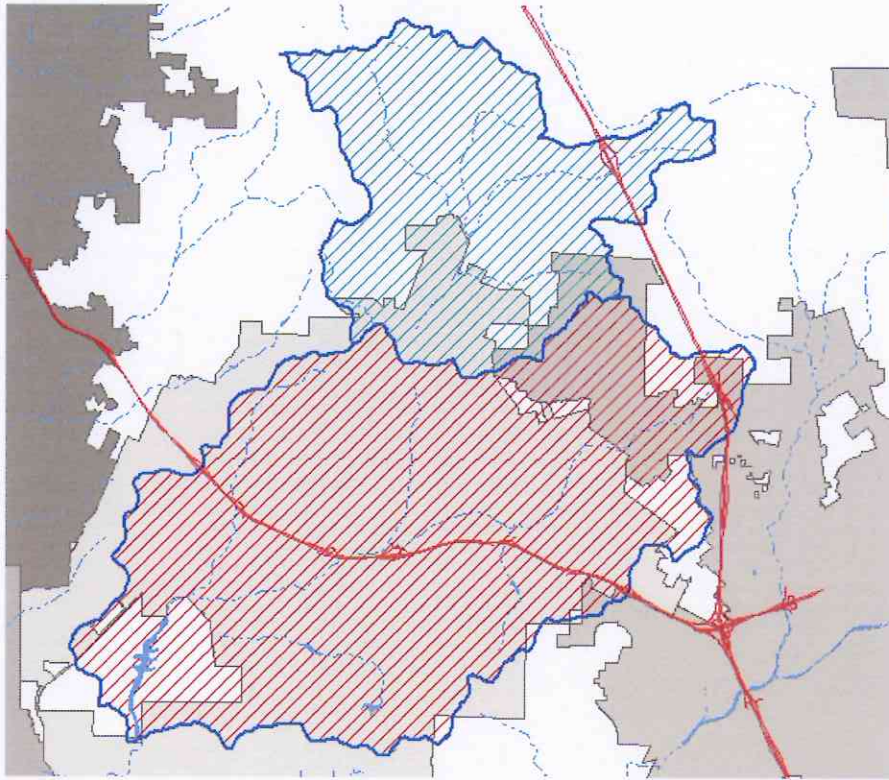
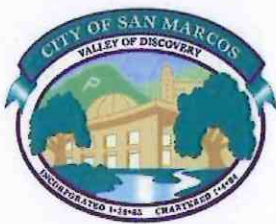


UPPER SAN MARCOS CREEK WATERSHED (USMC) NUTRIENT MANAGEMENT PLAN



PREPARED BY:

City of San Marcos



County of San Diego



City of Escondido



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USMC Nutrient Management Plan

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1.0 USMC NUTRIENT MANAGEMENT PLAN OBJECTIVES

The Upper San Marcos Creek (USMC) Watershed MS4 Copermittees (City of San Marcos, County of San Diego, and City of Escondido) have established four primary objectives for this Nutrient Management Plan:

1. Establish baseline data to assess nutrient-related water quality in the watershed and to measure future improvements;
2. Identify potential sources of nutrients in the watershed and establish priorities for source control activities;
3. Identify best management practices (BMPs) and other actions that will help to reduce nutrient discharges into and from municipal separate storm sewer systems (MS4s) operated by the USMC Watershed MS4 Copermittees;
4. Establish a framework for collaboration among the USMC Watershed MS4 Copermittees, including, data collection, monitoring, outreach, and reporting.

The USMC Watershed MS4 Copermittees will meet on a regular basis to achieve these objectives.

2.0 USMC WATERSHED CHARACTERIZATION

The USMC Watershed is approximately 29 square miles and is comprised of two sub-watersheds (See Appendix A, Figure 1). The primary water bodies in the USMC watershed are Upper San Marcos Creek and Lake San Marcos.

Table 2.1 illustrates that the Twin Oaks hydrologic sub-area (HSA 904.53) is located in the northern portion of the watershed and makes up 31% of the total watershed land area. The County of San Diego has the most land use jurisdiction in HSA 904.53, followed by the Cities of San Marcos and Escondido. HSA 904.53 is predominantly occupied by agricultural, open space, and single-family residential land uses.

The Richland HSA (HSA 904.52) comprises the remainder of the watershed, and is located south of the Twin Oaks HSA and north of Lake San Marcos. HSA 904.52 comprises 69% of the total land area of the watershed. The City of San Marcos has the predominant land use jurisdiction in HSA 904.52, followed by the City of Escondido and the County of San Diego. HSA 904.52 is predominantly urban with single-family residential land uses and some commercial and industrial corridors.

Table 2.1
HSAs in Upper San Marcos Creek Watershed

HSA	Land Area (acres)	% of UPPER SAN MARCOS CREEK WATERSHED
Twin Oaks (904.53)	5,663	30.6
Richland (904.52)	12,863	69.4
TOTAL	18,526	100 %

This plan focuses on nutrient management activities by three Phase I MS4 municipalities. Table 2.2 summarizes each municipality's total land area within the USMC Watershed. The City of San Marcos comprises the majority of the land area followed by the County of San Diego, and the City of Escondido. The plan does not address nutrient contributions from other MS4s in the watershed, including those operated by Caltrans, utility agencies, or Phase II MS4 entities such as school districts, colleges, universities, and transit agencies. In addition, there are numerous other entities and private parties which may hold other permits and/or rights that may be potential nutrient sources. Although they are not included as part of this plan, the Phase 1 MS4s will endeavor to work cooperatively with all responsible parties in the watershed wherever feasible.

Table 2.2
MS4 Copermittee Jurisdictional Land in Upper San Marcos Creek Watershed

Agency	Land Area (square miles)	% of UPPER SAN MARCOS CREEK WATERSHED
City of San Marcos	16.9	58.2
County of San Diego	9.4	32.4
City of Escondido	2.7	9.4
TOTAL	29.0	100 %

Table 2.3 summarizes current water quality impairments in San Marcos Creek and Lake San Marcos as identified on the State of California's 303(d) List of Impaired Water Body Segments. Table 2.4 lists the beneficial uses of San Marcos Creek, Lake San Marcos, and unnamed intermittent streams that are established in the Water Quality Control Plan for the San Diego Basin (Basin Plan). This plan focuses only on addressing nutrient-related impairments, which most directly impact aquatic wildlife (WARM, WILD) and aesthetic beneficial uses (REC-2).

Table 2.3
2006 303(d) Listings for San Marcos Creek/Lake San Marcos
and Proposed 2008 303(d) Listings

303(d) Listed Water Body	2006
San Marcos Creek	DDE, phosphorous, sediment toxicity
Lake San Marcos	Ammonia as N, Nutrients, phosphorous

Table 2.4
Basin Plan Inland Surface Waters
Beneficial Uses for San Marcos Creek/Lake San Marcos

Water Body	Beneficial Uses
San Marcos Creek/Lake San Marcos (904.52 - Richland)	MUN (excepted), AGR, REC1, REC2, WARM, WILD
Unnamed intermittent streams (904.53 - Twin Oaks)	MUN (excepted), AGR, REC1, REC2, WARM, WILD

3.0 USMC WATERSHED POTENTIAL NUTRIENT SOURCES

This section identifies and describes potential sources of nutrients in the Upper San Marcos Creek Watershed. The USMC Watershed MS4 Copermittees conducted a watershed-based assessment of jurisdictional source inventories, available water quality monitoring data, and land use data to identify four priority source categories from the comprehensive list of potential sources shown in Table 3.1. These four source categories are likely contributors of nutrient loading in the Upper San Marcos Creek and Lake San Marcos. As shown in Table 3.1, management programs for many of these sources are already required pursuant to mandatory MS4 Permit compliance programs, including the Jurisdictional Urban Runoff Management Program (JURMP).

The relative nutrient loading from each potential source is unknown. Part of the initial work effort under this plan will involve iterative activities or data assessment studies to provide definitive information on a particular source's threat-to-water quality with respect to nutrients and potential abatement efforts on a sub-watershed basis.

Until more is known about the relative loading from each source, the USMC Watershed MS4 Copermittees will focus management and abatement activities on the top four source categories suspected to be contributing a significant portion of the nutrient load:

- Residential areas
- Agriculture (including nurseries)
- Parks, and
- Golf courses.

Together, these sources represent almost 50% of the total watershed land area. They are also thought to be significant in terms of their potential for over-irrigation and fertilizer use, both of which have the potential to exacerbate nutrient loading in the watershed. Table 3.1 also gives an indication of the extent and magnitude of each source category within the Upper San Marcos Creek Watershed.

Table 3.1
Potential Nutrient Sources in Upper San Marcos Creek Watershed

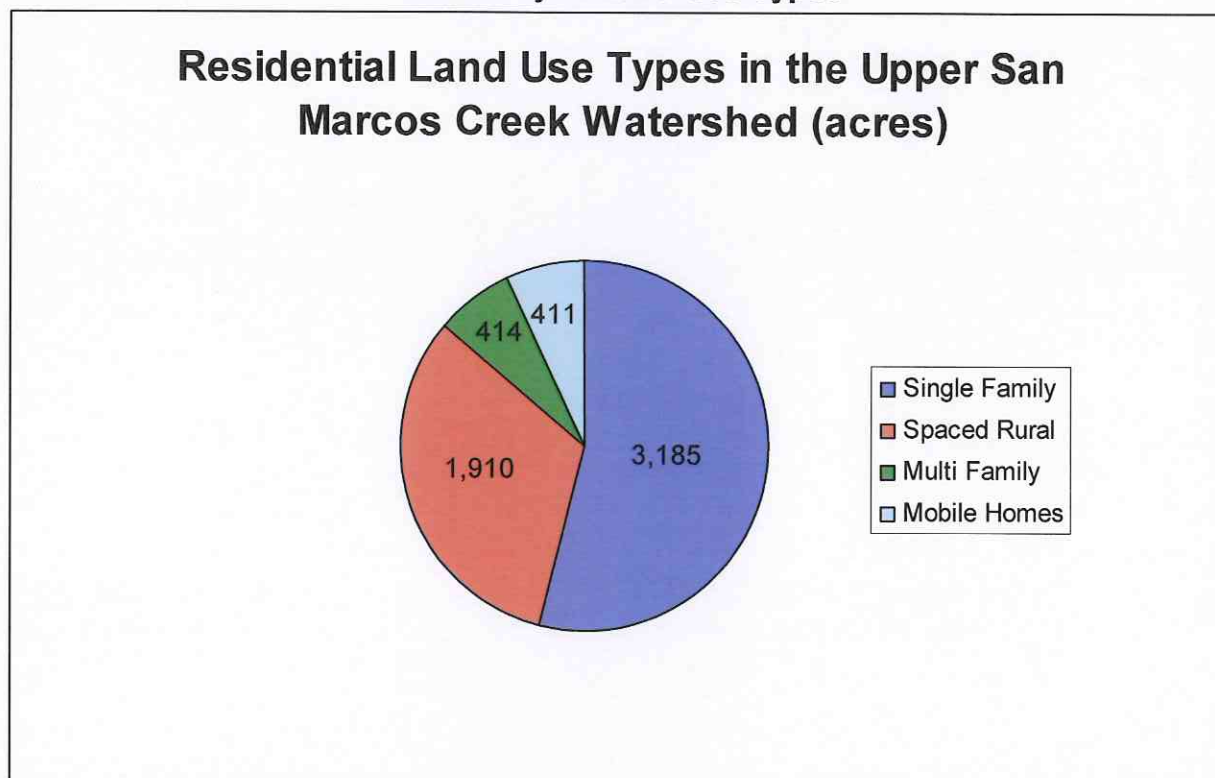
POTENTIAL NUTRIENT SOURCES	MANDATORY COMPONENT OF JURMP?	EXTENT WITHIN UPPER SAN MARCOS CREEK WATERSHED
PRIORITY SOURCE CATEGORIES UNDER THIS PLAN		
Residential Areas & Activities	Yes	5,949 acres (32.1%)
Agriculture, including nurseries	Yes (nurseries only)	2,133 acres (11.5%)
Parks & Recreational Areas	Yes	505 acres (2.7%)
Golf Courses (4 total)	Yes	422 acres (2.3 %)
Total		9,009 acres (48.6 %)
OTHER SOURCE CATEGORIES THOUGHT TO CONTRIBUTE NUTRIENT LOADING		
Aerial Deposition	No	Unknown
Animal Facilities	Yes	FUTURE DATA ASSESSMENT
Cemeteries	Yes	FUTURE DATA ASSESSMENT
Landscaping in Commercial/Industrial Areas	Yes	FUTURE DATA ASSESSMENT
Construction Sites	Yes	FUTURE DATA ASSESSMENT
Development (New and Redevelopment)	Yes	FUTURE DATA ASSESSMENT
Groundwater	No	Unknown
Landfills (including closed landfills)	Yes	FUTURE DATA ASSESSMENT

POTENTIAL NUTRIENT SOURCES	MANDATORY COMPONENT OF JURMP?	EXTENT WITHIN UPPER SAN MARCOS CREEK WATERSHED
Naturally Occurring Nutrients in Soil	No	FUTURE DATA ASSESSMENT
Phase II MS4s	No	FUTURE DATA ASSESSMENT
Sanitary Sewer Systems & Facilities	No	FUTURE DATA ASSESSMENT
Streets, Roads, and Highways	Yes	FUTURE DATA ASSESSMENT

3.1 Residential Areas and Activities

There are 5,949 acres (9.3 square miles) of residential development in the Upper San Marcos Creek Watershed (See Appendix A, Figure 2). This represents 32% of the total watershed land area. As shown in Table 3.2¹, single-family homes are the predominant residential land use type (54%), followed by spaced rural residential (32%). There are also significant multi-family and mobile home residential uses in the watershed (7% each). Table 3.2 describes nutrient-generating activities common in residential areas.

Table 3.2
Summary of Land Use Types



¹ Based on 2006 SANDAG Land Use Data

Table 3.3
Nutrient-Generating Activities Common to Residential Areas

ACTIVITY	DESCRIPTION
Automobiles and Boats	
Washing and cleaning	Washing and cleaning automobiles and boats can cause detergent and washwater with pollutants to run into the MS4 or directly into receiving waters.
Lawns, Gardens, and HOA-Maintained Areas	
Over-irrigation	Use of excessive water on lawns, gardens, or other green areas can cause runoff which carries pollutants to the MS4 or directly into receiving waters. Excessive water use can result from over-application, system leaks, or improperly adjusted sprinklers.
Fertilizer use	Overuse of fertilizer can cause contaminated runoff to enter the MS4 or receiving waters as a result of rain or irrigation flows.
Landscape drains	Landscape drains can convey irrigation water or groundwater with elevated levels of nutrients to the MS4 or directly to receiving waters.
Household and Home	
Outdoor cleaning	Cleaning outdoor areas such as sidewalks, driveways, and home exteriors by power washing or use of hazardous chemicals. Wash waters are often allowed to drain into the stormwater conveyance system or are not properly contained and disposed.
Pool, spa, and fountain care	Maintenance of swimming pools, spas, and ornamental water fixtures require chemical application and the discharging of polluted water and wash water. Water being drained is often allowed to flow into the MS4.
Materials and waste storage	Materials and waste that are not properly covered or contained have the potential to enter the MS4 or receiving waters as a result of rain or irrigation flows.
Waste disposal	Failure to properly dispose of material or waste into waste receptacles can lead to contamination of MS4s or receiving waters.
Sewer lateral maintenance	Failure to properly maintain private sewer laterals can lead to sewage overflows, which can contribute nutrients to receiving waters.
Pets	
Pet waste disposal	Failure to properly dispose of pet waste can lead to contaminated runoff entering MS4s or receiving waters as a result of rain or irrigation flows.
Pet cleaning	Pet cleaning and washing can cause detergent and wash waters with pollutants to run directly into MS4s or directly into receiving waters.
Livestock and Large Animals	
Manure management	Exposed manure from livestock, horses, or other large animals can enter the MS4 or receiving waters as a result of rain or irrigation flows.
Manure disposal	Failure to properly dispose of manure can lead to contaminated runoff entering MS4s or receiving waters as a result of rain or irrigation flows.
Composting	Failure to properly store and contain compost can result in nutrient loading to the MS4 or receiving waters.
Agriculture on Residential Parcels	
Over-irrigation	Use of excessive water leads to runoff, which can carry pollutants to the MS4 or directly into receiving waters.
Fertilizer use	Overuse of fertilizer can cause contaminated runoff to enter the MS4 or receiving waters as a result of rain or irrigation flows.

3.2 Agriculture (including Nurseries)

There are 2,133 acres (3.3 square miles) of agricultural land uses in the Upper San Marcos Creek Watershed (See Appendix A, Figure 3). This represents 12% of the total watershed land area. As shown in the Table 3.4 below², orchards and vineyards are the predominant type (57%), followed by intensive agriculture (23%), and field crops (21%). There are 42 nurseries and greenhouses in the unincorporated portion of the watershed, 6 within the City of San Marcos boundaries, and none in the City of Escondido. Table 3.5 describes nutrient-generating activities common in agricultural areas.

Table 3.4
Summary of Agricultural Land Uses

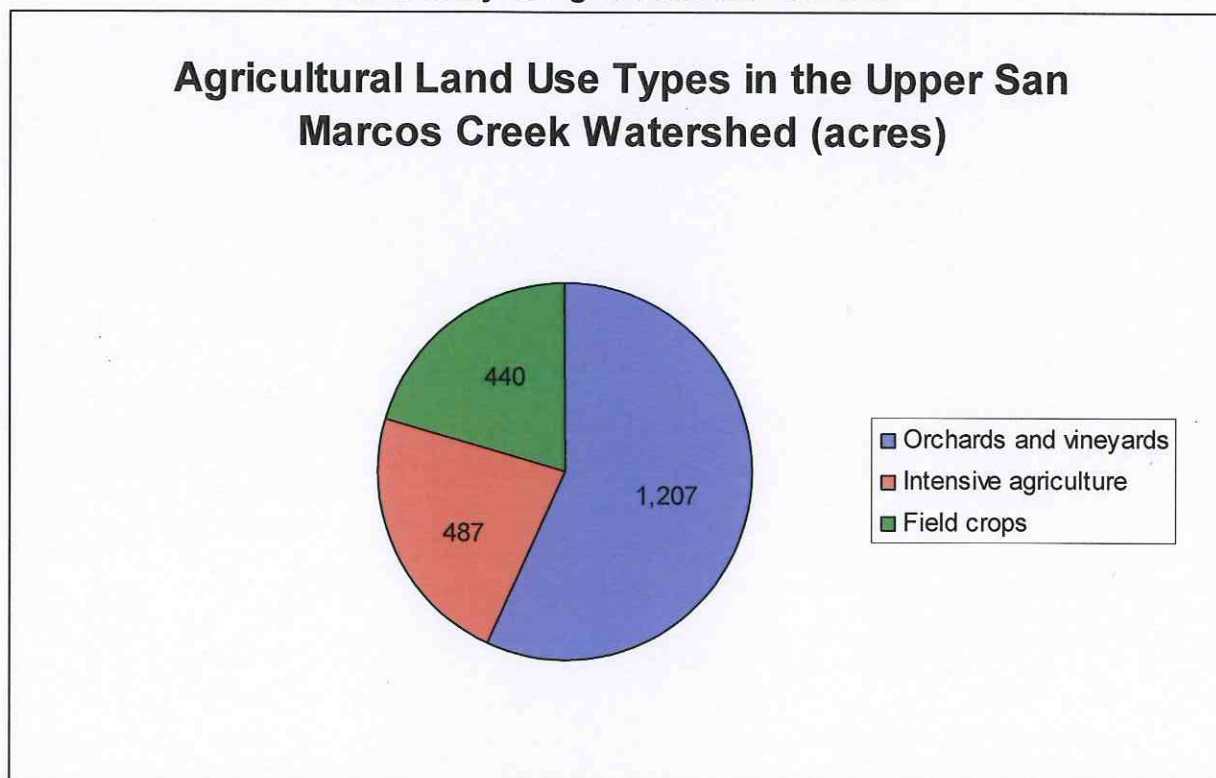


Table 3.5
Nutrient-Generating Activities Common to Agricultural Areas

ACTIVITY	DESCRIPTION
Irrigation management	Use irrigation water in a way that minimizes the amount of wasted water and the amount of water leaving the property and potentially reaching an MS4 or receiving water.
Nutrient management	Application of nutrients is necessary in agricultural settings, but the goal should be to apply only the amount of nutrients needed and usable by target plants, and at the appropriate time based on plant growth stage and environmental factors.
Erosion and runoff management	Erosion and runoff management involves modifying soil and container substrates to enhance their ability to hold water, creating barriers to the movement of sediments and water and capturing unused irrigation water for reuse or storage.

² 2006 SANDAG Land Use Data

3.3 Parks and Recreational Areas

There are 505 acres (0.79 square miles) of park land uses in the Upper San Marcos Creek Watershed (See Appendix A, Figure 4). This represents 2% of the total watershed land area. There are no parks in the unincorporated portion of the watershed, 52 within City of San Marcos boundaries, and none in the City of Escondido. Table 3.6 describes nutrient-generating activities common in landscaped park areas.

Table 3.6
Nutrient-Generating Activities Common to Park Areas

ACTIVITY	DESCRIPTION
Irrigation management	Use irrigation water in a way that minimizes the amount of wasted water and the amount of water leaving the property and potentially reaching an MS4 or receiving water.
Nutrient management	Application of nutrients is necessary in agricultural settings, but the goal should be to apply only the amount of nutrients needed and usable by target plants, and at the appropriate time based on plant growth stage and environmental factors.
Erosion and runoff management	Erosion and runoff management involves modifying soil and container substrates to enhance their ability to hold water, creating barriers to the movement of sediments and water and capturing unused irrigation water for reuse or storage.
Landscape Maintenance	Landscape Maintenance (shrub , grass, tree clippings, leaves) involves proper removal and disposal of organic matter from park areas in order to reduce the potential for organic matter to reach the MS4

3.4 Golf Courses

There are four separate golf courses throughout the Upper San Marcos Creek Watershed (See Appendix A, Figure 4). Of these four golf courses, two are within the unincorporated area, and one within each the City of San Marcos, and Escondido.

The total amount of land used by the four golf courses is 422.2 square acres (0.7 square miles). Golf courses in the County and Escondido are managed and/or owned by the same single private entity and comprise 65.1 % of the total golf course land use in the USMC watershed. Each golf course uses the following amount of area within the Upper San Marcos Creek Watershed:

- Lake San Marcos Executive Golf Course: 37 acres (0.06 square miles)
- Lake San Marcos Country Club Golf Course: 129 acres (0.20 square miles)
- Country Club (Escondido): 109 acres (0.17 square miles)
- Twin Oaks (San Marcos): 147 acres (0.23 square miles)

Table 3.7 describes nutrient-generation activities that are commonly associated with golf course operations.

Table 3.7
Nutrient-Generating Activities Common to Golf Courses

Source/Activity	Description
Fertilizer use	Overuse of fertilizer can cause polluted runoff.
Over irrigation	Over use of irrigation water for golf courses leads to excess runoff- resulting in nutrient rich water entering the MS4/receiving water bodies.
Wildlife waste	Wildlife (e.g., ducks) that gather in and around golf course.
MS4/receiving water protection	Unprotected inlets and exposed open channels.
Greenwaste management	Improper storage and/or disposal of greenwaste can pollute runoff.

4.0 IMPLEMENTATION PLAN

Implementation of this plan will involve a number of different activities, including monitoring, public education, enforcement of local ordinances to ensure private party compliance with nutrient discharge prohibitions, and municipal implementation of BMPs where appropriate.

4.1 Monitoring

This section describes current and planned water quality monitoring activities in the Upper San Marcos Creek Watershed. It is divided into two parts. "Core" monitoring activities are those required to maintain compliance with the MS4 Permit. "Enhanced" monitoring includes additional monitoring activities proposed by the Watershed Copermittees to: 1) assess water quality improvements resulting from implementation of this Nutrient Management Plan, and 2) identify and verify sub-watershed priorities for management action.

As an initial step, the USMC Watershed MS4 Copermittees reviewed historical sources of nutrient-related water quality data in the Upper San Marcos Creek Watershed. In addition to the Copermittee data described starting in Section 4.1.1, the review uncovered the following external sources of information:

- 904CBSAM3: This site, which is located on Upper San Marcos Creek near McMahr Road, about 1,300 feet upstream of the Discovery Street Bridge, was sampled during ambient conditions as part of the State of California's Surface Water Ambient Monitoring Program (SWAMP) in 2002. Both ammonia as N and total phosphorous as P exceeded their respective aquatic life thresholds of 0.025 mg/L and 0.1 mg/L in four out of four samples taken. Nitrate + Nitrite as N did not exceed its aquatic life threshold (10 mg/L) in any of the four samples.
- SMC-00729: This site, which is located on Upper San Marcos Creek about 900 feet downstream of State Route 78, near Echo Lane, was sampled during ambient conditions on June 3, 2009, as part of a program conducted by the Southern California Stormwater Monitoring Coalition (SMC). Ammonia as N was measured at 0.05 mg/L. Nitrate as N was measured at 1.92 mg/L compared to a Basin Plan Water Quality Objective of 10 mg/L. Nitrite as N was measured at <0.01 mg/L compared to a Basin Plan Water Quality Objective of 1 mg/L. Total Kjeldahl Nitrogen (TKN) was measured at 0.98 mg/L. Total nitrogen was calculated to be 2.9 mg/L compared to a Basin Plan Water Quality Objective of 1 mg/L. Total orthophosphate as P was measured at 0.1 mg/L. Total phosphorous

was measured at 0.218 mg/L compared to a Basin Plan Water Quality Objective of 0.1 mg/L.

4.1.1 Core Monitoring

The San Diego Municipal MS4 Permit requires Copermittees to carry out a variety of mandated water quality monitoring activities at many locations throughout the San Diego region. These “core” monitoring programs are intended to: 1) assess the chemical, physical, and biological impacts to receiving waters resulting from urban runoff discharges, and 2) to identify and characterize sources of specific pollutants in urban runoff discharges. The Regional Receiving Waters Monitoring Program approved by the Regional Water Quality Control Board and implemented by the San Diego Regional Stormwater Copermittees does not currently include any monitoring stations in the Upper San Marcos Creek Watershed. However, the County of San Diego, the City of San Marcos, and the City of Escondido all conduct a Dry Weather Field Screening and Analytical Monitoring Program within their respective jurisdictions. Jurisdictional dry weather monitoring takes place between May 1 and September 30 each year and is designed to detect and eliminate illicit connections and illegal discharges to the MS4 using frequent, geographically widespread dry weather discharge monitoring and follow up investigations.

4.1.1.1 County of San Diego

The County of San Diego regularly monitors four stations as part of its jurisdictional Dry Weather Monitoring Program. The CAR 13 and CAR 14 monitoring stations are located at MS4 outfall locations immediately adjacent to the lake, on the lake's west and east side respectively. The CAR 04 monitoring station is located within the San Marcos Creek channel as it crosses beneath the Discovery Street Bridge at the jurisdictional boundary between the County of San Diego and the City of San Marcos. The CAR 06 monitoring station is located in an earthen channel, near San Marcos Creek approximately seven miles upstream of Lake San Marcos at the jurisdictional boundary between the County of San Diego and the City of San Marcos.

Field data collected during site visits include site descriptions, qualitative observations of site conditions, as well as quantitative measurements of flow and physiochemical properties of water. Measurements of water flow and/or physiochemical properties are measured in situ. Grab samples are collected for field measurement of ammonia, nitrate, orthophosphate, MBAS, and additional laboratory analysis of constituents as required by the Permit or deemed valuable to the County's monitoring program. A full explanation of procedures for the Dry Weather Monitoring Program is presented in the Dry Weather Analytical and Field Screening Monitoring Procedures Manual (County of San Diego, 2008). Additionally, the County has developed and annually updates a Quality Assurance Project Plan (QAPP) for the Program (County of San Diego, 2008). As established in the MS4 Permit, results that exceed the action levels established for various constituents trigger follow up investigations to seek out and abate the discharge sources. The action level for nitrate (nitrate-N) is 10.0 mg/l. The action level for phosphate (orthophosphate-P) is 2.0 mg/l.

CAR 13 is located on the western side of Lake San Marcos in a storm drain outlet that discharges directly to the lake at the terminus of San Marino Drive. The drainage area is

composed of residential properties and the Lake San Marcos Executive Golf Course. Flowing water is usually present at this site during dry weather conditions. No exceedances of action levels were recorded during the 2008 sampling dry weather sampling season. Between 2004 and 2007, various indicator bacteria exceeded action levels but there have been no exceedances of action levels for nitrate or phosphate. Upstream investigations have identified bacteria exceedances in two tributaries to the site, but no specific sources have been located. The County has identified the need for additional monitoring at this location to: 1) better characterize low flows during dry weather, and 2) characterize nutrient loading during storm events (see Section 4.1.2).

CAR 14 is located on the eastern side of Lake San Marcos in an earthen channel of a small tributary at the end of El Chico Lane. The drainage area for this station is composed of primarily residential properties, but also includes agricultural land uses (avocado orchards) and the Lake San Marcos Main Golf Course. Only ponded water has been observed at this site under dry weather sampling conditions. The site has been monitored since 2004. Between 2004 and 2007 there were no action level exceedances at this location. Indicator bacteria levels exceeded action levels in July 2008 sampling date and on a follow up visit in August 2008. Subsequent upstream investigations showed indicator bacteria levels below the action level and no discharge sources could be located. Ammonia exceeded its action level in September 2008 but was determined to be a localized environmental condition.

CAR 04 is located on San Marcos Creek upstream of Lake San Marcos at the Discovery Street Bridge. During 2008, this location was sampled twice. The site had flowing water on the first visit (July 21) and ponded water on the second visit (September 8). No action level exceedances have been recorded at this location from 2002 to 2008.

CAR 06 is located in an earthen channel near San Marcos Creek, approximately seven miles upstream of Lake San Marcos near the jurisdictional boundary between the County of San Diego and the City of San Marcos. The site receives runoff from portions of the Twin Oaks area and includes agricultural and rural residential land use types. Under dry weather conditions the site is most often dry, with water observed during only two out of the seven years sampled. In 2006, a referral of potential nitrate exceedances was made to the County of San Diego. In the years following the referral, the County has attempted investigation but the site remains dry during scheduled sampling visits preventing further sampling at the location. The County of San Diego Department of Agriculture, Weights and Measures concluded that the nitrate exceedance may be the result of subsurface flow potentially created by the irrigation practices of surrounding commercial nurseries, field grown agriculture, and to a lesser degree, equestrian and equine activities.

4.1.1.2 City of San Marcos

Within the Upper San Marcos Creek Watershed, the City of San Marcos has 27 core dry weather monitoring stations. Two stations are located within HSA 904.53 and 25 are located in HSA 904.52. The City of San Marcos has four primary drainage areas identified A, B, C, and D. An assessment of data collected since 2002 identifies that two primary drainage areas and monitoring locations (D-3 and B-3) indicate elevated levels of nutrients. Since 2002, six incidents of nutrient exceedance have occurred,

predominately at B-02 and B-03. However, there were no consistent trends. These monitoring locations are consistent with the primary land use nutrient sources in HSA 904.52.

4.1.1.3 City of Escondido

Within the Upper San Marcos Creek Watershed, the City of Escondido has five dry weather monitoring stations. The Upper San Marcos Creek Watershed comprises only 11 percent of Escondido's total area representation within the San Marcos Creek Watershed. All five of the dry weather stations are situated around or within the Country Club Golf Course. Three stations are located within the Country Club Golf Course (874.4.0, 874.3.0 and 874.2.0) and two outside/adjacent to the golf course (874.0.0 and 874.1.0). The following are descriptions of the dry weather station locations as the sole surface water body travels through the City of Escondido's jurisdiction:

874.4.0: located within the northern portion of the golf course as surface water immediately enters the City's jurisdiction and golf course (Nutmeg Street and Gary Lane) via an outfall pipe. Historical data for this station shows no past water quality issues. The station has had flow twice (Fiscal years 04-05 and 07-08) since the dry weather program was initiated in 2001.

874.3.0: located within golf course (County Club Road and La Brea Street) in a side unnamed tributary (open natural) prior to commingling with main open (natural) channel which transverses the course. Historical data for this station provides no past water quality issues. The station had flow once in fiscal year 2007-08.

874.2.0: located within the main golf course (open natural channel), downstream of the main golf course pond and the last exposed location prior to entering a subterranean portion of the MS4. This station has had past elevated total coliform (fiscal years 03-04 and 05-09) and fecal coliform levels in fiscal year 08-09. Upon investigation, the source of the elevated bacteria was the result of water fowl gathering in the golf course pond up-gradient of the station. No elevated nutrients were found in any of the past fiscal years.

874.1.0: located outside the golf course along a natural side drainage (natural channel at the end of Arroyo Road and County Club Road) which feeds to the City's MS4. Historically the station is dry.

874.0.0: located downstream of the golf course within a concrete channel which passes through a mobile home park/facility (within the City of San Marcos). Historical data for this station has shown elevated levels for total coliform and fecal coliform in fiscal year 08-09. As previously mentioned above, the source was water fowl gathering in the golf course pond. No elevated nutrients were found in any of the past fiscal years.

The layout of the five stations is used to provide water quality (dry weather flow) analysis as flow passes through the County Club Golf Course. Station 874.4.0 provides influent water quality as it enters both the City of Escondido and the golf course. Stations 874.3.0 and 874.2.0 provide water quality data as it passes through the golf course, which can be a prime candidate for providing nutrient loading (refer to section

3.4). Lastly station 874.0.0 provides the effluent results as flow has traveled through the entire portion of the golf course and additional runoff from surrounding areas. This station is used to characterize the final water quality as it leaves Escondido. Station 872.1.0 has been chronically dry throughout the majority of the dry weather program and has not contributed to the MS4 during dry periods of the year.

4.1.2 Enhanced Monitoring

“Enhanced” monitoring activities are those proposed by the USMC Watershed MS4 Copermittees to: 1) assess water quality improvements resulting from implementation of this Nutrient Management Plan, and 2) identify and verify watershed priorities for management action. Enhanced monitoring includes watershed-wide monitoring projects jointly funded and implemented by the Watershed Copermittees, enhancements to existing jurisdictional monitoring programs to improve focus on watershed issues of concern, and a shared commitment to collaboratively reviewing and analyzing watershed monitoring data in a way that enhances each Copermittee’s ability to identify and eliminate pollutant discharges.

4.1.2.1 Collaborative Watershed Monitoring Activities

The Watershed Copermittees will undertake a collaborative monitoring project to collect baseline information on flow as well as nutrient and sediment loading from multiple locations throughout the watershed during both wet and dry weather conditions. Monitoring will occur during FY 2009-10 and is summarized in the table below. All composite samples will be sent to a certified laboratory for analysis of Ammonia-N, Nitrate-N, Nitrite-N, Total Kjeldahl Nitrogen, Orthophosphate-P, Total Phosphorous, and Total Suspended Solids. Analysis of data collected through this project will be presented in the FY 2009-10 WURMP Annual Report, along with any additional planned monitoring that has been determined by that time. The WURMP Annual Report is scheduled for submittal to the RWQCB on January 31, 2011.

Table 4.1
Collaborative Watershed Monitoring Project for FY 2009-10

STATION	LATITUDE	LONGITUDE	LOCATION	FLOW	WET WEATHER	DRY WEATHER
LSM-05a	33.11959	-117.20581	Stormdrain outfall near intersection of La Plaza Dr. and San Pablo Dr.	Continuous flow monitoring: Nov 15 '09 – Jan 8 '09 + 1 month period in Spring '10	N/A	N/A
LSM-05b	33.11900	-117.20531	Stormdrain vault 150 'ft upstream of LMS-05	Continuous flow monitoring: Nov 15 '09 – Jan 08 '10 + 1 month period in Spring '10	N/A	N/A
LSM-04	33.11982	-117.20565	Outfall at Lake San Marcos boat dock near San Pablo Dr.	Continuous flow monitoring planned in Spring '10 for 1 month	N/A	N/A

STATION	LATITUDE	LONGITUDE	LOCATION	FLOW	WET WEATHER	DRY WEATHER
CAR-13	33.12012	-117.20997	Stormdrain outfall at southern terminus of San Marino Dr.	Continuous flow monitoring: Sep '09 – Dec '09	2 flow-weighted composite sampling events: Nov '09 – April '10	N/A
CAR-14	33.11896	-117.20744	Stormdrain outfall near La Plaza Dr. and El Chico Lane	N/A	2 flow-weighted composite sampling events: Nov '09 – April '10	N/A
Discovery Street	33.13053	-117.20037	San Marcos Creek at Discovery St. bridge	N/A	2 flow-weighted composite sampling events: Nov '09 – April '10	N/A
Via Vera Cruz	33.13166	-117.18687	San Marcos Creek at Via Vera Cruz	Continuous flow monitoring: Nov '09 – May '10	N/A	1 flow-weighted composite sampling event: May '10
Woodland Parkway	33.15404	-117.13048	East fork of San Marcos Creek at Woodland Parkway near Woodland Park	Continuous flow monitoring: Nov '09 – May '10	2 flow-weighted composite sampling events: Nov '09 – April '10	1 flow-weighted composite sampling event: May '10
CAR-06	33.17965	-117.15254	San Marcos Creek at intersection of Sycamore Dr. & Olive St.	Continuous flow monitoring: Nov '09 – May '10	2 flow-weighted composite sampling events: Nov '09 – April '10	1 flow-weighted composite sampling event: May '10

4.1.2.2 County of San Diego Dry Weather Monitoring Program Enhancements

In addition to the routine dry weather monitoring activities described in section 4.1.1.1, the County of San Diego will augment its program to identify illicit connections and illegal discharges by performing periodic sweeps of all accessible pipes and conveyances that drain directly into Lake San Marcos. Monitoring sweeps will consist of two staff physically inspecting each accessible above-surface conveyance into the Lake. It is anticipated that each monitoring sweep will take two to three days to complete. Staff will document whether each drain is dry or flowing. Flowing drains will be sampled for analysis of nutrients and an estimate of flow will be made. Nutrient results in excess of the Copermittees' established dry weather action levels will trigger a follow up investigation to identify and abate the source of the discharge. Monitoring sweeps will occur at least two times during FY 2009-10 (once during the summer and

once during a winter dry spell) and as appropriate during subsequent fiscal years. Results from County monitoring sweeps will be presented in the FY 2009-10 WURMP Annual Report, along with any future plans for monitoring sweeps that have been determined by that time. The FY 2009-10 WURMP Annual Report is scheduled for submittal to the RWQCB on January 31, 2011.

4.1.2.3 City of San Marcos Dry Weather Monitoring Program Enhancements

In addition to the core dry weather monitoring activities described in section 4.1.1.2, the City of San Marcos will augment its core monitoring program with an additional 20 future monitoring locations to identify and characterize other sources of nutrients. Focused monitoring will occur within San Marcos Creek and near outlets of Phase II agencies. The City of San Marcos will collaborate with the County of San Diego monitoring plan near CAR 13 through synchronized sampling along with the County's summer and winter monitoring sweeps and as appropriate during subsequent fiscal years.

4.1.2.4 City of Escondido Dry Weather Monitoring Program Enhancements

As described below (4.1.2.5), the City of Escondido plans to regularly collaborate with each Copermittee in reviewing and analyzing the combined Copermittee dry weather data. This review may result in coordinated dry weather monitoring efforts that will be conducted more than once during the dry weather monitoring season—an effort that would exceed the current Permit's core requirement. Through the core dry weather program the City of Escondido annually monitors the entire water course as it transverses through the city and monitors the effluent water as it travels into the next jurisdiction.

4.1.2.5 Collaborative Review and Analysis of Monitoring Data

The Watershed Copermittees are committed to collaboratively reviewing and analyzing watershed monitoring data in a way that enhances each Copermittee's ability to identify and eliminate pollutant discharges. For example, an exceedance of a dry weather action level in one jurisdiction will be communicated to upstream jurisdictions when appropriate. This will allow a more coordinated effort to seek out and abate illegal discharges and illicit connections to MS4s near jurisdictional boundaries. Also, Copermittees will coordinate dry weather sampling dates and locations as appropriate to better link upstream impacts on water quality results collected from downstream sampling locations. At least once a year, the Watershed Copermittees will collaborate on an assessment of available monitoring data to ensure that monitoring locations are appropriately coordinated throughout the watershed. Data gaps will be identified and plans to conduct additional monitoring will be discussed.

4.2 Residential Sources

This section describes current and planned activities to address nutrient loading from residential areas in the Upper San Marcos Creek Watershed. It is divided into two parts. "Core" residential activities are those required to maintain compliance with the MS4 Permit. "Enhanced" residential activities are more targeted in nature and focus on raising awareness, changing behaviors, and reducing nutrient loading from specific targeted residential activities in high priority areas.

4.2.1. Core Residential Activities

The MS4 Permit requires Watershed Copermittees to implement the activities outlined in Table 4.2 below as part of a jurisdictional program to manage discharges from residential areas and activities. Core residential activities will continue as currently implemented under existing JURMPs. Notably, Copermittees will enforce their local ordinances as they become aware of non-compliance with discharge prohibitions and minimum BMP requirements in residential areas.

Each Copermittee will also continue to operate a hotline to facilitate public reporting of illegal discharges in the watershed. Copermittees will record all instances of residential non-compliance, enforcement measures, and corrective actions for inclusion in the WURMP Annual Report.

Table 4.2
Core Residential Activities

PERMIT REQUIREMENT	COUNTY OF SAN DIEGO	CITY OF SAN MARCOS	CITY OF ESCONDIDO
D.3.c.(1) Identify high threat to water quality residential areas and activities.	County JURMP Section 8.2 describes residential sources in the unincorporated area.	City of San Marcos JURMP Section 8.2 describes residential sources in the City's jurisdiction.	City of Escondido JURMP Section 8.2 describes residential sources in the City's jurisdiction.
D.3.c.(2) Require the implementation of designated minimum BMPs for high priority residential areas and activities.	County JURMP Section 8.3 describes BMP requirements for residential areas and activities within the unincorporated area. Sec. 67.801-67.806 and 67.807 of the County's Code of Regulatory Ordinances Relating to Watershed Protection, Stormwater Management, and Discharge Control (WPO) contain the relevant ordinance provisions.	City of San Marcos JURMP Sections 8.3 and 8.3.2 describes BMP requirements and additional controls for residential areas and activities within the City's jurisdiction City of San Marcos Water Quality Ordinance 14.5 Contain the relevant ordinance provisions. In addition, the Property Appearance Ordinance enhances residential enforcement for over irrigation and landscape requirements fronting public streets.	City of Escondido JURMP Sections 8.3 and 8.3.2 describes BMP requirements and additional controls for residential areas and activities within the City's jurisdiction.
D.3.c.(3) Enforce stormwater ordinance for all residential areas and activities as necessary to maintain compliance.	County JURMP Section 8.4.1.2.2 describes enforcement procedures for addressing non-compliance in residential areas in the unincorporated area.	City of San Marcos JURMP Section 8.4.4 describes enforcement procedures for addressing non-compliance in residential areas in the City's jurisdiction.	City of Escondido JURMP Section 8.4.8 describes enforcement procedures for addressing non-compliance in residential areas in the City's jurisdiction.
D.5.b.(3) Develop and implement a plan to educate residential, general public, and school children target communities	County JURMP Sections 8.4.1 and 8.4.2 describe programs to educate residential and school children target audiences in the unincorporated area.	City of San Marcos JURMP Section 8.5 describes enforcement procedures for addressing non-compliance in residential areas in the City's jurisdiction.	City of Escondido JURMP Sections 8.4.4 and 10.3 describe programs to educate residential and school children target audiences in the City's jurisdiction.

4.2.2 Enhanced Residential Activities

4.2.2.1 Irrigation Reduction

The USMC Watershed MS4 Copermittees will implement a program during FY 2009-10 and FY 2010-11 that targets a reduction in over-irrigation flows from residential areas in the Upper San Marcos Creek Watershed. Activities will include outreach to residents through materials distribution, presentations, and mass media as appropriate. The Copermittees will explore the viability of implementing an incentive program (i.e., rebates for smart irrigation controllers, rain barrels, or other BMPs) during FY 2009-10 for possible implementation during FY 2010-11. Irrigation reduction programs will be coordinated with the Vallecitos Water District (VWD) to the greatest extent possible so that water conservation messages can be coordinated and to build upon VWD's existing water conservation efforts.

4.2.2.2 Template Water Quality Management Plan for Homeowners Associations (HOAs)

The Watershed Copermittees will collaborate on a project to develop a template water quality management plan for homeowners associations (HOA). Work will involve researching similar plans developed in other regions, soliciting input and feedback from select HOA representatives, and creating a template plan that is tailored to addressing the nutrient issues of concern in the Upper San Marcos Creek Watershed. A template plan will be finalized by the end of FY 2009-10. Copermittees will conduct outreach to as many HOAs in the watershed as possible during FY 2010-11 to encourage adoption of a water quality management plan.

4.2.2.3 Outreach to Professional Landscapers

The County of San Diego will undertake a project to educate professional landscapers about their role in controlling nutrient loading in the Upper San Marcos Creek Watershed. Activities will include development and distribution of outreach materials to landscapers and presentations to both professional landscapers associations and HOAs/residents interested in hiring a responsible landscape contractor. Activities will take place during FY 2009-10 and FY 2010-11.

4.3 Agricultural Sources, Including Commercial Nurseries and Greenhouses

This section describes current and planned activities to address nutrient loading from agricultural land uses, including commercial nurseries and greenhouses, in the Upper San Marcos Creek Watershed. It is presented in two parts. "Core" agricultural activities are those required to maintain compliance with the MS4 Permit. "Enhanced" agricultural activities are more targeted in nature and focus on raising awareness, changing behaviors, and reducing nutrient loading from specific targeted agricultural activities in high priority areas.

It is important to note that discharges from agricultural and nursery operations are directly regulated by the RWQCB pursuant to a conditional waiver of waste discharge requirements. In order to be eligible for Conditional Waiver No. 4, agricultural and nursery operator discharges must: 1) implement minimum management measures and

BMPs to minimize or eliminate pollutant discharges, 2) perform annual self-assessments and training, 3) form or join a monitoring group no later than December 31, 2010, and 4) file a notice of intent with the RWQCB to be part of an individual or group monitoring program no later than January 1, 2011.

4.3.1 Core Agricultural Activities

While the MS4 Permit requires Copermittees to actively prohibit most discharges into and from its MS4, it does not require all types of agriculture to be addressed as part of the Jurisdictional Urban Runoff Management Program. Copermittees are, however, required to implement the activities outlined in Table 4.3 below to effectively manage discharges from commercial nurseries and greenhouses. Notably, Copermittees will continue to enforce their local ordinances as they become aware of non-compliance with discharge prohibitions and minimum BMP requirements at commercial nurseries and greenhouses. Each Copermittee will continue to periodically inspect nurseries and greenhouses to assess compliance. Copermittees will record all instances of non-compliance, enforcement measures, and corrective actions at nurseries and greenhouses for inclusion in the WURMP Annual Report.

Table 4.3
Core Agricultural Activities

PERMIT REQUIREMENT	COUNTY OF SAN DIEGO	CITY OF SAN MARCOS	CITY OF ESCONDIDO
D.3.b.(1)(a) Annually update a watershed-based inventory of nurseries and greenhouses within its jurisdiction.	An updated inventory of nurseries and greenhouses in the unincorporated area is included in the County's FY 2008-09 JURMP Annual Report. There are 42 nurseries and greenhouses within the County's portion of the Upper San Marcos Creek Watershed.	An updated inventory of nurseries and greenhouses in the City of San Marcos Area is included in the City's FY 2008-09 JURMP Annual Report. There are 6 nurseries and greenhouses within the City's portion of the Upper San Marcos Creek Watershed; however, commercial businesses inventories are monitored through the City's JURMP in Section 7.2.2	The City of Escondido has no agricultural businesses located within the Upper San Marcos Creek Watershed; however, commercial businesses inventories are monitored through the City's JURMP in Section 7.2.2.3.
D.3.b.(2)(c) Notify the owner/operator of each nursery/greenhouse of applicable BMP requirements.	All nurseries and greenhouses in the unincorporated area have been notified of applicable BMP requirements.	FY 10 – San Marcos will notify all nurseries of applicable BMP requirements.	The City of Escondido has no agricultural businesses located within the Upper San Marcos Creek Watershed.

PERMIT REQUIREMENT	COUNTY OF SAN DIEGO	CITY OF SAN MARCOS	CITY OF ESCONDIDO
D.3.b.(2)(d) Require the implementation of designated minimum BMPs for nurseries and greenhouses.	County JURMP Section 7.2.3 describes BMP requirements for commercial sites and sources within the unincorporated area. Sec. 67.801-67.806 and 67.808 of the County's Code of Regulatory Ordinances Relating to Watershed Protection, Stormwater Management, and Discharge Control (WPO) contain the relevant ordinance provisions.	JURMP Section 7.2.3 describes BMP requirements for commercial sites and sources in the City. City of San Marcos Water Quality Ordinance 14.5 contains the relevant ordinance provisions	The City of Escondido has no agricultural businesses located within the Upper San Marcos Creek Watershed.
D.3.b.(3)(a) Conduct site inspections at nurseries and greenhouses for compliance with ordinances, permits, and the MS4 Permit.	County JURMP Section 7.2 describes the inspection process for nurseries and greenhouses within the unincorporated area.	JURMP Section 7.2.4 describes the inspection process for nurseries and greenhouses within the City.	The City of Escondido has no agricultural businesses located within the Upper San Marcos Creek Watershed.
D.3.b.(5) Enforce stormwater ordinance for all nurseries and greenhouses as necessary to maintain compliance.	The County's FY 2008-09 JURMP Annual Report Section 5.2 describes current enforcement procedures for addressing non-compliance at nurseries and greenhouses in the unincorporated area.	JURMP Section 7.2.4.2 describes enforcement procedures for addressing non-compliance at nurseries and greenhouses in the unincorporated area. City of San Marcos Water Quality Ordinance 14.5 Contain the relevant ordinance provisions	The City of Escondido has no agricultural businesses located within the Upper San Marcos Creek Watershed.
D.5. Develop and implement a plan to educate owners and operators of nurseries and greenhouses	County JURMP Section 10.3.1.3 describes programs to educate owners and operators of nurseries and greenhouses in the unincorporated area.	City JURMP Section 10.3.4 describes programs to educate owners and operators of nurseries and greenhouses in the unincorporated area	The City of Escondido has no agricultural businesses located within the Upper San Marcos Creek Watershed.

4.3.2 Enhanced Agricultural Activities

4.3.2.1 County of San Diego

The County of San Diego will initially focus its attention on better understanding and addressing the impacts of agricultural activities in the immediate vicinity of Lake San Marcos. To initiate this effort, the County will work with professional grove management companies active in the area to collect information on crop types, water usage, fertilization schemes, and existing best management practices. It is estimated that approximately 70% of the parcels with ongoing agricultural activity in the Lake San Marcos community are operated by professional grove management companies. Given the number (~30) and size (~3-5 acres) of these parcels, this sub-set of groves is a reasonable place to begin.

Once baseline information has been collected, the County will solicit assistance from the Farm and Home Advisor, or other agencies with expertise in agriculture, to assess

whether existing grove management practices are consistent with industry best practices. Operational efficiencies and other opportunities for improvement will be communicated to grove operators following property assessments. The County will follow up with each of the appropriate grove management companies to track implementation of any recommended improvements. This work will be conducted during FY 2009-10 and FY 2010-11.

4.3.2.2 City of San Marcos

The City of San Marcos will focus its immediate attention on understanding and addressing the impacts of agricultural activities in the Twin Oaks Valley Area to mirror County efforts around Lake San Marcos. The City will establish baseline information on types of practices and growers in the Twin Oaks Valley Area. This work will be conducted during FY 2009-10 and FY 2010-11.

4.3.2.3 City of Escondido

The City of Escondido has no agricultural businesses within the Upper San Marcos Creek Watershed.

4.4 Parks

The MS4 Permit requires the USMC Watershed MS4 Copermittees to implement the activities outlined in Table 4.4 below as part of a jurisdictional program to manage discharges from municipal areas. Core municipal activities will continue as currently implemented under existing JURMPs. Notably, the City of San Marcos will enforce its local ordinances as it becomes aware of non-compliance with discharge prohibitions and minimum BMP requirements in municipal park areas. These consist of work orders to correct any issues. All municipal parks in the USMC watershed are owned and maintained by the City of San Marcos. The City maintains SWPPPs for Municipal Parks. The City will assess current fertilizer practices and BMPs in monitoring locations that show elevated nutrient trends.

4.4.1. Core Activities

Table 4.4
Core Activities for Parks

PERMIT REQUIREMENT	COUNTY OF SAN DIEGO	CITY OF SAN MARCOS	CITY OF ESCONDIDO
D.3.a.(1)(a) source identification within its jurisdiction.	N/A	An updated inventory of parks is in City of San Marcos Area is included in the City's FY 2008-09 JURMP Annual Report. There are 52 parks within the City's portion of the Upper San Marcos Creek Watershed; however, parks are monitored through the City's JURMP in Section 6.2.	N/A.
D.3.a.(2) Implement BMP requirements.	N/A	The City JURMP Section 6.3 describes BMP requirements for parks.	N/A.

PERMIT REQUIREMENT	COUNTY OF SAN DIEGO	CITY OF SAN MARCOS	CITY OF ESCONDIDO
D.3.a.(4) management of pesticides, herbicides, fertilizers	N/A	The City JURMP Section 6.3.2 describes designated minimum BMPs for parks and in City SWPPPs.	N/A.
D.3.a.(7) Conduct site inspections for compliance with ordinances, permits, and the MS4 Permit.	N/A	The City JURMP Section 6.4 describes inspection compliance with ordinances, permits and the MS4 Permit.	N/A.
D.3.a.(8) Enforce stormwater ordinance to maintain compliance.	N/A	The City JURMP Section 6.4.2 describes stormwater enforcement procedures.	N/A.
D.5. Develop and implement a plan to educate municipal departments and personnel	N/A	The City JURMP Section 10.0 describes education and outreach park staff.	N/A.

4.4.2. Enhanced Activities

4.4.2.1 County of San Diego

Within the Upper San Marcos Creek Watershed the County has no parks.

4.4.2.2 City of San Marcos

The City of San Marcos will focus its immediate attention on understanding and addressing the impacts of municipal parks in the USMC Watershed to identify baseline issues. The City will establish baseline information on effective source reduction BMPs. This work will be conducted during FY 2009-10 and FY 2010-11.

4.4.2.3 City of Escondido

Within the Upper San Marcos Creek Watershed the City of Escondido has no parks.

4.5 Golf Courses

This section describes current and planned activities to address nutrient loading from golf courses in the Upper San Marcos Creek Watershed. It is divided into two parts. "Core" golf course activities are those required to maintain compliance with the MS4 Permit. "Enhanced" golf course activities are more targeted in nature and focus on raising awareness, changing behaviors, and reducing nutrient loading from specific targeted golf course activities in high priority areas.

4.5.1. Core Activities

As described in the MS4 Permit, USMC Watershed MS4 Copermittees are required to add golf courses to their commercial inventories and update the inventories annually. Core activities performed under the JURMP are outlined in Table 4.5 below. Each Copermittee will enforce its local ordinance as it becomes aware of non-compliance with discharge prohibitions and minimum BMP requirements in golf courses. Compliance is determined through both active inspection of golf courses operations and responses to

public complaints about illegal discharges or insufficient BMPs. As described in section 4.1.1, the Core dry weather program assists in monitoring water quality and provides additional investigation if pollutants are detected (above the action level), triggering additional BMPs to protect water quality and monitoring.

Table 4.5
Core Activities for Golf Courses

PERMIT REQUIREMENT	COUNTY OF SAN DIEGO	CITY OF SAN MARCOS	CITY OF ESCONDIDO
D.3.b.(1)(a) Annually update a watershed-based inventory of golf courses within its jurisdiction.	An updated inventory of golf courses in the unincorporated area is included in the County's FY 2008-09 JURMP Annual Report.	An updated inventory of golf courses in the City of San Marcos Area is included in the City's FY 2008-09 JURMP Annual Report.	Golf course inventories are included in the commercial business inventory and are monitored through the City's JURMP in Section 7.2.2.3.
D.3.b.(2)(c) Notify the owner/operator of each commercial/industrial business of applicable BMP requirements.	Golf courses in the unincorporated area have been notified of applicable BMP requirements.	FY 10 – San Marcos will notify all golf courses of applicable BMP requirements.	The City of Escondido JURMP Section 7.2.3.1 describes BMP requirements for commercial businesses.
D.3.b.(2)(d) Require the implementation of designated minimum BMPs for commercial/industrial businesses	County JURMP Section 7.2.3 describes BMP requirements for commercial sites and sources within the unincorporated area. Sec. 67.801-67.806 and 67.808 of the County's Code of Regulatory Ordinances Relating to Watershed Protection, Stormwater Management, and Discharge Control (WPO) contain the relevant ordinance provisions.	JURMP Section 7.2.3 describes BMP requirements for commercial sites and sources in the City. City of San Marcos Water Quality Ordinance 14.5 Contain the relevant ordinance provisions	The City of Escondido JURMP Sections 7.2.3.1 and 7.2.3.2 describes designated minimum BMPs for commercial businesses.
D.3.b.(3)(a) Conduct site inspections at nurseries and greenhouses for compliance with ordinances, permits, and the MS4 Permit.	County JURMP Section 7.2 describes the inspection process for golf courses within the unincorporated area.	JURMP Section 7.2.4 describes the inspection process golf courses within the City.	The City of Escondido JURMP Section 7.2.4.3 describes inspection compliance with ordinances, permits and the MS4 Permit.
D.3.b.(5) Enforce stormwater ordinance for all commercial/industrial businesses as necessary to maintain compliance.	The County's FY 2008-09 JURMP Annual Report Section 5.2 describes current enforcement procedures for addressing non-compliance at golf courses in the unincorporated area.	JURMP Section 7.2.4 .2 describes enforcement procedures for addressing non-compliance at golf courses in the unincorporated area. City of San Marcos Water Quality Ordinance 14.5 Contain the relevant ordinance provisions	The City of Escondido JURMP Section 7.2.5 describes stormwater enforcement procedures.
D.5. Develop and implement a plan to educate owners and operators of commercial/industrial businesses.	County JURMP Section 10.3.1.3 describes programs to educate owners and operators of golf courses in the unincorporated area.	City JURMP Section 10.3.4 describes programs to educate owners and operators of golf courses in the unincorporated area	The City of Escondido JURMP Section 7.2.4.2 describes education and outreach for commercial business.

4.5.2. Enhanced Activities

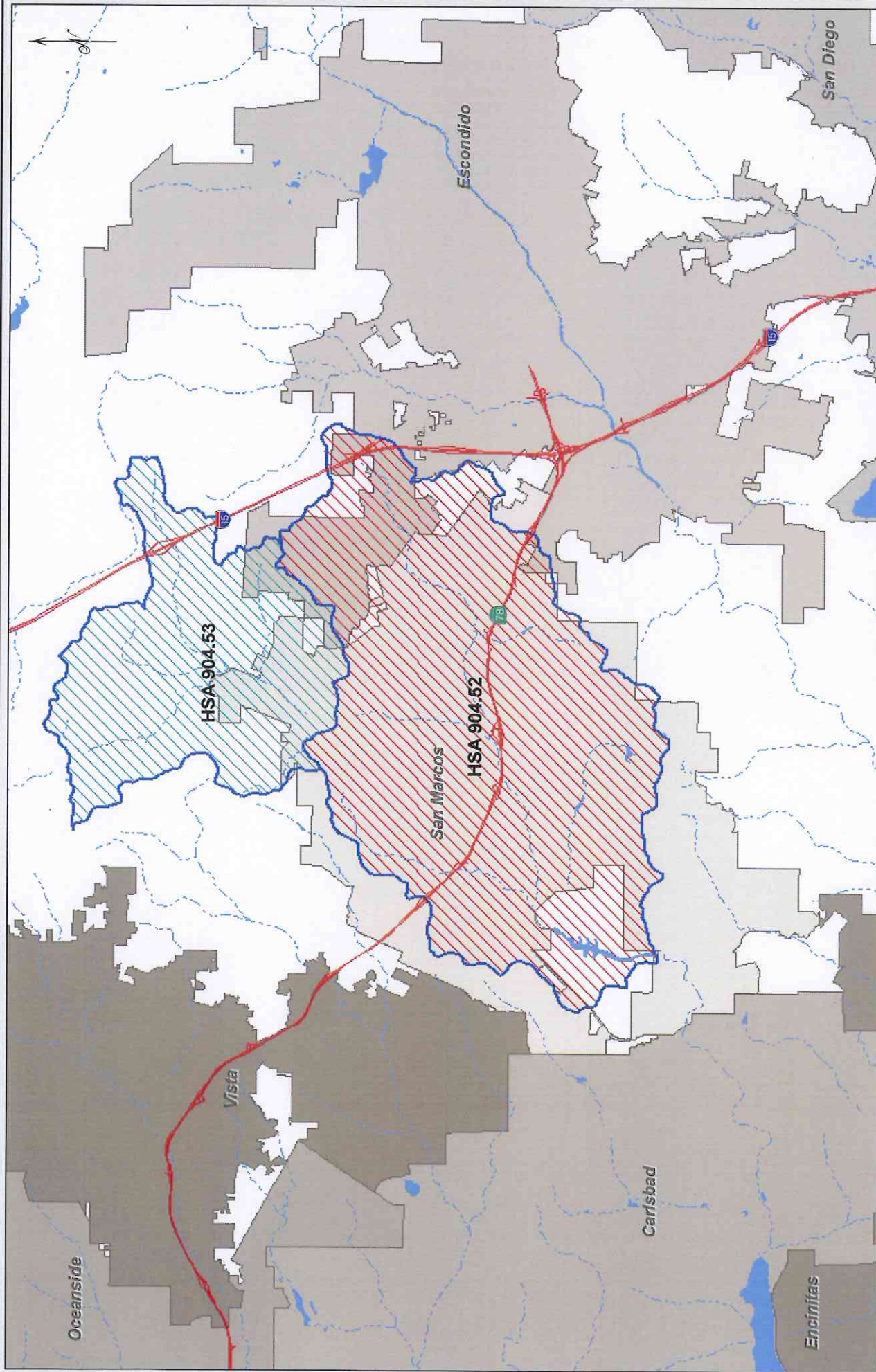
Each Copermittee's enhancement activities will be carried out through its existing annual JURMP inspection and dry weather "Core" programs but will be collaboratively reviewed through the WURMP program to evaluate overall effectiveness and to determine any necessary program modifications. Based on individual golf courses, BMPs will be tailored to each site based on results from annual commercial inspections, complaint investigations, and through water quality investigations as a part of the dry weather program. Data collected annually will be provided through each Copermittee's JURMP annual report and aggregately presented in the WURMP annual report.

Appendix A

FIGURES

Figure 1

USMC - Watershed Map



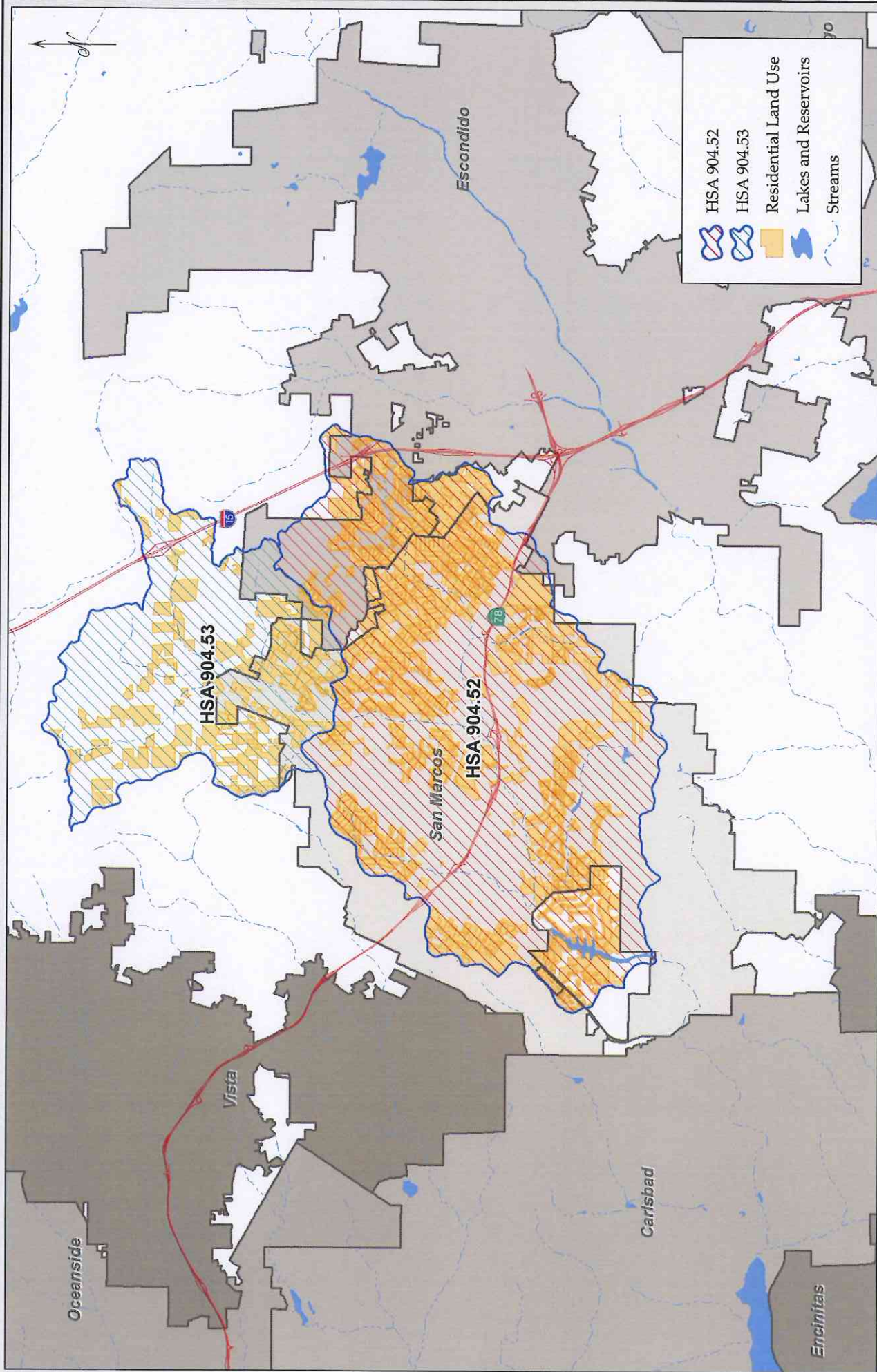
Every effort has been made to assure the accuracy of the maps and data provided; however, some information may not be accurate or current. The City of San Marcos assumes no responsibility arising from use of this information and incorporates by reference its disclaimer regarding the lack of any warranties, whether expressed or implied, concerning the use of the same. For additional information see the Disclaimer on the City's website.

USMC - Watershed Map

CREATED BY: City of San Marcos GIS
SOURCES OF DATA: SanGIS, 10/09

Figure 2

USMC - Residential Sources



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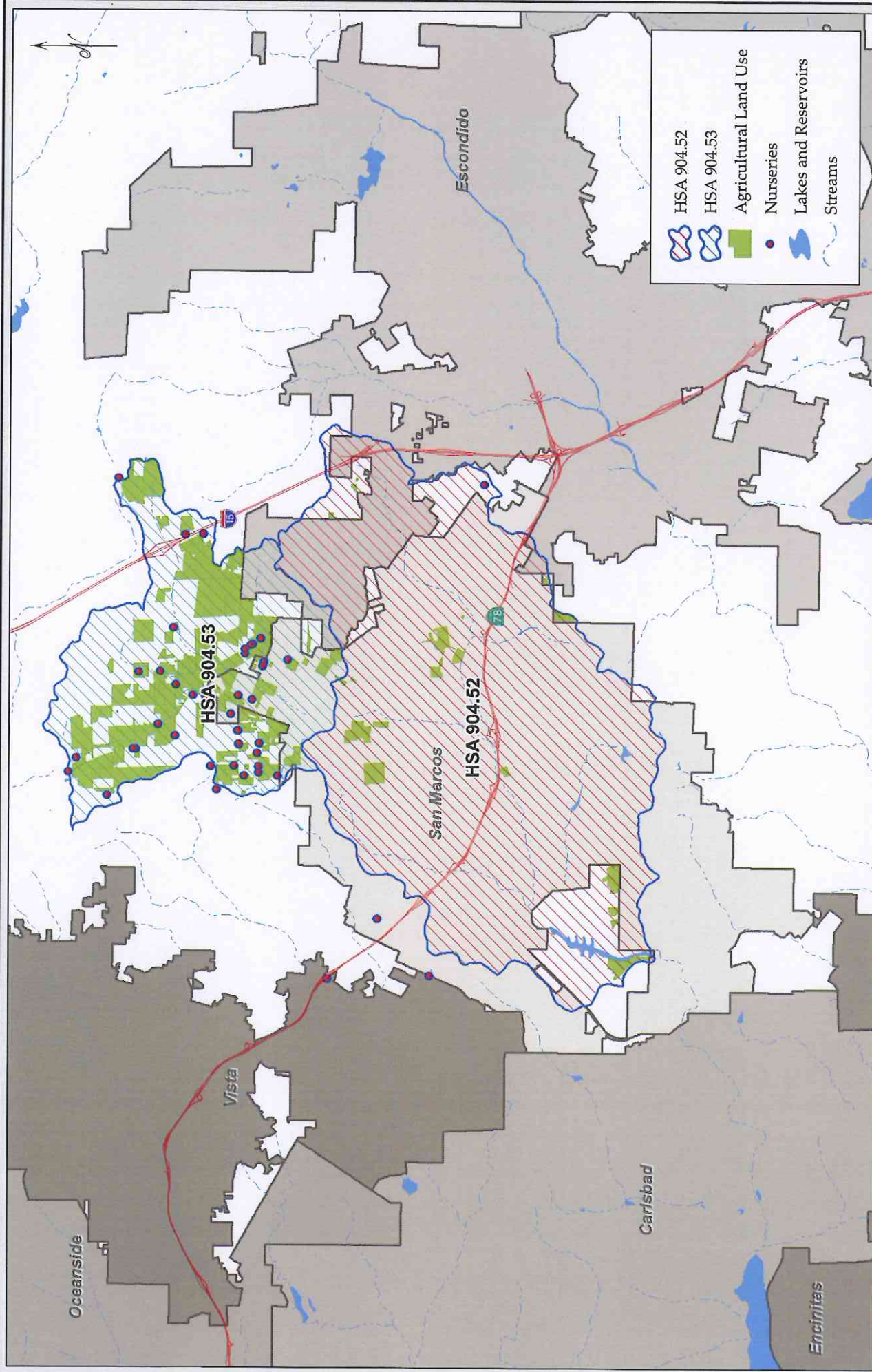
USMC - Residential Sources

0 2,125 4,250 8,500 Feet
1 inch = 8,500 feet

CREATED BY: City of San Marcos GIS
SOURCES OF DATA: SanGIS, 10/09, Sandag,
2009, and City of San Marcos,
1/10

Figure 3

USMC - Agricultural Sources



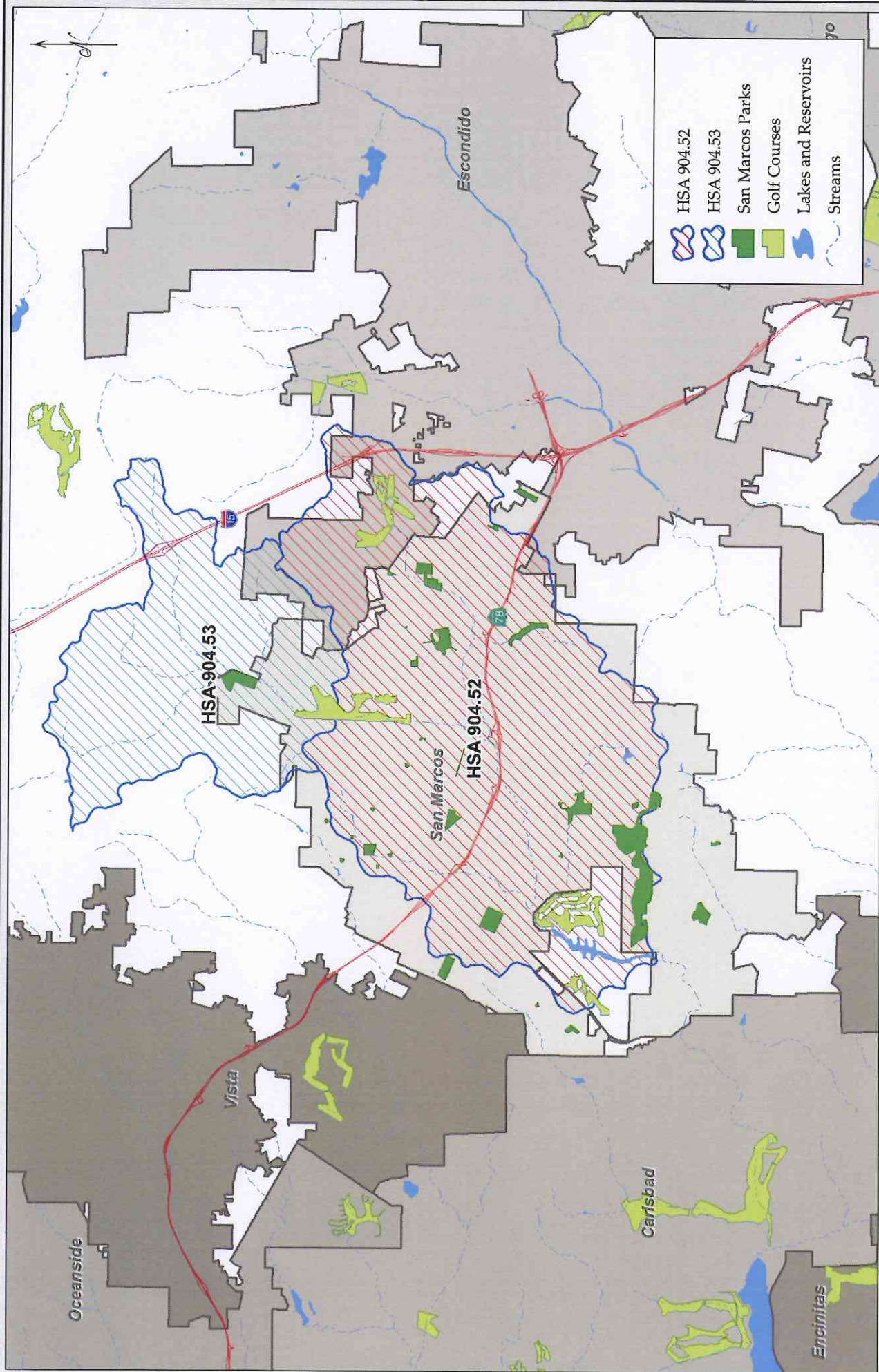
USMC - Agricultural Sources

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0 2,125 4,250 8,500 Feet
1 inch = 8,500 feet

CREATED BY: City of San Marcos GIS
SOURCES OF DATA: SanGIS, 10/09, Sandag,
2009, and City of San Marcos,
1/10

Figure 4
USMC - Parks & Golf Courses



HSA 904.52
HSA 904.53
San Marcos Parks
Golf Courses
Lakes and Reservoirs
Streams

0 2,125 4,250 8,500 Feet
1 inch = 8,500 feet

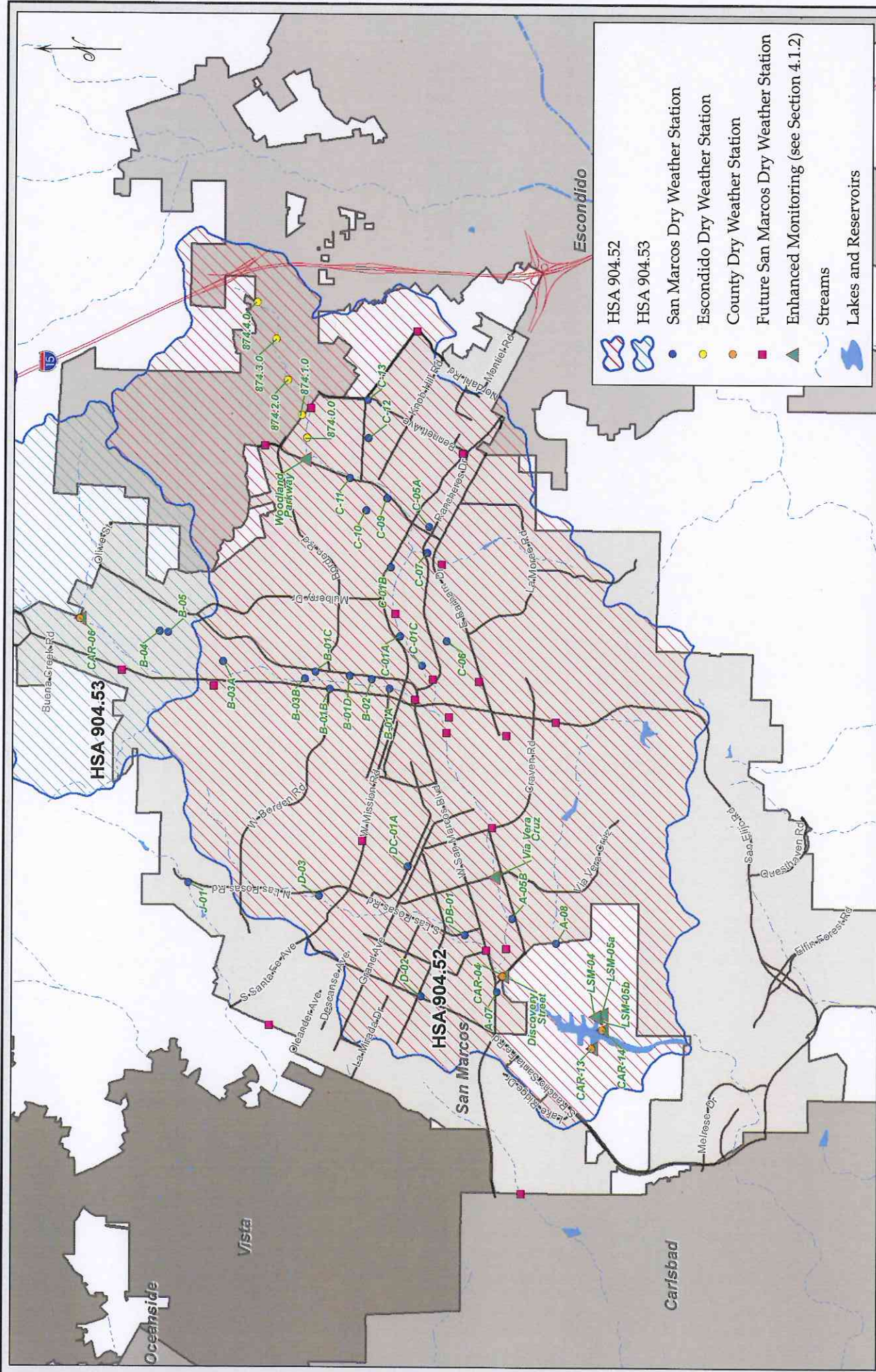
CREATED BY: City of San Marcos GIS
SOURCES OF DATA: SanGIS, 10/09 and City of San Marcos, 1/10

USMC - Parks & Golf Courses

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Figure 5

USMC - Water Quality Monitoring Locations



USMC - Water Quality Monitoring Locations

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Appendix B

City of San Marcos Baseline Watershed Implementation Plan (FY 10 through first quarter FY 11)

City of San Marcos
Baseline Watershed Implementation Plan
(FY 10 through first quarter FY 11)

Tables B-1, B-2 and B-3 summarize the City of San Marcos Baseline Watershed Implementation Plan (FY 10 through first quarter FY 11) activities that will be conducted by the City of San Marcos. These activities are the baseline information for year one of identification of nutrient sources and abatement of those sources. It is anticipated that the City will do multi- year refinement and iterations of these activities to establish effective BMP tool kits to realize an actual abatement of nutrient pollutant sources and that a Jurisdictional Watershed Implementation Plan will be prepared for inclusion in the FY 10 Carlsbad WURMP after ongoing additional data and monitoring data efforts have been completed in early FY 11.

The role of these activities is to refine and combine already existing inventories and data sets currently required under the MS4 permit into a geo-spatial assessment combined to better focus monitoring efforts within the the City of San Marcos Boundary. The primary objective is to establish a baseline data set for the primary sources of nutrients and establish an iterative process of identification and abatement over time.

Tables B-1, B-2, and B-3 summarize the efforts by the City of San Marcos. In addition, these efforts will be coordinated with the City's upcoming General Plan Update which will identify key policies to address the issues within the USMC watershed as well as significant development and planning efforts.

Table B-1
CITY OF SAN MARCOS
SOURCE IDENTIFICATION DATA ASSESSMENTS ACTIVITIES

Data Assessment	Completion Date
Land Use Assessment by HSA/Map/ Monitoring Location	FY11
Preliminary inventory of water quality and/or discharge permits by HSA/ Map	FY11
Private Party Land Area Assessment by HSA/Map	FY11
Inventory of HOAs/Map	FY 10/11
Dedicated Natural Open Space Inventory/Map	FY 10/11

Table B-2
CITY OF SAN MARCOS
BASELINE YEAR SOURCE ABATEMENT ACTIVITIES

Activity	Completion Date
Annual BMP Inspection of Golf Courses	FY 10
Water Purveyor Program Collaboration	FY 11
Focused Nutrient Education Plan for Land Uses - reduction in over-irrigation flows from residential areas in the Upper San Marcos Creek Watershed	FY 10
Data Reporting Plan for Primary Nutrient Sources	FY 10/FY11
Data Sharing and Reporting Plan for Water Quality Monitoring for Primary Nutrient Sources	FY 10/FY11
Agricultural - track implementation of any recommended improvements	FY9/FY10/FY/11
Agricultural - outreach and coordinate tracking of implementation of any recommended improvements w/ County	FY9/FY10/FY/11
Educate professional landscapers	FY9/FY10/FY/11
Educate professional landscapers – Coordinate/Mirror County Effort	FY9/FY10/FY/11
Assess current fertilizer practices and BMPs in monitoring locations that show elevated nutrient trends	FY9/FY10/FY/11

Table B-3
SUMMARY OF USMC WATER QUALITY MONITORING ACTIVITIES

HSA	Core Monitoring Locations	City of San Marcos Future Locations
	San Marcos Total	
904.53	2	1
904.52	25	19
USMC Grand Total - 47	27	20

Table B-3 establishes the baseline water quality monitoring effort. These data needs, source abatement activities, and enhanced monitoring activities are intended to be refined as the effort moves forward and more information is gathered and the abatement of nutrients is assessed. For FY 10, the City of San Marcos has committed to coordinated data samples outside of the core monitoring requirements with a limited suite of constituents in order to cover more of the City. The City of San Marcos will complete a preliminary data assessment and map, by HSA, other agencies, private parties, and a preliminary inventory of water quality and/or discharge permits to geospatially identify and assess the effect of other potential nutrient sources in conjunction with the initially selected four land use based sources.