San Diego Stormwater Copermittees
Jurisdictional Urban Runoff Management Program (URMP)

Illicit Connection / Illegal Discharge (IC/ID) Detection and Elimination Model Program Guidance

November 13, 2001

project clean water

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Section I. Background

Order No. 2001-01[1] (Permit), section B.[2], requires that Copermittees prohibit all types of illegal discharges into their municipal separate storm sewer systems (MS4s), except as authorized by a separate NPDES Permit or otherwise allowed in accordance with Permit sections B.2 and B.3. The Permit specifically addresses two types of discharges; stormwater and non-stormwater. "Stormwater" is as defined urban runoff and snowmelt runoff consisting only of those discharges which originate from precipitation events. "Non-stormwater" consists of all discharges to and from a stormwater conveyance system that do not originate from precipitation events. These are more commonly referred to as dry weather discharges. With limited exceptions, non-storm water discharges are prohibited to the MS4. Connections (e.g., pipes, etc.) which convey such discharges to Copermittee MS4s are also generally prohibited. Section F.5 requires Copermittees to establish an Illicit Connection / Illegal Discharge Detection and Elimination Component to actively seek and eliminate discharges and connections to their MS4s. Common examples of illegal discharges include wash water, sediment, spilled chemicals, sewage releases, and pollutants from various other sources. All can contribute to the degradation of local water quality.

This document provides suggested guidance to Copermittees in developing the Illicit Connection / Illegal Discharge Detection and Elimination element of their Jurisdictional Urban Runoff Management Programs as required by Permit section H.1.(7) to be submitted to the SDRWQCB by February 21, 2002. It does not establish or promote the establishment of a particular set of minimum standards or program activities for Copermittee programs. Rather it provides guidance for establishing individual program priorities and requirements, as well as a description of viable options and approaches available to Copermittees in lawfully complying with their permit obligations. A second and equally important focus of this guidance is to promote consistency between Copermittee programs. Permit section N.1. specifically requires that Copermittees "collaborate with all other Copermittees regulated under this Order to address common issues, promote consistency among Jurisdictional Urban Runoff Management Programs (Jurisdictional URMPs), and to plan and coordinate activities required under this Order." Consistency is especially crucial to the citizens of San Diego County who must ultimately abide by the standards and requirements set forth in individual jurisdictional programs. This document represents the first phase of Copermittee collaboration with respect to existing residential areas. It is expected that additional collaboration will be necessary as Copermittees implement programs and evaluate their effectiveness over time.

[1] Order No. 2001-01, NPDES No. CAS0108758, Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, and the San Diego Unified Port District.

[2] Requirements relating to illicit connections and illegal discharges are located throughout the Permit. Specific section references are provided as necessary throughout the remainder of this document. These Permit sections are also included as Appendix A.

Section II. Program Objectives

The overall goal of the Illicit Connection / Illegal Discharge (IC/ID) Detection and Elimination Jurisdictional URMP element is to prevent and eliminate IC/IDs into and from Copermittee MS4s. The purpose of this Model Program Guidance is to assist Copermittees in the development and augmentation of their IC/ID programs in support of this overall goal and the following specific objectives:

- Actively seek and eliminate IC/IDs into and from their MS4s,
- Conduct dry weather analytical and field screening monitoring at MS4 outfalls,
- Investigate and inspect portions of the MS4 that have a reasonable potential for illicit discharges,
- Implement and enforce ordinances, orders, or other legal authority to prevent illicit discharges into the MS4,
- Prevent, respond to, contain and clean up all sewage and other spills that may discharge into the MS4, including spills from private laterals and septic systems,
- Promote, publicize, and facilitate public reporting of IC/IDs through a public hotline,
- Facilitate the proper management and disposal of used oil and other toxics, and
- Implement controls and measures to limit infiltration from the sanitary sewer into the MS4.

Section III. Implementation Strategy

Permit section F.5 requires that Copermittees develop, implement, and augment a variety of program elements and activities to prevent and eliminate illicit connections and illegal discharges (IC/IDs) into and from their municipal separate storm sewer systems (MS4s). In combination with other Permit requirements, these activities are necessary to achieve the discharge prohibitions and receiving water limitations set forth in Permit sections A through C. A comprehensive approach to preventing and eliminating IC/IDs from Copermittee MS4s will include at least the following general elements, each of which is described further below:

- Establishment of Legal Authority,
- Establishment of Discharge Prohibitions,
- IC/ID Detection, Investigation, and Elimination,
- Spill Prevention and Response,
- IC/ID Reporting
- Public Education and Outreach, and
- Used Oil and Household Toxics Recycling and Disposal.

This section provides an overview and description of each of these elements. Where greater detail is required for some elements, additional discussion is provided in ensuing sections.

A. ESTABLISHMENT OF LEGAL AUTHORITY

Permit section D requires that Copermittees establish, maintain, and enforce adequate legal authority to control pollutant discharges into and from their MS4s through ordinance, statute, permit, contract, or other means. Copermittees must review and revise their ordinances and other applicable authorities as necessary to implement and enforce all activities and programs required under the Permit. This should include a periodic review of the Copermittee's authority to establish and enforce stormwater and non-stormwater discharge prohibitions for all areas and activities within their jurisdiction as per Permit sections A and B.

B. ESTABLISHMENT OF DISCHARGE PROHIBITIONS[3]

While the Permit requires the establishment of prohibitions broadly applicable to stormwater and non-stormwater discharges, Copermittees are provided some flexibility with respect to the determination of whether specified categories of existing non-stormwater discharges may continue to be allowed. For each of these categories, Copermittees need only prohibit those discharges which they have determined to be a significant source of pollutants to waters of the United States. Accordingly, they must establish the types of discharges that will continue to be allowed or disallowed into and from their MS4s, and establish appropriate BMPs for those which they will continue to allow. Discharge prohibition requirements and this non-stormwater discharge evaluation are described further in section IV of this guidance.

[3] The Permit also requires the establishment of minimum BMPs for most areas of activity. Although often closely related to IC/ID requirements, BMPs are not addressed here since the focus of this Guidance is discharge prohibitions only. Specific BMP requirements are addressed in other Model Program Guidances.

C. IC/ID DETECTION, INVESTIGATION, AND ELIMINATION

Permit sections F.5.a, d, and e set out broad requirements for Copermittees to implement programs to actively prevent and eliminate IC/IDs to their MS4s. These requirements, which collectively form the primary focus of the IC/ID program, are addressed through the concurrent implementation of a number of separate, but inter-related, program activities. Permit requirements and program elements applicable to IC/ID detection, investigation, and elimination are described in more detail in section V below. A general overview of potential enforcement options and tools is provided in section VI. Enforcement is also described as applicable throughout each of the other Model Program Guidances.

D. SPILL PREVENTION AND RESPONSE

Permit section F.5.f requires that Copermittees prevent, respond to, contain and clean up all sewage and other spills that may discharge to their MS4 from any source (including private laterals and failing septic systems). This section describes these obligations, and provides additional information on potential compliance strategies.

1. Spill / Discharge Prevention

In addition to the broad requirements of Permit section F.5.f, section H.1.(7) requires that Copermittees provide descriptions of the following specific activities as part of their February 21, 2002 Jurisdictional URMP submittal:

- "methods to prevent" … "all sewage (including spills from private laterals and failing septic systems) and other spills in order to prevent entrance into the MS4";
- "controls and measures to be implemented to limit infiltration of seepage from sanitary sewers to MS4s"; and
- "routine preventive maintenance activities on the sanitary system (where applicable) and the MS4".

To comply with these requirements, Copermittees will both need to augment existing programs and to work closely with other applicable agencies to ensure that Permit objectives are met. This should include at least the following.

(a) Copermittee Preventive Maintenance Activities. Permit section F.5.i. requires that Copermittees operating both a municipal sanitary sewer system and an MS4 implement controls and measures to limit the infiltration of seepage from these sewers to their MS4s. This must minimally include at least the following measures:

- Sanitary sewer surveys,
- MS4 surveys, and
- Thorough, routine preventive maintenance of both systems.

These requirements are closely related to those of Permit sections F.3.a.(3) and (4) which list both MS4s and sanitary sewer systems as high priority municipal facilities and require the establishment of minimum BMPs for each. Copermittees may need to augment their existing MS4 inspection and maintenance programs to include surveys which are adequate to detect the infiltration of sewage. Maintenance of Copermittee

MS4s is addressed separately in Permit section F.3.a.(5), and guidance relating to MS4 maintenance provided in the Municipal Facilities Model Program Guidance.

Preventive maintenance of the sanitary sewer is also addressed through a number of other existing programs. To avoid a duplication of efforts, Copermittees should coordinate as closely as possible with at least the programs described below.

***(b) RWQCB Order No. 96-04 Requirements*.** Regional Board Order 96-04 requires that wastewater agencies develop a Sanitary Sewer Overflow Prevention Plan (SSOPP) to prevent or minimize the potential for sanitary sewer overflows. The SSOPP must also be reviewed and amended after each sanitary sewer overflow, and must be amended as changes to the sanitary sewer system are made.

***(c) Capacity, Management, Operations, and Maintenance (CMOM) Program*.** The United States Environmental Protection Agency (USEPA) has proposed the Capacity, Management, Operations, and Maintenance (CMOM) Standard Conditions for Municipal Sanitary Sewer Collection Systems. Once adopted, the following CMOM Standard Conditions will be required of all Copermittees that operate sanitary sewers:

- Properly manage, operate, and maintain at all times the parts of the collection system that the Copermittee owns or over which it has operational control;
- Provide adequate capacity to convey base flows and peak flows;
- Take all feasible steps to stop and mitigate the impact of sanitary sewer overflows;
- Provide notification to parties with a reasonable potential for exposure to pollutants associated with the overflow event; and
- Develop a written summary of their CMOM program and required program audits and make these available to the public upon request.

2. <u>Spill Response</u>

In support of the broad spill response requirements of Permit section F.5.f, section H.1.(7) requires that Copermittees provide specific descriptions of the following as part of their February 21, 2001 Jurisdictional URMP submittals:

- "methods to" … "respond to, contain, and clean up all sewage (including spills from private laterals and failing septic systems) and other spills in order to prevent entrance into the MS4"; and

- "the mechanism to receive notification of spills from private laterals".

In most cases, sewage and other spills reaching the MS4 are likely to be observed by citizens or maintenance workers. Reports of sewage spills should generally be managed like other citizen complaints. However, since Copermittees are ultimately responsible for ensuring that these spills do not enter their MS4s, they must put adequate measures in place to ensure timely reporting (see section III. E below), and that all parties involved in spill response activities within Copermittee jurisdictions are aware of, and comply with, all applicable Permit requirements. In many respects, the objectives of Permit section F.5.f are already addressed through these existing programs. Copermittees should therefore work with these agencies to assure that

applicable performance standards are being met. Existing and proposed programs and requirements that should be considered are described below. Although Permit section F.5.f applies to all types of spills, it has a particular emphasis on sewage. This emphasis is accordingly emphasized throughout the remainder of this section.

***(a) Copermittee Complaint Programs*.** Stormwater-related complaints may be received through dedicated Copermittee hotlines, referrals from other staff or agencies, or a number of other channels. Complaint receipt and referral can often be convoluted and confusing. Copermittees will therefore need to coordinate as closely as possible with other agencies and departments which may receive IC/ID or related reports within their jurisdictions to ensure that all reports are appropriately received, routed, and investigated. Complaint investigation is discussed further in section V.B below.

***(b) Emergency Response Programs*.** Even when Copermittees do not provide response services themselves, they are responsible for ensuring that other responders meet all applicable Permit requirements within their jurisdictions. Since Copermittees in many cases are not directly involved in spill response, this may require coordination with other emergency responders (e.g., hazardous materials or fire agencies) to ensure compliance with their local requirements.

***(c) Housing Programs*.** The local housing agency generally has responsibility for responding, or ensuring adequate response, to sewage spills from private properties. The following cites have their own housing programs: Chula Vista, El Cajon, Escondido, Imperial Beach, Oceanside, and San Diego. The County of San Diego Department of Environmental Health (DEH) provides these services in other jurisdictions, and responds to failing septic systems throughout the County. To determine whether these existing programs meet the prescriptive requirements of Permit section F.5.f, Copermittees should coordinate with the appropriate housing authority within their jurisdiction. Regardless of whether such activities are already conducted by other entities, Copermittees are ultimately responsible for ensuring that sewage releases from private residences do not impact their MS4s.

***(d) Wastewater Collection Agencies*.** In general, wastewater collection agencies are responsible for leaks and spills from publicly owned collection systems. The following requirements apply to these entities:

(1) <u>RWQCB Order No. 96-04 Requirements</u>. Order No. 96-04 establishes minimum standards for agencies responding to sewage releases. These agencies must implement all remedial actions to the extent that they are applicable to the discharge including the following:

- o Interception and re-routing of sewage flows around the sewage line failure;
- o Vacuum truck recovery of sanitary sewer overflows and wash down water.
- o Use of portable aerators where complete recovery of the sanitary sewer overflows is not practicable and where severe oxygen depletion in existing surface waters is expected; and
- o Cleanup of debris of sewage origin at the overflow site.

Copermittees should check with their wastewater collection agencies to assure that spill response activities are conducted as prescribed. The protocols and procedures used by these agencies, although not necessarily applicable, may also be useful in addressing spills from private laterals.

(2) CMOM Program. Upon adoption, the CMOM Standard Conditions will require that Copermittees "take all feasible steps to stop and mitigate the impact of sanitary sewer overflows".

E. IC/ID REPORTING

The Permit contains a number of specific requirements applicable both to the receipt of IC/ID information by Copermittees, and the reporting of such information to the SDRWQCB. These are summarized below.

1. Copermittee Receipt of IC/ID Information from Regulated Third Parties

Permit section F.5.g requires that Copermittees "promote, publicize and facilitate the reporting of illicit discharges or water quality impacts associated with discharges into or from MS4s". The purpose of this requirement is to ensure that Copermittees are aware of discharges potentially affecting water quality within their jurisdictions, and that they take appropriate actions when warranted. At a minimum, this must include the use of a public hotline to receive citizen complaints (see section V.B.1 below). While public reporting requirements apply generally to all types of IC/IDs, the Permit provides further specificity with regard to sewage spills. Permit section F.5.f requires that Copermittees develop and implement a mechanism whereby they are notified of all sewage spills from private laterals and septic systems into their MS4s (also see section III.D above). Since existing programs (wastewater operations, emergency response, etc.) already provide avenues for spill reporting, Copermittees should first consider coordination with these entities. In combination with a stormwater hotline, this may be adequate to ensure Permit compliance. Close coordination with existing programs will also help to prevent the establishment of redundant or conflicting reporting mechanisms.

2. Copermittee Reporting of IC/IDs

***(a) Immediate Reporting of Non-Compliance to the SDRWQCB*.** In addition to receiving reports of IC/IDs from third parties, Copermittees must in turn report these events to the SDRWQCB if such non-compliance is determined to pose a threat to human or environmental health. In these instances, Copermittees must provide oral notification to the SDRWQCB within 24 hours of the discovery of non-compliance as required by Attachment C (B.6) of the Permit. Oral notification must be followed up by a written report and submitted to the SDRWQCB within 5 days of the incidence of non-compliance. These requirements are generally applicable to any type of IC/ID, but are also contained specifically within the Permit sections applying to construction sites (Permit section F.2.i) and industrial facilities (Permit section F.3.b.(8)). The criteria by which Copermittees will evaluate events of non-compliance that pose a threat to human or environmental health must be developed and submitted to the SDRWQCB by February 21, 2002.

(b) Annual Reporting Requirements for IC/IDs. As part of their Jurisdictional URMP Annual Reports, Copermittees must provide reports of illicit discharges to the SDRWQCB (see Permit section I.1.b). At a minimum, this must include reports of specific IC/IDs and their resolution, inspections conducted, and enforcement actions taken.

(c) Additional Reporting Requirements for Sewage Spills. In addition to those newly imposed by the Permit, Copermittees should be aware of existing, related reporting requirements applicable to sewage spills. In some cases, these requirements may overlap; however, reporting spills to one entity will not satisfy Copermittees' requirements with respect to any other. Copermittees are legally obligated to report as applicable to each of these agencies. Sewage spill reporting requirements are described below and summarized in Table 1.

(1) County of San Diego Department of Environmental Health (DEH). California Health and Safety Code Section 5411.5 requires that all sewage spills be immediately reported to the DEH 24 hours a day. During standard work hours (M-F, 7:30 a.m. to 4:30 p.m.) these can be called in to the Proposition 65 / Recreational Water Duty Specialist at 619-338-2386 or faxed to 619-338-2848. All immediately reportable spills should be called in by telephone regardless of whether an accompanying fax has been sent. After hours reports should be phoned in to County Communications at 858-565-5255, and a request made to page the Environmental Health Specialist.

(2) State Office of Emergency Services (OES). California Water Code Section 13271 and the California Code of Regulations Section 2250 also require that the State Office of Emergency Services (OES) be notified of sewage spills of 1000 gallons or more by telephone at 800-825-7550 and by fax at 916-262-1677 (follow up only).

(3) SDRWQCB. Order No. 96-50 requires that dischargers report to the SDRWQCB all sewage spills of at least 1000 gallons, or to surface waters, within 24 hours by fax (858-571-6972) or telephone (858-467-2952). In all instances, the discharger must fax a Sanitary Sewer Overflow (SSO) Report Form to the SDRWQCB within five days of the spill. The completed SSO form must also be faxed to the DEH. A quarterly report of all sewage spills, including those not meeting the criteria stated above, must also be submitted electronically to the Regional Board.

As per Permit Attachment C (B.6) (see section III.E.2 above), Copermittees must also report all sewage spills to the SDRWQCB orally (24 hours) and in writing (5 days) if such non-compliance is determined to pose a threat to human or environmental health. Depending on the criteria that Copermittees establish as part of their February 21, 2002 submittal, this may or may not be more restrictive than existing requirements to report sewage spills to the SDRWQCB.

Table 1: Summary of Sewage Spill Reporting Requirements

Spill Volume	Criteria	Agency Receiving Report	Reporting Period
Any	o Spills to waters of the State	o SDRWQCB o DEH	o 24 hours o Immediate
Any	o Permit non-compliance threatening human or environmental health	o SDRWQCB	o 24 hours verbal and 5 days written
Any	o Mitigated spills (absorbed, cleaned up, or captured)	o DEH	o 24 hours
Any	o Unmitigated spills to areas <u>with</u> potential public contact	o DEH	o Immediate
Any	o Unmitigated spills to areas <u>without</u> potential public contact	o DEH	o 24 hours
>1000 gallons	o Anywhere	o OES o SDRWQCB o DEH	o Immediate o 24 hours o Immediate

F. PUBLIC EDUCATION AND OUTREACH

Permit section F.4. requires that Copermittees implement an education component to "(1) measurably increase the knowledge of the target communities regarding MS4s, impacts of urban runoff on receiving waters, and potential BMPs for the [residential] target audience; and (2) to measurably change the behavior of target communities and thereby reduce pollutant releases to the environment." Permit sections F.4.a, F.4.b, and F.4.c specify minimum content for these efforts. These requirements are addressed separately in the Copermittees' Model Outreach Program Guidance. However, it is important to note that both the prevention and elimination of IC/IDs are crucial to overall Permit compliance, and should be strongly emphasized in Copermittees' outreach strategies.

Where possible, Copermittees should provide dischargers a variety of options, tools, and incentives to assist them in voluntarily achieving compliance, and to avoid the need for formal enforcement. Examples of educational tools which may be useful in encouraging compliance with discharge prohibitions include the following:

- <u>Model Storm Water Pollution Prevention Plans</u> (SWPPPs). A good tool for achieving voluntary compliance is to develop and distribute model SWPPPs for different industries that are tailored to their specific activities.

- o Compliance Incentives. Incentive programs (e.g., Green Company Award, Blue Citizen Award, etc.) can be an excellent means of providing residents or business operators additional motivation to comply with discharge prohibitions.

G. USED OIL AND HOUSEHOLD TOXICS DISPOSAL

Permit section F.5.h. requires that Copermittees "facilitate the proper management and disposal of used oil, toxic materials, and other household hazardous wastes". This must minimally include the following elements:

- o Educational activities,
- o Public information activities,
- o Establishment of collection sites, and
- o Curbside collection (encouraged for household hazardous wastes).

Since these requirements apply principally to residential areas, they are described separately in the Existing Residential Areas Model Program Guidance.

Section IV. Discharge Prohibitions

Under Order No. 90-42[4], the establishment of stormwater and non-stormwater discharge prohibitions, and the legal authority necessary to enforce them, have been required elements of Copermittee programs since 1990. Order No. 90-42 provided for the exemption of specified categories of non-stormwater discharge as allowed in federal stormwater permitting regulations. This section provides an overview of the discharge prohibitions contained in the Permit, and a general method for evaluating existing exemptions to these prohibitions.

A. PROHIBITED DISCHARGES

The Permit addresses two types of discharges: (1) stormwater discharges, and (2) non-stormwater discharges. "Stormwater" is as defined urban runoff and snowmelt runoff consisting only of those discharges which originate from precipitation events. "Non-stormwater" consists of all discharges to and from a stormwater conveyance system (e.g., irrigation flows, wash water, etc.) that do not originate from precipitation events. These are more commonly referred to as dry weather discharges. With limited exceptions, non-storm water discharges are prohibited to the MS4. Without exception, both stormwater and non-stormwater discharges are prohibited in all the following instances:

- Discharges into[5] and from MS4s in a manner causing, or threatening to cause, a condition of pollution, contamination, or nuisance (as defined in CWC § 13050), in waters of the state are prohibited.

- Discharges from MS4s which cause or contribute to exceedences of receiving water quality objectives for surface water or groundwater are prohibited.

- Discharges from MS4s containing pollutants which have not been reduced to the maximum extent practicable (MEP) are prohibited.

In addition to the above, all discharges from MS4s are subject to the receiving water limitations in Permit section C and each of the Basin Plan prohibitions cited in Permit Attachment A.

B. NON-STORMWATER DISCHARGE EXEMPTIONS

The Permit allows Copermittees some discretion in determining whether selected categories of non-stormwater discharges not meeting the above criteria must also be prohibited. Permit section B.2 lists seventeen categories of non-stormwater discharge that must be considered:

a. Diverted stream flows;
b. Rising ground waters;

[4] The Copermittees' previous municipal stormwater permit, *Order No. 90-42, NPDES No. CA 0108758 Waste Discharge Requirements for Stormwater and Urban Runoff from the County of San Diego, the Incorporated Cities of San Diego County, and the San Diego Unified Port District*.

[5] The State Water Resources Control Board currently proposes to amend this prohibition on November 15, 2001. If staff recommendations are adopted, this prohibition, which currently applies to discharges both "into and from" Copermittee MS4s, will apply only to discharges "from" Copermittee MS4s.

c. Uncontaminated ground water infiltration [as defined at 40 CFR 35.2005(20)] to MS4s;
d. Uncontaminated pumped ground water;
e. Foundation drains;
f. Springs;
g. Water from crawl space pumps;
h. Footing drains;
i. Air conditioning condensation;
j. Flows from riparian habitats and wetlands;
k. Water line flushing;
l. Landscape irrigation;
m. Discharges from potable water sources other than main breaks;
n. Irrigation water;
o. Lawn watering;
p. Individual residential car washing; and
q. Dechlorinated swimming pool discharges.

As part of their February 21, 2002 Jurisdictional URMP submittal, Copermittees must indicate which of these discharge types they have determined to be a significant source of pollutants to waters of the United States. Based on this determination, they must establish the types of discharges that will continue to be conditionally allowed, or which will be disallowed, into their MS4s. This evaluation is discussed further below.

C. EVALUATION OF NON-STORMWATER DISCHARGE EXEMPTIONS

This section outlines a general process (see Figure 1) for evaluating whether specified categories of non-stormwater discharge may be significant sources of pollutants to waters of the United States. Although this assessment must be initially completed by February 21, 2002, Copermittees should also consider it an iterative process, and one which will need to be periodically re-visited as additional data and information become available.

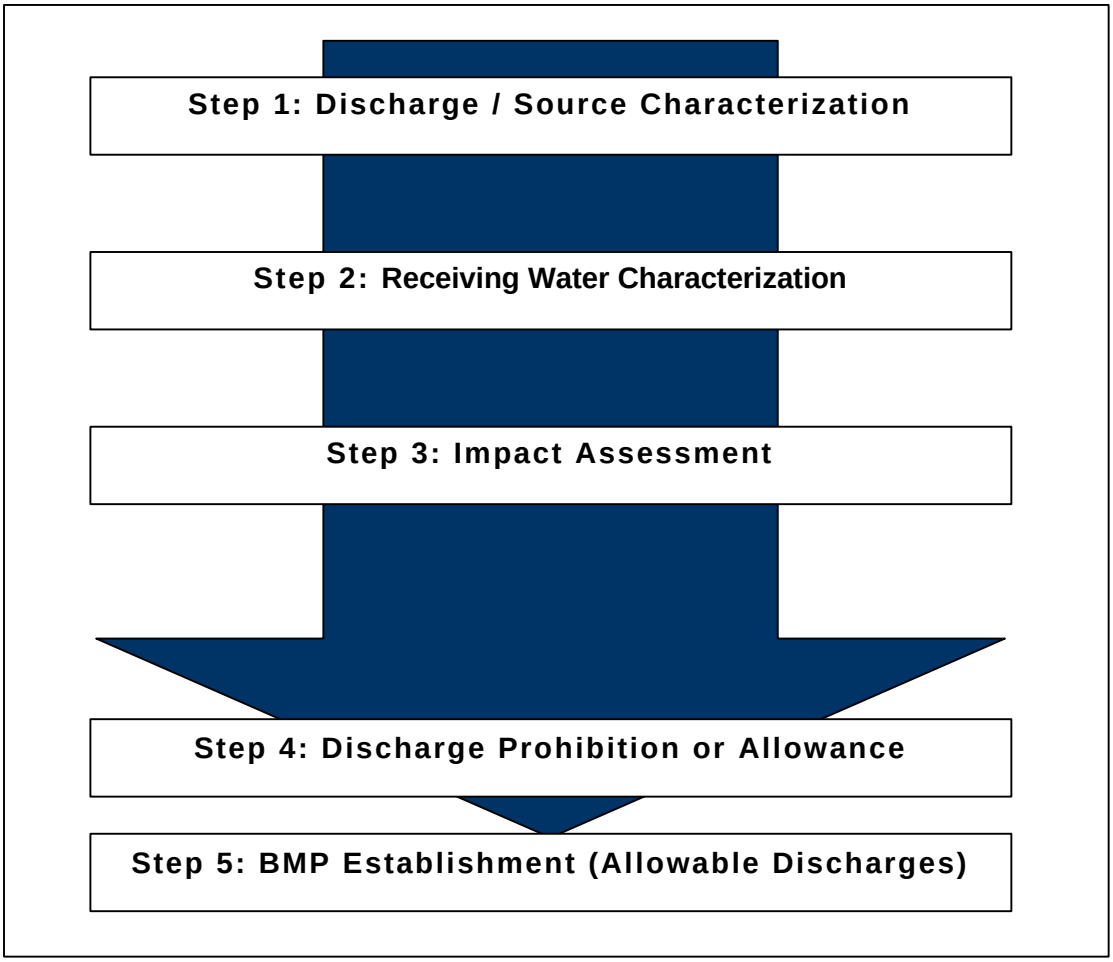
1. Discharge / Source Characterization

(a) General Considerations. A number of general considerations should be made in evaluating the potential of particular discharge types to impact water quality. At a minimum, this should include the following considerations:

- Discharge composition,
- Discharge volume,
- Frequency and abundance, and
- Duration.

Each of these issues is described further below.

Figure 1: Overview of Non-Stormwater Discharge Evaluation Methodology



(1) Discharge Composition. Both the type and the concentration of pollutants potentially contained in the discharge should be considered. Since the categories listed in Permit section B.2 are specific to types of activity rather than contaminants, decisions to allow or disallow particular discharges cannot be made without an understanding of the constituents that may be contained in each particular discharge. Table 2 below provides a categorical listing and general description of the potential impacts of constituents-of-concern generally associated with non-stormwater discharges.

(2) Discharge Volume. The volumes of non-stormwater discharges can vary considerably by category or type. For instance, air conditioning condensate can produce barely detectable discharges, while discharges from draining swimming pools easily exceed ten-thousands of gallons. It's also important to consider that non-stormwater flows can transport contaminants other than those associated with the source from which the flows are derived. Nuisance flows may therefore carry contaminants from roads or other surfaces they run over even if those from the initial flow source have been reduced to the MEP. Copermittees may conclude that some discharges should be prohibited simply because of the amounts of flow they produce.

Table 2: Constituent Categories and their Potential Impacts

Constituent Category	Potential Impact
Sediment	Excessive sediment can interfere with photosynthesis, respiration, growth, and reproduction. Sediment can also transport other pollutants that are attached to it, including nutrients, trace metals, and hydrocarbons. Increases in sediment load can also decrease the velocity of stream flows.
Nutrients	Nutrients, especially nitrogen and phosphorus, can result in excessive or accelerated growth of vegetation or algae and lead to oxygen depletion and loss of water clarity.
Bacteria and Viruses	Bacteria and viruses can impair the uses of recreational waters and lead to beach closures. They can also impact wildlife.
Oxygen-Demanding Substances	These substances depress the level of dissolved oxygen in stream, lakes, and estuaries.
Oil, Grease, and Fuels	Oils, greases, and fuels contain a wide variety of hydrocarbon compounds that are often toxic to aquatic organisms.
Heavy Metals	Heavy metals are toxic to aquatic organisms. They can also bio-accumulate and impact species higher in the food chain, including humans.
Toxic Chemicals	These chemicals can impact wildlife by interfering with photosynthesis, respiration, growth, and reproduction.
Floatables	Besides being unaesthetic, floatables can carry and be sources of many of the pollutants listed above.

(3) Frequency and Abundance. Both the frequency and abundance of discharges are critical considerations in assessing potential impacts. Some discharges may be very abundant, but infrequent, or vice versa. Discharges that are both frequent and abundant should obviously be given high priority for evaluation. Frequency and abundance are also important in determining whether potential impacts are localized or of a more general concern. Spatially abundant discharges are likely to be more significant to overall pollutant loading to receiving waters.

(4) Duration. The duration of discharges is also important in assessing the loading of pollutants to receiving waters. Depending on the constituents of concern, continuous sources may often present higher risks than occasional or one-time discharges. Since waterbodies are able to absorb some pollutants for short periods without appreciable impacts, discharges of a longer duration should initially be given higher priority status unless additional factors (e.g., pollutant type) indicate otherwise.

(b) Specific Considerations. In addition to the general considerations discussed above, some specific issues are applicable to the discharge categories under consideration. For convenience, the seventeen categories listed above are discussed according to four groups:

- Discharges associated with natural water sources,
- Discharges associated with supplied water sources,
- Discharges associated with the dewatering of structures, and
- Other discharges.

(1) Discharges associated with natural water sources. With limited exceptions, the following discharge categories are usually associated with natural surface waters or groundwater:

- Diverted stream flows,
- Rising ground waters,
- Springs,
- Flows from riparian habitats and wetlands, and
- Uncontaminated ground water infiltration [as defined at 40 CFR 35.2005(20)] to MS4s.

There is generally little reason to categorically prohibit discharges associated with natural water sources since they do not inherently convey significant sources of pollutants. Rather, when these waters are known or suspected to contain pollutants at levels of concern, efforts should first be focused on the sources of these pollutants. As a rule, these discharge types are best addressed on a case-by-case basis rather than categorically. Additionally, in the event that diversion of a stream flow might be considered, compliance with existing regulatory requirements (CWA section 401, etc.) should ensure adequate protection of receiving waters.

40 CFR 35.2005(20) defines infiltration as "[w]ater other than wastewater that enters a [municipal separate storm] sewer system (including sewer service connections and foundation drains) from the ground through such means as defective pipes, pipe joints, connections, or manholes. Infiltration does not include, and is distinguished from, inflow". Since controlling the flow of groundwater is generally impracticable, a general prohibition on infiltration to MS4s is unlikely to be enforceable or effective. This discharge category is therefore best addressed through Copermittee MS4 preventive maintenance programs.

(2) Discharges associated with supplied water sources. The following discharge categories are usually associated with supplied sources of water:

- Water line flushing,
- Landscape irrigation,
- Irrigation water,
- Lawn watering,
- Discharges from potable water sources other than main breaks, and

- o Uncontaminated pumped ground water.

Supplied water sources, particularly potable water, are generally characterized by the presence of chlorine used for disinfection. Depending on the particular use (irrigation or lawn watering), other constituents such as pesticides or fertilizers may also be present in discharges. Flow rate and volume can also be significant concerns with many of these discharges. Copermittees should also pay special attention to discharges of reclaimed water or gray water. The use of reclaimed water for irrigation uses is becoming increasingly common. Reclaimed water can contain very high chlorine levels. Gray water may contain bacteria, viruses, or other potentially pathogenic organisms.

In general, most of these discharges are characterized by a relatively high degree of controllability, and as such are amenable to water conservation techniques or the use of other applicable BMPs if they are ongoing, planned, or scheduled.

(3) Discharges associated with the dewatering of structures. Several discharge categories are associated with the dewatering of residences or other facilities, usually in response to the infiltration or inflow of surface or subsurface flows to below grade spaces:

- o Foundation drains,
- o Water from crawl space pumps, and
- o Footing drains.

Foundation drains are often used to prevent or correct moisture problems under or around homes or other buildings. Footing drains are used in most basements around the outside wall to collect groundwater in the soil and keep it from seeping through cracks in the basement floor and walls. In some homes, the footing drain may be connected directly to the sanitary sewer. Crawl spaces are designed for access, but often also unintentionally serve as discharge collection points.

There is not a particular type or types of pollutant that is associated with discharges from these sources. As a rule, these discharges reflect the sources and areas that drain to below grade spaces. Examples include in-home sources (condensation, dampening carpets, water line breaks, etc.), runoff from surrounding areas (rainfall, lawn watering, etc.), and groundwater infiltration. The volume and composition of discharges will reflect the original source of flow. Best management practice requirements will accordingly be case-specific.

(4) Other discharge sources. The Permit also addresses the following specific discharges:

- o Air conditioning condensation,
- o Individual residential car washing, and
- o Dechlorinated swimming pool discharges.

Air conditioning condensate is a common, but generally low, source of flow in residential and other areas, especially during summer months. In most cases, condensate is either collected in a shallow pan and evaporated or allowed to run freely from the air conditioning unit. For residential units, discharges originating from air conditioning condensate are generally small, but can be quite numerous. However, flows associated with large commercial units can be significant. Copermittees should note that refrigeration flows are not included in this exemption.

By and large, the last two of these discharges (car washing and draining of swimming pools) should be of potential concern to Copermittees because of their relative abundance, their potential for creating large flows, and the likely presence of a variety of contaminants in the discharges. While Copermittees must make their own determinations based on local priorities and data and information availability, these discharges should be carefully considered.

(b) Sources of Data and Information. Where possible, Copermittee assessments should focus on the identification of impacts, the pollutants of concern causing them, and the establishment of a nexus to contributing sources or activities. Copermittees will initially be limited in their ability to establish this nexus since little quantitative data currently exists to substantiate these conclusions. A greater initial reliance on qualitative sources of data and information will therefore be required. Locally collected data and information should generally be given higher priority. However, Copermittees should consider other sources, especially during their initial prioritization when availability will generally be lacking. Applicable data and information can generally be derived from a number of sources including those described below.

(1) Review of monitoring results (including field screening). The Copermittees have conducted a wet weather monitoring program since 1993. Results of this program, as well as individual Copermittee dry weather field screening, may be useful in assessing the potential of non-stormwater discharges to impact water quality. Additionally, Copermittees or other parties may have collected data within their jurisdictions or watersheds. Assessment of these data may also be useful in assessing priorities.

(2) Review of complaints, violations, and field investigations (Code enforcement, emergency response, etc.). Most Copermittees have responded to stormwater complaints and other types of code compliance issues for many years. This type of information is particularly important because it provides an indication of the relative frequency and severity of different discharge types. Depending on the availability of data, Copermittees may consider evaluating historical trends to identify types of recurring violations or areas where problems occur most frequently. Interviewing field staff can also help to point out problem areas.

(3) Review of other anecdotal information (municipal staff street sweepers, trash collectors, maintenance staff). Many municipal employees spend significant amounts of time outdoors during their daily activities. These

people often have extensive knowledge of the types and locations of recurring problems.

(4) Review of surveys (e.g., outreach surveys conducted, etc.). Some surveys have been conducted to assess existing environmental conditions locally and elsewhere. While local information is preferable, surveys conducted in other areas may be of value in determining initial program priorities. Outreach surveys can also be useful since they provide an indication of the types of behaviors likely to be contributing to pollution problems.

2. Receiving Water Characterization

Since the goal of evaluating non-stormwater discharges is to ensure that an appropriate degree of protection is afforded to receiving waters, it is necessary to characterize the waters which may receive those discharges. The purpose of this step is to identify those waterbodies which may potentially be impacted by the types of contaminants known to be associated with the categories of discharge under consideration. This can either be done generally or using local data that are specific to waterbodies within the Copermittee's jurisdiction. The Permit generally establishes several types of areas as high priority. As such these should be afforded preference in the determination of discharge allowances and BMP requirements.

(a) Clean Water Act section 303(d) impaired water bodies. A current listing of 303(d) water bodies in the San Diego Hydrologic Unit (SDHU) is included as Appendix B. This list also identifies the contaminant(s) for which each listing was established. It can be downloaded from the State Water Resources Control Board web site at http://www.swrcb.ca.gov/.

(b) Areas of Special Biological Significance (ASBS). The San Diego Basin Plan currently lists the following Areas of Special Biological Significance [Hydrologic Units (HUs) discharging to each are indicated].

- City of Encinitas Marine Life Refuge (HU 904. 5)
- Batiquitos Lagoon Ecological Reserve (HU 904.5)
- Blue Sky Ecological Reserve (HU 905.5)
- Buena Vista Ecological Reserve (HU 904.2)
- McGinty Mountain Ecological Reserve (HU 909.3)
- San Dieguito Lagoon Ecological Reserve (HU 905.1)
- San Elijo Ecological Reserve (HU 904.6)
- San Mateo Creek Wetland Natural Reserve (HU 901.4)
- Los Penasquitos Marsh Natural Preserve (HU 906.1)
- Tijuana River National Estuarine Research Reserve (HU 911.1)
- Sweetwater Marsh National Wildlife Refuge (HU 909.1)

(c) Waterbodies designated with the RARE beneficial use. The RARE beneficial use (Rare, Threatened, or Endangered Species) applies to habitats necessary, at least in part, for the survival and successful maintenance of plant and animals species established under state or federal law as rare, threatened, or endangered. A summary of water bodies within the San Diego Regional Water Quality Control Board jurisdiction that are designated with the RARE beneficial use are provided in Appendix C.

(d) Multiple Species Conservation Program (MSCP) preserves. Permit section F.1.b.(a)vii. specifically references "areas designated as preserves or their equivalent under the Multi[ple] Species Conservation Program [MSCP] within the Cities and County of San Diego." The MSCP is a cooperative effort between the County and twelve other local jurisdictions and agencies such as the U.S. Fish and Wildlife Service and California Department of Fish and Game. The program addresses the potential impacts of urban growth, natural habitat loss, and species endangerment and creates a plan to mitigate for the future potential loss of covered species and their habitat due to the direct impacts of future development within the MSCP area.

Areas "equivalent" to MSCP preserves include those designated under the Multiple Habitat Conservation Program (MHCP), a comprehensive habitat conservation planning process that addresses multiple species needs and preservation of native vegetation communities for the cities of Carlsbad, Encinitas, Escondido, Oceanside, San Marcos, Solana Beach and Vista. GIS maps of MSCP boundaries can be obtained from the San Diego Association of Governments (SANDAG) at http://www.sandag.org/. MHCP boundaries will also be obtainable through SANDAG as they become available.

(e) Any other equivalent environmentally sensitive areas that have been identified by the Copermittee. The existence of other environmentally sensitive areas should also be considered in assessing non-stormwater discharges as determined appropriate by individual Copermittees.

3. Impact Assessment

This step consists of integrating the data and information collected in the previous steps to assess the potential impact of the specific discharges under consideration on the waterbodies which may receive those discharges.

- The proximity of the discharge(s) to receiving waters,
- The role of site-specific factors, and
- The individual and cumulative impacts (if present) from the discharge type.

In most cases, Copermittees are not likely to have sufficient data or information to determine conclusively whether a discharge is a significant source of pollutants. Evaluations should therefore be conducted periodically as additional information becomes available to ensure that they continue to reflect the best available data and information.

4. Discharge Prohibition or Allowance

Evaluation of a non-stormwater discharge category will yield three possible results:

- The discharge is a significant source of pollutants to waters of the U.S., or
- The discharge is not a significant source of pollutants to waters of the U.S., or
- There is insufficient evidence to determine whether the discharge is a significant source of pollutants to waters of the U.S.

If a discharge is found to be a significant source of pollutants to Waters of the United States, it must be prohibited. This may require additional revision of the Copermittee's

legal authority. The latter two situations do not require discharge prohibition, but rather the establishment of BMPs to reduce pollutants to the MEP as described below.

5. BMP Establishment (Allowable Discharges)

For each discharge category not prohibited, the Copermittee must submit the following information to the SDRWQCB by February 21, 2002:

- The non-stormwater discharge category listed in the permit which the Copermittee elects not to prohibit, and

- The BMP(s) for each discharge category which the Copermittee will implement, or require the responsible party(ies) to implement, to prevent or reduce pollutants to the MEP.

Copermittees should endeavor to identify practical and enforceable BMPs that will reduce or eliminate the introduction of contaminants from exempted discharges to their MS4s. They should also note that the Permit does not explicitly require the establishment of new BMPs. For low threat discharges, Copermittees may therefore conceivably forego the requirement of additional BMPs if they conclude that existing practices are sufficient to achieve MEP. Conversely, they are not precluded from prohibiting discharges even when they have not been found to be significant pollutant sources. This may be done as a preventive measure, or because the imposition of specific BMPs is determined to be impracticable (i.e., there are no practical ways to effectively manage the discharge).

Copermittees should also note that some discharge categories are subject both to the requirements of Permit section B.2 and to the BMP requirements of high priority sources or activities addressed elsewhere in the Permit (sections F.3.a.(3)v, F.3.b.(3)(b), F.3.c.(2)(w), and F.3.d.(2)). At a minimum, this includes residential car washing and lawn watering. These sections also generally address any other municipal, industrial, commercial, or residential sources that the Copermittee determines may contribute a significant pollutant load to its MS4. If the Copermittee determines that any of the non-stormwater discharge categories listed in Permit section B.2 are also subject to the BMP requirements of these other applicable Permit sections, the requirements of section B.2 should take precedence (i.e., if the discharge is a significant source, it must be prohibited rather than pollutants in it reduced to the MEP).

Table 3 below lists each of non-stormwater discharge categories listed in Permit section B.2, and provides suggestions for BMPs that might be used for each to reduce pollutants to the MEP. Figure 2 also provides a sample worksheet for documenting Copermittee evaluations and BMP requirements.

Table 3: Potential BMPs[6] for Exempted Non-Stormwater Discharges

DISCHARGE CATEGORY	POTENTIAL BEST MANAGEMENT PRACTICES (BMPs)	
- Diverted stream flows **- Flows from riparian habitats and wetlands**	o Sediment filters o Infiltration	o Community clean-up / trash removal days
- Rising ground water **- Springs**	o Water conservation o Sewer	o Diversion to pervious area
- Uncontaminated ground water infiltration	o Water conservation	o MS4 preventive maintenance
- Water line flushing	o Sewer o Irrigation use	o Containment / diversion
- Landscaping irrigation **- Irrigation water** **- Lawn watering**	o Drip irrigation o Water conservation o Xeriscape	o Soaker hoses o Pesticide / fertilizer management
- Discharges from potable water sources other than water main breaks	o Diversion to pervious area o Sewer	o Water conservation
- Uncontaminated pumped ground water	o Use for irrigation	o Sewer
- Foundation drains **- Water from crawl space pumps** **- Footing drains**	o Divert the flow to a pervious area o Water conservation o Dry well o Sewer o Septic system o Dehumidifiers	o Sump pump o Redirection of surface drainage (roof downspouts, etc.) o Grading / sloping to prevent drainage to subsurface spaces o Limit infiltration by sealing the foundation o Remove occupant-related moisture sources
- Air conditioning condensate	o Divert the flow to a pervious area o Condensate pumps o Sewer	o Septic system o Shallow pan-condensate removal unit o Shallow pan-evaporation
- Individual residential car washing	o Wash cars on lawns o Use dry cleaning methods o Limit use of soap	o Controllable spray nozzles o Use of commercial car washes
- Dechlorinated swimming pool discharges	o Sewer o Infiltration o Use for irrigation	o Treatment prior to discharge

[6] Note: The BMPs listed here are potential options only, and may not be appropriate in all situations. Necessary approvals should always be obtained prior to the use of any BMP.

Figure 2: Sample Non-stormwater Discharge Evaluation Worksheet

Discharge Category	Significant Source?			Prohibit?		Best Management Practices (required if discharges are not prohibited)
	Yes	No	Undetermined	Yes	No	
Diverted stream flows						
Rising ground waters						
Springs						
Flows from riparian habitats						
Uncontaminated ground water infiltration						
Water line flushing						
Landscape irrigation						
Irrigation water						
Lawn watering						
Discharges from potable water sources other than main breaks						
Uncontaminated pumped ground water						
Foundation drains						
Water from crawl space pumps						
Footing drains						
Air conditioning condensation						
Individual residential car washing						
Dechlorinated swimming pool discharges						

Section V. Identification and Investigation of IC/IDs

Illicit discharges and illegal connections to Copermittee MS4s can generally be detected and investigated through a combination of programs and approaches targeted at a variety of potential pollutants and sources. Potential IC/IDs involving the MS4, or facilities and sources tributary to them, are normally identified and investigated through four types of activities.

- o Dry Weather Analytical and Field Screening Monitoring;
- o Complaints;
- o Business Inspections; and
- o Municipal Facility Inspections.

A. DRY WEATHER ANALYTICAL AND FIELD SCREENING MONITORING

As per Permit section F.5.b. and Attachment E, Copermittees must develop and implement a dry weather analytical and field screening monitoring program to detect illicit discharges into their MS4s. This program addresses two primary objectives. First, it requires Copermittees to actively identify IC/IDs in their MS4 and to conduct source investigations when these are found. Second, it provides quantitative data on the general quality of discharges into their system during dry weather conditions. In the future, this will assist Copermittees in establishing and evaluating program priorities. Detailed guidance for developing and conducting dry weather analytical and field screening monitoring is provided in Appendices D and E. Activities relating specifically to source investigation are also discussed in section V.E below.

B. COMPLAINTS

1. Hotline Requirements

Permit section F.5.g requires that Copermittees "promote, publicize and facilitate public reporting of illicit discharges or water quality impacts associated with discharges into or from MS4s ... through development and operation of a public hotline." Hotlines must be capable of receiving reports in both English and Spanish 24 hours per day / seven days per week. Since the Permit allows that these hotlines may be either individual or shared by Copermittees, a number of viable options exist for meeting this obligation, including the establishment of hotlines by individual Copermittees, contracting of services to professional organizations, or participation in a regional stormwater hotline. Two regional stormwater hotline numbers are currently operational within San Diego County: the toll-free Regional Stormwater Hotline, 1-888-846-0800, and the Think Blue Hotline, 1-888-THINK BLue (1-888-844-6525). Both hotlines are answered by the County of San Diego, Department of Environmental Health, Monday through Friday, 8:00 a.m. - 5:00 p.m. In addition to personal service during regular business hours, the hotline provides a voice mail message for 24-hour public access in both English and Spanish. The County has provided these services to Copermittees since December 1997, and continues to provide them free of charge. Through this hotline, complaint information is forwarded to appropriate Copermittee contacts for follow up and/or investigation.

2. Complaint Receipt and Referral

(a) Required Information. It is crucial that complaint intake staff document all required information when complaints are initially received, both because it may be difficult for field staff to contact reporting parties, and because the prioritization and timely investigation of complaints depends on the accuracy and completeness of the information received. The following are examples of the types of information that must be documented:

- Complainant information,
- Responsible party information,
- Location and description of the discharge, and
- Materials and waste involved, etc.

Copermittees should develop standardized intake forms for the receipt of complaints, and be vigorous in their efforts to document all required information. Complaint information may either be logged onto hard copy forms or directly into a database; however, logging data directly into a database from which hard copies of forms can be printed will reduce the chances of transcription errors later.

(b) Prioritization. Complaint intake staff should be familiar with, and able to assess, the relative urgency of the reports they receive. In many instances, higher priority complaints (e.g., those involving hazardous materials, threat to public safety, etc.) will require immediate referral to other staff or agencies than those tasked with routine stormwater complaint investigation. The following questions should be considered in prioritizing complaints:

- Is a hazardous or unknown material involved?
- Is the spill occurring now?
- Is there an immediate threat to health or the environment?

Copermittees should develop policies or procedures for complaint investigation that identify the types of complaints needing immediate investigation, and those which can be investigated on longer time frames (e.g., within 24 hours, a few days, etc.). Discharges which are not ongoing will generally not require immediate investigation unless other specific factors indicate a need. For ongoing discharges, an immediate referral to the appropriate responder should be made.

(c) Routing and Referral. In most instances, complaints received through Copermittee stormwater hotlines will be assigned to internal program staff. However, since stormwater-related complaints can often overlap or duplicate those received by other existing programs, responsibilities can often be unclear. Copermittees must therefore coordinate as closely as possible with other agencies and departments which may receive IC/ID or related reports to ensure that their respective responsibilities are clearly understood. This will ensure that all reports are appropriately received, routed, and investigated. When complaints are routed to other entities, Copermittees should always confirm that they have been received.

For discharges involving hazardous or unknown materials, local fire department should be dispatched to investigate. Fire departments will dispatch the San Diego Hazardous Incident Response Team (HIRT) if needed.

3. Complaint Investigation

Permit section F.5.g requires that Copermittees respond to and resolve all incidents reported through their hotlines. All complaints must be investigated to determine if there is an illicit discharge. A typical investigation should include the following steps.

(a) Pre-Investigation Preparation. Before leaving for an investigation, staff should assemble needed information and equipment. Table 4 below provides a list of suggested equipment and supplies. If a discharge is occurring from a specific property, the owner of the property should be identified through the assessor's parcel list. If possible, the address should be located on a map, and nearby receiving waters identified. Appropriate educational materials and other documentation should be collected. Investigation equipment should include at least the items listed in Table 3 below. Appendix E also contains a list of recommended items for dry weather field investigations which may be useful in identifying additional needed equipment.

(b) Field Investigation. In most cases, investigators will need to conduct a field investigation to confirm if a discharge is occurring or has occurred. If the complaint is determined to be unjustified, it should be documented as such. If an IC/ID is confirmed, it must be documented, the discharger must be contacted, and appropriate actions must be taken to eliminate the violation. If the investigator determines that the discharge is exempted, the responsible party should be informed to discuss any applicable restrictions or BMP requirements. All violations should be should be documented in writing. If a responsible party is available, a notice can be issued from the field during the investigation. If the responsible party is unavailable, they should be contacted as expediently as possible (e.g., via telephone, e-mail, or mail). All contact with responsible parties, including meetings, face-to-face discussions, and telephone calls should be documented with a narrative describing the topics which were discussed.

During a complaint investigation, staff should always be prepared to conduct field screening analyses, to sample for laboratory analysis, and document the discharge for any future enforcement.

C. BUSINESS INSPECTIONS

Permit sections F.3.b.(6) and F.3.c.(4) require that Copermittees develop inspection programs for high priority industrial and commercial facilities. Each of these programs provides important information to Copermittees on potential and actual IC/IDs at inspected facilities. Program requirements, including facility inspections, are described separately in the Existing Industrial Facilities Model Program Guidance and Existing Commercial Facilities Model Program Guidance documents.

D. MUNICIPAL FACILITIES AND ACTIVITIES

Scheduled inspections of Copermittee MS4s and other municipal facilities are an important source of information regarding potential IC/IDs. MS4 inspections may be conducted either individually or as part of existing maintenance inspections. Maintenance of Copermittee MS4s is addressed separately in Permit section F.3.a.(5), and guidance relating to MS4 maintenance provided in the Municipal Facilities Model Program Guidance. Copermittees may also elect to conduct facility inspections not in conjunction with MS4 or other existing inspection programs. In this case, the areas to be

Table 4: Recommended Complaint Investigation Equipment

Activity	Recommended Equipment
Field Screening Analysis	o pH paper or meter o Commercial stormwater pollutant screening kit that can detect for reactive phosphorus, nitrate nitrogen, ammonium nitrogen, specific conductance, and turbidity o Sample jars o Sample collection pole o A tool to remove access hole covers
Laboratory Analysis	o Sample cooler o Ice o Sample jars and labels o Chain of custody forms.
Documentation	o Camera o Notebook o Pens o Notice of Violation forms o Educational materials

investigated should be prioritized, with sensitive areas such as those near rivers or creeks, or potential sources such as industrial areas, dense residential neighborhoods, and commercial areas (e.g., with many restaurants, etc.) receiving higher priority.

Many municipal staff not currently involved in stormwater management often spend time outdoors during various routine or unscheduled field activities (inspections, maintenance, spill response, vector control, etc.). As a result, they may observe activities such as car washing, automotive repair, etc., which can result in discharges of pollutants. Many Copermittees already provide training to these staff to recognize, report, and/or respond to illicit connections and illegal discharges (IC/IDs) observed during their work activities. However, since this training has typically focused on identifying IC/IDs "after the fact" rather than the activities or practices causing them, Copermittees should also consider expanding their training to include a more proactive "eyes and ears" approach for the areas in which they conduct their activities. This approach can either be applied generally or specifically focused on the types of activities and the areas that Copermittees consider the highest priority (for instance, visiting neighborhoods where car washing occurs, etc.). This approach may also establish a more proactive community presence to educate residents and gain program support.

E. SOURCE INVESTIGATION

Regardless of how they are identified (e.g., field screening, complaints, etc.), each potential IC/ID received by Copermittees must be investigated and eliminated. In many instances, since the initial investigation or report will not identify a specific source of contamination, further field investigation be will required. Depending on the particular situation, source investigations may include any or all of the following steps:

- Following Flows or Discharges Upstream;
- Conducting Field Screening Sampling;
- Contacting Dischargers;
- Sampling for Laboratory Analysis; and
- Documenting Source Investigations.

Additional guidance on followup and enforcement is provided in section VI below.

1. Following Flows Or Discharges Upstream

Dry weather flows should generally be followed from the location where they are first observed in an upstream direction along the conveyance system. Investigators may need to consult drainage system maps. For belowground systems, it may be necessary to follow flows from the outfall or manhole to the next manhole with a junction. Manholes do not always need to be checked if there are no junctions between them. Field staff should always be aware of the surrounding areas and look for water flowing in gutters and streets. Areas where illegal dumping may typically occur include parking lots and garages behind buildings and warehouses.

When investigating a location with multiple inlets, if flow is observed coming from only one, continue tracking from that inlet. If flow is observed coming from more than one inlet, track them one at a time, using visual observations, odors, and/or field screening sampling to determine the order of investigation. It is generally easiest to track the largest flows first, but if they are about the same size, start with the one that is easiest, shortest, or with the least number of junctions, or track those originating from areas with the greatest potential for illegal discharges.

If the source of flow is found, the site visit should be documented and appropriate actions taken to ensure that the IC/ID is eliminated. If the flow originates in another jurisdiction, investigators should immediately inform them of the situation. Copermittee staff should not track flows into other jurisdictions.

If initially unable to locate the source of the flow (e.g. it disappears between manholes; the pipe, network, or channel terminates, etc.) the following possibilities should be considered. First, the flow may originate from a storm gutter. Check catch-basins and gutters between manholes for evidence of flows such as runoff from steam-cleaning operations, car washing, irrigation runoff, etc. There may also be a new or illicit connection to the system, possibly between manholes. Look for areas in the road that have been dug up and re-paved. Also consider checking with the appropriate wastewater management / operations agency or department for any recent work that may have been done in the area. Finally, look for evidence of recent or past dumping such as wet or stained pavement or gutters.

In most cases, it should be possible to determine the source of the flow using the methods described. These are preferred whenever possible since they are quick, safe, and inexpensive. If the source is still not found, the field investigation should be documented and the location of the last place that flow was observed marked on a map so that the area can be investigated again at a later date. The following additional source investigation techniques may be considered at a later time.

- o Water Discharges. This involves discharging water from a potential source and noting the location of the downstream discharge to establish a hydraulic connection between the source and the discharge connection. Water discharges are preferred to dye testing and smoke testing, described below, and can be utilized under most conditions.
- o Dye Testing. Dye testing can also be conducted to confirm hydraulic connections. This involves discharging fluorescent dye at the source of a potential IC/ID. This procedure should be performed sparingly because of the need to inform the surrounding public and appropriate regulatory agencies of the cause of downstream discoloration in the storm drain system.
- o Smoke Testing. Smoke tests may also be used to confirm the hydraulic connection between a potential source and a downstream location. Smoke tests are used only on underground stormwater conveyance facilities, and should also be performed sparingly because of the need to inform the surrounding public and agencies of the cause for smoke coming from the storm drain system.
- o Video Monitoring. Video inspections involve the deployment of a mobile video camera into an underground stormwater conveyance facility. The mobile video camera will "walk" the drain and record observations on a videocassette. Public notifications are not necessary with this method. This can be time-consuming and expensive.

If the flow under investigation is suspected to be sewage-related, this may often be confirmed through the presence of odor and visible solids. However, since this may often not be readily evident, the following may also be useful in determining whether flows are sewage-related:

- o Field Screening for Ammonia. Sewage frequently contains ammonia levels of 30 ppm or greater. This can be measured with an inexpensive field screening kit.
- o Bacteria Testing. Sewage is high in total and fecal coliforms and enterococci. Many sewage treatment plants, the County Public Health Laboratory, and commercial laboratories routinely conduct these indicator analyses.

2. Conducting Field Screening Sampling

During a source investigation, the collection of samples for field screening analysis may be helpful for comparison with downstream samples already collected. This may include any or all of the analyses conducted during routine field screening, or other field tests that the Copermittee determines are necessary. It may not be necessary to conduct all of the field screening tests. Investigators should base this decision on results obtained at the downstream site. All sampling and analysis conducted during source investigations should be documented. More detailed guidance for conducting field screening is provided in Appendices D and E. Source investigation is also discussed in section V.E. below.

3. Contacting Dischargers

If a specific discharger is identified as the source of a flow, they should be contacted by staff in the field and informed that it is illegal to discharge anything but stormwater to the

conveyance system without a valid NPDES permit. Investigators should work with the responsible party to find out what they are discharging and, if possible, whether or not the discharge is permitted. If the source is determined to be exempted or permitted, this information should be recorded. If the flow is determined to be illegal, or its status cannot be determined, staff should document the violation and require the responsible party to discontinue the IC/ID. At that time, a decision should also be made as to whether samples should be collected for laboratory analysis.

4. Sampling for Laboratory Analysis

In some situations (e.g. for enforcement, etc.) samples may need to collected for laboratory analysis. In these cases, sample collection should always be conducted according to applicable evidence sampling collection protocols. Samples should be documented on the Copermittee's field data form(s) and on a laboratory chain-of-custody record.

5. Documenting Source Investigations

Proper documentation of all IC/ID investigations is crucial. During an investigation, photographs should be taken to verify all suspected IC/IDs, whether or not they are confirmed. Sample results, notices of violation, correspondence, and other associated documents should be collected and filed with the complaint. This type of documentation will be crucial for any type of enforcement that becomes necessary. Each investigation will probably require a separate hard copy file containing all pertinent documentation even though much of the complaint information can be stored electronically in a complaint database.

Section VI. Followup and Enforcement

Permit section F.5.d requires that all IC/IDs be eliminated immediately. While IC/IDs cannot always realistically be eliminated immediately, Copermittees are responsible for taking all necessary actions to eliminate them in as timely a manner as possible, and for verifying that compliance has been achieved. This section describes a variety of enforcement options available to Copermittees in investigating IC/IDs and enforcing applicable authorities. It further describes the general responsibilities of field staff in conducting followup and enforcement activities.

A. VOLUNTARY COMPLIANCE

Illicit discharges and illegal connections can generally be eliminated through voluntary compliance. Most people are readily willing to change their behaviors when they learn that their actions are detrimental to the environment. Copermittees should therefore utilize a variety of options under a flexible and graduated system of enforcement actions, emphasizing voluntary return to compliance when possible. Field staff should be trained to evaluate each situation and within certain statutory and departmental guidelines, choose an appropriate enforcement mechanism. Voluntary return to compliance should be used for first-time, minor violations, whereas more serious violations or continued non-compliance may warrant a more aggressive and enforcement-oriented approach. Increasingly severe enforcement actions should be taken until compliance is achieved or the illicit connection or illegal discharge is otherwise eliminated.

B. ENFORCEMENT OPTIONS

More serious violations, or situations where a reasonable attempt has been made to educate a responsible party, but compliance has not been achieved, may require a more aggressive and enforcement-oriented approach. Enforcement approaches and actions should be based on several factors including the severity of the violation (environmental health threat), site-specific circumstances, and past compliance history. Potential enforcement tools available to Copermittees are summarized below.

1. Administrative Authorities

(a) Administrative Penalties. Copermittees may use administrative penalties to enforce their Ordinances.

(b) Ceast and Desist Orders. Written and/or verbal orders may be issued to stop Illegal Discharges and/or remove Illegal Connections.

(c) Notice and Order to Clean, Test, or Abate. Written and/or verbal orders may be issued where conditions warrant.

(d) Public Nuisance Abatement. If violations are deemed a threat to public health, safety, and welfare, they may be identified as a public nuisance. Costs for pollution detection and abatement may be recovered from the discharger in addition to any other penalties. Copermittees may consider making liens against the discharger's property in accordance with this procedure.

(e) Stop Work Orders. Whenever any work is being done contrary to the provisions of applicable authorities, a Copermittee may elect to order the work stopped by notice in writing. In this case, the person must immediately stop such work until authorized by the Copermittee to proceed.

(f) Denial or Revocation of Permits. In severe cases of non-compliance or significant discharges, it may be appropriate to revoke the permits (e.g., building or grading) that a responsible party is working under, or to deny future permits.

2. Judicial Authorities

(a) Civil Penalties and Remedies. Copermittees may file civil actions in Superior Court to enforce their Ordinances. In doing so, they may seek civil penalties and/or other remedies as provided in their Ordinance or other applicable laws. There is no requirement that administrative enforcement procedures be pursued before such actions are filed.

(b) Injunctive Relief. Copermittees may pursue enforcement by a judicial action for injunctive relief for violations of their Ordinances.

(c) Arrest or Issue Citations. The assistance of a peace officer may be enlisted to arrest violators as provided in California Penal Code, Ordinance 5, 5c, and 5d, Title 3, Part 2 (or as amended) and/or a citation and notice to appear as prescribed in Ordinance 5c of Title 1376 3, Part 2 of the Penal Code, including Section 853.6 (or as amended) may be issued. There is no requirement that administrative authorities be used before such actions are filed. The immunities prescribed in Section 836.5 of the Penal Code are applicable to Authorized Enforcement Officials acting in the course and scope of their employment pursuant to this Ordinance.

3. Enforcement of Contracts / Leases

Copermittees may add language into appropriate contracts or leases that give them the right to refuse payment, stop work (without time penalties) or revoke contracts or leases if specified activities are not conducted in compliance with agreed upon conditions or other applicable permits, laws, regulations and ordinances.

C. ENFORCEMENT RESPONSIBILITIES

When serious violations are observed, Copermittee staff should take all appropriate actions, including the following:

- assessing the threat to public health and the environment,
- sampling the discharge(s),
- identifying the responsible party,
- identifying individuals involved in the activity,
- photographing the violation(s),
- obtaining reports or records related to the incident,
- issuing an NOV to the responsible party, and
- making appropriate referrals to other regulatory agencies and requesting assistance.

Should the investigator determine that the situation poses an immediate risk to public health or the environment, they may need to coordinate with other agencies or teams that are specially trained to assess and mitigate emergency situations (e.g., those involving hazardous wastes/materials, etc.).

Court Case File Preparation. Investigators should be trained to carefully document non-compliant activities during every investigation. It is not always possible to know during an initial investigation whether more aggressive enforcement actions will be required in the future. Good documentation is the key to developing a complete case file. This file may be the deciding factor in a successful prosecution.

In preparing an appropriate file for referral to the prosecuting agency, the investigator should include all information from the site investigation, any analytical results, records of previous violations or complaints, and overall compliance history. The file should include at least the following:

- Chronology of events
- Case summary
- Time and expense log
- Inspection reports
- Complaints
- Phone conversation records
- Correspondence
- Maps and diagrams
- Photographs
- Reports from regulatory agencies
- Witness list
- Explanation of the violations
- Request-to-file form
- Field notes
- Emergency incident reports
- Lab results
- Chain-of-custody for samples
- Permit applications
- Sampling plans
- Other supporting documents

Sample Collection. When samples are necessary, these should be immediately delivered to the Copermittee's laboratory through a chain-of-custody. Investigators should always ensure that chain-of-custody procedures are followed, and that appropriate analyses are requested of the laboratory.

D. FOLLOWUP RESPONSIBILITIES

Copermittees are always responsible for making a sufficient effort to ensure that IC/IDs are eliminated. Depending on the nature and severity of the violation, followup investigations may or may not be needed to verify that an IC/ID has been eliminated. For instance, if the responsible party is willing and able to comply, a written Corrective Action Form may be sufficient evidence that substantial compliance has been achieved. For more serious violations, Copermittees should conduct followup field inspections to verify compliance. For instances where voluntary compliance has been utilized, and the Copermittee's followup shows that the IC/ID has not been eliminated, enforcement will need to be initiated.

Section VIII. Program Assessment

Assessing the performance of Copermittees' IC/ID program elements is crucial to the successful implementation of a comprehensive receiving water pollution reduction program. This concept is addressed in Permit Section F.7.a., which requires that each Copermittee develop a long-term strategy for assessing the effectiveness of its individual Jurisdictional URMP. The effectiveness of each of the Copermittee's individual program elements, including those focused on the detection and elimination of IC/IDs, must accordingly be measured, assessed, and reported as part of each Jurisdictional URMP Annual Report.

The effectiveness of activities focused both on BMPs and IC/IDs, whether considered individually or collectively, is ultimately measured over time by changes in the pollutant levels found in downstream receiving waters. Information collected through the Copermittees' wet and dry weather monitoring programs will be useful in identifying trends and assessing the effectiveness of their programs. However, Copermittees will likely not be able to rely on this data to assess the effectiveness of individual program elements that comprise their overall program. The basis for measuring the overall effectiveness of Copermittee programs must therefore be a collective assessment of the effectiveness of the activities implemented within that program. As such, specific measures should be developed and tracked at both the programmatic and activity-specific level. A suite of measures which allows for assessment on a variety of levels and time frames should therefore be developed. These measures are generally divided into two types, direct and indirect.

Direct measures are those that focus on characterizing the quality of water bodies receiving discharges from Copermittee MS4s or on assessing other parameters with an immediate or well-established nexus to changes in the quality of those waters. Examples of direct measurement include receiving waters monitoring, estimation of pollutant loadings from specified areas (catchments, municipalities, watersheds, etc.), and focused evaluations of structural BMPs. Direct measures generally include actual measurement or quantification of pollutants (e.g., reductions in concentrations of chemicals of concern, etc.) or of the amount of materials extracted or diverted by a BMP (e.g., through household hazardous waste collection, etc.).

The direct measurement of water quality, both with respect to receiving waters and discharges from Copermittee MS4s, is addressed through the Copermittees' Receiving Waters Monitoring Program (Permit Attachment B) and Dry Weather Analytical and Field Screening Monitoring Program (Permit Attachment E). Results of these programs, as well as other relevant data collected by Copermittees or other parties, should be integrated into effectiveness assessment strategies. Permit Section F.7.a. requires that the role of monitoring data in substantiating or refining the Copermittees' Jurisdictional URMP Effectiveness Component be addressed.

Because direct measures can be difficult and expensive to obtain, and because they often require long periods of time to fully assess, a variety of indirect measures are generally used to evaluate stormwater program effectiveness. Indirect measures are based on the assumption that the use of specific program activities is effective in decreasing stormwater pollution, and therefore in protecting water quality. They are typically used to assess the performance of non-structural source control BMPs such as

storm drain stenciling and public education programs. As above, tracking the level of effort expended during BMP implementation may often be required. Level of effort can be measured by quantifying the hours spent on a pollution prevention activity, the number of employees trained, the number of times a maintenance activity is conducted or other similar measures.

Indirect measures typically focus on degrees of implementation or comparison to standards or goals rather than actual water quality assessment or measures of pollutant loading. By measuring the degree or success of implementation of BMPs, it may therefore be possible to make inferences about water quality benefits. Indirect measures should be pursued in combination with more broadly focused direct measures to allow Copermittees to prioritize limited resources, conduct meaningful assessments on intermediate time frames, and focus their efforts on particular BMPs and program elements.

Whether using direct or indirect measures of effectiveness, baseline conditions must be defined. All future comparisons showing improvements will be made relative to these baseline conditions. In addition, the largest incremental improvements in receiving water quality are often realized at the beginning of an implementation program. In the absence of a well-defined baseline, these improvements cannot be adequately measured. Examples of baseline measures which might be applied to IC/ID program activities include annual summaries of sewage spills, numbers of IC/IDs reported, and numbers of spills responded to by Copermittees or other relevant agencies (e.g., fire departments, etc.). In establishing measures against which program effectiveness will be measured over time, Copermittees should be careful to consider the many factors that can influence the particular value tracked. For instance, reductions in IC/IDs reported over time could just as easily be attributable to ineffectiveness of education or reporting programs as to actual decreases in discharges. Measures initially established over time must necessarily be refined as Copermittees' knowledge base and sophistication increases. In spite of these limitations, Copermittees will need to establish a core set of baseline measures which can be tracked to measure program performance over time. In some instances, these may take the form of specific program objectives or goals. The following hypothetical measures are offered as examples:

- Percent inspection of areas where dumping is known or suspected to occur on a regular basis;
- Reduction of IC/IDs per unit time. For instance, a goal to reduce illicit discharges by 20% each year, or by 50% by 2005;
- Numbers of facilities inspected for illicit connections each year;
- Percentage of complaints responded to within a fixed period (one day, one week, etc.); and
- Decreases in levels of contaminants found during dry weather monitoring.

In all instances, Copermittees should be careful to avoid establishing unrealistic or ambiguous measures since these can often provide unmeasurable or spurious indications of program progress or environmental gains. It is highly recommended that the validity of any measure established be examined periodically, and that Copermittees remain open to making changes in their assessment strategies over the Permit cycle.

Appendix A Stormwater Permit Excerpts Relating to Illicit Discharge Detection and Elimination

A. PROHIBITIONS -- DISCHARGES

1. Discharges into and from MS4s in a manner causing, or threatening to cause, a condition of pollution, contamination, or nuisance (as defined in CWC § 13050), in waters of the state are prohibited.

2. Discharges from MS4s which cause or contribute to exceedances of receiving water quality objectives for surface water or groundwater are prohibited.

3. Discharges into and from MS4s containing pollutants which have not been reduced to the maximum extent practicable (MEP) are prohibited.

4. Applicable to New Development and Redevelopment:
Post-development runoff containing pollutants loads which cause or contribute to an exceedance of receiving water quality objectives or which have not been reduced to the maximum extent practicable is prohibited.

5. In addition to the above prohibitions, discharges from MS4s are subject to all Basin Plan prohibitions cited in **Attachment A** to this Order.

B. PROHIBITIONS -- NON-STORM WATER DISCHARGES

1. Each Copermittee shall effectively prohibit **all** types of non-storm water discharges into its Municipal Separate Storm Sewer System (MS4) unless such discharges are either authorized by a separate NPDES permit; or not prohibited in accordance with B.2. and B.3. below.

2. Pursuant to 40 CFR 122.26(d)(2)(iv)(B)(1), the following categories of non-storm water discharges need only be prohibited from entering an MS4 if such categories of discharges are identified by the Copermittee as a significant source of pollutants to waters of the United States:

   a. Diverted stream flows;
   b. Rising ground waters;
   c. Uncontaminated ground water infiltration [as defined at 40 CFR 35.2005(20)] to MS4s;
   d. Uncontaminated pumped ground water;
   e. Foundation drains;
   f. Springs;
   g. Water from crawl space pumps;
   h. Footing drains;
   i. Air conditioning condensation;
   j. Flows from riparian habitats and wetlands;
   k. Water line flushing;
   l. Landscape irrigation;
   m. Discharges from potable water sources other than water main breaks;
   n. Irrigation water;
   o. Lawn watering;
   p. Individual residential car washing; and
   q. Dechlorinated swimming pool discharges.

3. When a discharge category above is identified as a significant source of pollutants to waters of the United States, the Copermittee shall either:

a. Prohibit the discharge category from entering its MS4; ***OR***

b. Not prohibit the discharge category and implement, or require the responsible party(ies) to implement, BMPs which will reduce pollutants to the MEP; ***AND***

c. For each discharge category not prohibited, the Copermittee shall submit the following information to the SDRWQCB within **365 days** of adoption of this Order:

(1) The non-storm water discharge category listed above which the Copermittee elects not to prohibit; and

(2) The BMP(s) for each discharge category listed above which the Copermittee will implement, or require the responsible party(ies) to implement, to prevent or reduce pollutants to the MEP.

4. **Fire Fighting Flows:** Emergency fire fighting flows (i.e., flows necessary for the protection of life or property) do not require BMPs and need not be prohibited. As part of the Jurisdictional URMP, each Copermittee shall develop and implement a program within 365 days of adoption of this Order to reduce pollutants from non-emergency fire fighting flows (i.e., flows from controlled or practice blazes and maintenance activities) identified by the Copermittee to be significant sources of pollutants to waters of the United States.

5. **Dry Weather Analytical Monitoring and Non-Storm Water Discharges:** Each Copermittee shall examine all dry weather analytical monitoring results collected in accordance with section F.5. and Attachment E of this Order to identify water quality problems which may be the result of any non-prohibited discharge category(ies) identified above in Non-Storm Water Discharges to MS4s Prohibition B.2. Follow-up investigations shall be conducted as necessary to identify and control any non-prohibited discharge category(ies) listed above.

C. RECEIVING WATER LIMITATIONS

1. Discharges from MS4s that cause or contribute to the violation of water quality standards (designated beneficial uses and water quality objectives developed to protect beneficial uses) are prohibited.

2. Each Copermittee shall comply with Part C.1. of this Order through timely implementation of control measures and other actions to reduce pollutants in urban runoff discharges in accordance with the Jurisdictional Urban Runoff Management Program (Jurisdictional URMP) and other requirements of this Order including any modifications. The Jurisdictional URMP shall be designed to achieve compliance with Part C.1. of this Order. If exceedance(s) of water quality standards persist notwithstanding implementation of the URMP and other requirements of this Order, the Copermittee shall assure compliance with Part C.1. of this Order by complying with the following procedure:

a. Upon a determination by either the Copermittee or the SDRWQCB that MS4 discharges are causing or contributing to an exceedance of an applicable water quality standard, the Copermittee shall promptly notify and thereafter submit a report to the SDRWQCB that describes BMPs that are currently being implemented and additional BMPs that will be implemented to prevent or reduce any pollutants that are causing or contributing to the exceedance of water quality standards. The report may be incorporated in the annual update to the Jurisdictional URMP unless the SDRWQCB directs an earlier submittal. The report shall include an implementation schedule. The SDRWQCB may require modifications to the report;

b. Submit any modifications to the report required by the SDRWQCB within 30 days of notification;

c. Within 30 days following approval of the report described above by the SDRWQCB, the Copermittee shall revise its Jurisdictional URMP and monitoring program to incorporate the approved modified BMPs that have been and will be implemented, the implementation schedule, and any additional monitoring required;

d. Implement the revised Jurisdictional URMP and monitoring program in accordance with the approved schedule.

So long as the Copermittee has complied with the procedures set forth above and are implementing the revised Jurisdictional URMP, the Copermittee does not have to repeat the same procedure for continuing or recurring exceedances of the same receiving water limitations unless directed by the SDRWQCB to do so.

3. Nothing in this section shall prevent the SDRWQCB from enforcing any provision of this Order while the Copermittee prepares and implements the above report.

D. LEGAL AUTHORITY

1. Each Copermittee shall establish, maintain, and enforce adequate legal authority to control pollutant discharges **into** and **from** its MS4 through ordinance, statute, permit, contract or similar means. This legal authority must, at a minimum, authorize the Copermittee to:

a. Control the contribution of pollutants in discharges of runoff associated with industrial and construction activity **to** its MS4 and control the quality of runoff **from** industrial and construction sites. This requirement applies both to industrial and construction sites which have coverage under the statewide general industrial or construction storm water permits, as well as to those sites which do not. Grading ordinances shall be upgraded and enforced as necessary to comply with this Order.

b. Prohibit **all** identified illicit discharges not otherwise allowed pursuant to section B.2 including but not limited to:

(1) Sewage;

(2) Discharges of wash water resulting from the hosing or cleaning of gas stations, auto repair garages, or other types of automotive services facilities;

(3) Discharges resulting from the cleaning, repair, or maintenance of any type of equipment, machinery, or facility including motor vehicles, cement-related equipment, and port-a-potty servicing, etc.;

(4) Discharges of wash water from mobile operations such as mobile automobile washing, steam cleaning, power washing, and carpet cleaning, etc.;

(5) Discharges of wash water from the cleaning or hosing of impervious surfaces in municipal, industrial, commercial, and residential areas including parking lots, streets, sidewalks, driveways, patios, plazas, work yards and outdoor eating or drinking areas, etc.;

(6) Discharges of runoff from material storage areas containing chemicals, fuels, grease, oil, or other hazardous materials;

(7) Discharges of pool or fountain water containing chlorine, biocides, or other chemicals; discharges of pool or fountain filter backwash water;

(8) Discharges of sediment, pet waste, vegetation clippings, or other landscape or construction-related wastes; and

(9) Discharges of food-related wastes (e.g., grease, fish processing, and restaurant kitchen mat and trash bin wash water, etc.).

c. Prohibit and eliminate illicit connections to the MS4;

d. Control the discharge of spills, dumping, or disposal of materials other than storm water to its MS4;

e. Require compliance with conditions in Copermittee ordinances, permits, contracts or orders (i.e., hold dischargers to its MS4 accountable for their contributions of pollutants and flows);

f. Utilize enforcement mechanisms to require compliance with Copermittee storm water ordinances, permits, contracts, or orders;

g. Control the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements among Copermittees. Control of the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements with other owners of the MS4 such as Caltrans, the Department of Defense, or Native American Tribes is encouraged.;

h. Carry out all inspections, surveillance, and monitoring necessary to determine compliance and noncompliance with local ordinances and permits and with this Order, including the prohibition on illicit discharges to the MS4. This means the Copermittee must have authority to enter, sample, inspect, review and copy records, and require regular reports from industrial facilities discharging into its MS4, including construction sites; and

i. Require the use of best management practices (BMPs) to prevent or reduce the discharge of pollutants to MS4s.

2. Within **180 days** of adoption of this Order, each Copermittee shall provide to the SDRWQCB a statement certified by its chief legal counsel that the Copermittee has adequate legal authority to implement and enforce each of the requirements contained in 40 CFR 122.26(d)(2)(i)(A-F) and this Order. This statement shall include:

a. Identification of all departments within the jurisdiction that conduct urban runoff related activities, and their roles and responsibilities under this Order. Include an up to date organizational chart specifying these departments and key personnel.

b. Citation of urban runoff related ordinances and the reasons they are enforceable;

c. Identification of the local administrative and legal procedures available to mandate compliance with urban runoff related ordinances and therefore with the conditions of this Order;

d. Description of how these ordinances are implemented and appealed; and

e. Description of whether the municipality can issue administrative orders and injunctions or if it must go through the court system for enforcement actions.

E. TECHNOLOGY BASED STANDARDS

Each Copermittee shall implement, or require implementation of, best management practices to ensure

that the following pollutant discharges **into** and **from** its MS4 are reduced to the applicable technology based standard as specified below:

Table 3. Technology Based Standards[2]

POLLUTANT DISCHARGE FROM	DESCRIPTION	APPLICABLE PERFORMANCE STANDARD
Industrial Activity owned by the Copermittee	Categorical Industry in 40 CFR 122.26	BAT/BCT (pursuant to Statewide General Industrial Permit)
Industrial Activity	All other industry	MEP
Construction Activity owned by the Copermittee	Greater than or Equal to 5 Acres (or less than 5 acres and Part of a Larger Common Plan of Sale or Development)	BAT/BCT (pursuant to Statewide General Construction Permit)
Construction Activity	All Other construction	MEP
Other Sources	All Other Land Use Activities	MEP
MS4s	All discharges from MS4s	MEP

[Sections F.1 through F.4 not included]

F.5. Illicit Discharge Detection and Elimination Component

Each Copermittee shall implement an Illicit Discharge Detection and Elimination Component containing measures to actively seek and eliminate illicit discharges and connections. At a minimum the Illicit Discharge Detection and Elimination Component shall address:

F.5.a Illicit Discharges and Connections
F.5.b Dry Weather Analytical Monitoring
F.5.c Investigation / Inspection and follow-up
F.5.d Elimination of Illicit Discharges and Connections
F.5.e Enforce Ordinance
F.5.f Prevent and Respond To Sewage Spills (Including from Private Laterals and Failing Septic Systems) and Other Spills
F.5.g Facilitate Public Reporting of Illicit Discharges and Connections – Public Hotline
F.5.h Facilitate Disposal of Used Oil and Toxic Materials
F.5.i Limit Infiltration From Sanitary Sewer to MS4

F.5.a. Illicit Discharges and Connections

Each Copermittee shall implement a program to actively seek and eliminate illicit discharges and connections into its MS4. The program shall address all types of illicit discharges and connections excluding those non-storm water discharges not prohibited by the Copermittee in accordance with Section B. of this Order.

F.5.b. Dry Weather Analytical Monitoring

Pursuant to this Order, each Copermittee shall ensure that pollutants in runoff from industrial and construction sites within its jurisdiction have been reduced to the MEP standard before entering its MS4. The industrial and construction site dischargers themselves however must ensure that pollutants in runoff leaving their sites have been reduced to the BAT/BCT standard pursuant to either the statewide General Industrial or Construction Storm Water Permit. Runoff from industrial and construction sites owned by municipalities and subject to either the General Industrial or Construction Storm Water Permits, must meet the BAT/BCT standard.

Each Copermittee shall conduct dry weather analytical monitoring of MS4 outfalls within its jurisdiction to detect illicit discharges and connections in accordance with Attachment E of this Order.

F.5.c. Investigation / Inspection and Follow-Up

Each Copermittee shall investigate and inspect any portion of the MS4 that, based on dry weather analytical monitoring results or other appropriate information, indicates a reasonable potential for illicit discharges, illicit connections, or other sources of non-storm water (including non-prohibited discharge(s) identified in Section B. of this Order). Each Copermittee shall establish criteria to identify portions of the system where such follow-up investigations are appropriate.

F.5.d. Elimination of Illicit Discharges and Connections

Each Copermittee shall eliminate all detected illicit discharges, discharge sources, and connections immediately.

F.5.e. Enforce Ordinances

Each Copermittee shall implement and enforce its ordinances, orders, or other legal authority to prevent illicit discharges and connections to its MS4. Each Copermittee shall also implement and enforce its ordinance, orders, or other legal authority to eliminate detected illicit discharges and connections to it MS4.

F.5.f. Prevent and Respond to Sewage Spills (Including from Private Laterals and Failing Septic Systems) and Other Spills

Each Copermittee shall prevent, respond to, contain and clean up all sewage and other spills that may discharge into its MS4 from any source (including private laterals and failing septic systems). Spill response teams shall prevent entry of spills into the MS4 and contamination of surface water, ground water and soil to the maximum extent practicable. Each Copermittee shall coordinate spill prevention, containment and response activities throughout all appropriate departments, programs and agencies to ensure maximum water quality protection at all times.

Each Copermittee shall develop and implement a mechanism whereby it is notified of all sewage spills from private laterals and failing septic systems into its MS4. Each Copermittee shall prevent, respond to, contain and clean up sewage from any such notification.

F.5.g. Facilitate Public Reporting of Illicit Discharges and Connections - - Public Hotline

Each Copermittee shall promote, publicize and facilitate public reporting of illicit discharges or water quality impacts associated with discharges into or from MS4s. Each Copermittee shall facilitate public reporting through development and operation of a public hotline. Public hotlines can be Copermittee-specific or shared by Copermittees. All storm water hotlines shall be capable of receiving reports in both English and Spanish 24 hours per day / seven days per week. Copermittees shall respond to and resolve each reported incident. All reported incidents, and how each was resolved, shall be summarized in each Copermittee's individual Jurisdictional URMP Annual Report.

F.5.h.Facilitate Disposal of Used Oil and Toxic Materials

Each Copermittee shall facilitate the proper management and disposal of used oil, toxic materials, and other household hazardous wastes. Such facilitation shall include educational activities, public information activities, and establishment of collection sites operated by the

Copermittee or a private entity. Curbside collection of household hazardous wastes is encouraged.

F.5.i. Limit Infiltration From Sanitary Sewer to MS4/ Provide Preventive Maintenance of Both

Each Copermittee shall implement controls and measures to limit infiltration of seepage from municipal sanitary sewers to MS4s through thorough, routine preventive maintenance of the MS4. Each Copermittee that operates both a municipal sanitary sewer system and a MS4 shall implement controls and measures to limit infiltration of seepage from the municipal sanitary sewers to the MS4s that shall include overall sanitary sewer and MS4 surveys and thorough, routine preventive maintenance of both.

[Sections F.6 through G not included]

H. SUBMITTAL OF JURISDICTIONAL URMP DOCUMENT

The written account of the overall program to be conducted by each Copermittee within its jurisdiction during the five-year life of this Order is referred to as the "Jurisdictional URMP Document".

1. Individual – Each Copermittee shall submit to the Principal Permittee(s) an individual Jurisdictional URMP document which describes all activities it has undertaken or is undertaking to implement the requirements of each component of the Jurisdictional URMP section F. of this Order.

    a. At a minimum, the individual Jurisdictional URMP document shall contain the following information for the following components:

[Sections H.1a.(1) through (6) not included]

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(7) Illicit Discharges Detection and Elimination Component

(a) A description of the program to actively seek and eliminate illicit discharges and connections
(b) A description of dry weather analytical monitoring to be conducted to detect illicit discharges and connections (see Attachment E)
(c) A description of investigation and inspection procedures to follow-up on dry weather analytical monitoring results or other information which indicate potential for illicit discharges and connections
(d) A description of procedures to eliminate detected illicit discharges and connections
(e) A description of enforcement mechanisms and how they will be used
(f) A description of methods to prevent, respond to, contain, and clean up all sewage (including spills from private laterals and failing septic systems) and other spills in order to prevent entrance into the MS4
(g) A description of the mechanism to receive notification of spills from private laterals
(h) A description of efforts to facilitate public reporting of illicit discharges and connections, including a public hotline
(i) A description of efforts to facilitate proper disposal of used oil and other toxic materials
(j) A description of controls and measures to be implemented to limit infiltration of seepage from sanitary sewers to MS4s
(k) A description of routine preventive maintenance activities on the sanitary system (where applicable) and the MS4

[Sections H.1a.(8) through R not included]

ATTACHMENT A

BASIN PLAN PROHIBITIONS

California Water Code Section 13243 provides that a Regional Board, in a water quality control plan, may specify certain conditions or areas where the discharge of waste, or certain types of waste is not permitted. The following discharge prohibitions are applicable to any person, as defined by Section 13050(c) of the California Water Code, who is a citizen, domiciliary, or political agency or entity of California whose activities in California could affect the quality of waters of the state within the boundaries of the San Diego Region.

1. The discharge of waste to waters of the state in a manner causing, or threatening to cause a condition of pollution, contamination or nuisance as defined in California Water Code Section 13050, is prohibited.

2. The discharge of waste to land, except as authorized by waste discharge requirements or the terms described in California Water Code Section 13264 is prohibited.

3. The discharge of pollutants or dredged or fill material to waters of the United States except as authorized by an NPDES permit or a dredged or fill material permit (subject to the exemption described in California Water Code §13376) is prohibited.

4. Discharges of recycled water to lakes or reservoirs used for municipal water supply or to inland surface water tributaries thereto are prohibited, unless this Regional Board issues a NPDES permit authorizing such a discharge; the proposed discharge has been approved by the State Department of Health Services and the operating agency of the impacted reservoir; and the discharger has an approved fail-safe long-term disposal alternative.

5. The discharge of waste to inland surface waters, except in cases where the quality of the discharge complies with applicable receiving water quality objectives, is prohibited. Allowances for dilution may be made at the discretion of the Regional Board. Consideration would include streamflow data, the degree of treatment provided and safety measures to ensure reliability of facility performance. As an example, discharge of secondary effluent would probably be permitted if streamflow provided 100:1 dilution capability.

6. The discharge of waste in a manner causing flow, ponding, or surfacing on lands not owned or under the control of the discharger is prohibited, unless the discharge is authorized by the Regional Board.

7. The dumping, deposition, or discharge of waste directly into waters of the state, or adjacent to such waters in any manner which may permit its being transported into the waters, is prohibited unless authorized by the Regional Board.

8. Any discharge to a storm water conveyance system that is not composed entirely of "*storm water*" is prohibited unless authorized by the Regional Board. [The federal regulations, 40 CFR 122.26 (b) (13), define storm water as storm water runoff, snow melt runoff, and surface runoff and drainage. 40 CFR 122.26 (b) (2) defines an illicit discharge as any discharge to a storm water conveyance system that is not composed entirely of storm water except discharges pursuant to a NPDES permit and discharges resulting from fire fighting activities. [§122.26 amended at 56 FR 56553, November 5, 1991; 57 FR 11412, April 2, 1992].

9. The unauthorized discharge of treated or untreated sewage to waters of the state or to a storm water conveyance system is prohibited.

10. The discharge of industrial wastes to conventional septic tank/subsurface disposal systems, except as authorized by the terms described in California Water Code Section 13264, is prohibited.

11. The discharge of radioactive wastes amenable to alternative methods of disposal into the waters of the state is prohibited.

12. The discharge of any radiological, chemical, or biological warfare agent into waters of the state is prohibited.

13. The discharge of waste into a natural or excavated site below historic water levels is prohibited unless the discharge is authorized by the Regional Board.

14. The discharge of sand, silt, clay, or other earthen materials from any activity, including land grading and construction, in quantities which cause deleterious bottom deposits, turbidity or discoloration in waters of the state or which unreasonably affect, or threaten to affect, beneficial uses of such waters is prohibited.

15. The discharge of treated or untreated sewage from vessels to Mission Bay, Oceanside Harbor, Dana Point Harbor, or other small boat harbors is prohibited.

16. The discharge of untreated sewage from vessels to San Diego Bay is prohibited.

17. The discharge of treated sewage from vessels to portions of San Diego Bay that are less than 30 feet deep at mean lower low water (MLLW) is prohibited.

The discharge of treated sewage from vessels, which do not have a properly functioning US Coast Guard certified Type I or Type II marine sanitation device, to portions of San Diego Bay that are greater than 30 feet deep at mean lower low water (MLLW) is prohibited.

[Attachment A through Attachment C.B.5 not included]

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6. Twenty-four Hour Reporting [40CFR 122.41(1)(6)]
   Each Copermittee shall develop and submit criteria by which to evaluate events of non-compliance to determine whether they pose a threat to human or environmental health. These criteria shall be submitted in the Jurisdictional Urban Runoff Management Program Document and Annual Reports for SDRWQCB review. Using these criteria the discharger shall report any noncompliance with this Order or any noncompliance that may endanger human health or environmental health. Any information shall be provided orally to the SDRWQCB within **24 hours** from the time the discharger becomes aware of the circumstances. A written description of any noncompliance shall be submitted to the SDRWQCB within **five days** of such an occurrence and contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The following shall be included as information which must be reported within 24 hours under this reporting requirement:

   a. Any unanticipated bypass which exceeds any effluent limitation in this Order;

   b. Any discharge of treated or untreated wastewater, including reclaimed or recycled wastewater, resulting from pipeline breaks, obstruction, surcharge or any other circumstance;

   c. Any discharge or spill of raw or potable water not authorized by this order or resulting from pipeline breaks, obstruction, surcharge or any other circumstance;

   d. Any upset which exceeds any effluent limitation in this Order;

e. Any spill or discharge of non-storm water not authorized by this Order. Non-storm water discharges not prohibited by the Copermittees pursuant to Section B of this Order need not be reported under this section; and

f. Any violation of this Order.

7. Other Non-Compliance [40 CFR 122.41(l)(7)]
The discharger shall report all instances of noncompliance not reported elsewhere under other sections of this Order at the time annual reports are submitted. The reports shall contain the information listed in part B.6 of Attachment C of this Order.

8. Other Information [40 CFR 122.41(l)(8)]
Where the discharger becomes aware that it failed to submit any relevant facts in a Report of Waste Discharge, or submitted incorrect information in a Report of Waste Discharge, or in any report to the SDRWQCB, it shall promptly submit such facts or information.

[Attachment C.B.9 through Attachment E not included]

Appendix B 1998 California 303(d) List and Priority Schedule (Region 9)

Hydrologic Unit	Watershed	Major Water Bodies	Water Body Type	Pollutant / Stressor	Sources	Impaired Beneficial Uses	TMDL Priority
900.00	**San Diego Bay**	San Diego Bay; Shelter Island Yacht Basin (900.00)	B	Copper	Point / Nonpoint	Aquatic life	High
		San Diego Bay; Near Sub Base (900.00)	B	Benthic Comm. Effects, Sediment Toxicity	Point / Nonpoint	Aquatic life	High
		San Diego Bay; Near Grape Street (900.00)	B	Benthic Comm. Effects, Sediment Toxicity	Point / Nonpoint	Aquatic life	High
		San Diego Bay; Downtown Piers (900.00)	B	Benthic Comm. Effects, Sediment Toxicity	Point / Nonpoint	Aquatic life	High
		San Diego Bay; Near Switzer Creek (900.00)	B	Benthic Comm. Effects, Sediment Toxicity	Point / Nonpoint	Aquatic life	High
		San Diego Bay; Near Coronado Bridge (900.00)	B	Benthic Comm. Effects, Sediment Toxicity	Point / Nonpoint	Aquatic life	High
		San Diego Bay; Near Chollas Creek (900.00)	B	Benthic Comm. Effects, Sediment Toxicity	Point/ Nonpoint	Aquatic life	High
		San Diego Bay; San Diego Naval Station (900.00)	B	Benthic Comm. Effects, Sediment Toxicity	Point/ Nonpoint	Aquatic life	High
		San Diego Bay; Seventh Street Channel (900.00)	B	Benthic Comm. Effects, Sediment Toxicity	Point/ Nonpoint	Aquatic life	High
		San Diego Bay; North of 24th Street Marine Terminal (900.00)	B	Benthic Comm. Effects, Sediment Toxicity	Point/ Nonpoint	Aquatic life	High
901.00	**San Juan**	Aliso Creek, Mouth of (901.13)	E	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2	Medium
		Aliso Creek (901.13)	R	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2	Medium
		Pacific Ocean, Laguna Beach HSA (901.12)	C	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2, Shellfish harvest	Medium
		Pacific Ocean, Aliso HSA (901.13)	C	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2	Low
		Pacific Ocean, Dana Point HSA (901.14)	C	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2	Low
		San Juan Creek (Mouth) (901.200)	E	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2, Shellfish harvest	Low
		Pacific Ocean, Lower San Juan HSA (901.270)	C	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2, Shellfish harvest	Low

Appendix B 1998 California 303(d) List and Priority Schedule (Region 9; Continued)

Hydrologic Unit	Watershed	Major Water Bodies	Water Body Type	Pollutant / Stressor	Sources	Impaired Beneficial Uses	TMDL Priority
901.00 (cont.)		Lower San Juan Creek (901.270)	R	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2, Shellfish harvest	Low
		Pacific Ocean, San Clemente HA (901.30)	C	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2, Shellfish harvest	Low
902.00	**Santa Margarita**	Santa Margarita Lagoon (901.110)	E	Eutrophic	Point/ Nonpoint	Rec-1, Rec-2, Aquatic life	High
		Rainbow Creek (902.200)	R	Eutrophic	Point/ Nonpoint	Aquatic life	High
903.00	**San Luis Rey**	Pacific Ocean, San Luis Rey HU (903.00)	C	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2, Shellfish harvest	Low
		Guajome Lake (903.110)	L	Eutrophic	Point/ Nonpoint	Aquatic life	Medium
904.00	**Carlsbad**	Pacific Ocean, Loma Alta HAS (904.10)	C	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2, Shellfish harvest	Low
		Loma Alta Slough (904.100)	E	Eutrophic	Nonpoint	Aquatic life	Low
				High Coliform Count		Rec-1, Rec-2	
		Pacific ocean, Buena Vista HA (904.20)	C	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2, Shellfish harvest	Low
		Buena Vista Lagoon (904.210)	E	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2	Low
				Nutrients		Aquatic life	
				Sedimentation/Siltation			Medium
		Agua Hedionda Lagoon (904.310)	E	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2, Shellfish harvest	Low
				Sedimentation/Siltation		Aquatic life	Medium
		Pacific Ocean, San Marcos HA (904.50)	C	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2, Shellfish harvest	Low
		Pacific Ocean, Escondido Creek HA (904.60)	C	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2, Shellfish harvest	Low
		San Elijo Lagoon (904.610)	E	Eutrophic	Point/ Nonpoint	Aquatic life	Low
				High Coliform Count		Rec-1,Rec-2, Shellfish harvest, Fish consumption	
				Sedimentation/Siltation		Aquatic life	Medium

Appendix B 1998 California 303(d) List and Priority Schedule (Region 9; Continued)

Hydrologic Unit	Watershed	Major Water Bodies	Water Body Type	Pollutant / Stressor	Sources	Impaired Beneficial Uses	TMDL Priority
905.00	**San Dieguito**	Pacific Ocean, San Dieguito HU (905.00)	C	High Coliform Count	Rec-1, Rec-2, Shellfish harvest	Rec-1, Rec-2, Shellfish harvest	Low
906.00	**Mission Bay**	Los Penasquitos Lagoon (906.100)	E	Sedimentation/Siltation	Point/ Nonpoint	Aquatic life	Medium
		Pacific Ocean, Scripps HA (906.30)	C	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2, Shellfish harvest	Low
		Mission Bay (906.400)	B	Eutrophic	Point/ Nonpoint	Aquatic life	Medium
				High Coliform Count		Rec-1, Rec-2, Shellfish harvest	Low
				Lead		Aquatic life	Medium
		Famosa Slough & Channel (906.400)	E	Eutrophic	Nonpoint	Aquatic life	Medium
		Tecolote Creek (906.500)	R	Cadmium	Point/ Nonpoint	Aquatic life	Medium
				Copper			
				Lead			
				Zinc			
				Toxicity			
				High Coliform Count		Rec-1, Rec-2	Low
907.00	**San Diego**	Pacific Ocean, San Diego HU (907.00)	C	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2, Shellfish harvest	Low
908.00	**San Diego Bay (Pueblo San Diego)**	San Diego Bay, Lindbergh (908.210)	C	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2	Low
		Chollas Creek (908.220)	R	Cadmium	Point/ Nonpoint	Aquatic life	High
				Copper			
				Lead			
				Zinc			
				Toxicity		Rec-1, Rec-2	
				High Coliform Count			Low

Appendix B 1998 California 303(d) List and Priority Schedule (Region 9; Continued)

Hydrologic Unit	Watershed	Major Water Bodies	Water Body Type	Pollutant / Stressor	Sources	Impaired Beneficial Uses	TMDL Priority
909.00	**San Diego Ba (Sweetwater)**	San Diego Bay, Telegraph HAS (909.11)	C	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2	Low
910.00	**San Diego Bay (Otay)**	Pacific ocean, Coronado HA (910.10)	C	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2, Shellfish harvest	Low
911.00	**Tijuana**	Pacific Ocean, Tijuana HU (911.00)	C	High Coliform Count	Point/ Nonpoint	Rec-1, Rec-2	Low
		Tijuana River Estuary (911.110)	E	Eutrophic	Point/ Nonpoint	Aquatic life	Low
				Lead			
				Nickel			
				Trash			
				Thallium			
				Pesticides		Aquatic life, Fish Consumption	
				High Coliform Count		Rec-1, Rec-2, Fish consumption, Shellfish harvest	
		Tijuana River (911.110)	R	Eutrophic	Point/ Nonpoint	Aquatic life, Fish Consumption	Low
				High Coliform Count		Rec-1, Rec-2, Fish consumption	
				Org. Enrichment/Low D.O.		Aquatic life	
				Pesticides		Fish consumption	
				Solids		Aquatic life	
				Synthetic Organics		Aquatic life, Fish Consumption	
				Trace Elements		Aquatic life, Fish Consumption	
				Trash		Fish consumption	

Water Body Types

B=Bays and Harbors G=Ground Water R=Rivers/Streams W=Wetlands and Freshwater

C=Coastal Shorelines L=Lakes/Reservoirs S=Saline Lakes

E=Estuaries O=Ocean and Open Bays T=Wetlands,Tidal

Appendix C Designated RARE Waterbodies in the San Diego Region

WATERSHED										
San Juan	Santa Margarita	San Luis Rey	Carlsbad	San Dieguito	Penasquitos/ Mission Bay	San Diego River	Pueblo SD	Sweetwater	Otay	Tijuana
INLAND SURFACE WATERS										
San Mateo Creek San Onofre Canyon S. Fork Las Flores Cr Piedra de Lumbre Canyon Aliso Canyon French Canyon	Santa Margarita River DeLuz Creek Pueblitos Canyon	San Luis Rey River Pilgrim Creek	Buena Vista Creek	Santa Ysabel Creek San Dieguito River unnamed Trib San Bernardo Valley	Carol Canyon unnamed Trib San Clemente Canyon	San Diego River Sycamore Cyn 2 unnamed Tribs Clark Canyon Spring Canyon Murphy Canyon		Sweetwater River unnamed Trib	Dulzura Creek Jamul Creek unnamed Trib Otay River	Tijuana River Cottonwood Creek
RESERVOIRS AND LAKES										
	O'Neill Lake	Lake Henshaw		Lake Hodges Sutherland Lake		El Capitan Resivor Cuyamaca Resivor				Lake Barrett Morena Resivor
COASTAL WATERS										
Pacific Ocean Dana Pt. Harbor Aliso Creek mouth San Juan Creek mouth San Mateo Creek mouth San Onofre Creek mouth	Pacific Ocean Oceanside Harbor Santa Margarita Lagoon	Pacific Ocean S. Luis Rey R. mouth	Pacific Ocean Batiquitos Lagoon San Elijo Lagoon Agua Hedionda Lagoon Buena Vista Lagoon Loma Alta Slough	Pacific Ocean Del Mar Boat Basin San Dieguito Lagoon	Pacific Ocean Mission Bay L. Penasquitos Lagoon	Pacific Ocean Mouth of San Diego River	Pacific Ocean San Diego Bay	Pacific Ocean San Diego Bay	Pacific Ocean San Diego Bay	Pacific Ocean Tijuana Estuary

*** Source: Water Quality Control Plan, San Diego Basin, Region 9, Chapter 2.**

Appendix D Dry Weather Analytical and Field Screening Monitoring Guidance

Dry Weather Analytical and Field Screening Monitoring Guidance

I. Background

Order No. 2001-01 (Permit), Section F.5 requires each stormwater Copermittee to develop and implement a program that will detect and eliminate illicit connections and illegal discharges (IC/IDs) to the MS4. A critical component of this IC/ID program is dry weather analytical and field screening monitoring as described in Attachment E of the Permit. The Copermittees are required to use dry weather field and analytical monitoring information to identify conveyances that are discharging elevated levels of water pollutants and to conduct follow up studies as necessary, to detect and eliminate the sources of these pollutants. This program will be implemented as part of the Copermittees' Jurisdictional URMPs.

There are three components to the Copermittee dry weather monitoring programs: (1) field screening observations, (2) field screening analytical monitoring, and (3) laboratory analytical monitoring. Field screening observations include various site descriptions and a series of qualitative (mainly visual) observations of physical and biological conditions at the site. Field screening monitoring includes determinations of several water quality parameters and flow. The analytical monitoring component involves the collection of samples for a more extensive laboratory analysis of primarily toxicity-causing and bacteriological water quality parameters. The presence of abnormal conditions in any of the three dry weather monitoring components is justification for initiating a pollutant source identification investigation.

II. Monitoring Objectives

The objectives of the Dry Weather Analytical and Field Screening Monitoring Program are the following:

1. Detect and eliminate illicit connections and illegal discharges to the MS4
2. Characterize dry weather (May 1 – September 30) discharges in the MS4 system

III. Program Requirements

The Permit requires each Copermittee to conduct a Dry Weather Analytical and Field Screening Monitoring Program that includes the following tasks, each of which is described further below:

- Develop and complete an MS4 map
- Select dry weather field screening and analytical monitoring stations
- Develop dry weather field screening and analytical procedures
- Submit a dry weather field screening and analytical monitoring map and procedures as part of the Copermittee's Jurisdictional URMP (JURMP)
- Conduct dry weather field screening and analytical monitoring. If monitoring indicates elevated pollutant levels in the MS4 and the possibility of an illicit connection or illegal discharge, then conduct follow-up source identification investigation and elimination activities as described in Permit Sections F.5.c and F.5.d.
- Summarize and report the results of dry weather field screening and analytical monitoring including the identification and elimination of illicit connections and illegal discharges.

A. Develop and Complete an MS4 Map

Each Copermittee must submit a dry weather analytical map with MS4, drainages, and field screening stations as part of its Jurisdictional Urban Runoff Management Plan (URMP). Maps may contain information on the size and location of natural and man-made drainage facilities, drainage and jurisdictional boundaries, and other prominent features that enhance the readability of the MS4 map (e.g. freeways, major roads, reservoirs, etc.).

MS4 maps may already be available for many Copermittees to reference in the development of their dry weather programs. The accuracy of these maps should be verified during field operations and corrections made as necessary. Attachment E of the Permit also recommends that the Copermittees create GIS layers of their MS4 systems.

B. Selection of Monitoring Station Locations and Frequencies

1. Sampling Locations

Copermittees should conduct a thorough evaluation of their MS4 to select suitable locations for monitoring. Dry weather field screening and analytical monitoring sampling stations should be selected by considering at a minimum, the following criteria:

a. Drainage areas

Identify drainage areas including drainage and jurisdictional boundaries, and all major conveyances and tributaries within the drainage. Stations may be located at the farthest downstream accessible point within each drainage area.

b. Land use

If possible, defined areas of homogeneous land use should be isolated. Select at least one station for each of the following land uses in each drainage area identified in 2.A.1, above:

- Commercial
- Industrial
- Residential
- Parks / agricultural

Various tools are available to define areas of homogeneous land usage including land use maps and GIS layers, aerial photographs, and GIS layers that indicate clusters of permitted industrial, or commercial locations.

c. Critical locations / areas

Section F.1.b(2)(a)vii of the Permit lists several types of environmentally sensitive areas (ESAs). The Copermittees may attempt to locate dry weather monitoring stations in conveyances immediately upstream or within the following environmentally sensitive areas (ESAs):

- Clean Water Act section 303(d) impaired water bodies
- Areas of Special Biological Significance (ASBS)
- Water bodies designated with the RARE beneficial use
- Multiple Species Conservation Program (MSCP) preserves

- o Any other equivalent environmentally sensitive areas that have been identified by the Copermittee

d. Previous or suspected problem areas

Copermittees should conduct a review of existing dry weather data and complaint history and locate stations to assess previous problem areas. Stations should also be located downstream of any suspected illicit or illegal activity.

The Copermittees may also refer to the watershed-based inventories compiled for construction, municipal, industrial, commercial, and residential activities (as required in Permit sections F.2.e, F.3.a.(3), F.3.b.(3), F.3.c.(2), and F.3.d.(2), respectively).

e. Accessibility

MS4 maps, site reconnaissance, and public works employee experience are useful in evaluating the accessibility of proposed sites. If a site is determined to be inaccessible, an alternate station should be located on the same conveyance.

f. Safety

Steep and/ or slippery slopes, swift water, deep water, confined spaces and other potentially unsafe conditions must be avoided. If a site is determined to be unsafe, an alternate station should be located on the same conveyance.

g. Hydrologic variables

The magnitude of flow within storm drains should be considered when selecting and prioritizing sites for field screening and analytical sampling. Storm drains with high discharge should be given a higher priority than low-flow conveyances unless land uses within the drainage area, historical data, and/or visual observations of the site indicate otherwise.

Other hydrologic variables that may effect site selection include local groundwater drainage and tidal influence. Substantial amounts of pollutant-containing groundwater can be discharged into some storm drains. These groundwater discharges are often indicative of regional groundwater contamination problems and cannot be eliminated by simple source identification.

Dry weather monitoring samples should not be collected when seawater is present. When sampling within the zone of tidal influence, Copermittees should use electrical conductivity measurements to confirm that the water sampled is not of marine origin.

Attachment E, Section 2 of the Permit states that Copermittees may develop a 1/4-mile grid to identify potential sites for field screening and source identification studies as an alternative to using the non-random site selection criteria outlined above. A grid may also be useful in larger jurisdictions where comprehensive knowledge of the MS4 is lacking even if it is not the primary method of selecting sampling locations. Grids can also be used to establish a coordinate system for describing the location of dry weather monitoring and source identification study areas.

2. Sampling Frequency

Each Copermittee should conduct dry weather monitoring at each site identified above in Section III.B.1, at least once during the period May 1 - September 30, or as often as the Copermittee determines is necessary to adequately detect and eliminate illicit connections and illegal discharges.

Dry weather monitoring should not be conducted within 72 hours of the end of any rain event or if local hydrologic conditions indicate that storm flow is still occurring at a site after a rain event. Grab samples should be collected for field analysis at each station where there is ponded or flowing water. An additional grab sample must be collected for laboratory analysis at a minimum of 25% of the sites where ponded or flowing water is observed.[1]

The probability of detecting illicit connections and illegal discharges at individual MS4 sites will increase with higher field screening frequencies however; the cost of conducting laboratory analytical sampling at 25% of the sites where field screening is conducted may limit the total number of dry weather monitoring visits that are feasible. The Copermittees should design and conduct their programs to optimize the detection and elimination of illicit connections and illegal discharges given the inevitable constraints of their dry weather program budgets.

C. Field Screening and Analytical Sampling Procedures

Sampling should be conducted in accordance with the guidelines outlined in Appendix E (Dry Weather Monitoring Sampling Manual). Field personnel should have a copy of these or comparable sampling guidelines for reference during all field operations. Additional Copermittee-specific field reference materials should be available at all times including MS4 maps, contact numbers, and field equipment operating manuals and procedures.

D. Submission of Dry Weather Monitoring Map and Procedures

The Permit requires that each Copermittee submit a dry weather field screening and analytical monitoring map (including the MS4, drainage watersheds, and station locations) and dry weather analytical monitoring procedures to the Principal Copermittee for inclusion in the unified Jurisdictional URMP. The unified JURMP must be submitted to the SDRWQCB by February 21, 2002. The following elements of the Copermittees' dry weather programs must be presented in the unified JURMP report:

1. Basic MS4 map
2. Selected dry weather monitoring stations
3. Completed MS4 map with dry weather monitoring stations
4. Procedures for dry weather monitoring

[1] Clarification of Attachment E, Section 4 requirements provided by SDRWQCB, 9-12-01

The procedures for dry weather monitoring must address the issues of sampling frequency, field observations at monitoring stations, field screening and laboratory chemical, physical, and bacteriological analyses, criteria and procedures for follow up investigation, and procedures for eliminating detected illicit connections and illegal discharges.

E. Field Screening and Laboratory Analytical Monitoring

1. Field Screening

Field screening consists of a series of qualitative field observations, flow measurement, and field analyses of selected water quality parameters. Information relating to weather conditions, the amount of time since last rainfall/ storm discharge, and type of stormwater conveyance should also be recorded. The specific observations and results of the field water quality analyses are recorded on a standard field data sheet. Figure 1 is an example of a field data sheet that may be used by Copermittees to record field screening information. The data sheet will also serve as a record of the field visit and must be completed for every site visit regardless of whether samples are collected. The data sheet can also be used to record the results of the laboratory analytical monitoring and should be submitted to the SDRWQCB as part of the dry weather monitoring report for the jurisdiction.

a. Qualitative observations

Qualitative field observations must be made during each site visit whether or not ponded or flowing water is observed. These observations are intended to provide a general assessment of the site and include variables like odor, water clarity, the presence of floatables, visible deposits/ stains, and biological status. Evidence of present or past illicit connections and illegal discharges to the MS4 can often be ascertained by careful field observations. Each field screening location should be photographed to provide additional information and documentation of site conditions.

b. Flow measurement

A flow measurement should be made during each dry weather monitoring site visit. Flow measurements can be used to estimate pollutant mass loading, prioritize storm drains for future investigation, or to identify significant changes in discharge that may be indicative of an illegal release upstream. In the absence of a permanent flow measurement installation, several field methods may be employed to measure discharge rate. These methods are outlined in Figure 2.

c. Field water quality analyses

At each site with ponded or flowing water, grab samples should be collected and field analyzed for the following constituents:

- Specific conductance
- Temperature
- pH
- Turbidity
- Nitrate-N

Figure 1

Dry Weather Storm Drain Monitoring Data and Observation Sheet

San Diego Municipal Storm Water Permit 2001-01

Watershed ID_____

Date/Time_____

Monitor's Name_____

Weather Information

Light Conditions Sunny Overcast Partly Cloudy

Last Rain > 72 hours < 72 hours < 3 hours **Precipitation** > 0.1" < 0.1"

Site Description **Location**_____

Earthen Drainage **Concrete Channel** **SD Outfall** **Manhole** **Catchbasin**

Other_____

Flow Estimation **Flow** Yes / No / Ponded **Evidence of overland flow near sampling location?** Yes / No

Area X Velocity (creek / channel)	**Filling a Bottle**	**Area X Velocity (pipe)**
1. Width (cm - ft - in)_____	1. Volume _____ (mL - L - oz)	1. Pipe Diameter _____ (ft/in)
2. Depth (cm - ft - in)_____	2. Time _____ (sec)	2. Depth _____
3. Velocity (cm - ft - in / sec)_____		3. Velocity _____
4. Flow [ ]	***See formula on back	***See formula on back

Visuals	Photo Taken	yes / no	Pic# _____	
Odor	Chemical	Sewage	Rotten Eggs	None/Other_____
Color	Greyish	Greenish	Browish	None/Other_____
Clarity	Clear	Cloudy		Other_____
Floatables	Oily / Rainbow	Trash	Bubbles	None/Other_____
Vegetation	Limited	Extensive		None/Other_____
Biology	Mosquitos	Algae	Snails / Fish	None/Other_____

Draw sample location / Picture

***Field Screening**	Water Temp (°C)_____	NH_3-N_____	NO_3-N_____	React P-P_____
	pH (pH units)_____	TURB_____	EC / TDS_____	DO_____
***Laboratory Analysis**	Cd (diss)_____	Cu (diss)_____	Pb (diss)_____	Zn (diss)_____
	MBAS_____	Hardness_____	O/G_____	Diazinon(µg/L)_____
	T. Coliform_____(MPN)	Fec. Col_____(MPN)	Entero_____(MPN)	Chlorpyrifos(µg/L)_____

Lab Samples taken Yes / No **Bottle ID#'s** _____ _____ _____

Comments _____

Observations _____

_____

_____

_____

Figure 2: Methods of Flow Measurement

Calculating the Area (a) of the Cross Section of a Circular Pipe Flowing Partially Full

D = Depth of water a = area of water in partially filled pipe
d = diameter of the pipe Ta = Tabulated Value Then a = Ta*d2

D/d	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.0000	0.0013	0.0037	0.0069	0.0105	0.0147	0.0192	0.0242	0.0294	0.0350
0.1	0.0409	0.0470	0.0534	0.0600	0.0668	0.0739	0.0817	0.0885	0.0951	0.1039
0.2	0.1118	0.1199	0.1281	0.1365	0.1440	0.1535	0.1623	0.1711	0.1800	0.1890
0.3	0.1982	0.2074	0.2187	0.2280	0.2355	0.2450	0.2540	0.2642	0.2780	0.2836
0.4	0.2934	0.3032	0.3130	0.3220	0.3328	0.3428	0.3527	0.3627	0.3727	0.3827
0.5	0.3980	0.4030	0.4130	0.4230	0.4330	0.4430	0.4520	0.4620	0.4720	0.4820
0.6	0.4920	0.5020	0.5120	0.5210	0.5310	0.5400	0.5500	0.5590	0.5690	0.5780
0.7	0.5870	0.5960	0.6050	0.6140	0.6230	0.6320	0.6400	0.6490	0.6570	0.6660
0.8	0.6740	0.6810	0.6890	0.6970	0.7040	0.7120	0.7190	0.7250	0.7320	0.7360
0.9	0.7450	0.7500	0.7560	0.7610	0.7660	0.7710	0.7750	0.7790	0.7820	0.7840

AREA x VELOCITY

(CREEK/CHANNEL METHOD)

a. Measure the width, depth, and velocity of the water.

b. Convert each value to a common unit (i.e. all measurements converted to cm, ft, or in.).

c. Multiply the width * depth * velocity to determine flow.

d. Multiply the flow by 0.8 for creek measurements –or-- 0.9 for concrete channel measurements to account for channel roughness.

e. The results if measured in

- Ft = Ft^3/sec
- cm = cm^3/sec (mL/sec)
- in = in^3/sec

f. Convert to desired value.

TIME REQUIRED TO FILL A KNOWN VOLUME

(FILL A BOTTLE METHOD)

1. Determine volume/capacity of the sample bottle.
2. Measure time required to fill the bottle.
3. Flow will be determined by initial volume units:
   - mL/s
   - oz/s
4. Convert to desired value.

AREA x VELOCITY

(PARTIALLY FILLED PIPE)

a. All measurement must be converted to a common unit before calculation (ft, in, or cm).

b. Let D = water depth.

c. Let d = *inside* pipe diameter

d. Calculate D/d.

e. Find the tabulated (Ta) value on the partially filled pipe formula chart above using the D/d value. (i.e. if D/d = 0.263 then Ta =.1623).

f. Find the area using the formula $a = Ta*d^2$.

g. Multiply area (a) by the water velocity.

h. Convert to desired value.

SAE / Metric Unit Conversion

0.083 ft
=
1 in
=
2.54 cm

0.1337 ft^3
=
1 gal
=
=
128 oz
3.785 L

0.0078 gal
=
1 oz
=
.0011 ft^3

1000 cm^3
=
1 L
=
1000 mL

- o Ammonia-N
- o Reactive Phosphorus (Ortho-P)

The Copermittees should adequately train field personnel to achieve consistent, accurate results from the observational, flow estimation, and field analytical monitoring components. Field instruments should be calibrated daily and the viability of test kit reagents should be checked regularly. Periodically, each Copermittee may submit sample splits to the laboratory for analysis of the above constituents in order to assess the accuracy of their field testing methods. Duplicate samples may be analyzed in the field to assess precision. Establishing a record keeping system to track specific field activities such as samples collected and submitted, calibration records, and reagent expiration dates will assist the Copermittees in maintaining a high level of quality control.

2. Analytical Monitoring

At a minimum of 25% of the sites where ponded or flowing water is observed, grab samples must be collected and submitted to a California Department of Health Services - certified laboratory for analysis of the following constituents:

- o Total Hardness
- o Surfactants (MBAS)
- o Oil and Grease
- o Diazinon and Chlorpyrifos
- o Dissolved Cadmium, Copper, Lead, and Zinc
- o Enterococcus, Total Coliform, and Fecal Coliform Bacteria

A summary of laboratory sampling and analytical requirements for a range of water quality parameters is provided in Table 1. Field personnel must also follow strict sampling and chain-of-custody protocols when conducting dry weather analytical monitoring. Proper chain-of-custody records provide critical documentation in enforcement cases involving illegal discharges.

3. Source Identification Investigations

The primary objective of the Copermittees' dry weather monitoring programs is to detect and eliminate illicit connections and illegal discharges to the MS4. As required in Section F.5 of the Permit, each Copermittee must establish a procedure by which the field and laboratory results gathered during dry weather monitoring are quickly evaluated and referred for follow up investigation and elimination.

The Stormwater Copermittees' Illicit Discharge Elimination Technical Workgroup has developed guidelines for conducting source identification investigations. Elimination of illicit connections and illegal discharges is a multi-step process that includes identifying source(s), education and/ or enforcement, BMP implementation, and follow up investigations.

Table 1: Summary of Laboratory Sampling and Analysis Requirements

Physical and Inorganic Non-Metals	Analytical Method	Container	Volume (mL)	Preservative (Always @ 4o C)	Holding Time
TDS	SM 2540C	P	100		7 d
TSS	SM 2540D	P	100		7 d
Turbidity	SM 2130A	P	100		48 h
Alkalinity or Hardness	SM 2320B	P	100		14 d
pH	EPA 150.1	P	10		Field
Conductivity	SM2510B	P	20		28 d
Temperature		N/A			Field
Phosphorous, total	SM4500PE	P	100	H_2SO_4	28 d
Phosphorous, dissolved / reactive	SM4500PE	P	100	H_2SO_4	48 h
Nitrate	SM 4500 NO3 E	P	100		48 h
Nitrite	SM 4500 NO2 B	P	100		48 h
TKN	EPA 351.1	P	200		28 d
Ammonia	SM4500 NH3 D	P	500	H_2SO_4	28 d
BOD	EPA 405.1	P	1000		48 h
COD	EPA 410.4	P	10	H_2SO_4	28 d
Chlorine, Residual	SM4500 Cl G	N/A			Field
Organics					
*Petroleum Hydrocarbons, total (d + g)	EPA 8015	G + 2V	250 + 40 (2)	HCl	14 d
Oil and Grease	EPA 413.1	G	500	HCl	14 d
Diazinon	EPA 8140	G	1000		7 d
Chlorpyrifos	EPA 8140				
Methylene Blue Substances (MBAS)	SM 5540 C	P	250		48 h
Organochlorine Pesticides and PCBs	EPA 8081, 8082	G	1000		7 d
*Volatile Organic Compounds	EPA 8260	2V	40 (2)	HCl	14 d
Semivolatile Organic Compounds	EPA 8270	G	1000		7 d
Metals / Toxics					
Antimony	EPA 6010	P	500	HNO_3	6 m
Arsenic	EPA 6020	P			
Cadmium	EPA 6010	P			
Chromium	EPA 6010	P			
Copper	EPA 6010	P			
Lead	EPA 6010	P			
Nickel	EPA 6010	P			
Zinc	EPA 6010	P			
Thallium	EPA 7470	P			
Silver	EPA 6020	P			
Mercury	EPA 6010	P			28 d
Cyanide	SM 4500 CN C	P	500	NaOH	14 d
Phenols (from SVOC's)	EPA 8270	G	1000		7 d
Bacteriological (including dilutions)					
Coliform, total	SM 9221	P (sterile)	125	$Na_2S_2O_3$	6 h
Coliform, fecal	SM 9221	P (sterile)			
Coliform, *E Coli*		P (sterile)	125		
Enterococcus	SM 9230	P (sterile)	125		
Streptococcus	SM 9230	P (sterile)			

*ZHS (Zero Head Space Required) V=VOA / G=Amber Glass / P=Plastic

Recommended Action Levels and Data Interpretation

An action level is a specific pollutant concentration that will trigger a source identification study when it is exceeded during dry weather monitoring. The development of effective action levels requires knowledge of background pollutant levels and relevant water quality criteria. Unfortunately, background levels for many of the field screening and laboratory parameters in San Diego County are not known at the present time. For this reason, the Copermittee Monitoring Workgroup has developed two primary approaches and one secondary approach to assist the Copermittees in interpreting their dry weather field screening and analytical monitoring data. The primary approaches are (1) the use of numeric action levels, and (2) the identification of highly elevated analyte concentrations using a simple statistical method to calculate confidence intervals. The secondary approach involves the use of best professional judgment when interpreting all dry weather water quality data and/or field observations. The secondary approach should always be used in conjunction with the two primary approaches listed above and is the primary approach for interpreting turbidity and temperature data. All three approaches are described in detail below.

a. Numeric action levels

The use of numeric action levels is the primary approach for interpreting pH, orthophosphate, nitrate, ammonia, conductivity, MBAS, and oil and grease data results (Table 2). If these action levels are exceeded, then a source identification investigation to determine the cause of the elevated levels is necessary unless best professional judgment indicates otherwise.

b. Statistical confidence interval

The identification of highly elevated concentrations using confidence intervals is the primary approach for interpreting diazinon, chlorpyrifos, dissolved trace metals (Cd, Cu, Pb, and Zn), total and fecal coliform bacteria, and enterococcus data. The individual Copermittees should calculate a running confidence interval (90% or 95%) as dry weather results are collected. If a reading exceeds the calculated confidence interval and a pre-established water quality criterion (see Table 2) then that result is considered a statistical outlier. The sampling site is then a candidate for source identification unless best professional judgment indicates otherwise.

As the Copermittees conduct their 2002 dry weather programs they will collect a substantial amount of water quality data for the above-listed parameters. This data should allow the determination of regional, jurisdictional-specific, or conveyance-specific background levels for the 2003 dry weather season for many or all of the parameters. The various action levels and the usefulness of identifying outlier values with confidence intervals will be re-evaluated after the 2002 dry weather season.

c. Best professional judgment

The use of best professional judgment is the primary approach for interpreting turbidity and water temperature data, and the secondary approach for interpreting the results of all other field and laboratory analyses. The use of best professional judgment may indicate that results, which either exceed certain action levels or are statistical outliers, may be the result of natural or background factors. For example, conditions like highly elevated

Table 2: Action Levels for Field Screening and Laboratory Parameters

Field Screening Analytes	Action Levels[1]	Source/ Notes
pH	<6.5 or >9.0	Basin Plan, w/ allowance for elevated pH due to excessive photosynthesis
orthophosphate-P (mg/L)	2.0	USEPA Multi-sector General Permit
nitrate-N (mg/L)	10.0	Basin Plan, and drinking water standards
Ammonia-N (mg/L)	1.0	Workgroup experience, may also consider unionized ammonia fraction
Turbidity (NTU)[2]	Best Professional Judgment	USEPA Multi-sector General Permit level - 5 NTU. Typical levels are substantially higher. Base judgment on channel type and bottom, season, time since last rain, background, etc.
Temperature (^{o}F or C)	Best Professional Judgment	Base judgment on season, air temperature, channel type, shade, etc.
Conductivity (umhos/cm) or TDS (mg/L)	5000 umhos/ cm conductivity or ~3500 mg/L TDS	General guideline - should consider sample variability, groundwater infiltration, influence of mineral dissolution and local background. The conversion factor for conductivity to TDS is approximately 0.7.

Laboratory Analytes	Action Levels	Source/ Notes
MBAS (mg/L)	1.0	Basin Plan, w/ allowance based on Workgroup field experience and possible field reagent interferences
Oil and Grease (mg/L)	15	USEPA Multi-sector General Permit. If a petroleum sheen is observed, the sample should be collected from the water surface
Diazinon (ug/L)	*Confidence Interval Test*[3]	Acute LC_{50} for aquatic invertebrates range from 0.2 mg/L for *Gammarus fasciatus* to 4.0 mg/L for *Hyallela azteca*
Chlorpyrifos (ug/L)	*Confidence Interval Test*	Acute LC_{50} is 9 ug/L Rainbow Trout, higher for other fish, decreased survival and growth for fathead minnow at 30-day chronic exposure of 2 ug/L
Dissolved Cadmium (ug/L)	*Confidence Interval Test*	California Toxics Rule: 1-hr = 4.3 ppb
Dissolved Copper (ug/L)	*Confidence Interval Test*	California Toxics Rule: 1-hr = 13 ppb
Dissolved Lead (ug/L)	*Confidence Interval Test*	California Toxics Rule: 1-hr = 65 ppb
Dissolved Zinc (ug/L)	*Confidence Interval Test*	California Toxics Rule: 1-hr = 120 ppb
Total Coliform (MPN/ 100 mls)	*Confidence Interval Test*	Bacteria levels in many stormdrains are likely to exceed public health guidance criteria. Use confidence interval test and best professional judgment to identify conveyances for source ID.
Fecal Coliform (MPN/ 100 mls)		
Enterococcus (MPN/ 100 mls)		

[1]The referenced action levels should not be the sole criteria for initiating a source identification investigation. Dry weather monitoring data should be interpreted using a variety of available information. Factors that should be considered include within-site and between-site sample variability.

[2]Turbidity data will be re-evaluated after the 2002 dry weather season to determine whether action levels can be established for 2003.

[3] The statistical outlier test uses the mean and standard deviation of a dry weather data set to determine whether a sample concentration exceeds a given confidence interval (usually 90 or 95%). Those readings that are above the confidence interval **and** exceed the referenced guidelines are identified as outliers and are appropriate for source identification.

summertime water temperatures in exposed concrete conveyances, high ambient pH (>9.0) levels due to photosynthesis and CO_2 depletion, or elevated NO_3 or electrical conductivity readings in channels with high groundwater input are unrelated to illicit connections and illegal discharges.

Other relevant factors that should be considered include the type of MS4 conveyance (i.e. storm drain, open concrete channel, natural channel, receiving water, etc.), the status of downstream receiving waters, and weather conditions when the samples/measurements were collected. Conversely, qualitative observations (dead animals, strong odors, the presence of an oily sheen on the water surface, excessive floatables or trash, etc.) may indicate that serious water quality problems are present at a location when field and analytical sampling results are either within action or confidence limits or not immediately available. The Copermittees should maintain enough flexibility in their dry weather programs to enable staff to respond decisively to water quality problems as indicated by all of the available qualitative and quantitative information.

When the results of field screening or laboratory analytical sampling exceed the action levels or guidelines presented in Table 2, Copermittees should initially confirm the results by resampling. In the case of a field analytical result, usually the resample should be collected between 4 and 24 hours after the initial sample. If the follow up results confirm the presence of elevated pollutant levels then field personnel should either initiate source identification or immediately refer the condition for investigation. If visual and/ or analytical evidence of gross contamination is present at a site (e.g. substantial petroleum sheen, extremely high ammonia concentration, evidence of a sewage release) then an immediate source identification investigation is warranted.

When a laboratory sample exceeds the action level guidelines in Table 2, the Copermittee may initiate a source identification investigation as soon as possible after receiving the initial result. Another sample should be collected at the onset of the source identification investigation to confirm the initial laboratory results. In order to expedite the progress of source identification studies, field test kits may be used even if a laboratory analyzed the initial sample (e.g. copper, MBAS).

F. Reporting

Beginning May 1, 2002 each Copermittee will begin conducting dry weather analytical and field screening monitoring in accordance with the procedures outlined in its individual Jurisdictional URMP. Each Copermittee will report the results of the May 1 – September 30, 2002 dry weather monitoring in the unified Jurisdictional URMP Annual Report, which will be submitted by the Principal Copermittee to the SDRWQCB by February 21, 2003. All reports submitted by the individual Copermittees to the Principal Copermittee for subsequent inclusion in the unified Jurisdictional URMP Annual Report should comply with the standard reporting requirements outlined in Attachments B and C of the Permit.

Dry weather field screening and analytical monitoring results should be presented in suitable tabular and graphical formats. The results should be accompanied by a discussion of the overall dry weather program, an MS4 map with sampling locations, a short summary of the field methods used, and a description of follow up and elimination activities for potential illicit connections and illegal discharges. Copies of dry weather monitoring field sheets (Figure 1) should also be included.

G. Analytical Methods

Dry weather field screening samples can be measured with a suitable combination of field meters, test strips, colorimetric, and spectrophotometric test methods. The sensitivity, accuracy, and precision of most pH, temperature, and specific conductivity meters are high when they are properly maintained and calibrated. Colorimetric and spectrophotometric methods (e.g. ampules, single-method colorimeters, and multi-method spectrophotometers) are typically less sensitive, accurate, and precise than laboratory analytical methods, however they are excellent screening tools in the field. Test strips are an effective screening tool for source identification studies; however they are usually less sensitive and have lower resolution than meters or higher quality field methods and should not be used as a substitute for these methods during normal field screening operations.

The Copermittees must submit all dry weather analytical monitoring samples to laboratories certified by the Environmental Laboratory Accreditation Program (ELAP) Division of the California Department of Health Services. Only EPA-approved methods may be used to analyze the samples. The Colilert 18 method for the analysis of total coliform bacteria is not recommended because studies comparing this method with other EPA-approved methods have indicated that the results are poorly correlated. If the Colilert 18 method is used then decisions relating to source identification efforts should be based on the fecal coliform and enterococcus indicators. In order to maintain consistency with other Copermittee monitoring programs and to facilitate data analysis efforts, it is also recommended that all bacteriological samples be prepared by the analytical laboratory to allow the enumeration of bacterial densities from 20 – 160,000 MPN/ 100 mls.

H. Program Assessment

Each Copermittee must evaluate the effectiveness of its Dry Weather Analytical and Field Screening Monitoring Program annually and summarize this evaluation in its individual Jurisdictional URMP Annual Report. Criteria for evaluating the effectiveness of dry weather monitoring programs include the number of sites monitored, the frequency of monitoring, the number of field screening and laboratory samples collected, the number of source identification investigations conducted, and the number of water pollution sources identified and eliminated. The Copermittees should also attempt to carefully track their education and enforcement efforts during the detection and elimination phases of their dry weather programs.

Each Copermittee should use the annual dry weather program assessment to refine and focus its approach for the following dry season. For example, sampling locations that indicate the presence of pollutants should continue to be monitored, possibly at a higher frequency during the next dry season. Locations that do not appear to have water quality problems may be monitored less frequently. Each Copermittee should also review ongoing changes in land usage within their jurisdictions (e.g. new development) and adjust their dry weather programs accordingly.

Appendix E Dry Weather Monitoring Sampling Manual

DRY WEATHER MONITORING SAMPLING MANUAL

1. Dry Weather Monitoring Field Equipment Checklist

The field equipment listed below is used to conduct dry weather monitoring.

- Clipboard, pens, pencils, Sharpie or other waterproof pens
- MS4 maps, Thomas Guide
- Digital camera
- Field notebook
- Latex gloves
- Protective eyeglasses or goggles
- Rubber boots
- Cooler and ice
- Paper towels
- Tape for securing cooler
- Sample bottles with preservatives
- Polypropylene bucket with rope, or sampling rod to collect samples from larger bodies of water
- Portable field test kits, colorimeters, or spectrophotometer and all reagents for these meters.
- Multi-parameter or individual probes to measure temperature, electrical conductivity, and pH
- Extra batteries for all meters
- Flow measurement equipment (required equipment will depend on method used)
    - Measuring tape for measuring stream width
    - Folding scale for measuring stream depth
    - Current meter or wristwatch
- De-ionized or ultra pure water in squeeze bottles for rinsing, dilutions, etc. (depending on methods used)
- Thermometer for measuring air temperature (optional)
- Waste disposal bottles
- Boat (for sampling lagoon sites)

2. Sampling Procedures and Submission

Dry weather monitoring typically involves the collection of *grab* samples only. The following procedures apply:

1. Use appropriate containers. See 40 CFR Part 136 for container types. Laboratories routinely provide pre-cleaned sample bottles with preservatives already added.

    a. Rinse the container with the sample at least twice. Do not rinse pre-cleaned, preserved containers, as the preservative will be lost.

    b. Use the proper preservatives. Use only analytical or higher grade reagents for preserving samples. Store samples in an ice chest at 4^{o} C until custody is transferred to the analytical laboratory directly or via contracted courier.

c. Avoid contaminating the sample. Wear latex gloves.

2. If practical, collect the sample at about 60% of the stream depth (from the surface) in an area of maximum turbulence (except when sampling for volatile organics). Avoid stagnant pools near the edge of flowing streams unless sampling stagnant pools. Enter the channel downstream of the sampling location and move upstream, disturbing as little of the bottom material as possible.

3. Record all qualitative observations and field testing results on the field data sheet. Estimate the flow rate as described on the back of the field data sheet. Also note any changes to standard procedures (for whatever reason), and describe any unusual or noteworthy conditions or results in detail on the bottom of the sheet.

4. Dispose of all spent reagents, reacted samples, and rinse solutions in the appropriate waste containers. Upon returning to the office or laboratory, decant these wastes into the sewer system of the office or laboratory unless otherwise instructed by the sewering agency. Be sure to clean all equipment (recheck calibration if any results were questionable), and restock reagents (if necessary).

5. If filtering samples in the field for dissolved trace metals analysis, do not preserve with HNO_3 until after the sample is filtered. If field personnel are submitting unfiltered samples for dissolved trace metals analysis those samples should not be preserved with HNO_3.

6. Samples collected for laboratory analysis should be submitted to the laboratory as soon as possible after collection. Complete the following tasks:

    1. Fill out the chain-of custody form making sure that all sample bottles are correctly labeled
    2. Carefully pack the sample bottles in the cooler
    3. Transport the samples to the laboratory
    4. Complete the chain-of-custody form

Automatic sampling methods may be useful during some source identification or enforcement investigations. Investigators should refer to the manufacturer's instructions for operating automatic sampling equipment.

3. Equipment Maintenance

In order to ensure the quality of field results, maintenance of equipment must be given a high priority. All equipment must be cleaned and serviced at the end of a field shift.

1. All water quality meters must be calibrated in the laboratory or office before field use. Calibration solutions should remain uncontaminated and not be used after their expiration dates.

2. Field meters and cameras must be in proper working order. Make sure that batteries have sufficient voltage to power the equipment for the entire field trip. Recharge or

replace them as necessary. Keep extra batteries in the instrument case. Probes should be inspected, cleaned and reconditioned regularly.

3. Clean and rinse all other sampling equipment after returning from the field. Store clean equipment in clear polyethylene bags or storage cases.

4. Glassware used in the field (e.g. graduated cylinders for sample dilutions, test kit flasks and/ or beakers) should be cleaned immediately after usage. Use laboratory detergent, a brush, and hot tap water or 10% Analytical Grade HCl. Rinse three to four times with deionized water and wipe the outside of the glassware dry with a white paper towel. Dry in an inverted position. Store the dry glassware in the cabinets with stoppers intact (volumetric flasks) or in an inverted position (beakers).

4. Quality Control/ Quality Assurance

QA samples can be in the form of replicates, spikes, field blanks, method blanks, or synthetic samples. Dry weather monitoring programs can use these various types of QA/ QC samples to assess the accuracy and precision of the field and laboratory analyses performed for their dry weather monitoring programs.

1. Replicate samples can be collected periodically and submitted to the analytical laboratory to assess the accuracy of the field analyses for nitrate, ammonia, phosphate, electrical conductivity, pH, and turbidity.

2. Replicate samples are used to assess laboratory or field precision. They should be collected in the field in one container and split into two samples for analysis.

3. Spiked samples can be prepared in the field or the Copermittee's laboratory/ office. A field sample is spiked with known amounts of analytes and the total volume of this fraction is adjusted to a specific volume (usually 1 liter) using a portion of the original sample as makeup water. *Make sure that the volume of the added spike is small compared to the volume of the sample to which it is added.*

4. Blank samples must be prepared with deionized or ultrapure water (resistivity greater than 17 mega ohms). A trip blank is prepared by filling a sample container in the laboratory/ office and transporting it on a routine monitoring assignment, preserving it in the field (noting the station location), and submitting it with a normal batch of samples.

   Method or equipment blanks are prepared using the same methods used to collect, process, or contain samples before submittal to the laboratory. An example of an equipment blank would be pouring deionized water into a sample container to test the cleanliness of the container.

5. Synthetic samples can be prepared using aliquots of commercially prepared standards or from EPA quality assurance ampules. Deionized water should be used as makeup water and analytical grade NaCl should be used to adjust the electrical conductivity of the QA sample into the range of the environmental samples.

5. Health and Safety

Dry weather water sampling may occur when the sampling environment and discharges create hazardous conditions. Use safety precautions at all times when conducting dry weather monitoring.

Safety Guidelines

- Keep a first aid kit with field equipment.
- Watch out for traffic along the access road when sampling or making observations.
- Do NOT remain in open areas or stand under trees if lightning is occurring in the vicinity.
- Watch your step; the ground may be wet and slippery, steep, or unstable. Do not attempt to climb down unsafe slopes.
- Always wear clean latex rubber gloves when sampling.
- Protect eyes and skin against contact with acids and other preservatives.
- Use common sense when deciding whether to sample during adverse weather conditions. *This program is intended to assess dry weather conditions.* Do not sample during dangerous conditions such as high winds, lightning storms, or flooding conditions that might be unsafe.
- Do not enter channels during periods of high flow. The general rule of thumb is: If the product of the water depth in feet and the velocity in feet per second is greater than 10, or the level is above your waist, don't go in.
- Do not enter confined spaces
- Follow all analytical procedures as prescribed in the equipment manuals. Heed all warnings and precautionary statements.
- Be familiar with Material Safety Data Sheets for all chemicals used in the field and when calibrating instruments. Know the health hazards and emergency medical treatments, and follow proper disposal instructions.

Safety Equipment

The following safety equipment is recommended for use during dry weather sampling:

- First aid kit
- Safety glasses
- Latex gloves
- Rubber boots
- Safety rope

Appendix F Abbreviations, Acronyms and Definition of Terms

Abbreviations and Acronyms

BMP	Best Management Practices
CWA	Clean Water Act
EPA	United States Environmental Protection Agency
IC/ID	Illicit Connection/Illegal Discharge
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
RWQCB	California Regional Water Quality Control Board
SWRCB	California State Water Resources Control Board
TMDL	Total Maximum Daily Load
URMP	Urban Runoff Management Plan
WDR	Waste Discharge Requirements

Definition of Terms

Beneficial Uses: The uses of water necessary for the survival or well being of man, plants, and wildlife. These uses of water serve to promote the tangible and intangible economic, social, and environmental goals "Beneficial Uses" of the waters of the State that may be protected against 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 uses that were attained in the surface or ground water on or after November 28, 1975; and potential beneficial uses are uses 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)].

Best Management Practices: Best Management Practices (BMPs) are 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 United States. 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 municipal storm water permits, BMPs are typically used in place of numeric effluent limits.

Biochemical Oxygen Demand: A measure of the amount of oxygen required to neutralize organic wastes.

Contamination: As defined in the Porter-Cologne Water Quality Control Act, contamination is "an impairment of the quality of waters of the state by waste to a degree which creates a hazard to the public health through poisoning or through the spread of disease. 'Contamination' includes any equivalent effect resulting from the disposal of waste whether or not waters of the state are affected."

Copermittee (or Co-permittee): A permittee to an NPDES permit that is only responsible for permit conditions relating to the discharges from its area of jurisdiction.

Discharge: The volume of water that passes a given point within a given period of time. It is an all-inclusive outflow term, describing a variety of flows such as from a pipe to a stream, or from a stream to a lake or ocean.

Dry Weather Season: May 1 through September 30 of each year

Dry Sweeping Techniques: Cleaning techniques which include use of a broom and dustpan, a vacuum, or dry absorbant to clean up spills or debris, rather than washing down with water.

Ephemeral: Water bodies, or segments thereof, that contain water for only a short period following precipitation

Erosion: When land is diminished or warn away due to wind, water, or glacial ice. Often the eroded debris (silt or sediment) becomes a pollutant via storm water runoff. Erosion occurs naturally but can be intensified by land clearing activities such as farming, development, road building, and timber harvesting.

Evaluation: Refers to the analysis and interpretation of information obtained through monitoring.

Geographic Information System (GIS): Is a computer system capable of assembling, storing, manipulating, and displaying geographically referenced information, i.e. data identified according to their locations.

Hazardous Waste: Hazardous waste is defined as "any waste which, under Section 600 of Title 22 of this code, is required to be managed according to Chapter 30 of Division 4.5 of Title 22 of this code." [CCR Title 22, Division 4.5, Chapter 11, Article 1]

Herbicides: Chemical compounds that are used to control weeds.

Hydrocarbons: Any of a vast family of compounds originating in materials containing carbon and hydrogen in various combinations. Some may be carcinogenic; others are active participants in photochemical processes in combination with oxides of nitrogen.

Hydrologic Unit: A subunit of a basin as defined by a RWQCB.

Illicit (Illegal) Connection: Any discharge to a municipal separate storm sewer that is not composed entirely of stormwater and is not authorized by an NPDES permit, with some exceptions (e.g., discharges due to fire-fighting activities).

Illicit (Illegal) Discharge: Any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges form the municipal separate storm sewer) and discharges resulting from fire fighting activities.

Impairment: A condition whereby a water body that does not meet one or more of its beneficial uses as defined in the water Quality Control Plan for the San Diego Basin (Basin Plan).

Insecticide: Chemical compounds that are used to kill insects.

Irrigated: Artificially supplied with water.

Load Allocations: The maximum amount of a pollutant that can be discharged from a particular point or non-point source in a Total Maximum Daily Load (TMDL) program.

Maximum Extent Practicable (MEP): MEP is the technology-based standard established by Congress in CWA section 402(p)(3)(B)(iii) that municipal dischargers of storm water (MS4s) must meet. Technology-based standards establish the level of pollutant reductions that dischargers must achieve, typically by treatment or by a combination of treatment and best management practices (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 Plan. Their total collective and individual activities conducted pursuant to the Urban Runoff Management Plan 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 municipal separate storm sewer system maintenance). In the absence of a proposal acceptable to the SDRWQCB, the SDRWQCB defines MEP.

Monitoring: Refers to a variety of activities and processes through which Copermittees may obtain information relevant to implementation of their stormwater quality management programs so that the need for and/or opportunities for revision or refinement can be identified.

Municipal Separate Storm Sewer System (MS4): MS4 is an acronym for Municipal Separate Storm Sewer System. A Municipal Separate Storm Sewer System is 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 United States; (ii) Designated or used for collecting of conveying storm water; (iii) Which is not a combined sewer; (iv) Which is not part of the Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

Historic and current development make use of natural drainage patterns and features as conveyances for urban runoff. Urban streams used in this manner are part of the municipalities MS4 regardless of whether they are natural, man-made, or partially modified features. In these cases, the urban stream is both an MS4 and a receiving water.

National Pollution Discharge Elimination System (NPDES): These permits pertain to the discharge of waste to surface waters only. All State and Federal NPDES permits are also WDRs.

Non Point Source (NPS): 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 areas, 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. NPS 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 ground water.

Non-Storm Water Discharge: Any discharge to a storm drain system or receiving water that is not composed entirely of storm water.

Non-Structural Control: A type of best management practice (BMP) that employs institutional, educational or pollution prevention practices to limit the generation of, or reduce the amounts of pollutants contained in stormwater runoff.

Nutrients: Any substance assimilated by living things that promotes growth. The term is generally applied to nitrogen and phosphorus in wastewater, but is also applied to other essential and trace elements.

Outfall: The point source where a municipal storm sewer discharges to waters of the United States.

Particulates: Liquid or solid particles such as dust, smoke, mist, or smog found in air emissions.

Permit: Refers to the NPDES Municipal Storm Water Permit (Order No. 2001-01) adopted by the RWQCB on February 21, 2001.

Pesticide: Any material used to control pests. Includes insecticides, herbicides and rodenticides.

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.

Pollutant: A pollutant is broadly defined as any agent that may cause or contribute to the degradation of water quality such that a condition of pollution or contamination is created or aggravated.

Pollutant Loading: The quantity of a pollutant found in runoff expressed in mass per unit of time. Pollutant loadings are commonly expressed in units of tons/year or pound/year.

Pollution Prevention: Pollution prevention is defined as practices and processes that reduce or eliminate the generation of pollutants, in contrast to source control, treatment, or disposal.

Preventative Maintenance: Involves the regular inspection, testing, and replacement or repair of equipment and operational systems.

Wet Weather Season: The October 1 through April 30.

Receiving waters: All surface water bodies within the permit area into which wastewater or treated effluent is discharged. (See also (1) Waters of the State (2) Waters of the United States)

Regional Water Quality Control Board (RWQCB): "Regional Board" means any California regional water quality control board for a region as specified in Section 13200 of the California Water Code.

Residence: A building designed to be occupied by human(s). The place in which one lives; a dwelling.

Sediment: Organic or inorganic material that is carried by or is suspended in water and that settles out to form deposits in the storm drain system or receiving waters.

Spill: An accidental dumping or spilling of a potential pollutant onto the ground or into a waterway.

State Water Resources Control Board (SWRCB): As delegated by EPA, California agency that implements and enforces CWA Section 401(p) NPDES permit requirements, and is issuer and administrator of the Permit. Works with the nine RWQCBs.

Storm Water (or Stormwater): "Storm water" is as defined urban runoff and snowmelt runoff consisting only of those discharges which originate from precipitation events. Storm water is that portion of precipitation that flows across a surface to the storm drain system or receiving waters. Examples of this phenomenon include: the water that flows off a building's roof when it rains (runoff from an impervious surface); the water that flows into streams when snow on the ground begins to melt (runoff from a semi-pervious surface); and the water that flows from a vegetated surface when rainfall is in excess of the rate at which it can infiltrate into the underlying soil (runoff from a pervious surface). When all factors are equal, runoff increases as the perviousness of a surface decreases. During precipitation events in urban areas, rain water picks up and transports pollutants through storm water conveyance systems, and ultimately to waters of the United States.

Storm Water Conveyance System: Streets, gutters, inlets, conduits, natural or artificial drains, channels and watercourses, or other facilities that are owned, operated, maintained and used for the purpose of collecting, storing, transporting or disposing of storm water.

Structural Control: A type of best management practice (BMP) that employs engineered and constructed systems to improve the quality and/or quantity of runoff (e.g. detention ponds and constructed wetlands).

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.

Toxicity: Adverse responses of organisms to chemicals or physical agents ranging from mortality to physiological responses such as impaired reproduction or growth anomalies). The water quality objectives for toxicity provided in the Water Quality Control Plan, San Diego Basin, Region 9, (Basin Plan), state in part…*"All waters shall be free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life.…The survival of aquatic life in surface waters subjected to a waste discharge or other controllable water quality factors, shall not be less than that for the same water body in areas unaffected by the waste discharge"….* Urban runoff discharges from MS4s

are considered toxic when (1) the toxic effect observed in an acute toxicity test exceeds zero Toxic Units Acute (Tua=0); or (2) the toxic effect observed in a chronic toxicity test exceeds one Toxic Unit Chronic (Tuc=1). Urban runoff discharges from MS4s often contain pollutants that cause toxicity.

Urban Runoff: Urban runoff is defined as all flows in a storm water conveyance system and consists of the following components: (1) storm water (wet weather flows) and (2) non-storm water illicit discharges (dry weather flows).

Waste Discharge Requirements: Permits issued in California for the discharge of wastes to waterways or to land pursuant to the Water Code section 13260. WDRs for discharges to federal waters ("waters of the U.S.") are concurrently NPDES permits.

Watershed: That geographical area which drains to a specified point on a watercourse, usually a confluence of streams or rivers (also known as drainage area, catchment, or river basin).

Waters of the State: Any water, surface or underground, including saline waters within the boundaries of the State [California Water Code Section 13050 (e)]. The definition of the Waters of the State is broader than that for the Waters of the United States in that all water in the State is considered to be a Waters of the State regardless of circumstances or condition. Under this definition, a Municipal Separate Storm Sewer System (MS4) is always considered to be a Waters of the State.

Waters of the United States: Waters of the United States can be broadly defined as navigable surface waters and all tributary surface waters to navigable surface waters. Groundwater is not considered to be a Waters of the United States. Under this definition (see below), a Municipal Separate Storm Sewer System (MS4) is always considered a Waters of the United States.

As defined in the 40 CFR 122.2, the Waters of the U.S. are defined as: "(a) All waters, which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; (b) All interstate waters, including interstate "wetlands;" (c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands," sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation or destruction of which would affect or could affect interstate or foreign commerce including any such waters: (1) Which are or could be used by interstate or foreign travelers for recreational or other purposes; (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or (3) Which are used or could be used for industrial purposes by industries in interstate commerce; (d) All impoundments of waters otherwise defined as waters of the United States under this definition: (e) Tributaries of waters identified in paragraphs (a) through (d) of this definition; (f) The territorial seas; and (g) "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with the EPA.", or river basin).

Water Quality Standards: Are defined as the beneficial uses (e.g., swimming, fishing, municipal drinking water supply, etc.,) of water and the water quality objectives necessary to protect those uses.

Wetland: Those areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support vegetation typically adapted for life in saturated soil conditions. Generally includes playa lakes, swamps, marshes, bogs, mudflats, natural ponds and similar areas.