areas). Note: The Bull Test and Beef Feedlot are scheduled to be relocated in the Fall of 2006.

Ranch Water Quality Management Plans have been completed for these ranches and the unit that includes the Bull Test Site, Beef Feedlot, Beef Unit and P-hill Pastures of the Extended Campus and have been incorporated into this section. The following is a brief synopsis of ranch history and land-use. Table 1 provides a summary of ranch statistics presented.

Peterson Ranch

Site Description: Peterson Ranch was established in 1950. It is located one mile northeast of the Grand Avenue campus entrance. The Union Pacific Railroad and Serrano Ranch border Peterson Ranch to the north, and the Campus Instructional Core borders the property to the south. The Miossi property lies to the east and the Kirschner property to the west. The ranch is comprised of 426 acres of rangeland, and is divided into 22 paddocks/pastures that total 406 acres. The Poly Canyon Architecture & Environmental Design Experimental Construction Laboratory, established in 1965, occupies the remaining 16.5 acres. Along with Serrano Ranch, this ranch supports Cal Poly’s purebred herd of approximately 90 head. The natural habitats consist mainly of grassland. Oak woodland, riparian, chaparral, coastal sage scrub, and rock outcrops can also be found.

Water: For the most part, the ranch runs along the eastern side of Brizzolara Creek. Water is stored in three 5,000 gallon tanks that are fed by developed springs in the upper watershed. This water is distributed throughout the ranch by polyethylene pipe to cement water troughs.. Two storage tanks supply domestic water to the Architectural Village and the ranch residence.

Operations: Two residences, an enclosed barn, and one corral are on the property. The barn is located at the end of Poly Canyon Road and is approximately 1643 square feet. The corral is located directly behind the barn. There are approximately 3.5 miles of unimproved roads that run the length of the ranch. The main purpose of the ranch is to support the University's beef cattle grazing program, which is critical to meet educational requirements and research efforts.

Serrano Ranch

Site Description: Serrano Ranch was established with the purchase of 544 acres in 1950. Additional land purchases brought the ranch to approximately 745 acres. The property is located at the end of Stenner Creek. The Los Padres National Forest borders the northern section of the property. The Union Pacific Railroad and California Mens Colony determine the western border. West Cuesta Ridge Road lies to the east and the Peterson Ranch to the south. Surrounding properties include the Glick property to the west, Kirschner to the south, and the Miossi lease to the west. The topography is rugged with steep slopes and gullies. The natural habitat consists mainly of grassland. Oak woodland, riparian, chaparral, coastal sagescrub, and rock outcrops can also be found. During the Highway 41 fire in August 1994, 520 acres of the ranch were burned. The ranch is comprised of 16 separate field areas (646.5 acres) that support approximately 90 cows.

Water: The Stenner Creek headwaters are located on the Serrano Ranch. There are 6 developed springs and 10 seeps. Two springs supply water to five troughs and one water storage tank. The tank is the domestic water supply for ranch housing. Six of the seeps drain to tributaries of Stenner Creek. Some tributaries that supply water to Brizzolara Creek begin on Serrano Ranch and flow through the Peterson Ranch.

Operations: Two residences (a house and mobile home), a barn (3,480 square feet), a shearing shed (1,680 square feet), and one sheep corrals are located on the property. The present corral was built for sheep and is scheduled to be rebuilt as soon as funding become available. Other land uses in the area include the Chumash Challenge ropes course. Serrano Ranch has four small unimproved roads: (1) a 0.5 mile Department of Water Resources access road in S13, (2) a 0.3 mile road that connects S3 and S5, (3) a 0.3 mile access road that connects S3 and S6, and (4) a 1.3-mile dirt access road that goes through S15 and S16.

Cheda Ranch

Site Description: The 443-acre Cheda Ranch was established in 1951, and is located 2 miles north of San Luis Obispo off Highway 1. It is bordered to the north by the California Men's Colony, to the south by a residential area of San Luis Obispo, to the west by Highway 1, and to the east by the Union Pacific Railroad, Tartaglia property, and Extended Campus. The ranch is comprised of 18 fields used primarily for row crops and grazing. There are 18 acres of vineyards and 40+ acres of avacados.

Water: Cheda Ranch is located within two watersheds. A small section (approximately 70 acres) of the west side is in the Chorro Creek watershed, while the rest drains into Stenner Creek and the San Luis Obispo Creek watershed. A small amount of riparian water is diverted to Middlecamp Reservoir, which feeds Nelson Reservoir. The small man-made Ketcham Frog Pond (Figure 2a) retains drainage from the avacados and also feeds a tributary to Nelson Reservoir.



Cheda Ranch

Operations: The ranch includes one house, two dorms, a main barn, pole barn, and feed and equipment storage barn. There are approximately 1.4 miles of unimproved roads. The paved Stenner Creek Road provides the main access.

Extended Unit

Located within the Extended Campus, the Extended Unit consists of the Bull Test Site, Beef Feedlot, Beef Unit, and P-hill Pastures. Note: The Bull Test and Beef Feedlot are scheduled to be relocated in the Fall of 2006.

Bull Test Site

Site Description: Currently the bull test site is used to run the 300 Cal Poly Bull Test from May to October.

Water: The bull test site is adjacent to Brizzolara Creek. There are a total of thirteen water troughs located at the bull test site. Three are located within the horse pens, six are located within the bull lot, and four are located within the bullpens.

Operations: At the bull test site there are three buildings, these include the AI shed, horse barn, and workshop/feed room. The AI Shed is located south of the bullpens, adjacent to Brizzolara Creek. The shed provides a place for artificial insemination of females and provides storage of supplies such as medicine, vaccines and branding supplies. The horse barn is used to store tack and grain for the horses and is located north of the horse stalls. The shop is located north of the bullpens and is used to store tools and as a feed room. Gravel roads surround the site along with an alley for the feed truck.

Beef Feedlot

Site Description: The feedlot holds a maximum of 200 head and is used for the steer test and for feeding other miscellaneous animals.

Water: The beef feedlot is adjacent to Brizzolara Creek. There are five water troughs located at the beef feedlot.

Operations: The beef feedlot has two buildings, one serves as a feed room and the other is currently empty. There are no roads located within the feedlot; a dirt alley circles the pens.

Beef Unit

Site Description: The beef unit has a maximum capacity of 100 head and is used to house and feed the show animals and other miscellaneous animals. During the rainy season, the numbers are reduced to 25 head to minimize runoff.

Water: The beef unit is adjacent to Brizzolara Creek. There is a total of six water troughs located at the beef unit. There are four troughs located within the pens, one in the pasture, and one between the two dry lots.

Operations: A barn and beef pavilion are located within the beef unit. The barn is divided into six rooms for show supplies, feed, general storage, clipper storage, medicine, and a bathroom. The beef pavilion is used for shows and judging contests. There is one road, which is part asphalt and part gravel, located at the beef unit.

P-hill Pastures

Site Description: The College of Agriculture Beef Program uses these pastures for horses to graze for four months of the year.

Water: The P-hill pastures are adjacent to Brizzolara Creek. Three water troughs are located within the P-hill pastures. One trough is at the base of the hill and is filled by a main water supply. The other two troughs further up the hill are filled from a spring-filled storage tank.

Operations: One gravel road extends from the base of the pastures to the top and is used by the university to service the water tank.

Chorro Creek Watershed Ranches

The Chorro Creek, Walters, and Escuela Ranches are located in the Chorro Creek watershed (Figure 2b). The Chorro Creek, Escuela, and Walters Ranch units were once portions of a private 5000-acre holding that was grazed prior to 1942, when the U.S. Government took over the land for army infantry training until the end of World War II. Ranch Water Quality Management Plans have been developed for these ranches and have been incorporated into this WQMP.

The following describes each of these ranches in detail providing a brief history of the ranch, water resources, and operations.

Chorro Creek Ranch

Site Description: Established in 1965, Chorro Creek Ranch is located 6 miles northwest of the City of San Luis Obispo along Highway 1 and about 4 miles southeast of the City of Morro Bay. Chorro Creek Ranch is bordered to the north and east by Highway 1 and the Hammons property, to the south by Cuesta College and the California Men's Colony sewage treatment plant, and to the west by the Madonna and Tomassini properties. The ranch is comprised of 534.5 acres in 21 fields. Fields 1-16 and 19 are owned and operated by Cal Poly, fields 17 and 18 are co-owned by Cuesta College and Cal Poly and managed by Cal Poly. Fields 20 and 21 are owned by the California National Guard and managed by Cal Poly.

Water: Chorro Creek Ranch is bisected by Chorro Creek. Walters Creek and a mapped unnamed tributary from Walters Ranch flow into Chorro Creek on the western end of the ranch. A spring, a 2,000-gallon water storage tank, and three reservoirs (Gibson, Johnson, and Tyler) are located at this ranch, as well as two developed stream crossings. Two deep irrigation wells pump water from Chorro Creek to surrounding fields. Riparian areas have been fenced to control cattle access.

Operations: A permanent residence occupied by the Cal Poly Farm Operations Supervisor, a maintenance shop, a corral, and miniature airplane runway. The ranch is managed for grazing and cultivated for dry-land crops and 37 acres of vineyards. The vineyards are located along the eastern border of the ranch where the land has been contoured to prevent runoff and siltation from accumulating in Chorro Creek. There are approximately 6.4 miles of unimproved roads.

Walters Ranch

Site Description: The Walters Ranch was established in 1982. The ranch is bordered on the north by the Escuela Ranch, to the west by California Department of Fish and Game wildlife area, to the south by Highway 1, and to the east by San Luis Obispo County school district offices and Cuesta College property. The entire ranch contains 713 acres. Natural habitats consist primarily of grassland with some riparian areas, as well as many rock outcrops. Archaeological site #544 established in 1971 is located on the south portion of the Walters Ranch along Highway 1.

Water: Walters and Chumash creeks run through portions of the ranch. There are three dry reservoirs (Fox, Gary's and John's) on the ranch. Water is stored in the upper watershed in six 5,000-gallon tanks that are fed by developed springs and horizontal wells in the upper watershed of Walters and Pennington Creeks. This water is distributed throughout the ranch by polyethylene pipe to cement water troughs. Electric fences control cattle activity within the riparian areas.

Operations: There are no residential facilities on the ranch. The ranch is divided into approximately 30-acre paddocks where the cattle are rotated throughout the paddocks in a rest/rotation grazing program. There are approximately 2.5 miles of unimproved roads.

Escuela Ranch

Site Description: The 1796-acre Escuela Ranch was established in 1968. It is about six miles north of San Luis Obispo off Highway 1. The southern border is shared with Camp San Luis Obispo National Guard Reservation and El Chorro Regional Park. To the north, the USFS Los Padres National Forest and the Vollmer property border the

ranch. The National Forest borders the eastern portion as well. Walters Ranch, the Rancho El Chorro Outdoor School, and a portion of the Turri property occupy the western border. A biological sciences preserve was established on the ranch and occupies approximately 211 acres.

Water: Pennington, Chumash, and portions of Walters Creeks pass through the ranch. There are approximately five developed springs that provide water to troughs. A water tank supplies water to the corral. Riparian areas have been fenced to control cattle access.

Operations: The ranch includes two corrals, an office, and a pole barn. There are approximately 22 miles of an unimproved road network.

Figure 2a: Main Campus and San Luis Obispo Creek Watershed Ranches & Waters

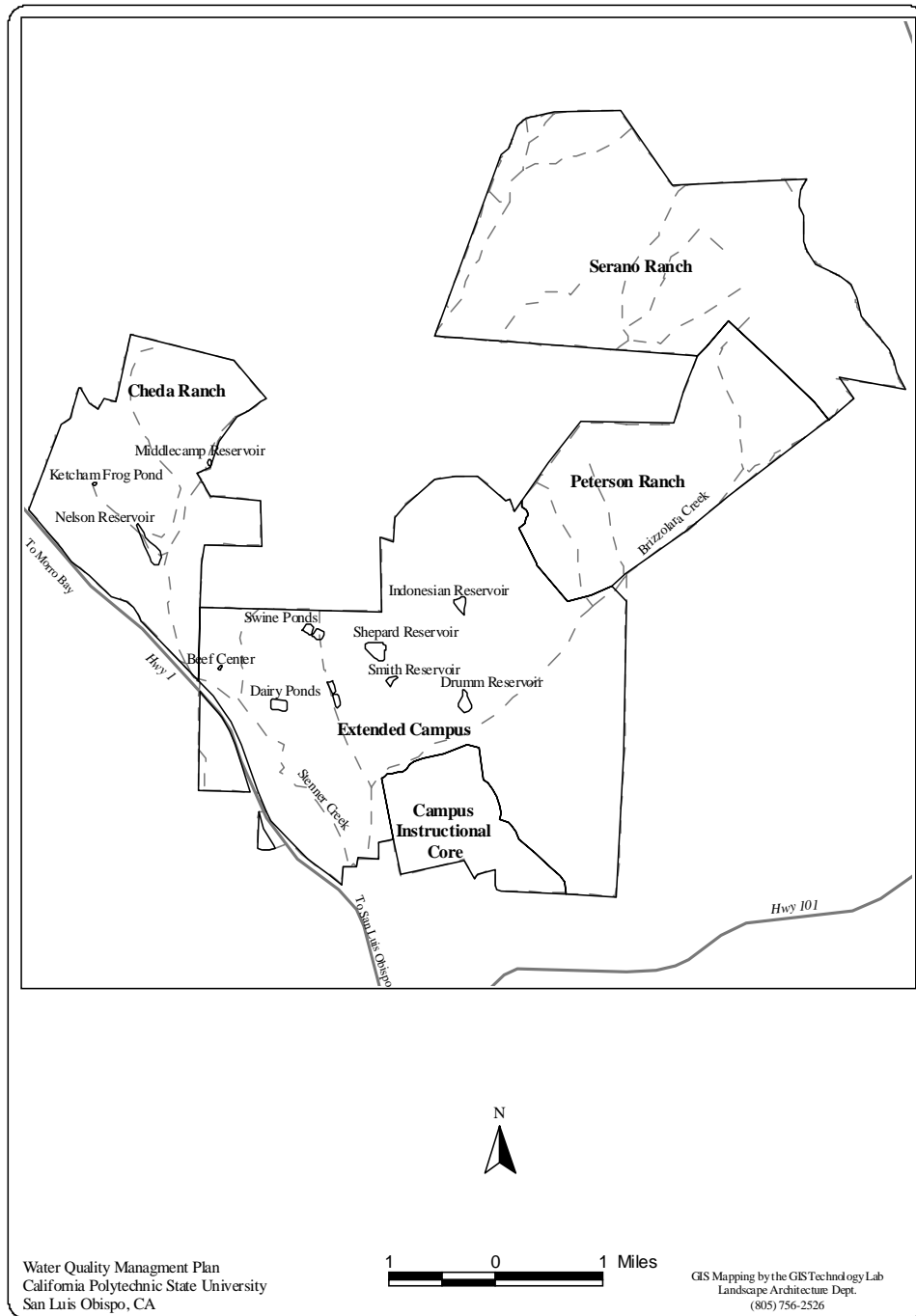


Figure 2b: Chorro Creek Watershed Ranches & Waters

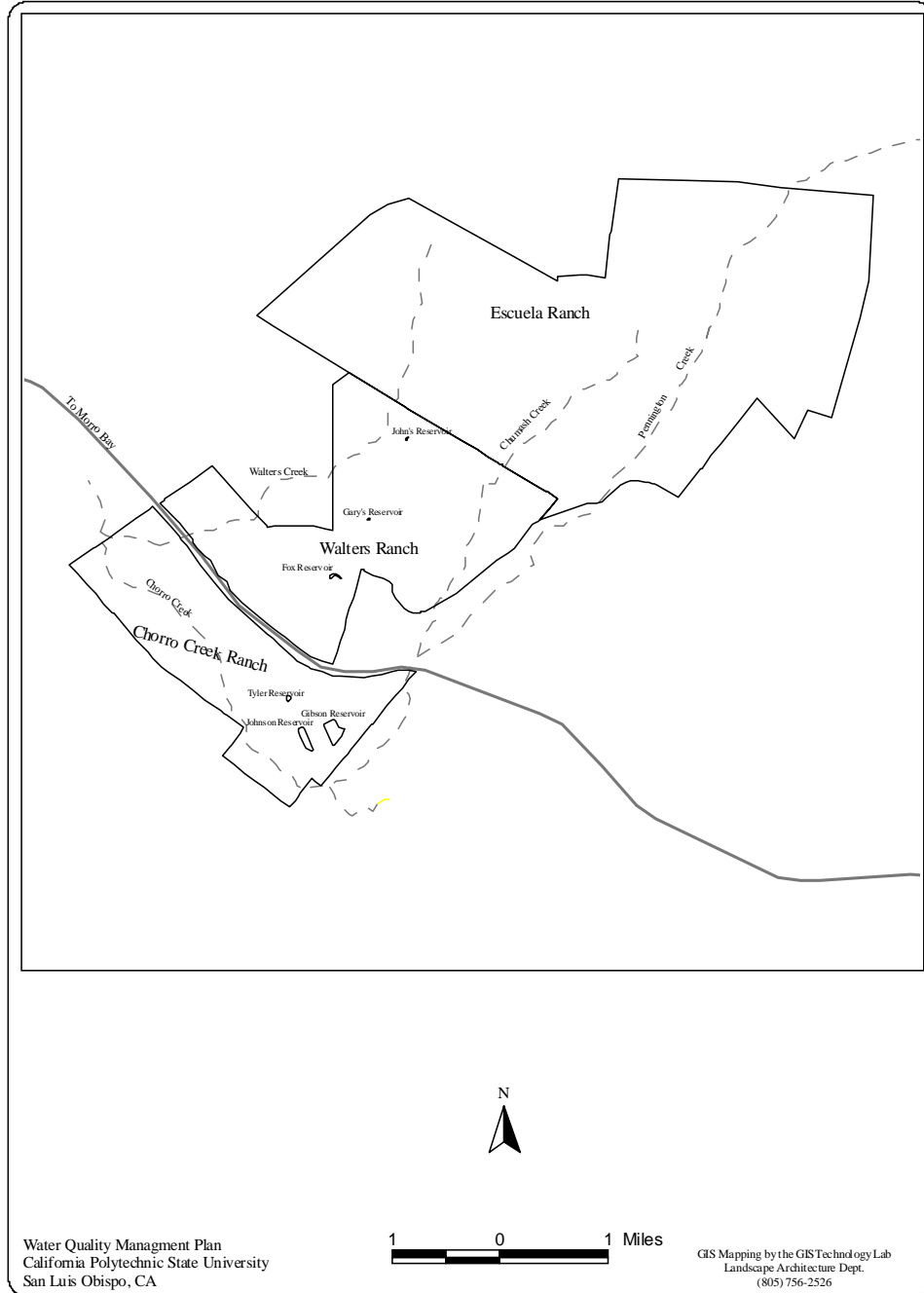


Table 1: Cal Poly Water Quality Management Ranch Plan Matrix

Ranch	Water Quality Ranch Plan	Date Est.	Fields		Structures	Dirt Roads miles	Springs	Creeks	Reservoirs	Wells	Animal Units		Animals	
			Avg. Size (ac)	Number							**AUM	Area	Numbers	Kind
San Luis Obispo Creek Watershed Ranches														
Peterson	Yes	1950	~108	22	2 residences 1 barn 1 corral	3.5	6	Brizzolara	0	0	880	727	90	Beef
Serrano	Yes	1950	~34	21	2 residences (1 house, 1 mobile home) 1 barn 1 shearing shed 2 corrals Chumash Challenge ropes course	2.1	6	Brizzolara Stenner	0	0	236*	266	90 250* 50	Beef Ewes Rams
Cheda	Yes	1951	~15	23	1 house 2 dorms 1 Shearing/Lambing barn 1 main barn 2 pole barns 2 outside corrals	1.4	0	Stenner	2	0	180*	130	150* 250	Ewes Lambs
Chorro Creek Watershed (All Riparian Areas Fenced)														
Escuela	Yes	1968	58 (307-16 range)	31	1 pole barn 1 office 2 corrals	~22	~5	Pennington Walters Chumash	0	4	2400	1800	150	Beef
Walters	Yes	1982	~67	17	1 corral	2.5	1	Walters Chumash	3 (dry)	0	800	524	70	Beef
Chorro Creek	Yes	1965	~41 (8-42 range)	13	1 residence 1 student residence 1 corral 1 shop 1 miniture airplane runway	6.4	1	Walters Pennington Chorro	3	2	350	253	40	Beef
<p>*This number reflects sheep that spend part of the year on Serrano or Cheda Ranches. This does not reflect cattle. ** Based on 1997-98 stocking rate, varies with season.</p>														

INVENTORY OF CAMPUS WATERS

Campus waters consist of reservoirs, wastewater ponds, streams, ground water, and irrigation wells. Table 2 provides basic information as it relates to each water. There are 7 reservoirs located within the San Luis Obispo Creek watershed and 6 within the Chorro Creek watershed (Figures 2a and 2b). The 7 wastewater ponds are located within the Main Campus and San Luis Creek watershed ranches. Stenner and Brizzolara Creeks are located within the San Luis Obispo Creek watershed, while Chorro, Pennington, Walters, and Chumash Creeks are part of the Chorro Creek watershed. There are 5 irrigation wells on campus. The 2 deep well water pumps are located adjacent to Chorro Creek at the Chorro Creek Ranch.

Reservoir System

San Luis Obispo Creek Watershed

In 1966, Cal Poly obtained rights to 1,200 acre-feet of water from Whale Rock Reservoir. About 449 acre-feet are used for annual agricultural purposes the remainder is allocated for domestic use. The water is pumped from Whale Rock Reservoir to Middlecamp Reservoir, and then to Indonesian Reservoir for distribution to the campus agriculture reservoir system for irrigation of crops and animal production. Excess water is allowed to flow via a drainage canal to Nelson Reservoir where it provides for recharge of the Stenner Creek aquifer. In addition, Cal Poly riparian water rights on Stenner Creek allow for gravity flow diversion to Middlecamp and Nelson Reservoirs with overflow to Stenner Creek. Middlecamp Reservoir uses pipes at the site to drain and clean the reservoir.



Indonesian Reservoir

At the discretion of the City of San Luis Obispo, water may be added to Middlecamp Reservoir from Salinas Reservoir instead of Whale Rock Reservoir. Additionally, the City may add water to Middlecamp Reservoir via the city water treatment plant backflushing process.

Surface runoff from Horse Canyon flows into Indonesian and Shepherd Reservoirs. Smith Reservoir is part of the system, but its water is not directly controlled through the campus reservoir system. It receives overflow from Shepard Reservoir from the northwest and drainage from a northerly riparian area adjacent to the Horse Unit. The water then moves through a four-foot culvert into Brizzolara Creek.

Drumm Reservoir water is used primarily for irrigation, research at the Irrigation Training and Research Center, and nonpoint source pollution abatement at constructed wetlands in James Creek which flow into Drumm Reservoir.

Chorro Creek Watershed

Six reservoirs are located within the Chorro Creek watershed, three of which are active. Gibson receives its water directly from the California Men's Colony wastewater facility. The water can then be transferred to Johnson Reservoir. This water is used primarily for irrigation on fodder crops for cattle. Tyler Reservoir is located west of Gibson and captures surface flow. Due to concerns about fish migrating in the Chorro Creek watershed, the California Department of Fish and Game requires the other three reservoirs (Fox, Gary's and John's) to remain opened to allow surface water to flow through; these reservoirs are unlikely to be used in the near future.

Stream/Creek System

San Luis Obispo Creek Watershed

Stenner Creek - This is the main creek that flows through parts of the Serrano and Cheda Ranches. As the creek flows from Serrano Ranch it meets the Tartaglia property and then re-enters Cal Poly at Cheda Ranch.

Brizzolara Creek - This creek forms the Poly Canyon area and flows through the Peterson and Serrano Ranches as well as the Main Campus. The creek flows from headwaters near the Union Pacific Railroad right-of-way. A small portion flows into the Miozzi property along Poly Canyon road, but most is contained within Cal Poly property. Brizzolara Creek flows into Stenner just north of the Foothill Boulevard and California Boulevard intersection.

Chorro Creek Watershed

Chorro Creek - The campus portion of this creek flows from the California Men's Colony wastewater treatment plant along the boundary of Chorro Creek Ranch west to the Domenghini property.

Pennington Creek - The campus portion of this creek flows from headwaters in the northern portion of Escuela Ranch, across county property, and into Chorro Creek southeast of the Chorro Creek Ranch.

Walters Creek - This intermittent stream is located within Chorro Creek and Walters and Escuela Ranches. It has a limited water supply, and connects with Chorro Creek just west of Chorro Creek Ranch boundary.

Chumash Creek - This intermittent stream is located within both Escuela Ranch and Walters Ranch. It connects to Pennington Creek on the east side of the ranches.

Ground Water System

San Luis Obispo Creek Watershed

The majority of Cal Poly lies within the San Luis Obispo Creek Basin. The basin is eighteen square miles and is drained by San Luis Obispo Creek. It extends from the northern limits of the City of San Luis Obispo, southerly along the alignment of the creek to the Pacific Ocean at Avila Beach. Near the southern portion of the City in the Edna Valley area, the basin extends approximately four miles east of the Pismo Basin. In the Los Osos Valley area, the basin extends approximately four miles west to the Los Osos Basin near Baywood Park.

According to the Department of Water Resources (DWR) Bulletin #18, the water-bearing formations extend to a depth of 160 feet and have a total storage capacity of 67,000 acre-feet. The basin has a usable storage above sea level of 22,000 acre-feet with an estimated maximum safe annual yield of 5,900 acre-feet.¹ The San Luis Obispo County Master Water Plan Update currently estimates the production of this basin at 6,000 acre-feet per year.

The ground water quality for irrigation uses is generally considered Class 1 or Class 2, and occasionally Class 3, as established by the Agriculture Department, University of California, Davis. The ground water is hard and high in chlorides, sulfates, iron, manganese, magnesium, nitrates, and total dissolved solids. These concentrations occasionally exceed EPA Drinking Water Standards.

Cal Poly occupies much of the Stenner Sub-basin within the San Luis Obispo Creek Basin. The Stenner Sub-basin serves as an important ground water recharge area for the San Luis Obispo Creek Basin, as noted in the Master Water Plan Update. Surface water quality in this area is especially important, as it will have an impact on ground water quality as well.

¹ *San Luis Obispo County Master Water Plan Update*, August 1998.

Chorro Creek Watershed

Chorro Creek flows through the Chorro Creek Ranch near the California Men’s Colony. The Chorro Basin is approximately 1.1 square miles in size and, although no measure of safe annual yield has yet been established, annual production is estimated at 1,833 acre-feet.²

Irrigation Wells

Withdrawals by Cal Poly from the above listed ground water basins are limited to the following irrigation wells.

San Luis Obispo Creek Watershed

- Well #1 – Located on Field 25, Parker Barn, South End (Irrigation).
Pump HP: 40 HP
Output: Measured GPM 6/96 by PG&E 613 gpm; 349.1 kWh/af
Meter No: R06743
- Well #2 – Located west side of Stenner Creek at the Crop Science Orchard packing shed.
Pump HP: 3.4 HP
Output: Measured GPM 6/96 by PG&E 51 gpm; 266.2 kWh/af
Meter No: 4743T7

Chorro Creek Watershed

- Well #3 – Located South of the shooting range on Highway 1 (Walter’s Ranch).
Pump HP: 2.1 HP
Output: Measured GPM 6/96 by PG&E 18 gpm; 482 kWh/af
Meter No: 1042N8
- Well #4 – Located adjacent to Chorro Creek
Pump HP: 11.3 HP
Output: Measured GPM 6/96 by PG&E 107gpm; 426.4 kWh/af
Meter No: 099R46
- Well #5 - Located adjacent to Chorro Creek
Pump HP: 6.4 HP
Output: Measured GPM 6/96 by PG&E 107gpm; 243.6 kWh/af
Meter No: 9T3383 or 099R55

Wastewater Ponds

Of the 7 wastewater ponds located within the San Luis Obispo Creek watershed, two are associated with the Swine Unit, four with the Dairy Unit (two are overflow ponds), and one with the BCEC. Specifics related to each pond can be found in Table 2. All pond water has the potential to be used for spray irrigation. Specifics relating to spray irrigation can be found in the Point Source Pollution Prevention Program section under Wastewater Disposal Fields.

² *Ibid.*

Table 2: California Polytechnic State University Water Resources & Irrigation Wells

Reservoir System San Luis Obispo Creek Watershed	Date of Construction	Surface Area (ft ²)	Surface Area (ac)	Capacity (ac-ft)	Vegetation Audit
Middlecamp	1965	59677	1.4	11.0	Yes
Indonesian	1956/57	111949	2.6	20.6	Yes
Ketcham Frog Pond	1950	25000	0.6	1/8 shallow	Yes
Nelson	1950	182952	4.2	33.6	Yes
Drumm	1949	67200	1.5	12.0	Yes
Shepard	1947	130000	3.0	34.0	Yes
Smith	1949	32670	0.8	6.00	Yes

Reservoir System Chorro Creek Watershed					
Gibson	1968	265716	6.1	49.0	Yes
Tyler	1974	43560	1.0	1.0	Yes
Johnson	1971	74240	4.0	50.0	Yes
Fox [dry]	1984	14520	0.3	<.05	Yes
Johns [dry]	1984	8712	0.2	<.05	Yes
Garys [dry]	1984	8712	0.2	<.05	Yes

Wastewater Ponds San Luis Obispo Creek Watershed					
Swine Lower	1970	43249	1.0	5.2	Yes
Swine Upper	1970	38104	1.0	5.2	Yes
Dairy East (Methane)	1998	65340	1.5	12.3	Yes
Dairy West (open)	1994	87120	2.0	10.0	Yes
Dairy Overflow North	1972	38880	0.7	4	Yes
Dairy Overflow South	1972	38880	0.7	4	Yes
Beef Center	1994	26780	0.5	1.5	Yes

Streams San Luis Obispo Creek Watershed	Ranch	Length (mi)	Type
Stenner Creek	Cheda, Serrano	1.8	Perennial
Brizzolara Creek	Peterson	0.8	Perennial

Streams Chorro Creek Watershed			
Chorro Creek	Chorro Creek	1.2	Perennial
Pennington Creek	Escuela	1.3	Perennial
Walters Creek 1988 (named)	Escuela, Walters	1.1	Intermittent
Chumash Creek 1988 (named)	Escuela, Walters	0.6	Intermittent

Irrigation Wells/Pumps	Location	HP	Output (gpm)	Meter No
Well #1	Field 25	40	613	R06743
Well #2	Crop Science packing shed	3.4	51	4743T7
Well #3	Walters Ranch	2.1	18	1042N8
Well #4	Camp SLO	11.3	107	099R46
Well #5	Camp SLO	6.4	107	099R55

PART II: PROGRAMS

This section discusses the three water quality programs that will be initiated at Cal Poly during the Fall and Winter quarters of the 2001-02 academic year (pending the Regional Board's approval) under the direction of the Facilities Planning Department. The programs will be operational within one year of Regional Board approval. Once accepted by the Regional Board, the three WQMP elements will replace existing programs established to meet Regional Board regulatory requirements and will add a new dimension to water quality management on campus in the unregulated areas of nonpoint source and storm water pollution prevention. Because not all pollutants are point sources, some water quality issues and BMPs may be addressed more than once. However, all aspects of the WQMP programs will be implemented simultaneously.

POINT SOURCE POLLUTION PREVENTION PROGRAM

Cal Poly operates a Dairy Unit, Swine Unit, and Beef Cattle Evaluation Center, which, due to enclosed design and intensive use, are considered point sources of pollution. The establishment of waste discharge requirements for these units is exempt from CEQA.

All waste discharge requirements identified from existing permits by the Regional Board are incorporated into this program. To further water quality management objectives on campus, all confined animal areas and animal waste storage sites are included. The program identifies the existing conditions, BMPs, and monitoring of point sources of pollution. Included in this program is a description of 1) the campus activities that have required waste discharge permits, 2) other confined animal areas, and 3) adjacent waters. In addition, procedures surrounding wastewater discharge volume, solid waste storage areas, wastewater disposal fields, solid waste disposal, and ground water limitations are discussed.

All confined animal facilities identified in the program meet the criteria contained in Title 23, Division 3, Chapter 15 of the California Code of Regulations. Confined animal areas are defined as areas where domestic animals are corralled, penned, tethered or otherwise restricted, and feeding is achieved via means other than grazing.

EXISTING CONDITIONS

Table 3 lists all confined animal areas/sites and the maximum allowable number of animals during the dry (April 1 to October 14) and wet season (October 15 to March 31) as well as the site's general location. Locations of the confined animal areas can be found on the map presented in Figure 3. The present locations of the Bull Test Site and Beef Feedlot will be phased out by 2006. These are part of the area identified earlier in the Extended Unit in the San Luis Obispo Creek Watershed Ranches section. The new locations are being planned and will be included in the WQMP once completed.

Confined Animal/Manure Areas

Dairy Unit: The Dairy Unit includes barns, milking facilities, milk storage, laboratories, and classrooms. The facility is in the San Luis Obispo Quad, Section 22, T30S, R12E. Stenner Creek is located approximately 1.6 miles northwest of the unit. The Dairy Unit is 60 feet higher than the elevation of the creek. A small local drainage course proceeds south through an area between the fenced padlocks and the retention ponds. The watershed contributing to this drainage course is a twenty-acre pasture to the north. The Dairy Unit is designed for 800 head of cattle, and is permitted for 375 AU (one thousand pounds of live weight of any given livestock species or any combination of livestock species) of cattle.

Swine Unit: The Swine Unit is located 0.8 mile northwest of campus, in the San Luis Obispo Quad, SE 1/4 of Section 15, T30S, R12E. Stenner Creek, which flows in a southwesterly direction, is located 1/2-mile southwest and down-gradient of the wastewater ponds. This unit holds approximately 600 animals.

Beef Areas: Consists of four segments including the BCEC, Beef Unit, Beef Feedlot, and Bull Test Site.

Beef Cattle Evaluation Center (BCEC): The BCEC facilities are in the San Luis Obispo Quad, Section 15, T30S, R12E. They are located 0.8 miles northwest of campus. Stenner Creek is located approximately 500 feet south of the retention pond. The BCEC includes 16 feeding pens with each pen having a maximum capacity of 15 head. The facility has a maximum total capacity of 240 head of test cattle.

Beef Unit: Maximum 100 head during dry season, and 25 head during rainy season.

Beef Feedlot: Maximum 200 head during dry season. No animals on the east side during rainy season, numbers reduced to 50 on west side during rainy season.

Bull Test Site: Maximum 300 head during the dry season. Animals are brought into the area in May and remain through October. They have no direct access to Brizzolara Creek. Bulls are removed in October; the area is seeded and naturally irrigated to provide grass cover for the rainy season. Buffer areas are established in the areas that have potential for major runoff. In early Spring, grazing animals are brought into the creek area for a short time to reduce wild fire potential. Bulls are excluded from the drainage swale and effective in 2005, activities in field #5 (adjacent to creek) will be discontinued until operations are relocated.

Sheep Unit: (Cheda and Serrano Ranches). Sheep ranch management practices involve the movement of animals between Serrano and Cheda Ranches based on range conditions and stage of animal production. For example, there are approximately 250 ewes on Serrano Ranch which graze from May to August. Of these, 130 will remain through February when they are moved to Cheda for the rest of the year. The 120 ewes that are moved from Serrano in August will be pastured at Cheda. From January to April, approximately 50 replacement rams will be kept in feedlot at the Serrano ranch. On the Cheda Ranch, approximately 150 lambs will remain in the feedlot from May through October, then they may be moved to pasture or sold. Sheep operations are conducted on a portion of Cheda ranch. In the event that a lamb feeding enterprise project is warranted, that activity takes place through the summer months. Barn time for ewes is kept at a minimum for the health and welfare of the animals. There is a 75' buffer between the livestock barn and Stenner Creek. Accumulated waste in the barn is removed once every 2-3 years, no waste is stored on site

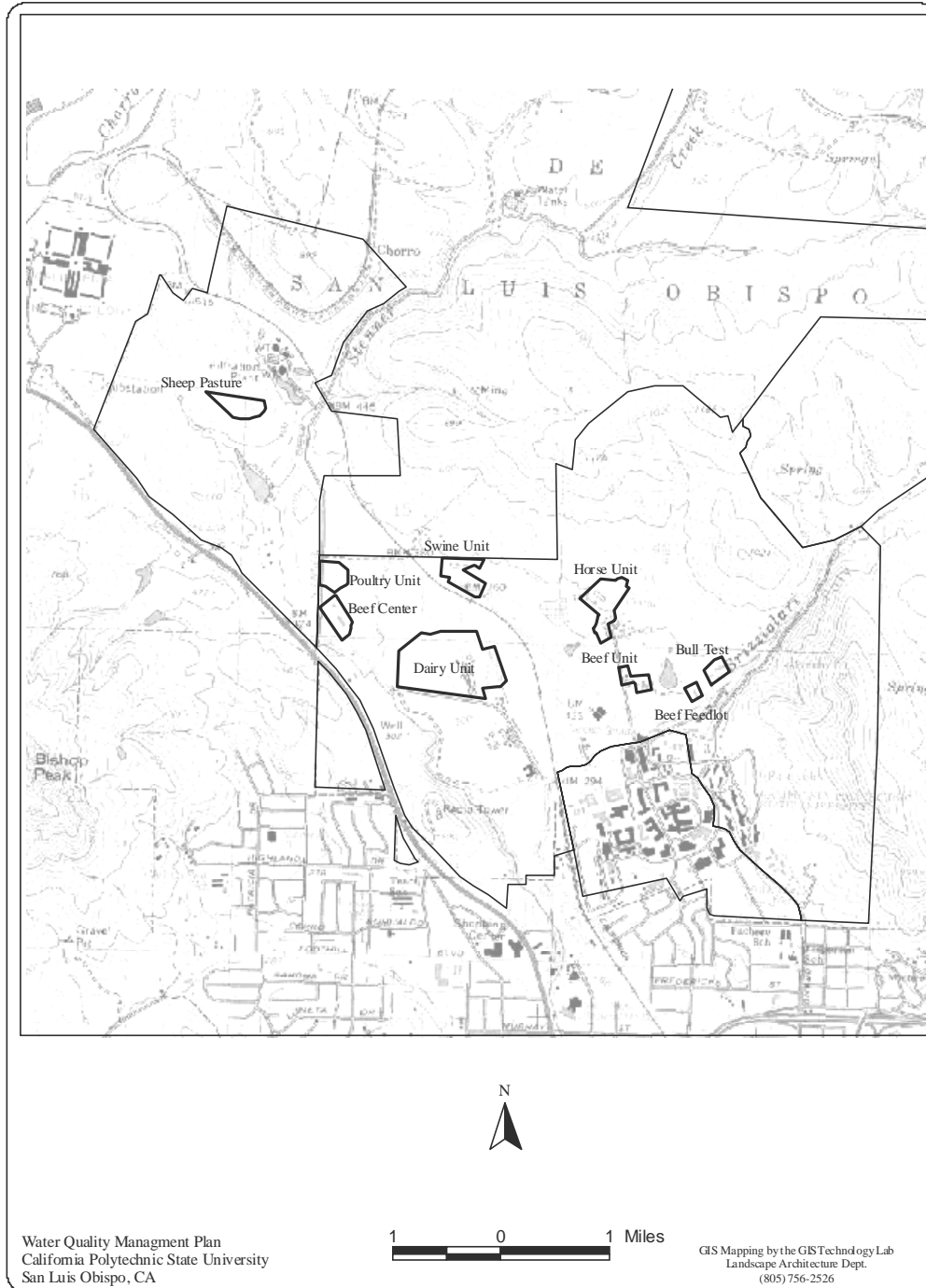
Horse Unit: This unit consists of a series of individual horse pens and corrals, which are cleaned daily. Waste is moved to the concrete storage area east of Hadley Arena for transport to composting area. There is a maximum of 102 horses in confined areas (pens and corrals). An additional 27 to 66 animals could be pastured in the area adjacent to the horse unit.

Poultry Unit: This unit has self-contained waste storage, which when full is moved to the compost area.

Table 3: Confined Animal Areas/Sites - Maximum Numbers of Animals per Season/Location

Unit	Dry Season (1 April to 14 October)	Wet Season (15 October to 31 March)	Location
Dairy Unit	375 AU	375 AU	Extended Campus
Swine Unit	600 Swine	600 Swine	Extended Campus
Beef Areas			
BCEC	240 Beef	240 Beef	Extended Campus
Beef Unit	100 Beef	25 Beef	Extended Campus
Beef Feedlot	200 Beef	50 Beef (westside)	Extended Campus
		0 (eastside)	
Bull Test Site	300 Beef	0	Extended Campus
Sheep Feedlot	150 Lambs	0	Cheda Ranch
Sheep Pasture	250 Ewes	250 Ewes	Serrano/Cheda
Sheep Pasture	100 Lambs	0	Serrano/Cheda
Horse Unit	102 Horses	85 Horses	Extended Campus
Poultry Unit	30,000 Chickens	30,000 Chickens	Extended Campus

Figure 3: Confined Animal Areas



Adjacent Waters

Stenner and Brizzolara Creeks are surface water tributaries to San Luis Obispo Creek and are in the immediate vicinity of the following confined animal areas:

Dairy Unit: Stenner Creek is located approximately 1.6 miles northwest of the retention ponds.

Swine Unit: Stenner Creek is located approximately 0.5 mile southwest and down-gradient of the wastewater ponds.

Beef Cattle Evaluation Center: Stenner Creek is located approximately 500 feet south of the retention pond.

Bull Test Site: Brizzolara Creek is located approximately 200 feet south of the unit and fields. Much of this area drains into Drumm Reservoir.

Beef Feedlot: Brizzolara Creek is located approximately 200 feet south of the unit.

Beef Unit: Brizzolara Creek is located approximately 800 feet south of the unit.

Regulated Wastewater

Wastewater Retention Ponds

Dairy Unit: Up to 46,000 gallons per day (gpd) of wash-water may be discharged at this facility. The treatment and disposal facilities consist of a solids removal process. The water is then allowed to settle in a 13 acre-foot retention pond (Dairy West) located on approximately 2 acres at the southeast corner of the facility. A second pond (Dairy East, 12.3 acre-feet) was added in 1998 to supplement Dairy West and to facilitate methane recovery. Within the Dairy Unit, accumulated wastewater is re-circulated for washdown of the facility.

Two wastewater ponds, each with a capacity of approximately 8.9 acre feet at the abandoned State Dairy facility (adjacent to the Dairy Unit) are maintained and used as backup holding capacity for emergencies (i.e., excessive storms and retention pond maintenance activities).

Swine Unit: The swine unit holds approximately 600 animals and generates discharge of up to 6000 gallons/day for clean up, wash water, and storm water runoff. The wastewater treatment and disposal facility consists of two retention ponds.

Beef Cattle Evaluation Center (BCEC): The site holds a maximum of 240 head year round. The confined animal unit is suited with a 6-inch lipped concrete pad adjacent to the pens that directs runoff on the east side to a pipe leading to the wastewater pond. A similar structure on the west side leads wastewater to an overland drain to the pond. Up to 1.7 acre-feet of storm water runoff may be discharged at this facility. The treatment and disposal facility consists of a 1.7 acre feet retention pond located on approximately 0.5 acres southeast of the livestock pens.

Wastewater Disposal Fields

Excess wastewater accumulated from the Dairy Unit, Swine Unit, and Beef Cattle Evaluation Center ponds is disposed of by spray irrigation on adjacent pasturelands to maintain appropriate freeboard or to prepare for winter storms. Any storm runoff from manure areas adjacent to the pond is directed to retention ponds.

Wastewater from retention ponds is periodically sprayed on agriculture fields to reduce volume and provide needed irrigation to pastures and crops not cultivated for human consumption.

The following list identifies existing, retired, and new spray fields. The existing and new fields will be used to provide a more even distribution of wastewater without overloading the soils and creating overland flow. Figure 4 identifies the field locations.

Existing Spray Fields:

Active: C16, C39, C38, C37, C36, C52a.

Inactive: C 29, C33, C35a, C35b, C34, C45

Retired Fields: C46a, C46b, C46c, C46d, C47a, C47b, C 48, C49, C50, C56b, C57.

New Fields (formerly retired): C55, C56a.

Sludge/Dredge Disposal

Wastewater ponds: Disposal of sludge from the wastewater ponds is a function of the agriculture operational requirements and the volumes of water entering the system. Small units that do not produce a large volume of water can be dried and the sludge moved to the compost site (i.e., Swine Unit ponds). For large agricultural operations, the sludge cannot be dried out at the site due to the need for water storage. The majority of the aqueous sludge goes to the composting site with the remainder distributed on agriculture fields. The wastewater ponds are cleaned of sludge every 10 to 15 years. Cleaning is a function of the water storage capacity of the ponds related to facilities needs.

Reservoirs: Dredge material from the reservoirs is topsoil that has been washed in and is applied directly to the agriculture fields. Reservoirs are dredged on a fifteen to twenty year cycle, which is a function of water storage and reservoir use.

Solid Waste

Solid Waste Storage Areas

Dairy Unit: Solid waste from the Dairy Unit and local confined animal areas is stored in two concrete walled units. The lower unit is 11.8 ft high, 40.0 ft wide, and 59.2 ft long; the upper unit is 12.5 ft high, 28.5 ft wide, and 96.5 ft long. Wastes are hauled periodically to composting field C 42 or designated areas in field C 45.

Dairy Unit Wastewater Pond Area: The storage area for solid waste separated from the wastewater washing generated from the milking parlor and confined animal areas is 7.7 ft high, 39.0 ft wide, and 86.5 ft long. Wastes are dried and used for bedding in the sheltered pens or hauled periodically to composting field C 42 or designated areas in field C 45.

Beef Cattle Evaluation Center: The confined animal unit is suited with a 6-inch lipped concrete pad adjacent to the pens. The pens and concrete pad are scraped monthly and the waste is transported to the composting area (field C 42).

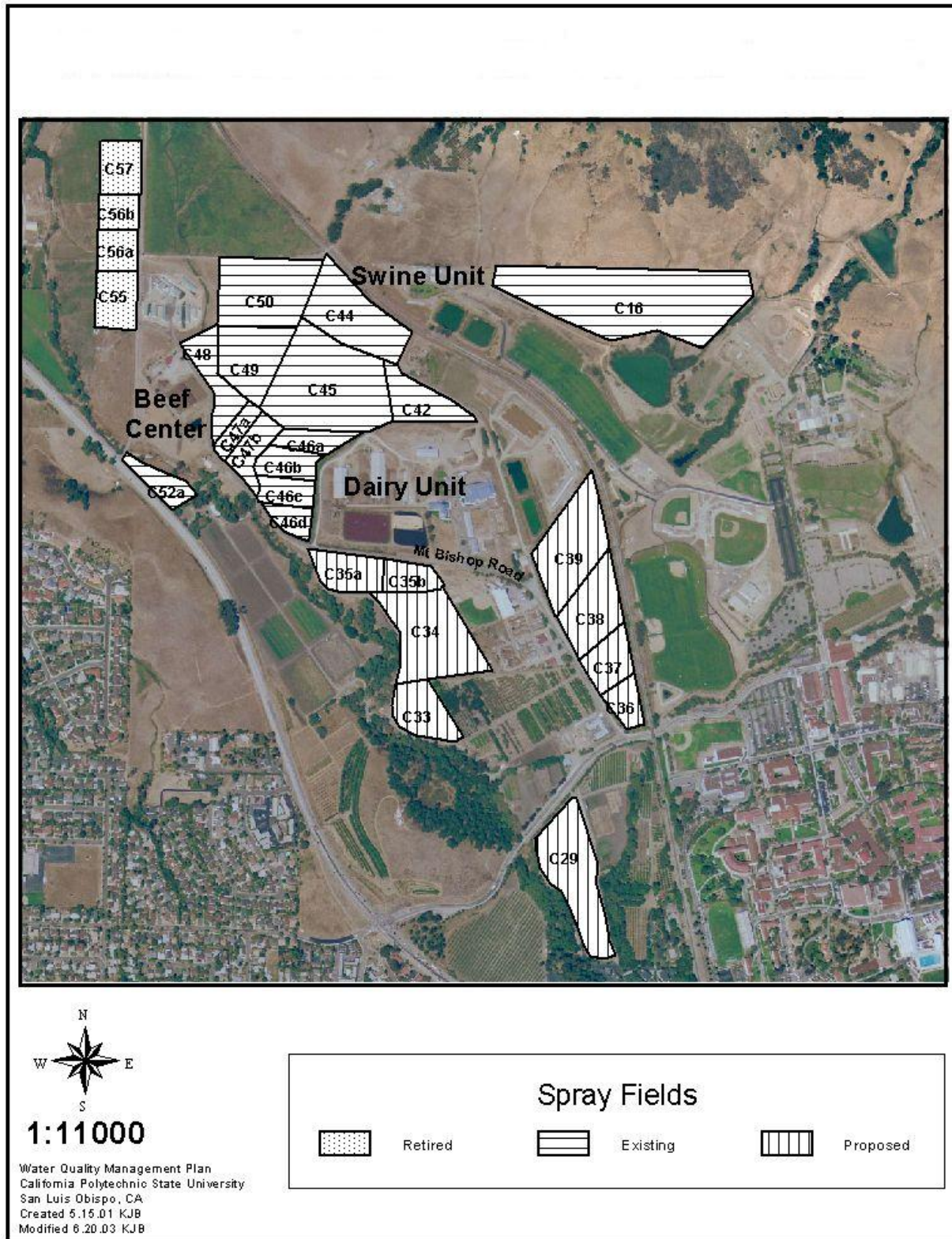
Horse Arena: (North of Hadley Arena): Animal waste from the horse unit is temporarily stored on a concrete slab (4 ft high, 29 ft wide, 100 ft long with retaining wall built into slope) prior to removal to the composting area field C 42 or designated areas in field C 45.

Solid Waste Disposal

Field Disposal: Field C 44 was used to compost all animal waste from storage and confined animal sites, areas, and units on campus. This field was retired from composting and is back in agriculture production. During the fall of 1999 all composting materials were deposited in field C 42 (3.8 acres). This field has been designated as the composting site on campus. In addition, three or four acres of the northwest end of field C 45 will augment field C 42. This area is flat and easily accessed. Wet manure that is not stored or does not go to the compost operation is used on cultivated fields such as cornfields.

Septic Systems: Septic systems exist at Peterson, Serrano, Cheda, Chorro and Escuela Ranches. Specifically these areas are located at the BCEC, Parsons House at the Crops Unit, Parker Barn, Architecture Village Bridge and Shell Houses, resident hall at the Swine Unit, and the barn/maintenance shop at the Chorro Ranch. Through detailed research of campus historical records, there appears to be little information about the installation dates of these systems. Most systems appear to be installed at the time the units were constructed. Waste from the septic systems is periodically removed and disposed of by a local contractor.

Figure 4: Wastewater Disposal Fields



Ground Water Limitations

Ground water limitations will be determined by comparing samples collected from wells located up-gradient and down-gradient wastewater disposal spray fields (Figures 4 and 5).

The locations of the monitoring wells are: (Figure 5)

- MW-1 (Mid-gradient well): Southern part of field C 47B adjacent to Mount Bishop Road. (Note: the existing well on the southern border of field C 47A and northern border of field C 47B has been retired as the mid-gradient well. The retired well was formerly known as Well Two.)
- MW-3 (Up-gradient well): Tartaglia property near railroad tracks, westside.
- MW-4 (Down-gradient well): New well developed in 1999. Southwest corner of field C 29 near Stenner & Brizzolara Creeks. The new well was developed to assess any impacts associated with bringing the new spray fields on line.
- MW-5 (Up-gradient well): North of Field C16, Swine Unit
- MW-6 (Down-gradient well): South of Field C16, Swine Unit
- MW-7 (Up-gradient well): North of Field C39, East of Dairy Unit
- MW-8 (Down-gradient well): South of Field C36, SE of Dairy Unit

POINT SOURCE BEST MANAGEMENT PRACTICES

The following are Best Management Practices (BMPs) are functions of existing permits currently being implemented for sites identified below. Additional requirements can be found in the Nonpoint Source Pollution Prevention Program of the WQMP. The following BMPs are derived from current Regional Board requirements, and are intended as minimum pollution prevention requirements. It is the intent of the WQMP not to limit these requirements to changing technologies and BMPs.

Confined Animal/Manure Areas (CA)

- CA-1. “Confined animal areas” and “manure areas” are protected from inundation or washout by overflow from stream channels for up to 20-year peak stream flows. These areas are also protected from 100-year peak stream flows. Conditions are monitored to ensure compliance with Regional Board requirements.
- CA-2. Adequate surface drainage is maintained in animal confinement facilities to prevent continuous accumulation of surface waters in corrals and feedlots. Manure may be stacked in the confined lot or other appropriate area as long as the discharge is minimized and any storm runoff is managed. If manure is managed as a solid, any drainage from the storage area or structure is routed to the appropriate retention pond.
- CA-3. Manure is regularly removed from confined animal areas and applied directly to the compost area or cultivated land.
- CA-4. Operational procedure manuals for the Dairy Unit, BCEC and Swine Unit, identify appropriate BMPs for managing the unit and procedures for field irrigation and application of wastewater including the use of recycled wastewater within the unit to reduce the amount of water used within the system and the amounts used for spray irrigation.

Adjacent Waters (AW)

Animals are allowed into riparian areas, on a controlled basis, during low seasonal rainfall periods and when grazing impacts are not degrading to stream banks or impacts desirable forage or canopy, to remove vegetation for fire protection and weed control. Animals are controlled while entering such surface waters and riparian areas will be fenced to control animal activity. Animals grazing in the riparian zone will occur for short durations (usually 24 hours) and long rest periods to minimize nutrient load.

Regulated Wastewater

Wastewater Retention Ponds (WWP)

- WWP-1 Wastewater quantities (associated wash-water and contaminated runoff) will not exceed the amount of waste generated by 375 AU of test cattle at Dairy Unit, 600 swine at the Swine Unit, and 240 head of test cattle at BCEC. Some wastewater is disposed via spray fields, which are identified later in this program.
- WWP-2 Retention ponds and land disposal areas are maintained to have capacity to retain all facility wastewater and runoff from manure areas during any 25-year, 24-hour storm (6.0 inches/24 hours).
- WWP-3 Retention ponds are sufficiently lowered following each storm to restore the design capacity of the system, as permitted by disposal field conditions.
- WWP-4 Drainage areas are maintained and kept free of debris or other materials that would prohibit the movement of wastewater to the pond system.
- WWP-5 Freeboard exceeds 12 inches or the specified design freeboard, if greater, in the retention ponds.
- WWP-6 Retention ponds are lined or underlain by soils that contain at least 10 percent clay and not more than 10 percent gravel, or by artificial materials of equivalent impermeability.
- WWP-7 Wastewater ponds are cleaned of sludge every 10 to 15 years, or as needed for proper maintenance of retention ponds. Sludge is disposed of by composting or field application.
- WWP-8 Domestic wastewater is not discharged to the Dairy Unit, BCEC, or Swine Unit wastewater pond systems.
- WWP-9 Discharge does not contain cleaning agents, solvents, or other constituents in concentrations detrimental to waters, soils, plants, or animals, and will not occur within 100 feet of any water well.

Wastewater Disposal Fields (WWF)

- WWF-1 There is no discharge of wastes, including overflow, bypass, seepage, and over-spray from transport, treatment, or disposal systems, to any surface water, including but not limited to Stenner Creek, Brizzolara Creek, and adjacent drainageways.
- WWF-2 Application of manure and wastewater to land disposal areas occurs at rates that are appropriate for the crop, soil, climate, management system, and condition of waste, and to assure that wastewater percolation meets the requirement of the Regional Board. A Wastewater Irrigation Rotation Form (Form 3) is kept by the Farm Operations Department which documents a rotation schedule of wastewater field irrigation to negate continuous field observation related to nutrient loading, erosion, and nutrient rich runoff. The form identifies field sprayed, date, weather, length of spraying, and state of vegetation in the spray field area.
- WWF-3 Wastewater is applied to irrigation areas at rates and durations suitable for the type of soils and irrigation method to minimize percolation to ground water.
- WWF-4 Lands where liquid animal wastes are applied are managed to preclude runoff of wastewater as described in the Nonpoint Source Pollution Prevention Program.
- WWF-5 Effluent discharged to retention ponds or land disposal areas shall have a pH not less than 6.5 or greater than 8.4.

WWF-6 Effluent irrigation will not take place during rainfall or when the ground is saturated (after a 3-inch rainfall).

WWF-7 Released irrigation effluent will be maintained on the appropriate pastures without runoff to adjacent drainageways or properties and meet the RWQCB discharge requirements.

Solid Waste

Solid Waste Storage Areas (SWS)

SWS-1 Animal waste is managed to prevent nuisances (odors, vectors) in manure storage areas.

SWS-2 Manure storage areas are managed to minimize percolation or infiltration of water into underlying soils by routing drainage to impervious storage areas, applying manure directly to land areas, relocating existing lots or, in the case of new areas, selecting more-impervious soils for manure storage. Extraneous surface drainage, including water from roofed areas, is prevented from running through manure areas and into ponds, except when such drainage can be fully retained in on-site ponds.

SWS-3 Compost piles will be located on compacted soil or an impervious surface to lessen the seepage of nutrients and salts into the ground. The soil surrounding the pile will provide moderate drainage and will not be compacted from high traffic or pool up during wet weather. A slight slope of 2-4% is permitted to help drain water away from the compost area.

SWS-4 Compost sites will not be located near any natural drainage areas or ground water wells.

Solid Waste Disposal Fields (SWF)

SWF-1 Irrigated agricultural fields with high concentrations of animals or where waste is applied are managed to preclude runoff of irrigation water.

SWF-2 Lands where solid and semi-solid animal wastes are applied are managed to preclude runoff.

SWF-3 Wet manure applied to cultivated land is incorporated into the soil as soon as possible after application.

Septic Systems (SS)

Systems are inspected once a year by the Facility Services Department, Plumbing Shop and pumped as required. A local contractor handles disposal of the septic waste.

Ground Water Limitations

GWL-1 Nitrate concentrations in the ground water down-gradient of the disposal area will not exceed 10 mg/1 (as N).

GWL-2 The discharge of wastewater will not cause substantial increase of mineral constituent concentrations in underlying ground waters.

GWL-3 The discharge wastewater will not cause concentrations of chemicals and radionuclides in ground water to exceed limits set forth in Title 22, Chapter 15, Articles 4 and 5 of the California Code of Regulations.

POINT SOURCE MONITORING

The reporting schedule and all waste discharge monitoring requirements identified in previous permits for point source pollution by the Regional Board are identified in Table 4. The General Site Inspection Form (Appendix, Form 1) was developed to record monitoring results.

The retention ponds, confined animal manure areas, and spray fields will be inspected three times a year to assure BMPs are in place and functioning. Particular attention will be paid to any liquids flowing from spray irrigation fields, waste ponds, waste storage sites, etc., and to verify that spray irrigation is limited to those sites identified for wastewater disposal. The General Site Inspection Form (Appendix, Form 1) was developed to record results of the inspection and serve as the record of compliance. In addition, the inspection of the Dairy Unit will record the type of water (recycled or potable) that is used for flushing the system. Non-potable recycled water is desired.

The Risk Management Department will submit quarterly reports of findings to the Regional Board as identified in the monitoring and reporting schedules identified in Tables 4 and 5. Weekly and monthly samples will be found in quarterly reports. Semi-annual reports will include quarterly and semi-annual results.

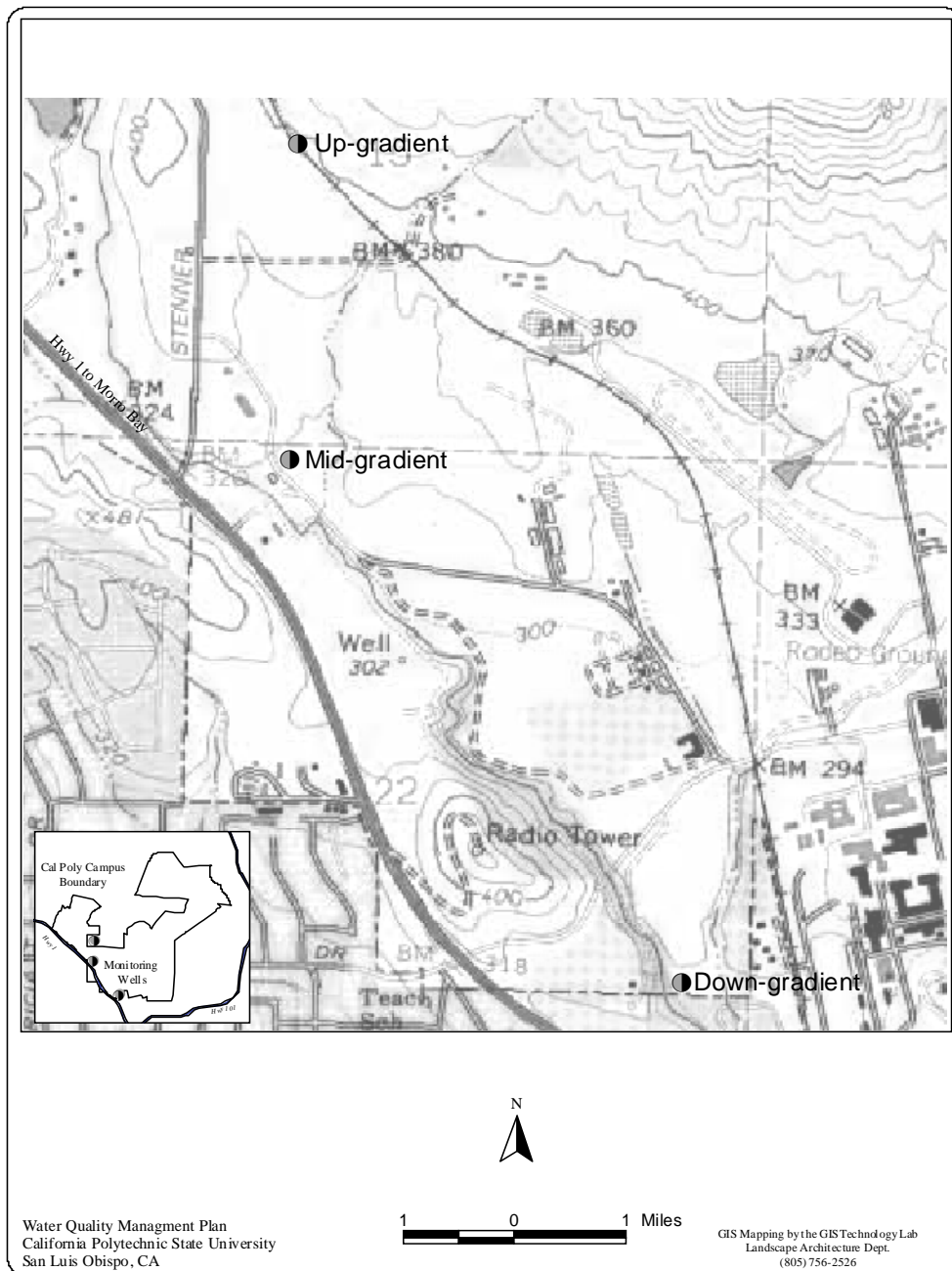
Assessment of the potential impact to ground water by the application of wastewater to agricultural fields will be conducted through the Risk Management Department as part of the implementation and training portion of the WQMP. Field monitoring will include up-gradient and down-gradient monitoring wells of the spray area within the Stenner Creek drainage. Results of the analysis will be used to evaluate impacts of the discharge upon ground water in the vicinity. The assessment will determine whether existing wells meet or exceed well standards contained in the Department of Water Resources' Bulletins 74-81 and 74-90.

A semi-annual technical report summarizing all field investigations will be submitted to the Regional Board and will include monitoring well locations, well logs, monitoring results of indicators identified in Table 4, and an evaluation of ground water gradient. A registered engineer or other qualified professional will certify the report, as needed.

Table 4: Point Source Monitoring Requirements and Schedule for Wastewater

Requirements	Weekly			Monthly			Semi-Annual			
	Dairy Unit	BCEC	Swine Unit	Dairy Unit	BCEC	Swine Unit	Dairy Unit	BCEC	Swine Unit	Wells
Freeboard	X	X	X							
Total Pig Population						X				
Adult Pig Population						X				
pH				X	X	X				
Dissolved Oxygen				X	X	X				
Total Dissolved Solids							X	X	X	X
Total Cattle Population				X	X					
Milking Head Population				X						
Chloride							X	X	X	X
Nitrate Nitrogen							X	X	X	X
Nitrate								X		X
Nitrite Nitrogen										X
Nitrite							X	X	X	
Sodium							X	X	X	X
Total Kjeldahl Nitrogen							X	X	X	X
Total Nitrogen							X	X	X	X
Depth to Groundwater										X

Figure 5: Monitoring Wells



NONPOINT SOURCE POLLUTION PREVENTION PROGRAM

The Nonpoint Source Pollution Prevention Program focuses on two major land use areas that have potential to impair or threaten water quality: Agriculture (Ranch) Land Management and Urban Development and Runoff. This program also identifies measures for managing wetland and riparian areas to minimize contribution to nonpoint source pollution.

Rainfall or other water moving over and/or through the ground causes nonpoint pollution. As water moves over the ground, it picks up and carries pollutants, depositing them into lakes, rivers, wetlands, coastal waters, and ground waters. In addition, hydrologic modification by land use practices may create nonpoint source pollution that adversely affects the biological and physical integrity of surface waters by eroding channels.

EXISTING CONDITIONS

Agricultural Land Management

Cal Poly's commitment to managing water quality is evidenced by the practices that have been developed and implemented by the University's College of Agriculture in conducting its farm operations and by the College's continued commitment to developing practices that reduce and eliminate potential nonpoint sources of pollution. To this end, the College has completed Ranch Water Quality Management Plans for each of the University's ranches and an area of the Extended Campus that consists of the Bull Test Site, Beef Feedlot, Beef Unit, and P-Hill pastures (Extended Unit). The BMPs identified in the completed ranch plans and the Extended Unit have been incorporated into this document. As the existing plans are updated, relevant materials will be incorporated into the WQMP.

The primary agricultural nonpoint source pollutants are sediment, nutrients, animal wastes, salts, and pesticides. Agricultural activities also have the potential to directly impact the habitat of aquatic species through physical disruption to stream banks, riparian vegetation, and ground cover caused by livestock or equipment, or through the management of water.

Management practices can reduce the mass load of sediment reaching a water body and improve water quality and the use of the water resource. These practices can be implemented by using one of two different approaches or a combination of both. The more effective method is to prevent erosion and sediment transport through such practices as conservation tillage, contour strip-cropping, terracing, and critical area planting. The second approach involves routing field runoff through devices that remove sediment, such as filter strips, field borders, grade stabilization structures, sediment retention ponds, water and sediment control basins, terraces, and vegetated drainage areas.

Runoff - Confined Animal Areas

Although confined animal areas are generally treated as point sources of pollution and are addressed in the Point Source Pollution Prevention Program, runoff from these areas can, in fact, behave as a nonpoint source of pollution. The intensive use of these areas may contribute sediment and waste to local waterways if not managed properly.

Pesticide Management

The purpose of pesticide management on campus is to reduce contamination of surface and/or ground water by implementing effective and safe use of pesticides. In general, this is accomplished by releasing fewer pesticides and/or less-toxic pesticides into the environment and through practices that minimize the movement of pesticides to surface water and/or ground water.

Pesticide management begins with the application of pesticides by responsible and knowledgeable individuals. On the Cal Poly campus, five restricted material permits are held by campus entities from the San Luis Obispo County Agricultural Commissioner: Crop Science (two permits), Environmental Horticulture Science, Facility Services (for ground maintenance), and Farm Operations. All pesticides have EPA identification numbers and are reported as required. Pesticides are stored, handled, and disposed of in compliance with all State and Federal regulations.

Grazing

Properly planned grazing, which utilizes both the tools of grazing and animal impact, will result in soil surfaces that absorb water rapidly, capture increasing quantities of solar energy, rapidly cycle nutrients, and stimulate complexity of life forms – all of which tend to create covered soils that are very stable and productive. In addition, these same processes will result in better shading of waters, more habitat for wildlife, and improved health of livestock.

Grazing used in the form of overgrazing, and animal impact used as low impact over long time periods will result in just the opposite – bare compacted soils that shed water rather than absorb it, shallow rooted plants that can not stabilize stream banks, suppressed biotic communities that cannot cycle the nutrients created at the soil surface, and the reduction of energy capture by plants.

Irrigation

Irrigation can contribute excessive amounts of sediment and agricultural pesticides to local water systems.

Application of inordinate amounts of water or improper watering schedules can cause soil erosion of soils. BMPs to address these issues focus on adjusting watering schedules to account for soil conditions and need.

Urban Area Sources: Main Campus

Urban areas contribute to nonpoint source pollution generally through runoff from impermeable surfaces such as roofs, parking lots, roads, mountain bike trails, and certain types of landscaping. These areas contribute to increased levels of salts, oils, heavy metals, fertilizers, and organic materials. Onsite septic systems in place in the campus area are treated as nonpoint sources of pollution in this report and can contribute waste products to soils and underground water systems.

Wetland/Riparian Area Management

The wetland and riparian areas of the Cal Poly campus provide a living laboratory for students and faculty. These areas are part of the campus learning environment where students and faculty study through observation and research a variety of biological, ecological, and physical systems. These areas may contribute to nonpoint source pollution levels through erosion and sedimentation, yet, if properly managed, they may also act to buffer watercourses from surrounding pollution sources.

Landfill/Quarry Monitoring

A decommissioned landfill and active quarry operation are located in Poly Canyon adjacent to Stenner Creek. The County Public Health Department and the State Health Services periodically conduct a visual inspection of this area to ensure that no obvious problems exist. It is the intention of this WQMP to begin the process of developing a more thorough monitoring program for this area. Listed BMPs are suggested methods for improving assessment of this area.

NONPOINT SOURCE BEST MANAGEMENT PRACTICES

Although both agricultural and urban land uses currently are managed to minimize runoff, a formal BMP program does not yet exist to specifically address the issues associated with nonpoint source pollution. However, this does not mean that BMPs are not already a part of daily operations in both the agricultural and urban portions of Cal Poly. As a function of past environmental review, many facilities in the Campus Instructional Core and elsewhere implement BMPs to ensure water quality and to minimize adverse effects. As mentioned above, the College of Agriculture already employs many of the BMPs listed below and addresses the management of resources as a priority in their program.

This section identifies management practices that manage surface and ground waters from agricultural sources of nonpoint pollution, as well as methods for reducing, containing, and/or treating runoff from agricultural operations (e.g., row crops, grazing, pens, corrals, manure management, etc.). The BMPs listed below are intended to provide flexibility for management, to utilize the most appropriate BMPs for any given situation. These management practices are intended as minimum pollution prevention requirements as applicable for the prevention of nonpoint

source pollution. It is the intent of the WQMP to not limit these requirements to changing technologies and BMPs. The selection of appropriate BMPs shall be performed by trained Cal Poly resource managers. . In addition, personnel will be updated on existing and new BMPs through the annual training program. In cases where the BMPs listed are derived from the Natural Resource Conservation Service, the appropriate NRCS-assigned number is specified.

Agricultural Land Management

Erosion/Sediment Control (ES)

The following BMPs are intended to reduce the mass load of sediment reaching a water body. Although these practices may increase the potential for movement of water and soluble pollutants through the soil to ground water, this WQMP does not ignore potential for transport of pollutants to ground water. Erosion and sediment control systems can and will be designed to protect against contamination of ground water as well as surface water.

ES-1. Conservation Tillage (329)

This practice includes any tillage or planting system that maintains at least 30 percent of the soil surface covered by residue after planting. This method shall be used to reduce soil erosion, detachment, and sediment transport by providing soil cover during critical times in the cropping cycle.

ES-2. Contour Strip-cropping (585)

This method involves growing crops in a systematic arrangement of strips or bands on a topographic contour to reduce water erosion. The crops are arranged so that a strip of grass or close-growing crop is alternated with a strip of clean-tilled crop or fallow, or a strip of grass is alternated with a close-growing crop. Contour planting also increases the amount of water available to the root zone. This method shall be used where erosion of slopes is of primary concern.

ES-3. Terrace (600)

A terrace is an earthen embankment, channel, or a combination ridge and channel constructed across the slope to:

- reduce the slope length and the amount of surface runoff that passes over the area down-slope from an individual terrace
- trap and reduce sediment and associated pollutant content in runoff
- intercept and conduct surface runoff at a non-erosive velocity to stable outlets, thus reducing the occurrence of ephemeral and classic gullies and resulting sediment

This method shall be used where erosion of slopes is of primary concern.

ES-4. Critical Area Planting (342)

This BMP involves planting vegetation, such as trees, shrubs, vines, grasses, or legumes, on highly erodible or critically eroding areas (this does not include tree planting mainly for wood products) to:

- stabilize soil
- reduce damage from sediment and runoff to downstream areas
- improve wildlife habitat and visual resources

This method shall be used where critical areas are eroding, and may be used in conjunction with terracing and other listed BMPs.

ES-5. Pasture and Hay Planting (512, 550)

This BMP involves planting of pasture or hay to:

- allow native and compatible species, varieties, or cultivators
- improve or maintain livestock nutrition and or health, and extend the length of the grazing season
- provide emergency forage production and reduce soil erosion by wind or water after plants are established

This method must be carefully managed in conjunction with sound livestock practices (listed below) to effectively reduce erosion and sedimentation. If chemicals are used in the reestablishment process, the substance will be applied according to label instruction to reduce the chances of chemical runoff into downstream watercourses. This practice is generally more suited to gently rolling terrain as opposed to steep slopes.

ES-6. Water and Sediment Control Basin (638)

Where excessive amounts of water or sediment are expected from an activity, a basin shall be constructed to collect and store debris or sediment. This method is especially useful where the land drains steeply into a stream or other sensitive water body. In addition to trapping sediment, basins can help improve formability of sloping land, reduce sheeting and water erosion, and improve downstream water quality. Basins shall be constructed where sharply sloping land and excessive sediment or other materials drain directly to a nearby waterway.

Runoff – General (R-G)

The following practices are designed to help reduce wastewater from entering waterways by filtering, confining, or diverting water at the site.

R-G-1. Constructed Wetland

Constructed wetlands are aquatic systems with rooted emergent hydrophytes designed and managed to treat wastewater and runoff. This method shall be used where runoff or wastewater is poor in quality and where retention basins are not effective in removing contaminants.

Constructed wetlands require periodic maintenance to be efficient. Ongoing work may include removal of sediment when it greatly decreases capacity or treatment capability, control of invasive and exotic species, and maintenance of berms and other structural supports.

R-G 2. Grassed Waterway (412)

A grassed waterway is a natural or constructed channel shaped or graded to required dimensions and established in vegetation suitable for the stable conveyance of runoff. This BMP should be used in conjunction with terracing or water diversions to effectively control outflow and to minimize erosion.

R-G-3. Filter Strip (393)

This BMP involves planting a strip or area of vegetation for removing sediment, organic matter and other contaminants from runoff and wastewater. This method should be used in conjunction with terracing or other groundwork to prevent erosion and sedimentation of waterways and to slow runoff.

R-G-4. Dikes (356)

A dike is an embankment constructed of earth or other suitable materials that protects land against overflow or regulates water. Dikes can be used to form wetlands and should be used in conjunction with R-G-1, above, or similar BMPs.

R-G-5. Lined Waterway or Outlet (468)

As opposed to R-G-2, above, this BMP involves a waterway or outlet having an erosion-resistant lining of concrete, stone, or other permanent material. Such structures must be combined with energy dissipaters or other velocity-reducing structures so that increased erosion does not occur at the termination or point of entry to a stream or other water body. *This method shall only be used if grassed waterways (R-G-2) or other less intensive measures prove ineffective.*

R-G-6. Waste Storage Pond (425)

This method involves construction of an impoundment by excavation or earth fill for temporary storage of animal or other agricultural waste. This reduces the direct delivery of polluted water, which is the runoff from manure stacking areas, feedlots, and barnyards to the surface waters, effectively reducing organic, pathogen, and nutrient loading to surface waters. Waste storage ponds are described more completely in Part I of the WQMP.

R-G-7. Diversions (362)

A diversion is a channel constructed across the slope with a supporting ridge on the lower side. These structures effectively redirect water from sheet or gully flow across a slope. Diversions should be used in conjunction with terracing and vegetation to reduce gullying and slope erosion.

R-G-8. Roof Runoff Management (558)

Roof and gutter systems shall be designed to control and dispose of runoff water from roofs. This will:

- reduce erosion and delivery of sediment and related substances to surface waters
- reduce volume of water polluted by animal wastes
- prevent loading of organic waste, nutrients, bacteria, and salts to surface water from flow across concentrated waste areas, barnyards, roads, and alleys
- reduce pollution and erosion
- prevent flooding
- improve drainage

Runoff - Confined Animal Areas (R-CA)

The following BMPs are directed at the general operation and maintenance of retention ponds to hold runoff, and at reducing non-contaminated runoff from reaching the facilities and manure areas. The intent is to divert runoff water from upslope sites and roofs away from the confined animal areas, thereby minimizing the amount of water that must be managed and to maintain adequate storage in ponds.

R-CA-1 General Operation

The following set of BMPs will be employed in the yearly operation of ponds storing confined animal waste:

- Retention ponds shall be operated such that the designed storm volume is available for storage of runoff that moves through the confined animal manure areas to avoid adverse impacts to water quality in local waterways, and to prevent illegal release of wastewater. This will include drawing down the water level as soon as site conditions permit the safe removal and appropriate use of wastewater and solids. Wastewater levels will also be drawn down well before the onset of the rainy season to maximize available space.
- Solids will be removed from the solids separation basin as soon as possible following storm events to ensure that needed solids storage volume is available for subsequent storms.

R-CA-2 General Maintenance

The following BMPs will be utilized in daily maintenance activities associated with confined animal areas:

- Clean water (except that which falls directly into the lagoons) will be excluded from the wastewater storage ponds unless needed for further dilution in a liquid system so that available storage space will be maximized. This may involve the redirection of storm water as cited in the Storm Water Pollution Prevention Program.
- Diversions around confined animal manure areas will be periodically reshaped to maintain grade, clean out sediment, and avoid water breaching the bank. Diversions and channels should also be kept free of trees and brush growth to maximize capacity.
- Gutters and downspouts will be inspected annually, repaired when needed, and oriented to direct water away from confined animal manure areas (refer R-G-8 above).

Pesticide Management (PM)

In addition to those required under State and Federal restricted material permits, the following BMPs shall be implemented:

PM-1 Pesticide Management

- Stored and disposed materials will remain in sealed containers or indoors to preclude release.
- Lower application rates than prescribed by the label will be utilized whenever feasible.
- Organic farming techniques that avoid synthetically compounded pesticides will be employed if feasible.

PM-2 Integrated Crop Management System (Pest Management 595)

This system involves the efficient use of pesticide and nutrients in an environmentally sound and economically efficient manner for total crop system management. It involves biological (as opposed to chemical) controls and unique cropping patterns to minimize or completely avoid the use of pesticides. Strategies include:

- Biological controls:
 - Introduction and fostering of natural enemies;
 - Preservation of predator habitats; and
 - Release of sterilized male insects.
- Pheromones:
 - For monitoring populations;
 - For mass trapping;
 - For disrupting mating or other behaviors of pests; and
 - To attract predators/parasites.
- Crop rotations to reduce pest problems.
- Cover crops to conserve water and reduce deep percolation that could leaching pesticides into ground water.
- Resistant crop strains.
- Efficient application methods (e.g., spot spraying and banding of pesticides).

This method of minimizing pesticide use will be used wherever feasible to reduce water quality impacts and to improve soil stability and health.

Grazing (G)

The following BMPs focus on the interface between waters (reservoirs, streams, wetlands, etc.) and uplands (riparian zone) to control erosion from range, pasture, and other grazing lands above the riparian zone.

Implementation of these BMPs will reduce the physical disturbance to sensitive areas and the discharge of sediment, animal waste, nutrients and chemicals to surface waters.

G-1. Deferred or Planned Grazing (352, 556)

This practice involves postponing grazing or resting grazing land for a prescribed period to reduce sediment yield through increased ground cover and reduced surface disturbance, improve soil bulk density characteristics, and increase infiltration rates in areas with bare ground or minimal ground cover. This practice also serves to reduce the opportunity for adverse runoff effects by reducing animal waste during the time of deferred grazing.

G-2. Pond (378), Trough or Tank (614)

Refer to R-G-6 and ES-6 above.

G-3. Well (642) or Spring Development (574)

Developing wells and improving springs and seeps by excavating, cleaning, capping, or providing irrigation, collection, and storage facilities.

Purpose: reduce long-term water quality impacts. (Erosion and sedimentation may occur from any disturbed areas during and immediately after construction, but should be short-lived.)

G-4. Livestock Riparian Access

In order to manage water quality, livestock will be controlled (short duration) in areas such as waterways. Controlling access of livestock from such areas will help reduce manure deposition, soil compaction, and loss of vegetation and undergrowth and provide for fire control of weedy species.

Irrigation (IR)

The following practice can reduce movement of nonpoint source pollution from land into ground or surface water. The pathways taken by applied water and precipitation affect the movement of pollutants. Using runoff to append irrigation or reduce the amount of water diverted increases irrigation efficiency.

IR-1. Irrigation System Tailwater Recovery (447)

This system will collect, store, and transport irrigation tailwater for reuse in the farm distribution system. This will prevent the release of salts, soluble nutrients, and soluble pesticides that accumulate in the collection facility.

Urban Area Sources: Main Campus

Runoff – Urban (R-U)

The following BMPs are intended to: (1) decrease the erosive potential of increased runoff volumes and velocities associated with development-induced changes in hydrology; (2) remove suspended solids and associated pollutants entrained in runoff that result from activities occurring during and after development; (3) retain hydrological conditions that closely resemble those of the pre-disturbed condition; and (4) preserve natural systems including in-stream habitat.

R-U-1. Training

The Risk Management Department will conduct annual training and educational programs, and provide materials for individuals involved with design, installation, operation, inspection, and maintenance of campus runoff areas. This will ensure contractor certification, inspector training, and competent design review.

R-U-2. Infiltration Basins/Trenches

Structures shall hold diverted urban runoff and gradually infiltrate wastes from the bottom of the structure into the subsoil and eventually into the ground water.

R-U-3. Filter Strip (393)

Refer to *R-G-3*

R-U-4. Constructed Wetland

Refer to *R-G-1*

R-U-5. Retention Ponds/Wet Ponds

A pool of water shall be maintained to temporarily store urban runoff until it is released at a controlled rate, and trap incoming sediment for removal.

Onsite Disposal Systems (Septic) (SEP)

The Point Source Pollution Prevention Program identifies the locations of septic systems on campus. This section addresses effluent from those systems as a nonpoint pollutant.

SEP-1. Perform Regular Inspection and Maintenance of Septic System

Septic tanks will be inspected annually to determine the need for maintenance and pumping. When required, systems will be pumped and the waste will be handled by a local contractor. In general, the capacity of a septic tank, flow of wastewater (number of people and use habits), the volume of solids in the wastewater, and the solids retention time determine the required frequency of pumping. A Septic Inspection and Maintenance Form (Form 4) will be implemented by the Facility Services Department, Plumbing Shop for all septic areas on campus including the Chorro Creek maintenance shop and Escuela Ranch. The Plumbing Shop will submit an annual report to the Risk Management Department.

SEP-2. Discourage Use of Phosphates

Low-phosphate detergents are commercially available from a variety of manufacturers. Eliminating phosphates from detergent can reduce phosphorus loads to septic systems by 40-50 percent. Campus use of phosphate detergents shall be discouraged.

SEP-3. Eliminate Disposal of Grease, Oil, and Toxic Materials

Grease and oil shall not be introduced into the system. Bleach, solvents, fungicides, and any other toxic material shall not be poured into the system.

SEP-4. Eliminate Use of Garbage Disposals

Eliminating garbage disposals can significantly reduce loading of suspended solids and BOD to septic systems. Total nitrogen and phosphorus loads may also be slightly reduced because of decreased loading of vegetative matter and foodstuffs. Eliminating garbage disposals can also reduce buildup of solids in septic tanks and reduce frequency of pumping required. Garbage disposals shall be eliminated whenever feasible.

SEP-5. Retrofit or Upgrade Improperly Functioning Systems

Soil absorption fields often fail due to hydraulic overload but may repair themselves with periods of rest. A backup absorption system shall be constructed to divert water from the primary absorption system and allow alternate the use of the primary and the backup systems (e.g., for 6-month periods).

Wetland/Riparian Area Management (R)

The following BMPs are intended to help prevent riparian areas from contributing to nonpoint sources of pollution.

R-1. Channel Vegetation (322)

This involves planting native species, such as willow and sycamore, to stabilize channel banks and adjacent areas, and reduce erosion and sedimentation. Channels shall be revegetated with native species to maintain or enhance the quality of the environment for fish and wildlife, and to improve visual aesthetics.

R-2. Stream Channel Stabilization (584)

Through excavation, silt fencing, boulders, downed trees, or other methods, eroding or damaged stream banks shall be stabilized against further degradation. This also creates a stable streambed favorable to fish, wildlife, and riparian vegetation.

R-3. Culvert Clean Out

Culverts shall be cleaned periodically during the normal dry season (1 April to 14 October) and times of severe flooding to prevent unintended modification of channel geomorphology upstream. Care shall be taken not to disturb the natural setting or increase erosion, and will include:

- Work will be done during dry weather when no or low flows are present.
- Sandbag or haybail diversion shall be installed and removed by hand to ensure that contents do not enter waterway.
- No heavy equipment will be used work in the creek.
- Equipment will be fueled and maintained where potential spills cannot enter waterway.
- Downstream silt fencing will be installed and maintained.
- Erosion and siltation control measures will be in place and maintained.
- All exposed areas will be seeded and covered with erosion control material(s) and maintained until vegetation is established.
- No wet concrete slurry will come into contact with State waters.
- All debris and construction materials will be removed and disposed of in accordance with all applicable requirements.

R-4. Stream Bank and Shoreline Stabilization

This technique aims to stabilize banks and streams, reservoirs, wetlands or excavated channels, and in combination with *R-2* to:

- prevent loss of land or damage to utilities, roads, buildings, or other facilities adjacent to the banks
- maintain channel capacity;
- control meandering that would adversely affect downstream facilities; and
- improve the stream for recreation or as a habitat for fish and wildlife.

R-5. Structure for Water Control (587)

Structures for water control may include dikes, channels, and actual control devices.

The purpose of this practice is to:

- control stage, discharge, distribution, delivery, or direction of flow in open channel or water use areas;
- facilitate water quality control vis-à-vis sedimentation, temperature, etc.; and
- enhance fish, wildlife and other natural resources.

Landfill/Quarry (L-Q)

BMPs for this area should focus on the retention of runoff and monitoring of ground water. BMPs listed under “Runoff-General” above should serve to minimize impacts from runoff, and should be implemented. Moreover, visual monitoring will be completed by ground water monitoring before confluence with Stenner Creek. This may be achieved through a combination of ground water wells and upstream and downstream sample comparisons. Monitoring will take place in a similar schedule to other campus monitoring practices discussed below. The annual report will include a status of or activity in the quarry.

NONPOINT SOURCE MONITORING

The Risk Management Department will verify proper implementation of the control and management practices through field inspection. Two forms have been developed to document BMP effectiveness and aid in the assessment of land management practices. The General Site Inspection (Appendix, Form 1) will be completed before, during and after the rainy season to determine effectiveness of erosion control measures on non-disturbed sites. If a potential problem is identified, the inspector may also photograph the area to help identify and understand the problem, and determine the best means of addressing it now and in the future. The form requires the inspector to specify BMPs and identify a timeline for remediation. If there is a problem that cannot be addressed through the Facilities Planning Department, a Professional Engineer (PE) with erosion control training or a Certified Professional Erosion and Sediment Control (CPESC) specialist will be consulted.

Disturbed sites and construction activities will be evaluated using the Disturbed Area Inspection Form (Appendix, Form 2). Copies of forms can be found in the Appendix.

STORM WATER POLLUTION PREVENTION PROGRAM

This program provides storm water management for some of the developed and rural portions of the Main Campus. The program addresses issues associated with runoff, service and construction. This section describes existing procedures related to hazardous materials. In addition, equipment storage and cleaning, as well as maintenance areas and pollutants are described. This program proposes BMPs for construction activities and road maintenance, and discusses storm water monitoring. These practices have been incorporated into the Cal Poly Construction Specifications. The program identified here addresses urban runoff on the Main Campus. As required in Phase II, Cal Poly has submitted a draft Storm Water Management Plan which outlines several management measures and details of the required implementation of those measures. Excerpts from this plan will be included in this section of the WQMP once approved by the Regional Board.

EXISTING CONDITIONS

Hazardous Materials

Based on information provided by the Risk Management Department, Environmental Health and Safety (June 1999), the University does not store bulk hazardous materials or hazardous wastes outdoors in any manner likely to result in release of material to the environment. Bulk waste oil stored in tanks at the Farm Operations (Building 09) and Transportation Services (Building 71) are checked weekly by The Risk Management Department for possible leaks, and all inspections are documented. Bulk fuel (gasoline and diesel) tanks at these facilities are secondarily contained, and system integrity is pressure tested annually by a state-approved contractor. Small amounts of other hazardous materials are stored indoors throughout the campus with little potential for release. All hazardous wastes are stored, handled, and disposed of in compliance with State and Federal regulations.

Equipment Storage, Cleaning, and Maintenance

Equipment wash-off areas are provided on campus to inhibit wash water from entering off-site storm water conveyances. Washing of equipment or storage materials is restricted to areas where polluted water can be captured and contained. Vehicle maintenance occurs in controlled areas.

On-site storage and disposal methods include keeping all materials in closed containers or indoors. Waste disposal and good housekeeping measures are enforced, including proper waste management and disposal to improve the work environment as well as minimize the contact of possible contaminants with storm water.

Practices include:

- Maintaining a clean and orderly site with daily clean up.
- Regular trash pick-up.
- Protecting waste containers or storage sites from storm water when rain is predicted.

With the exception of sediment, none of the potential pollutants – oil, antifreeze and asphalt products – will be found in storm water in significant quantities, if the control methods identified in the WQMP are implemented. Small oil and fuel spills from vehicles are cleaned up immediately by the Risk Management Department personnel. Grounds and maintenance staff and campus personnel are required to notify supervisors of any incidents. All maintenance personnel are trained and knowledgeable of proper clean-up procedures. Information about hazardous materials clean-up is provided in the campus phone directory. In addition, future plans (NPDES Phase II) will include distribution of additional educational materials to faculty, staff and students with handling and notification requirements.

STORM WATER BEST MANAGEMENT PRACTICES

These management practices are intended as minimum pollution prevention requirements as applicable for the prevention of storm water pollution. The intent is not to limit the University to existing technology or BMPs.

Construction Activities

The following BMPs are intended to reduce sediment loading from construction sites due to water and/or wind erosion. Without proper control, runoff from construction sites can transport large amounts of sediment to waterways.

Erosion/Sedimentation Control (CON)

Erosion and sediment control measures in place during construction (clearing and grading activities) shall capture sediments before they can migrate into storm drains and drainage channels. Site control practices include:

CON-1. Vegetative Buffer Strip (194)

Purpose: Such strips furnish cover that traps wind-transported particles.

CON-2. Critical Area Planting (342)

Refer to *ES-4*. For construction projects, this method also involves seeding and maintaining of all permanent slopes per landscape plans approved by the Landscape Advisory Committee

CON-3. Water and Sediment Control Basin (638)

Refer to *ES-6*.

CON-4. Filter Strip (393)

Refer to *R-G-3*.

CON-5. Grade Stabilization (410)

This BMP shall control erosion in natural or artificial channels, prevent the formation or advance of gullies, enhance environmental quality, and reduce pollution hazards.

CON-6. Terrace (600)

Refer to *ES-3*.

CON-7. Controlled Drainage (335)

Drainage shall be controlled to reduce runoff carrying sediment and chemicals.

CON-8 Surface Drainage, Main or Lateral (608)

This BMP involves the use of a drainage pipe to dispose of excess surface or subsurface water, intercept ground water, control ground water levels, and/or provide for leaching of saline or alkali soils. This type of BMP shall be used in conjunction with energy dissipaters or other velocity-reducing measure such as *CON-12*.

CON-9. Sediment Basins/Traps

These impoundment structures allow sediment to settle out from construction runoff. Traps are installed before full-scale grading and remain in place until the disturbed portions of the drainage area are fully stabilized. Sediment traps are typically installed in a drainage way or other point of discharge from a disturbed area.

CON-10. Filter Fabric/Silt Fence

With filter fabric, sediment is filtered out as runoff flows through. Fences shall be used only where sheet flow occurs, and the maximum drainage area to the fence should be 0.5 acre or less per 100 feet of fence. Filter fabric fences have a useful life of approximately 6 to 12 months.

CON-11. Straw Bale Barrier

A row of anchored straw bales or similar structures shall detain and filter runoff. Straw bales are less effective than materials that do not have the potential to contribute seeds and other plant materials into the water.

CON-12. Inlet Protection

Inlet protection consists of a barrier placed around a storm drain drop inlet which traps sediment before it enters the storm sewer system. Filter fabric, straw bales, gravel, or sandbags shall be used for inlet protection.

Dust Control (CON)*CON-13. General Construction Dust Control*

The following set of practices will help reduce sediment and debris from reaching a water body via wind transport and will be utilized in all construction activities.

- 13(a). During clearing, grading, earth moving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems will be used to prevent dust from leaving a site and to create a crust after each day's activities cease.
- 13(b). During construction, water trucks or sprinkler systems will be used to keep all areas of vehicle movement damp enough to prevent dust from leaving a site. At a minimum, this shall include wetting down such areas in the morning and after work, and whenever wind exceeds 15 miles per hour.
- 13(c). Grading and scraping operations shall be suspended when wind speeds exceed 20 mph (one-hour average).
- 13(d). Stockpiled earth material will be sprayed with water or soil binders as needed to minimize dust generation, and seeded to produce a vegetative cover if left idle for more than 30 days after project completion.
- 13(e). During construction, the amount of disturbed area shall be minimized, and onsite vehicle speeds will be limited to 15 mph or less.
- 13(f). After clearing, grading, earth moving, or excavation is completed, the entire area of disturbed soil will be treated immediately by watering, revegetating, or spreading soil binders to minimize dust generation until the area is paved or otherwise developed. Other methods may include paving all roadways, driveways, and sidewalks associated with construction activities as soon as possible; and/or laying all building and other pads as soon as possible after grading unless seeding or soil binders are used.
- 13(g). All prepared cut and fill slopes will be seeded at the earliest possible time after the slopes have been compacted.

CON-14 Excavation BMPs

The following set of practices is intended to address the excavation portion of construction. These BMPs will be implemented in any excavation operation.

- 14(a). During excavation, stockpile materials suitable for backfilling are stored from excavation to prevent overloading, slides, or cave-ins.
- 14(b). Remove material encountered in excavating operations that is unsuitable for backfilling, subgrade or foundation purposes as determined by an outside Testing Laboratory or the Facilities Planning Department. Dispose of materials off-site in an approved manner in accordance with requirements of authorities having jurisdiction.
- 14(c). Prevent surface water from flowing into excavations by temporary grading, creation of temporary drainage channels, or other approved methods (do not use footing excavations for drainage trenches).
- 14(d). Remove accumulated water in excavations using pumps, well points, sumps, suction and discharge lines, and other dewatering system components required to remove water from excavations until concrete and backfill are placed.

CON-15 Dewatering Excavations

The following is intended to prevent flushing of water and other materials from construction sites into local waterways. This practice should be utilized in conjunction with drainage measures in *CON-14*.

- Prohibit debris, soil, silt, sand, rubbish, oil, cement washing, etc., from entering storm drains or surface drains in sufficient quantities to cause damage to or have deleterious effect upon the drainage system, fish, or wildlife at the site, adjacent areas, or streams to which the drainage system is a tributary.

Roads

Roads, as defined in the WQMP, include unpaved thoroughfares such as trails and access roads, as well as paved surfaces such as campus streets. Roads can contribute to water quality problems through runoff, sedimentation, and deposition of toxic materials such as oil and grease. The following BMPs are intended to address such concerns and prevent water quality degradation.

Runoff (ROAD)

ROAD-1. Recreation Trails and Walkways (568)

Users of rural portions of Cal Poly, as well as interior campus open spaces, often create pathways and routes. Many of these informal routes shortcut across slopes and banks and may expose sensitive areas to erosion and gullyng. The establishment of designated trails and walkways helps prevent the creation and use of such shortcuts and can, in turn, enhance sensitive vegetation and scenic resources.

ROAD-2 Access Roads (560)

Agricultural operations on Cal Poly farmland and users of recreation and study areas, such as Poly Canyon, often use vehicles to provide access. Informal routes in these areas act as large versions of the trails discussed in *ROAD-1* and have many of the same harmful impacts. The provision of a fixed route for vehicle travel and for moving livestock, produce equipment, and supplies will greatly reduce the use of informal roads. Such routes may also provide access for proper operation, maintenance, and management of conservation enterprises while controlling runoff. Access roads must be properly designed and maintained as described below to reduce impacts to water quality.

ROAD-3. Filter Strip (393)

Refer to *R-G-3*.

Unimproved Road Maintenance Procedures (ROAD)

ROAD-4 Unimproved Road Maintenance/Construction

In general, surface drainage controls should be installed to remove storm water from the roadbed before the flow gains enough volume and velocity to erode the surface. Discharge from drainage structures will be routed so that water will disperse and infiltrate. Methods of road surface drainage include:

- 4(a). Broad-based Dip Construction. A broad-based dip is a gentle roll in the centerline profile of a road that is designed to be a relatively permanent and self-maintaining water diversion structure that can be traversed by any vehicle. The dip should be outsloped 3 percent to divert storm water off the roadbed where soil can be trapped by vegetated areas. Broad-based dips should be used on roads having a gradient of 10 percent or less.
- 4(b). Road Outsloping and Grading. Grade and outslope roadbeds are utilized to minimize water accumulation on road surfaces. This practice minimizes erosion and road failure potential. Outsloping involves grading the road so that it slopes downward from the toe of the road cut to the shoulder. The slope should be about 3-4 percent. Outsloping the roadbed keeps water from flowing next to and undermining the cut bank, and is intended to spill water off the road in small volumes at many locations. Berms may form along the edge of older roadbeds and block drainage; therefore, proper maintenance of these structures is necessary.
- 4(c). Waterbars. Waterbars are earthen diversions designed to minimize the volume of water flowing over exposed areas and to divert water to areas where it will not cause erosion.

Post-Construction Storm Water Management

Post-construction storm water management has been made a part of the Storm Water Pollution Prevention Program to address issues associated with minor construction activities that may affect water quality. Specific BMPs in addition to those listed above include the designation of areas for retaining and/or detaining on-site runoff, if necessary. Post-construction management will include inspection and maintenance of control devices as required, and assessment of the effectiveness of the procedure(s).

Training of maintenance personnel is an important part of the non-structural control measures to be implemented as part of the Storm Water Pollution Prevention Program. It will be included in the annual training program.

STORM WATER/DISTURBED AREA MONITORING

Maintenance and repair of erosion-control devices and stabilization practices are the responsibility of the Facilities Services Department. Site inspection will occur as identified in the Implementation, Reporting, and Training Program section of the WQMP. Forms 1 and 2 (Appendix) will be completed in the field to identify current conditions and possible deficiencies. Results will be reported to the Risk Management Department for possible action.

The storm water management monitoring program covers the entire Cal Poly campus and focuses on construction activity and road maintenance. Form 2 (Appendix) will be used to assess the effectiveness of the Storm Water Pollution Prevention Program. Annual inspection before, during and after the rainy season will be conducted on sites disturbed before the last rainy season. For extensively disturbed sites, photo documentation will verify BMP implementation. The effectiveness of BMPs will be assessed within 3 months to 1 year after implementation, and at least one rainy season after the disturbance. Copies of monitoring Forms 1 and 2 can be found in the Appendix.

PART III: IMPLEMENTATION, REPORTING, AND TRAINING

The Implementation, Reporting, and Training Program of the WQMP is primarily directed at preventing potential adverse effects to water quality on campus. The WQMP was developed by the Facilities Planning Department under the direction of the Vice President for Administration and Finance. To ensure the success of the WQMP, it will be implemented and managed through the Risk Management Department.

In general, monitoring will be performed by trained Cal Poly personnel and reviewed by the Risk Management Department. If the reports warrant further review a Professional Engineer (PE) or a Certified Professional Erosion and Sediment Control (CPESC) specialist will be consulted for advice.

IMPLEMENTATION

Cal Poly will conduct discretionary periodic examinations of the campus and disturbed sites during the dry season to verify that all site management (point source, nonpoint source, and storm water), soil stabilization, and erosion control practices are being implemented; have been constructed properly; and were effective during the previous season.

Site inspections will be performed or delegated by the Risk Management Department before, during and after the rainy season. Site inspectors will receive training related to the WQMP, its implementation, BMPs, recommendations, and development and submittal of reports (forms). Training will focus on site inspections, field observations, recommendations, and adjusting BMPs or other land management activities. Site inspectors will submit a report summary, as well as site inspection forms, to the Risk Management Department for review.

On sites where the effectiveness of BMPs may be in question, a photographic record of the area will accompany the written record. An additional photo record will be taken during or after the rainy season of the first year of implementation. If the BMPs are not working, a written assessment of the situation will be recorded in conjunction with remedial action, if necessary. The Risk Management Department will review the written records and photographs on an annual basis to assess the effectiveness of the BMPs. This information will be included in the annual report.

Two forms have been developed for the field assessment. A General Site Inspection Form directed at assessing point and nonpoint sources (Appendix, Form 1), and a Disturbed Area Inspection Form directed at assessing storm water (Appendix, Form 2). The General Site Inspection Form will be completed before, during and after the rainy season. The Disturbed Area Inspection Form will be completed on a schedule related to the nature of the disturbance. Both forms will be revised and updated during the training workshop.

NON-COMPLIANCE PENALTY CLAUSE

The following statement is intended to prevent conflict with the University and to enable the various departments to work proactively with the regulatory agencies through the Risk Management Department.

It is the responsibility of Deans, Division Heads, Department Chairs and Department Heads to develop and maintain procedures to ensure effective compliance with the Water Quality Management Plan (WQMP) as they relate to operations under their control. Any enforcement action by a regulating agency (Regional Water Quality Control Board, Army Corps of Engineers, etc.), as a result of deviating from the WQMP, will be assessed to the department responsible for the transgression. Enforcement actions include but are not limited to fines, performance of mitigation measures, and/or both direct and indirect costs of mitigation measures. The Risk Management Department will consult with the regulating agency regarding any enforcement actions.

REPORTING/RECORDS

The Risk Management Department will notify the Regional Board of any minor change in the contents of the WQMP in the annual report. Major changes will be submitted in writing to the Regional Board for review and approval, and will be incorporated into the WQMP as appropriate. Operational and service activities under 1 acre will be included in the quarterly reports. Projects 1 acre or larger will be preceded with an NOI to the Regional Board at least 30 days prior to starting the project and will have a Storm Water Pollution Prevention Plan prepared in accordance SWRCB adopted Order 99-08-DWQ.

Quarterly status reports will summarize activities completed within a 3 month period starting January of each year. The report will categorize activities by issue (point source, nonpoint source, and storm water), identify BMPs implemented and identify effectiveness of prior BMPs for projects during that period. The reports will be due 30 days after the quarter; (e.g., the January, February, and March quarterly report is due April 30) (Table 5).

Semi-annual reports (June and December) will be submitted by the Risk Management Planning Department to the Executive Officer of Regional Board and will include Pursuant to Title 23, Division 3, Chapter 9, of the California Code of Regulations, statements assessing:

1. Whether there will be changes in the continuity, character, location, or volume of the discharge; and,
2. Whether, in Cal Poly's opinion, there is any portion of the Order that is incorrect, obsolete, or otherwise in need of revision.

Reports will be submitted by the 30th of July and January.

The Risk Management Department at Cal Poly will retain records for a period of at least three years from the dates of submission. With the exception of noncompliance reporting, Cal Poly is not required to submit records, except upon specific request by Regional Board.

Records will include all monitoring data and forms, copies of required quarterly/semi-annual/annual reports, inspections, compliance certifications, noncompliance reporting, and NOI for all operational services and/or construction activities related to the WQMP.

Table 5: Reporting Schedule

Quarter	Report Due		
	Quarterly	Semi-Annual	Monitoring Compliance
1 st	Apr-30		
2 nd	Jul-30	Jul-30	Jul-30
3 rd	Oct-30		
4 th	Jan-30	Jan-30	

TRAINING WORKSHOP

Training of site maintenance and inspection personnel (site inspectors/resource managers) is important to ensure the reliable operation of the pollutant control program. Training will be provided by an individual that is knowledgeable in point, nonpoint, and storm water pollution techniques and able to verify competent implementation of specified devices and practices as outlined in the WQMP.

To ensure that WQMP is implemented correctly, the Risk Management Department will sponsor an annual mandatory training workshop for all campus personnel engaged in campus activities and services that affect water quality. Training will include review of the WQMP, its use, and permit conditions, including responsibilities for inspection and reports, maintenance, and updating BMPs. Sections of the WQMP that identify BMPs related to

specific water quality issues (point, nonpoint sources, and construction) will be distributed to all relevant personnel and used as a field tool (handbook) when implementing BMPs or monitoring for compliance with the WQMP. A Professional Engineer (PE) with erosion control training or a Certified Professional Erosion & Sediment (CPESC) specialist as well as an invited Regional Board staff person will participate with the training, as necessary.

Monitoring forms used for inspection purposes will be reviewed, as well as procedures for how, when, and where to file forms (i.e., at the end of the month in which the inspection occurred). In addition, the annual training workshop will serve as the focal point to discuss effective/non-effective BMPs as an additional means of protecting water quality.

REPORT AVAILABILITY

Reports are available at the Risk Management Department, Cal Poly, San Luis Obispo, California for review upon request by the Regional Water Quality Control Board and all interested parties during normal operating hours.

REQUIRED CHANGES TO THE WQMP

- The WQMP and various programs will be amended whenever there is a change in activities, services, or operations, that may affect the quality of storm water discharged from the site.
- The WQMP and any program will be amended if it violates any change in the regulations.
- The WQMP and any program will be amended if it has not achieved its objective of reducing pollutant discharge.
- The WQMP and any program will be amended if it has not achieved its goal of protecting water quality.

ANNUAL MONITORING COMPLIANCE CERTIFICATION

Monitoring Compliance Certification is to be completed by January 30 of each year based on the information accumulated during the year and stored on-site with other reporting materials at the Risk Management Department. The original compliance certificates will be forwarded to the RWQCB with the annual report. The following certification shall be signed and dated prior to January 30 of each year the WQMP permit is in force:

I certify that activities and service operations occurring on the Cal Poly campus are in compliance with the Water Quality Management Plan and Waste Discharge Requirements.

_____ Date _____
Risk Management Department
California Polytechnic State University, San Luis Obispo

NON-COMPLIANCE REPORTING


If for some reason the site cannot be certified, but not more than 30 days from non-compliance, notification will be sent to the Regional Water Quality Control Board at:

Matt Thompson
 c/o California Regional Water Quality Control Board
 Central Coast Region (3)
 895 AeroVista Place, Suite 101
 San Luis Obispo, California 93401
 (805) 549-3147

Notification will include:

1. A description of the noncompliance,
2. Actions necessary to achieve compliance, and
3. At time schedule to achieve compliance.

Following is an example of the form to be used:

 California Polytechnic State University San Luis Obispo	
<u>Environmental Non-Compliance Report</u>	
Date of Incident: _____	
General Location: _____	
Description of Incident: _____	

Description of Activity Causing Non-Compliance: _____	

Remedial Action Necessary for Compliance: _____	

Time Schedule for Compliance: _____	
Filed By: _____	
_____ Facilities Planning _____ Date	
Copy Issued to: <input type="checkbox"/> Facilities Services <input type="checkbox"/> Environmental Health & Safety Manager <input type="checkbox"/> Farm Shop Manager <input type="checkbox"/> Project Director/Supervisor	

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APPENDIX

PROGRAM RECOMMENDATIONS

DEFINITIONS

FORMS

PROGRAM RECOMMENDATIONS

The goals of the WQMP are to preserve, enhance and ensure water quality. As such, Cal Poly has taken the initiative to identify needs by obtaining input from those on campus that are responsible for water quality management, and to clarify their concerns. These concerns were developed into program recommendations to guide future water quality management. We have taken this opportunity to identify improvements that can be made through time as resources allow. It is understood that these “Recommendations” are not requirements. They identify alternative and additional practices in water quality management that can be made and should be viewed as a “strategic look to the future” for managing water quality.

It is further understood through our conversations with the Regional Board, that these requirements will not be transferred into Regional Board Requirements, but will be used as a guide to enhance future water quality management on campus.

The following recommendations are those that were identified during the development of this WQMP. They have been organized under the following headings to help direct management in specific areas and ensure that practices not currently in place will be implemented in the future. An internal document will be developed and circulated to those involved with this WQMP requesting their assistance for implementation. As a result of identifying recommendations for the campus, individual units have started to implement program recommendations. The accomplishments, to date, are identified in the last section titled Recommendation Implementation.

POINT SOURCE POLLUTION PREVENTION PROGRAM

Wastewater Management

- WWM-1* Develop artificial wetland areas with appropriate vegetative buffer strips to serve as biofilters for runoff and wastewater. The areas would be developed to suit a particular purpose, such as wastewater tailing, storm runoff, erosion protection, etc. Drainage areas leading from agriculture fields could be used to detain water, i.e. Parker Barn fields.
- WWM-2* Create an artificial wetland to address the issue of storm wastewater volume for confined animal areas. The two retention ponds used by the old dairy could be converted into an artificial wetland to handle the storm wastewater discharge volume of the dairy. Fields 34 and 35 also have potential for wetland development. These fields are close to designated spray fields and could be used to recycle treated water.
- WWM-3* Develop a surface water monitoring program for Chorro and San Luis Obispo Creeks, that may be impacted by land use activities.

NONPOINT SOURCE POLLUTION PREVENTION PROGRAM

Land Management

- LM-1* Develop a working schedule for fencing the riparian area on San Luis Creek Watershed Ranches within a 5-year time frame, and develop a program to manage and enhance riparian areas.
- LM-2* Develop a working schedule for replacing fences on the Chorro Creek Watershed Ranches.
- LM-3* Create areas for drying the material from wastewater sludge and the dairy waste separator prior to being used as compost.

Ranch Management

General

- RM-1* Establish and maintain a creek monitoring program that includes sampling of the creeks in various areas (Stenner, Brizzolara, Chorro, etc.), three times per year (before, during, and after the rainy season).
- RM-2* Establish fencing along the riparian corridor, at each creek crossing, and around isolated wetlands that are subject to grazing on the campus.
- RM-3* Develop and maintain springs to provide a water source (storage tank or trough) for animals to utilize.
- RM-4* Remove invasive and undesirable plant species from riparian corridor, including campus reservoirs and ponds.
- RM-5* Address and implement erosion practices surrounding culverts located along unimproved ranch roads. In addition, areas where mass movement or sloughing have occurred need to be reinforced (stabilize slope or seeding) and silt fences utilized to capture any sedimentation that may occur as runoff from these areas.
- RM-6* Establish fencing within wetland areas to prevent cattle from entering those sensitive areas.
- RM-7* Create buffer strips to reduce non-point source pollution impacts from the crop fields.

Peterson and Serrano Ranches

- RM-8* Install and maintain erosion flutes along the recreation trail located in Field S13.
- RM-9* Work with State Water Project personnel to address utilizing oak and willow plantings along the corridor where erosion potential is evident (Fields P4, S6, S7 and S13).

Cheda Ranch

- RM-10* Increase pasture productivity (increase percentage of high quality annual and perennial grasses).
- RM-11* Close the Stenner Creek water crossing to all vehicles once permanent bridge is constructed.
- RM-12* Work with vineyard personnel on developing and implementing BMPs for the vineyard on the Cheda and Chorro Ranches.
- RM-13* Create water bars or rolling dips on dirt road along Nelson Reservoir riparian area.
- RM-14* *Minimize runoff from avocado groves, provide for energy dissipation on culvert outlets, and increase the capacity in the detention basin.*

STORM WATER POLLUTION PREVENTION PROGRAM

- SW-1* Roads Survey: Inventory and assess approximately 45 miles of unpaved roads on the San Luis Creek and Chorro Creek Watershed Ranches.
- Identify historic and recent sources of erosion and sedimentation related to roads.
 - Determine sites related to roads that have the potential to deliver sediment to streams in the future.
 - Identify remedial treatments to reduce future sediment production from roads and reduce sediment delivery to Cal Poly waters.
- SW-2* Gravel mine/Road: Develop and implement a strategy to reduce or eliminate storm water runoff from the gravel mine, the road leading to the gravel mine, and flow from the hillside across Poly Canyon Road which flows towards Brizzolara Creek. The use of hay bales and directing flows are not permanent solutions.
- SW-3* The Environmental Horticultural Science Unit experiences erosion and sediment transport to Drumm Reservoir and Brizzolara Creek during heavy storm events. Erosion control practices currently in place are sufficient for average storms. A more permanent solution is necessary for more severe storms.
- SW-4* The Horse Unit contributes to erosion, sediment, and nutrient loading to Smith and Shepard reservoirs during severe storm periods. Heavy storm waters also impact the educational program at the Horse Unit during the wet season. BMPs have been implemented to remove waste from the site and to prevent the occurrence of erosion, sedimentation, and nutrient loading. It appears that more permanent solutions are necessary during storm events to abate these problems. Incorporate BMPs and runoff control measures into the redesign of the Horse Unit.
- SW-5* Develop a strategic plan for developing and implementing a campus “Urban Runoff Plan.”

IMPLEMENTATION, REPORTING, AND TRAINING

Training

- T-1 Develop a user-friendly guide to be utilized by operational services and/or maintenance personnel for implementing BMPs on campus.
- T-2 Investigate and develop a phased program to modify the monitoring and reporting program to include self monitoring and less frequent sampling.

RECOMMENDATION IMPLEMENTATION

The following describes the practices and procedures that are currently being implemented as of June 2000.

Wastewater Management of Storm Runoff for Confined Animal Facilities

Surface flow across open cattle pens into the wastewater retention ponds during heavy rains reduces the retention pond capacity. Reduction in the surface volume flow would increase the efficiency of the retention ponds and reduce the volume for spray disposal.

In addition, proposals have been submitted to Regional Water Quality Control Board and California Department of Fish and Game to create bio-filters on the Cal Poly campus to: 1) address surface runoff and erosion issues, and 2) develop a recreational trail system around the created wetland areas.

Land Management

Most of the riparian areas in the San Luis Creek and Chorro Creek watersheds have been fenced to prevent cattle from entering streams. Some of the fences are over 30 years old and need to be replaced. Proposals are currently being developed to address additional and replacement fencing in these watersheds.

Projects have been funded through the Agricultural Research Initiative, California Department of Fish and Game, and EPA 319(h) grants to address the wetland, riparian, and water quality issues on campus. This includes fencing of wetland and riparian areas and the development of stock watering areas (storage tank or trough) to keep cattle from entering wetland habitats.

In addition to designating Field C 42 as the primary composting area on campus, an additional composting site of approximately 5 acres in Field C 45 has been designated as backup for storing, drying, and composting animal waste. This area was selected because it is flat, level, and easily accessible during wet periods.

Ranch Management

Remove invasive plant species adjacent to waters on campus. Drumm Reservoir has been targeted as the initial site for Castor Bean removal. A field lab exercise has been developed for the FNR 306 class to implement Integrated Pest Management strategies to remove and/or control invasive plant species from the campus reservoirs and waterways. Primarily non-chemical means of control are implemented. A proposal to control invasive pest plant species through class lab exercises has been submitted to the California Department of Fish and Game.

The Bull Test Site, Beef Feedlot and Beef Unit (Extended Unit) are scheduled to be relocated by 2006. This decision was made to prevent erosion and sedimentation into Brizzolara Creek and the San Luis Creek watershed. A proposal has been submitted to the California Department of Fish and Game to address the present erosion concerns in Brizzolara Creek.

DEFINITIONS

AUM (animal unit month): quantity of forage required by one mature cow and her calf (or the equivalent, in sheep or horses, for instance) for one month.

Brizzolara: family name for which Brizzolara Creek was named, synonymous with USGS Topographic Map name “Brizziolari”.

Confined Animal Areas: areas where cattle, calves, swine, horses, mules, goats, fowl, or other domestic animals are penned (or otherwise enclosed or held), and fed by means other than grazing.

Cultivated Land: land (soil) that is primarily prepared for raising crops.

Dry Season: April 1 to October 14. The Rainy Season is October 15 to March 31.

Facility wastewater: all wastewater, from whatever source, produced at a confined animal facility.

Freeboard: the vertical distance between the lowest point along the top of a dike, dam, or similar feature, and the surface of the wastewater retained by the feature.

Manure: accumulated moist animal excrement that does not undergo decomposition or drying as would occur on open grazing land or natural habitat. This definition includes feces and urine which may be mixed with bedding materials, spilled feed, and soil.

Manure areas: include manure storage areas and "confined animal areas."

Manure storage: areas include corrals, feedyards, retention ponds, manure collection areas of any kind and areas used for storage, composting, and/or drying of animal wastes.

Nonpoint Source Pollution: generally results from land runoff, precipitation, atmospheric deposition, drainage, seepage, or hydrologic modification.

Point Source Pollution: any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft from which pollutants are or may be discharged.

Rainy Season: October 15 to March 31. The Dry Season is April 1 to October 14.

Retention pond: a pond used to retain wastewater or surface drainage from manure storage areas until proper disposal on land or other suitable disposal means can be accomplished.

Runoff: any precipitation, leachate, or other liquid that drains from any part of the facility.

Storm Water: the sum of channel interception, surface, and subsurface flow.

Undisturbed: land that is not cultivated and maintains a vegetation cover.

Usable ground water: first encountered ground water beneath the site which will sustain a residence year-round (i.e., 300 gallons-per-day).

Washwater: Water that has been used for washing animals or equipment or for cleaning manure storage areas.

FORMS

The following forms are designed to provide documentation for the implementation of the WQMP and the effectiveness of the BMPs. These forms may be altered to allow for changes consistent with the WQMP.

Form 1: General Site Inspection Form

Date: _____

Site Inspection Checklist for Point, Nonpoint, and Storm Water Sources

Inspected By: _____

Photograph Taken: Y or N

Location/Site: Campus Instructional Core
 Extended Campus
 Ranch: _____

Site Identification/Description: _____

Monitoring Period: Before the Rainy Season (October 15)
 (check one) During Rainy Season
 After the Rainy Season (March 30)

Size of Area: Less than one (1) acre
 (check one) Greater than one (1) acre

POINT SOURCE POLLUTION	Yes	No	Correction necessary?
Confined Animal Areas			
1a Dairy Unit - Is the manure contained on the cement slab?			
1b Solids Separator - Does the screen appear to be free of debris and/or waste?			
2a Beef Center - Is there a build up of waste in the penned areas?			
2b Is the concrete slab (adjacent to the pens) free of debris?			
3 Swine Unit - Is the waste water exceeding the cement limits?			
4a Is the manure in the confined animal areas removed from pens and corrals?			
4b Is the manure in the confined animal areas protected from washout?			
4c Does the manure on the concrete slab need to be moved to the compost site?			
4d Horse Unit - Is the manure contained on the concrete slab?			
5 Poultry Unit - Is the self-contained waste storage area full?			
6 Are the compost storage areas bermed to prevent runoff?			
<i>If corrective action is necessary, identify on the next page what must be done to remedy the problem, who is responsible, and when the action will be completed.</i>			
Spray Disposal Fields			
1 Are the fields being sprayed currently listed on the approved spray field list?			
2 Are the fields being sprayed displaying any evidence of overland flow?			
<i>If corrective action is necessary, describe on the next page what must be done to remedy the problem, who is responsible and when the action will be completed.</i>			
Wastewater Retention Ponds			
1 Are drainage areas maintained and kept free of debris and/or other material that would prohibit the movement of wastewater to the pond system?			
2 Does the freeboard exceed 12 inches?			
3 Is there any evidence that domestic wastewater is being released into the retention ponds?			
4 Is there any evidence that cleaning agents, solvents, or other constituents are being released into the retention ponds?			
5 Is the pH of the retention pond between 6.5 and 8.4?			
<i>If corrective action is necessary, identify on the next page what must be done to remedy the problem, who is responsible, and when the action will be completed.</i>			

NONPOINT SOURCE POLLUTION		Yes	No	Correction necessary?
Agricultural Land Management Ranches (General)				
1 Are erosion/sedimentation practices in place where sloughing is evident?				
2 Is runoff from agricultural areas being controlled?				
3 Is there any evidence that livestock are grazing in the riparian areas without being controlled?				
4 Is irrigation water being collected for reuse?				
Urban Area Sources: Main Campus				
1 Are runoff practices in place and being utilized?				
Riparian/Reservoir Areas				
1 Is there any evidence that stream banks are unstable?				
2 Are culverts clear of debris?				

If corrective action is necessary, identify below what must be done to remedy the problem, who is responsible, and when the action will be completed.

STORM WATER MANAGEMENT		Yes	No	Correction necessary?
1 Are discharge points reasonably free of any significant deposition of sediment? If Yes, go to question 2. If No, continue below.				
a. Are sediment control BMPs installed downslope of all disturbed areas of the site?				
b. Are sediment control BMPs in proper repair and free of excessive sediment buildup?				
c. Are site entrance and exit points free of tracked sediment?				
d. Are all discharge points (e.g., storm drain inlets) provided with inlet protection?				
2 Are soil disturbing activities occurring during the rainy season? If Yes, continue below. If No, inspection is complete.				
a. Have BMPs been implemented?				
b. Have BMPs been implemented correctly?				

If corrective action is necessary, identify below what must be done to remedy the problem, who is responsible, and when the action will be completed.

CORRECTIVE ACTIONS

Identify: 1) Reason for action(s), 2) Date scheduled for completion, and 3) Responsible individual

NON EFFECTIVE BMPs			
Location	BMP # and Description, Explain effectiveness	Partially Effective	
		Yes	No

RECOMMENDED BMPs	
Location	BMP # and Description

Form 2: Disturbed/Construction Area Inspection Form

Site Inspection Checklist: Disturbed/Construction Areas

Date: _____

Inspected by : _____

Location/Site: Campus Instructional Core
 Extended Campus
 Ranch: _____

Site Identification/Description: _____

Monitoring Period: Prior to Rainy Season
 During the Rainy Season
 Post Rainy Season
(check one)

Size of Area: Less than one (1) acre
 Greater than one (1) acre
(check one)

Check "Yes" or "No", or "N/A" if not applicable

YES	NO	N/A
-----	----	-----

- | | | | |
|-------|-------|-------|--|
| _____ | _____ | _____ | 1. Has there been an absence of rain since the last Inspection? |
| _____ | _____ | _____ | 2. Are all BMPs identified in the Storm Water Pollution Prevention Program of the Plan installed in the proper location and according to the specification of the program? |
| _____ | _____ | _____ | 3. Are all sediment barriers (e.g., sandbags, straw bales, and silt fences) in place in accordance with BMPs of the WQMP? |
| _____ | _____ | _____ | a. Are they functioning properly? |
| _____ | _____ | _____ | 4. Exposed slopes: Are they protected from erosion through the implementation of acceptable soil stabilization practices? |
| _____ | _____ | _____ | 5. Sediment traps/basins: Are they installed and functioning properly? |
| _____ | _____ | _____ | 6. Are all materials handling and storage areas associated with the disturbed site reasonably clean and free of spills, leaks, or other deleterious materials? |
| _____ | _____ | _____ | 7. Are all materials and equipment properly covered? |
| _____ | _____ | _____ | 8. Are all external discharge points (i.e., outfalls) reasonably free of any noticeable pollutant discharges? |
| _____ | _____ | _____ | 9. Are all internal discharge points (i.e., storm drain inlets) provided with inlet protection? |
| _____ | _____ | _____ | 10. Are all external discharge points reasonably free of any significant erosion or sediment transport? |
| _____ | _____ | _____ | 11. Are all structural control practices in good repair and maintained in functional order? |

If corrective action is necessary, describe on the next page what must be done to remedy the problem, who is responsible and when the action will be completed.

Check "Yes" or "No", or "N/A" if not applicable

YES NO N/A

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12. Are all on-site traffic routes, parking, and storage of equipment and supplies restricted to areas designated in the program for those uses?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13. Are all locations of temporary soil stockpiles or construction materials in approved areas?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14. Are all seeded or landscaped areas properly maintained?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15. Are sediment treatment controls in place at discharge points from the site?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16. Are slopes free of significant erosion?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17. Are all points of ingress and egress from the site provided with stabilized construction entrances?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	18. Is sediment, debris, or mud being cleaned from public roads at intersections with site access roads?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	19. Does the program reflect current site conditions?

If corrective action is necessary, identify below what must be done to remedy the problem, who is responsible, and when the action will be completed.

CORRECTIVE ACTIONS

Identify: 1) Reason for action(s), 2) Date scheduled for completion, and 3) Responsible individual

NON EFFECTIVE BMPs			
Location	BMP # and Description, Explain effectiveness	Partially Effective	
		Yes	No

RECOMMENDED BMPs	
Location	BMP# and Description

Form 3: Wastewater Irrigation Rotation Form

Date	Weather	Field Number	Duration (hours)	Vegetation Type	By

Form 4: Septic Inspection and Maintenance Form		
Location:		
Public Restroom:	_____	
Type of Facility:	_____ House	_____ Trailer
Number of Residents:	_____ Permanent	_____ Student(s)
Number of Bathrooms:	_____	
Number of Showers:	_____	
Garbage Disposal:	_____	
Date Septic System Installed:	_____	Name of Contractor: _____
Size of Septic Tank:	_____	<u>Contact Number and Location:</u>
Leachfield System:	_____	
Comments:		
History of Maintenance		
Activity	Date	Comments