COMPREHENSIVE BACTERIA REDUCTION PLAN

Submitted to:

California Regional Water Quality Board, Santa Ana Region

Order No.: R8-2013-0043

Submitted by:

City of Pomona

January 14, 2014

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BMPs	Best Management Practices
BPS	Bacterial Prioritization Score
CBRMP	Chino Basin Recharge Master Plan
CBRP	Comprehensive Bacteria Reduction Plan
CEQA	California Environmental Quality Act
cfu	colony forming unit
CII	Commercial, Industrial, and Institutional
CIP	capital improvement plan
COPS	Community Oriented Policing Services
CUWCC	California Urban Water Conservation Council
CWA	Clean Water Act
CWP	Center for Watershed Protection
DMM	Demand Management Measures
DOC	dissolved organic carbon
DWF	Dry Weather Flow
EPA	Environmental Protection Agency
ET	evapotranspiration
GPDC	gross per capita demand
IDDE	Illicit Discharge Detection and Elimination
IEUA	Inland Empire Utilities Agency
LA	Load Allocations
LID	Low Impact Development
LIP	Local Implementation Plan
ml	Milliliters
MS_4	Municipal Separate Storm Sewer System
MSAR	Middle Santa Ana River
MEP	Maximum Extent Practicable
MST	Microbial Source Tracking
MWD	Metropolitan Water District
NPDES	National Pollutant Discharge Elimination System
OCWD	Orange county Water District
POTWs	Publicly-owned Treatment Works
QAPP	Quality Assurance Project Plan

RCFC&WCD	Riverside County Flood Control and Water Conservation District
REC-1	Water Contact Recreation
REC-2	Non-Contact Recreation
RWQCB	Regional Water Quality Control Board
Santa Ana RWQCB	Santa Ana Regional Water Quality Control Board
SAR	Santa Ana River
SAWPA	Santa Ana Watershed Protection Authority
SBCFCD	San Bernardino County Flood Control District
SCAG	Southern California Association of Governments
SWQSTF	Stormwater Quality Standards Task Force
SWRCB	State Water Resources Control Board
TMDL	Total Maximum Daily Load
UAA	Use Attainability Analysis
USEP	Urban Source Evaluation Plan
USGS	United States Geological Study
UWMP	Urban Water Management Plan
WAP	Watershed Action Plan
WBIC	Weather-based Irrigation Controller
WLA	Waste Load Allocations
WMP	Waste Management Plan (DOE)
WMWD	Western Municipal Water District
WQMP	Water Quality Management Plan
WQO	Water Quality Objective
WWTP	Wastewater Treatment Plant

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Section 1
Background and Purpose

The Los Angeles Regional Water Quality Control Board (Los Angeles RWQCB) adopted a Municipal Separate Storm Sewer System (MS4) permit for Los Angeles County on November 8, 2012 that, through a designation agreement with the Santa Ana Regional Water Quality Control Board (Santa Ana RWQCB), requires the development of a Comprehensive Bacteria Reduction Plan (CBRP). The CBRP is a long term plan designed to achieve compliance with dry weather condition (April 1 – October 31) wasteload allocations for bacterial indicators established by the Middle Santa Ana River (MSAR) Bacterial Indicator Total Maximum Daily Load (TMDL) ("MSAR Bacterial Indicator TMDL"). This document fulfills this MS4 permit requirement. The following sections provide the regulatory background, purpose, and framework of the CBRP.

1.1 Regulatory Background

The 1972 Federal Water Pollution Control Act and its amendments comprise what is commonly known as the Clean Water Act (CWA). The CWA provides the basis for the protection of all inland surface waters, estuaries, and coastal waters. The federal Environmental Protection Agency (EPA) is responsible for ensuring the implementation of the CWA and its governing regulations (primarily Title 40 of the Code of Federal Regulations) at the state level.

California's Porter-Cologne Water Quality Control Act of 1970 and its implementing regulations establish the Santa Ana RWQCB as the agency responsible for implementing CWA requirements in the Santa Ana River Watershed. These requirements include adoption of a Water Quality Control Plan ("Basin Plan") to protect inland freshwaters and estuaries. The Basin Plan identifies the beneficial uses for waterbodies in the Santa Ana River watershed, establishes the water quality objectives required to protect those uses, and provides an implementation plan to protect water quality in the region (Santa Ana RWQCB 1995, as amended).

The CWA requires the RWQCB to routinely monitor and assess water quality in the Santa Ana River watershed. If this assessment indicates that beneficial uses are not met in a particular waterbody, then the waterbody is found to be impaired and placed on the state's impaired waters list (or 303(d) list[1]). This list is subject to the Environmental Protection Agency (EPA) approval; the most recent EPA-approved 303(d) list for California is the 2010 list.

Waterbodies on the 303(d) list require development of a TMDL. A TMDL establishes the maximum amount of a pollutant that a waterbody can receive (from both point and nonpoint sources) and still meet water quality objectives.

[1] 303(d) is a reference to the CWA section that requires the development of an impaired waters list.

1.2 Santa Ana River Watershed Basin Plan

The Basin Plan designates beneficial uses (including recreational uses) for surface waters in the Santa Ana River watershed (Santa Ana RWQCB 1995, as amended) (see Table 3-1 of the Basin Plan). Although the City of Pomona is included as a Permittee in the Los Angeles RWQCB MS4 Permit, through a designation agreement, its jurisdiction within the MSAR watershed will be regulated by the Santa Ana RWQCB, which includes existing and proposed requirements in the Santa Ana Watershed Basin Plan. The following sections describe existing and potential future Basin Plan requirements that are relevant to this CBRP.

1.2.1 Existing Basin Plan Requirements

The recreational uses applicable to waterbodies in the MSAR watershed include Water Contact Recreation (REC-1) and Non-Contact Recreation (REC-2). These are currently defined in the Basin Plan as follows:

- *REC-1* - Waters that are used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses may include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing, and use of natural hot springs.

- *REC-2* - Waters that are used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water would be reasonably possible. These uses may include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, and aesthetic enjoyment in conjunction with the above activities.

To evaluate whether these recreational uses are protected in a given waterbody, the Basin Plan (Chapter 4) currently relies on fecal coliform[2] as a bacterial indicator for the potential presence of pathogens. Fecal coliform present at concentrations above certain thresholds are believed to be an indicator of the potential presence of fecal pollution and harmful pathogens, thus increasing the risk of gastroenteritis in recreational bathers exposed to the elevated levels. Section 4 of the Basin Plan specifies the following water quality objectives for protection of recreational uses:

- REC-1 - Fecal coliform: log mean less than 200 organisms/100 ml based on five or more samples/30-day period, and not more than 10 percent of the samples exceed 400 organisms/ 100 ml for any 30-day period.

- REC-2 - Fecal coliform: average less than 2000 organisms/100 ml and not more than 10 percent of samples exceed 4000 organisms/100 ml for any 30-day period

1.2.2 Proposed Amendments to the Basin Plan

The Santa Ana RWQCB adopted a Basin Plan amendment to replace the REC-1 bacterial indicator water quality objectives for fecal coliform with *E. coli* objectives on June 15, 2012[3]. This modification is consistent with EPA water quality guidance to protect recreational uses (EPA, 2012). The Basin Plan amendment was developed through the work of Santa Ana RWQCB staff and members of the Stormwater Quality

2 Fecal coliform and *E. coli* are a group of bacteria considered by the Regional Board as bacterial indicators for pathogens. Within this CBRP, references to fecal coliform and *E. coli* should be considered equivalent to the term bacterial indicators.
[3] http://www.waterboards.ca.gov/santaana/water_issues/programs/basin_plan/recreational_standards.shtml

Standards Task Force (SWQSTF) (which includes representatives from the Santa Ana Watershed Protection Authority [SAWPA]; the counties and cities of Orange, Riverside, and San Bernardino; Orange County Coastkeeper; Inland Empire Waterkeeper; among others). The key elements of the Basin Plan Amendment included:

- Clarification of the definition of REC-1 waters;
- Deletion of the current fecal coliform objectives for REC-1 and REC-2 beneficial uses;
- Adoption of geometric mean *E. coli* objectives for REC-1 waters based on EPA (1986, 2012);
- Sub-categorization of REC-1 waters into classes and establishment of a class-specific method for assessing *E. coli* data in the absence of sufficient data to calculate a geometric mean;
- For waters designated only REC-2 (only after approval of a Use Attainability Analysis [UAA] that removes the presumptive REC-1 use), establishment of an antidegradation-based bacterial indicator water quality objective; and
- Temporary suspension of recreational uses during high flow conditions in freshwater streams.

The Basin Plan amendment includes several Use Attainability Analyses (UAAs) to modify presumptive REC-1 uses in certain specific water bodies in the MSAR watershed. These UAAs and proposed recreational use changes include:

- *Cucamonga Creek* – Reach 1, confluence with Mill Creek (at Hellman Street) upstream to 23rd Street in Upland, California; remove both REC-1 and REC-2 uses.
- *Temescal Creek* – Reach 1, from approximately 100 feet downstream of Cota Street (33°53'29.904"N, 117°34'12.432") to the Arlington Drain confluence; remove REC-1 use.
- *Temescal Creek* – Reach 2, from the confluence with Arlington Drain (33° 52' 51.204"N, 117° 33' 15.732"W) to approximately 1,400 feet upstream of Magnolia Avenue (33° 52' 1.992"N, 117° 31' 30.108"W); remove REC-1 and REC-2 uses.

The Santa Ana RWQCB-approved Basin Plan amendment is currently under review by the State Water Resources Control Board (SWRCB).

1.3 Middle Santa Ana River Bacterial Indicator TMDL

Water quality data collected in 1994 and 1998 from waterbodies in the MSAR watershed showed exceedances of fecal coliform bacterial indicator water quality objectives. Based on these data and potential impacts to recreational uses, the Santa Ana RWQCB recommended that the following waterbodies be placed on the 303(d) list:

- Santa Ana River, Reach 3 – Prado Dam to Mission Boulevard (excludes Prado Basin Management Zone)
- Chino Creek, Reach 1 – Santa Ana River confluence to beginning of hard lined channel south of Los Serranos Road
- Chino Creek, Reach 2 – Beginning of hard lined channel south of Los Serranos Road to confluence with San Antonio Creek

- Mill Creek (Prado Area) – Natural stream from Cucamonga Creek Reach 1 to Prado Basin
- Cucamonga Creek, Reach 1 – Confluence with Mill Creek to 23rd Street in City of Upland
- Prado Park Lake

As noted above, waterbodies on the 303(d) list are subject to the development of a TMDL. Accordingly, on August 26, 2005 the Santa Ana RWQCB adopted Resolution No. R8-2005-0001, amending the Basin Plan to incorporate bacterial indicator TMDLs for the above-listed waterbodies in the watershed (referred to as the MSAR Bacterial Indicator TMDL) (RWQCB 2005). The TMDLs adopted by the Santa Ana RWQCB were subsequently approved by the SWRCB on May 15, 2006, by the California Office of Administrative Law on September 1, 2006, and by EPA Region 9 on May 16, 2007. The EPA approval date is the TMDL effective date.

The MSAR Bacterial Indicator TMDL established wasteload allocations for urban MS4s and confined animal feeding operation discharges and load allocations for agricultural and natural sources. The wasteload and load allocations were established for both fecal coliform and *E. coli*:

- Fecal coliform: 5-sample/30-day logarithmic mean (or geometric mean) less than 180 organisms/100 ml and not more than 10 percent of the samples exceed 360 organisms/100 ml for any 30-day period.
- *E. coli*: 5-sample/30-day logarithmic mean (or geometric mean) less than 113 organisms/100 ml and not more than 10 percent of the samples exceed 212 organisms/100 ml for any 30-day period.

The urban discharger requirements are listed as tasks in the TMDL, with Tasks 1.2, 3, 4.1, 4.3, 4.5, and 6 having relevance to this CBRP for the City of Pomona (Table 1-1). Other tasks included in the TMDL either address urban discharges associated with other MS4 Permittees (within San Bernardino and Riverside Counties) or agricultural discharge requirements.

1.4 Los Angeles County MS4 Permit

The Los Angeles County MS4 program operates under a National Pollutant Discharge Elimination System (NPDES) MS4 permit issued by the Los Angeles RWQCB (Order No. R4-2012-0175, NPDES Permit No. CAS004001). This permit regulates discharges to and from MS4 facilities within the coastal watersheds of Los Angeles County. The Permittees covered by this permit include the Los Angeles County Flood Control District, the County of Los Angeles, and 84 incorporated cities within the coastal watersheds of Los Angeles County (including Pomona), with the exception of the City of Long Beach. The City of Pomona is tributary to Chino Creek, an impaired waterbody in the MSAR Bacterial Indicator TMDL (see Los Angeles County MS4 Permit, Attachment R). Chino Creek falls within the jurisdiction of the Santa Ana RWQCB, therefore a designation agreement was made between the Los Angeles and Santa Ana RWQCBs to have the Santa Ana RWQCB regulate discharges of bacteria by the Cities of Pomona and Claremont through their MS4s to receiving water in the MSAR watershed (letter dated May 31, 2013; see Attachment A.2). Subsequently, the Santa Ana RWQCB adopted Order No. R8-2013-0043 on September 13, 2013, which describes requirements for the Cities of Pomona and Claremont to address the MSAR Bacteria TMDL.

Table 1-1. MSAR Bacterial Indicator TMDL Requirements Applicable to Portions of Los Angeles County.

Task	Required Activity	Schedule/Status
Task 1 – Review/ Revise Existing Waste Discharge Requirements	Review and revise the Waste Discharge Requirements for the Cities of Pomona and Claremont within the Santa Ana region, as necessary to include the appropriate wasteload allocations, compliance schedules and or monitoring requirements	A new Los Angeles County MS4 permit was adopted on November 8, 2012. Relevant TMDL requirements, including the preparation of the CBRP for dry weather were designated to the Santa Ana RWQCB and are included in Santa Ana RWQCB Order No. R8-2013-0043
Task 3 - Watershed-Wide Water Quality Monitoring Program	All named responsible parties in the TMDL shall, as a group, submit to the Regional Board for approval a proposed watershed-wide monitoring program that will provide data necessary to review and update the TMDL.	All parties (except U.S. Forest Service) are implementing a Regional Board approved monitoring program collaboratively through the MSAR Task Force (see Attachment A)
Task 4 – Urban Discharges	Responsible parties named in the TMDL shall develop a Bacterial Indicator Urban Source Evaluation Plan. This plan shall include steps needed to identify specific activities, operations, and processes in urban areas that contribute bacterial indicators to MSAR watershed waterbodies. The plan shall also include a proposed schedule for completion of each of the steps identified. The proposed schedules can include contingency provisions that reflect uncertainty concerning the schedule for completion of the SWQSTF work and/or other investigations that may affect the steps that are proposed. The USEP shall be implemented upon RWQCB approval.	This CBRP incorporates the principles/activities of the USEP and replaces its implementation requirements (See Attachment C).
Task 6 – Review or Revision of the MSAR Bacterial Indicator TMDL	Santa Ana RWQCB will review all data and information generated pursuant to the TMDL requirements on an on-going basis (at least every three years). Based on results from the monitoring programs, special studies, modelling analysis, SWQSTF and/or special studies, changes to the TMDL, including revisions to the numeric targets, may be warranted.	The first Triennial Report was submitted on February 15, 2010; the second Triennial Report was submitted on February 11, 2013 and included data gathered by the cities of Pomona and Claremont

Accordingly, the development of this CBRP is an MS4 permit requirement for the Cities of Pomona and Claremont associated with implementation of the MSAR Bacterial Indicator TMDL within the areas tributary to Chino Creek. The CBRP is designed to provide a comprehensive plan for attaining WLAs for the MSAR TMDL by integrating existing control programs and efforts with new permit mandates and other additional activities necessary to address controllable urban sources of bacterial indicators for the portion of the City that is tributary to the MSAR.

1.5 Comprehensive Bacterial Indicator Reduction Plan

This section provides information on the requirements for CBRP development and the applicability of the plan to urban discharges in the affected portions of the Cities of Pomona and Claremont. In addition, information is provided on the general framework of this plan and the process associated with its development.

1.5.1 Purpose and Requirements

The Santa Ana RWQCB Order No. R8-2013-0043 requires the Cities of Pomona and Claremont to develop a long-term plan (a comprehensive bacteria reduction plan, CBRP) designed to achieve compliance with the WLAs by the compliance dates. If necessary, the CBRP will be updated based on an evaluation of the effectiveness of the BMPs implemented. In the absence of an approved CBRP by December 31, 2015, the WLAs become the final numeric water quality-based effluent limit that must be achieved by the compliance dates. The order lists the requirements for preparation of the CBRP for the MSAR Bacteria TMDL for the Cities of Pomona and Claremont, which include:

a. The specific ordinance(s) adopted to reduce the concentration of indicator bacteria in urban sources.

b. The specific BMPs implemented to reduce the concentration of indicator bacteria from urban sources and the water quality improvements expected to result from these BMPs.

c. The specific inspection criteria used to identify and manage the urban sources most likely causing exceedances of water quality objectives for indicator bacteria.

d. The specific regional treatment facilities and the locations where such facilities will be built to reduce the concentration of indicator bacteria discharged from urban sources and the expected water quality improvements to result when the facilities are complete.

e. The location to be used for compliance and program effectiveness monitoring.

f. The scientific and technical documentation used to conclude that the CBRP, once fully implemented, is expected to achieve compliance with the urban wasteload allocation for indicator bacteria by December 31, 2015.

g. A detailed schedule for implementing the CBRP. The schedule must identify discrete milestones to assess satisfactory progress toward meeting the urban wasteload allocations for dry weather by December 31, 2015. The schedule must also indicate which agency or agencies are responsible for meeting each milestone.

h. The specific metric(s) that will be established to demonstrate the effectiveness of the CBRP and acceptable progress toward meeting the urban wasteload allocations for indicator bacteria by December 31, 2015.

i. Detailed descriptions of any additional BMPs planned, and the time required to implement them, in the event that data from the watershed-wide water quality monitoring program indicate that water quality objectives for indicator bacteria are still being exceeded after the CBRP is fully implemented.

j. A schedule for developing a CBRP needed to comply with the urban wasteload allocation for indicator bacteria during wet weather conditions (November 1st thru March 31st) to achieve compliance by December 31, 2025.

1.5.2 Applicability

The applicability of this CBRP is limited to the following:

- *Bacterial Indicator Sources* – The CBRP is designed to mitigate controllable urban sources of bacterial indicators that cause non-attainment of bacterial indicator water quality objectives at the watershed-wide compliance sites.
- *Jurisdiction* – Though additional responsible parties are named in the TMDL, this CBRP document only applies to the City of Pomona.
- *Hydrologic Condition* – This CBRP applies only to urban discharges from the MS4 during dry weather conditions that have the potential to impact the downstream watershed-wide TMDL compliance monitoring site.
- *Seasonal Condition* - This CBRP applies only to urban discharges from the MS4 during the period April 1st through October 31st.

1.5.3 Compliance with Urban Wasteload Allocation

The City of Pomona has developed a CBRP that is designed to achieve compliance with the dry season urban wasteload allocation by the compliance date of December 31, 2015. Compliance with the wasteload allocations can be measured in several ways:

- Water quality objectives are attained at the watershed-wide compliance sites established as part of the implementation of the TMDL (see Attachment C). If not attained, then it must be demonstrated that bacterial indicators from controllable urban sources are not the cause of non-attainment.
- Compliance with controllable urban source wasteload allocations demonstrated from specific MS4 facilities, e.g., sampling demonstrates that controllable urban sources discharged from MS4 outfalls or drains are in compliance with the wasteload allocation during dry weather conditions.
- MS4 facilities, e.g., outfalls, are dry, or that flows from these MS4 outfalls are infiltrating prior to connection with impaired waterbodies, and thus not contributing dry weather flow (DWF) to downstream waters.

1.5.4 CBRP Conceptual Framework

CBRP implementation relies on a step-wise approach that implements key actions to identify controllable urban sources of bacterial indicators, evaluate and select a mitigation alternative, and, where necessary, construct structural BMPs to mitigate controllable sources. This pragmatic approach is a direct extension of the already Santa Ana RWQCB-approved watershed-wide compliance monitoring program, Urban Source Evaluation Plan (USEP), and framework established by the SWQSTF, which is proposed for implementation through the 2012 Basin Plan amendment. Coupled with this pragmatic approach is the incorporation of existing and relevant Los Angeles County MS4 permit requirements. These requirements are supplemented, where needed, to target controllable urban sources of bacterial indicators.

The demonstration of compliance with the MSAR Bacteria TMDL (see Section 3) assumes SWRCB and EPA Region 9 approval of the Santa Ana RWQCB-approved Basin Plan amendments. These amendments establish the following framework.

First, the bacteria objectives and related wasteload allocations should only be applied to waterbodies designated REC-1 and the Santa Ana RWQCB is working closely with MSAR MS4 Permittees to identify the various storm water channels that should be reclassified. This assumption governs the range of compliance alternatives that could be proposed in the CBRP. In particular, the MSAR Permittees plan to install regional treatment facilities, where needed, to ensure urban discharges comply with bacteria objectives in 303(d) listed streams. This depends first on amending the Basin Plan to make clear that the same objectives are not intended to apply in the concrete-lined flood control channels that are tributary to natural streams. Without such clarifications, it is uncertain whether regional treatment facilities would be permitted under federal law. The MSAR Permittees have not identified any actions that would be taken to meet bacteria standards if the Basin Plan amendments are not approved, because we know of no feasible means to assure compliance with the wasteload allocation at each urban stormwater outfall to every flood control channel.

Second, the CBRP is designed to mitigate controllable urban sources of bacteria to the maximum extent practicable because the MSAR Permittees lack sole authority to determine what mitigation measures will be permitted under law. Several different federal, state and local agencies must approve the various projects designed to achieve compliance with the urban wasteload allocation. However, there is no assurance that such approvals can be obtained given the need to simultaneously protect other designated beneficial uses (e.g. aquatic habitat, groundwater recharge) in the watershed. To the extent that the MSAR Permittees may be restricted from implementing the most effective methods for reducing urban discharges of bacteria, the only legal alternative is to select a different strategy that achieves compliance to the maximum extent practicable. This merely represents a practical regulatory reality and is not intended to serve as an excuse for making anything other than the best effort possible to meet water quality standards.

Third, the MSAR Permittees believe strongly that eliminating controllable discharges is, by far, the best way to assure compliance with the urban wasteload allocation. In general, there should be little or no urban runoff discharges during dry weather conditions. Mass balance analysis indicates that the greatest water quality improvement would come from focusing on the relatively small nuisance flows associated with excess landscape irrigation and other common activities (car washing, driveway cleaning) common to residential areas. Reducing such flows not only offers the best method for reducing bacterial loads from controllable urban sources, it will help the MSAR Permittees comply with the conservation requirements specified in SB x7-7 (aka "20 percent by 2020"). The fact that similar efforts are already required in the MS4 Permit only increases our commitment to implement the strategy with great diligence and a stronger sense of urgency.

Fourth, the CBRP presumes that compliance with the wasteload allocation must be demonstrated by actual water quality monitoring data. Such data will be regularly collected at monitoring sites designated by the Santa Ana RWQCB. Such locations are commonly referred to as "watershed-wide compliance sites." The MSAR Permittees recognize that the Basin Plan and the permit require discharges to meet water quality standards throughout the watershed regardless of which specific locations are selected for routine sampling. The text of the CBRP uses the phrase "watershed-wide compliance sites" to distinguish these locations from other sites, such as those that are part of the USEP, that are sampled far less frequently. The MSAR Permittees fully expect that all water quality monitoring requirements associated with the CBRP will be reviewed and updated on a regular basis and that the Santa Ana RWQCB may request new or different sampling locations before reauthorizing the monitoring plan.

Without adoption of Basin Plan amendments, the estimated cost of compliance with the MSAR Bacteria TMDL is in excess of $2 billion, which has the potential to cause significant societal economic hardship (CDM, 2010).

1.5.5 CBRP Roadmap

The CBRP is presented in two parts: (1) primary sections that provide an executive level summary of the components, schedule, strategy, and technical basis for the CBRP; and (2) supporting attachments that provide additional information to support the primary sections. Following is a summary of the purpose and content of the remaining sections of the CBRP:

- ***Section 2*** – Provides an executive level summary of the following components of the CBRP: Implementation Steps, Program Elements, Implementation Schedule, and Compliance and Iterative/Adaptive Management Strategies.
- ***Section 3*** – Provides the technical basis for the conclusion that full implementation of the CBRP will achieve compliance with the urban wasteload allocation under dry weather conditions.
- ***Section 4*** - Provides the schedule for development of the CBRP for achieving compliance with urban wasteload allocations under wet weather conditions.

The above sections are supported by the following attachments:

- ***Attachment A, TMDL Implementation*** – Documents the outcome of the numerous TMDL monitoring and source evaluation activities completed to date.
- ***Attachment B, Watershed Characterization*** – Provides background information regarding the general characteristics of the MSAR watershed, including major subwatersheds, key jurisdictions and dominant land use.
- ***Attachment C, CBRP Program Elements –*** Provides additional information relevant to each of the Program Elements summarized in Section 2.2.
- ***Attachment D, Existing Urban Source Control Program -*** Documents existing MS4 permit activities that have been implemented by the City of Pomona stormwater program.
- ***Attachment E, Implementation Schedule –*** Provides additional information regarding the implementation schedule summarized in Section 2.3.
- ***Attachment F, Glossary***
- ***Attachment G, References***

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Section 2
CBRP Implementation Program

The City of Pomona intends to achieve compliance with the wasteload allocation using a variety of implementation strategies, including: evaluating the need for new water conservation ordinances to reduce urban runoff from landscape irrigation, more rigorous enforcement of existing ordinances to reduce water waste and control pet waste, management of homeless encampments and other illicit discharges, enhanced septic system management, improved street sweeping programs, and implementation of other structural BMPs designed to intercept, retain, divert or treat controllable urban DWF during dry weather conditions. A multi-step procedure will be used to select and implement the most appropriate control strategy for each MS4 outfall in the City that is tributary to an impaired waterbody.

The City of Pomona's CBRP Implementation Steps are the same as for other MSAR Permittees. CBRPs have been developed and approved for San Bernardino and Riverside Counties MS4 Permittees in the MSAR watershed (http://www.waterboards.ca.gov/santaana/water_issues/programs/tmdl/msar_tmdl.shtml), and a CBRP for the City of Claremont is currently under development. The actions of the City of Pomona will address the specific needs of the local sub-watershed.

Prior to developing this CBRP, the City of Pomona has been an active participant in the MSAR TMDL Task Force, and has implemented comparable programs to San Bernardino and Riverside County MSAR Permittees, which satisfy the initial steps of their respective CBRPs. Thus, the City has already completed a portion of this CBRP and intends to maintain implementation efforts on a similar schedule as those other MSAR Permittees.

2.1 CBRP Implementation Steps

The City of Pomona will implement the CBRP using a stepwise project approach. This approach incorporates three distinct steps encompassing six specific actions (Figure 2.1).

Step 1 – Identify, Prioritize, and Evaluate MS4 Dry Weather Flow Sources

Step 1 project activities include implementation of non-structural BMPs (see CBRP Program Elements, below) and inspection activities (No. 1 – Figure 2.1). These inspections (or urban source evaluation investigations) occur systematically in each area draining to a watershed-wide compliance site. For each key drainage area source evaluation activities are implemented to (a) identify controllable MS4 dry weather flow sources and their contribution to elevated bacterial indicator concentrations; (b) prioritize controllable dry weather flow sources for follow-up mitigation activity (No. 2 – Figure 2.1); and (c) identify alternatives to mitigate prioritized controllable urban sources (No. 3 – Figure 2.1).

The City of Pomona has completed the first two items in this schedule of key implementation actions. Monitoring for ten consecutive weeks in the 2011 dry season for *E. coli* and *Bacteroides* in Chino Creek upstream of the confluence with San Antonio Channel (Site ID - CHINOCRK) provided Tier 1 data for the majority of Pomona's drainage area in the MSAR watershed. These results were merged with all other Tier 1 data and included in the prioritization of MS4 drainage areas for source evaluation (see Attachment B). The CHINOCRK site was determined to be high priority, and therefore the City of Pomona is currently implementing a Tier 2 source evaluation in this drainage area.

Completion of Step 1 achieves four outcomes:

- Documentation of a prioritized list of drainage areas where mitigation of dry weather flow/bacterial indicators is deemed necessary to comply with urban wasteload allocations applicable to the MS4;
- For each prioritized drainage area requiring action, implementation of activities to identify non-structural or structural BMP alternatives to mitigate controllable urban bacterial indicator sources (No. 4 – Figure 2.1).
- If non-structural BMPs can mitigate the source(s), initiation of new, enhanced or more targeted non-structural BMPs (see CBRP Program Elements, below); and

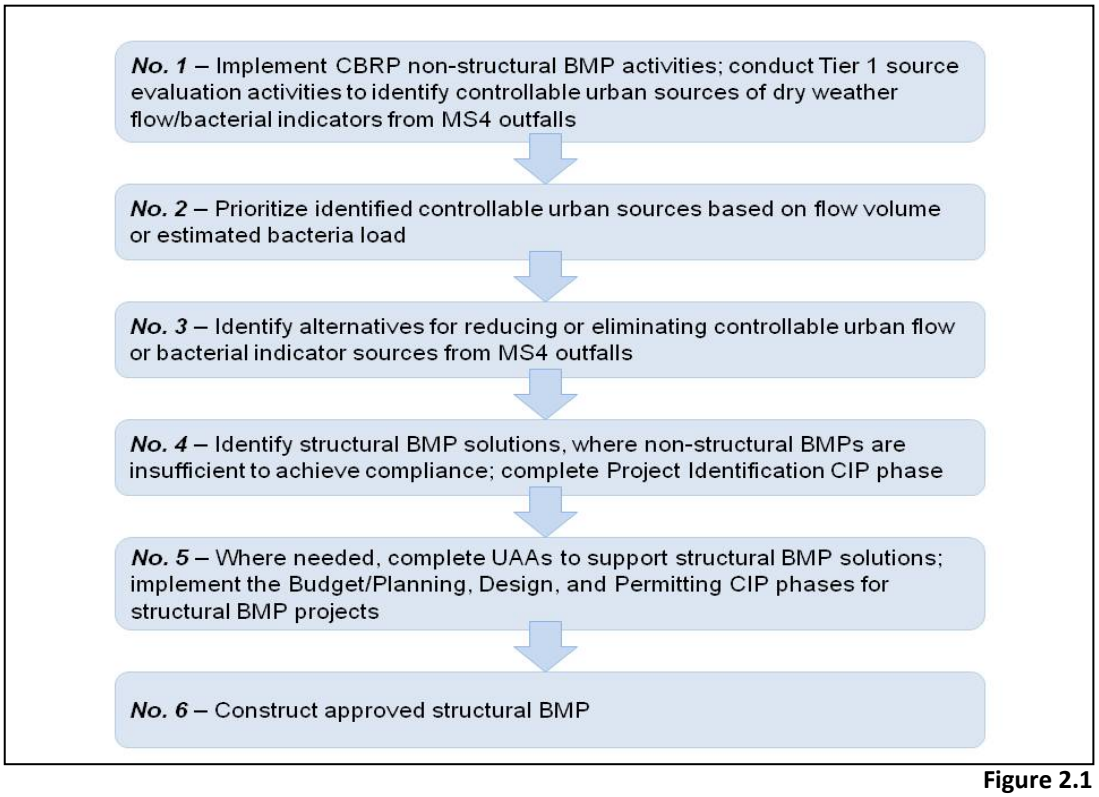

Figure 2.1
Key Implementation Actions

- If structural BMPs are needed, completion of the Project Identification phase of the local Capital Improvement Project (CIP) process, if the project involves an individual Permittee, or identification of the need to implement a multi-jurisdictional process for projects involving multiple Permittees

(Figure 2.2). In addition, it is important to determine the need for a Use Attainability Analysis (UAA) to facilitate a structural BMP solution.

CBRP Step 1 is iterative and will occur over an extended period so that MS4 outfalls in each drainage area can be properly prioritized, investigated and evaluated for mitigation. The expected outcomes from Step 1 activities will be complete in all drainage areas by the first quarter of 2015 (see CBRP Schedule, below).

Project Identification– Identification of a CIP project occurs through one of two mechanisms:

Public agency assessment of a particular site's current conditions to evaluate the need for structural improvements. These needs may be identified from observations of agency staff, routine maintenance / replacement schedules, or other sources internal to the agency.

Receipt of public complaints, requests, or inquiries (presented directly to agency staff or a governing body) regarding an infrastructure concern (e.g., potholes, street flooding), which may result in a site investigation. Based on the outcome of the investigation, an agency may decide that a project needs to be constructed.

Budgeting / Planning - After a project need has been established, staff will implement a process to have the proposed project included in the CIP. Agency staff begins preliminary planning steps to verify the viability of the project and prepares a cost estimate, which along with other new or ongoing infrastructure needs, is used to prioritize the project based on public need, necessity and available funds. This phase typically involves both project planning and preparation of a preliminary design to support development of the cost estimate. With a project budget prepared, staff seeks approval to incorporate the project in the CIP. In some cases preliminary planning efforts may determine that a proposed project is not viable due to environmental constraints, community opposition, engineering limitations or other factors. In such cases a project is typically abandoned and alternative solutions are considered.

Design - Once a project is in the CIP, design work to prepare construction drawings and project specifications can begin. Based on project complexity, the time required to complete the design varies from less than a year to several years. During the design phase, and sometimes beginning in the budgeting / planning phase, staff initiates the California Environmental Quality Act (CEQA) process. Depending on the nature of the project or the need for special permits, obtaining CEQA approval can significantly affect the timeline to construct a project. Projects may also be abandoned in the design phase as the project is further refined. Factors such as changes to the project's preliminary design parameters, soils, groundwater and utility investigations, and regulatory issues can impact the viability of a project during its refinement in the design stage.

Permitting– During this phase, all required permits and approvals for construction are obtained. The process for obtaining permits and approvals typically begins during the design phase and sometimes begins as early as the budgeting / planning phase. Depending on the nature of the project or the need for special permits, obtaining all required permits and approvals can significantly affect the timeline to construct a project and in some cases result in cancellation of the project. If this occurs, then alternative solutions are considered.

Construction– Construction can begin upon design completion, receipt of all required permits and approvals, completion of all administrative requirements, and availability of funds. Depending on the complexity and size of the project, right of way acquisition timelines, CEQA documentation and approvals, and involvement of other agencies, e.g., utilities, the construction phase can take anywhere from a few months to several years.

Figure 2-2
Typical Capital Improvement Project (CIP) Process for Local Permittee Projects

Step 2 – Evaluate and Select Structural BMP Projects

The City anticipates that structural BMPs (outfall-specific or regional) may be required to mitigate some controllable urban sources of dry weather flow or bacterial indicators. A prioritized list with locations for these structural BMPs is a Step 1 outcome. Under Step 2, the identified structural BMP projects move forward in the CIP Process (No. 5 – Figure 2.1). Potential Step 2 outcomes include:

- Completion of UAAs deemed necessary to support implementation of a structural BMP project.
- Completion of the Budget/Planning, Design and Permitting CIP phases (see Figure 2.2) for each structural BMP project involving an individual Permittee or implementation of the multi-jurisdictional process to plan, design, and permit a small regional or sub-watershed treatment facility (Table 2-1).

Table 2-1. Estimated Timeline to Develop Small Regional or Sub-Watershed Treatment Facilities

Project Phase - Average Time to Complete	Project Step	Activity
Phase 1 - 18 months	Local Jurisdiction Preliminary Engineering Review	Identify project operational parameters within context of potential joint use arrangement
	Project Financial Feasibility and Funding Source Scoping	Identify project costs, land acquisition and funding mechanisms
	Project Placement Review	Identify placement parameters within context of potential joint use arrangement
Phase 2 - 18 months	Pre-Application Project Environmental Review	Identify environmental requirements and project constraints
	Joint Use Jurisdictional Agreement Formation Committee	Establish Joint Use Jurisdiction Agreement to guide project development
	Joint Use Project Development Committee	Review Final Project Concept within context of stakeholder interests
Phase 3 - 18 months	Underlying Landholder Project Coordination	Establish final structure for landholder agreements/acquisitions and long-term operational requirements to be included in landholder agreements/disclosures
	Joint Use Final Project Approval	Finalize construction funding mechanisms, joint use responsibilities, operational funding mechanisms, underlying property owners rights and responsibilities, and long-term environmental roles and responsibilities
	Joint Use Facility Project Development Committee: Procurement	Retain firms with appropriate engineering, environmental expertise to design project
Phase 4 - 18 months	Joint Use Facility Project Development Committee: Design & Permitting	Oversee design process, review plans and environmental submittals for compliance with project objectives
	Project Bidding and Contractor Qualification Phase	Solicit construction bids; contracts awarded only when all environmental clearances, permits and approvals obtained and full package submittals are signed and approved by authorizing jurisdiction

Similar to the Step 1 schedule, Step 2 will occur over an extended period to move each planned structural BMP project forward to the point where the final phase can be initiated – Construction. Because Step 2

includes initiation of the CEQA process and may include establishment of multi-jurisdictional agreements, the timeline for moving all planned structural BMPs to the point where construction can be initiated may be lengthy. Also, as noted above, situations may occur where through the planning and design phases a proposed project is determined to be infeasible. If that occurs, a different alternative to mitigate the controllable urban bacterial indicator source will be sought.

Step 3 – Construct Structural BMP Projects

Step 3 focuses on construction of structural BMP projects. The schedule for construction cannot be established at this time given the City's requirement that any project move through the appropriate planning, design and permitting processes. However, as construction dates become known, these will be reported to the RWQCB as part of the CBRP reporting process.

2.2 CBRP Program Elements

The Santa Ana RWWCB NPDES Waste Discharge Requirements for the implementation of bacterial indicator TMDLs for the MSAR watershed waterbodies issued to the Cities of Claremont and Pomona established four required CBRP program elements (Order No. R8-2013-0043, NPDES No. CA8000410 Section III.B.2). These elements, which are tools for implementing the CBRP, encompass a range of potential non-structural and structural BMP activities:

- Element 1 - Ordinances
- Element 2 - Specific BMPs
- Element 3 - Inspection Criteria (for the purposes of the CBRP, this element includes urban source evaluation activities)
- Element 4 - Regional Treatment (for the purposes of the CBRP, this element includes both outfall-specific and regional structural BMP projects)

Table 2.2 summarizes the relationship among these required CBRP program elements and the three implementation steps and associated implementation actions described above (see Figure 2-1). The following sections summarize the key components of each CBRP program element (see Attachment C for a detailed presentation of these elements).

Table 2.2. Relationship between Implementation Steps and Actions and Required CBRP Elements

CBRP Steps	Implementation Actions (Figure 2-1)	Relevant Required CBRP Elements
1	Nos. 1, 2, 3, and 4	Elements 1, 2, 3
2	No. 5	Element 4
3	No. 6	Element 4

Element 1 – Ordinances

The CBRP requires the identification of specific ordinances that will be adopted during implementation to reduce bacterial indicators in controllable urban dry weather flow sources. Three types of ordinances have been included in the CBRP: Water Conservation, Pathogen Control, and Low Impact Development. Following is a brief statement regarding the purpose and potential water quality benefits that may be incurred.

Water Conservation Ordinance

Purpose – Evaluate the existing water conservation ordinances to determine if adequate authority available to manage water use to reduce dry weather flows to the MS4.

Implementation Approach – The City will evaluate existing ordinances and authority (including enforcement authority) available to manage dry weather runoff from water use practices in its jurisdiction. Modifications to these ordinances will be made, where appropriate. This effort will be implemented in coordination with implementation of BMPs related to irrigation or water conservation practices (see below).

Expected Benefits – Improved water management reduces dry weather discharge to the MS4, which reduces opportunity for the discharge to or mobilization of bacteria in the MS4. A corollary benefit is enhanced water conservation consistent with other state policies and regulatory requirements.

Low Impact Development Ordinance

Purpose – Evaluate existing ordinances to lessen the water quality impacts of development by minimizing pollutant loading from impervious surfaces.

Implementation Approach – The City will evaluate existing ordinances and consider adoption of new ordinances to implement this BMP. Based on this evaluation the City will revise existing ordinances or adopt new ordinances, as needed, to fulfill this CBRP requirement and comply with the Los Angeles County MS4 permit requirement to "minimize the adverse impacts from storm water runoff on the biological integrity of Natural Drainage Systems."

Expected Benefits – Using low impact development (LID) strategies to mimic pre-development hydrology in areas of new development and redevelopment will reduce the volume of storm water runoff and storm water discharge in the MS4, reducing the opportunity for the discharge of bacteria in the MS4.

Element 2 – Specific BMPs

The CBRP requires the identification of specific BMPs that will be implemented to reduce controllable urban sources of bacterial indicator. Selected BMPs range from programmatic activities that set the stage for other CBRP elements (e.g., dry weather flow source evaluation activities) to specific activities that can reduce dry weather flows or mitigate controllable urban sources of bacterial indicators. Some of the included BMPs are also MS4 permit requirements. In addition, some of the selected BMPs may be coordinated between Los Angeles, San Bernardino, and Riverside Counties to streamline the level of effort required to implement the BMP.

Transient Camps

Purpose – Evaluate the potential for transient camps to contribute bacterial indicators to MS4 dry weather flow, and if determined necessary, develop and implement transient camp closure activities.

Implementation Approach – The City will identify locations of suspected transient encampments in or immediately adjacent to receiving waters or MS4 facilities. Once identified, an investigation at one or more locations will evaluate potential DWF water quality impacts from transient camps. If transient camps are identified as a potential controllable urban bacterial indicator source in DWF, the City will develop a model program to address transient encampments targeted for closing because of expected water quality impacts. As determined necessary, implement transient camp closures and follow-up activities to prevent re-establishment of closed camps in the same locations.

Expected Benefits – Closure of transient camps in locations where it is determined that the encampment is contributing bacterial indicators to dry weather flows eliminates a bacterial indicator source.

Illicit Connection and Illicit Discharge Elimination Program

Purpose – The LA County MS4 permit requires the development of an Illicit Connection and Illicit Discharge (IC/ID) Elimination program to supplement ongoing permit implementation efforts. Completion of this requirement will enhance existing tools to reduce or eliminate dry weather flows to the MS4.

Implementation Approach – The City will complete development of the IC/ID program as required by the MS4 Permit. The program will be used to support MS4 inspection activities to reduce or eliminate dry weather flows to the MS4 (see below).

Expected Benefits – Completion of this program provides additional tools to guide efforts to reduce or eliminate dry weather flows to the MS4.

Street Sweeping and Catch Basin Cleaning

Purpose – Evaluate existing street sweeping and catch basin cleaning programs to determine if the ongoing program can be enhanced to further reduce presence of controllable bacterial indicators on street surfaces.

Implementation Approach – The City will evaluate the existing street sweeping and catch basin cleaning programs (e.g., method, frequency, and equipment) to determine the potential to modify the program to further reduce bacteria on street surfaces and within MS4 facilities. Where opportunities exist, changes will be made to the program. If it is determined that a change in equipment can provide water quality benefits, the MSAR Permittees will work with their respective governing bodies to obtain funding to upgrade/replace equipment.

Expected Benefits – Reductions in bacterial indicators in MS4 outfalls (as a result of mobilization by dry weather flows to the MS4) may occur where it is determined that enhancements to the existing street sweeping program will further reduce bacteria present on street surfaces.

Irrigation or Water Conservation Practices

Purpose – Implementation of BMP practices that reduce outdoor water use and discharge of DWF to the MS4.

Implementation Approach – The City will evaluate options and minimum requirements for implementation of irrigation and outdoor water conservation BMPs. Implementation will be closely coordinated with the Water Conservation Ordinance activity described above. Based on the findings of the evaluation the City will coordinate implementation of outdoor water conservation BMPs.

Expected Benefits – Improved local water management will reduce dry weather water use discharges to the MS4, which will reduce opportunity for discharge or mobilization of bacteria as a result of MS4 discharge. A corollary benefit is enhanced water conservation consistent with other state policies and regulatory requirements.

Planning and Land Development Program

Purpose – The MS4 Permit requires the implementation of a Planning and Land Development Program that incorporates low impact development (LID) practices to reduce runoff from new development and

significant redevelopment activities. This requirement is included as a BMP since implementation of LID practices can reduce dry weather flows to the MS4, especially where they are applied to significant redevelopment activities.

Implementation Approach – The City of Pomona is developing revised guidelines for developers to ensure that new development and redevelopment projects meet the criteria contained in the MS4 Permit, including prioritization of LID BMPs. Once implemented, LID practices will be applied to development projects subject to the LID-based requirements.

Expected Benefits – For new development the benefits are expected to be mostly limited to wet weather runoff, because it is assumed that no DWF is generated from the predevelopment condition. However, for significant redevelopment projects, the potential for reduced dry weather flows to the MS4 will be realized through the reconfiguration of the site to accommodate LID practices (e.g., runoff from irrigation can be managed to stay onsite rather than runoff to the MS4).

Septic System Management

Purpose – Evaluate potential for septic systems in the City to contribute controllable bacterial indicators to the MS4 during dry weather conditions.

Implementation Approach – The City will develop an inventory of existing septic systems, map the location of these facilities relative to the MS4 to evaluate potential impacts to water quality in the MS4, conduct public education to ensure proper operation and maintenance of septic systems, and conduct inspection and enforcement activities, where appropriate to reduce potential for septic systems to impact water quality.

Expected Benefits – Implementation of this BMP reduces the potential for septic systems to contribute bacterial indicators to the MS4 during dry weather conditions.

Pet Waste Management

Purpose – Implementation of BMPs that target areas where there is a high volume and concentration of pet waste, e.g., parks

Implementation Approach – The City will evaluate existing authority and programs to manage pet waste to identify opportunities to further target BMPs to manage pet waste. Where appropriate, the City will implement these BMPs.

Expected Benefits –BMPs targeted specifically to pet waste management (in association with a pathogen control ordinance) can support compliance at a local scale, where pet activities are concentrated.

Element 3 – Inspection Criteria (Urban Source Evaluation)

Purpose – Implementation of urban source evaluation activities provides the data required to determine the potential for an MS4 outfall or drainage area to discharge controllable sources of bacterial indicators. The results of this evaluation dictate next steps in the CBRP implementation process.

Implementation Approach – The City will implement urban source evaluation activities using a comprehensive, methodical approach that provides data to make informed decisions regarding the potential for an MS4 outfall or group of outfalls to discharge controllable sources of bacterial indicators. This approach relies on the following activities:

Tier 1 Reconnaissance – Tier 1 sites are defined as locations where urban sources of dry weather flow may directly discharge to a downstream watershed-wide compliance site. The city of Pomona has 3 major MS4 systems outfall to either Chino Creek or San Antonio Channel. The Tier 1 reconnaissance will characterize DWF and bacteria from these sites.

Prioritization – Based on the findings from Tier 1 data collection activities, MS4 drainage areas with potentially controllable urban sources of bacterial indicators will be prioritized based on factors such as the magnitude of bacterial indicator concentrations and results from source tracking analyses. Areas with human sources (as compared to anthropogenic sources such as domestic pets) will receive the highest priority for action.

Evaluate Mitigation Alternatives – In order of priority, prioritized drainage areas will be further evaluated to identify non-structural or structural alternatives (or some combination of both) for mitigating controllable urban sources of bacterial indicators. As needed, this controllability assessment will include reconnaissance of Tier 2 sites and the use of IC/ID methods to identify and evaluate alternatives. Tier 2 sites are tributary to Tier 1 outfalls. Tier 2 sites within the City of Pomona will be predominantly underground storm drains. If a Tier 2 site is determined to be a potential contributor to non-compliance, additional inspection activities may need to be conducted to identify the nature and source of the dry weather flow and bacterial indicators and evaluate controllability.

Select Mitigation Alternatives – The MSAR Permittees will select a mitigation alternative to mitigate controllable urban bacterial indicator sources in each prioritized drainage area. If the selected alternative involves a structural BMP, the Project Identification phase of the CIP process is implemented to establish the project need.

Expected Benefits – This element is key to the CBRP implementation, as it provides the data required to make informed decisions regarding: (1) selection of BMPs to mitigate controllable urban sources of bacterial indicators; (2) establishment of a priority, process, and schedule to implement the selected mitigation alternative.

Element 4 – Regional Treatment (Structural Controls)

Purpose – Plan, design and construct structural BMPs to mitigate controllable urban sources of dry weather flow and bacterial indicators. BMP projects may be regional (address controllable sources from multiple outfalls) or outfall-specific.

Implementation Approach – The outcome from CBRP Step 1 implementation may result in the identification of structural BMPs to manage controllable urban bacterial indicator sources. Consistent with the MS4 Permit, BMPs that promote groundwater recharge or other retention processes such evapotranspiration or onsite use will be prioritized. Once a structural BMP project is identified the appropriate process for planning, design and permitting will commence. For localized projects the CIP phases described in Figure 2-2 will guide the process. However, if a small regional or sub-watershed treatment facility is planned, then the process described in Table 2-1 guides the process. Completion of structural BMP projects is subject to governing body approval, CEQA approval and funding availability. Accordingly, the length of time from project identification to construction completion will be highly variable. Also, as noted above, situations may occur where through the planning and design phases of a proposed project it may determine to be infeasible. If that occurs, a different alternative to mitigate the controllable urban bacterial indicator source will be sought.

Expected Benefits – Completion of structural BMPs, where determined necessary, will mitigate controllable urban sources of bacterial indicators.

2.3 Implementation Schedule

Figure 2-3 summarizes the CBRP implementation schedule for the various required CBRP elements. A more detailed schedule, which includes information regarding milestones, metrics and responsibilities, is provided in Attachment E. Color differences in the timeline for a particular activity illustrate shifts from BMP development to BMP implementation. For example, until a structural BMP has been successfully incorporated into the CIP or is being implemented as part of a multi-jurisdictional effort, the structural BMP is considered in development. However, once the planning, design and permitting phases are moving forward, the BMP is considered in the implementation phase, unless the project is determined to be infeasible at some point during the final planning, design and/or permitting phases.

Elements 1, 2, and 3 will be completed and fully implemented by December 31, 2015. It is expected that Elements 1, 2 and 3 should independently attain the MS4 permit's water quality based effluent limits for the MSAR TMDL (See Section 3 for Reasonable Assurance Analysis). However, Capital Projects may be more cost effective or necessary in some cases to attain the water quality based effluent limits. Element 4 will identify structural BMPs by December 31, 2015 believed necessary to attain the MS4 permit water quality-based effluent limits for the MSAR TMDL. Completion of subsequent project development phases will likely occur beyond the end of 2015 (gray shaded area of Figure 2-4).

2.4 Compliance and Iterative/Adaptive Management Strategies

The CBRP establishes a program to reduce controllable urban sources of bacterial indicators based on currently available information. Significant uncertainties remain considering the state of science regarding bacterial indicator management in urban environments (e.g., CREST 2007). Additionally, bacterial indicator sources are not static; e.g. homeless encampments are transitory in nature and the significance and magnitude of their impacts on water quality may be the function of various factors including the economy, available social service programs and other factors beyond the City of Pomona's control. Similar issues impact irrigation runoff control programs, septic system management programs and other control programs for potential urban sources of bacterial indicators. Therefore, the CBRP includes a compliance strategy to guide decision-making during the implementation process, and an iterative and adaptive management strategy for making course corrections to the CBRP as new data are collected and evaluated.

Compliance Strategy

Figure 2-4 illustrates the overall CBRP compliance strategy, consistent with the three CBRP Steps and the Implementation Actions described above (e.g., Figure 2-1). The CBRP is designed to mitigate controllable[1] urban sources of bacterial indicators that cause non-attainment of water quality objectives at the watershed-wide compliance sites. The CBRP is not intended to address bacterial indicator impairments attributable to non-MS4 sources (e.g., agricultural or water transfers), or sources that cannot be accounted for, e.g., wildlife sources or sources that arise from within the impaired waterbody.

[1] Controllable sources will be defined by the Santa Ana Basin Plan Amendment applicable to recreational uses and objectives (see Section 1.5.4).

Figure 2-4 highlights three key decision points that occur during implementation of the compliance strategy:

- ***Decision Point #1*** – Distinguish between controllable urban bacterial indicator sources associated with the MS4 and other potential non-urban sources of bacterial indicator impairment.
- ***Decision Point #2*** – Prioritize MS4 drainage areas for establishment of mitigation alternatives where MS4 outfalls are determined to be contributing to impairment at watershed-wide compliance sites.
- ***Decision Point #3*** – Select mitigation alternative – non-structural or structural BMPs.

Fundamental to the compliance strategy is the development and implementation of ordinances and specific BMPs targeted to reduce controllable urban sources of dry weather runoff and bacterial indicators from the MS4 (Figure 2-4, Box 1). To determine whether controllable urban sources are present, CBRP Step 1 includes comprehensive urban source evaluation activities to identify sources of dry weather flows to the MS4, especially those that contain bacterial indicator concentrations and sources that may cause or contribute to impairment at watershed-wide compliance sites (see Boxes 2 and 3).

The results from urban source evaluation activities lead to the first decision point in the compliance strategy. The City will evaluate the potential for MS4 discharges to be contributing controllable sources of bacterial indicators. Where controllable MS4 sources are identified, those areas of the MS4 remain under the CBRP (***Decision Point #1***, Boxes 4 and 5). Where controllable sources are not present and the MS4 is not the cause of impairment, those areas would be addressed outside of the CBRP (Boxes 12 through 14).

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CBRP Program			Implementation Schedule: Development Activity: / Implementation Activity:																				
			2011		2012				2013				2014				2015				Post 2015 - Continuous improvement through Iterative / Adaptive Management Strategy			
CBRP Element	**Key Implementation Actions**	**Specific Activity**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**				
1 - Ordinances	No. 1 – Implement non-structural BMP activities; conduct Tier 1 source evaluation activities to identify controllable urban sources of dry weather flow/bacterial indicators from MS4 outfalls	Water Conservation																						
		Low Impact Development																						
2 - Specific BMPs	No. 1 – Implement non-structural BMP activities; conduct Tier 1 source evaluation activities to identify controllable urban sources of dry weather flow/bacterial indicators from MS4 outfalls	Transient Camps																						
		IC/ID Program Evaluation																						
		Evaluate Street Sweeping Program Enhancement																						
		Targeted Irrigation & Water Conservation Practices																						
		LID for New Development and Significant Redevelopment																						
		Septic System Management																						
		Pet Waste Management																						
3 - Inspection Criteria	No. 1 – Implement non-structural BMP activities; conduct Tier 1 source evaluation activities to identify controllable urban sources of dry weather flow/bacterial indicators from MS4 outfalls	Tier 1 Sites																						
	No. 2 - Prioritize identified controllable urban sources based on flow volume or estimated bacteria load	Prioritize Key Drainage Areasand Develop Tier 2 Approach																						
	No. 3 – Identify alternatives for reducing or eliminating controllable urban flow or bacterial indicator sources from MS4 outfalls	Tier 2 Source Evaluation and Identification of Mitigation Alternatives																						
	No. 4 – Identify structural BMP solutions, where non-structural BMPs are insufficient to achieve compliance; complete Project Identification CIP phase	Select Mitigation Alternatives																						
		Project Identification																						
4 - Regional Treatment (Outfall-Specific or Regional)	No. 5 – Where needed, complete UAAs to support structural BMP solutions; implement the Budget/Planning, Design, and Permitting CIP phases for structural BMP projects	Complete UAAs																						
		Budget/Planning																						
		Design																						
		Permitting																						
4 - Regional Treatment (Outfall-Specific or Regional)	No. 6 – Construct approved structural BMP	Construct BMPs																						
Reporting	Watershed-wide Compliance Monitoring	Dry Season Report		●				●				●				●				●				●
		Wet Season Report				●				●				●				●				●		
		Triennial Reports							●												●			
	CBRP Progress Report	Annual Report		●				●				●				●				●				●

Figure 2-3
CBRP Implementation Schedule

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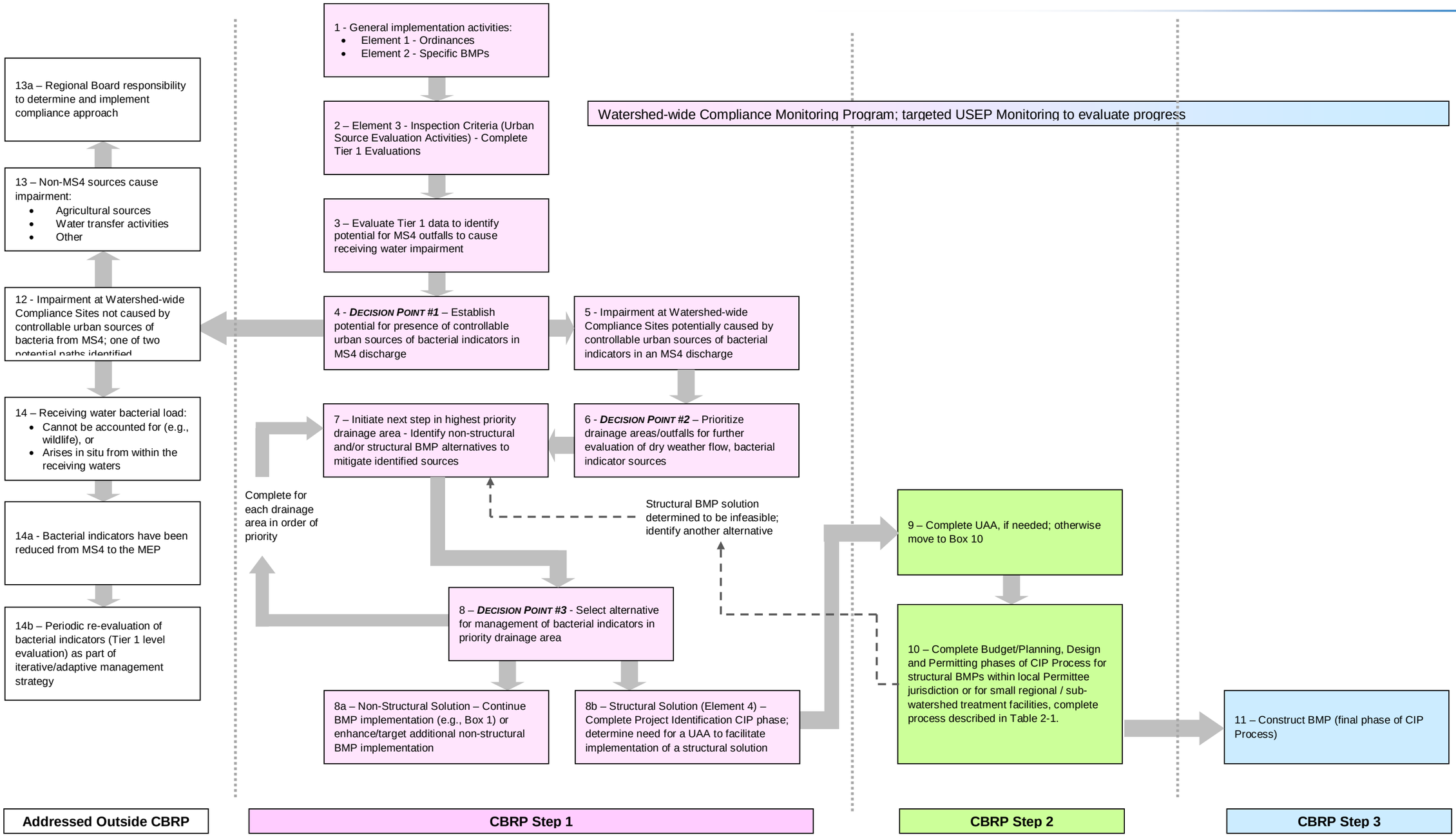

Figure 2-4
CBRP Implementation Strategy

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For MS4 drainage areas that potentially contribute impairment at a watershed-wide compliance site, the City will evaluate data from source evaluation activities to prioritize drainages areas or outfalls for continued work. Prioritization of drainage areas/outfalls is ***Decision Point #2*** (Box 6) and critical to CBRP implementation in an environment with limited resources. Prioritization will consider relative contribution and source of bacterial indicator loads. Highest priority areas are those where controllable human sources of bacterial indicators are present and persistent.

Starting with the highest priority drainage area, the City will conduct inspections and source evaluation activities as needed to identify and evaluate non-structural or structural BMP alternatives to mitigate sources (Box 7). This effort leads to ***Decision Point #3*** (Box 8) – selection of an alternative to mitigate the source. If a non-structural solution is available, the City will implement new, enhanced, or more targeted BMPs. Where a structural solution is deemed necessary – the Project Identification phase will establish the project need and will direct the project towards the appropriate process for working with local governing bodies or multi-jurisdictional stakeholders to move the project forward into planning, design and permitting (CBRP Step 2, Boxes 9, 10).

Regardless of the size of the BMP project, implementation of a structural solution under CBRP Step 2 will require completion of the CEQA process, (and potentially NEPA process if federal land, or federal funding is involved) and input from multiple stakeholders (e.g., regulatory agencies, city councils, environmental advocacy groups, and water supply utilities). Accordingly, from the time a project need is identified through completion of construction, consideration must be given to range of regional and local issues, including, but not limited to:

- Technical feasibility to mitigate the bacterial indicator source;
- Regional water supply management plans and objectives;
- Environmental considerations (e.g., CEQA requirements to assess project impacts on issues ranging from in-stream flow and habitat to energy and greenhouse gas emissions);
- Consideration of alternatives, including use of offset and trading strategies (e.g., a regional project in one area could provide offsets for overall bacterial indicator reductions needed within another area); and
- Economic feasibility, which will consider the capital cost and the long term operation and maintenance cost (which can in some instances exceed the original construction cost over the long-term).

Following completion of CBRP Step 2 activities, the project will either move forward to construction, as funding is available; or be determined to be infeasible. Projects ready for construction are CBRP Step 3 Projects (Box 11). Projects determined to be infeasible will result in the City returning to evaluate other potential mitigation alternatives for the bacterial indicator source (Box 7).

Throughout all CBRP Steps, the Watershed-wide Compliance Monitoring Program will continue at the five watershed-wide compliance sites, including Chino Creek. Sample results from the Chino Creek site along with collected urban source evaluation data provide the basis for evaluating progress towards compliance with TMDL requirements under dry weather conditions. Periodic reporting activities will provide the mechanism for evaluating progress and effectiveness of compliance strategy implementation. Where effectiveness evaluations identify the need to modify the CBRP, this need will be addressed as part of the iterative and adaptive management strategy, as described below.

Iterative and Adaptive Management Strategy

This CBRP is based on the current level of knowledge of controllable urban sources of bacterial indicators. As the CBRP is implemented and new data are generated (especially through source evaluation activities), it expected that this basic level of knowledge will change. Given this expectation, an iterative and adaptive management strategy has been built into the CBRP to provide opportunities to revise the CBRP implementation approach, where appropriate. These opportunities include the following elements:

Triennial Reports – The TMDL requires these reports as part of TMDL implementation. These reports will include an evaluation of CBRP implementation including progress towards meeting the urban wasteload allocation for dry weather conditions in the dry season. This evaluation may include recommendations for CBRP revisions to the RWQCB regarding how new data or programmatic requirements will be incorporated into the CBRP. Two Triennial Reports are associated with the timeline for CBRP implementation:

- *2013 Report* – This report was completed by the Task Force in February 2013 and summarized monitoring data collected through 2012. Results did not show a significant trend of declining bacteria concentration in Chino Creek; however CBRP implementation actions were limited prior to 2012.

- *2016 Report* – This report (due on February 15, 2016) will evaluate the overall effectiveness of CBRP implementation and the status of all structural BMP projects in CBRP Steps 2 and 3. The report will provide the means to determine the extent to which compliance with urban wasteload allocations for dry weather conditions has been achieved. The 2016 Report will also provide detailed descriptions of any additional BMPs planned and the schedule for implementation in the event that water quality data (urban source evaluation activities; watershed-wide water quality monitoring program) indicate that a reasonable potential still exists that completed BMPs, as well as BMPs in process (e.g., structural BMPs still moving through the CIP Process), may not result in compliance with TMDL requirements applicable to the MS4.

MS4 Permit Annual Reports –The City of Pomona's MS4 Permit Annual Report will include a summary of CBRP implementation activities in the MSAR watershed for submittal to the Santa Ana RWQCB. This summary will replace the semi-annual USEP reports as a USEP and MS4 permit reporting requirement. The City's MS4 Annual Reports will also include recommendations to the Santa Ana RWQCB for modifications to the CBRP if alternative approaches or actions are identified that will contribute to the goal to achieve compliance with urban wasteload allocation during dry weather conditions.

Successful CBRP implementation requires timely input and decisions by the Santa Ana RWQCB so that new information or outcomes can be quickly integrated into the decision-making process. This is especially true for efficient implementation of the compliance strategy. Accordingly, the City of Pomona will provide as much advanced notice as possible regarding the need for Santa Ana RWQCB approval of decisions associated with CBRP implementation and any recommendations for CBRP modification

Section 3
Reasonable Assurance Analysis

3.1 Introduction

The MS4 permit requires that the CBRP provide a reasonable assurance analysis (RAA), which contains the scientific and technical documentation used to conclude that the CBRP, once fully implemented, is expected to achieve compliance with the urban wasteload allocation for indicator bacteria by December 31, 2015 (Santa Ana RWQCB Order No. R8-2013-0043, Section III.2.B.i.f). Compliance targets or wasteload allocations were developed for both fecal coliform and *E. coli* bacterial indicators:

- Fecal coliform: 5-sample/30-day Logarithmic Mean less than 180 organisms/ 100 ml and not more than 10 percent of the samples exceed 360 organisms/100 ml for any 30-day period.
- *E. coli*: 5-sample/30-day Logarithmic Mean less than 113 organisms/100 ml and not more than 10 percent of the samples exceed 212 organisms/100 ml for any 30-day period.

The reasonable assurance analysis presented in this section used the 5-sample/30-day logarithmic mean for *E. coli* of 113 cfu/100 ml to demonstrate that this plan, once implemented, is expected to achieve compliance with the urban wasteload allocation. This concentration-based wasteload allocation for the City of Pomona is a target for all urban sources of flow; however, it would be nearly impossible to monitor bacteria at all MS4 outfalls. Consequently, compliance with the bacterial indicator TMDL is assessed at five watershed-wide compliance monitoring locations. This analysis focuses on the Chino Creek monitoring location (WW-C7), as this is the only compliance monitoring location with contributing flows from the City of Pomona jurisdiction.

3.1.1 Overview of Reasonable Assurance Analysis

The reasonable assurance analysis for Chino Creek subwatershed shows that *E. coli* concentrations at the compliance monitoring locations are higher than expected based on an estimate of blended concentration of MS4 and Carbon Canyon WRRF inputs alone. Target reductions in *E. coli* concentration are used to determine the reduction of DWF from MS4s in the watershed that would be needed to comply with the WLAs.

Compliance with the TMDL is demonstrated by showing how the target DWF reduction could be achieved with potential implementation of a mix of ordinance enforcement, outdoor water conservation BMPs, and regional structural BMPs; or by implementing a rigorous inspection and IC/ID program to isolate sources in small drainages, which could be evaluated for controllability. The CBRP includes each of these management strategies, with implementation beginning in the highest priority subwatersheds and following a schedule that begins with source evaluation and IC/ID and non-structural BMP deployment, followed by as needed structural BMPs, where feasible (see Figure 2-1).

3.1.2 Reasonable Assurance Analysis Approach

The following sections provide a detailed description of the methodology employed to demonstrate compliance with the MSAR Bacterial Indicator TMDL WLA. The analysis involved several key questions, including:

- What is the relative contribution of urban DWF volume from MS4 outfalls to receiving waterbodies?
  - This contribution determines the volume of DWF that is potentially controllable by the MS4 program. See Section 3.2.1.
- What are typical levels of *E. coli* in urban runoff during dry weather conditions?
  - The concentration of bacterial indicators in urban DWF is needed to compute water quality benefits associated with DWF reduction. See Section 3.2.2.
- How is compliance with the wasteload allocation for the City best demonstrated?
  - The MS4 Permit allows for two alternative approaches for this RAA to demonstrate that implementation of the CBRP would achieve compliance with the TMDL. See Section 3.3
- What level of implementation of proposed CBRP elements would be sufficient to achieve the targeted DWF reduction?
  - Section 3.5 discusses the water quality benefits (quantifiable and non-quantifiable) expected from CBRP implementation.

3.2 Baseline DWF and Bacterial Indicator Data

3.2.1 DWF Sources to the MS4 System

Continuous DWF exists in Chino Creek and its source waterbodies. Sources of DWF include:

- Tertiary treated effluent from the Carbon Canyon WRRF
- Turnouts of imported water by the MWD purchased for groundwater recharge by water agencies in the Santa Ana River watershed
- Groundwater inflow from areas of rising groundwater
- Temporary de minimums discharges, such as well blow-offs
- Water transfers between water agencies for conjunctive use programs
- Authorized non-stormwater discharges (as defined by WDRs/NPDES Permits issued by the RWQCB)
- Non-permitted discharges including Phase II MS4 discharges.

Each of these sources of runoff has a different pathway and potential to transport bacteria to receiving waterbodies. Thus, it is important to understand the relative role of each of these categories of DWF. Attachment B provided an overview of dry weather hydrology in the MSAR watershed. This information

provides a basis for the RAA provided in the following sections. Additionally, some sources of bacteria are not directly related to MS4 DWF inputs such as birds and other wildlife within waterbodies, resuspension of bacteria in channel bottom sediment, air deposition, and transient encampments.

3.2.2 Data Sources

Flow and bacterial indicator level data are available from several sources for all of the compliance monitoring locations and most of the major tributaries to the impaired receiving waterbodies. Table 3-1 provides a summary of the sources of data used to characterize flow and bacterial indicator water quality in the Chino Creek Subwatershed, with Pomona's outfalls bolded. The majority of the City of Pomona's MS4 within the Chino Creek watershed is characterized by sites CHINOCRK and Pomona SD. Visual flow assessments were conducted at other minor City of Pomona MS4 outfalls by SBCFCD staff during a San Antonio Channel windshield survey in August 2012.

Table 3-1. Available Data for Characterization of DWF and Bacterial Indicators in Areas Draining to Chino Creek at Central Watershed-Wide Compliance Sites

Site	Flow	Bacterial Indicator Concentration
Downstream: Chino Creek at Central Ave (WW-C7)	Watershed-wide field measurements 2007-2009	Watershed-wide compliance monitoring 2007-2013 (n=110)
IEUA Carbon Canyon WRRF Influent	Daily effluent (May 2012 – July 2012)	Assumed effluent of 2.2 MPN/100 ml
Carbon Canyon Creek Channel	SBCFCD Little Chino Creek gauge 2843 (2007-2008)	USEP samples (n=19) Tier 1 Samples - 2012 (n=10)
Chino Creek above Schaeffer	U.S. Geological Survey (USGS) Gauge 11073360 (2005-2009)	None
Chino Storm Drain to San Antonio Channel	Tier 1 field measurements	USEP samples - 2007 (n=19) Tier 1 samples – 2012 (n=4)
Chino Creek upstream of San Antonio Channel (CHINOCRK)	Tier 1 field measurements	Tier 1 samples - 2011 (n=10)
Boys Republic South Channel	Tier 1 field measurements	Tier 1 samples - 2012 (n=10)
Pipeline Ave 84" RCP Outlet under bridge	Tier 1 field measurements	Tier 1 samples - 2012 (n=8)
Yorba Ave extension to Chino Creek	Tier 1 field measurements	Tier 1 samples - 2012 (n=10)
San Antonio Channel at 1st Street Outfall (Pomona SD)	Estimate from field photographs	Tier 1 samples – 2012 (n=7)
Montclair Storm Drain (SAC13)	Estimate from field photographs	Tier 1 samples – 2012 (n=6)
All MS4 outfalls to Chino Creek and San Antonio Channel	Tier 1 Visual Assessment Survey	None

3.2.3 Dry Weather Flow Data Summary

Figure 3-1 displays the subwatersheds represented by each of the Tier 1 stations listed in Table 3-1. Flow data from these sources characterize the role of DWF from MS4 inputs and Carbon Canyon WRRF effluent to flows in Chino Creek at the compliance monitoring location. Column 2 in Table 3-2 shows the median of DWF measurements from upstream Tier 1 sites (MS4 outfalls) and effluent from the Carbon Canyon WRRF in the 2011 (City of Pomona) or 2012 (San Bernardino County MS4 Permittees) dry seasons.

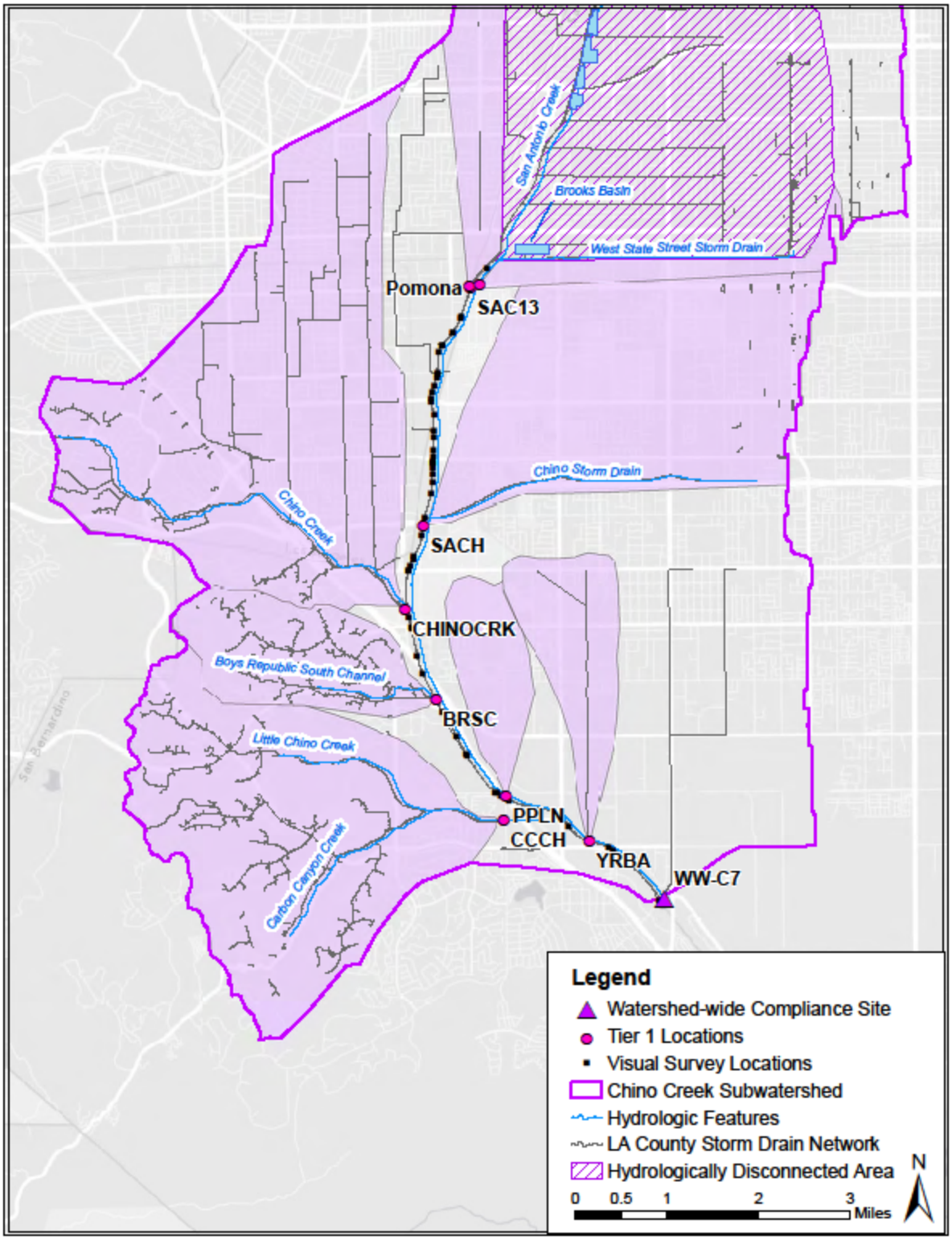

Figure 3-1
Tier 1 Stations

Table 3-2. Arithmetic Average of DWF and Geomean of *E. coli* Concentrations from Tier 1 Sites in the Chino Creek Watershed

Site	Hydrologically Connected Acres	Dry Weather Flow (cfs)	MS4 Dry Weather Flow Generation (gal/acre/day)	Dry Weather Geometric Mean of *E. coli* (cfu/100 ml)
Carbon Canyon WRRF Effluent	n/a	4.88		2.2
T1-CCCH	3,934	4.52	742	70
T1-SACH	5,886	0.01	1	276
T1-CHINOCRK	5,490	1.70	200	536
T1-BRSC	1,027	0.44	279	551
T1-YRBA	942	0.01	8	2,142
T1-PPLN	618	0.01	8	2,329
Pomona SD	1,037	.05	31	450
Montclair SD (SAC 13)	438	.05	74	2,980
Other MS4 Areas	1,500	0.01	5	1,400 [1]

1) No bacteria samples collected, assumed value is estimated from data collected within San Antonio Channel at Mission Ave (SAC 14) in August 2012.

Within the Chino Creek subwatershed there are many MS4 drainage areas that do not typically cause or contribute to flow at the compliance monitoring location. DWF at these MS4 outfalls is hydrologically disconnected from the TMDL receiving waterbodies, by either purposefully recharging groundwater in constructed regional retention facilities or through losses in earthen channel bottoms, where the recharge capacity of underlying soils exceeds dry weather runoff generated in upstream drainage areas (see hashed areas in Figure 3-1). DWF in San Antonio Channel, the largest tributary to Chino Creek, is diverted into a series of retention basins that span from San Antonio Dam to Brooks Basin in the City of Montclair. Downstream of the diversion to Brooks Basin, there is potential for MS4 outfalls to contribute DWF to Chino Creek at the compliance monitoring location.

The rate of DWF per unit drainage area measured at Tier 1 sites varies significantly (Table 3-2). At some MS4 outfalls, higher DWF rates are associated with known areas of rising groundwater in the watershed. Better water quality at these outfalls is frequently in compliance with the *E. coli* WLA. MS4 outfalls with no or minimal DWF were typically associated with smaller urban MS4 drainage areas. In such cases, it may be more effective to manage DWF near the outfall in small scale BMPs, as opposed to embarking on rigorous Tier 2 inspection program activities.

In addition to typical DWF sources within MS4 drainage areas, it was necessary to obtain information regarding other non-MS4 sources of DWF in receiving waterbodies. The primary non-MS4 source of DWF in Chino Creek is Carbon Canyon WRRF effluent. In recent years, Carbon Canyon WRRF effluent discharge rates to Chino Creek have declined as a result of increased recycling of effluent to serve indirect and direct reuse projects.

MS4 sources of DWF at the CHINOCRK site averaged 1.7 cfs which represents most of DWF inputs from the City of Pomona to Chino Creek. DWF rates at the Pomona SD and at other drains to San Antonio Channel were estimated to combine to a total DWF input of less than two gallons per minute (<0.005 cfs). Overall, the contribution of MS4 DWF from all urban areas is roughly half of total downstream flow in the Chino Creek subwatershed. This fraction is higher than for the other MSAR TMDL waterbodies (Cucamonga Creek and Santa Ana River), because of the presence of a substantial rising groundwater component that is conveyed through MS4s, especially from parts of the City of Chino Hills, to Chino Creek.

3.2.4 Bacterial Indicator Data Summary

Analysis of *E. coli* concentration data from the Tier 1 source evaluation monitoring showed that bacterial water quality in dry weather flow at MS4 outfalls to Chino Creek is highly variable, but typically exceeds the WLA for *E. coli* of 113 Most Probable Number (MPN)/100 ml (Figure 3-2). Some MS4 drainages had significantly greater *E. coli* concentration than others, which influences the prioritization of MS4 drainage areas for future CBRP implementation activities. These data, inventoried in Table 3-1, were used to provide baseline data for the RAA for the Chino Creek watershed. Attachment B summarizes the bacterial indicator concentrations observed at watershed-wide compliance sites since 2007 and the concentrations observed from Tier 1 sites, collected over several dry seasons (2007 – USEP, 2011 – Pomona Tier 1 source evaluation, 2012 – Other MSAR Permittees Tier 1 source evaluations).

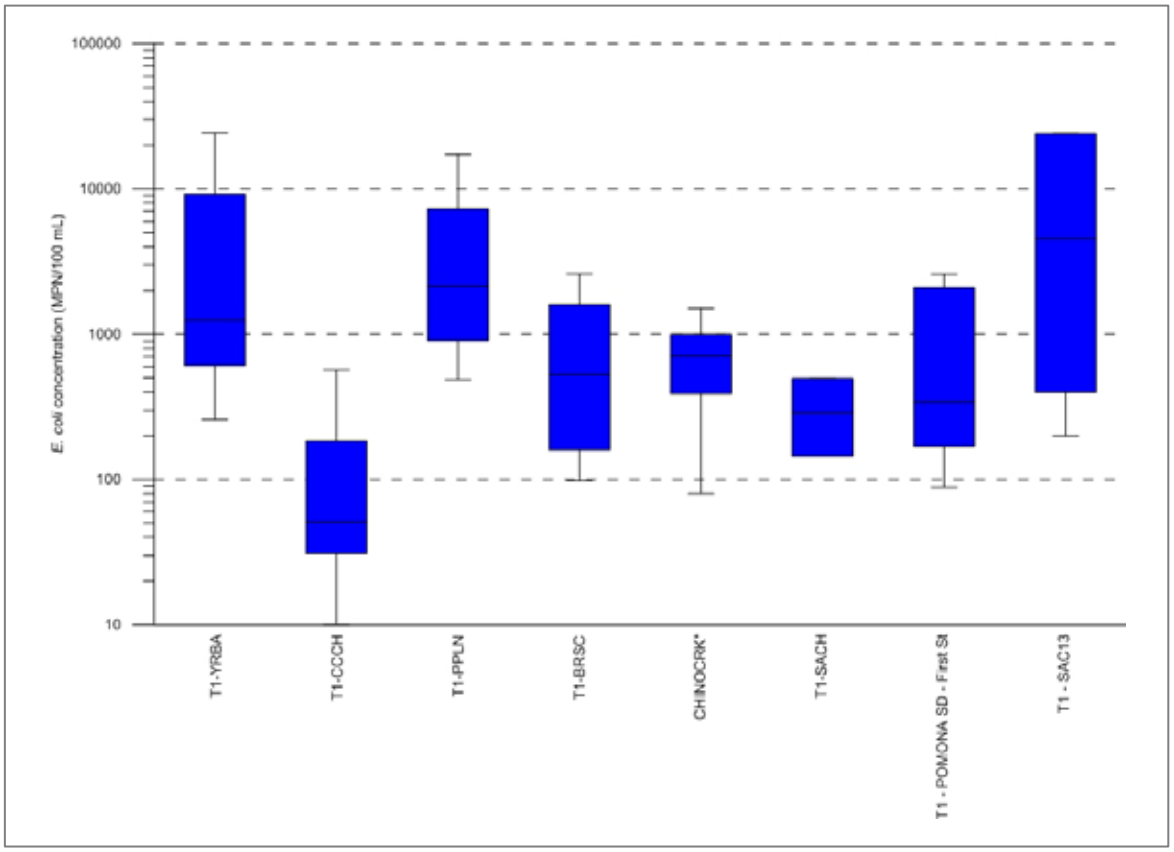

Figure 3-2
Box-whisker plots of *E. coli* concentration from Tier 1 Sites that are tributary to Chino Creek

Geometric means of dry weather *E. coli* concentrations at each Tier 1 site provide an estimate of baseline average daily dry season bacterial indicator inputs from MS4s in the Chino Creek watershed (Table 3-2). These values show a wide range of observed *E. coli* concentrations, which suggests that targeted inspection and BMP implementation, would be an effective approach for mitigating controllable urban bacterial indicator sources.

Bacterial indicator data was not collected at every MS4 outfall to Chino Creek or San Antonio Channel; therefore it was necessary to approximate *E. coli* concentrations from these unmonitored areas to develop a comprehensive RAA for the entire Chino Creek watershed. For purposes of this reasonable assurance analysis, the geometric mean of dry weather *E. coli* concentrations within San Antonio Channel at the

Mission Avenue bridge (~ 0.5 miles downstream of Brooks Basin), of ~1400 cfu/100 ml provides an initial estimate of bacterial indicator levels in the very limited amount of DWF that is generated from these drainage areas, as demonstrated in the previous section.

3.3 Reasonable Assurance Analysis

3.3.1 Compliance Demonstration

Alternative approaches were considered for demonstrating how implementation of the CBRP would achieve compliance with urban source WLAs:

- *Alternative 1* - Demonstrate that implementation of the CBRP would result in achieving the WLAs at every outflow to a receiving waterbody. This approach can be achieved by either reducing *E. coli* concentrations at flowing MS4 outfalls to 113 MPN/100 ml or eliminating DWF from the majority of urban area draining to each outfall.

- *Alternative 2* – If data demonstrate that receiving water impairment is potentially caused by the MS4, then demonstrate sufficient reduction in controllable human sources of bacterial indicator loads in DWF from MS4 facilities to not cause an exceedence of the *E. coli* water quality objective at downstream watershed-wide compliance monitoring sites.

The City of Pomona plans to use the second alternative approach to evaluate compliance with the MSAR Bacterial Indicator TMDL. This approach allows for a watershed-wide assessment of bacterial water quality in downstream receiving waterbodies. Within Chino Creek, the Carbon Canyon WRRF provides a source of clean water to dilute inputs from MS4 outfalls. Despite this condition, compliance monitoring data show water quality objectives are being exceeded. Further bacterial indicator reduction of controllable sources may be necessary to achieve compliance with the TMDL.

3.3.2 RAA Methodology

Sources of bacteria during dry weather conditions include MS4 discharges as well as non-MS4 sources such as wildlife and in-stream growth. This source evaluation estimates the relative role of MS4 sources in downstream receiving waterbody bacterial indicator concentrations. Data collected at Tier 1 monitoring sites represent most of the DWF from MS4 facilities to downstream compliance sites. The bacterial indicator concentrations in the blend of MS4 inputs and Carbon Canyon WRRF effluent ($C_{blended}$) was compared with downstream bacterial indicator concentrations (C_{comp}) to assess the potential role of other non-MS4 sources to an impaired waterbody. The blended concentration is a function of MS4 inputs of flow (Q_{inflow}) and bacterial indicator concentrations (C_{inflow}) and POTW effluent flow ($Q_{effluent}$), as follows:

$$C_{blended} = \frac{[\sum_i^j (Q_{inflow} * C_{inflow})]}{(Q_{inflow} + Q_{effluent})}$$

$$C_{comp} = C_{blended} + e$$

This type of analysis characterizes the relative role of different flow sources in the watershed on downstream bacterial indicator concentrations. An important outcome of this analysis is the identification of the level of bacterial indicators (e) at the compliance sites that cannot be explained by MS4 inflows (referred to as “unaccounted-for sources”). The presence of an unbalanced set of inputs and

outputs in relation to downstream bacterial indicator levels is not surprising, given the potential for increases in bacteria indicator levels from illegal and illicit discharges, direct input from wildlife, air deposition, transient encampments, environmental growth, or resuspension, or decreases in bacterial indicator levels due to environmental decay or settling.

This approach is equivalent to the reasonable assurance analysis included in the San Bernardino and Riverside County CBRPs; however, in this RAA reports results as concentrations instead of loads. This adjustment to the methodology was made to provide results that are more readily compared with the concentration based WLA.

The source evaluation analysis for the Chino Creek watershed involved computation of a blended bacterial indicator concentration from MS4 outfalls (Tier 1 sites) and effluent from the Carbon Canyon WRRF. Table 3-3 provides an estimate of the downstream blend concentration from geomeans of *E. coli* concentration and arithmetic means of DWF rate from all inflow sources. Based on these data, the estimated blend concentration during the dry season is 132 cfu/100ml. Comparing this value with the geometric mean of all 2011 and 2012 dry season samples collected at the downstream compliance monitoring location WW-C7, 383 cfu/100ml, suggests unaccounted-for sources of bacteria could cause increases to downstream bacteria concentration by approximately 250 cfu/100ml (Table 3-3). Table 3-3 shows that the relative source contribution of MS4s is approximately 34 percent of the downstream bacteria. Thus, even if all DWF inputs were eliminated, the downstream concentration in Chino Creek may be out of compliance due to unaccounted-for sources.

Table 3-3. Relative Bacterial Indicator Source Contribution from MS4 DWF in Chino Creek Watershed

Compliance Monitoring Location	Baseline Dry Weather *E. coli* (cfu/100 ml)	Blended *E.coli* from MS4 and WRRF Effluent (cfu/100 ml)	Unaccounted-for Sources of *E. coli* (cfu/100ml)	Relative Source Contribution of MS4s[1]
Chino Creek at Central Avenue [1]	383	132	250	35%

1) Bacteria generated in both Los Angeles and San Bernardino Counties

For seven consecutive weeks in the 2012 dry season bacterial indicator samples and DWF measurements were collected at both upstream Tier 1 sites (from SBCFCD Permittees) and at the downstream watershed-wide compliance monitoring location (WW-C7, Chino Creek Central Ave). The estimate of blended concentration from MS4 inflows and Carbon Canyon WRRF blend was compared with actual concentrations over this period (Figure 3-3). This expected blend concentration also accounted for Pomona's MS4 inputs, which did not have concurrent data (samples were collected in the 2011 dry season), by using the geometric mean concentration of 2011 Tier 1 samples.

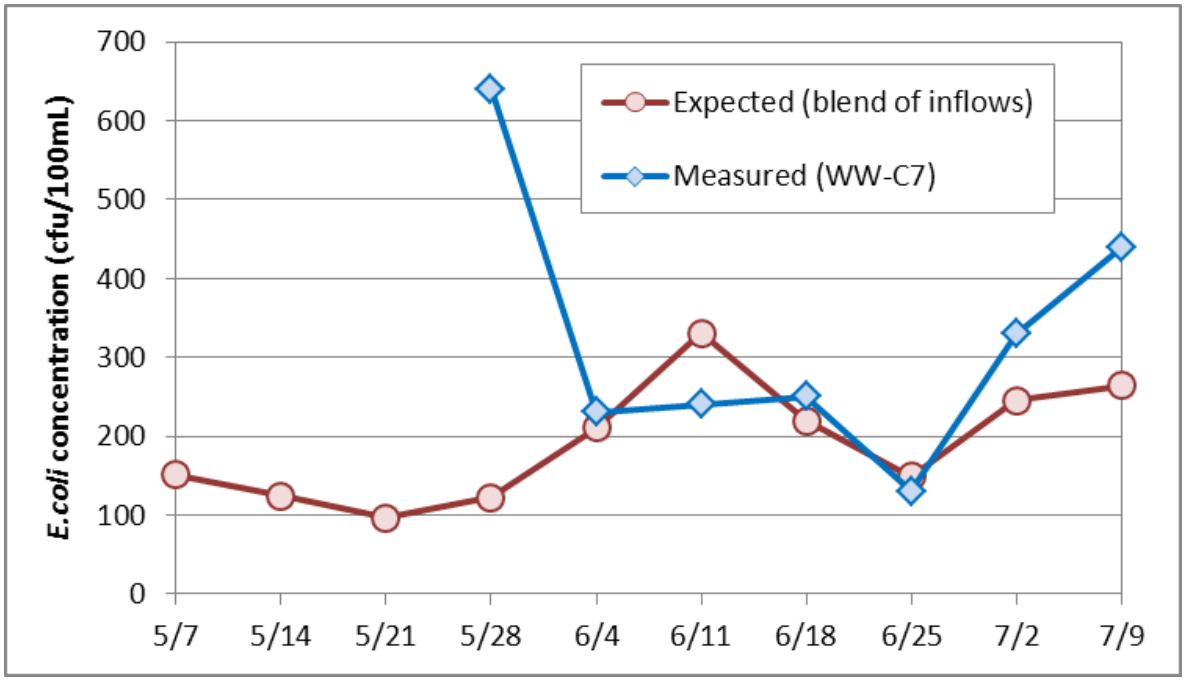

Figure 3-3
Comparison of Estimated Blended *E. coli* Concentration of MS4 and Carbon Canyon WRRF Effluent with Downstream watershed-wide Compliance Monitoring data for Chino Creek at Central Avenue

The relative role of specific Tier 1 MS4 outfalls in the estimate of downstream *E. coli* was assessed to evaluate the most significant source of *E. coli* for focusing Tier 2 source evaluation activities (Figure 3-4). Based on this assessment, it is estimated that, on average, over 90 percent of the estimated blended bacterial indicator concentration in Chino Creek at Central Avenue is caused by three MS4 inputs:

- T1-CHINOCRK, mostly from the City of Pomona underground MS4 system
- T1–BRSC, Boys Republic South Channel
- T1-CCCH, Carbon Canyon Creek Channel

However, DWF from Carbon Canyon Creek Channel has a higher flow rate and lower bacterial indicator concentration (typically below the WLA of 113 cfu/100ml) due to the influence of rising groundwater, and therefore serves to reduce the blended concentration. Thus, MS4 drainage areas to Chino Creek upstream of the San Antonio Creek confluence and Boys Republic South Channel, from parts of the Cites of Pomona and in Chino Hills, respectively, are prioritized for Tier 2 source evaluation and controllability assessment.

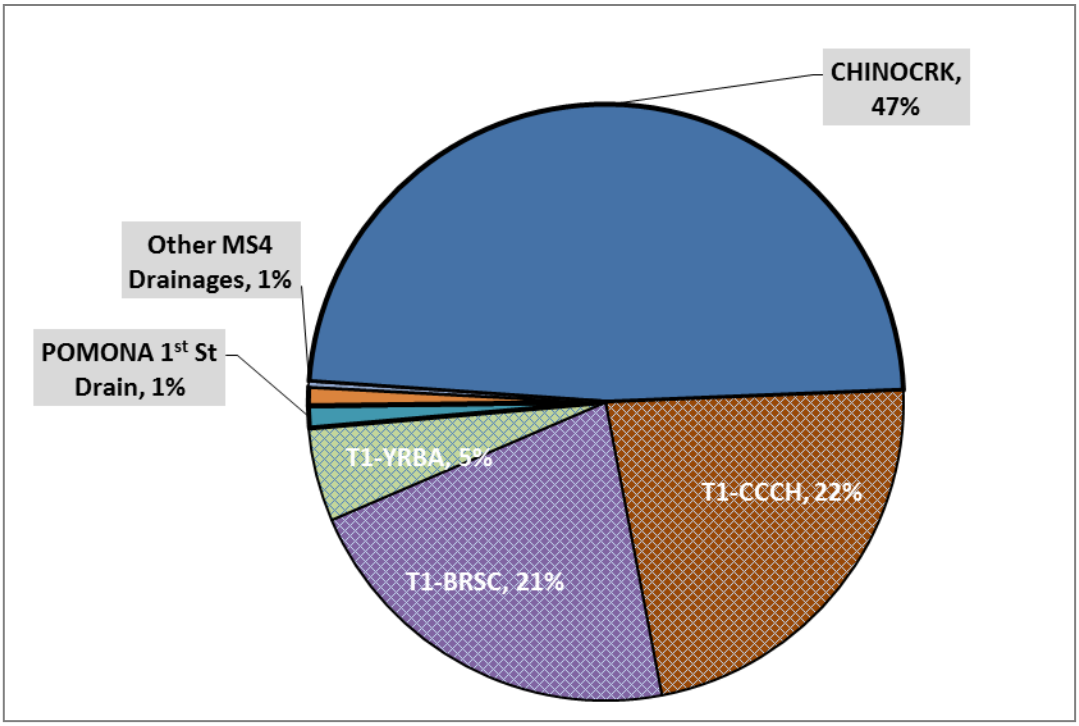

Figure 3-4
Potential for individual MS4 Drainage Areas to Contribute to Blended Concentration at Chino Creek at Central Avenue

3.4 Bacterial Indicator Reduction from the MS4

3.4.1 Controllability

The relative source contribution analysis showed that unaccounted-for sources make up the majority of bacterial indicator contributions during dry weather in Chino Creek (see Table 3-3). For this RAA, contributions of unaccounted-for sources of bacterial indicators to Chino Creek are not the responsibility of the MS4 Permittees with outfalls in the upstream drainage area. Tier 1 data used to develop the source contribution analysis was collected at the outfall from MS4s to receiving waters; therefore, unaccounted-for sources of bacteria are not attributable to MS4 inputs.

3.4.2 Gap Analysis for Bacterial Indicators

Bacterial indicator data collected from each of the watershed-wide TMDL compliance monitoring sites provide an estimate of existing *E. coli* concentrations in receiving waters. The magnitude of exceedances of the TMDL numeric target provides a basis for estimating the *E. coli* reduction needed from all sources to reduce current bacterial indicator concentrations to the WQO of 126 cfu/100 ml.

Table 3-4 computes a target reduction from MS4 sources in the Chino Creek watershed. The difference between baseline *E. coli* concentration at the Chino Creek at Central Avenue compliance monitoring site (column 1) and the TMDL numeric target (column 2) is the total bacterial reduction needed to achieve compliance (column 3). The portion of the baseline bacterial indicator concentration at the compliance monitoring site attributable to measured MS4 sources is shown as a percentage in column 4 (see Table 3-3 for details). This relative source contribution is applied to the total reduction needed in column 3 to approximate a target *E. coli* reduction for all MS4 sources in the Chino Creek watershed (column 5).

The portion of this reduction to be met by City of Pomona's CBRP implementation is assumed to be equal the relative source contributions from Los Angeles County and San Bernardino County MS4s, which was estimated to be a 50/50 split. This is shown in Figure 3-4, with unhatched Tier 1 sites representing MS4 areas from the Cities of Pomona and Claremont, and hatched Tier 1 sites representing MS4 areas within San Bernardino County.

Table 3-4. Estimate of Target Reduction of *E. coli* Concentration in DWF from MS4 Sources in the Chino Creek Watershed

Compliance Monitoring Location	1 Baseline Dry Weather *E. coli* (cfu/100 ml)	2 Numeric Target (cfu/100 ml)	3 *E. coli* Reduction Needed (cfu/100 ml)	4 MS4 Relative Source Contribution [1]	5 *E. coli* Reduction Target from All MS4s (cfu/100 ml)	6 *E. coli* Reduction Target from Pomona MS4 (cfu/100 ml)
Chino Creek at Central Avenue [2]	383	126	257	35%	89	44

1) Estimate of MS4 relative source contribution shown in Table 3-3
2) Bacteria generated in both Los Angeles and San Bernardino Counties

The estimated downstream blend concentration, based on geomeans of *E. coli* concentration and arithmetic means of DWF rate from all inflow sources (132 cfu/100ml - Table 3-3, column 5) is less than the total load reduction that would reduce bacteria to the numeric targets (257 cfu/100ml - Table 3-4, column 3). Thus, it may be physically impossible to attain the water quality objective even if MS4 DWF discharges were eliminated. Therefore, the recommended course of action is to determine whether the unaccounted-for sources of bacteria are from controllable non-urban sources (e.g. agriculture, dairy etc.) or other non-MS4 Permittee urban sources (Cal-Trans, state, federal and tribal lands), or if the source is naturally occurring and uncontrollable.

3.5 Water Quality Benefit Estimates

Water quality benefits associated with implementation of the dry weather CBRP almost entirely rely on reduction or elimination of DWF from MS4 systems, through ordinance enforcement, water conservation, or structural controls. The most significant source of DWF flow from urban land uses in the Chino Creek watershed is excess irrigation runoff. Therefore, one approach to demonstrate compliance would be to convert target reduction in *E. coli* (see column 6 of Table 3-4) to an equivalent DWF reduction. Section 3.5.1 explains how this conversion is determined from *E. coli* reduction to DWF reduction from prioritized MS4 drainage areas. Section 3.5.2 demonstrates how specific CBRP activities planned in MS4 areas upstream of the Chino Creek watershed-wide compliance site have the potential to achieve adequate DWF reduction to meet the target *E. coli* reduction.

3.5.1 CBRP Activity Implementation Targets

The DWF rate reduction that could provide the targeted *E. coli* reduction was approximated by assuming a concentration of *E. coli* typically found in DWF and also assuming that all there is 100 percent reduction in the load per volume of DWF that is reduced or eliminated. Water quality data is not available to characterize bacteria concentration in DWF from individual urban source areas prior to reaching MS4 conveyance systems. However, it is generally accepted that DWF from urban source areas contains elevated levels of bacteria. For purposes of this RAA, an *E. coli* concentration of 1,260 cfu/100ml is assumed (10 times the geometric mean WQO for *E. coli*) for DWF that is reduced or eliminated from entering Pomona's MS4. This assumption is consistent with the reasonable assurance analysis developed for the San Bernardino and Riverside County CBRPs.

Based on the blend concentration analysis, a one cfs reduction of DWF, with an *E. coli* concentration of 1,260 cfu/100ml, results in approximately 100 cfu/100ml reduction downstream. Thus, to achieve a 44 cfu/100ml reduction downstream, the City of Pomona must reduce its DWF contribution by 0.44 cfs (~280,000 gallons/day). The types of CBRP activities, described in Section 2 and Attachment C, that will be employed to reduce or eliminate DWF from entering the MS4 have different relative effectiveness, therefore levels of implementation needed to provide the full target DWF reduction are variable.

Table 3-5 shows the level of implementation that would be needed for each CBRP activity if it were to be used for the full DWF reduction target. Except for enhanced use of vacuum assisted street sweeping, levels of implementation shown in Table 3-5 do not vary substantially. This analysis indicates that *E. coli* reduction targets may be achieved by water waste ordinance enforcement, water conservation BMPs, or structural BMPs managing dry weather runoff from roughly 1,000 acres of irrigated area within the City of Pomona MS4 area draining to the Chino Creek watershed. It is important to note that compliance will be continue to be measured by water quality monitoring data collected at the watershed-wide compliance monitoring sites.

Table 3-5. Approximate Level of CBRP Activity Implementation Needed to Achieve Target E.- *coli* Reduction

Compliance Monitoring Location	Chino Creek at Central Ave
Hydrologically Connected Drainage (total acres)	6,000
Bacteria Reduction Target from MS4 (cfu/100ml)	44
Approximate Target DWF Reduction (gal/day) [1]	280,000
BMP Implementation necessary to provide target DWF Reduction (irrigated acres managed) [2]	
Enforce water conservation ordinances [3]	560
Replace grass with artificial turf [3]	560
Replace grass with native plants [3]	560
Installation of a weather based irrigation controller (WBIC) [4]	1,647
Landscape irrigation audit [5]	1,473
Enhanced Sweeping [3,6,7]	7,840
LID BMPs with redevelopment [3]	560
Regional structural controls [3]	560

1) Assumes *E. coli* concentration in reduced or eliminated DWF of 1,260 cfu/100ml (10 times the geometric mean WQO)
2) Values presented show the level of implementation that would be needed if CBRP implementation employed a singular activity. Implementation of CBRP will involve a combination of these activities as well as ongoing source inspection.
3) Average DWF generation rate of 500 gal/irrigated acre/day. Assume complete elimination for this amount of DWF for grass replacement BMPs, significant redevelopment projects, and regional structural controls. For vacuum assisted street sweeping, assume this DWF generation rate from tributary area
4) DWF reduction of 170 gal/irrigated acre/day from installing WBICs
5) DWF reduction of 190 gal/irrigated acre/day from conducting landscape audits
6) Biweekly frequency of vacuum assisted street sweeping (day^{-1})
7) *E. coli* concentration of 1,260 cfu/100ml (10 times the geometric mean WQO for *E. coli*) that would be attributable to release of bacteria from biofilms in street gutters. Assume vacuum assisted street sweeping eliminates biofilm for a period of one day

The basis used to quantify DWF generation and potential runoff reduction effectiveness of water conservation BMPs is from a study conducted by Metropolitan Water District of Orange County and Irvine Ranch Water District. The study evaluated the effectiveness of WBICs and landscape irrigation system audits for residential runoff reduction during dry weather (Jakubowski, 2008). Several key findings of this study provide estimates of DWF reduction that were used to quantify benefits of increased use of water conservation BMPs in the MSAR watershed, including:

- Dry weather flow measurements downstream of a residential neighborhood showed approximately 500 gal/irrigated acre/day. This rate is used to approximate the runoff reduction benefit of replacing grass lawns with artificial turf or native plants (i.e. no expected runoff following BMP implementation).

- Education and outreach reduced DWF by ~190 gal/irrigated acre/day. This rate is used to approximate the runoff reduction from education and outreach BMPs, including an on-site irrigation audit, and water waste enforcements.

- Installation of a weather based irrigation controller on a large portion of the urban landscape provided DWF reduction of 170 gal/irrigated acre/day.

Lastly, the effectiveness of street sweeping was quantified by estimating the *E. coli* load that would not be picked up as DWF contacts street gutters if biofilm and other bacteria habitats were effectively removed. Assuming that the release of *E. coli* from biofilms and other habitats in street gutters is responsible for adding 1,260 cfu/100 ml of *E. coli* to DWF as it flows to the MS4, then the target flow for treatment (not reduction) would be equivalent to other CBRP activities that target DWF from individual properties. However, the frequency of street sweeping is an important consideration. Following a sweeping, biofilms and other habitats for bacteria will begin to build-up within the street gutter. Accordingly, it was assumed that street sweeping is effective at removing sources of bacteria from gutters for a period of 24 hours. Taking this assumption, a bi-weekly street sweeping program would need to provide treatment for 14 times the irrigated area as the other proposed CBRP activities, as shown in Table 3-5.

3.5.2 CBRP Implementation to Demonstrate Compliance

It would be impossible to use just one CBRP activity to address the full *E. coli* reduction target that would address the portion of controllable bacteria from Pomona's MS4 needed to demonstrate compliance with the TMDL per this RAA. The following sections describe several actions that will reduce *E. coli* during the dry season within the City of Pomona MS4 drainage area to Chino Creek.

Outdoor Water Conservation BMPs

The City of Pomona Urban Water Management Plans (UWMP) incorporates outdoor water use conservation BMPs that will also provide DWF reduction benefits (Pomona, 2011). The Water Conservation Bill of 2009 sets new performance requirements for gross per capita water demand (GPCD), with the primary goal of reducing statewide water use by 20 percent by 2020. Water agencies throughout the State of California are planning to implement a combination of recycled water use and water conservation BMPs to meet their respective urban water use targets for GPCD.

The City's strategy for achieving its 2020 urban water use target includes a combination of recycled water, and indoor and outdoor conservation BMPs. The total reduction in potable demand that must be achieved by 2020 is equal to the difference in baseline per capita demand (175.5 gal/person/day) and the 2020 urban water use target (141.6 gal/person/day) for the projected 2020 population. The City also has plans to use up to 3,600 AFY citywide of new recycled water which would equate to a potable demand offset of ~17 gal/person/day, which can be used toward meeting the urban water use targets in 2020. The City of Pomona will meet the remaining per capita demand reduction of 16.9 gal/person/day with implementation of water conservation BMPs.

Since the City falls in both the MSAR and San Gabriel River watersheds, only the portion of the population that resides within the MSAR watershed, estimated to be 84,157, was used purposes of estimating DWF reduction benefits in outfalls to Chino Creek for this RAA. This RAA assumed that

70 percent of the conservation savings will be achieved through implementation of outdoor water use efficiency BMPs. Thus, the projected reduction of outdoor water use in the City of Pomona, within the MSAR watershed, is 11.8 gal/person/day or 1,112 AFY (Table 3-6). These projections of outdoor water use conservation show that BMPs proposed in the Pomona UWMP could provide most of the target DWF reduction to Chino Creek from the City of Pomona MS4 by 2020. This analysis is subject to change as the water department develops its respective programs aimed to reduce urban per capita water demand. The City of Pomona will coordinate outdoor water use conservation BMP programs to provide the optimal benefit for DWF reduction in the areas of greatest priority for TMDL compliance.

Table 3-6. Estimate of Irrigated Area Addressed by Potential Water Agency Implementation of Outdoor Water Conservation BMPs Planned for Compliance with 20x2020 Requirement

Agency	Baseline (GPCD)[1]	2020 Urban Water Use Target (GPCD)[1]	Demand Reduction from Outdoor Water Use Efficiency BMPs (AFY) [2]		Targeted Outdoor Water Demand (AFY) [3]	Approximate Irrigated Area (acres) [4]
			Gal/Person/Day	AFY		
City of Pomona	175.5	141.6	11.8	1,112	5,562	1,214

1) Source: Draft 2010 Urban Water Management Plans (UWMPs) for listed water agencies.
2) Assumes 70 percent of per capita demand reduction not achieved by new recycled water use comes from conservation BMPs that target outdoor water waste.
3) Water conservation savings of 20 percent is assumed for outdoor water conservation BMPs
4) Irrigation demand of 55 in/yr based on CIMIS Station 44 at UC Riverside

Redevelopment

Redevelopment in the MSAR watershed prior to the December 31, 2015 compliance date may occur in 0.5 percent of the hydrologically connected MS4 drainage area. (6,000 urban acres * 0.005 = 30 acres of redevelopment). Assuming 30 percent of land cover on properties that will be redeveloped had been irrigated, the CBRP benefit of implementing updated development planning requirements with LID BMPs that would retain and eliminate DWF is 9 acres of irrigated area.

Other Activities

The CBRP also includes other recommended specific BMPs that have the potential to reduce controllable urban bacterial indicator levels from DWF (see Attachment C). While these BMPs have been included to address potential urban bacterial indicator sources, the ability to quantify water quality benefits is greatly limited. For example, transient camps may be an important bacterial indicator source in certain areas, but the benefits of mitigation are unknown since studies have not been done to evaluate the water quality impacts of such camps under dry weather conditions. Given such limitation, the water quality benefits were not quantified. However, the potential reductions in bacterial indicator levels that will be achieved from implementing these BMPs provide an additional margin of safety toward achieving urban wasteload allocation by the compliance date.

3.5.3 Role of Inspection Program in Achieving Compliance

The inspection program involves rigorous monitoring of flow, bacterial indicators, and human sources of fecal bacteria indicators (using human *Bacteroides* markers) at key locations in the MS4. The purpose of conducting such monitoring activities is to identify smaller portions of MS4 drainage areas that may be responsible for a disproportionate amount of bacterial indicators (referred to as a “hot spot”). The temporal variability of available bacteria indicator levels from downstream monitoring sites suggests that in some drainage areas, urban sources may be contributing to increases in downstream bacterial indicator levels. However, because of the high percentage of unaccounted-for sources of bacterial indicators

apparent in the system, to what degree the MS4 is a contributor to elevated bacterial indicator levels needs to be evaluated.

The inspection program provides a means to identify urban sources and target mitigation activities. For instance, an MS4 outfall may be determined to be consistently dry or to contain a lower *E. coli* level than expected. If so, there would be no need to implement upstream BMPs for the purposes of reducing bacterial indicators. At the same time, the inspection program could identify drainage areas that generate DWF and have elevated bacterial indicator concentrations. Targeted BMPs within the watershed upstream would be prioritized and therefore will likely provide more benefit than is estimated in this RAA. Accordingly, the inspection program provides the information necessary to use an iterative adaptive watershed management approach, which allows for the best use of resources to mitigate controllable urban bacterial indicator sources. Moreover, data collected under the inspection program will provide the means to improve the basis for the relative source contribution analysis for bacterial indicators in receiving waterbodies.

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Section 4
Wet Weather Condition Program

The requirements for development of a dry weather condition CBRP include establishing a schedule for developing a wet weather condition CBRP (November 1st through March 31st) to comply with urban wasteload allocations for indicator bacteria by December 31, 2025. Given the expected challenges associated with compliance with wasteload allocations under wet weather conditions, the wet weather CBRP will require more time to develop. Accordingly, the earliest a draft wet weather condition CBRP will be submitted to the RWQCB for review will be 24 months following adoption of the next MS4 permit.

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Attachment A
TMDL Implementation

A.1 Introduction

The MSAR MS4 permittees have been actively engaged in implementation of the MSAR Bacterial Indicator TMDL since its 2005 adoption by the Santa Ana RWQCB (almost two years before the TMDL became effective upon EPA approval in 2007). All TMDL requirements with specific completion dates from establishment of a watershed-wide monitoring program to adoption and implementation of the USEP have been met. The outcomes of the various TMDL implementation activities completed to date provide the foundation for this CBRP. Each of these activities is described in more detail below to provide a complete picture of TMDL implementation activities in the watershed, even those areas outside of the jurisdiction of the City of Pomona.

A.2 MSAR TMDL Task Force

With formal adoption of the MSAR Bacterial Indicator TMDL on August 26, 2005, all responsible parties named in the TMDL began the process to create a formal cost-sharing body, or Task Force, to collaboratively implement a number of requirements defined in the TMDL. Task Force participants include:

- RCFC&WCD
- County of Riverside
- Cities of Corona, Norco, and, Riverside
- San Bernardino County Flood Control District (SBCFCD) (representing the Cities of Chino, Chino Hills, Fontana, Montclair, Ontario, Rancho Cucamonga, and Rialto)
- Cities of Pomona and Claremont (Los Angeles County)
- Agricultural Pool and Milk Producers
- U.S. Department of Agriculture, U.S. Forest Service
- RWQCB
- SAWPA

SAWPA serves as administrator of the Task Force. In this role, SAWPA provides all Task Force meeting organization/facilitation, secretarial, clerical and administrative services, management of Task Force funds, annual reports of task force assets and expenditures and hiring of Task Force authorized consultants.

All documents and presentation (including CBRP presentations to the Task Force) are posted on SAWPA's project website at: www.sawpa.org/roundtable-MSARTF.html.

A.3 Proposition 40 State Grant

In anticipation of EPA approval of the MSAR Bacterial Indicator TMDL, SAWPA, in cooperation with the urban dischargers (SBCFCD and RCFC&WCD) and on behalf of the Task Force submitted a California Proposition 40 grant proposal ("Grant Project") to the State Board to support implementation of the TMDL. The State Board approved the Grant Project in fall 2006 and the project was initiated in early 2007.

The overarching purpose of the Grant Project was to accelerate the TMDL implementation process by supporting efforts by urban dischargers to implement TMDL requirements, including the watershed-wide monitoring program and USEP (which are described in more detail below). Within this framework, the Grant Project focused on identifying sources of bacterial indicator contamination in the MSAR watershed and pilot testing BMP technologies designed to reduce bacterial indicators in storm drains (SAWPA 2010b). The results of these activities were used to support the development of this CBRP to achieve compliance with urban wasteload allocations during dry weather conditions.

A.4 Watershed-wide Compliance Monitoring

Task 3 of the TMDL implementation plan required the responsible jurisdictions named in the TMDL to submit to the RWQCB for approval a proposed watershed-wide compliance monitoring program. The purpose of this program is to provide the data necessary to review and update the TMDL as needed and evaluate compliance with the TMDL wasteload and load allocations. Using the Grant Project as a funding vehicle to initiate this TMDL task, the MSAR Task Force worked with the RWQCB to select compliance sites consistent with the purpose of this monitoring program. Compliance sites were selected based on two key criteria:

- The sites should be located on waterbodies that are impaired and subject to Bacterial Indicator TMDL compliance requirements; and
- The sites should be located in reaches of the impaired waterbodies where REC-1 activity is likely to occur, i.e., there is an increased risk from exposure to pathogens.

Based on these criteria, six watershed-wide compliance monitoring sites were selected originally as compliance sites (Table A-1). One of these sites, Icehouse Canyon Creek was later removed with RWQCB approval[1]. A Monitoring Plan and Quality Assurance Project Plan (QAPP) were prepared to support the monitoring program (www.sawpa.org/collaboration/projects/tmdl-taskforce/ under the monitoring tab). Appendix B of the Monitoring Plan provides information regarding each of the monitoring sites listed in Table A-1.

The RWQCB approved the Monitoring Plan and QAPP, and the Task Force initiated sampling in summer 2007. Weekly sampling occurs over a 20-week period during the dry season (April 1 – October 31) and an 11-week period during the wet season (November 1 – March 31). Four samples are collected during and

[1] Bacterial indicator concentrations in Icehouse Canyon Creek were consistently non-detect. The MSAR Bacterial Indicator TMDL Taskforce and the RWQCB determined that this site is representative of water quality from natural background in higher elevation areas, and not representative of natural background in lowland areas, and therefore the site was removed from the list of compliance monitoring sites.

after one wet weather event each year. This sampling program has been implemented annually since 2007[2].

Table A-1. Watershed-wide Monitoring Program Sample Sites

MSAR Waterbody	Sample Sites	Site Code[1]
Icehouse Canyon Creek [2]	Icehouse Canyon Creek	WW-C1
Prado Park Lake	Prado Park Lake at Lake Outlet	WW-C3
Chino Creek	Chino Creek at Central Avenue	WW-C7
Mill-Cucamonga Creek	Mill Creek at Chino-Corona Rd	WW-M5
Santa Ana River, Reach 3	Santa Ana River Reach 3 @ MWD Crossing	WW-S1
	Santa Ana River Reach 3 @ Pedley Ave	WW-S4

[1] – Location of sites shown on Figures 3-8 through 3-11.
[2] – Icehouse Canyon Creek was removed from the list of watershed-wide compliance monitoring sites with RWQCB approval.

A.5 Urban Source Evaluation Plan

The MSAR Bacterial Indicator TMDL required permitted MS4 discharges to develop the USEP within six months after TMDL adoption or November 30, 2007. Per Section 4.1 of the TMDL (RWQCB 2005), the purpose of the USEP is to identify specific activities, operations, and processes in urban areas that contribute bacterial indicators to MSAR waterbodies. The plan should also include a proposed schedule for the activities identified and include contingency provisions as needed to reflect any uncertainty in the proposed activities or schedule.

The urban dischargers developed a USEP as part of Grant Project implementation activities. The RWQCB approved the USEP as compliant with TMDL requirements on April 18, 2008 (RWQCB Resolution R8-2008-0044[3]). The approved plan included a four step process for fulfilling the purpose of the USEP (as stated by the TMDL):

- *Step 1: Urban Source Evaluation Monitoring Program* – The first step in the plan is to conduct a monitoring program at key sites to gather bacterial indicator source data associated with urban land uses.
- *Step 2: Risk Characterization* – Step 2 couples the data obtained from Step 1 with other applicable watershed data to characterize the risk of exposure to bacterial indicators and prioritize urban sites for additional investigation.
- *Step 3: Site Investigations* – This step describes the types of actions that may be implemented to further investigate urban bacterial indicator sources. Per the outcome of Step 2, site investigation activities would be focused on high priority sites first.

[2] Seasonal reports and updates to the Monitoring Plan and QAPP are available on the SAWPA MSAR Task Force webpage: www.sawpa.org/collaboration/projects/tmdl-taskforce/ under the monitoring tab.
[3] Available from the Regional Board's website at: www.waterboards.ca.gov/santaana/water_issues/programs/tmdl/msar_tmdl.shtml

§ *Step 4: Adaptive Implementation* - As new data become available or if changes in recreational uses occur on waterbodies as a result of SWQSTF efforts, then site prioritization or the schedule for USEP implementation may change.

A summary of the elements contained within each of these steps follows. The complete USEP is available at www.sawpa.org/collaboration/projects/tmdl-taskforce/ under the resources tab.

Urban Source Evaluation Plan Monitoring Program

The MSAR Task Force implemented the urban source monitoring program during both dry and wet seasons in 2007 and 2008. Monitoring activities occurred at 13 locations in the MSAR watershed, including all major subwatersheds that drain to waters listed as impaired for bacterial indicators in the MSAR watershed. Table A-2 provides information on the location of each monitoring site. Additional information about each sample location is available in Appendix C of the Monitoring Plan available at www.sawpa.org/collaboration/projects/tmdl-taskforce/ under the monitoring tab.

Table A-2. Urban Source Evaluation Plan Monitoring Program Sample Locations

MSAR Waterbody	Waterbody Reach[1]	Sample Location	Site Code[2]
Santa Ana River	Reach 3	Santa Ana River (SAR) at La Cadena Drive	US-SAR
		Box Springs Channel at Tequesquite Avenue	US-BXSP
		Sunnyslope Channel near confluence with SAR	US-SNCH
		Anza Drain near confluence with Riverside effluent channel	US-ANZA
		San Sevaine Channel in Riverside near confluence with SAR	US-SSCH
		Day Creek at Lucretia Avenue	US-DAY
		Temescal Wash at Lincoln Avenue	US-TEM
Chino Creek	Reach 1	Cypress Channel at Kimball Avenue	US-CYP
	Reach 2	San Antonio Channel at Walnut Ave	US-SACH
		Carbon Canyon Creek Channel at Pipeline Avenue	US-CCCH
Mill-Cucamonga Creek	Prado Area	Chris Basin Outflow (Lower Deer Creek)	US-CHRIS
		County Line Channel near confluence with Cucamonga Creek	US-CLCH
	Reach 1	Cucamonga Creek at Highway 60 (Above RP1)	US-CUC

[1] - Reaches are defined in the Basin Plan.
[2] – Location of sites shown on Figures 3-8 through 3-11.

To characterize bacterial indicator concentrations at each site (along with flow and other field parameters), samples were collected over four five-week periods in both the dry and wet seasons. Samples were collected from each site to identify sites where human, bovine or domestic canine sources of bacterial indicator were prevalent. Attachment B provides a summary of the results of this monitoring program (see also SAWPA 2009). While human and domestic canine sources have a high potential to be found in most portions of the MS4 system, bovine sources are likely to be restricted to areas potentially influenced by dairy farming activities. In the MSAR watershed, the number of dairy farms has declined significantly in recent years and will continue to be replaced with new urban development (SAWPA 2010c).

Risk Characterization

The USEP established a framework for prioritizing sites for follow-up investigation of urban sources of bacterial indicators based on a characterization of risk of exposure to pathogens. Three key factors drive the characterization process:

- *Exceedance Factor* – The first factor to be evaluated in the framework is the frequency and magnitude by which the bacterial indicator exceeds the water quality objective. The greater the frequency and magnitude of recorded exceedances, the higher the likelihood that the contamination can be tracked back to its source. Intermittent, low intensity events are more difficult to detect and, therefore, more difficult to trace.

- *Contagion Factor* – Human beings, particularly children are believed to be at greater risk of infection from water-borne pathogens generated by other people (EPA 2007). Accordingly, the risk of illness resulting from recreational use is believed to be highest where microbial source tracking methods (e.g. *Bacteroides*) indicate the probable presence of human pathogens. After human sources, exposure to fecal contamination from agricultural animals is the next most important concern (EPA 2007).

- *Exposure Factor* - A higher investigation/implementation priority should be assigned to locations and conditions where recreational activities are most likely to occur. Exceedances that occur in natural channels, during warmer months with relatively moderate flows, merit a higher priority than those that may occur in a concrete flood control channel during a winter rainstorm. This different priority is based on the assumption that the number of persons likely to be exposed is much higher in the first case than in the second.

The factors described above drive the prioritization of urban source investigation activities established in the USEP. Figure A-1 provides a framework for priority ranking from high (1) to low (8). Generally speaking, the highest priority sites are those where:

- Magnitude and frequency of bacterial indicator exceedance are high;

- *Bacteroides* marker analysis indicates the persistent presence of human sources of bacterial indicators;

- The site is in an area, or is close to an area, where recreational activities are likely to occur; and

- Observed exceedances and the presence of human sources of bacterial indicators occur during periods when people are most likely to be present, e.g., during warm months and dry periods.

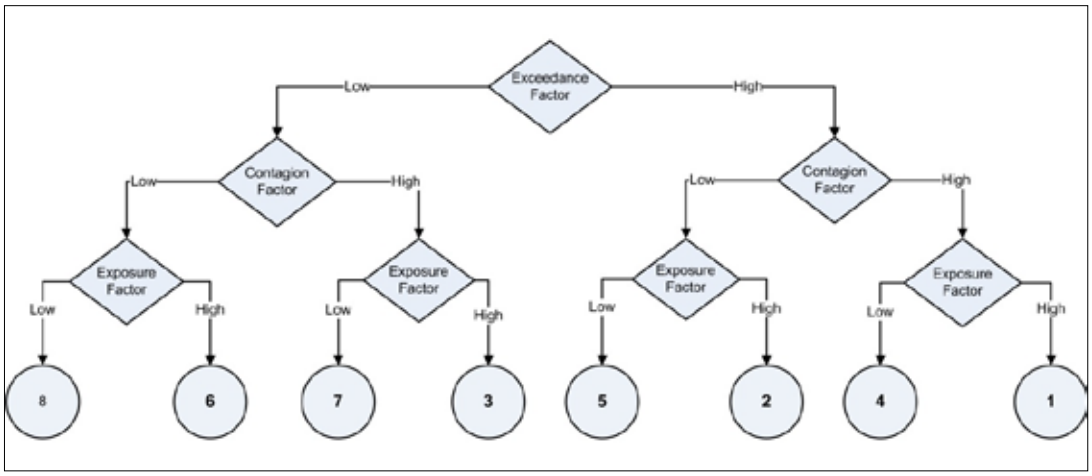


Figure A-1
Risk Characterization Framework

In contrast, the lowest priority sites for urban dischargers would be those where the bacterial indicator exceedance frequency and magnitude is low, human or other urban sources, e.g., domestic dogs, are not present, and the site is not used for water contact recreation, e.g., a concrete, vertical walled flood control channel. Sites with bacterial indicators from agricultural sources are referred to the RWQCB for follow-up action with agricultural dischargers.

The exceedance, contagion and exposure factors provide the basic foundation for prioritizing sites or areas for further investigative activities. As appropriate, additional factors may be considered to more clearly define the priority between several sites with similar priorities based on the three base factors, as described above. For example, other relevant considerations may include regulatory factors, e.g., the waterbody may be reclassified as a result of Basin Plan changes or the source is determined to be uncontrollable.

The results of the 2007-2008 USEP monitoring program provided the first opportunity to rank sites based on the factors described above. This prioritization was updated based on data collected from Tier 1 sites in the 2011 and 2012 dry seasons. The Tier 1 data was used to provide the basis for the RAA in Section 3 and the focus of highest priority MS4 drainage areas for Tier 2 source evaluations in the 2013 and 2014 dry seasons. However, as additional data are developed during CBRP implementation, priorities may be revised (as envisioned in Step 4 of the USEP). Attachment B summarizes the results of the all historical bacteria source evaluations in the MSAR watershed, and describes how this information was used to prioritize TMDL implementation activities.

Site Investigations

The USEP describes the types of actions that may be implemented to further investigate urban sources of bacterial indicators. Investigative strategies would be developed at six month intervals to address the highest priority needs. In principle, resources would be directed to the high priority areas first; implementation activities in lower priority sites would occur only after high priority sites have been addressed. However, when necessary, the priority for any site can be elevated, particularly if new data become available that changes the priority for action.

The USEP identifies three general types of investigative activities: Channel surveys; enhanced tracking methods; and controllability assessments. These activities would typically be implemented sequentially at

a given site, e.g., complete channel survey work before implementing an enhanced tracking method, but a step could be skipped if the source of the elevated levels of bacterial indicators is generally known. Following is a summary of the investigative tools envisioned for implementation under each investigative activity type in the USEP:

- *Channel Surveys* – Surveys may be conducted to better define sources of bacterial indicators. Example survey tools could include:
  - UAA development (consistent with SWQSTF methods) to refine application of the recreational uses in the Basin Plan.
  - Source tracking studies in tributaries or outfalls to better define the urban sources of bacterial indicators.
  - Flow loading from tributaries and other outfalls to evaluate potential for these sources to contribute significant numbers of bacterial indicators.
  - Preliminary source reconnaissance to identify potential sources of bacterial indicators including (a) direct human sources (e.g., leaking sewers or septic systems, transient camps, illicit discharges); (b) domesticated animals associated with urban land use, especially areas where domesticated animals are concentrated; and (c) wildlife concentration areas (e.g., birds, rodents, squirrels, rabbits, feral cats and dogs)
- *Enhanced Tracking Methods* – These methods provide a means to narrow down urban sources of bacterial indicators, including where to prioritize implementation efforts. Examples of tools that may be used to support enhanced source tracking include:
  - Evaluation of relative contribution of bacterial indicators by flow sources to determine which tributaries or drains contribute the most numbers of bacterial indicators to the waterbody.
  - Use of constituent-specific sampling (analgesics, hormones, caffeine, antibiotics, nutrients, surfactants, etc.) to identify potential flow sources.
  - Use of patterns and trends analyses to identify conditions under which elevated levels of bacterial indicators occur.
- *Controllability Assessments* – Where a bacterial indicator source requiring mitigation is identified, the final step in the investigative process is to determine the controllability of the source. Controllability is largely dependent on the nature of the source. For example, elevated levels of bacterial indicators attributable to wildlife or impacts associated with use of the waterbody as a conduit for water transfers may limit the controllability of the source. In these instances, it may not be feasible to control the source. Controllability assessments will consider three alternatives:
  - Prevention (or source control) activities, including for example repair of all sewer leaks, better control of domestic animals, moving transient camps, stronger enforcement of illicit discharges, etc.
  - Construction of low flow diversions to intercept DWFs and send the water to a facility for recharge or to a regional wastewater treatment facility.

- Use of on-site or regional BMPs, e.g., detention ponds, wetlands and bioswales for regional treatment. The practicability of using these facilities would be considered on a site-specific basis.

Adaptive Implementation

Adaptive implementation is an iterative process commonly incorporated into TMDL implementation plans to provide a means to reassess compliance strategies based on new data or analyses. Given the large uncertainty associated with control of pollutants such as bacterial indicators, an adaptive implementation component was included in the USEP framework to provide opportunity, where appropriate, to reconsider priorities. This adaptive component has been carried forward into this CBRP.

USEP Implementation

The USEP contains an implementation schedule that centers around periodic implementation of source evaluation activities to identify sources of bacterial indicators for potential mitigation. Along with these activities, the USEP requires submittal of a semi-annual report to document ongoing and planned activities related to the management of urban sources of bacterial indicators. These reports have been submitted since July 2009.

In spring 2009 the Task Force established the first priority areas for further investigation based on the findings of the 2007-2008 USEP monitoring program and ongoing watershed-wide monitoring at the compliance sites (see Attachment B for a discussion of this prioritization process). In fall 2009 the Task Force authorized two USEP-based studies:

§ *Source Evaluation Activities in Carbon Canyon Creek and Cypress Channels in San Bernardino County* – The data analysis report prepared after completion of 2007-2008 monitoring activities (SAWPA 2009a) prioritized the next steps for USEP implementation based on the risk characterization approach described above. USEP sample locations with a combination of the largest number of exceedances of bacterial indicator water quality objectives, highest levels of bacterial indicators, and most frequent indications of contamination by human sources were given the highest priority for additional source evaluation activities. Accordingly, the Cypress Channel subwatershed was ranked high for follow-up investigations. In contrast, the Carbon Canyon Creek subwatershed was ranked very low as both the frequency of exceedances of water quality objectives and the levels of bacterial indicators was relatively low.

  Both the Cypress Channel and Carbon Canyon Creek drainage areas were recommended for source evaluation studies. Evaluation of the Carbon Canyon Creek subwatershed was included to determine if any site-specific characteristics could be identified that provide insight into how to reduce bacterial indicator levels elsewhere. Source evaluation activities involved a desktop level characterization as well as field reconnaissance to identify subwatershed or in-stream characteristics which may contribute to high or low levels of bacterial indicators at either site. A technical memorandum summarizing the findings of this effort was prepared (SAWPA 2010d).

§ *Dry Weather Runoff Controllability Assessment for Lower Deer Creek Subwatershed (Chris Basin) in San Bernardino County* – SAWPA (2009a) identified Chris Basin as a high priority site for bacteria source evaluation activities. Given its location at the confluence of Cucamonga Creek and Lower Deer Creek, Chris Basin has the potential to be retrofitted for use as a regional treatment BMP for dry weather runoff. The USEP study evaluated opportunities to retrofit the site to capture DWFs

and eliminate the existing dry weather discharge to Cucamonga Creek. A technical memorandum summarizing the findings of this study was prepared (SAWPA 2010e).

Both of the above USEP studies recommended a number of follow-up actions applicable to both urban dischargers and the RWQCB. These actions will be incorporated as appropriate into future source evaluation activities conducted in these areas as the CBRP is implemented.

Urban dischargers have also implemented a number of other source evaluation activities through the direction of the Task Force. These activities and their relevance to the management of bacterial indicators or CBRP include:

- During the 2007-2008 USEP monitoring program, human source bacteria were regularly detected and high bacterial indicator concentrations were present in Box Springs Channel. Following a local investigation in 2008, a sanitary/storm sewer cross connection was identified and corrected. Sampling occurred in spring 2011 to evaluate current bacterial indicator levels and verify that human source bacteria are no longer present. The findings from this effort are available from SAWPA[4].

- When the USEP program was implemented in 2007-2008 no samples were collected from sites representing the Cities of Pomona and Claremont (portion of MSAR watershed in Los Angeles County). To fill this data gap, sample collection was conducted under dry weather conditions in spring 2011 to provide a preliminary characterization of bacteria loading from this portion of the MSAR watershed. The findings from this effort are available from SAWPA[5]

- A source evaluation study was implemented in 2011 to obtain additional information regarding the variability of dry weather flows in stormwater channels/outfalls in the MSAR watershed. The information gained from this effort was combined with other available dry weather hydrology data to draw conclusions regarding characteristics of typical dry weather flows, especially the nature of their variability. These data were incorporated into the flow analyses included in the CBRP's compliance analysis. The findings from this effort are available from SAWPA[6].

- In the 2011 and 2012 dry seasons, the MSAR Permittees collected samples from Tier 1 sites, defined as locations where urban sources of dry weather flow may directly discharge to a downstream watershed-wide compliance site. Monitoring data collected from Tier 1 sites characterized DWF and bacteria from 34 major MS4 outfalls in the MSAR watershed (increasing the number of sites from 13 in the original 2007-08 USEP Study). Based on the findings from Tier 1 data collection activities[7], MS4 drainage areas with potentially controllable urban sources of bacterial indicators were prioritized based on factors including the magnitude of bacterial indicator concentrations, persistence of human *Bacteroides* detection, and risk of exposure. In order of priority, prioritized drainage areas will be further evaluated to identify non-structural or structural alternatives (or some combination of both) for mitigating controllable urban sources of bacterial indicators. As needed, this controllability assessment will include reconnaissance of Tier 2 sites and the use of

[4] See Technical Memorandum – Box Springs Channel Follow-up Study available from www.sawpa.org/collaboration/projects/tmdl-taskforce/ under the resources tab
[5] See Technical Memorandum –Preliminary Characterization of Bacteria Loading from MS4 in Pomona and Claremont, available from www.sawpa.org/collaboration/projects/tmdl-taskforce/ under the resources tab
[6] See Technical Memorandum – Dry Weather Flows from MS4 Outfalls www.sawpa.org/collaboration/projects/tmdl-taskforce/ under the resources tab
[7] See MSAR Final Triennial Report - February 2013, available from www.sawpa.org/collaboration/projects/tmdl-taskforce/ under the resources tab

IC/ID methods to identify and evaluate alternatives. Tier 2 sites are tributary to Tier 1 outfalls. If a Tier 2 site is determined to be a potential contributor to non-compliance, additional inspection activities may occur to identify the nature and source of the dry weather flow and bacterial indicators and evaluate controllability.

A.6 Triennial Review Summary

Task 6 of the implementation section of the MSAR Bacterial Indicator TMDL requires preparation of a water quality assessment every three years that summarizes the data collected for the preceding three year period and evaluates progress towards compliance with wasteload and load allocations. Referred to as a Triennial Report, the requirement for this assessment is also in the MS4 permits for San Bernardino and Riverside Counties within the Santa Ana River watershed. Two of these Triennial Reports have been submitted to the Santa RWQCB as required on February 15, 2010 (SAWPA 2010a) and February 11, 2013 (SAWPA 2013)[8].

The Triennial Report findings, relevant to the MS4 wasteload allocation, are provided in Attachment B of this CBRP. These findings provide the baseline for the CBRP reasonable assurance analysis that demonstrates that implementation of this CBRP is expected to achieve compliance with the wasteload allocation by December 15, 2015.

[8] These Triennial Reports are available from www.sawpa.org/collaboration/projects/tmdl-taskforce/ under the resources tab

Attachment B
Watershed Characterization

B.1 Middle Santa Ana River Watershed

The following sections provide background information regarding the general characteristics of the MSAR watershed, including major subwatersheds, key jurisdictions and dominant land use.

General Description

The Santa Ana River watershed, located in southern California, encompasses an area of approximately 2,800 square miles. Surface water flows begin in the San Bernardino and San Gabriel Mountains and flow in a generally northeast to southwest direction to the Pacific Ocean. Flows are interrupted by a number a number of features ranging from groundwater recharge basins to Prado Basin Dam. The MSAR watershed encompasses an area of approximately 488 square miles and is located generally in the north central portion of the Santa Ana River watershed (Figure B-1).

The MSAR watershed includes the southwestern part of San Bernardino County, the northwestern part of Riverside County, and a small portion of Los Angeles County (Figure B-1). This CBRP represents the participation of the City of Pomona in Los Angeles County (Figure B-2).

Lying within an arid region, limited natural perennial surface water is present in the watershed. Flows derived from mountain areas (snowmelt or storm runoff) are mostly captured by dams or percolated in recharge basins. In the transition zone from mountains to lower lying valley areas, the sources of surface water flows vary, e.g., dry weather urban runoff, such as occurs from irrigation, stormwater runoff during rain events, treated municipal wastewater discharges, water transfers, dewatering discharges and other permitted discharges, and rising groundwater.

The largest order waterbody in the MSAR watershed is Reach 3 of the Santa Ana River which flows from Mission Boulevard to Prado Basin Dam, where Prado Dam controls flows from the middle to the lower part of the Santa Ana River watershed. Downstream of Mission Boulevard, there is less channelization of the Santa Ana River, allowing for larger meanders and riparian habitat extent within a wider floodplain. A number of major tributaries to the MSAR exist, many of which have been modified for flood control purposes.

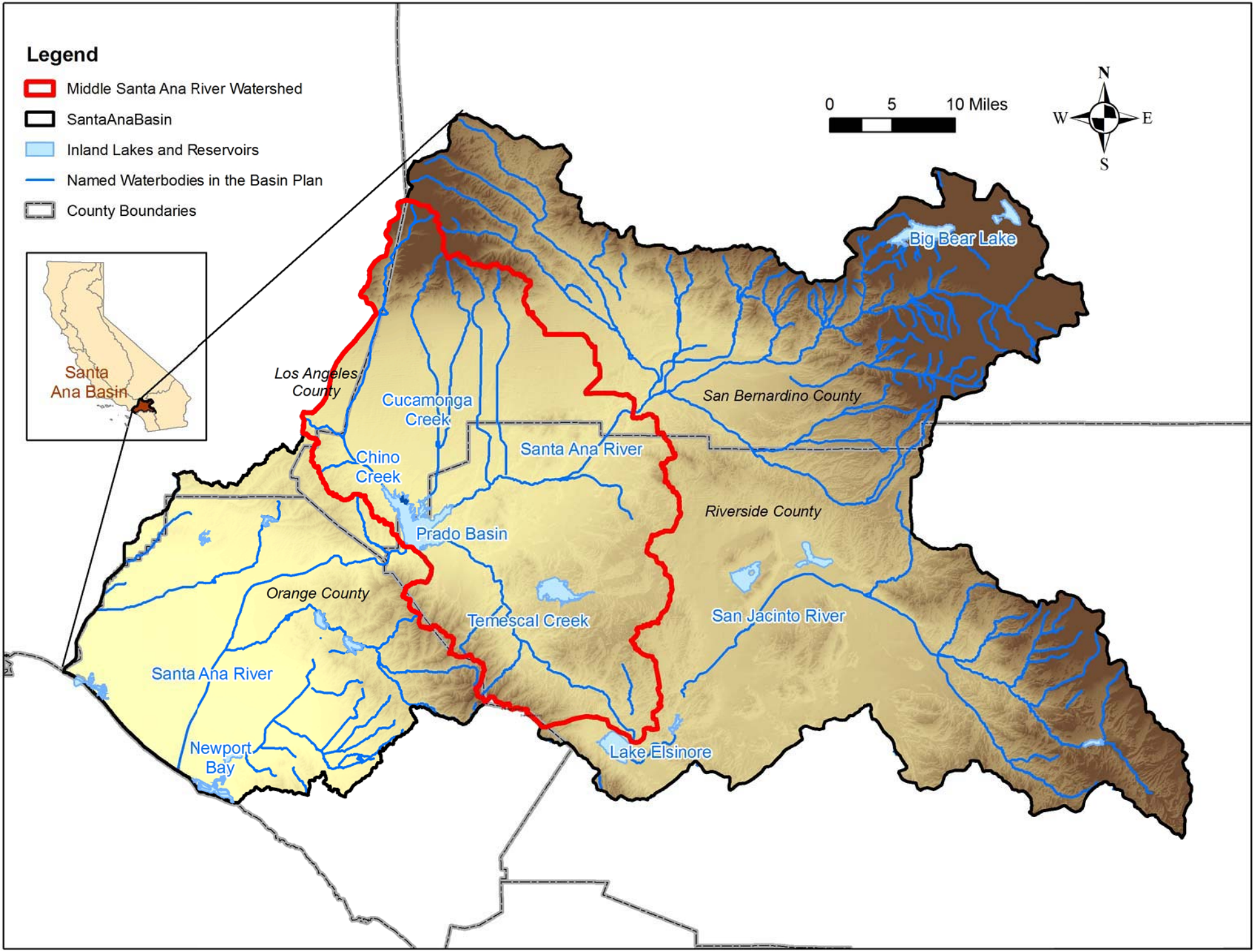


Figure B-1. Santa Ana River Watershed

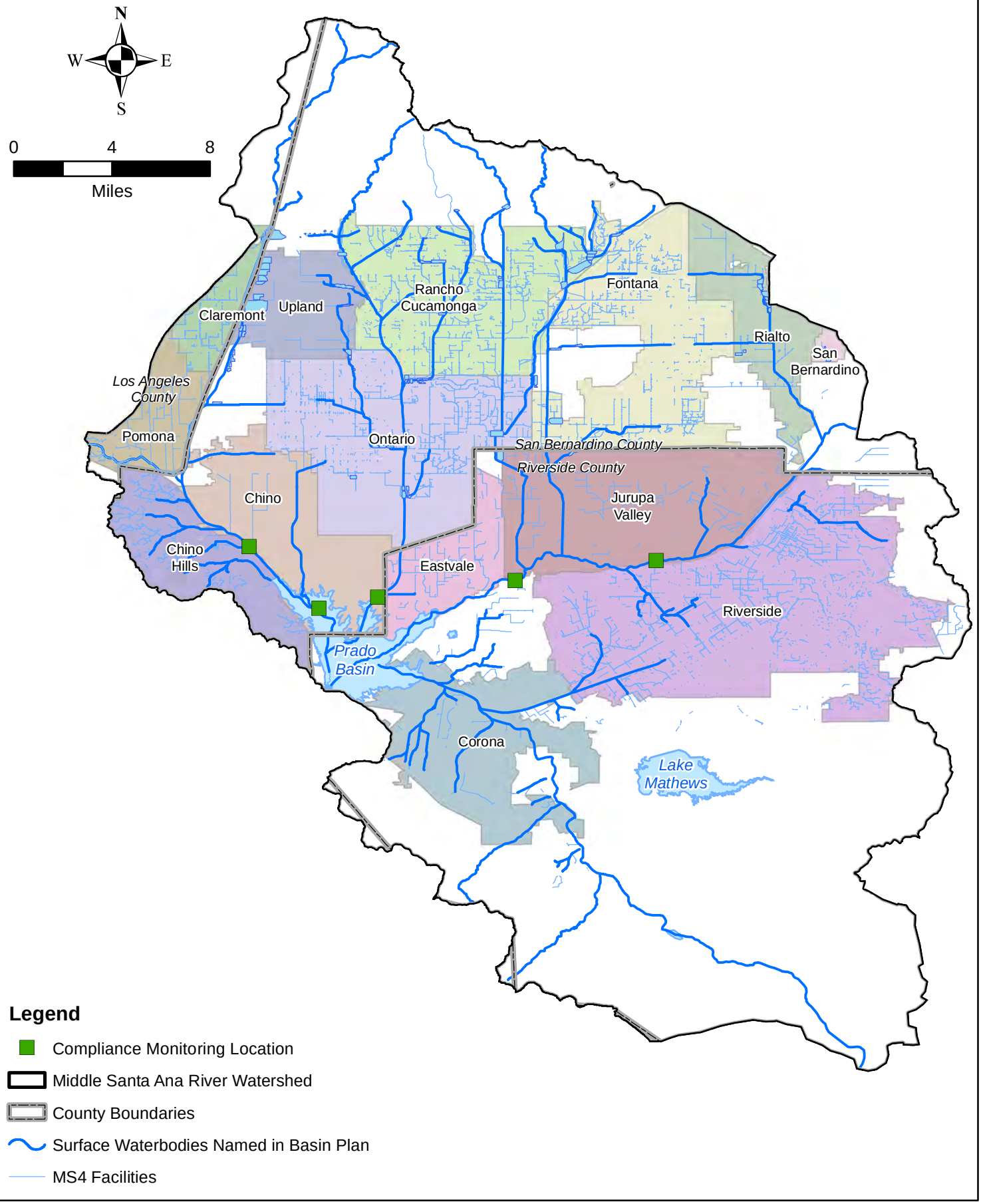


Figure B-2. Jurisdictional Areas

Based on 2000 census data, the population of the MSAR watershed is approximately 1.4 million people. Much of the lowland areas are highly developed; however, a portion of the watershed remains largely agricultural - the area formerly known as the Chino Dairy Preserve. This area is located in the south central part of the Chino Creek Basin subwatershed. At the time of TMDL development the area contained approximately 300,000 cows (RWQCB 2005). As of January 2009, this number was down to about 138,500 (email communication, Ed Kashak, RWQCB, to Pat Boldt, representative of agricultural interests and MSAR Task Force member, December 8, 2009). In recent years, the cities of Ontario, Chino, and Chino Hills annexed the unincorporated portions of this area in San Bernardino County. The remaining portion of the former preserve, which is in Riverside County, was recently incorporated in the City of Eastvale ***(http://www.rcip.org/pdf_files/maps_09_24_03/lowres/Fig3_4Eastvale.pdf).***

Major Subwatersheds

The MSAR watershed is divided into several major subwatersheds to provide a basis for evaluating compliance with TMDL urban wasteload allocations. These subwatersheds drain to the following watershed-wide compliance points as established in the watershed-wide monitoring program (see Section 2.4) (Figure B-3; see Table B-1):

- Chino Creek at Central Avenue (WW-C7) – Areas of both Los Angeles and San Bernardino Counties drain to this site. The upper portion of the subwatershed is hydrologically disconnected from the MSAR and drains to the Brooks Basin.
- Mill-Cucamonga Creek at Chino-Corona Road (WW-M5) – With the exception of a small area in Riverside County, drainage area is mostly in San Bernardino County. No portion of this watershed is in Los Angeles County.
- Santa Ana River at MWD Crossing (WW-S1) – Areas of both Riverside and San Bernardino Counties drain to this site. No portion of this watershed is in Los Angeles County.
- Santa Ana River at Pedley Avenue (WW-S4) - Areas of both Riverside and San Bernardino Counties drain to this site. No portion of this watershed is in Los Angeles County.
- Prado Park Lake (WW-C3) – Entire drainage area to this location is in San Bernardino County.

Another important subwatershed in the MSAR watershed is Temescal Creek. Temescal Creek is tributary to the Prado Basin Management Zone. The RWQCB has not listed Temescal Creek as impaired by bacterial indicators and, therefore, no watershed-wide compliance monitoring location has been established on this waterbody. The confluence of Temescal Creek within the Prado Basin Management Zone is well downstream of the watershed-wide bacterial indicator TMDL compliance monitoring site at Santa Ana River at Pedley Avenue.

Jurisdictions

Table B-1 summarizes the jurisdictional area of each MS4-permitted city and unincorporated county area that drains to each of the MSAR watershed-wide compliance monitoring locations. Although this CBRP only applies to areas within the City of Pomona, the jurisdictional areas outside of the City are included in Table B-1 to illustrate the relative importance of City of Pomona MS4 programs to the watershed-wide compliance locations.

Land Use

Land use distribution has the potential to affect flow volume and bacterial indicator concentrations under dry weather conditions. Table B-1 provides the land use distribution for each jurisdiction in each of the areas draining to the watershed-wide compliance monitoring locations.

Land use in the MSAR watershed includes a variety of categories as defined by the Southern California Association of Governments (SCAG 2005). Related categories were lumped together to reflect major types of land uses, e.g., agricultural or industrial related land uses. Figure B-4 illustrates the resulting spatial land use pattern for the Los Angeles County portion of the MSAR watershed, at least as most recently available in the 2005 SCAG dataset. Residential land uses make up the greatest fraction of urbanized drainage area in both the MSAR watershed generally (~50 percent) and the City of Pomona specifically (57 percent). Industrial, commercial institutional, and infrastructural land use together comprise approximately 30 percent of the MSAR drainage area within the City. This suggests that compliance activities targeted at urban residential and commercial lands might provide the most significant water quality benefits. No agricultural lands and little vacant land or open space are present within the City of Pomona portion of the MSAR watershed.

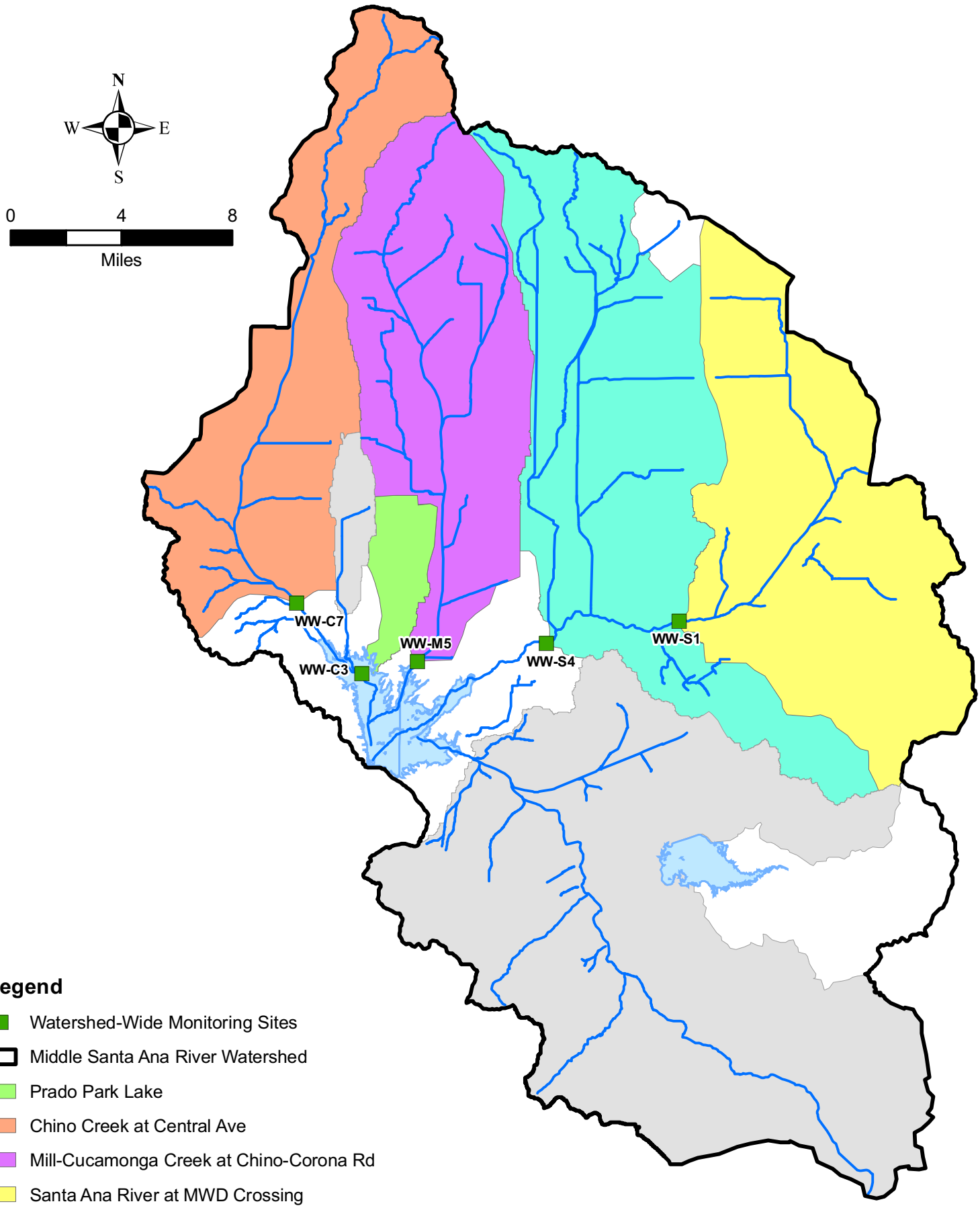


Figure B-3. Major Watershed Draining to Compliance Sites

Table B-1. Jurisdictional area and percent land use in each of the major MSAR subwatersheds (areas outside of City of Pomona included to show land use percentages of all areas draining to watershed-wide compliance sites)

Jurisdictions within MSAR Subwatersheds	Drainage Area (acres)	Agricultural	Commercial Institutional	Industrial	Infrastructure	Mixed Urban	Natural Vacant	Open Space Recreation	Residential	Water Wetlands
Chino Creek at Central Avenue (WW-C7)	54,607									
Pomona	6,707	0%	15%	10%	6%	0%	9%	3%	57%	0%
Chino	7,659	10%	15%	25%	5%	1%	4%	2%	38%	0%
Chino Hills	6,125	6%	7%	0%	3%	0%	42%	2%	40%	0%
Montclair	3,537	1%	24%	12%	5%	1%	4%	2%	51%	0%
Ontario	2,721	3%	16%	6%	0%	1%	3%	4%	67%	0%
Upland	5,161	0%	13%	17%	7%	0%	11%	1%	51%	0%
Unincorporated San Bernardino	13,714	2%	1%	1%	1%	0%	81%	1%	13%	0%
Claremont	3,011	0%	21%	2%	6%	0%	30%	8%	32%	1%
Unincorporated Los Angeles	5,972	0%	0%	0%	0%	0%	99%	0%	1%	0%
Mill-Cucamonga Creek at Chino-Corona Road (WW-M5)	55,456									
Chino	618	65%	0%	0%	2%	2%	26%	0%	5%	0%
Ontario	18,006	20%	7%	19%	16%	1%	13%	2%	22%	0%
Rancho Cucamonga	5,256	1%	10%	8%	6%	1%	11%	3%	60%	0%
Upland	4,871	2%	10%	5%	7%	5%	4%	4%	62%	1%
Unincorporated San Bernardino	13,860	0%	0%	0%	4%	0%	91%	0%	5%	0%
Eastvale	2,815	32%	1%	10%	3%	5%	28%	1%	20%	0%
Unincorporated Riverside	30	1%	0%	20%	59%	0%	19%	0%	1%	0%
Prado Park Lake (WW-C3)	6,878									
Chino	2,255	45%	4%	1%	14%	10%	18%	5%	1%	2%
Ontario	4,623	66%	2%	0%	3%	0%	6%	2%	21%	0%
Santa Ana River at MWD Crossing (WW-S1)	65,017									
Fontana	4,486	1%	9%	1%	2%	0%	33%	1%	53%	0%

Table B-1. Jurisdictional area and percent land use in each of the major MSAR subwatersheds (areas outside of City of Pomona included to show land use percentages of all areas draining to watershed-wide compliance sites)

Jurisdictions within MSAR Subwatersheds	Drainage Area (acres)	Agricultural	Commercial Institutional	Industrial	Infrastructure	Mixed Urban	Natural Vacant	Open Space Recreation	Residential	Water Wetlands
Rialto	11,490	0%	7%	13%	13%	4%	21%	1%	41%	0%
Riverside	26,442	3%	11%	7%	5%	2%	25%	4%	43%	0%
Unincorporated San Bernardino	5,867	4%	6%	12%	9%	1%	18%	3%	47%	0%
Jurupa Valley	8,772	7%	5%	10%	5%	0%	34%	11%	28%	0%
Unincorporated Riverside	7,155	7%	12%	1%	5%	3%	40%	22%	10%	0%
San Bernardino	804	1%	11%	2%	7%	1%	10%	2%	66%	0%
Santa Ana River at Pedley Avenue (WW-S4)	89,253									
Fontana	21,620	3%	9%	11%	8%	3%	25%	4%	37%	0%
Norco	141	4%	0%	0%	1%	0%	35%	7%	53%	0%
Ontario	3,819	0%	11%	59%	18%	0%	12%	0%	0%	0%
Rancho Cucamonga	10,457	1%	8%	13%	17%	6%	23%	1%	31%	0%
Riverside	12,990	14%	12%	4%	3%	1%	23%	2%	41%	0%
Unincorporated San Bernardino	19,047	0%	4%	12%	7%	1%	67%	0%	9%	0%
Eastvale	317	43%	1%	18%	29%	5%	3%	0%	1%	0%
Jurupa Valley	17,952	5%	5%	11%	4%	1%	25%	10%	39%	0%
Unincorporated Riverside	2,909	6%	2%	6%	10%	1%	23%	0%	52%	0%
Temescal Creek	118,583									
Corona	18,879	5%	9%	8%	7%	4%	22%	3%	42%	0%
Norco	2,372	4%	9%	4%	1%	1%	37%	4%	40%	0%
Riverside	11,998	15%	11%	2%	2%	2%	23%	1%	44%	0%
Unincorporated Riverside	85,333	4%	1%	2%	0%	2%	78%	1%	12%	0%
Lake Mathews	24,671									
Riverside	6	0%	49%	0%	0%	0%	0%	0%	51%	0%
Unincorporated Riverside	24,664	6%	3%	0%	0%	2%	54%	2%	22%	11%
Other Drainages to Prado Basin	39,842									
Chino	8,440	47%	3%	4%	5%	1%	19%	6%	14%	1%

Table B-1. Jurisdictional area and percent land use in each of the major MSAR subwatersheds (areas outside of City of Pomona included to show land use percentages of all areas draining to watershed-wide compliance sites)

Jurisdictions within MSAR Subwatersheds	Drainage Area (acres)	Agricultural	Commercial Institutional	Industrial	Infrastructure	Mixed Urban	Natural Vacant	Open Space Recreation	Residential	Water Wetlands
Chino Hills	7,626	0%	2%	1%	4%	3%	56%	5%	29%	0%
Corona	3,483	0%	7%	23%	8%	0%	30%	4%	28%	0%
Norco	6,328	4%	13%	1%	3%	2%	21%	1%	54%	1%
Ontario	2,778	20%	12%	2%	5%	0%	3%	1%	57%	0%
Rialto	4	0%	0%	0%	11%	0%	63%	0%	26%	0%
Riverside	139	0%	0%	0%	1%	0%	98%	0%	1%	0%
Unincorporated San Bernardino	127	11%	0%	0%	2%	0%	59%	23%	0%	5%
Unincorporated Los Angeles	0	0%	0%	0%	0%	0%	100%	0%	0%	0%
Eastvale	6,279	26%	1%	0%	4%	16%	19%	9%	25%	0%
Jurupa Valley	382	13%	0%	0%	0%	0%	26%	11%	50%	0%
Unincorporated Riverside	4,256	1%	1%	2%	13%	0%	46%	27%	6%	4%

B.2 Dry Weather Hydrology

Regular flows exist in many MSAR waterbodies during dry weather conditions. Sources of flow during dry weather include:

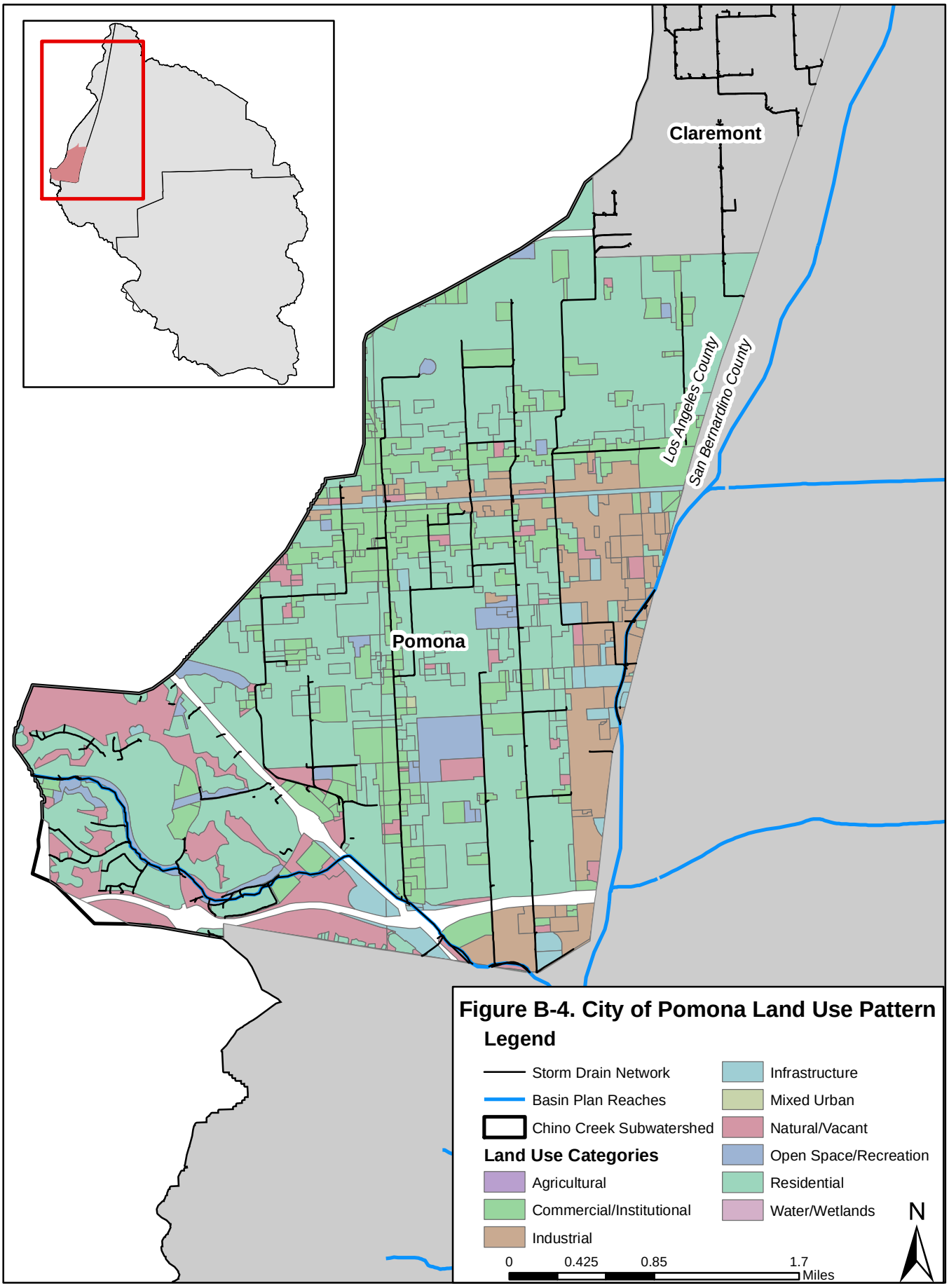
- Tertiary treated effluent from POTWs
- Turnouts of imported water by the Metropolitan Water District purchased for groundwater recharge by water agencies in the Santa Ana River watershed
- Groundwater inputs from areas of rising groundwater
- Temporary de minimums discharges, such as well blow-offs
- Water transfers between water agencies for conjunctive use programs
- Authorized non-stormwater discharges (as defined by WDRs issued by the RWQCB)
- Non-permitted discharges including Phase II MS4 discharges.

Each of these sources of DWF has a different pathway and potential to transport bacterial indicators to receiving waterbodies. Thus, it is important to understand the relative role of each of these categories of DWF.

Within the MSAR watershed, many MS4 drainage areas do not typically cause or contribute to flow at the compliance monitoring sites. DWF from these drainage areas is hydrologically disconnected from the TMDL receiving waterbodies, by either purposefully recharging groundwater in constructed regional retention facilities or through losses in earthen channel bottoms, where the recharge capacity of underlying soils exceeds dry weather runoff generated in upstream drainage areas. Within Los Angeles County, the northern portion of the City of Claremont drains to the Brooks Basin and is hydrologically disconnected from the Chino Creek subwatershed (Figure B-5).

Existing data were evaluated to estimate a typical rate of DWF generation in the MSAR watershed. A per acre rate could be used to quantify DWF reduction for BMP implementation over a known area. Within the Chino Basin portion of the MSAR watershed, the Inland Empire Utilities Agency (IEUA) measures flow at a number of locations to quantify groundwater recharge for water supply benefit. Flow measurements, on days when DWF is predominantly from urban sources, suggest that DWF from urban sources occur at a rate of 100 gal/acre/day in the MSAR watershed, ranging from 20 to 280 gal/acre/day (Table B-2). This is consistent with DWF generation rates developed to support the City of Los Angeles Integrated Resources Plan (2004), which estimated DWF rates from urban watersheds ranging from zero to 300 gallons/acre/day.

The USEP and Tier 1 source evaluation flow measurements indicated that some tributaries have significantly greater DWF rates per acre of urbanized drainage area than would be expected solely from urban sources. In these cases, the presence of a non-urban source was determined to be responsible for the elevated DWF rates. At a few locations, field measured runoff equated to less than 100 gal/acre/day; therefore it was assumed that non-urban sources in these subwatersheds are negligible.


Claremont
Pomona
Los Angeles County
San Bernardino County
Figure B-4. City of Pomona Land Use Pattern
Legend
Storm Drain Network
Basin Plan Reaches
Chino Creek Subwatershed
Land Use Categories
Agricultural
Commercial/Institutional
Industrial
Infrastructure
Mixed Urban
Natural/Vacant
Open Space/Recreation
Residential
Water/Wetlands
N
0
0.425
0.85
1.7
Miles

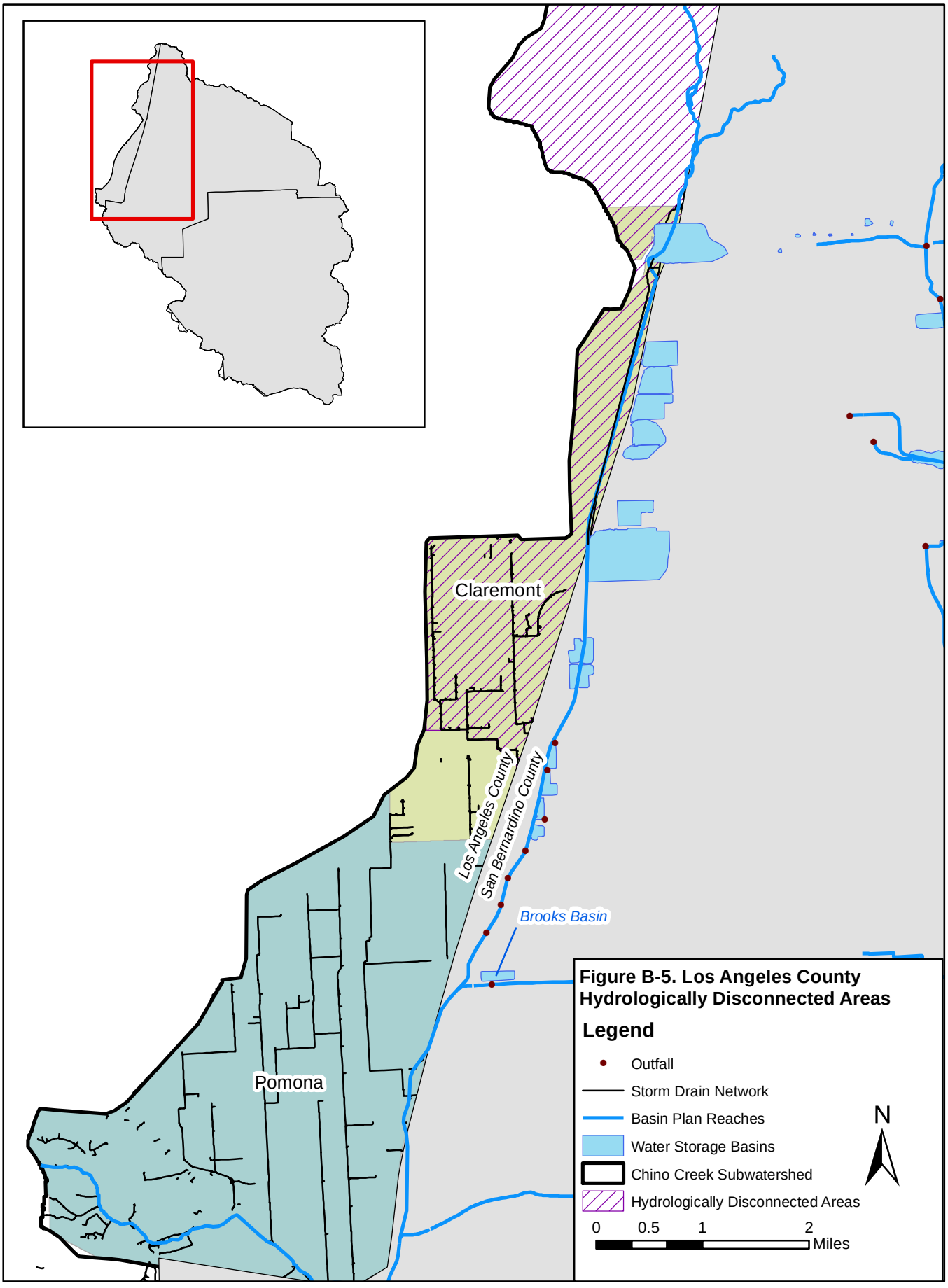

Claremont
Pomona
Los Angeles County
San Bernardino County
Brooks Basin
Figure B-5. Los Angeles County Hydrologically Disconnected Areas
Legend
Outfall
Storm Drain Network
Basin Plan Reaches
Water Storage Basins
Chino Creek Subwatershed
Hydrologically Disconnected Areas
N
0
0.5
1
2
Miles

Table B-2. Urban dry weather flow in MSAR watershed upstream of IEUA flow measurement locations

Location	Average Dry Weather Flow (cfs)	Urban Runoff Rate (gal/ac/day)
Grove Basin	0.04	111
West State Street Storm Drain	0.05	19
8th St. Storm Drain into 8th St.	0.17	82
West Cucamonga Inlet @ 8th St. B	0.41	92
Turner 1 Inlet from Cucamonga Cr	0.49	36
Deer Creek Drop Inlet @ Turner 4	1.58	110
Deer Creek @ 4th St. Overpass	1.06	105
Turner 4 - Guasti Creek	0.19	219
Lower Day Basin Forebay Storm Dr	0.02	63
San Sevaine Basin 5 Storm Drain	0.19	81
Victoria Basin Inlet	0.05	49
RP3 Basin Distribution Channel Inlet	0.32	53
Declez Channel at Live Oak	0.27	282
Declez Channel by School	0.16	98
Average of all Sites		100

Chino Creek

Most of the DWF in Chino Creek at Central Avenue can be attributed to three sources, as described below:

- Urban DWF from the cities of Pomona and Claremont, as well as Cities of Chino, Chino Hills, and Montclair (within San Bernardino County).
- Effluent from the IEUA Carbon Canyon Wastewater Recycling Facility (WRF) (Table B-3)
- Contributions from areas of rising groundwater and springs within the Carbon Canyon Creek Channel subwatershed.

USGS flow gauges measure flows at points downstream of 80 percent of the drainage area tributary to the Chino Creek at Central Avenue compliance point. Continuous flow data are available from a USGS gauge on Chino Creek at Schaeffer Avenue (USGS Gauge# 11073360) and a San Bernardino County Flood Control District (SBCFCD) gauge on Carbon Canyon Creek Channel (SBCFCD# 2853). The portion of the Chino Creek watershed upstream of Schaeffer Avenue (including San Antonio Channel) contributes ~3 cfs of flow during dry weather. This flowrate equates to an urban DWF generation rate of ~40 gallons/acre/day, based on the size of the upstream drainage area. The lower than typical rate could be the result of retention of DWF from portions of the MS4 drainage in recharge basins alongside San Antonio Channel (Table 3-3).

Conversely, DWF in Carbon Canyon Creek Channel (~5 cfs) significantly exceeds the expected flow from a typical urban watershed in southern California (equating to an urban DWF generation rate of ~2,400 gal/acre/day). This subwatershed has historically experienced high groundwater conditions resulting in natural springs, which may provide one explanation for the elevated DWF rates (personal communication, Peter Hainey, San Bernardino County Department of Public Works, Water Resources Division, and May 6, 2010).

Drainage from the City of Pomona as measured at the CHINOCRK site in the 2011 dry season had an average DWF of 1.7 cfs, and ranged from 1-3 cfs. This equates to a DWF generation rate of approximately 250 gal/acre/day, which is higher than might be typically expected from a typical urban drainage area in the MSAR watershed (see Table B-2). Source evaluation activities implemented according to this CBRP will evaluate the key sources of DWF within the drainage area to CHINOCRK within the City of Pomona.

Table B-3. Average daily effluent from POTWs in the MSAR watershed

Treatment Facility	Receiving Waterbody	Dry Season (cfs)
Riverside Water Quality Control Plant	Santa Ana River Reach 3	49
Colton/San Bernardino RIX	Santa Ana River Reach 4	59
Rialto WWTP	Santa Ana River Reach 4	10
IEUA RP1 Outfall 1	Cucamonga Creek	27
IEUA RP1 Outfall 2	Prado Park Lake	8
IEUA Carbon Canyon (CCWRF)	Chino Creek	9
Yucaipa Valley Water District	Santa Ana River Reach 4	6
Lee Lake WWTP	Temescal Creek	0.9
Corona WWTP No.1 and No.3	Temescal Creek	3.4
Western Municipal Water District (WMWD) West Riverside WWTP	Santa Ana River Reach 3	7
	Totals	180

B.3 Baseline Water Quality

Water quality monitoring in the MSAR watershed to support TMDL implementation has been ongoing since 2007 at all five watershed-wide compliance monitoring locations. To date, this effort has included:

- Collection of 20 bacterial indicator samples at watershed-wide sites during each dry season (April 1 – October 31), under dry weather conditions in 2007, 2008, 2009, 2010, 2011, 2012 and now during 2013.

- Collection of 11 bacterial indicator samples at watershed-wide sites during each wet season (November 1 – March 31), under dry weather conditions in the 2007-08, 2008-09, 2009-10, 2010-11, 2011-12, and 2012-13 wet seasons.
- Collection of 4 bacterial indicator samples at watershed-wide sites during and after a wet weather event in each of the wet seasons of the 2007-08, 2008-09, 2009-10, 2010-11, 2011-12, and 2012-13 wet seasons.
- Collection of approximately 20 bacterial indicator samples during dry weather conditions in both dry and wet seasons from 13 USEP monitoring program locations in 2007-2008.
- Collection of 10 bacterial indicator samples during the dry season from the CHINOCRK Tier 1 site in 2011.
- Collection of approximately 20 bacterial indicator samples during the dry season from 29 Tier 1 monitoring program locations in 2012 (not including Tier 1 sites visited that were consistently dry).
- Collection of seven bacterial indicator samples during the dry season from a three Tier 1 sites, one of which drains a portion of Pomona that is tributary to San Antonio Channel in 2012.

The following sections summarize baseline water quality for bacterial indicators in the MSAR watershed. Detailed information is available in data reports prepared to support TMDL implementation: SAWPA (2009a) summarizes the findings from the 2007 dry season and 2007-08 wet season monitoring; SAWPA (2009b) and SAWPA (2009c) summarize the findings from the 2008 dry and 2008-2009 wet seasons, respectively; SAWPA (2009d) and SAWPA (2010c) summarize the results from the 2009 dry and 2009-2010 wet seasons; SAWPA (2010f) and SAWPA (2011a) summarize the results from the 2010 dry season and from the 2010-2011 wet season, respectively; SAWPA (2011b) and SAWPA (2012a) summarize the results from the 2011 dry season and the 2011-2012 wet season, respectively; and SAWPA (2012b) and SAWPA (2013b) summarize the results from the 2012 dry season and the 2012-2013 wet season, respectively.

Watershed-wide Compliance Monitoring

Table B-4 presents the geometric mean, median, and coefficient of variation of the *E. coli* concentrations from samples collected during dry weather in the dry and wet weather seasons at the watershed-wide monitoring locations. Figure B-6 illustrates the dry and wet season results for the watershed-wide compliance monitoring locations.

Generally, *E. coli* concentrations within the Santa Ana River are lower than in Chino Creek and Mill-Cucamonga Creek. *E. coli* concentrations in Prado Park Lake are also comparatively low. These summary statistics are presented to provide an overall view of water quality; actual measures of attainment of proposed *E. coli* water quality objectives are based on geometric mean calculations from samples collected over a period of no more than 30 days. Exceedances of *E. coli* water quality objectives currently under review by the SWRCB (see Section 1.2.2) occur regularly at all sites. In addition, exceedances of the TMDL urban wasteload allocations regularly occur.

Figures B-7 and B-8 illustrate the pattern in single sample and geometric mean results for *E. coli* for Chino Creek in the dry season (2007 - 2012) and wet season (2007/08 – 2012/13), respectively. In general, the observed geometric mean *E. coli* concentrations remained steady during the period of reference. Bacterial indicator concentrations remain well above the urban wasteload allocations at the Chino Creek compliance monitoring site.

Table B-4. Summary statistics for *E. coli* levels (cfu/100 mL) and data variability by sample location during dry weather conditions in the dry (2007 – 2008) and wet seasons (2007/08 -2012/13)

Site	Dry Season				Wet Season			
	N	Geometric Mean	Median	Coefficient of Variation[1]	N	Geometric Mean	Median	Coefficient of Variation[1]
Prado Park Lake (WW-C3)	115	86	80	0.23	75	140	130	0.21
Chino Creek at Central Ave (WW-C7)	115	380	330	0.14	69	232	210	0.17
Mill-Cucamonga Creek at Chino-Corona Rd (WW-M5)	115	910	810	0.11	72	320	360	0.18
Santa Ana River at MWD Crossing (WW-S1)	115	171	165	0.13	66	106	110	0.19
Santa Ana River at Pedley Ave (WW-S4)	115	137	140	0.15	64	140	155	0.16

1 - Coefficient of variation was calculated using natural log-transformed data

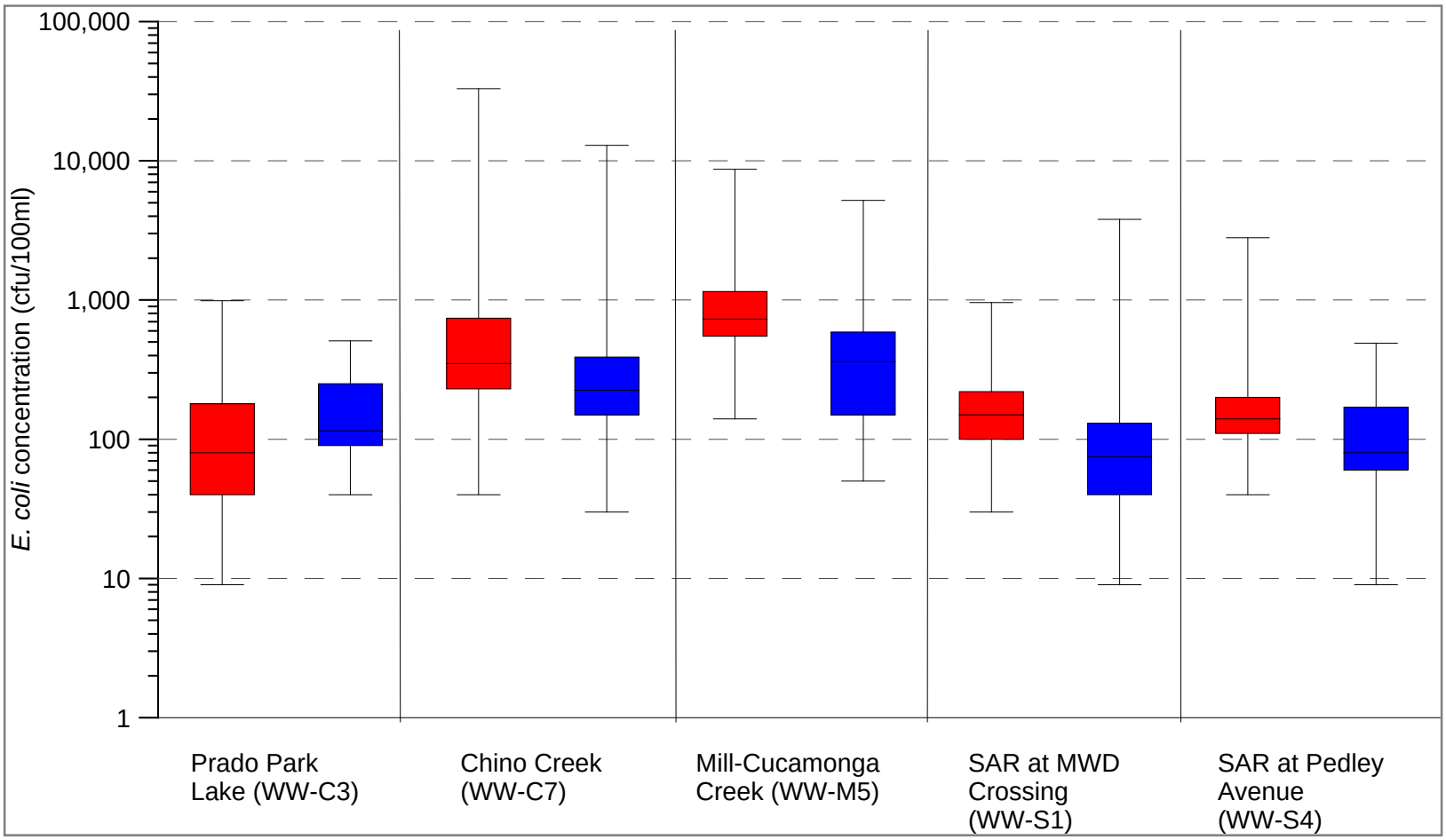


Figure B-6

Box-Whisker Plots of *E. coli* levels in samples collected under dry weather conditions during the dry season (red) and wet season (blue) at the watershed-wide TMDL compliance monitoring site (WW-C7)

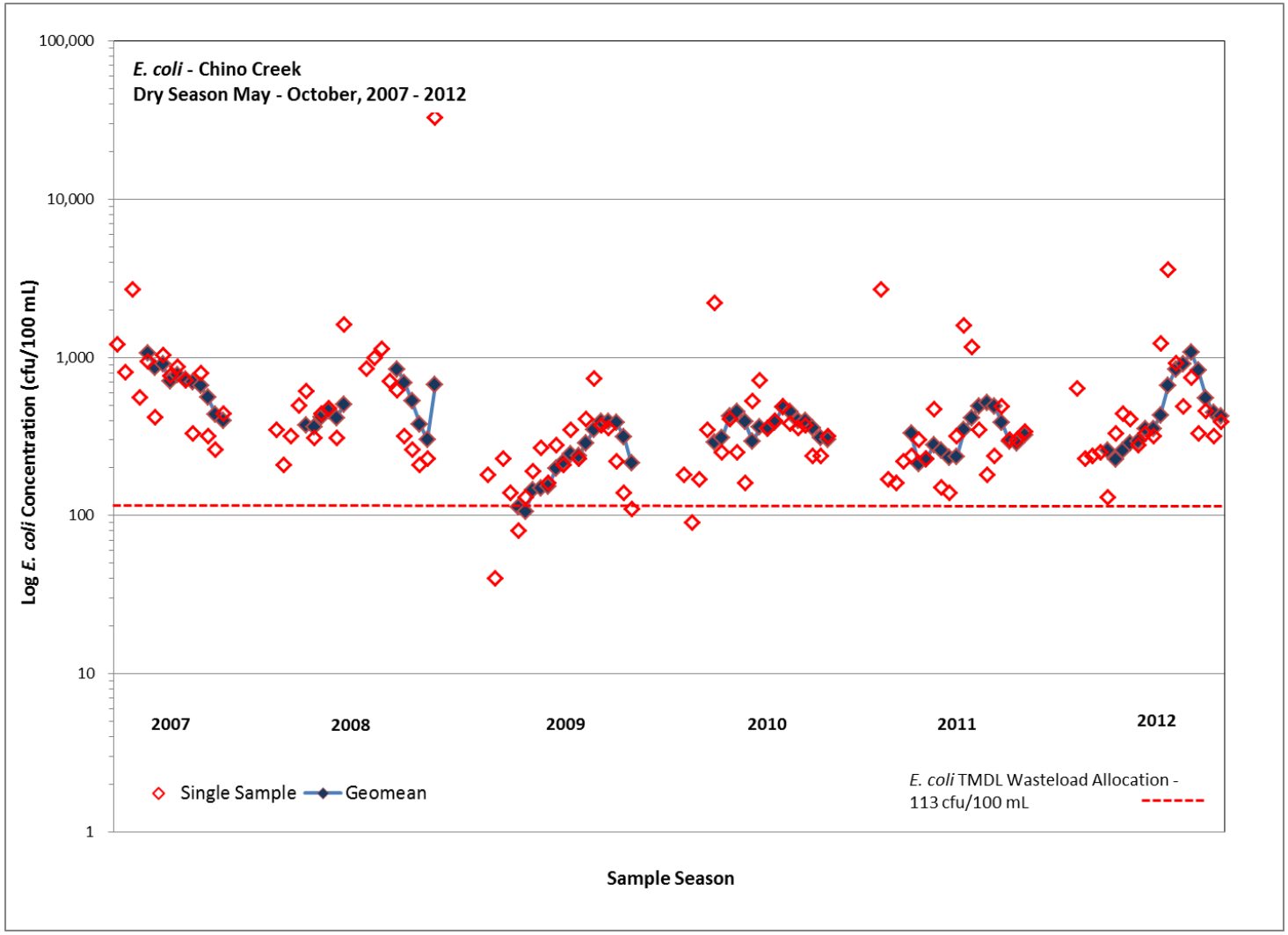


Figure B-7

Time series plot of *E. coli* single sample results and geometric means for dry season samples collected from Chino Creek (WW-C7, 2007-2012). Geometric mean was calculated only if five samples were collected during the previous five weeks

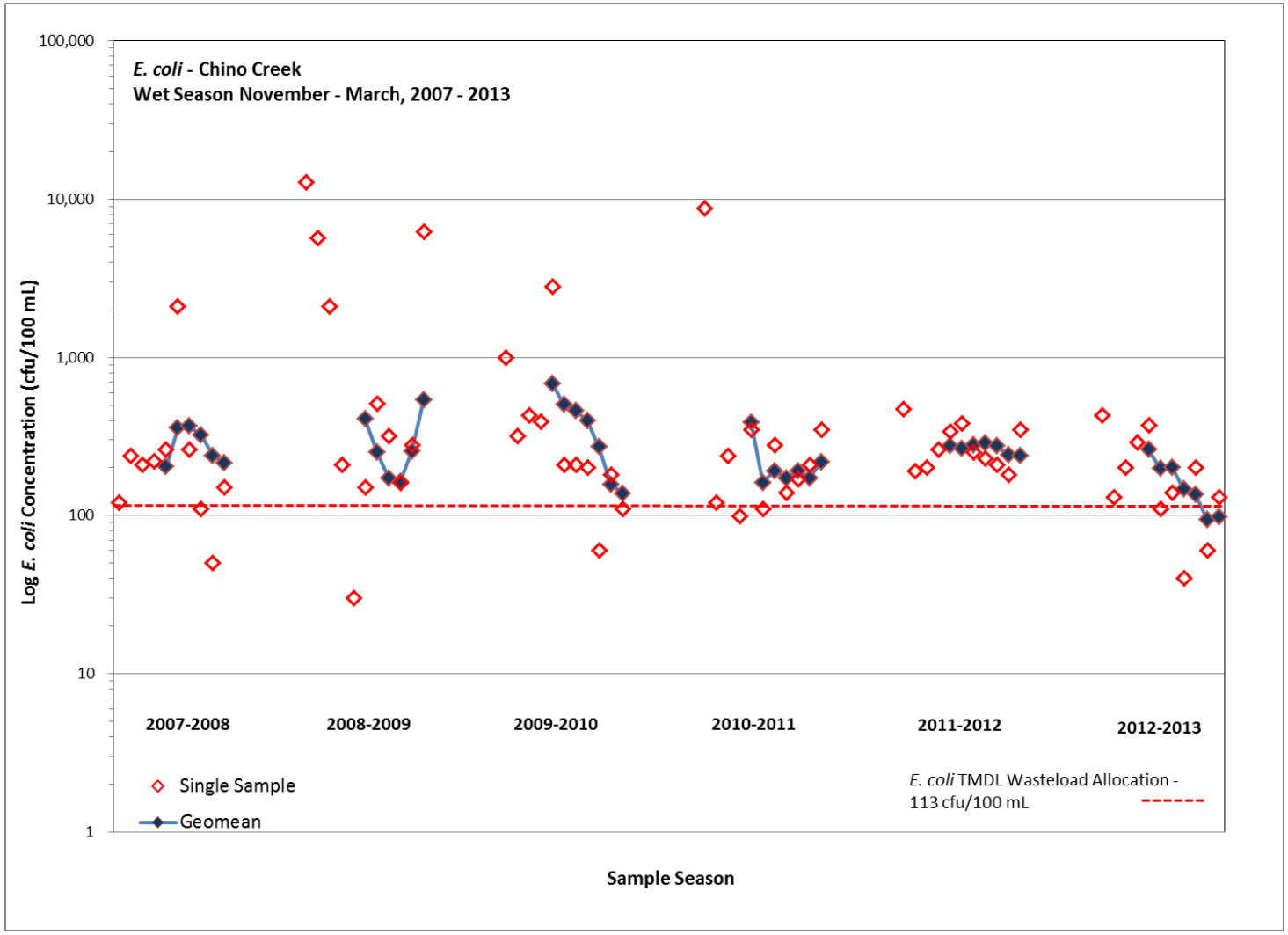


Figure B-8

Time series plot of *E. coli* single sample results and geometric means for wet season samples collected from Chino Creek (WW-C7, 2007-2013). Geometric mean was calculated only if five samples were collected during the previous five weeks

Table B-5 summarizes the frequency of compliance with geometric mean Basin Plan REC-1 water quality objectives proposed for *E. coli* (126 cfu/mL) during dry weather conditions in the dry season 2007-2012. At some locations there has been an improvement in compliance frequency since data collection began in 2007, e.g., as observed at the Santa Ana River watershed-wide compliance monitoring locations. The Chino Creek location has consistently exceeded the geomean compliance criterion.

Table B-5. Geometric mean compliance frequency for *E. coli* under dry weather conditions during the 2007 - 2012 dry seasons (as compared to proposed Basin Plan objectives for *E. coli*)

Site	Geometric Mean Criterion Exceedance Frequency (%)					
	2007	2008	2009	2010	2011	2012
Prado Park Lake	64%	50%	0%	44%	0%	25%
Chino Creek	100%	100%	88%	100%	100%	100%
Mill-Cucamonga Creek	100%	100%	100%	100%	100%	100%
SAR @ MWD Crossing	91%	58%	44%	75%	56%	94%
SAR @ Pedley Ave.	82%	75%	44%	25%	50%	50%

Source Evaluation Monitoring

Major source evaluation monitoring programs have included the 2007-2008 USEP monitoring program and more recent monitoring at Tier 1 sites in the 2011 and 2012 dry seasons. The 2011 and 2012 Tier 1 sampling program expanded upon the results of the 2007-2008 USEP program by monitoring all major MS4 outfalls to each of the subwatersheds draining to the MSAR. The combined data set from all Tier 1 sites was used for prioritization of steps for mitigating controllable urban sources of bacterial indicators within the MSAR watershed (SAWPA 2013a).

Analysis of *E. coli* concentration data from the CBRP Tier 1 source evaluation monitoring showed that bacterial water quality in dry weather flow at MS4 outfalls is highly variable, but typically exceeds the WLA for *E. coli* of 113 Most Probable Number (MPN)/100 mL (Figure B-9). Some MS4 drainages had significantly greater *E. coli* concentration than others, which influences the prioritization of MS4 drainage areas for future CBRP implementation activities, as described in the following section. Comparison of dry season monitoring data from the Tier 1 source evaluation with the 2007 USEP showed significant increases in *E. coli* concentration at some sites, such as Chris Basin, County Line Channel and San Sevaine Channel and decreases at some sites, such as Anza Drain, Cypress Channel, and Box Springs Channel (Figure B-10). Generally, outfalls that showed increases in concentration showed decreases in dry weather flowrate. Data from 9 of 24 Tier 1 source evaluation monitoring sites that were not part of the USEP were found to have high *E. coli* concentrations with geomeans exceeding 1,000 MPN/100 mL at T1-PPLN, T1, YRBA, T1-CAPT, T1-CNRW, T1-CFRN, T1-CFRN, T1-EVLA, T1-EVLB, T1-EVLD, and T1-EVLD.

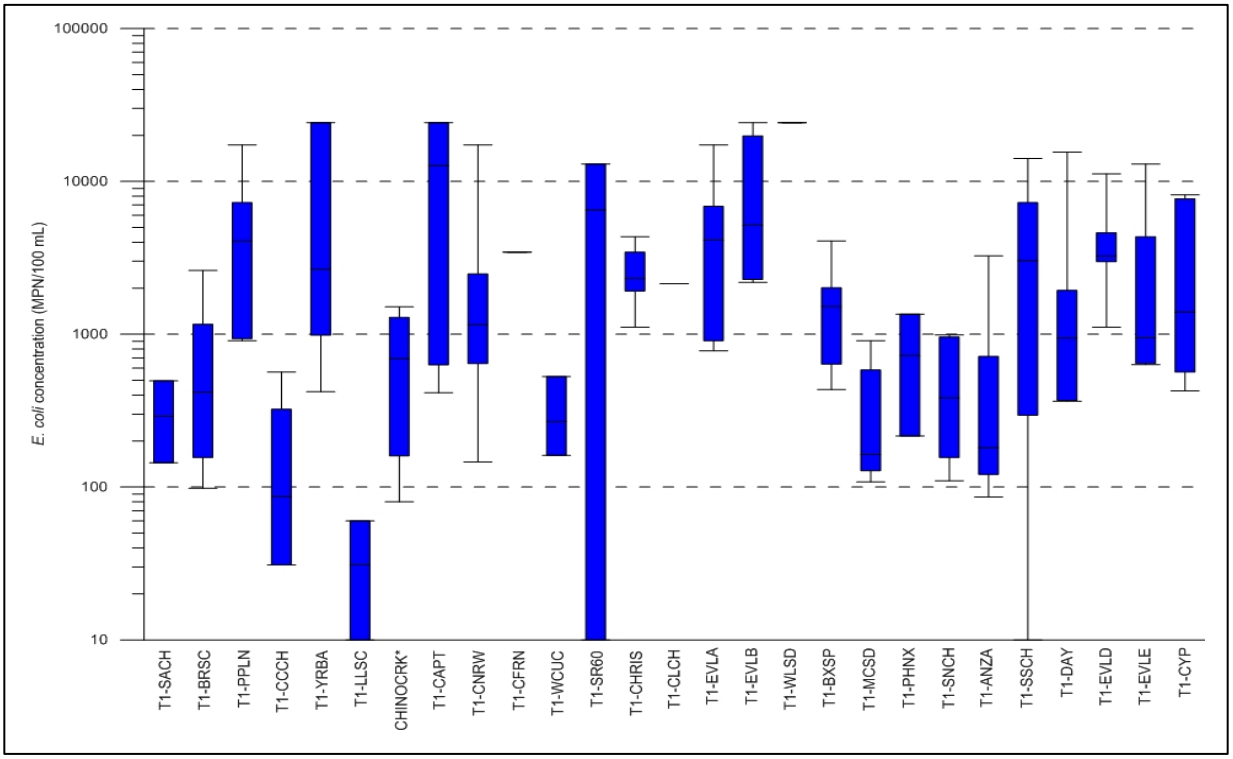


Figure B-9
Box-whisker plots of *E. coli* concentration from Tier 1 monitoring sites (2012)

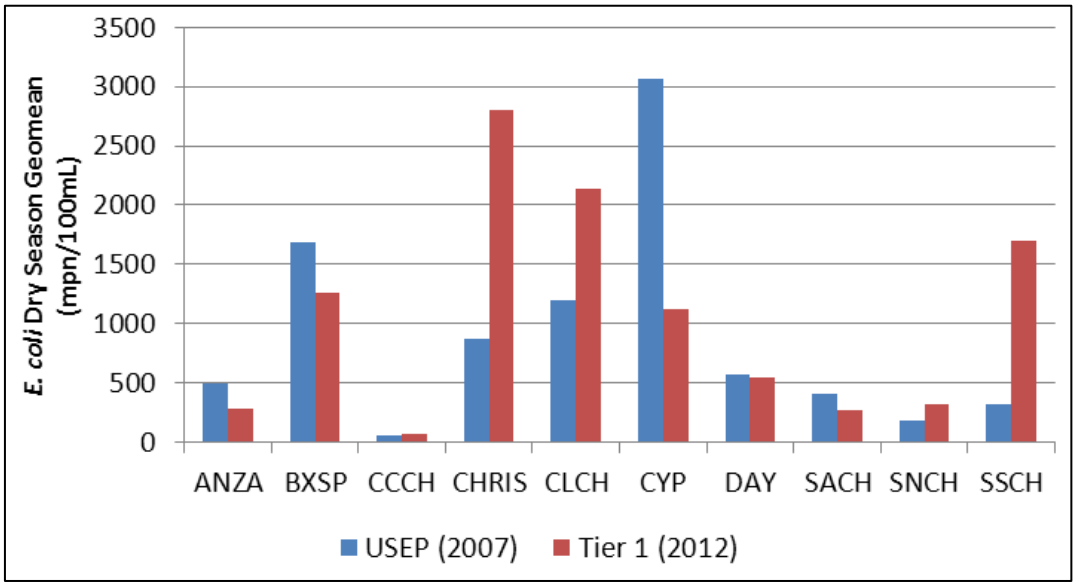


Figure B-10
Change in *E. coli* concentration from 2007 USEP to 2012 Tier 1 Inspection Program

E. coli concentration was compared with field measured parameters to assess any statistically significant relationships (Table B-6). This analysis did not identify any strong correlations between any of the field measured parameters and *E. coli* concentration.

Table B-6 Correlation analysis between *E. coli* concentrations and TSS, temperature, and DWF for all Tier-1 sites

Comparison	Pearson's r coefficient	Degrees of freedom (n - 2)	Student-t statistic	p-value	Significant at p < 0.05?
***E. coli* vs.**					
TSS	0.27	194	3.92	0.0001	Yes
Temperature	-0.20	194	2.79	0.006	Yes
Dry Weather Flow	-0.13	194	1.85	0.07	No

In addition to *E. coli*, the human *Bacteroides* marker was evaluated in samples from the Tier 1 source evaluation monitoring. The analytical method provides semi-quantitative results, however; for this analysis, results were simplified to presence or absence of human *Bacteroides*. Figure B-11 summarizes the frequency of human *Bacteroides* presence at sites with one or more detections (14 of 34 Tier 1 sites). Figure B-12 shows that similar results were found at sites also monitored during the USEP with one significant exception; *Bacteroides* results from Box Springs Channel (BXSP) verified that a previously identified source of human bacteria had been successfully addressed in 2008 by RCFC&WCD with the correction of the restroom cross-connection.

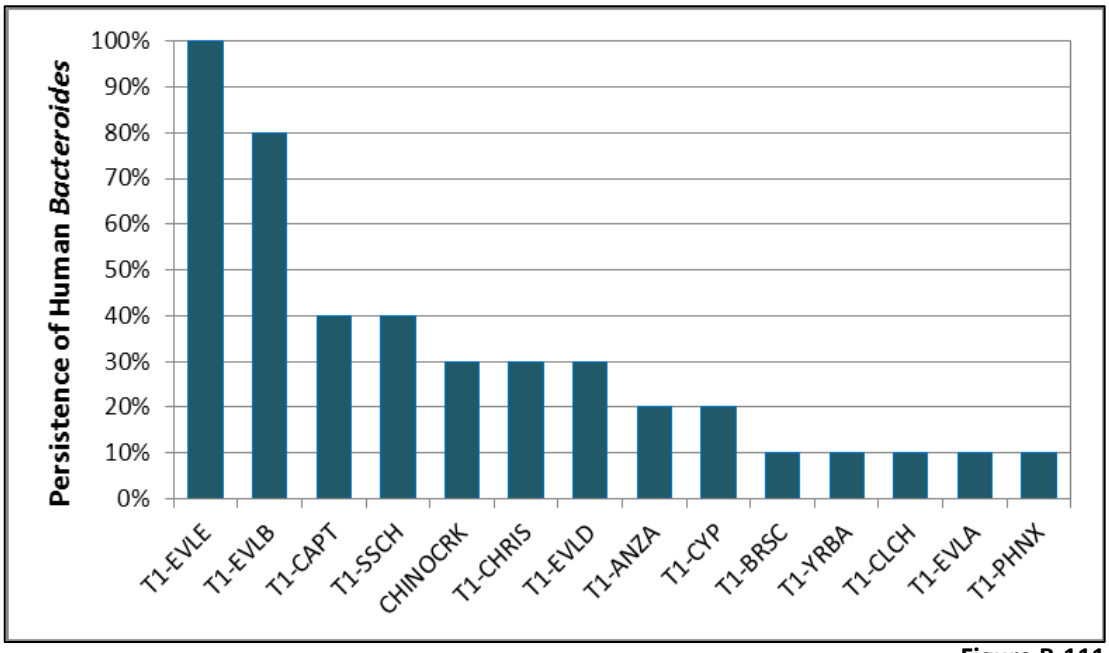


Figure B-111
Persistence of human *Bacteroides* marker for Tier 1 sites with at least one detection in the 2012 dry season

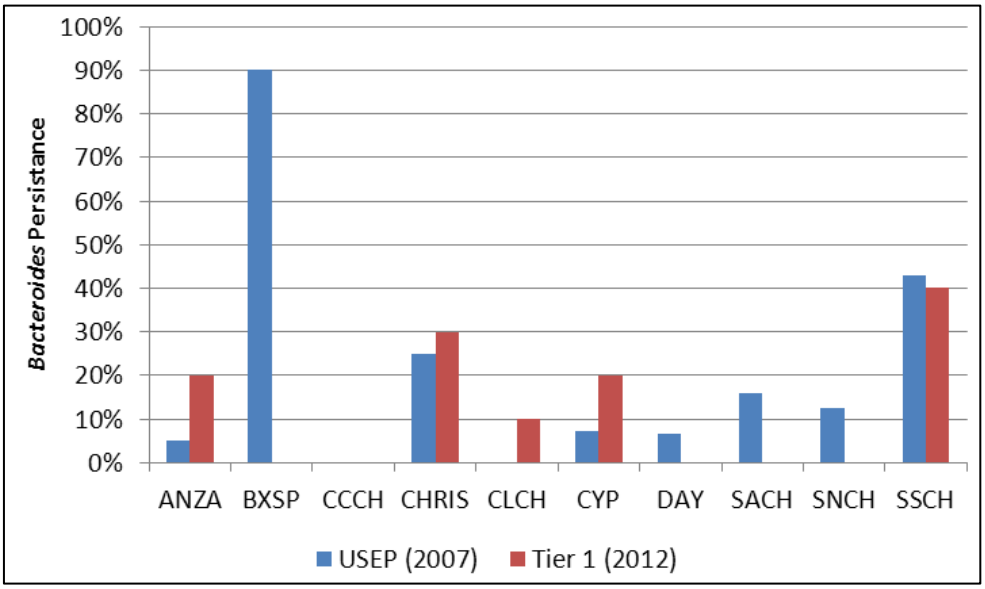


Figure B-12
Change in persistence of human *Bacteroides* from 2007 USEP to 2012 Tier 1 Inspection Program

The relationship between human *Bacteroides* detection and bacterial indicator data shows the effectiveness of using bacterial indicators to assess potential health risk of recreational users. Table B-7 provides the results of the Student t-test showing a statistically significant difference in *E coli* concentration exists in samples that did or did not coincide with a detection of human *Bacteroides*. The geomean of *E. coli* concentration was approximately 350 percent greater in samples where a human source was detected (Figure B-13). Thus, the presence of human sources may be integral to bacterial indicator concentration at MS4 outfalls. This same analysis for a smaller set of monitoring sites did not find a statistically significant difference based on the 2007 dry season USEP data analysis.

Table B-7. Results of Student T-Test comparing *E. coli* geometric mean concentrations to detection of human-specific *Bacteroides* markers for All Tier-1 sites

	N	*E. coli* Geomean (MPN/100 mL)	P-value
Human Marker Detected	41	2596	0.0029
Human Marker Not Detected	155	750	

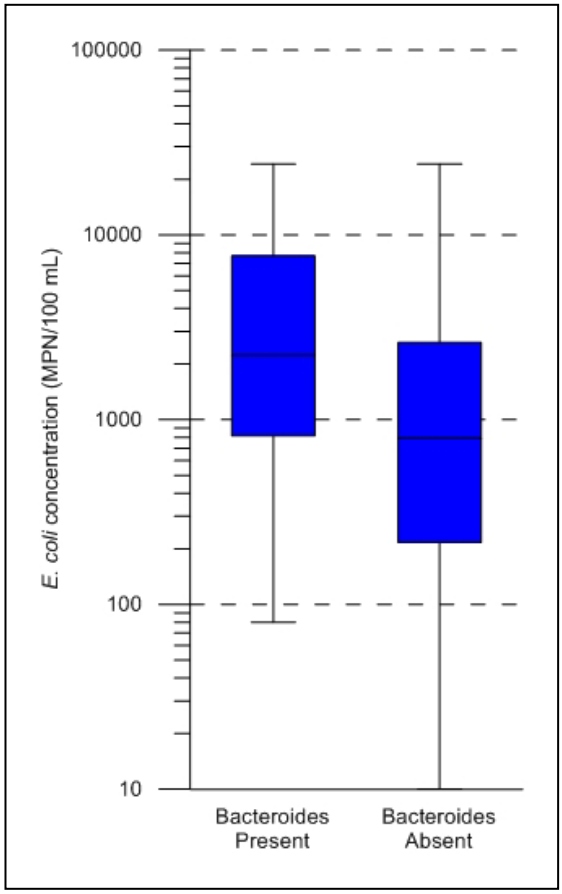


Figure B-13
Box-Whisker plots of *E. coli* in samples with and without detection of human *Bacteroides* marker for all Tier 1 sites

Attachment C
Comprehensive Bacterial Indicator Reduction Program

C.1 Introduction

This section describes the CBRP program planned for implementation by the City of Pomona to achieve compliance with urban wasteload allocations under dry weather conditions. The CBRP program relies on a combination of ordinance adoption or revision, implementation of specific BMPs, a comprehensive inspection program (i.e., source evaluation program), and where determined necessary, regional treatment (with options ranging from ultraviolet disinfection, natural treatment systems to diversions to POTWs). The recommended approach focuses both on the elimination of DWFs from MS4 facilities and reductions of urban bacterial indicator sources (CBRP Section 3.5).

The Santa Ana RWQCB Order No. R8-2013-0043 lists the requirements for preparation of the CBRP for the Cities of Pomona and Claremont. These requirements call for the inclusion of four key program elements. These elements and their corresponding reference in the CBRP are as follows:

- Ordinances – Element 1
- Specific BMPs - Element 2
- Inspection Criteria – Element 3
- Regional Treatment – Element 4

The following sections describe the CBRP program activities planned for implementation under each of these elements.

C.2 Element 1 - Ordinances

The CBRP requires the identification of specific ordinances that will be adopted during implementation that reduce the levels of indicator bacteria in urban sources. The City of Pomona has several ordinances that will be evaluated to ensure that they are sufficient to facilitate TMDL compliance by addressing DWF and animal waste throughout the City.

Water Conservation Ordinance

As part of the Urban Water Management Plan Act requirements, the City of Pomona must address water waste prohibitions during normal water conditions and during various stages of water shortages (catastrophic interruptions and during droughts). The City of Pomona has adopted a water conservation ordinance (Chapter 62, Article IV, Division 4) incorporating specific permanent conservation requirements in Section 62-354. Those requirements addressing outdoor water use are described below:

62-354 (a) Limits on watering hours. Watering or irrigating of lawn, landscape or other vegetated area with potable or recycled water is prohibited between the hours of 10:00 a.m. and 6:00 p.m. Pacific Standard Time on any day, except by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting, or repairing an irrigation system.

62-354 (b) Limit on watering duration. Watering or irrigating of lawn, landscape, or other vegetated area with potable water using a landscape irrigation system or a watering device, that is not continuously attended, is limited to no more than 15 minutes watering per day per station. This subsection does not apply to landscape irrigation systems that exclusively use very low-flow drip type irrigation systems when no emitter produces more than two gallons of water per hour and weather based controllers or stream rotor sprinklers that meet a 70 percent efficiency standard.

62-354 (c) No excessive water flow or runoff. Watering or irrigating of any lawn, landscape or other vegetated area in a manner that causes or allows excessive water flow or runoff onto an adjoining sidewalk, driveway, street, alley, gutter, or ditch is prohibited.

62-354 (d) No washing down hard or paved surfaces. Washing down hard or paved surfaces, including but not limited to sidewalks, walkways, driveways, parking areas, tennis courts, patios, or alleys, is prohibited except when necessary to alleviate safety or sanitary hazards, and then only by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off device, or a low-volume, high-pressure cleaning machine equipped to recycle any water used, or a low-volume high-pressure water broom.

62-354 (e) Obligation to fix leaks, breaks or malfunctions. Excessive use, loss or escape of water through breaks, leaks or other malfunctions in the water user's plumbing or distribution system for any period of time after such escape of water should have reasonably been discovered and corrected and in no event more than seven days of receiving notice from the city, is prohibited. The city, in its sole discretion, may discontinue service to consumers who willfully violate provisions of this subsection.

62-354 (f) Recirculating water required for water fountains and decorative water features. Operating a water fountain or other decorative water feature that does not use recirculated water is prohibited, effective January 1, 2010.

62-354 (g) Limits on washing vehicles. Using water to wash or clean a vehicle, including but not limited to any automobile, truck, van, bus, motorcycle, boat, motor home or trailer, whether motorized or not is prohibited, except by use of a hand-held bucket or similar container or a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or at a commercial car washing facility that utilizes a recirculating water system to capture or reuse water.

In addition to these permanent prohibitions, the City's water conservation ordinance sets forth several general provisions (Section 62-359) that may be used to manage outdoor water use in the City, including but not limited to the following:

62-359 (b) Large landscape areas; rain sensors. Large landscape areas, such as parks, cemeteries, golf courses, school grounds, and playing fields, that use landscape irrigation systems to water or irrigate, may be required to use landscape irrigation systems with rain sensors that automatically shut off such systems during periods of rain or irrigation timers which automatically use information such as evapotranspiration sensors to set an efficient water use schedule.

62-359 (h) Customer water conservation reports. The city may, by written request, require all commercial, residential and industrial customers using 25,000 or more billing units per year to submit a water conservation plan and to submit quarterly progress reports on such plan. The conservation plan must include recommendations for increased water savings, including increased water recycling based on feasibility, and the reports must include progress to date on implementation of such recommendations.

Lastly, the state Water Conservation in Landscaping Act of 2006, Assembly Bill 1881 (AB 1881), requires statewide adoption of the Model Water Efficient Landscape Ordinance (California Code of Regulation Title 23, Division 2, Chapter 2.7) designed to improve public and private landscaping and irrigation practices for new development projects or rehabilitation of significant landscape areas. The ordinance reduces outdoor water waste through improvements in irrigation efficiency and selection of plants requiring less water. The ordinance requires development of water budgets for landscaping, use of recycled water if available, routine irrigation audits, and scheduling of irrigation based on localized climate. For existing landscapes greater than one-acre in size, the water purveyors are required to implement programs, such as irrigation water use analyses, irrigation surveys, and irrigation audits to reduce landscape water use to a level not exceeding the Maximum Applied Water Allowance (MAWA) as specified in the ordinance. Landscape audits are required to be conducted by a certified landscape auditor. Local purveyors are also required to prevent outdoor water waste resulting from inefficient landscape irrigation and establish penalties for violating these prohibitions

Stormwater Ordinance

The City of Pomona has adopted a stormwater ordinance (Chapter 18, Article X, Division 3) incorporating requirements intended to reduce pollutants in non-stormwater discharges from illicit connections and illegal discharges and prohibitions of specific activities for protection of watercourses. The ordinance contains exemptions for certain non-stormwater discharges, when properly managed, including (Chapter 18, Article X, Division 3, Section 18-492):

18-492 a) Water line flushing and other discharges from potable water sources

18-492 b) Landscape irrigation and lawn watering

18-492 c) Irrigation water

18-492 d) Diverted stream flows

18-492 e) Rising groundwaters

18-492 f) Infiltration to separate storm drains

18-492 g) Uncontaminated pumped groundwater

18-492 h) Foundation and footing drains

18-492 i) Water from crawl space pumps

18-492 j) Air conditioning condensation

18-492 k) Springs

18-492 l) Individual residential car washings

18-492 m) Flows from riparian habitats and wetlands

18-492 n) Dechlorinated swimming pool discharges

18-492 o) Municipal street maintenance activities

18-492 p) Street washwaters

18-492 q) Flows from firefighting.

CBRP Implementation: The City has ordinances for both water conservation and stormwater. During CBRP implementation, the City will evaluate whether these existing ordinances are adequate to manage DWFs to reduce bacterial indicator levels in receiving waters. The statewide ordinance set forth with AB 1881 has been incorporated into development planning requirements for the City of Pomona.

C.3 Element 2 - Specific BMPs

The CBRP requires the identification of specific BMPs that will be implemented to reduce bacterial indicator levels in receiving waters. The following sections describe in no particular order the specific BMPs that have been incorporated into the CBRP. These BMPs range from programmatic activities that set the stage for other CBRP elements (e.g., DWF inspections) to specific activities that can reduce DWFs or control bacterial indicators at the source. Some of the recommended BMPs are also MS4 permit requirements, which will be noted as appropriate. In addition, some of these BMP activities may be coordinated with San Bernardino County to streamline the level of effort required to implement the activity to support TMDL implementation activities.

Transient Camps

Transient encampments near receiving waters or within MS4 facilities are often cited as a potential source for bacterial indicators and a reason for closure of these encampments. As this source of bacterial indicators is directly associated with human waste / human pathogens, this is a high priority source for control. It is not certain to what degree water quality is impacted by these encampments, especially under dry weather conditions. However, facilities for proper management of human and food wastes are typically not present at transient encampments. A difficulty in addressing transient encampments as a source of bacterial indicators is that they are transitory, existing for periods that may range from days to weeks. In some instances, sites may be used intermittently by transients. Two essential questions need to be evaluated prior to fully engaging in a process that involves eliminating transient camps that have the potential to impact water quality:

- *Where are transient encampments in relation to the MS4?* Transient encampments are commonly located under bridges, in channels, or near or adjacent to waterbodies within the flood control facility right-of-way or within a natural channel. LACDPW owns and operates the vast majority of channels that can support transient encampments. Through annual inspections of its facilities, LACDPW identifies encampments that are a threat to public health and safety or downstream receiving waters. These encampments are relocated and cleaned through a coordinated program, referred to as Operation Homeless Outreach, with local municipalities, social service providers and law enforcement.

- *What is the water quality impact of transient encampments?* Once a transient encampment has been identified as part of an MS4 inspection or source assessment follow-up, an investigation can be conducted to examine to what degree transient activities, including illicit discharges, are

impacting DWFs. It may be possible that such encampments are more of a wet weather concern. Such an investigation may include field observations of camp activities and water quality sampling upstream and downstream of selected camps located adjacent to waterbodies.

Based on the findings from the above activities, an evaluation of the potential benefits of enhancing existing transient encampment management strategies to focus on eliminating camps near waterbodies will be made. Specifically, this evaluation will look at the social, financial impacts of program enhancement relative to the water quality benefits achieved as compared to other bacterial indicator reduction strategies. This evaluation is needed prior to implementation since camp closure requires participation by multiple agencies, which will tax already limited resources, e.g., law enforcement, public works, environmental health, and social services.

If the decision is made to expand efforts to eliminate transient encampments to support CBRP implementation an area-wide model program will be developed to guide jurisdictional agencies. For example, The Center for Problem-Oriented Policing and the U.S. Department of Justice Office of Community Oriented Policing Services developed *Homeless Encampments* (2009 guidance document), which presents recommended steps for closing down transient camps. These steps are summarized as follows:

- Assess encampment to identify the number of occupants and any hazardous conditions - This initial step is critical as it provides information regarding what additional local resources (law enforcement, public works, and social services) would be required to close the camp.
- Determine jurisdiction for multi-agency coordination – The exact location of the encampment determines which municipal entities and department should be involved.
- Arrange alternative shelter prior to removal of individuals from encampments to prevent legal challenges.
- Engage homeless advocacy groups to explain what process will be followed and what alternative shelter arrangements are available; this will ease tensions and controversy prior to implementing camp closure activities.
- Understand jurisdictional laws regarding removal of transient/ property to prevent latter claims of violations of such laws.
- Provide and post written advance notice to camp occupants that they are trespassing, provide a deadline to vacate and remove all property, and identify location(s) of alternative shelter.
- Issue citations after passage of the first deadline and notify occupants that they are subject to arrest and property seizure if the camp is not vacated after a second deadline.
- Conduct arrests if occupants have not vacated and removed property by second deadline.
- Clean-up site after camp has been vacated, and remove and cut back foliage/natural cover as this action tends to remove incentive for the camps to be rebuilt in the same location; it also provides unobstructed views of the area.
- Inspect the site periodically to ensure camp is not reestablished.
- Post signage prohibiting establishment of encampments in the area.

CBRP Implementation: The following activities will be implemented as part of this BMP:

- Identify locations of suspected transient encampments in receiving waters or MS4 facilities.
- Implement an investigation at one or more locations to evaluate potential DWF water quality impacts from transient camps.
- As determined necessary, implement transient camp closures and follow-up activities to prevent re-establishment of closed camps in the same locations.

Illicit Connection and Illicit Discharge (IC/ID) Program

The MS4 permit for Los Angeles County requires the continued implementation of the IC/ID Program to detect, investigate, and eliminate illicit connections and illicit discharges to the MS4. The purpose of this program is to specify a procedure to conduct focused, systematic field investigations, outfall reconnaissance surveys, indicator monitoring and tracking of discharges to their sources. The CBRP will benefit from focused implementation of the IC/ID Program for City of Pomona facilities in high priority areas during dry weather.

CBRP Implementation: The City of Pomona will identify opportunities to focus IC/ID Program activities in the high priority MS4 drainage areas for dry weather bacteria loads to Chino Creek. MS4 drainage areas for enhanced IC/ID Program implementations will be determined through the Tier 2 inspection program (Element 3 – Attachment C.4).

Street Sweeping and Catch Basin Cleaning

Trash and other materials accumulated in streets and within MS4 facilities may provide a habitat and food source for bacterial indicators. DWF in street gutters, drains, and catch basins keeps these facilities damp, which supports bacterial indicator survivability. Biofilms may develop under these types of conditions within catch basins, along street gutters, or within flood control channels (e.g., see Skinner et al., 2010; Fergusson 2006). Biofilms are dynamic microbial communities that go through an attachment phase and then ultimately a detachment, erosion or "sloughing" phase from the surface to which they are attached.

Managing or eliminating biofilm development has the potential to substantially reduce bacterial indicator levels. A recent study by the City of San Diego shows that enhanced cleaning of catch basins provided minimal benefits in terms of reducing bacterial indicator levels. However, there is evidence that enhanced street sweeping will provide benefits. This can be accomplished by using vacuum street sweepers to reduce biofilms and their habitat and food sources from street gutters. Skinner et al. (2010) found very high bacterial indicator counts in initially bacteria free hose water running along street gutters. Implementing improved street sweeping practices resulted in an order of magnitude reduction in fecal coliform concentration (14,000 MPN/100 mL to 870 MPN/100 mL) in a 300 feet section of gutter before and after street sweeping. This finding suggests that the use of newer vacuum street sweepers targeting the street gutter could provide increased control of this source of bacterial indicators.

CBRP Implementation: The City of Pomona will evaluate its current street sweeping and catch basin cleaning programs (e.g., method, frequency, equipment) to determine potential to modify the program for enhanced reduction of bacterial indicator sources (i.e., enhanced beyond what is required as minimum street sweeping and catch basin cleaning requirements in its MS4 permit). Based on the findings of this evaluation, a plan and schedule will be developed for implementation.

Irrigation or Water Conservation BMPs

Section C.2 above describes expectations associated with water conservation ordinance enforcement under this plan. A separate but related CBRP element is the implementation of BMPs that target irrigation practices with a goal of reducing/eliminating DWFs to the MS4. These practices not only benefit water quality, but reduce water use. The development and implementation of these practices will be carried out collaboratively with the Pomona Water Department. Specific practices that would be effective at reducing dry weather runoff include:

- *Replacement of grass with artificial turf* – The use of artificial turf provides a low maintenance, no irrigation alternative to grass lawns. Costs of materials and installation to replace a grass lawn with artificial turf can range from $6-14 per square foot. Several water purveyors near Pomona offer a $1 per square foot rebate for property owners that replace existing grass lawns with artificial turf.

- *Replacement of grass with drought tolerant native plant species* – California drought tolerant native plants/gardens require minimal watering and therefore reduce the likelihood of off-site dry weather runoff (see the California Native Plant Society webpage for more information at www.cnps.org). Several water purveyors near Pomona offer a $1 per square foot rebate for property owners that replace existing grass lawns with drought tolerant plants.

- *Installation of Weather Based Irrigation Controllers (WBICs)* – WBICs use climate measurements to determine the amount of water needed to meet evapotranspiration requirements of grass lawns and other landscaped areas on a given day. Limiting irrigation to the needs of the plants can reduce the amount of water that leaves a property as dry weather runoff. WBICs can be distributed to potential users via several types of programs, including partial rebates/vouchers, equipment exchanges, or direct installation. Typical costs for WBICs range from $300 - $800 for a small residential application, to $2,000 - $3,000 for a property with large landscaped areas. The cost effectiveness of installing WBICs to a property owner or water agency is dependent upon the existing water use (potential to reduce demand), avoided cost of water, water rates, and expected lifespan of the device (Mayer et al. 2009). Given these variables, it would likely not be cost effective to distribute WBICs to individual homeowners who do not typically over-irrigate. Conversely, applications of WBICs would likely be cost effective on large landscape properties where excess water is used and the potential to generate off-site runoff is high. The most cost effective implementation approach would need to be evaluated by the local jurisdiction.

- *Landscape irrigation audits* – An audit involves checking the irrigation system for leaks, ensuring spray heads are properly directed and operational, capping unused spray heads, and providing a watering schedule based on precipitation rate, local climate, irrigation system performance, and landscape conditions. Customers are also provided with information regarding rebates and incentives designed to reduce outdoor water use. A potential implementation approach would be to target landscape audits in areas that are hydrologically connected to downstream receiving waterbodies/compliance sites. The cost of conducting a landscape irrigation audit is low relative to other irrigation practice BMPs; however, the effectiveness is unpredictable. To be effective, property owners would need to consistently implement the audit recommendations.

- *Public education and outreach* - Public education and outreach activities to encourage water conservation are already ongoing. The CBRP does not recommend any new or modified public education and outreach activities.

- *Water Budgets* –A water budget provides customers with a site specific water budget based on lot size, local climate, and seasons. After a budget is developed customers are sent a report with each water bill showing the budget versus actual usage. Customers exceeding the budget are provided recommendations to reduce water use. A similar program was implemented by the Municipal Water District of Orange County and reduced water use by 20% for participating customers.

The benefits expected from each of the above BMPs vary (see Table 5-1). For grass replacement BMPs, dry weather runoff is mostly eliminated while WBICs can reduce dry weather runoff by approximately 50 percent (Jakubowski 2008). Runoff reduction from landscape irrigation audits and ongoing public education and outreach activities are more difficult to quantify, as they are largely dependent on changing human behavior. These types of BMPs may reduce runoff from an individual property by only a small amount; however, because implementation may be more widespread the overall benefit may be relatively high. Factors associated with each of the above BMPs impact will affect decisions on how such BMP practices can be developed and implemented at the local level as part of the CBRP. These factors include cost, public perception, reliability, ease of implementation, and expected runoff reduction. Table C-2 provides an evaluation of each of these factors by ranking them has low, medium or high with regards to expected benefits from their implementation.

Table C-2. Evaluation matrix for irrigation practices/ water conservation BMPs (high benefit ●; medium benefit ⦿; low benefit ○)

Water Conservation BMP	Dry Weather Runoff Reduction	Cost	Ease of Implementation	Water Conservation
Replacement of grass with artificial turf	●	○	○	●
Replacement of grass with drought tolerant plant species	●	⦿	○	●
Installation of WBICs	⦿	○	⦿	⦿
Landscape irrigation audits	○	●	●	○
Public education and outreach	○	●	●	○
Water budgets	⦿	●	●	●
GeoSmart landscape finance program	●	○	○	●

Other types of water conservation BMPs could be used in-lieu of the ones included in this CBRP such as high efficiency spay nozzle installations, water brooms, and large landscape water budgets. The effectiveness of these BMPs would need to be evaluated further to estimate the DWF and associated bacteria reduction that could be achieved.

CBRP Implementation: Development and implementation of these BMPs will be closely coordinated with Pomona's Water Division. Water Demand Management Measures (DMM), also known as BMPs, are required to be evaluated in Urban Water Management Plans (UWMPs). The UWMP Act (http://www.water.ca.gov/urbanwatermanagement/docs/water_code-10610-10656.pdf) lists 14 DMMs for evaluation of which 7 take partly into consideration outdoor water use and could potentially reduce DWF. Water purveyors are required to describe and provide a schedule for implementation of each DMM. For DMMs not implemented or not scheduled for implementation in the next five years, water purveyors are required to evaluate each DMM, by considering DMMs that offer lower incremental costs

than obtaining additional water supplies. This evaluation must take into account a cost-benefit analysis, and identify funding for any water supply projects providing water at higher unit cost than the DMM. All water purveyors applying for state-funded grants or loans must comply with AB 1420. AB 1420 states a water purveyor must be deemed compliant with the DMMs before funding can be provided by the State.

DMMs with the potential to impact DWF are described below:

- **DMM A – Water Survey Programs for Single-Family Residential and Multi-Family Residential Customers.** This DMM requires water survey programs for both indoor and landscape water use. As determined, by the California Urban Water Conservation Council (CUWCC), the landscape water use portion of this measure involves offering landscape water conservation surveys to not less than 20 percent of single- and multi-family residential customers every two years, and completing surveys for not less than 15 percent of single- and multi-family residential customers within 10 years of program initiation. After the ten-year period, water purveyors will maintain the program at the same level as high water bill complaints or no less than 0.75 percent per year of single-family accounts. Landscape water surveys include, but are not limited to checking irrigation system and timers for maintenance and repairs, estimating landscape measured areas, developing customer irrigation schedules, reviewing the schedule with customers, provide information handouts to customers, and providing the customer with evaluation results and recommendations to save water.

- **DMM E – Large Landscape Conservation Programs.** As determined by the CUWCC, this measure consists of three parts focusing on commercial, industrial, and institutional customers with large landscape irrigation needs. CUWCC assumes the DMM will result in a 15 to 20 percent demand reduction for landscape irrigation for customers participating. The first part requires developing evapotranspiration (ET)-based water budgets for accounts with dedicated irrigation meters. Water budgets cannot equal more than an average of 70% of the annual average local reference ET per square foot of landscape area. Budgets must be developed at an average rate of 9 percent per year over ten years, so budgets are developed for 90 percent of dedicated irrigation meter accounts within ten years of implementation. Upon completion, notices are required to be provided with each billing cycle showing the water consumed versus the budget. Within 6 years of implementation, the water provider must annually provide site-specific technical assistance to all customers exceeding their budgets by 20 percent or more. The second part involves providing large landscape surveys to not less than 15 percent of commercial, industrial, and institutional (CII) accounts with mixed-use meters within 10 years of program initiation. The third part requires offering financial incentives to support parts 1 and 2.

- **DMM G – Public Information Programs.** This DMM requires implementation of public information programs with the goal informing customers about why water conservation is important, methods customers can use to conserve water, and to encourage water users to conserve water. The CUWCC has established minimum program requirements. Minimum requirements are:

  1. Contacts with the public at a minimum on a quarterly basis
  2. Contacts with the media at a minimum on a quarterly basis
  3. Maintenance of a website on a quarterly basis
  4. Describe the materials used to meet items 1 and 2.

5. Annual budget for public information program

6. Describe all other outreach programs.

- **DMM H – School Education Programs.** This DMM is designed to educate students regarding the importance of conserving water and to develop good water conservation habits at an early age. CUWCC requires purveyors to implement a school education program promoting water conservation and to work with both private and public schools in providing education materials, instructional assistance, and presentations about the local watershed. At a minimum the program should include the following:

  7. Curriculum materials provided by the water purveyor including confirmation from the materials meet State education framework requirements and are age appropriate.

  8. Materials are distributed to grades K-6 students and if possible grades 7 -12.

  9. Descriptions of the materials used to meet the minimum requirements.

  10. Provide an annual budget for the program

  11. Describe all other water purveyor educational programs.

- **DMM I – Conservation Programs for Commercial, Industrial, and Institutional Accounts.** The CUWCC defines this measure as requiring water purveyors to implement water conservation measures for CII customers to achieve a 10 percent water savings for the CII sector as a whole using 2008 as a baseline over a 10 year period. Purveyors can either implement measures on CUWCC's list with documented savings or implement purveyor developed measures, but the purveyor must document how it is determining the savings. Measures may target indoor and/or outdoor water use.

- **DMM K – Conservation Pricing.** CUWCC defines conservation pricing as providing economic incentives to customers to use water in an efficient manner. Acceptable types of rate plans include uniform, seasonal, tiered, and allocated based rates as long as purveyors can illustrate their rates meet CUWCC established formulas for determining if rates reflect conservation pricing. Conservation pricing has the potential to reduce outdoor water waste and subsequently DWF.

- **DMM M – Water Waste Prohibition.** This measure requires water purveyors to prevent water waste for new developments and existing users and to develop water shortage response measures (see Water Conservation Ordinance in Element 1, Section C.2). For outdoor water use, this measure addresses irrigation inefficiencies and other outdoor water uses. Purveyors can meet these requirements by adopting water waste ordinances or developing terms of service prohibiting water waste. Prohibiting water waste and enforcing ordinances and terms of service agreements has the potential to reduce DWF.

The City of Pomona will evaluate current DMM implementation status and determine the need to supplement these efforts to attain the 2010 MS4 Permit WQBEL for the MSAR TMDL.

Planning and Land Development Program

The MS4 Permit requires the implementation of a Planning and Land Development Program that incorporates low impact development (LID) practices to reduce runoff from new development and

significant redevelopment activities. This requirement is included as a BMP since implementation of LID practices can reduce dry weather flows to the MS4, especially where they are applied to significant redevelopment activities.

For new development the benefits are expected to be mostly limited to wet weather runoff, because it is assumed that no DWF is generated from the predevelopment condition. However, for significant redevelopment projects, the potential for reduced dry weather flows to the MS4 will be realized through the reconfiguration of the site to accommodate LID practices (e.g., runoff from irrigation can be managed to stay onsite rather than runoff to the MS4). The presumption is, that for these existing developments, stormwater management controls were not designed originally to control non-storm runoff. Therefore, some degree of runoff (e.g., from irrigation runoff) likely currently occurs under dry weather conditions. With significant redevelopment of the project site, incorporating LID practices will eliminate DWF from leaving the site.

While water quality benefits are expected to be achieved for significant redevelopment projects, the pace at which such projects are expected to be completed in the MSAR watershed is likely to be slow given economic factors. Moreover, even if the rate of development activities increase in the near term, given the December 31, 2015 compliance date for meeting urban wasteload allocations for dry weather conditions in the dry season, the numbers of acres of redevelopment relative to the total numbers of acres where dry weather runoff likely occurs will be relatively small. Over a much longer time horizon, e.g., 50-100 years, the cumulative benefits will be much greater.

CBRP Implementation: The City of Pomona is developing revised guidelines for developers to ensure that new development and redevelopment projects meet the criteria contained in the MS4 Permit, including prioritization of LID BMPs. Once implemented, LID practices will be applied to development projects subject to the LID-based requirements.

Septic System Management

Poorly operating septic systems can potentially lead to the discharge of pollutants to surface waters; however, the extent to which septic systems are currently a source of bacterial indicators in DWFs within the City of Pomona from the MS4 is unknown. The City will develop an inventory of existing septic systems, map the location of these facilities relative to the MS4 to evaluate potential impacts to water quality in the MS4, conduct public education to ensure proper operation and maintenance of septic systems, and conduct inspection and enforcement activities, where appropriate to reduce potential for septic systems to impact water quality. While development of this inventory may identify areas with problematic septic systems, the potential for water quality improvement may be limited to surface water impacts that occur only during wet weather runoff events.

CBRP Implementation: CBRP implementation will include activities to ensure that septic systems are not contributing bacterial indicators to the MS4 under dry weather conditions. Activities will include:

- *Develop a septic system inventory* – Permittees will complete necessary studies to develop a landscape level inventory of areas with concentrations of existing septic systems within their jurisdictions and provide information to County Environmental Health.
- *Evaluate potential water quality impacts* – Using the inventory, mapping the location of septic systems relative to MS4 facilities will be reviewed to evaluate the potential impact of septic systems to water quality under dry weather conditions as part of source assessment activities.

- *Conduct public education* – Public outreach programs to educate owners regarding how to properly maintain their on-site septic systems and distribute materials explaining recommended operation and maintenance schedules. The RCFC&WCD developed a septic system management brochure in 2009 that is currently being distributed through District and Permittee activities. This brochure or materials developed by others will be evaluated for potential use in the City of Pomona.

- *Conduct inspections and initiate enforcement, where appropriate* – As part of source assessment activities, where the potential for water quality impacts from septic systems is identified, conduct inspections of suspected leaking septic systems to determine the need for mitigation. Where appropriate, conduct enforcement actions to mitigate water quality concerns associated with septic systems.

C.4 Element 3 - Inspection Criteria

Element 3 addresses the CBRP requirement for inclusion of specific inspection criteria to identify and manage the urban sources most likely causing exceedances of water quality objectives for indicator bacteria. Implementation of urban source evaluation activities provides the data required to determine the potential for an MS4 outfall or drainage area to discharge controllable sources of bacterial indicators. The results of this evaluation dictate next steps in the CBRP implementation process. This required element is incorporated into what is being termed the inspection program. The inspection program envisioned for the CBRP is a systematic campaign to conduct DWF and bacterial indicator source evaluation activities within each subwatershed draining to a watershed-wide compliance site. The foundation for this approach is originally defined by the USEP, prepared by the MSAR TMDL Task Force to satisfy a TMDL requirement (see Attachment A). Urban source evaluation methods were recently updated and incorporated into the Monitoring Plan and QAPP that guides all sampling activities in the MSAR watershed (2013 revision). USEP-related activities are currently being implemented by the MSAR TMDL Task Force; however, under the CBRP the pace and extent of these activities has been significantly increased to eliminate or reduce controllable urban sources of DWF in a timely manner.

As noted above, several of the specific BMPs included in Element 2 directly support the implementation of Element 3, e.g., development of the IC/ID program and implementation of water conservation BMPs. Completion of these elements will help guide implementation of the inspection program. Conversely, implementation of the inspection program may impact how or where specific BMPs are implemented or how decisions are made regarding the need for additional ordinance authority. For example, over time the inspection program may identify a particular bacterial indicator or DWF source that can be managed better by the adoption of an ordinance.

The MS4 Permittees will implement urban source evaluation activities using a comprehensive, methodical approach that provides data to make informed decisions regarding the potential for MS4 outfalls to discharge controllable sources of bacterial indicators. This approach relies on implementation activities associated with the inspection program element, described in the following sections.

Tier 1 Reconnaissance

Tier 1 sites are defined as locations where urban sources of dry weather flow outfall directly to Chino Creek or San Antonio Creek. Some of the Tier 1 sites are at the same locations sampled as part of implementation of the USEP in 2007-2008. It should be noted that none of the recommended Tier 1 sites are located in areas that have been determined to be hydrologically disconnected from impaired waterbodies during dry weather conditions (see hatched areas in Figures B-5).

Tier 1 source evaluations were completed for the City of Pomona in 2011 in Chino Creek upstream of the San Antonio Creek confluence and then at Pomona's 1st Street storm drain outfall to San Antonio Channel in August 2012. The findings from these sites and others in the MSAR watershed were submitted to the Santa Ana RWQCB on February 11, 2013.

Prioritization

Based on the findings from Tier 1 data collection activities completed to date, MS4 drainage areas with potentially controllable urban sources of bacterial indicators were prioritized, based on factors such as the magnitude of bacterial indicator concentrations and results from source tracking analyses (Figure C-1). Areas with human sources (as compared to other anthropogenic sources such as domestic pets) received the highest priority for action, consistent with guidance originally developed in the USEP.

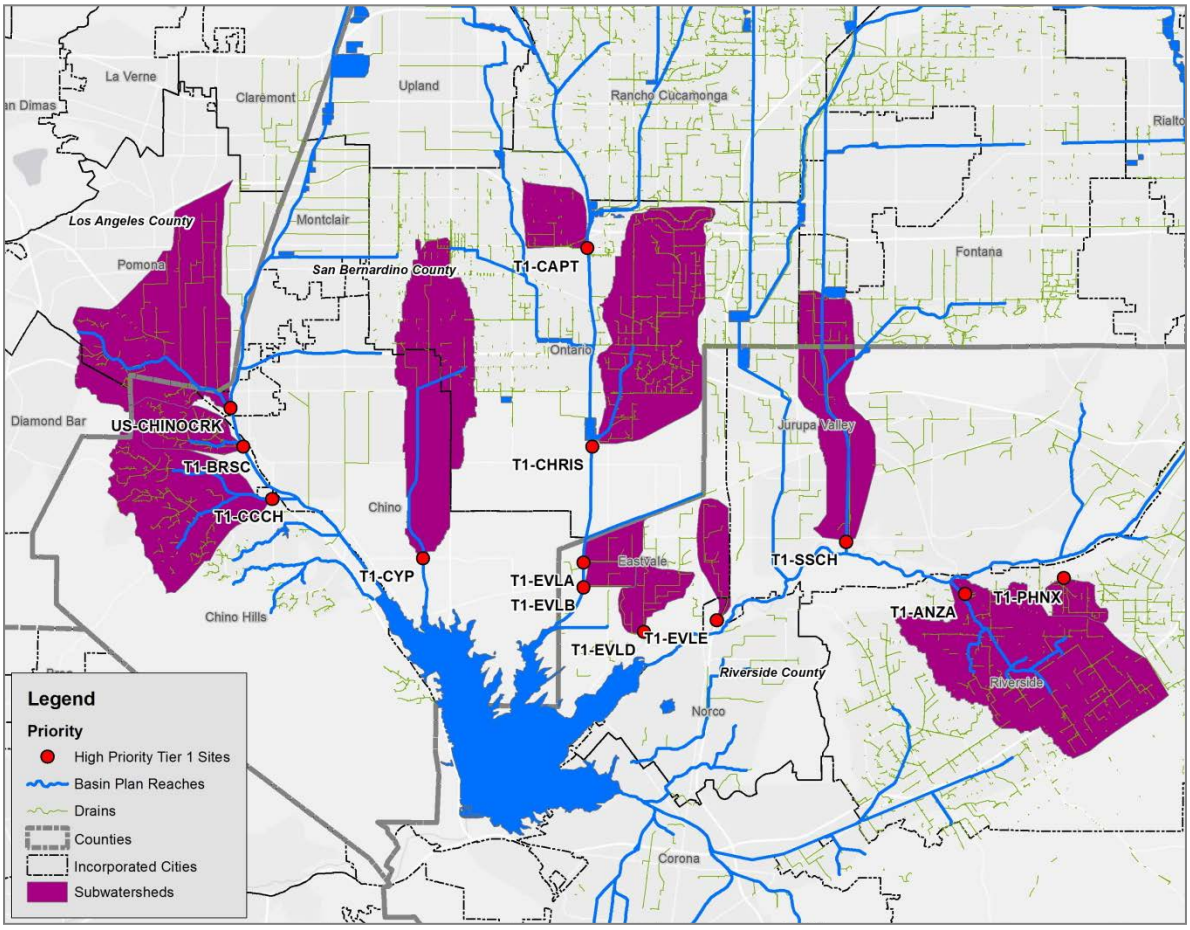


Figure C-1
Map of Prioritized Tier 1 MS4 Drainage Areas

Evaluate Mitigation Alternatives

In order of priority, prioritized drainage areas will be further evaluated to identify non-structural or structural alternatives (or some combination of both) for mitigating controllable urban sources of bacterial indicators. As needed, this controllability assessment will include reconnaissance of Tier 2 sites and the use of IC/ID methods to identify and evaluate alternatives. Tier 2 sites are tributary to Tier 1

outfalls. If a Tier 2 site is determined to be a potential contributor to non-compliance, additional inspection activities may occur to identify the nature and source of the dry weather flow and bacterial indicators and evaluate controllability.

The CBRP includes a schedule of activities, which in the 2013 and 2014 dry seasons includes implementation of Tier 2 source evaluation activities. The goal of Tier 2 source evaluations is to identify specific urban sources of fecal bacteria within MS4 drainages areas and to identify and implement activities wherever possible to eliminate these sources.

MS4 facilities upstream of Tier 1 sites include many miles of underground drainage conveyances, which would be nearly impossible to monitor at the same levels as was done for the Tier 1 outfalls to receiving waters. Therefore, it was necessary to develop alternative approaches to source evaluation that can be effective at identifying specific MS4 sources of bacterial contamination with limited resources. To optimize resources, the City of Pomona identified alternative monitoring methods for use to track controllable sources of human fecal bacteria in prioritized MS4 drainage areas, including field reconnaissance and use of tracers or other secondary screening tools. Many of these methods are adapted from Center for Watershed Protection guidance documents and supporting memoranda.

It may be demonstrated that a MS4 drainage area is absent of DWF (i.e. hydrologically disconnected from the receiving waterbody) or that the source of bacterial indicators comes from non-urban sources, and therefore no mitigation is needed. The following criteria establish guidelines for making these determinations from data collected in the inspection program:

- *Absence of DWF* – Determining the presence or absence of DWF at a given MS4 outfall is a critical step. Routine field observation and measurement (if possible) will be conducted during dry weather at varying times of day and on different days of the week for up to one year to develop sufficient data to characterize frequency/volume of DWFs at Tier 1 sites. Ideally, at least 10 field visits will be made over a one-year monitoring period. If the site is dry on at least 80 percent of the visits, the area upstream of the site can be assumed to have little to no impact on downstream water quality. While up to a year is recommended to collect flow data to look at seasonal variability, if a site is found to have persistent or substantial flow after only as few as three visits that occur over a short period of time, it can be presumed that the area draining to the site is a candidate for additional inspection activity to determine the source of the DWF. If a site is found to be typically dry after ten visits, then only occasional inspections would be required in the future to provide certainty that this conclusion remains correct. If Tier 1 site results indicate the need for additional inspection, then a similar level of effort may be necessary for Tier 2 sites tributary to the Tier 1 location.

- *Non-Urban DWF Sources* - If there are any non-urban sources of DWF to a MS4 site (such as from a well blow off, water transfer, or rising groundwater), it is important to identify the frequency and relative contribution of these flows. Generally, it is assumed that these non-urban DWF sources will have very low concentrations of bacterial indicators. However, it is possible that the physical nature of the discharge generates sufficient shear stress to mobilize bacterial indicators associated with sediment or biofilms present in the receiving water (as compared to the low shear stress generated from MS4 urban DWF due to their relatively low flow rates). Elimination of the non-urban source could also result in conditions that enhance decay of bacterial indicators in channel bottom sediments or biofilms, resulting in fewer bacterial indicator organisms available for mobilization during wet weather events. If the non-urban flow source is suspected as the cause of downstream exceedances, a site-specific study would need to be implemented to verify the

assumption. The nature of such a study would be dictated by local circumstances, but could require a fairly complex sampling plan. If it is determined that the non-urban source is contributing to the exceedance of bacterial indicator water quality objectives, resolution of the issue may occur independent of the MS4 permit through supplemental RWQCB actions.

Select Mitigation Alternatives

The ultimate goal of the inspection program is to select a mitigation alternative for DWFs with controllable urban bacterial indicator sources. As described above, systematically conducting source evaluation activities in the MS4 should identify which outfalls or channels are primary contributors of DWF and elevated bacterial indicators. The controllability of DWF is largely dependent on the source (specific vs. diffuse) and the controllability of bacterial indicators is largely dependent on the nature of the source, with urban sources likely to be more controllable than non-urban sources, e.g., wildlife. In many cases, it is likely that the elimination or significant reduction of the DWF will also mitigate elevated levels of bacterial indicators.

The MSAR Permittees will select a mitigation alternative to mitigate controllable urban bacterial indicator sources in each prioritized drainage area. The MS4 Permittees will consider alternatives such as:

- *Prevention (or source control)* – As noted above, if the source of the water or bacterial indicators can be specifically identified, then implementation of local control measures is the best approach for mitigating the problem. The controllability assessment consists of evaluating which BMPs or programmatic tools can be applied to the situation to reduce or eliminate the source. Such controls may include specific-source (e.g. illegal discharge) or general source control programs to manage septics, irrigation runoff, pet waste, homeless encampments or other potential sources. If a targeted solution is not available, then the controllability assessment may need to consider more costly solutions, as described below.

- *Retention Structures or Low Flow Diversions* – The implementation of relatively local structural controls to prevent the DWFs from impacting downstream waters may be an outcome of the controllability assessment. Options may range from the modification of existing retention structures to capture all DWFs to the construction of new retention facilities or construction of diversions to intercept the DWFs and conveying them to a treatment facility.

- *On-Site or Regional Treatment* – The use of on-site treatment facilities, e.g., bioretention (drainage area < 20 acres) and subsurface flow wetlands (drainage area < 1,000 acres), is largely dependent on drainage area, facility sizing criteria and land availability. The practicability of these systems will have to be considered on a site-specific and subwatershed specific basis. In many cases, implementation of a regional treatment solution such as conveying DWF to a regional storage basin requires successful completion of a UAA for upstream waters, which also provides greater flexibility where the regional treatment may be sited. The MS4 permit for San Bernardino County requires the completion of a system-wide evaluation to identify retrofit opportunities of existing stormwater conveyances. The findings from this evaluation may be of use to the City of Pomona when considering regional treatment solutions.

Inspection Criteria Summary

CBRP Element 3 – Inspection Criteria implements the USEP to its fullest extent, building on source evaluation work already completed in the watershed. Execution of this element is the key to the success of CBRP implementation. Understanding the localized nature of DWFs and associated bacterial

indicators provides the basis for determining where BMPs need to be targeted to address controllable urban sources of bacteria (Element 2 – Specific BMPs, Attachment C.3), whether there is a need for additional ordinance authority (Element 1 – Ordinances, Attachment C.2), and where regional structural controls may be necessary (Element 4 – Regional Treatment, Attachment C.5).

C.5 Element 4 - Regional Treatment (Structural Controls)

Element 4 focuses on the planning, design and construction of structural BMPs to mitigate controllable urban sources of dry weather flow and bacterial indicators. BMP structural projects may be regional (address controllable urban sources from multiple outfalls) or outfall-specific. Where appropriate to support implementation of a structural solution, UAAs will be completed.

Structural Controls

A large portion of upper part of the Chino Creek watershed in Los Angeles and San Bernardino Counties is hydrologically disconnected from impaired waters (see Figure B-5). This is primarily because of the extensive use of regional recharge basins to capture and recharge dry and wet weather flows. These existing basins are regional structural controls already in operation. The desire to recharge additional water in the watershed coupled with source evaluation program findings (Element 3) will drive decisions regarding siting of new structural BMP facilities.

It is too soon to propose specific locations for new structural BMP facilities given the lack of knowledge regarding the best locations to site such facilities (e.g., regional vs. outfall specific). Also, too little is known regarding urban sources of dry weather flow and the relative bacterial indicator concentrations associated with these sources. Implementation of the Element 3 components of CBRP Step 1 has been designed to address this knowledge void. The key outcome from this effort will be the evaluation and selection of solutions to mitigate controllable urban sources of bacterial indicators. Where a structural solution is identified, then responsible jurisdictions (those permittees responsible for drainage to the targeted outfall or outfalls) will implement CBRP Steps 2 and 3 for the project site.

Structural controls identified under CBRP Step 1 are developed in accordance with the CIP Process for outfall-specific or permittee-specific projects (see Section 2.1, Figure 2-2). Completion of the CIP Process is intended to result in fully-constructed structural BMPs (Steps 2 and 3 of the CBRP implementation process). Larger regional or sub-watershed treatment projects require additional planning and coordination, as described in Table 2.1. Completion of these projects also occurs under CBRP Steps 2 and 3. Regardless of project size, it is possible that during the planning, design and permitting phases under CBRP Step 2 a determination will be made that the planned structural BMP project is infeasible. If such a finding is made, the Permittees will go back to CBRP Step 1 and re-evaluate mitigation alternatives for the affected drainage area to identify a new approach for achieving compliance.

If a UAA is needed to ensure the success of a structural BMP project (including regional projects), UAA development will commence in parallel to the planning, design and permitting process (see additional information, below). Completion of structural BMP projects is subject to governing and regulatory approvals as well as funding. Accordingly, the length of time from project identification to construction completion will be highly variable. Annual reporting will document the status of each identified structural BMP project.

Use Attainability Analyses

The development of a UAA may become an integral part of the implementation of a structural BMP solution. If so, the Permittees will approach the RWQCB regarding the need to conduct specific UAAs. The following sections provide information regarding the development of UAAs in the MSAR watershed.

All waterbodies in the MSAR watershed are presumptively classified as REC-1 protected waterbodies. This means that all waterbodies in the watershed must meet the REC-1 water quality objectives regardless of their characteristics and ability to support REC-1 type activity. The REC-1 presumption may be inappropriate for a number of reasons including channel physical attributes and flow volume. To establish more appropriate recreational uses that recognize these factors, a UAA is required. As defined by the Basin Plan, the purpose of a UAA is "to evaluate the physical, biological, chemical, and hydrological conditions of a river to determine what specific beneficial uses the waterbody can support." For a UAA to be implemented it must receive regulatory approval, from the RWQCB, State Board and EPA Region 9.

The outcome of a UAA could be removal of either the REC-1 use or removal of both REC-1 and REC-2 uses. Either outcome would substantially change the basis for determining compliance with water quality objectives and compliance with bacterial indicator TMDL urban wasteload allocations. For example, if the waterbody is not designated REC-1, then the applicable bacterial indicator water quality objectives are much less stringent than would be the case if the REC-1 use was applicable. These changes could greatly reduce the number of locations where implementation of water quality control activities is necessary to achieve compliance. Modification of recreational uses would also provide additional flexibility for deciding where implementation of a water quality control measure is needed. For example, if a structural BMP is needed to meet compliance at a downstream site, the number of potential locations where that facility can be sited is increased.

UAA Template

The format of these UAAs will be consistent with the final version of UAAs that provide the basis for SWRCB and EPA review of the 2012 recreational use Basin Plan amendment (see discussion in Section 1 of this CBRP).

The recreational use survey database developed by the SWQSTF will be used to support development of UAAs. This database was developed using remote camera technology coupled with occasional site visits to document area recreational activity at 17 locations in the Santa Ana River watershed (Table C-3). Eight of these sites are located in the MSAR watershed.

With the exception of recreational use activity data, which is part of the eligibility analysis, most of the information required for each of the UAA sections is relatively simple to compile. It is expected that the existing large recreational use survey image dataset will provide a basis for predicting the level of recreational use activity in un-surveyed waterbodies based on similarities in waterbody characteristics. As a result, for some future UAAs it may not be necessary to collect additional recreational use survey data. However, if unusual site-specific conditions exist, e.g., in areas where a waterbody is within a residential area or near a school and access to the channel is not restricted, there may be some concern with relying solely on the recreational use survey image database to document the existing or potential for recreational use activities in the waterbody. In these situations, it is understood that the RWQCB may require the collection of site-specific use survey data.

The RWQCB's decision to approve a UAA and modify recreational uses is largely based on an evaluation of the potential risk of human exposure to bacterial indicators in a particular waterbody. The potential risk is related to the characteristics of the waterbody and the likelihood of water contact recreational activities occurring given those characteristics. For example, where water contact recreation is likely to occur, such as a natural waterbody with sufficient flow, the risk of exposure is higher than where such recreation is unlikely, e.g. in a vertical-walled concrete-lined engineered channel.

Results from SWQSTF surveys, which are now stored in the recreational use survey image database (currently available at SAWPA), show that channel characteristics are a strong indicator of existing and potential recreational use activity in the Santa Ana River watershed (however, ultimately it is up to the RWQCB to determine applicable uses):

- *Vertical-walled, Concrete-lined Channels* - Based on over 93,000 images collected from all seasons and different areas of the Santa Ana River watershed, no water contact recreation has been observed in vertical-walled channels. Accordingly, no exposure risk has been identified and a UAA could result in the removal of both REC-1 and REC-2 uses.

- *Trapezoidal-walled, Concrete-lined bottom Channels* - Based on over 35,000 images collected from all seasons and different areas of the watershed, only one contact with water was observed – a person kneeling at the edge of a low flow channel contacted the water on two occasions for a period of less than 30 minutes. In these situations, a UAA could result in the removal of the REC-1 use.

- *Trapezoidal-walled, Natural bottom Channels* – Based on over 113,000 images, only a few images (23) showed some type of contact with the water, but limited to shallow wading, e.g., Chino Creek at Central Avenue where 10 observations occurred. The outcome of the UAA in these situations is unclear and site-specific recreational use survey may need to be collected.

- *Natural Stream Channels* – Three natural or somewhat natural stream channels have been surveyed (Santa Ana Delhi Channel at Newport Bay and Reach 2 of the Santa Ana River at Yorba Linda and Anaheim). Based on over 32,000 images, only two observations of contact with the water were observed and these occurrences were limited to hand/water contact at the Santa Ana Delhi Channel at Newport Bay site.

Table C-3. Summary of recreational use surveys completed by SWQSTF in the Santa Ana River watershed

Representative Photo of Site	Summary of Recreational Use Survey
	**Greenville Banning Channel at Adams Avenue Bridge** ■ Concrete lined, vertical walled channel ■ Land use: Residential and open space ■ Period of Survey: 11/17/05 – 1/3/06 ■ Images collected: 2552 ■ Water contact recreational use events: 0
	**Greenville Banning Channel at Pedestrian Bridge** ■ Concrete lined, vertical walled channel ■ Land use: Residential and vacant natural land ■ Period of Survey: 7/7/2005 – 7/27/2005 ■ Images Collected: 45 ■ Water contact recreational use events: 0
	**Santa Ana Delhi Channel at Mesa Ave** ■ Concrete lined, vertical walled channel ■ Land use: Residential / open space and recreation ■ Period of Survey 6/20/2005 – 7/13/2006 ■ Images Collected: 21,284 ■ Water contact recreational use events: 0
	**Cucamonga Creek at RP1** ■ Concrete lined, vertical walled channel ■ Land use: Industrial/commercial and open space/recreation ■ Period of Survey 10/2/2007 – 10/10/2008 ■ Images Collected: 27,122 ■ Water contact recreational use events: 0
	**Anza Channel at John Bryant Park** ■ Concrete lined, vertical walled channel ■ Land use: Residential and open space/ public park ■ Period of Survey 6/6/2008 – 9/29/2009 ■ Images Collected: 20,386 ■ Water contact recreational use events: 2
	**Demens Channel** ■ Concrete lined, vertical walled channel ■ Land use: Residential and open space ■ Period of Survey 2/1/2008 – 2/9/2009 ■ Images Collected: 21,382 ■ Water contact recreational use events: 0
	**Cucamonga Creek at Hellman Ave (Upstream)** ■ Trapezoidal channel, concreted lined wall and bottom ■ Land use: Agriculture ■ Period of Survey 11/1/2005 – 11/1/2006 ■ Images Collected: 2,546 ■ Water contact recreational use events: 0

Table C-3. Summary of recreational use surveys completed by SWQSTF in the Santa Ana River watershed

Representative Photo of Site	Summary of Recreational Use Survey
	**Temescal at Main Street** ■ Trapezoidal channel, concreted lined wall and bottom ■ Land use: Industrial / Commercial ■ Period of Survey 7/26/2005 – 8/4/2005 ■ Images Collected: 513 ■ Water contact recreational use events: 1
	**Temescal at City of Corona WWTP No. 2** ■ Trapezoidal channel, concreted lined wall and bottom ■ Land use: Industrial / Commercial ■ Period of Survey 11/1/2005 – 11/1/2006 ■ Images Collected: 10,653 ■ Water contact recreational use events: 1
	**Santa Ana Delhi Channel at Sunflower Ave** ■ Trapezoidal channel, rip rap side slopes, natural bottom ■ Land use: Commercial/ residential/ school ■ Period of Survey 7/7/2005 – 7/9/2006 ■ Images Collected: 20,978 ■ Water contact recreational use events: 1
	**Cucamonga Creek at Hellman Ave (Downstream)** ■ Trapezoidal channel, rip rap side slopes, natural bottom ■ Land use: Agriculture ■ Period of Survey 7/26/2005 – 11/1/2006 ■ Images Collected: 16,678 ■ Water contact recreational use events: 8
	**Perris Valley Channel at Moreno Valley WRF** ■ Trapezoidal channel / concrete lined side slope and concrete/natural bottom ■ Land use: Industrial/ Residential/school and open space/public park ■ Period of Survey 10/3/2007 – 10/10/2008
	**SAR at Anaheim** ■ Trapezoidal channel, rip rap side slopes, natural bottom ■ Land use: Industrial/ commercial and open space/public park ■ Period of Survey 10/2/2007 – 10/5/2008 ■ Images Collected: 25,904 ■ Water contact recreational use events: 0
	**Chino Creek at Central Ave** ■ Trapezoidal channel / rip rap slope and bottom ■ Land use: Industrial / commercial ■ Period of Survey 12/19/2007 – 5/23/2009 ■ Images Collected: 23,913 ■ Water contact recreational use events: 10

Table C-3. Summary of recreational use surveys completed by SWQSTF in the Santa Ana River watershed

Representative Photo of Site	Summary of Recreational Use Survey
	**San Diego Creek at Irvine** ■ Trapezoidal channel / natural side slopes and bottom ■ Land use: Residential/commercial/school and open space ■ Period of Survey 6/10/2008 – 9/30/2009 ■ Images Collected: 24,801 ■ Water contact recreational use events: 4
	**Santa Ana Delhi Channel at Newport Bay** ■ Natural Channel ■ Land use: Open space / commercial ■ Period of Survey 6/20/2005 – 6/6/2006 ■ Images Collected: 20,203 ■ Water contact recreational use events: 2
	**SAR at Yorba Linda** ■ Natural Channel ■ Land use: Residential / open space ■ Period of Survey 4/11/2006 – 4/6/2007 ■ Images Collected: 12,645 ■ Water contact recreational use events: 0

UAA Candidate Segments

Table C-4 summarizes the potential UAAs within the City of Pomona. Figure C-2 provides an overview of where UAAs have been completed in the MSAR watershed or where they could potentially be developed in the future to support a structural BMP project. The identification of these potential UAAs is based on the channel characteristics and UAA findings already completed by the SWQSTF.

Table C-4. UAA candidate waterbodies in San Bernardino County

Primary Jurisdiction of Waterbody	UAA Candidate Waterbody	Additional Jurisdictions	Waterbody Length (miles) Classified as UAA Candidate
Pomona	Chino Creek Reach 2	Chino Hills, Chino, Unincorporated San	3.05
	San Antonio Creek	Ontario	5.78

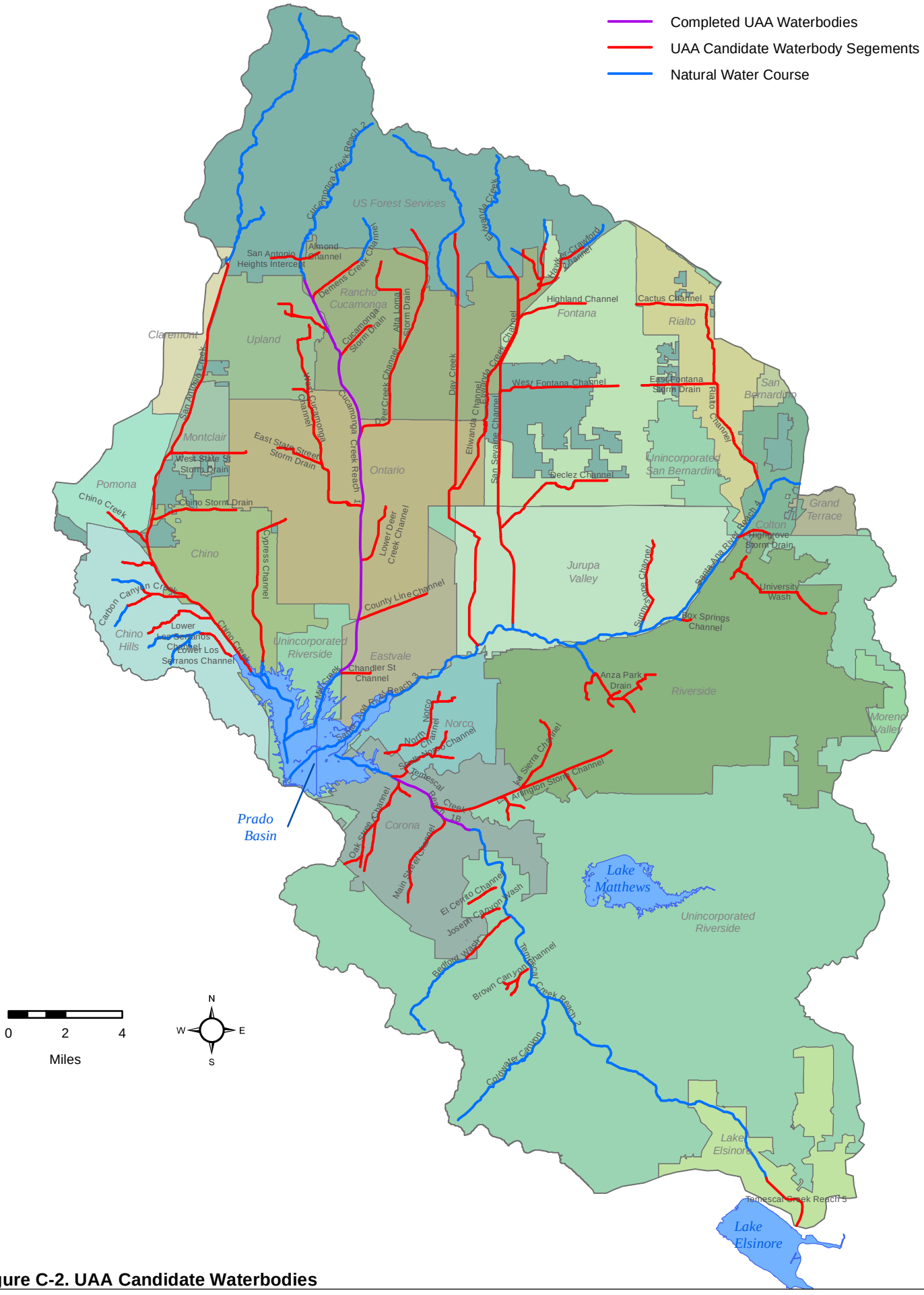


Figure C-2. UAA Candidate Waterbodies

UAA Development Process

RWQCB staff will be consulted prior to initiating development of any UAA. It is anticipated that development of a UAA would rely on the following process:

- Conduct meeting with RWQCB to obtain agreement on the following:
  - UAA to be developed, e.g., upper and lower boundaries;
  - Minimum water quality data requirements;
  - Requirements for additional recreational survey data collection (if any) or other technical data (if any); and
  - UAA structure and content, i.e., is the existing UAA template adequate or are there any site-specific issues that need to be addressed.
- Collect any necessary data (time period could range from a few weeks or months to a year if substantial recreational use survey or other technical data are required).
- Submit draft UAA to the RWQCB for review and comment. Draft UAA will be in the same format as the final approved Cucamonga Creek UAA.
- Prepare revised UAA to the RWQCB for adoption as a Basin Plan amendment.

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Attachment D
City of Pomona

Programs/ Activities	Number of Projects/Programs	Explanation
Post "No Dumping Message" on storm drains	▪ Messages posted at 504 drains in 2009/10 ▪ Messages posted at 462 drains in 2010/11 ▪ Messages posted at approximately 23 drain inlets in 2011/12	All storm drain inlets are inspected for legibility of stenciling on an annual basis prior to October 1st. Each faded/illegible stencil is remarked at the time of inspection. The city has marked all its storm drain inlets with legibly marked "no dumping messages".
Post "No Dumping Message" on water bodies	▪ No Messages posted	All public access points to creeks and channels are the responsibility of the Los Angeles County Flood Control District. However, the City staff assists with graffiti removal from signage and notifies the County when signs are defaced, missing or in need of repair or replacement.
Receive/respond to hotline calls	▪ 104 calls received in 2009/10 ▪ 6 calls received in 2010/11 ▪ 48 calls received in 2011/12	The City received 158 phone calls in the last three years. Information is recorded on an “Incident Report Form” and filed in the Environmental Compliance Consultant’s on-site files and electronic database.
Coordinate/attend public outreach meetings	▪ No meetings attended in 2009/10 ▪ Attended 4 public outreach meeting in 2010/11 ▪ Attended 4 public outreach meeting in 2011/12	The City did not attend any quarterly principal permittee strategy meetings as they were not submitted to co-permittees in 2009/10. City staff attended four Public Outreach meetings held by the Principal Permittee in 2010/11 and 2011/12.The City distributed public education outreach material most of which were general audience-oriented during the Department of Public Works Open House, making well over 200 impressions. In addition, the City updated educational materials hosted in the City’s webpage.
Coordinate/attend public outreach meetings	▪ No meetings attended in 2009/10 ▪ Attended 4 public outreach meeting in 2010/11 ▪ Attended 4 public outreach meeting in 2011/12	The City did not attend any quarterly principal permittee strategy meetings as they were not submitted to co-permittees in 2009/10.

Programs/ Activities	Number of Projects/Programs	Explanation
Coordinate/attend public outreach meetings	▪ No meetings attended in 2009/10 ▪ Attended 4 public outreach meeting in 2010/11 ▪ Attended 4 public outreach meeting in 2011/12	City staff attended four Public Outreach meetings held by the Principal Permittee in 2010/11 and 2011/12.The City distributed public education outreach material most of which were general audience-oriented during the Department of Public Works Open House, making well over 200 impressions. In addition, the City updated educational materials hosted in the City's webpage.
Coordinate/attend local school programs	▪ In 2009/10, the City hosted 1 Public Works Week; Attended 2 school events, 7 after school programs and 3 special events ▪ In 2011/10, the City worked with a local high school (Freemont High School) to implement a six-month stormwater education programs. Additionally, the City worked with Lexington Elementary School's Afterschool Program, focusing on watershed protection.	
Develop/revise pollutant specific outreach permits	▪ In 2009/10, the City developed Public Works front counter stormwater materials for visitors including but not limited to information for business owners, developers, and contractors. ▪ In 2010/11, the City revised stormwater outreach materials to reflect New Construction General Permit requirements	The City has revised its stormwater outreach materials to reflect the New Construction General Permit requirements and the City's SUSMP review process. The City's website has been redesigned to include Environmental program information to including Stormwater Pollution Prevention. In addition, outreach materials were created to reach residents, businesses, homeowners associations, and development/construction sectors.
Coordinate/attend business assistance programs	▪ The City does not have any formal Business Assistance Programs	
Implement/develop Public outreach through media Implement/develop non-traditional advertising	▪ In 2011/12, City spent approximately $3,000 on media outreach ▪ The City prints the (888) CLEAN-LA hotline number on its own used oil recycling program media that are distributed to the public to encourage proper/legal disposal/recycling of used oil/automotive fluids/filters.	

Programs/ Activities	Number of Projects/Programs	Explanation
Implement/develop community partnership programs	▪ In 2009/10, the City attended 1 community event to discuss storm water pollution.- In 2011/12, the City attended 4 workshops to discuss stormwater pollution	Continuing community partners are active neighborhood and community groups (Pomona Citizens, Contractors and land Developers). Group members have been supplied with "Stormwater Begins at Your Door" brochures and stormwater door hangers and brochures detailing household cleanup techniques to help reduce the discharge of pollutants from properties. Groups have distributed these materials to other community members and neighbors; they are great "environmental stewards."The City also works with developers during the project planning phase to assure that the appropriate construction and post-construction stormwater BMPs are incorporated in SUSMP and SWPPP documents. In addition, the City ensures that local contractors and developers implement appropriate stormwater BMPs during active construction.
Create/update critical source inventory database	▪ Updated critical source database	The City updated the critical source database utilizing information contained in the City's business license database. Future inspections will be compared against this listing.
Industrial/ Commercial Facilities Program	▪ 824 facilities were inspected in 2009/10 ▪ 9 facilities were inspected in 2010/11 ▪ 1 industrial site inspected by City staff and Los Angeles Regional staff in 2011/12 was identified as out of compliance. Staff continues to work with the facility staff to resolve the outstanding compliance issues.	In the past three years, the City's consultant has inspected all automotive, industrial/commercial businesses in the City. This citywide inspection plan is providing the program team a baseline of current conditions. The City completed the first and second round of inspections in compliance.
BMP Implementation/ upgrades	▪ 7 facilities inspected in 2010/11 require BMP implementation upgrades	City staff completed all required industrial and commercial facility inspections during the 5-year Permit term. During FY 2010-2011, staff performed inspections of facilities in receipt of Notices of Non-Compliance by the Los Angeles Regional Water Quality Control Board or as the result of a referral by other City staff.

Programs/ Activities	Number of Projects/Programs	Explanation
Enforcement Activities	▪ In 2009/10, 4 notices to comply were issued and 1 Citation was Issued ▪ In 2010/11,8 Compliance warning letters were issued (Los Angeles Regional Water Quality Control Board issued Notices of Violation to seven industrial sites) ▪ In 2011/12,1 notice to comply was issued (City staff referred facility to the Los Angeles Regional Water Quality Control Board)	City staff issued reports of non-compliance after completing inspections. Follow-up inspections were performed and facilities were brought into compliance.
Planning and Land Development Program		
Amended codes/ordinances to give legal effect to SUSMP	▪ City requires all appropriate SUSMP design standards requirements stated in the Planning Division's Conditional Use Permit (CUP) for a proposed new/redevelopment project site must be part of the final project. ▪ All development projects are required to submit preliminary plans to the City's Planning Division. ▪ The City requires the preparation and submittal of a SUSMP document (including project plans) for approval. All SUSMP documents must be submitted through the Building and Safety Division, and then the Engineering Division and NPDES consultant reviews them. Plans are reviewed and conditions are imposed before Building or Grading permits are issued. Prior to occupancy, the site is inspected for implementation of the approved SUSMP conditions.	

Programs/ Activities	Number of Projects/Programs	Explanation
Review/inspected facilities to meet SUSMP requirements	▪ In 2009/10, the city issued 9 permits (8 commercial establishments and 1 parking lot); 23% of the total development projects were conditioned to meet SUSMP requirements. ▪ In 2010/11, the city issued 11 permits (2 residential facilities, 4 commercial, 2 retail gasoline outlets, 1 restaurant and 2 parking lots); 73% of the total development projects were conditioned to meet SUSMP requirements ▪ In 2011/12, the city issued 11 permits (3 residential,3 commercial,1 automotive service facility and 4 parking lots); 100% of the total development projects were conditioned to meet SUSMP requirements	
Process to reduce SUSMP thresholds from 2003 thresholds	▪ The City's Environmental Consultant prepared City staff, developers, engineering firms, etc. for the SUSMP threshold reduction by means of circulating informational sheets and emails noting the change that occurred in March 2003. ▪ The City's Environmental Consultant reviews all proposed projects for SUSMP compliance during the Planning Division's "Development Review" process. Appropriate comments and recommendations regarding SUSMP requirements are provided to the Planning staff for inclusion into the Conditional Use Permit (CUP).	
Updated General Plan Elements		The General Plan update includes stormwater compliance and will be adopted by City Council in early 2014.
Targeted staff trained	▪ City trained 17 targeted staff in 2010/11 and 22 in 2011/12.	

Programs/ Activities	Number of Projects/Programs	Explanation
Develop/Implement Development Planning Guidelines	▪ During the project's development review process, the City's Environmental Consultant refers to the Los Angeles County's "Development Planning for Stormwater Mitigation Plan" reference manual. This document including other related references are made available to City staff. ▪ In addition, the Coordinator developed and makes available a SWPPP and SUSMP tri-fold brochure, which provides the California Stormwater Quality Association's California BMP handbook.	
Development Construction Program		
Issued building/grading permits	▪ In 2009/10, 9 site permits were issued ▪ In 2010/11, 900 site permits issues In 2011/12, 901 permits were issues	In 2009/10, City issued 6 General Construction Activities Storm Water Permit and 3 construction site permit (for sites less than 1 acres) In 2010/11,City issued 2 General Construction Activities Storm Water Permit and 898 construction site permit (for sites less than 1 acres) In 2011/12, City issued 1 General Construction Activities Storm Water Permit and 900 construction site permit (for sites less than 1 acres)
Construction Site Inspection	▪ In 2009/10, 4 construction sites were inspected ▪ In 2010/11, 2 construction sites were inspected In 2011/12, 2 construction sites were inspected	
BMP Implementation/ Upgrades	▪ In 2009/10, 3 violations (2 regarding inadequate BMP/SWPPP implementation and 1 regarding off-site discharge of sediments) were reported. All 3 violations were corrected during inspection. In 2010/11, 2 violations (regarding inadequate BMP/SWPPP implementation) were reported. Both violations were corrected during inspection. In 2011/12, 1 violation was reported. It did not lead to any enforcement actions	

Programs/ Activities	Number of Projects/Programs	Explanation
Public Agency Activities	▪	
Sanitary sewer overflows (SSOs)		
Public Construction Activities Management	▪ In 2010/11, City staff responded to 50 complaints on sewer stoppages, backups and overflows. Only two were city related SSOs.	
Public Construction Activities Management	▪ In 2011/12, City staff responded to 81 call outs on sewer stoppages, backups and overflows. None of them were city related SSOs	
Vehicle Maintenance/Material Storage Facilities/ Corporation Yards Management	▪ Three Pomona city yard sites are adhering to their site specific Industrial SWPPP, incorporating all of the currently implemented BMPs and newly implemented BMPs since the last Industrial SWPPP revision.	To emphasize the importance of proper BMP implementation during maintenance operations, the City's Divisions have developed and implemented new Rules & Regulations that include SOPs, which include appropriate BMP implementation in the field.
Landscape and Recreational Facilities Management	▪ -The City requires bi-monthly inspection and cleaning of City's corporate yard. ▪ The City has banned the cleaning of service vehicles at the Vehicle Maintenance yard to help reduce the discharge of non-stormwater and waste water discharges to the storm-drain system (MS4). ▪ SWPPPs have been completed a number of years ago ▪ The City will develop a City Yard Specific BMP Manual when the 4th Term MS4 permit is adopted. ▪ -City staff are regularly trained regarding good housekeeping practices, material storage, leak and spill control, and illicit discharges during tailgate meetings and safety meetings.	–

Programs/ Activities	Number of Projects/Programs	Explanation
Storm Drain Operation and Management	▪ -Each sprayer is certified by the State of California and is responsible for following the City's No Rinsate Policy; Spill Prevention, Control and Countermeasure (SPCC) Plan; OSHA Regulations; and Municipal NPDES BMPs. ▪ -The City currently implements the US EPA agricultural requirements pertaining to pesticide application.	
Storm Drain Operation and Management	▪ The City landscape plans include native and drought resistant vegetation where feasible. Additionally, the City installs permeable materials to allow greater water infiltration of stormwater. ▪ All landscape related service employees and City staff are trained in the proper application of fertilizers, pesticides, herbicides, none of which may be applied if there is a forecast of rain within a 5-day period. Further, such chemicals are not immediately applied following storm events.	
Street and Road Maintenance	▪ In 2009/10, the city cleaned out 4 Priority A basins, 2 Priority B basins, and 1 Priority C basin; 77.8 tons of total waste was cleaned out of the catch basins; and 3 trash receptacles were installed. ▪ In 2010/11, the city cleaned out 4 Priority A basins, 2 Priority B basins, and 1 Priority C basin; 33.18 tons of total waste was cleaned out of the catch basins; and no new trash receptacles were installed.	

Programs/ Activities	Number of Projects/Programs	Explanation
Street and Road Maintenance	▪ In 2011/12, the City cleaned out 4 Priority A basins, 2 Priority B basins, and 1 Priority C basin; 26.93 tons of total waste was cleaned out of the catch basins; and no new trash receptacles were installed.	In 2009/2010, the City designated 53 Priority A catch basin inlets; 119 Priority B catch basin inlets and 332 Priority C catch basin inlets.-In 2010/11, the City designated 504 Priority A catch basin inlets; 168 Priority B catch basin inlets and 204 Priority C catch basin inlets.- In 2011/12, the City designated 254 Priority A catch basin inlets; 268 Priority B catch basin inlets and 354 Priority C catch basin inlets.- The City is not currently a co-Permittee of a Trash TMDL
Parking Facilities Management	▪ All Priority A Streets were swept at least 2 times/month; Priority B streets were swept at least once/month; and Priority C streets are cleaned less than once/year.	
Public Industrial Activities Management	▪ All permitte-owned parking lots were cleaned bi monthly.	Agency requires that Permittee-owned parking lots be kept clear of debris and excessive oil buildup and cleaned no less than 2 times /month and inspected no less than 2 times/ month to determine if cleaning is necessary.
Emergency Procedures		
IC/ID Elimination Program	▪ City follows all emergency procedures	In case of real emergencies, the City repairs all essential public services and infrastructure in a manner to minimize environmental damage. The City also ensures that all BMP's are implemented to the extent that measures do not compromise public health and safety.
Illicit Discharges reported		
Illicit connections screened	▪ In 2009/10, there were no illicit discharges reported or identified. ▪ In 2010/11, 3 illicit discharges were reported (1 of the events resulted in no evidence of discharge; and 1 resulted in enforcement action).	

Programs/ Activities	Number of Projects/Programs	Explanation
Illicit connections screened	▪ In 2011/12, 39 illicit discharges were reported (11 of the events resulted in no evidence of discharge; and 8 resulted in enforcement action.)	
	▪ In 2009/10 and 2010/11, there were no illicit connections reported or identified. -In 2011/12, 4 illicit connections were identified (1 of the connections resulted in enforcement actions; and 3 resulted in other actions)	

Attachment E
CBRP Implementation Plan

E.1 Introduction

The Santa Ana RWQCB adopted Order No. R8-2013-0043 on September 13, 2013, which describes requirements for the Cities of Claremont and Pomona to address the MSAR Bacteria TMDL, establishes the minimum required schedule-related elements for inclusion in the CBRPs for the cities of Pomona and Claremont. These elements include:

- A detailed schedule with discrete milestones to assess satisfactory progress toward meeting urban wasteload allocations for dry weather;
- Designation of responsibility for meeting each milestone; and
- Specific metrics to demonstrate the effectiveness of the CBRP and acceptable progress for meeting the urban wasteload allocations for dry weather.

Section 2.3 provides an overview of the schedule for the CBRP implementation program. The following sections present the additional information required by the Santa Ana RWQCB adopted Order No. R8-2013-0043.

E.2 CBRP Program Elements

This section provides the implementation plan for each of the four required CBRP elements. Each plan includes the following information:

- *CBRP Activity* – Programmatic area to be implemented.
- *Milestones* – Discrete actions associated with the completion of each CBRP activity.
- *Metrics* – Specific outcomes to demonstrate completion of each milestone; in addition, metrics for some activities are related to mitigation of identified controllable urban sources of bacterial indicators and provide a means to measure effectiveness of activity.
- *Responsible Agency* – Assignment of the activity to either the area-wide MS4 program or to MS4 permittees with jurisdiction over a targeted area.
- *Completion Date* – Completion dates are provided where possible. CBRP Step 2 and 3 activities are expected to extend beyond the December 31, 2015 compliance date given the length of time involved with the design, permitting and construction of a structural BMP.

Element 1 – Ordinances

Table E-1 provides the implementation activities planned for each of these CBRP activities. Tasks include evaluations of legal authority and the development of minimum ordinance requirements consistent with other MSAR Permittees and local ordinance development or enhancement, where necessary. The adoption of a LID ordinance is included in this CBRP and is a requirement of the LA County MS4 Permit. Progress towards implementing Element 1 activities will be summarized and reported in the Annual Report prepared under the LA County MS4 permit.

Element 2 – Specific BMPs

Seven specific BMPs are included in Element 2. Table E-2 provides the implementation plan associated with each of these activities. Some activities are closely linked to other CBRP elements, e.g., implementation of irrigation practices is closely linked with the water conservation ordinance activities described under Element 1. Completion dates for BMPs included in the LA County MS4 Permit are consistent with the MS4 permit requirements. Progress implementing Element 2 activities will be summarized and reported in the Annual Report prepared under the MS4 permit.

Element 3 – Inspection Criteria

This element includes the activities dedicated to identifying controllable urban dry weather flow and bacterial indicator sources, prioritizing mitigation evaluations, completing mitigation alternative evaluations, and initiating the implementation of selected mitigation alternatives (Table E-3). Element 3 activities require data collection, the results of which support decisions regarding next steps to mitigate controllable sources. Deliverables range from selection and initiation of a structural BMP project to implementation of more targeted non-structural BMPs. Structural BMPs selected under Element 3 are designed and constructed as part of Element 4. Where the results of source evaluation activities indicate that sources are uncontrollable or are not the responsibility of the MS4, the RWQCB will be notified and the source will be addressed outside of the CBRP.

Element 3 activities will replace the need to periodically identify source evaluation activities for implementation. Reports regarding the findings of mitigation evaluations and selection of mitigation alternatives will be summarized in the MS4 permit Annual Reports.

Table E-1. Implementation Plan for CBRP Element 1 – Ordinances

CBRP Activity	Milestones	Metrics	Responsibility	Complete by
1.A - Water Conservation Ordinance	1.A.i – Evaluate existing legal authority to manage and enforce DWF	Establish minimum DWF management and enforcement requirements for the area	Permittees	June 30, 2014
	1.A.ii - Evaluate opportunities to collaborate with water department on implementation of UWMP to maximize use of outdoor water use efficiency BMPs and reduce DWF			
	1.A.iii – Evaluate need to revise local ordinances to incorporate more stringent DWF management requirements	Prepare draft revised ordinances in the local jurisdiction, as needed	Permittees	December 31, 2014
	1.A.iv - Adopt revised water conservation ordinances (as appropriate)	As appropriate to the local jurisdiction, revised ordinances adopted	Permittees	December 31, 2015
1.B – Low Impact Development Ordinance	1.B.i - Submit draft LID Ordinance to Los Angeles RWQCB	Submit draft LID Ordinance	Permittees	June 26, 2013[1]
	1.B.ii - Submit final LID Ordinance to Los Angeles RWQCB	If necessary, revise draft and submit final LID Ordinance	Permittees	December 28, 2014[1]
	1.B.iii – Develop tracking system and an inspection and enforcement program for new development and redevelopment post construction storm water	Submit tracking and inspection and enforcement program to RWQCB	Area-wide MS4 Program	February 26, 2013[1]
1.C – Reporting	1.C.i – Provide annual summary of ordinance development activities and recommendations for CBRP modification as identified by Element 1 implementation	Incorporate summary into MS4 permit Annual Report	Permittees	Annually by November 15

[1] - Consistent with MS4 permit requirement

Table E-2. Implementation Plan for CBRP Element 2 – Specific BMPs

Activity	Milestones	Metrics	Responsibility	Complete by
2.A – Transient Camps	2.A.i - Identify locations of transient encampments outside of MS4 rights-of-way that may be contributing to elevated bacterial indicators in dry weather flows in MS4 facilities, evaluate potential impacts from identified camps, and develop plan to mitigate camps determine to be a water quality concern	Report findings	Permittees	September 30, 2012
	2.A.ii - Develop model program for mitigating water quality impacts from transient encampments	Establish model program for use by local jurisdictions	Permittees	December 31, 2014
	2.A.iii - Develop targeted transient camp mitigation plan	Based on the outcome of 2.A.i and 2.A.ii, prepare mitigation plan (with schedule) for implementation by local jurisdiction	Permittees	June 30, 2015
	2.A.iv - Implement transient camp mitigation plan	Complete targeted activities based on mitigation plan	Permittees	December 31, 2014
2.B – IC/ID	2.B.i – Implement IC/ID Program	Implementation of Inspection Program as required by 3.C	Area-wide MS4 Program & Permittees	Ongoing
2.C - Street Sweeping	2.C.i – Literature review of street sweeping programs (e.g., method, frequency, equipment) to determine potential to modify programs to reduce bacterial indicator sources	Develop recommendations for modified street sweeping program targeted at bacterial indicators	Permittees	June 30, 2014
	2.C.ii - Develop plan/schedule for implementation of modified program (as appropriate)	Establish plan/schedule for implementation of modified street sweeping program, as appropriate to local jurisdictions	Permittees	September 30, 2014
	2.C.iii – Implement modified street sweeping program	Compliance with established plan/schedule	Permittees	As required by 2.C.ii
2.D – Irrigation or Water Conservation Practices	2.D.i - Develop irrigation and outdoor water conservation BMP programs in coordination CBRP activity 1.A	Identify recommended irrigation and water conservation BMP practices for implementation	Permittees	March 31, 2014
	2.D.ii - Develop plan/schedule for implementation of BMP practices	Establish plan/schedule for implementation of BMP practices, as appropriate within local jurisdictions	Permittees	June 30, 2014
	2.D.iii – Implement BMP practices	Compliance with established plan/schedule	Permittees	As required by 2.D.ii

Table E-2. Implementation Plan for CBRP Element 2 – Specific BMPs

Activity	Milestones	Metrics	Responsibility	Complete by
2.E – New Development / Redevelopment Project Performance Criteria	2.E.i – Implement requirements of LA County MS4 Permit of City of Pomona LID Ordinance for new development and significant redevelopment projects	Ensure proper compliance with LID requirements in proposed projects	Area-wide MS4 Program & Permittees	June 26, 2013[1]
	2.E.ii – Develop effectiveness tracking system and an inspection and enforcement program for new development and redevelopment post construction storm water	Submit tracking and inspection and enforcement program to RWQCB	Area-wide MS4 Program & Permittees	February 26, 2013[1]
2.F –Septic System Management	2.F.i – Analyze relationship between location of septic systems and MS4 facilities to evaluate potential for impacts from septic systems on water quality under dry weather conditions	Identify areas where septic systems have the potential to impact the MS4; establish plan to target areas for education, inspection and enforcement activities	Permittees	June 30, 2014
	2.F.ii – Develop educational materials and conduct public education activities to inform septic system owners on proper maintenance of septic systems	Complete targeted educational activities	Permittees	June 30, 2014
	2.F.iii – Conduct inspection and enforcement activities as needed, to ensure potential water quality impacts to MS4 are mitigated	Complete targeted inspections and implement enforcement actions as needed	Permittees	December 31, 2015
2.G – Pet Waste Management	2.G.i – Evaluate pet waste management BMPs within local jurisdictions to identify any opportunities to enhance BMPs to better target bacterial indicator sources	Identification of new or enhanced BMPs for implementation	Permittees	September 30, 2014
	2.G.i – Develop and implement BMPs identified in 2.G.i.	Implementation of BMPs identified in 2.G.i	Permittees	As required by 2.G.i
2.H - Reporting	2.H.i – Provide annual summary of BMP activities and recommendations for CBRP modification as identified by Element 2 implementation	Incorporate summary into MS4 permit Annual Report to Santa Ana RWQCB	Area-wide MS4 Program & Permittees	Annually by December 15

[1] - Program guidance is an MS4 permit requirement with no due date; the CBRP establishes a due date consistent with CBRP implementation needs
[2] - Consistent with MS4 permit requirement

Table E-3. Implementation Plan for CBRP Element 3 – Inspection Criteria[1]

Activity	Milestones	Metrics	Responsibility [1]	Complete by
3.A –Tier 1 Source Evaluation	3.A.i – Implement IC/ID Program	Implementation of IC/ID program to achieve common objectives to the CBRP Inspection Program	Area-wide MS4 Program & Permittees	Ongoing
	3.A.ii - Revise Watershed-wide Monitoring Program Monitoring Plan and QAPP, as needed	Revised Monitoring Plan and QAPP approved by RWQCB	Permittees through MSAR Task Force	March 31, 2012
	3.A.iii - Collect data from Tier 1 sites	Completed sampling; laboratory data received and included in MSAR database maintained by SAWPA	Permittees through MSAR Task Force	Completed in 2011
	3.A.iv – Develop non-stormwater outfall based screening and monitoring program plan	Submit plan documenting procedures for non-stormwater outfall based screening and monitoring	Area-wide MS4 Program & Permittees	December 28, 2013
	3.A.v - Identify and inventory outfalls with significant non-stormwater discharges	Storm Drains, Channels and Outfalls map and associated outfall database shall be updated to incorporate the most recent characterization data for outfalls with significant non-storm water discharge	Area-wide MS4 Program & Permittees	Annually
3.B – Prioritization of Drainage Areas	3.B.i – Prepare Data Analysis Report with prioritized drainage areas based on data collected under 3.A	Data Analysis Report summarizing Tier 1 results to support Decision Points #1 and #2 in the Compliance Strategy (Figure 2-4)	Permittees through MSAR Task Force	Completed in February 2013
3.C – Tier 2 Source Evaluation	3.C.i - Develop a source identification schedule based on the prioritized list of outfalls exhibiting significant non-storm water discharges.	Tier 2 source evaluations are to be conducted in the MS4 areas upstream of the prioritized outfalls for non-stormwater discharges in the dry season	Permittees through MSAR Task Force	October 31, 2014 [2]
3.D – Identify Alternatives for Reducing or Eliminating	3.D.i - Based on the findings of Elements 3.B.i and 3.C.i, develop alternatives to mitigate controllable dry weather flow or bacterial indicator sources for each prioritized drainage area starting with the highest	Prepare documentation regarding the alternatives identified for each evaluated drainage area (documentation prepared for each drainage area in order of priority and included in Annual Report)	Permittees through MSAR Task Force	December 31, 2014
3.E – Identify and Select Mitigation Alternatives	3.E.i – Select mitigation alternative based on findings established under 3.D.i	Prepare documentation regarding the selected alternative for mitigating controllable sources in each drainage area (documentation prepared for each drainage area in order of priority and included in Annual Report)	Permittees	March 31, 2015
	3.E.ii – Implement targeted non-structural BMPs if part of mitigation alternative	Document implementation of non-structural BMPs through Annual Report	Permittees	December 31, 2015

Table E-3. Implementation Plan for CBRP Element 3 – Inspection Criteria[1]

Activity	Milestones	Metrics	Responsibility [1]	Complete by
	3.E.iii – Complete Project Identification phase of CIP process where structural BMPs selected	Establish Project Need and move structural BMP project into CBRP Step 2 (see Table E-4.)	Permittees	March 31, 2015
3.E - Reporting	3.F.i – Provide annual summary of Element 3 implementation activities and TMDL Compliance	Incorporate TMDL Compliance Report into Annual Report. Report should also contain summary data and effectiveness assessment for non-storm water control measures	Area-wide MS4 Program & Permittees	Annually by December 15

[1] – Area-wide MS4 Program refers to the group of agencies within the coastal watersheds of LA County, except for the City of Long Beach
[2] – MS4 Permit requires source evaluations to be completed for no less than 25% of the outfalls in the inventory prior to December 28, 2015 and 100% of the outfalls in the inventory prior to December 28, 2017. However, the compliance deadline for the MSAR Bacteria TMDL of December 31, 2015 requires that the Tier 2 source evaluations, for areas draining to the MSAR, be completed earlier than required in the Permit.

Element 4 – Regional Treatment

This element includes all CBRP Step 2 and 3 activities and programmatic activities (Table E-4). The milestones, metrics and schedule associated with Element 4 activities are consistent with area-wide requirements in the LA County MS4 permit.

The outcomes of CBRP Step 1 (selection of BMP alternatives for each prioritized drainage area) determine the schedule for implementation of structural BMP projects and the specific permittees responsible for BMP implementation (e.g., responsibility for implementation of the BMP rests with the permittees located within the drainage area that drains to the structural BMP). Wherever structural BMP solutions are selected for implementation, a project-specific schedule will be developed. This schedule will take into account the nature of the project (e.g., local outfall-specific project vs. small regional or sub-watershed treatment project) and the usual factors that affect implementation of capital improvement projects, e.g., available funding or permitting requirements. If under CBRP Step 2 a selected alternative is determined to be infeasible, a process will be initiated to identify another alternative for the targeted drainage area.

The CBRP schedule shows CBRP Steps 2 and 3 likely extending beyond the December 31, 2015 to allow for the CIP process to be implemented within each responsible jurisdiction. The status of CBRP BMP projects will be annually summarized and reported in the Annual Report prepared for the MS4 permit program.

E.3 Monitoring & Reporting

A watershed-wide compliance monitoring program was established in 2007; it will continue as designed under the CBRP. A report summarizing sample results from dry weather conditions from April 1 to October 31 is submitted to the RWQCB by December 31st of each year. Similarly, a report summarizing sample results from November 1 through March 31 is submitted to the RWQCB by May 31st of each year. In addition to these biannual reports, a 3-year summary (or Triennial Report) is due to the RWQCB by February 15th every three years since TMDL adoption. The first of these reports was submitted on February 15, 2010. Subsequent reports are due in 2013 and 2016.

Table E-5 summarizes the monitoring and reporting activities associated with the CBRP. Under the CBRP, the watershed-wide compliance monitoring program will continue to be the primary means of evaluating progress toward meeting the wasteload allocations for dry weather. The existing Monitoring Plan and QAPP will be revised as needed to facilitate source evaluation activities implemented as part of Element 3 – in particular allowing the use of alternative EPA-approved bacterial indicator laboratory analysis methods.

The CBRP schedule includes the regular reporting of seasonal sampling results that is ongoing. In addition, during CBRP implementation two Triennial Reports will be prepared that will provide opportunity to evaluate newly collected data and the effectiveness of CBRP implementation over the long term:

- *2013 Triennial Report* – This report, submitted on February 11, 2013, provided an interim evaluation of progress towards meeting the urban wasteload allocation by the December 21, 2015 compliance date. The data and analysis from this report was used to develop the compliance analysis contained in CBRP Section 3. This report also completed the MS4 Permit requirement for a prioritization of outfall for non-stormwater discharges. Source evaluations are underway within the prioritized MS4 outfall drainage areas.

- *TMDL Compliance Report* – This annual report due to the Santa Ana RWQCB (first version on November 15, 2014) will document the City of Pomona's progress toward implementation of the four elements of the CBRP including ordinances, specific BMPs, source evaluation, and regional treatment. This report will relate key findings from Tier 2 source evaluation to the assumptions used in the development of the RAA. Where appropriate, the RAA and potentially DWF reduction targets and associated BMP implementation requirements will be updated.

- *2016 Triennial Report* – This report, due to the Santa Ana RWQCB by February 15, 2016, will provide an analysis of the most recent dry weather condition results obtained through October 2015. As part of the preparation of this report, the RAA contained in CBRP Section 3 will be reviewed, and where appropriate, further revised to take into account newly available bacterial indicator, flow, and special study data which provide additional information regarding controllable urban sources and the relative contribution of bacteria from the MS4 to impaired waters.

Table E-4. Implementation Plan for CBRP Element 4 – Regional Treatment (Structural BMPs)

Activity	Milestones	Metrics	Responsibility	Complete by
4.A – Complete UAAs, as needed	4.A.i - Meet with Los Angeles RWQCB to present UAA needs and propose development schedule and waterbody-specific data requirements	UAA schedule and waterbody specific approach established with Los Angeles RWQCB	Permittees	Schedule specific Structural BMP Projects
	4.A.ii- Collect required data and complete UAA	Submit completed UAA to RWQCB	Permittees	Schedule linked to Structural BMP Projects
4.B – Budget / Planning CIP Phase	4.B.i – Prepare preliminary design and cost estimate for identified structural BMP project	Completed project cost estimate	Permittees	Schedule linked to Structural BMP Projects
	4.B.ii – Incorporate into CIP or implement multi-jurisdictional process to develop project (see Table 2-1).	Incorporation of structural BMP project into CIP or implementation of multi-jurisdictional process	Permittees	Schedule linked to Structural BMP Projects
4.C – Design CIP Phase	4.C.i – Develop design for structural BMPs included in the CIP, as funding allows	Completed structural BMP design	Permittees	Schedule linked to Structural BMP Projects
	4.C.ii – Initiate CEQA process for projects in design	CEQA process initiated	Permittees	Schedule linked to Structural BMP Projects
4.D – Permitting CIP Phase	4.D.i – Complete CEQA process	CEQA approval obtained	Permittees	Schedule linked to Structural BMP Projects
	4.D.ii – Obtain all required permits and approvals	All permits and approvals for construction obtained	Permittees	Schedule linked to Structural BMP Projects
4.E – Construction CIP Phase	4.E.i – Construct BMP, as available funding allows	BMP constructed	Permittees	Schedule linked to Structural BMP Projects
4.F - Reporting	4.F.i – Provide summary of status of each structural BMP project	Incorporate summary into Annual Report to Santa Ana RWQCB	Area-wide MS4 Program	Annually by November 15

[1] - Consistent with MS4 permit requirement

Table E-5. Implementation of activities to assess compliance with urban wasteload allocations

CBRP Activity	Milestones	Metrics	Responsibility	Complete by
Watershed-wide Compliance Monitoring	Revise Monitoring Plan and QAPP as needed to facilitate Element 3 activities, including modifying the approved *E. coli* laboratory analysis method to another EPA-approved method to allow use of local laboratories[1]	Revised Monitoring Plan and QAPP approved by Santa Ana RWQCB	Permittees through MSAR Task Force	December 31, 2011
	Collect 20-weekly samples during dry season (April 1 – October 31)	Submittal of Dry Season Report to Santa Ana RWQCB	Permittees through MSAR Task Force	Ongoing annual activity
	Collect 11 weekly samples during wet season (November 1 – March 31)	Submittal of Wet Season Report to the Santa Ana RWQCB	Permittees through MSAR Task Force	Ongoing annual activity
	Collect 4 samples during and after one wet weather event			
2013 Triennial Report	Review and revise compliance analysis contained in CBRP Section 3 based on most recent data (e.g., flow, bacterial indicators, special studies) including additional analysis on relative contribution of bacterial indicators from controllable urban sources	Revised compliance analysis for incorporation into the 2013 Triennial Report	Permittees through MSAR Task Force	December 31, 2012
	As part of 2013 report, evaluate progress towards meeting urban wasteload allocations, in particular during dry weather conditions (April 1 – October 31)	Submit Triennial Report to the Santa Ana RWQCB by February 15, 2013; incorporate recommendations for modifications to CBRP	Permittees through MSAR Task Force	February 15, 2013
TMDL Compliance Report	TMDL Compliance Report as part of its Annual Report detailing compliance with the applicable interim and/or final effluent limitations using i) site-specific performance data for the applicable device(s); (ii) information on the number and location of such installations, and the drainage areas addressed by these installations; and (iii) calculated compliance with the applicable effluent limitation	Submittal of TMDL Compliance Report to the Santa Ana RWQCB	Area-wide MS4 Program & Permittees	November 15, 2014, Then annually [2]
2016 Triennial Report	Review and revise compliance analysis contained in CBRP Section 3 based on most recent data (e.g., flow, bacterial indicators, special studies) including additional analysis on relative contribution of bacterial indicators from controllable urban sources	Revised compliance analysis for incorporation into the 2016 Triennial Report	Permittees through MSAR Task Force	December 31, 2015

Table E-5. Implementation of activities to assess compliance with urban wasteload allocations

CBRP Activity	Milestones	Metrics	Responsibility	Complete by
	As part of 2016 report, evaluate progress towards meeting urban wasteload allocations, in particular during dry weather conditions (April 1 – October 31)	Submit Triennial Report to the RWQCB by February 15, 2016; incorporate recommendations for modifications to CBRP including additional BMPs planned if compliance monitoring indicates additional measures are required	Permittees through MSAR Task Force	February 15, 2016
Water Quality Objective Review	Based on the findings/outcomes of CBRP implementation activities, evaluate whether to revise geometric mean *E. coli* water quality objective applicable to Chino Creek, Mill-Cucamonga Creek, Santa Ana River Reach 3 and Prado Park Lake from 126 to 206 cfu/100 mL	RWQCB decision on whether to implement Basin Plan amendment process	RWQCB with MSAR Task Force	Spring 2016

[1] The Basin Plan amendment under development by the SWQSTF allows for the use any EPA-approved *E. coli* method for evaluating compliance. Implementation of the CBRP will require use of local laboratories to facilitate inspection program activities; the existing Monitoring Plan will be revised to accommodate this requirement.
[2] - Consistent with MS4 permit requirement

Attachment F
Glossary

Many of the following glossary terms were adapted from Appendix 4, Glossary, San Bernardino County MS4 Permit, Order No. R8-2010-0036. Several new terms are included that are specific to this CBRP.

303(d) list - Provides information on impaired waters, likely pollutant sources, and priority for TMDL development.

Bacterial Indicator - Indicator for the potential presence of pathogens.

Basin Plan – Water Quality Control Plan developed by the Regional Board for the Santa Ana River watershed.

Bacterial Prioritization Score [BPS] – Scoring given to a Middle Santa Ana River subwatershed on the basis of frequency and magnitude of water quality objective exceedences and number of human detections over the course of the 2007-2008 USEP monitoring period.

Beneficial Use – Uses of water necessary for the survival or wellbeing of man, plants, and wildlife. These uses of water serve to promote the tangible and intangible economic, social, and environmental goals. "Beneficial Uses" that may be protected include, but are not limited to: domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves. Existing Beneficial Uses are those that were attained in the surface or ground water on or after November 28, 1975; and potential Beneficial Uses are those that would probably develop in future years through the implementation of various control measures. "Beneficial Uses" are equivalent to "Designated Uses" under federal law. [California Water Code Section 13050(f)] Beneficial Uses for the Receiving Waters are identified in the Basin Plan.

BMP [Best Management Practices] – Defined in 40 CFR 122.2 as schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the Pollution of Waters of the U.S. BMPs also include treatment requirements, operating procedures and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. In the case of MS4 permits, BMPs are typically used in place of Numeric Effluent Limits.

Comprehensive Bacteria Reduction Plan [CBRP] – A plan presenting a long-term solution designed to achieve compliance with the WLAs by the dates specified in the MSAR Bacteria Indicator TMDL. This plan includes a description of the proposed BMPs and the documentation demonstrating that the BMPs are expected to attain the WLAs by the compliance dates when implemented.

Controllable Urban Bacteria Sources – Non-agricultural/non-Open Space Anthropogenic sources of Pollutants in Urban Runoff that may be controlled by the Permittees to the MEP. "Controllable Urban Sources" do not include discharges from state and federal facilities, public schools and hospitals, utilities, railroads, special districts, Native American tribal lands, wastewater management agencies and other point and non-point source discharges otherwise permitted by or under the jurisdiction of the Regional Board, which have been identified by the Regional Board in the MS4 permit as being beyond the Permittees' legal jurisdiction. Additionally, "Controllable Urban Sources" do not include certain activities that generate Pollutants in Urban Runoff which have been identified by the Regional Board in the MS4 permit as being beyond the ability of the Permittees to eliminate and include, but are not limited to: emissions from internal combustion engines, brake pad wear and tear, atmospheric deposition, bacteria from wildlife (including feral cats and dogs) or from bacterial resuscitation or reactivation from treated waters or growth of bacteria in the environment (such as sediments, surface water, or other substrate) and leaching of naturally occurring nutrients and minerals from local soils. Specific anthropogenic controllable indictor bacteria sources within the Santa Ana Watershed may include:

- Improper use of fertilizers on residential and commercial properties and agricultural lands
- Improper handling of pet waste
- Cross-connections between the sanitary and storm sewer systems
- Leaky sanitary sewer conveyances
- Discharges from POTWs owned and operated by the Permittees
- Improper handling and disposal of food waste
- Runoff from yards containing fertilizers, pet waste, and lawn trimmings
- Transient encampments

Dry Season – For the CBRP, the dry season is defined by the period from April 1 through October 31 of each year.

Dry Weather Flow [DWF] – Flow in MS4 drains or receiving waterbodies during dry weather in either wet or dry seasons.

Dry Weather – a condition where daily rainfall does not exceed 0.1 inches.

Illegal Discharge –Defined at 40 CFR 122.26(b)(2) as any discharge to the MS4 that is not composed entirely of storm water, except discharges pursuant to an NPDES permit, discharges that are identified in Section VI.A. of this Order, and discharges authorized by the Executive Officer.

Illicit Connection – Any connection to the MS4 that is prohibited under local, state, or federal statutes, ordinances, codes, or regulations. The term Illicit Connection includes all non-storm-water discharges and connections except discharges pursuant to an NPDES permit, discharges that are identified in Section V, Effluent Limitations and Discharge Specifications, of this Order, and discharges authorized by the Executive Officer.

Impaired Waterbody / Impaired Waters – Section 303(b) of the CWA requires each of California's Regional Water Quality Control Boards to routinely monitor and assess the quality of waters of their

respective regions. If this assessment indicates that Beneficial Uses are not met, then that waterbody must be listed under Section 303(d) of the CWA as an Impaired Waterbody. The 2006 water quality assessment found a number of water bodies as Impaired pursuant to Section 303(d). The Santa Ana River, Reach 3 is listed as an impaired waterbody for pathogens.

Impressions – The most common measure is "gross impressions" that includes repetitions. This means if the same person sees an advertisement or hears a radio or sees a TV advertisement a thousand times, that will be counted as 1000 Impressions.

Load Allocations [LA] – Distribution or assignment of TMDL Pollutant loads to entities or sources for existing and future Non-Point Sources, including background loads.

Low Impact Development (LID) – Comprises a set of technologically feasible and cost-effective approaches to storm water management and land development that combines a hydrologically functional site design with Pollution Prevention measures to compensate for land development impacts on hydrology and water quality. LID techniques mimic the site's predevelopment hydrology by using site design techniques that store, infiltrate, evapotranspire, bio-treat, bio-filter, bio-retain or detain runoff close to its source.

Major Outfall – Outfalls from MS4 systems expected to contribute a measurable amount of dry weather flow based on desktop GIS analysis of upstream drainage area. It is expected that this desktop GIS analysis is moderately comparable with the NPDES Permit definition of a major outfall as an outfall "with a pipe diameter of 36 inches or greater or drainage areas draining 50 acres or more".

Maximum Extent Practicable [MEP] – Is not defined in the CWA; it refers to management practices, control techniques, and system design and engineering methods for the control of pollutants taking into account considerations of synergistic, additive, and competing factors, including, but not limited to pollutant removal effectiveness, regulatory compliance, gravity of the problem, public acceptance, social benefits, cost and technological feasibility. January 29, 2010 (Final) Order No. R8-2010-0036 (NPDES No. CAS 618036) Page 113 of 125 Area-wide Urban Storm Water Runoff Management Program San Bernardino County MS4 Permit MEP is the technology-based standard established by Congress in CWA section 402(p)(3)(B)(iii) that operators of MS4s must meet. Technology-based standards establish the level of pollutant reductions that dischargers must achieve, typically by treatment or by a combination of source control and treatment control BMPs. MEP generally emphasizes pollution prevention and source control BMPs primarily (as the first line of defense) in combination with treatment methods serving as a backup (additional line of defense). MEP considers economics and is generally, but not necessarily, less stringent than BAT. A definition for MEP is not provided either in the statute or in the regulations. Instead, the definition of MEP is dynamic and will be defined by the following process over time: municipalities propose their definition of MEP by way of their urban runoff management programs. Their total collective and individual activities conducted pursuant to the urban runoff management programs becomes their proposal for MEP as it applies both to their overall effort, as well as to specific activities (e.g., MEP for street sweeping, or MEP for MS4 maintenance). In the absence of a proposal acceptable to the Regional Board, the Regional Board defines MEP.

MS4 – [Municipal Separate Storm Sewer System] – A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, natural drainage features or channels, modified natural channels, man-made channels, or storm drains): (i) Owned or operated by a State, city town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or

other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or designated and approved management agency under section 208 of the CWA that discharges to Waters of the U.S.; (ii) Designated or used for collecting of conveying storm water; (iii) Which is not a combined sewer; (iv) Which is not part of the POTW as defined at 40 CFR 122.2.

New Development – The categories of development identified in Section XI.D of this Order. New Development does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of a facility, nor does it include emergency New Development required to protect public health and safety. Dischargers should confirm with Regional Board staff whether or not a particular routine maintenance activity is subject to this Order.

Non-Point Source – Refers to diffuse, widespread sources of Pollution. These sources may be large or small, but are generally numerous throughout a watershed. Non-Point Sources, include but are not limited to urban, agricultural or industrial area, roads, highways, construction sites, communities served by septic systems, recreational boating activities, timber harvesting, mining, livestock grazing, as well as physical changes to stream channels, and habitat degradation. Non-Point Source Pollution can occur year round any time rainfall, snowmelt, irrigation, or any other source of water runs over land or through the ground, picks up Pollutants from these numerous, diffuse sources and deposits them into rivers, lakes and coastal waters or introduces them into groundwater.

National Pollutant Discharge Elimination System (NPDES) – A national program under Section 402 of the Clean Water Act for regulation of discharges of pollutants from point sources to waters of the United States. Discharges are illegal unless authorized by an NPDES permit.

Point Source – 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 operations, landfill leachate collection systems, vessel, or other floating craft from which pollutants are or may be discharged.

POTW – [Publicly Owned Treatment Works] – Wastewater treatment facilities owned by a public agency.

Non-structural BMPs – In general, activities or programs to educate the public or provide low cost non-physical solutions, as well as facility design or practices aimed to limit the contact between Pollutant sources and storm water or authorized Non-Storm Water. Examples include: activity schedules, prohibitions of practices, street sweeping, facility maintenance, detection and elimination of IC/IDs, and other non-structural measures. Facility design (structural) examples include providing attached lids to trash containers, canopies for fueling islands, secondary containment, or roof or awning over material and trash storage areas to prevent direct contact between water and Pollutants.

Significant Redevelopment -The addition or creation of 5,000, or more, square feet of impervious surface on an existing developed site. This includes, but is not limited to, construction of additional buildings and/or structures, extension of the existing footprint of a building, construction of impervious or compacted soil parking lots. Significant Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, the original purpose of the constructed facility or emergency actions required to protect public health and safety.

Structural BMPs – Physical facilities or controls that may include secondary containment, treatment measures, (e.g. low flow diversion, detention/retention basins, and oil/grease separators), run-off controls

(e.g., grass swales, infiltration trenches/basins, etc.), and engineering and design modification of existing structures.

Total Maximum Daily Load [TMDL] - The TMDL is the maximum amount of a pollutant that can be discharged into a water body from all sources (point and non-point) and still maintain water quality standards. Under Clean Water Act Section 303(d), TMDLs must be developed for all water bodies that do not meet water quality standards after application of technology based controls.

Uncontrollable Bacteria Sources - Contributions of bacteria within the watershed from nonpoint sources that are not readily managed through technological or natural mechanisms and that may result in exceedances of water quality objectives for indicator bacteria. Uncontrollable sources can occur from both natural and anthropogenic sources, and include runoff from the roadways, residential, industrial and agricultural land use, and wildlife activity. Specific uncontrollable indicator bacteria sources within the Santa Ana Watershed may include:

- Wildlife activity and waste
- Bacterial regrowth within sediment
- Resuspension from disturbed sediment
- Marine vegetation (wrack) along high tide line
- Concentration (flocks) of semi-wild water fowl
- Shedding during swimming

Waste Load Allocations (WLAs)– Maximum quantity of Pollutants a discharger of waste is allowed to release into a particular waterway, as set by a regulatory authority. Discharge limits usually are required for each specific water quality criterion being, or expected to be, violated. Distribution or assignment of TMDL Pollutant loads to entities or sources for existing and future Point Sources.

Water Quality Objectives – Means the numeric or narrative limits or levels of water quality constituents or characteristics which are established for the reasonable protection of Beneficial Uses of water or the prevention of Nuisance within a specific area. [California Water Code Section 13050(h)]

Water Quality Standards –The water quality goals of a waterbody (or a portion of the waterbody) designating Beneficial Uses to be made of the water and the Water Quality Objectives or criteria necessary to protect those uses. These standards also include California's anti-degradation policy.

Wet Season - For the CBRP, the wet season is defined by the period from November 1 to March 31, of each year.

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Attachment G
References

CDM. 2010. Analysis of Diversion of Dry Weather Urban Runoff to POTWs for Bacteria Control within the Santa Ana River Watershed Portion of San Bernardino County, Technical Memorandum prepared for the Stormwater Quality Standards Study Task Force, August 31, 2010.

Center for Watershed Protection. 2005. Illicit Discharge Detection and Elimination – A Guidance Manual for Program Development and Technical Assessment.

Environmental Protection Agency (EPA), 2012. Recreational Water Quality Criteria. EPA Office of Water, Washington, D.C. EPA 820/F-12-058

EPA. 2007. Report of the Experts Scientific Workshop on Critical Research Needs for the Development of New or Revised Recreational Water Quality Criteria. Workshop held in Warrenton, VA, March 26-30, 2007. EPA Office of Water and Office of Research and Development. Washington, DC. EPA 823/R-07-006.

Ferguson, D. 2006. Growth of E. coli and Enterococcus in Storm Drain Biofilm. Presentation at 2006 EPA National Beaches Conference. www.tetratech-ffx.com/beach_conf06/pdf/sessionIX/ferguson.pdf

Jakubowski, S. 2008. Effectiveness of runoff reducing weather based irrigation controllers (SmartTimers). Presentation to the WaterSmart Innovations Conference, Las Vegas, NV, October 8, 2008.

Kennedy Jenks Consultants. 2010. Water Use Efficiency Master Plan. Report prepared for Riverside Public Utilities, July 29, 2010.

Mayer P., W. DeOreo, M., R. Davis, E. Caldwell, T. Miller, and P. Bickel. 2009. Evaluation of California Weather Based "Smart" Irrigation Controller Programs. Prepared for California Department of Water Resources, Prepared by Metropolitan Water District of Southern California and East Bay Municipal Utility District. July, 2009

Pomona, 2011. 2010 Urban Water Management Plan, prepared by RMC, July 2011.

Regional Board 2005. Resolution Amending the Water Quality Control Plan for the Santa Ana River Basin to Incorporate Bacterial Indicator Total Maximum Daily Loads (TMDLs) for Middle Santa Ana River Watershed Waterbodies. Resolution R8-2005-0001. Santa Ana Regional Water Quality Control Board, Riverside, CA.

Santa Ana Watershed Project Authority (SAWPA). 2005. Santa Ana Integrated Watershed Plan, 2005 Update, An Integrated Regional Water Management Plan. SAWPA, Riverside, CA.

SAWPA. 2008a. Middle Santa Ana River Water Quality Monitoring Plan. Prepared by CDM on behalf of SAWPA and the Middle Santa Ana River Watershed TMDL Task Force. April, 2008, as amended.

SAWPA. 2008b. Quality Assurance Project Plan for the Middle Santa Ana River Pathogen TMDL – BMP Implementation Project. Prepared by CDM on behalf of SAWPA and the Middle Santa Ana River Watershed TMDL Task Force. April, 2008, as amended.

SAWPA. 2008c. Middle Santa Ana River Bacterial Indicator TMDL Urban Source Evaluation Plan. Prepared by CDM on behalf of SAWPA and the Middle Santa Ana River Watershed TMDL Task Force. April, 2008.

SAWPA. 2009a. Middle Santa Ana River Bacterial Indicator TMDL Data Analysis Report. Prepared by CDM on behalf of SAWPA and the Middle Santa Ana River Watershed TMDL Task Force. March 2009.

SAWPA. 2009b. Middle Santa Ana River Bacterial Indicator TMDL 2008 Dry Season Report. Prepared by CDM on behalf of SAWPA and the Middle Santa Ana River Watershed TMDL Task Force. March 2009.

SAWPA. 2009c. Middle Santa Ana River Bacterial Indicator TMDL 2008-2009 Wet Season Report. Prepared by CDM on behalf of SAWPA and the Middle Santa Ana River Watershed TMDL Task Force. May, 2009.

SAWPA. 2009d. Middle Santa Ana River Bacterial Indicator TMDL 2009 Dry Season Report. Prepared by CDM on behalf of SAWPA and the Middle Santa Ana River Watershed TMDL Task Force. December, 2009.

SAWPA. 2010a. Middle Santa Ana River Bacterial Indicator TMDL: Triennial Report. Prepared by CDM on behalf of SAWPA and the Middle Santa Ana River Watershed TMDL Task Force. February 2010.

SAWPA. 2010b. Middle Santa Ana River Bacteria TMDL BMP Control Strategy and Prioritization Plan. Prepared by CDM on behalf of SAWPA and the Middle Santa Ana River Watershed TMDL Task Force. February, 2010.

SAWPA. 2010c. Middle Santa Ana River Bacterial Indicator TMDL 2009-2010 Wet Season Report. Prepared by CDM on behalf of SAWPA and the Middle Santa Ana River Watershed TMDL Task Force. May, 2010.

SAWPA. 2010d. Source Evaluation Activities in Carbon Canyon Creek and Cypress Channel. Prepared by CDM on behalf of SAWPA and the Middle Santa Ana River Watershed TMDL Task Force. May 2010.

SAWPA. 2010e. Dry Weather Runoff Controllability Assessment for Lower Deer Creek Subwatershed (Chris Basin). Prepared by CDM on behalf of SAWPA and the Middle Santa Ana River Watershed TMDL Task Force. June, 2010.

SAWPA. 2011. Middle Santa Ana River Bacterial Indicator TMDL 2010-2011 Wet Season Report. Prepared by CDM on behalf of SAWPA and the Middle Santa Ana River Watershed TMDL Task Force. May 2011.

Skinner, J.F., J. Guzman, and J. Kappeler. 2010. Regrowth of enterococci and fecal coliform in biofilm, Stormwater 11(5), July 2010.

Southern California Association of Governments (SCAG). 2005. Land use data.

Surbeck, C.Q., Jiang, S.C., and Grant, S.B. "Ecological Control of Fecal Indicator Bacteria in an Urban Stream." Environmental Science and Technology, 2010, 44 (2), pp 631–637.

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