

City of Los Angeles
Sewer System Management Plan (SSMP)

Attachment F1

Response and Reporting Procedures for Sewer Overflows

SANITARY SEWER OVERFLOW RESPONSE AND REPORTING PROCEDURES



WASTEWATER COLLECTION SYSTEMS DIVISION

June 26, 2017

“FOR A CLEANER AND HEALTHIER ENVIRONMENT”

RESPONSE AND REPORTING PROCEDURES FOR SANITARY SEWER OVERFLOWS
AND SEWER OR STORMWATER CONTAMINATION
Revised June 26, 2017

SANITARY SEWER OVERFLOW RESPONSE AND REPORTING PROCEDURES

Table of Contents

	<u>Page</u>
1. Purpose	2
2. Goals	2
3. Definitions	2
4. References	3
5. SSO Response Procedures	4
6. Reporting and Notifications Procedures	6
6.1. Category I SSOs	6
6.2. Category II SSOs	8
6.3. Category III Events	10
6.4. Other Spill Events	11
7. Quality Assurance – SSO Review Committee	12
8. Attachments	
Appendix A - Sanitary Sewer Monitoring and Reporting Plan	
Appendix B - Sanitary Sewer Overflow Estimation Guidelines	
Appendix C - Sanitary Sewer Overflow Notification and Contact List	
Appendix D - Sample of Sanitary Sewer Overflow Report	
Appendix E - Sewage Sanitary Sewer Overflow Response and Notification Flowcharts	
Appendix F - Sample of Sani-Gram	
Appendix G- Sample report to RWQCB	
Appendix H- Claim for Damages Form	
Appendix I - Statewide General Waste Discharge Requirements for Sanitary Sewer Systems	
Appendix J- SSO Technical Report Outline	

RESPONSE AND REPORTING PROCEDURES FOR SANITARY SEWER OVERFLOWS
AND SEWER OR STORMWATER CONTAMINATION
Revised June 26, 2017

In an effort to protect the public health and the environment, the following procedures were developed to respond and report all sanitary sewer overflows and other sewer or stormwater contamination events. All division staff is required to follow the procedures outlined in this policy and ensure the expeditious and timely implementation of these procedures. Staff is expected to be courteous, cooperative and responsive in all communications with the public, the regulatory agencies, and the other City offices and staff.

1. **PURPOSE**

- 1.1. Comply with the regulatory requirements (the law).
- 1.2. Document and clearly define the procedures related to SSO response and notification.
- 1.3. Provide uniformity in response and reporting.

2. **GOALS**

- 2.1. Protect the public health and the environment.
- 2.2. Achieve timely response to SSOs.
- 2.3. Minimize, if not prevent, any adverse impacts on the public and the environment.
- 2.4. Mitigate any adverse impacts.

3. **DEFINITIONS**

- 3.1. **Sanitary Sewer Overflow:** Any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from a sanitary sewer system.
- 3.2. **Category I SSOs:** All Sanitary Sewer Overflows of any volume that;
 - Reach surface water and/or reach a drainage channel tributary to a surface water;
 - Reach a Separate Storm Sewer System and are not fully captured and returned to the sanitary sewer system.
- 3.3. **Category II SSOs:** All Sanitary Sewer Overflows of **1,000 gallons or greater** that;
 - Do not reach surface water, a drainage channel, or a Separate Storm Sewer System, or
 - Reach a Separate Storm Sewer System or a drainage channel and are fully captured and returned to the sanitary sewer system.
- 3.4. **Category III SSOs:** All Sanitary Sewer Overflows **less than 1,000 gallons** that;
 - Do not reach surface water, a drainage channel, or a Separate Storm Sewer System, or
 - Reach a Separate Storm Sewer System or a drainage channel and are fully captured and returned to the sanitary sewer system.
- 3.5. **Other spill events:** Other spill events may include Sanitary Sewer Overflows originating in another agency's jurisdiction outside the City's service area which results in beach closures or other circumstances that may concern City residents. Other events may also include the discharge of hazardous waste into the storm drain or the sewer system.
- 3.6. **CIWQS:** The California Integrated Water Quality System (Electronic Reporting Database)
- 3.7. **DWP:** The Department of Water and Power.

RESPONSE AND REPORTING PROCEDURES FOR SANITARY SEWER OVERFLOWS
AND SEWER OR STORMWATER CONTAMINATION
Revised June 26, 2017

- 3.8. **EMD:** The Bureau of Sanitation's Environmental Monitoring Division.
- 3.9. **ISCD:** The Bureau of Sanitation's Industrial Safety and Compliance Division.
- 3.10. **RWQCB:** The Regional Water Quality Control Board – Los Angeles Basin.
- 3.11. **SANIGRAM:** A fax notification of an incident to the Mayor's Office, the City Council, the Board of Public Works, and all impacted environmental groups.
- 3.12. **SWRCB:** The State Water Resources Control Board
- 3.13. **WPD:** The Bureau of Sanitation's Watershed Protection Division.
- 3.14. **WCSD:** The Bureau of Sanitation's Wastewater Collection Systems Division.

4. REFERENCES

- 4.1. California Code of Regulations, Title 23, Section 2250.
- 4.2. California Fish and Game Code, Chapter 2, Article 1, Section 5650.
- 4.3. California Health and Safety Code, Division 5, Chapter 6, Article 2, Sections 5410-5415, 5460-5462.
- 4.4. California Water Code (Porter Cologne Act) Section 13271.
- 4.5. NPDES permit for the Hyperion Treatment Plant – Permit No. CA0109991, Order No. R4-2017-0045, Compliance File No. CI 1492
- 4.6. NPDES permit for the Terminal Island Treatment Plant – Permit No. CA0053856, Order No. R4-2010-0071
- 4.7. NPDES permit for the Donald C. Tillman Water Reclamation Plant – Permit No. CA0056227, Order No. R4-2017-0062, Compliance File No. CI 5542
- 4.8. NPDES permit for the Los Angeles-Glendale Water Reclamation Plant – Permit No. CA0053953, Order No. R4-2017-0063, Compliance File No. CI 5675
- 4.9. Statewide General Waste Discharge Requirements for Sanitary Sewer Systems – SWRCB Order No. 2006-0003
- 4.10. Collection System Settlement Agreement and Final Order
- 4.11. State Water Resources Control Board Order No. WQ 2013-0058-EXEC Amending Monitoring and Reporting Program for Statewide General Waste Discharge Requirements for Sanitary Sewer Systems.

RESPONSE AND REPORTING PROCEDURES FOR SANITARY SEWER OVERFLOWS
AND SEWER OR STORMWATER CONTAMINATION
Revised June 26, 2017

5. SSO RESPONSE PROCEDURES

The crew leader in response to sanitary sewer overflows affecting public and private properties shall follow the following procedure and actions. These actions may have to occur simultaneously. The highest priority is to contain the SSO and minimize, if not prevent the overflow from reaching the storm drain system and the receiving water and minimize exposure to the public and impact on the public health.

NOTE: Always be courteous, cooperative and responsive in all communications with the public, the regulatory agencies, and the other City offices and staff.

- 5.1. Perform a quick assessment of the SSO condition and the surrounding area.
- 5.2. Notify District Supervisor immediately upon verification that an SSO is occurring; the approximate flow rate and approximate time that the SSO started.
- 5.3. Contain the SSO and establish bypass if feasible or necessary.
- 5.4. Document initial observations. Take pictures of the overflows and the surrounding area.
- 5.5. Take a sewage sample and preserve per standard procedures - Category I and II SSOs only [Refer to Appendix A].
- 5.6. Identify and investigate the possible cause(s) of the SSO. If the SSO was not the responsibility of the City of Los Angeles, proceed to item 5.17 below.
- 5.7. Initiate the appropriate corrective measures per the standard operating procedures. If unable to clean the sewer line per standard operating procedures; contact the District Supervisor for further instructions.
- 5.8. Perform a rough estimate of the overflow volume or flow rate using established guidelines [Refer to Appendix B].
- 5.9. Identify all schools in the immediate vicinity of the SSO.
- 5.10. Inform the District Supervisor of the initial findings, observations, initial estimate of overflow volume or flow rate, and any schools that may be impacted by the SSO. The District Supervisor shall utilize WCSD's SSO templates to determine a final "draft" estimate.
- 5.11. Post community warning signs and barricades as necessary.
- 5.12. Perform the necessary cleanup of the impacted areas.
 - 5.12.2 All cleanups shall be performed without introducing contaminated water to the storm drain system or the receiving waters.
 - 5.12.2 For SSOs affecting private property, perform cleanup as directed by the District Supervisor and provide the property resident with a Claim for Damages Form (FORM CONT. 100A) for follow-up claim for damages [Refer to Appendix H]. In addition, the District Supervisor will collect and complete the necessary information and documentation in anticipation of a City Attorney Claim and forward to the Area Manager for review. The Supervisor shall complete the documentation within **7 business days** of the SSO date and forward the documents to the SSO coordinator.

RESPONSE AND REPORTING PROCEDURES FOR SANITARY SEWER OVERFLOWS
AND SEWER OR STORMWATER CONTAMINATION
Revised June 26, 2017

- 5.13.** Document field observations, timeline, cause(s), actions taken, and other relevant information by completing the appropriate reports [Refer to Appendix D].
- 5.14.** Deliver sample to the appropriate EMD laboratory per standard procedures [Refer to Appendix A].
- 5.15.** Implement the appropriate notification and reporting requirements as outlined below.
- 5.16.** The District Supervisor shall immediately arrange a follow-up closed circuit television (CCTV) inspection of the impacted sewer(s).
- 5.17.** For SSOs which are not the responsibility of the City of Los Angeles, proceed per the following procedure:

CONDITION	ACTIONS
If SSO is caused by the blockage of a private lateral and the overflow is flowing onto the City street,	<p>Then</p> <ul style="list-style-type: none"> ➤ Continue to contain SSO and bypass as necessary until released by Supervisor. ➤ Implement item 5.5 through 5.14. ➤ The District Supervisor shall notify the Los Angeles County Department of Public Health and the City's Department of Building and Safety for necessary actions.
If SSO is caused by the construction activities of a contractor,	<p>Then</p> <ul style="list-style-type: none"> ➤ Continue to contain SSO and bypass as necessary until released by Supervisor. ➤ Implement item 5.5 through 5.14. ➤ The District Supervisor shall notify the Bureau of Contract Administration, The Bureau of Engineering and the Contractor for implementation of necessary repair actions. ➤ The District Supervisor shall request a written report from the Bureau of Engineering project manager outlining the circumstances, the contractor's preparedness at the time of the SSO and future measures to be taken to prevent similar incidents.
If SSO is in another agency's sewer system,	<p>Then</p> <ul style="list-style-type: none"> ➤ Continue to contain SSO and bypass as necessary until released by Supervisor. ➤ Implement item 5.5 through 5.14. ➤ Identify the responsible agency. ➤ The District Supervisor shall notify the responsible agency.

RESPONSE AND REPORTING PROCEDURES FOR SANITARY SEWER OVERFLOWS
AND SEWER OR STORMWATER CONTAMINATION
Revised June 26, 2017

6. REPORTING AND NOTIFICATIONS

Please be advised that all sewage discharges must be reported to the County Operator (213) 974-1234 regardless of the time of discharge. All sewage discharges that enter the waters of the State, which include the ocean or waterways, must be reported immediately. For the purposes of reporting to the Health Officer, immediate reporting should be interpreted as within 15 minutes of discharge or knowledge thereof and applied when there is direct discharge into the waters of the State and /or collection system personnel due to their knowledge of the geographical area, sewer or storm drain infrastructure, determine that a discharge could potentially result in a discharge to the waters of the State. In addition any SSO as described above must be reported both to the RWQCB, State Office of Emergency Services (OES) and Heal the Bay within 2 hours of becoming aware of the discharge. A written report certifying that the SSO was reported in accordance with these regulations must be submitted within 24 hours of the discharge to the Los Angeles County Department of Health Services, RWQCB and EPA Region IX. The standard City of Los Angeles Sanitary Sewer Overflow Report (single page report) shall serve as the written notification. Please note the 24-hour timeframe includes all weekends or Holidays. All other discharges must be reported to the Health Officer and the RWQCB within 2 hours of knowledge of a discharge.

The necessary reporting and notification shall be implemented in accordance with the following procedures:

- 6.1. Category I SSOs:** All Sanitary Sewer Overflows of any volume that;
 - Reach surface water and/or reach a drainage channel tributary to a surface water; or
 - Reach a Separate Storm Sewer System and are not fully captured and returned to the sanitary sewer system.
- 6.1.1** The crew leader shall **immediately** notify the District Supervisor upon verification that an SSO has occurred.
- 6.1.2** The District Supervisor shall **immediately** notify his/her Area Manager that a Category I SSO has occurred.
- 6.1.3** A supervisor shall respond to the Category I SSO location after making the initial notifications.
- 6.1.4** The District Supervisor must notify the County Operator immediately (within 15 minutes) of becoming aware of the discharge. Then the Area Manager, or his/her designee, must notify all other agencies including State Department of Health Services, the RWQCB, the State Office of Emergency Services, EPA / NRC and Heal the Bay must be notified within **2 hours** of becoming aware of the discharge. In addition a written follow up report [Refer to Appendix D] must be provided to the County of Los Angeles Department of Health Services, the RWQCB and USEPA Region IX within **24 hours** of becoming aware of the discharge.
- 6.1.5** The Area Manager shall notify the Manager II and Manager III within **30 minutes** of becoming aware of a Category I SSO.
- 6.1.6** For any Category I SSO that has the potential to impact schools, the District Supervisor shall notify by phone the school principal and the Los Angeles Unified School District headquarters (if a public school is impacted) of the SSO. The District Supervisor shall inform the school of the SSO and the need to ask the students and staff to stay away from the affected area.
- 6.1.7** The Manager II or Manager III shall notify the Assistant Director in charge of WCSO within **1 hour** if there is potential for a beach closure. Then the Assistant Director or his/her designee shall notify Board of Public Works representatives, Mayor's Office, affected Council Office, and

RESPONSE AND REPORTING PROCEDURES FOR SANITARY SEWER OVERFLOWS
AND SEWER OR STORMWATER CONTAMINATION
Revised June 26, 2017

Heal the Bay. If a beach advisory or closure occurs, then the Board of Public Works, Public Affairs Office is to be notified so that a press release can be prepared.

- 6.1.8** For any Category I SSO reaching a City of Los Angeles storm drain, the Area Manager shall also notify the WPD for sampling purposes within **2 hours**.
- 6.1.9** For any Category I SSO in which 50,000 gallons or greater are discharged to surface waters, the Water Quality Monitoring Plan shall be implemented within **48 hours** after initial notification of the spill. [Refer to Appendix A].
- 6.1.10** For any Category I SSO reaching the Los Angeles River, the Area Manager shall also notify the City of Long Beach Department of Health and Human Services for sampling purposes within **2 hours**.
- 6.1.11** For any Category I SSO that reaches the receiving waters (Pacific Ocean or Los Angeles Harbor) the Area Manager shall notify EMD for sampling purposes within **2 hours**.
- 6.1.12** For a Category I SSO that could impact shallow groundwater the Area Manager shall notify the Department of Water and Power, Water Control Office, of the incident within **2 hours**.
- 6.1.13** In instances requiring coordination of multi-agency response, it may be necessary for the Supervisor or Area Manager to notify the ISCD upon approval from the Division Manager.
- 6.1.14** **As soon as possible, but no later 9:00 A.M. of the next business day** of the incident, the Area Manager shall prepare and forward a draft Sani-Gram for review and approval by the Division Manager. Upon approval by the Division Manager the Sani-Gram shall be forwarded to the Bureau of Sanitation Executive Office for processing.
[Refer to Appendix F]
- 6.1.15** The Administrative Staff shall finalize the SSO report and fax the report to the County of Los Angeles Health Department, RWQCB and USEPA Region IX by **10:00 A.M. of the next business day**.
- 6.1.16** **As soon as possible, but no later than 3 business days** after becoming aware of the SSO the Area Manager must report the incident on the SWRCB Online SSO System. In addition the Area Manager shall prepare a preliminary written report to the RWQCB for each Category I SSO (Refer to Appendix G). The preliminary report must be received by the RWQCB within **five business days** of the incident. The written report on each spill shall include at least the following information:
- Date and Time: (a) SSO occurred, (b) City received notification, and (c) City staff arrived at the scene;
 - Location of spill including Thomas Guide map grid, zip code and Latitude / Longitude of SSO location;
 - Duration of SSO;
 - Causes(s) of SSO;
 - Nature and volume of SSO including volume of sewage lost and volume returned to the sewer system;
 - Type, size and age of sewer involved; also a description of terrain if applicable.
 - Type of remedial / cleanup measures and the date and time of implementation;
 - Corrective/preventive actions taken;
 - Water body impacted and results of bacteriological monitoring, if applicable; and
 - Agency responsible for SSO, if other than City of Los Angeles (e.g. contractor).
 - Date and time of notification to regulatory agencies.

RESPONSE AND REPORTING PROCEDURES FOR SANITARY SEWER OVERFLOWS
AND SEWER OR STORMWATER CONTAMINATION
Revised June 26, 2017

All written reports to the RWCQB shall be addressed to:

Sam Unger
Executive Officer
Los Angeles Regional Water Quality Control Board
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

with copies to:

- Executive Division File
- WSCD Management

- 6.1.17** As soon as possible, but within **10 business** days after submitting the preliminary report, a final written report must be submitted to the RWQCB. A copy of the final written report that was already submitted to the SWRCB pursuant to a Statewide General Waste Discharge Requirements may be submitted to satisfy this requirement. All Category I SSOs require submission of a final certified report within **15 days** of the conclusion of the SSO response and remediation efforts. If the online database is not available then a copy of the final certified report must be faxed to the SWRCB. The final report must be certified by the Legally Responsible Official or Division Manager.
- 6.1.18** Within **45 calendar** days after the end date of any Category 1 spill in which 50,000 gallons or greater are discharged to surface waters, a SSO Technical Report must be submitted. [Refer to Appendix J]
- 6.1.19** All SSO documentation including SSO reports, Sani-Grams, RWQCB Letters, Time and Work Reports, EMPAC Work Orders and CIWQS Reports are to be sent to the SSO Records Coordinator within **7 business days** from the SSO date.
- 6.1.20** The Engineering staff shall include the SSO in the monthly report. The monthly report shall be compiled by the Engineering staff for review and approval by the Division Manager. The monthly report shall be transmitted to the Bureau Executive Management by the **20th day of the month**. In addition the Collection System Settlement Agreement requires that a Quarterly Summary of all Sanitary Sewer Overflows is prepared and distributed within **30 days after the end of each quarter**.
- 6.2. Category II SSOs:** All Sanitary Sewer Overflows of **1,000 gallons or greater** that;
Do not reach surface water, a drainage channel, or a Separate Storm Sewer System, or
Reach a Separate Storm Sewer System or a drainage channel and are fully captured and returned to the sanitary sewer system.
- 6.2.1** The District Supervisor shall **immediately** notify his/her Area Manager that a Category II SSO has occurred.
- 6.2.2** A supervisor shall respond to the Category II SSO location.
- 6.2.3** The Area Manager, or his/her designee, must notify the County Operator, State Department of Health Services, the RWQCB, the State Office of Emergency Services and EPA / NRC within **2 hours** of becoming aware of the discharge. In addition each Area Manager or their designee shall send the City of Los Angeles Sanitary Sewer Overflow Report to the administrative staff with copies to all managers no later than **9:00 A.M. of the following business day** [Refer to Appendix D].
- 6.2.4** The Area Manager shall notify the Manager II and Manager III within **30 minutes** of becoming aware of a Category II SSO.

RESPONSE AND REPORTING PROCEDURES FOR SANITARY SEWER OVERFLOWS
AND SEWER OR STORMWATER CONTAMINATION
Revised June 26, 2017

- 6.2.5** For any Category II SSO that has the potential to impact schools, the District Supervisor shall notify by phone the school principal and the Los Angeles Unified School District headquarters (if a public school is impacted) of the SSO. The District Supervisor shall inform the school of the SSO and the need to ask the students and staff to stay away from the affected area.
- 6.2.6** For a Category II SSO that could impact shallow groundwater the Area Manager shall notify the Department of Water and Power, Water Control Office, of the incident within **2 hours**.
- 6.2.7** In instances requiring coordination of multi-agency response, it may be necessary for the Supervisor or Area Manager to notify the ISCD upon approval from the Division Manager.
- 6.2.8** **As soon as possible, but no later 9:00 A.M. of the next business day** of the incident, the Area Manager shall prepare and forward a draft Sani-Gram for review and approval by the Division Manager. Upon approval by the Division Manager the Sani-Gram shall be forwarded to the Bureau of Sanitation Executive Office for processing.
[Refer to Appendix F]
- 6.2.9** The Administrative Staff shall finalize the SSO report and fax the report to the County of Los Angeles Health Department and the RWQCB by **10:00 A.M. of the next business day**.
- 6.2.10** **As soon as possible, but no later than 3 business days** after becoming aware of the SSO the Area Manager must report the incident on the SWRCB Online SSO System. In addition the Area Manager shall prepare a preliminary written report to the RWQCB for each Category II SSO (Refer to Appendix G). The preliminary report must be received by the RWQCB within **five business days** of the incident. The written report on each spill shall include at least the following information:
- Date and Time: (a) SSO occurred, (b) City received notification, and (c) City staff arrived at the scene;
 - Location of spill including Thomas Guide map grid, zip code and Latitude / Longitude of SSO location.
 - Duration of SSO;
 - Causes(s) of SSO;
 - Nature and volume of SSO including volume of sewage lost and volume returned to the sewer system;
 - Type, size and age of sewer involved; also a description of terrain if applicable.
 - Type of remedial / cleanup measures and the date and time of implementation;
 - Corrective/preventive actions taken;
 - Water body impacted and results of bacteriological monitoring, if applicable; and
 - Agency responsible for SSO, if other than City of Los Angeles (e.g. contractor).
 - Date and time of notification to regulatory agencies.
- All written reports to the RWQCB shall be addressed to:
- Sam Unger
Executive Officer
Los Angeles Regional Water Quality Control Board
320 W. 4th Street, Suite 200
Los Angeles, CA 90013
- with copies to:
- Executive Division File
 - WSCD Management

RESPONSE AND REPORTING PROCEDURES FOR SANITARY SEWER OVERFLOWS
AND SEWER OR STORMWATER CONTAMINATION
Revised June 26, 2017

- 6.2.11** As soon as possible, but within **10 business days** after submitting the preliminary report, a final written report must be submitted to the RWQCB. A copy of the final written report that was already submitted to the SWRCB pursuant to a Statewide General Waste Discharge Requirements may be submitted to satisfy this requirement. All Category II SSOs require submission of a final certified report within **15 days** of the conclusion of the SSO response and remediation efforts. If the online database is not available then a copy of the final certified report must be faxed to the SWRCB. The final report must be certified by the Legally Responsible Official or Division Manager.
- 6.2.12** All SSO documentation including SSO reports, Sani-Grams, RWQCB Letters, Time and Work Reports, EMPAC Work Orders and CIWQS Reports are to be sent to the SSO Records Coordinator within **7 business days** from the SSO date.
- 6.2.13** The Engineering staff shall include the SSO in the monthly report. The monthly report shall be compiled by the Engineering staff for review and approval by the Division Manager. The monthly report shall be transmitted to the Bureau Executive Management by the **20th day of the month**. In addition the Collection System Settlement Agreement requires that a Quarterly Summary of all Sanitary Sewer Overflows is prepared and distributed within **30 days** after the end of each quarter.
- 6.3. Category III SSOs:** All Sanitary Sewer Overflows **less than 1,000 gallons** that;
Do not reach surface water, a drainage channel, or a Separate Storm Sewer System, or
Reach a Separate Storm Sewer System or a drainage channel and are fully captured and returned to the sanitary sewer system.
- 6.3.1** The crew leader shall **immediately** notify the District Supervisor upon verification that an SSO has occurred.
- 6.3.2** The District Supervisor shall **immediately** notify the Area Manager of the SSO and the actions taken.
- 6.3.3** For any Category III SSO that has the potential to impact schools, the District Supervisor shall notify by phone the school principal and the Los Angeles Unified School District headquarters (if a public school is impacted) of the SSO. The District Supervisor shall inform the school of the SSO and the need to ask the students and staff to stay away from the affected area.
- 6.3.4** The Area Manager, or his/re designee shall notify the Department of Health Services, the County of Los Angeles Health Department and the RWQCB within **2 hours** of becoming aware of the SSO.
- 6.3.5** In instances requiring coordination of multi-agency response, it may be necessary for the Supervisor or the Area Manager to notify the ISCD upon approval of the WCSD Division Manager.
- 6.3.6** Each Area Manager or their designee shall complete the City of Los Angeles Sanitary Sewer Overflow Report and send it to the administrative staff with copies to all managers no later than **9:00 A.M. of the following business day** [Refer to Appendix D].
- 6.3.7** The Administrative Staff shall finalize the SSO report and fax the report to the County of Los Angeles Health Department and the RWQCB by **10:00 A.M. of the next business day**.
- 6.3.8** As soon as possible, but no later than **7 business days** after becoming aware of the SSO the Area Manager must report the incident on the SWRCB Online SSO System. All

RESPONSE AND REPORTING PROCEDURES FOR SANITARY SEWER OVERFLOWS
AND SEWER OR STORMWATER CONTAMINATION
Revised June 26, 2017

Category III SSOs require submission of a final certified report within **30 days** of the conclusion of the month that the SSO occurred. The final report must be certified by the Legally Responsible Official or Division Manager.

- 6.3.9** All SSO documentation including SSO reports, Sani-Grams, RWQCB Letters, Time and Work Reports, EMPAC Work Orders and CIWQS Reports shall be sent to the SSO Records Coordinator within **7 business days** from the SSO date.
- 6.3.10** The Engineering staff shall include the SSO in the monthly report. The monthly report shall be compiled by the Engineering staff for review and approval by the Division Manager. The monthly report shall be transmitted to the Bureau Executive Management by the **20th day of the month**. In addition the Collection System Settlement Agreement requires that a Quarterly Summary of all Sanitary Sewer Overflows is prepared and distributed within **30 days** after the end of each quarter.
- 6.4. Other spill events:** Other spill events may include Sanitary Sewer Overflows originating in another agency's jurisdiction outside the City's service area which results in beach closures or other circumstances that may concern City residents. Other events may also include the discharge of hazardous waste into the storm drain or the sewer system
- 6.4.1** The crew leader shall **immediately** notify the District Supervisor of the event.
- 6.4.2** The District Supervisor shall **immediately** notify the Area Manager of the event and the actions taken.
- 6.4.3** For any discharge originating in another agencies jurisdiction outside the City's service area the District Supervisor / Area Manager shall follow the appropriate reporting procedures as described in this document, until such time as the appropriate agency assumes responsibility for the incident.
- 6.4.4** For any event that has the potential to impact schools, the District Supervisor shall notify by phone the school principal and the Los Angeles Unified Scholl District headquarters (if a public school is impacted) of the event. The District Supervisor shall inform the school of the event and the need to ask the students and staff to stay away from the affected area.
- 6.4.5** For any discharge reaching the sewer system controlled by the City of Los Angeles, the District Supervisor shall **immediately** notify the Bureau of Sanitation's Industrial Waste Management Division of the incident .
- 6.4.6** For any discharge reaching a City of Los Angeles drainage facility, the District Supervisor shall **immediately** notify the WPD.

RESPONSE AND REPORTING PROCEDURES FOR SANITARY SEWER OVERFLOWS
AND SEWER OR STORMWATER CONTAMINATION
Revised June 26, 2017

- 6.4.7** The Area Manager shall notify the Manager II and Manager III within **30 minutes** of any other spill event that resulted in notification to the Industrial Waste Management Division, the WPD and/or the Los Angeles County Department of Public Works.
- 6.4.8** The Manager II or Manager III shall notify the Assistant Director in charge of WCSD within **1 hour** if there is potential for a beach closure. Then the Assistant Director or his/her designee shall notify Board of Public Works representatives, Mayor's Office, affected Council Office, and Heal the Bay. If a beach advisory or closure occurs, then the Board of Public Works Public Affairs Office is to be notified so that a press release can be prepared.
- 6.4.9** As soon as possible, but no later **9:00 a.m. of the next business day** after the incident, the Area Manager shall prepare and forward a draft Sani-Gram for review and approval by the Division Manager. Upon approval by the Division Manager the Sani-Gram shall be forwarded to the Bureau of Sanitation Executive Office for processing.
(Refer to Appendix F)
- 6.4.10** For a spill event that could impact shallow groundwater the Area Manager shall notify the Department of Water and Power, Water Control Office, of the incident within **2 hours**.
- 6.4.11** In instances requiring coordination of multi-agency response, it may be necessary for the Supervisor or the Area Manager to notify the ISCD, upon the approval of the WCSD Division Manager.

7. Quality Assurance – Sanitary Sewer Overflow Review Committee

- 7.1.** A Sanitary Sewer Overflow Review Committee consisting of Division Management and Engineering Staff will evaluate all spills and recommendations made by the District Supervisor and Area Manager.
- 7.2.** All the sewer reaches where the spill occurred will be inspected by CCTV. CCTV will be scheduled ASAP, but normally within **2 business days**.
- 7.3.** All SSO documentation including SSO reports, Sani-Grams, RWQCB Letters, Time and Work Reports, EMPAC Work Orders and CIWQS Reports are to be sent to the SSO Records Coordinator within **7 business days** from the SSO date.
- 7.4.** The committee will review the SSO documentation and the follow-up CCTV tape to
- Identify and recommend any necessary improvement to the spill response and notification procedures,
 - Define and recommend necessary follow-up actions such as an accelerated preventive maintenance schedule, sewer repair or system upgrade through capital improvement process, and refer any construction repair or upgrade needs to the Project Development Team (PDT).

APPENDIX A

Sanitary Sewer Overflow Sampling Protocol

Note: The entire document is on file at the Wastewater Collection Systems Division Headquarters and is incorporated into this document by reference. This Appendix contains Chapter 3 Spill Response Sample Collection and Analysis Protocol and a Sample Chain of Custody Document.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL



ENVIRONMENTAL MONITORING DIVISION
WATERSHED PROTECTION DIVISION
WASTEWATER COLLECTION SYSTEMS DIVISION

November 21, 2013

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Sanitary Sewer Overflow and Monitoring

Overview

On May 2, 2006 the State Water Board adopted Water Quality Order 2006-0003-DWQ, “Statewide Waste Discharge Requirements for Sanitary Sewer Systems” (SSS WDRs) to address Water Code section 13193 requirements and develop the framework for the statewide Sanitary Sewer Overflow Reduction Program. The State Water Board Executive Officer issued a revised Monitoring and Reporting Program (MRP) for the SSS WDRs on February 20, 2008 to rectify notification deficiencies that occurred early in program implementation and to ensure that first responders (e.g., Water Boards, California Office of Emergency Services, and County Health Departments) are notified in a timely manner for SSOs discharged to surface waters.

The State Water Board concluded that the current, February 20, 2008 revised MRP is no longer adequate to advance the Sanitary Sewer Overflow Reduction Program objectives, assess compliance, and enforce the requirements of the SSS WDRs, based on over six years of implementation of the SSS WDRs. Following a January 24, 2012 workshop with stakeholders for the review and update of the SSS WDRs, the State Water Board directed staff to review and evaluate the existing monitoring and reporting requirements and prepare an amended MRP for the Executive Director’s issuance. As a result of this, new reporting requirements have been developed that address the compliance and enforcement issues noted above and improve the quality and usefulness of SSO data collected.

Three of the major changes made to the existing MRP (Order 2008-0002-EXEC) and incorporated in the final revised MRP (Order 2013-0058-EXEC) are defined new spill categories and refined spill report fields:

1. Replacement of spill Categories 1 and 2 with Categories 1, 2, and 3. Spills are now classified as follows:

- Category 1 – Spills of **any volume** that reach surface water
- Category 2 – Spills greater than or equal to 1,000 gallons that do not reach surface water
- Category 3 (formerly Category 2) – Spills less than 1,000 gallons that do not reach surface water

All spills to surface water will be in a distinct category with this change. Spill reporting fields were refined and streamlined with stakeholder input.

2. Addition of requirement to submit a technical report within 45 days of the end date for spills over 50,000 gallons reaching surface water.

3. Addition of requirement for all Permit enrollees to develop a Water Quality Monitoring plan to be implemented within 48 hours after initial notification for spills where 50,000 gallons or more reach surface water.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

The Los Angeles Regional Water Quality Control Board also requires the City of Los Angeles to monitor and report sanitary sewer overflows in the NPDES permits for Hyperion Treatment Plant (HTP) (Order No. R4-2010-0200, Permit No. CA0109991) and Terminal Island Water Reclamation Plant (TIWRP) (Order No. R4-2010-0071, Permit No. CA0053856). This requirement applies to any spill, overflow, or bypass incident of raw or partially-treated sewage that reaches a receiving water, enters a shallow ground water aquifer, or has public exposure and to all sewage spills, overflows, or bypasses of 1,000 gallons or more. Successful implementation of the Sanitary Sewer Overflow Monitoring Program requires effective coordination and cooperation among the appropriate City agencies: City Emergency Operation Center, Bureau Call Center, Wastewater Collection Systems Division (WCSD), Environmental Monitoring Division (EMD), and Watershed Protection Division (WPD). This document provides information that details the courses of action, contact lists, and procedures for monitoring any sanitary sewer overflow that may occur within the City of Los Angeles.

The information contained within this document is organized into chapters, each addressing specific procedures, so that they may be readily accessed by the appropriate agency. It includes a Decision Making and Contact Flowchart, which will function as the starting point for the City's sanitary spill response by providing a succinct summary of the procedures for the various types of sanitary sewer spills covered by the new requirements, contact names, phone numbers, e-mail addresses, and references to the appropriate Standard Operating Procedures (SOPs). The Flowchart will be posted on the Bureau of Sanitation's Intranet, as well as distributed among the appropriate City agencies to insure ready access to this information.

The remainder of this document covers SOPs for the types of sanitary sewer spills that can occur. Chapters include the following:

- Chapter 1 – Introduction, which describes the program.
- Chapter 2 –WCSD Decision-Making Key: to determine who to contact, who must sample, delivery of samples to EMD, mobilization of staff for sample analysis, and reporting. More complete listings of contact information are provided in subsequent chapters.
- Chapter 3 –EMD Emergency Spill Response, Sample Collection and Analysis Protocol.
- Chapter 4 – WPD Sanitary Sewer Overflow Monitoring Protocol.
 - Appendix A: Sewer Spill and Monitoring Contacts
 - Appendix B: Field Sampling Guide
 - Appendix C: Standard Operating Procedure-Pollution Assessment Section
 - Appendix D: LADOT Worksite Traffic Control Plan
 - Appendix E: California Hazardous Material Spill/Release Notification Guidance
- Chapter 5 – EMD Spill Sampling Protocol.
 - Section 1: Santa Monica Bay Shoreline Sewage Spills.
 - Section 2: 1-Mile Outfall Diversion Sample Collection.
 - Section 3: Los Angeles Harbor Sewage Spills.
 - Section 4: Offshore Ammonia Sample Collection

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- Chapter 6 – Sewage Spill Visual Observations.
- Chapter 7 –Analysis Protocols
 - Section 1: Chromogenic Substrate Method.
 - Section 2: Membrane Filtration (MF) Technique
 - Section 3: Ammonia Analysis
- Chapter 8 – Data Validation and Reporting Protocols.

Chapter 1: Introduction

I. Background

Pursuant to the “Monitoring and Reporting Program”, Order No. WQ 2013-0058-EXEC (effective September 9, 2013) of the Los Angeles Regional Water Quality Control Board, the City of Los Angeles is required to report and monitor any spill, overflow, or bypass incident of any volume of raw or partially-treated sewage that reaches a receiving water*¹, enters a shallow ground water aquifer, or has public exposure, including conducting water quality sampling for spills 50,000 gallons or greater. In addition, the City of Los Angeles shall report and monitor all sewage spills, overflows, or bypasses of 1,000 gallons or more that do not reach a surface water, and spills less than a 1,000 gallons that do not reach a surface water. The City of Los Angeles Bureau of Sanitation (BOS) is tasked with developing an integrated Sewer Spill Response and Monitoring Protocol in order to ensure that the source of pathogenic bacteria and relevant pollutants is abated and the City is in compliance with SSS WDRs, NPDES Permits Nos. CA0109991 (Hyperion Treatment Plant), CA0053856 (Terminal Island Water Reclamation Plant), and CAS004001 (Los Angeles County MS4). The task will require effective coordination and cooperation among the appropriate City agencies: City Emergency Operation Center, Bureau Call Center, Wastewater Collection Systems Division (WCSD), Environmental Monitoring Division (EMD), and Watershed Protection Division (WPD). The monitoring protocol includes notification, mobilization, site and storm drain channel identification, equipment preparation, personnel safety, sampling location, sampling operation, sample testing, data management, and reporting requirements.

WCSD shall make an on-site assessment to determine if the spill originates from a sanitary sewer source, estimate the volume of the spill, determine if a storm drain is impacted, determine if a sample is required, and immediately take a grab sample of the sewage if one is required. If receiving water monitoring is required, WCSD shall immediately contact WPD. WPD will determine if EMD is to conduct the receiving water monitoring (spills to Santa Monica Bay or Los Angeles Harbor) or if WPD is to conduct the receiving water monitoring (all other receiving waters). Receiving water samples shall be representative grab samples for analysis of indicator bacteria (total coliform, fecal coliform or *E.coli*, and enterococci) and relevant pollutants from upstream and downstream of the discharge (point where spill enters receiving water in a channel or along the shore of Santa Monica Bay, Los Angeles Harbor, or a lake). A channel may be a main channel such as the L.A. River, Dominguez Channel, or Ballona Creek or a tributary channel. Specific sampling protocols are referenced in subsequent chapters of this document. Samples collected by WPD or WCSD shall be delivered to EMD for laboratory analysis. EMD will analyze these and any samples they collect following their standardized operating procedures for analyses (see

¹ “Receiving water” shall mean any open channel, lake, pond, harbor, or the ocean

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Chapter 7). EMD also will conduct testing and analyses for any relevant pollutants (see Section III below) in the grab samples following the appropriate protocols.

II. Scope

Any volume of raw sewage or partially-treated sewage entering a receiving water that is not fully captured shall be considered to impact the receiving water and shall be monitored; Any spill, overflow, or bypass of 1,000 gallons or more of sewage also shall be monitored even if it does not enter a receiving water, including all other discharges of untreated or partially treated wastewater from an SSO. This also shall include spill incidents where a City sanitary sewer overflows to a County storm drain. WCDSD shall be responsible for collecting spill samples. WPD shall be responsible for monitoring wastewater reclamation plant bypasses and freshwater receiving water samples. EMD shall monitor bypasses of Hyperion Treatment Plant and Terminal Island Water Reclamation Plant (TIWRP) and Santa Monica Bay (SMB) and Los Angeles Harbor (LAH) receiving waters.

The duration of the required sampling will vary depending on specifics. At a minimum², receiving water monitoring will continue on a daily basis from the time of the spill until the results of two consecutive daily sets of laboratory test data indicate that the receiving water is no longer impacted by the spill (i.e., bacterial levels/relevant pollutant concentrations indicate a return to background levels) or cessation is authorized by Los Angeles County Department of Public Health (WPD shall contact Los Angeles County Department of Public Health). If the spill or bypass of raw or partially treated sewage is from the Tillman or Los Angeles-Glendale Water Reclamation Plants and enters the Los Angeles River System, total and fecal coliform analyses shall be performed on grab samples collected at all potentially affected downstream receiving water stations and at least one unaffected upstream receiving water station on the date of the spill or bypass, if possible, and daily on each of the following four days. Similarly, if the spill or bypass of raw or partially treated sewage is from the Terminal Island Water Reclamation Plant and enters the Los Angeles Harbor, total and fecal coliform analyses shall be made on grab samples collected at all potentially affected receiving water stations and at least one unaffected ambient water station on a daily basis from the time the spill is known until the results of four consecutive sets of monitoring results indicate a return to normal levels and the spill or bypass has ceased. Additionally, for TIWRP, the receiving water shall be monitored for BOD, suspended solids, settleable solids, and oil and grease, during any day the filters are bypassed, until it is demonstrated that the filter “bypass” has not caused an adverse impact on the receiving water. Discharges from the one-mile outfall into Santa Monica Bay shall be monitored once per discharge day. Monitoring procedure shall be followed as described in this guideline.

III. Notification and Relevant Pollutant Assessment

² Except discharges from HTP’s One-Mile Outfall as discussed below.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

When a sewer spill incident occurs and impacts the storm drain, WCSD shall notify WPD directly. The WPD industrial waste inspector shall subsequently contact the WCSD supervisor to ensure that the discharge has been contained. WCSD shall notify the Los Angeles Regional Water Quality Control Board, the State Office of Emergency Services (Chapter 4, Appendices A & E), and the local health agency if the storm drain is impacted by a spill or overflow from the City's wastewater collection system. If any volume of sewage is spilled and reaches a receiving water, WCSD shall immediately determine if EMD (SMB or LAH) or WPD (all other receiving waters) is to collect the samples, and then notify EMD (see notification protocol, Chapter 2) regarding sampling and delivery of samples. If WPD is to collect the samples, the WPD inspector will coordinate with the WPD Pollution Assessment Section coordinator to secure sampling equipment and notify EMD lab of impending sample delivery.

WPD staff shall survey the businesses upstream of the sanitary sewer overflow in order to provide information regarding the nature of the businesses (e.g., refinery, metal plater, chemical manufacturer, etc.) and whether they were operating during the time of the overflow. WPD shall provide an assessment of potential relevant pollutants to be sampled. If WPD determines a need to sample for relevant pollutants, in addition to the bacterial samples (and ammonia samples for spills $\geq 50,000$ gallons), WPD shall notify EMD regarding the additional samples to be collected and analyzed. The analyses to be conducted shall be indicated on the chain-of-custody. The key contacts for WPD/Enforcement, WPD/PAS (Pollution Assessment Section), WCSD, EMD, LA County Environmental Health Department, and LA County Emergency Operator are listed in Chapter 4, Appendix A.

IV. Mobilization

WPD staff mobilization time should be within an hour during normal traffic hours. If extended mobilization time is needed, the on-call WPD supervisor shall be notified. The supervisor shall exercise the option of dispatching staff closer to the site of incident as an alternate responder. See Chapter 5 for EMD mobilization procedures.

V. Site and Storm Drain Channel Identification

The WPD inspector shall coordinate with WCSD staff to identify and secure the source of the spill. If a storm drain catch basin is impacted by the sewer spill, the inspector shall identify the storm drain system by utilizing the Stormwater Information Management System or Navigate LA application on his/her laptop. The inspector shall also identify the receiving water outfall. If the storm drain outfall discharges directly into LAH or SMB, the WPD inspector will convey the information to EMD (see contact protocol, Chapter 2). If the storm drain outfall enters directly to a freshwater receiving site, the WPD inspector will identify the sampling sites (e.g., the upstream and downstream bridge overpasses that would serve as sampling locations). If no bridge exists downstream from the outfall on a tributary

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

channel, the sample shall be taken from the nearest downstream bridge on the main channel. PAS Standard Operation Procedure is a good reference for routing to the channel bridge overpasses (Chapter 4 Appendix C).

VI. Analyses and Reporting

EMD will analyze the samples and report the results to WCSD and WPD. WCSD will report to the Regional Board. If the spill does not involve the City's wastewater collection system (e.g., a septic system spill), but does reach public property and flows into the storm drain system, WCSD will help to clean up the spill and will notify WPD, but WCSD will not report to the Regional Board. All reporting in these situations is the responsibility of WPD.

Chapter 2: Decision-Making Key and Contact Table

This chapter contains a decision making and contact table. The table focuses on selecting procedural options and providing some contact information. It directs one to subsequent chapters that provide more detailed procedural information and additional contact information.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Sanitary Sewer Spill and Monitoring Decision Making and Contact Flowchart						
No	Event	Action	Contacts			Go to
1	Report of spill received from 3-1-1 Call Center From within LA City: 3-1-1 or 866-4-LA-CITY Outside greater LA area: 213-978-3231	3-1-1 Call Center notifies WCSD for sewer spill verification	Citywide Office Barry Berggren, WCSD bgberggrwyohann@san.lacity.org Paul Blasman Paul.blasman@lacity.org	O C H O C H	213-485-7575 323-342-6002 213-359-8301 877-323-5115 213-485-5892 213-361-2632 213575-8491	Next Page
2a	Sewer spill not confirmed	WCSD notifies WPD Enforcement that other pollutants have spilled or that the spill does not involve the City's wastewater collection system WPD Enforcement performs routine IC/ID investigation and reports to management	During work hours (define) After hours		800-974-9794 311	End OR Chp 4
2b	Sewer spill confirmed	WCSD performs local safety procedure and contains spill as necessary, assesses size of spill and whether it will reach a receiving water				Chp 3
3b	Category 2 Spills ≥ 1000 gal that do not reach receiving waters	WCSD samples spill, delivers sample to EMD Microbiology Laboratory, and notifies EMD that samples have been delivered and no receiving water samples will be collected. Chapter 3: Spill Response Protocol	Microbiology lab (Daily, 6:30 am-4:00 pm) On-call cell phone (Sun – Sat, 3:00-11:00 pm) Additional contacts		310-648-5276 213-712-7594 See Chapter 3	Chp 7
3c	Category 3 Spills < 1000 gallons that do not reach receiving water	WCSD collects sample for delivery to EMD (Chapter 3: Spill Response Protocol), and notifies EMD that samples will be delivered.	WPD During work hours (06:30 – 4:00) After hours EMD		800-974-9794 311 Same as 3a	Chp 4
4a	Spill any volume that reaches a pond, lake, river, channel, or aquifer	WCSD samples spill; WPD is notified and prepares for receiving water monitoring, notifies EMD staff and delivers samples to EMD Lab.	During work hours (06:30 – 4:00) After hours		800-974-9794 311	Chp 5
4b	Spill any volume that reaches SMB or LAH receiving waters	WCSD notifies WPD, samples spill, and notifies EMD that sample will be delivered. WPD notifies EMD EMD prepares for receiving water monitoring	EMD Management & Supervisors Stan Asato, Spill Response Coordinator Ioannice Lee, Spill Response Supv Microbiology lab (Daily, 6:30 am-4:00 pm) After hours and additional contacts		310-648-5194 310-648-5196 310-648-5276 Spill Response Protocol + Chapter 5	Chps 3,5,6
4c	Spill ≥ 50,000 gallons reaches receiving waters	WCSD notifies WPD within 48 hours of becoming aware of SSO; WPD notifies EMD EMD prepares for receiving water monitoring	Same as 4b		Same as 4b	Chps 5,6

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

SANITARY SEWER SPILL AND MONITORING DECISION MAKING AND CONTACT FLOWCHART				
No	Event	Action	Sampling, analytical, and reporting references	Go to
5	Spill reaches a pond, lake, river, channel, or aquifer	WPD notifies EMD Microbiology Supervisor of impending sampling, identifies storm drain and sampling locations, collects samples, and delivers samples to EMD	Public Works sewage spill notification and contact list Chapter 4 WPD Monitoring Protocol Chapter 6 Sewage Spills Observations	Next Page
6a	Spill reaches SMB receiving waters	EMD identifies sampling locations and performs sampling	Chapter 5 Section 1: Santa Monica Bay Shoreline Sewage Spills Chapter 5 Section 2: 1-Mile Outfall Diversion Sample Collection (Not necessarily a spill, but addressed here) Chapter 6 Sewage Spill Observations	Chps 5,6
6b	Spill reaches LAH receiving waters	EMD identifies sampling locations and performs sampling	Chapter 5 Section 3: Los Angeles Harbor Receiving Water Monitoring Chapter 6 Sewage Spills Observations	Chps 5,6
7a	Sample Analysis	EMD conducts analyses	Chapter 7 Section 1: Chromogenic Substrate Method OR Chapter 7 Section 2: Membrane Filtration Method	7
7b	Sample Analysis Spill \geq 50,000 gallons reaches surface waters	EMD conducts analyses	Chapter 7 Section 1: Chromogenic Substrate Method OR Chapter 7 Section 2: Membrane Filtration Method AND Chapter 7 Section 3: Ammonia	7
8	Sample Reporting	EMD reports results to WCSD/WPD WCSD Reports City Collection System and POTW events to RWQCB for both spill and receiving water samples WPD reports on all storm drain system events	Chapter 8: EMD SOP for Sewage Spill Data Validation, and Data Transmittal to SSO Group Detailed location map illustrating all water quality sampling locations	8

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Sanitary Sewer Overflow Notification and Contact List

BUREAU OF SANITATION MANAGEMENT Office No.: 213-485-2210	PAGER/CELLULAR NUMBER FAX # (213) 485-2979	HOME NUMBER
ADEL HAGEKHALIL	CELLULAR (213) 359-0312	(714) 992-2632
ENRIQUE ZALDIVAR	CELLULAR (213) 359-3052	(909) 931-1237

BOARD OF PUBLIC WORKS Office No.: 213-978-0251	PAGER/CELLULAR NUMBER	HOME NUMBER
CAPRI MADDOX	CELLULAR (213) 703-3929	
JERILYN MENDOZA- LOPEZ	CELLULAR (213) 703-3927	

PUBLIC AFFAIRS OFFICE Office No.: 213-978-0319	PAGER/CELLULAR NUMBER	HOME NUMBER
CORA JACKSON- FOSSETT	CELLUAR (213) 761-3117	(323) 293-3176

WASTEWATER COLLECTION SYSTEMS DIVISION	PAGER/CELLULAR NUMBER	WORK NUMBER/ HOME NUMBER
BARRY G. BERGGREN	PAGER (213) 208-1329 CELLULAR (213) 271-8168	(323) 342-6002 (909) 592-4719
BRIAN Mc CORMIK	PAGER (213) 208-1332 CELULAR (213) 359-9554	(323) 342-1577 (661) 273-3132
ROBERT POTTER	PAGER (213) 208-1333 CELLULAR (213)280-2668	(323)342-6004 (818) 435-2272
PAUL BLASMAN	PAGER (213) 208-1330 CELLULAR (213) 361-2632	(213) 485-5892 (213) 575-8491
KENT CARLSON	PAGER (213) 208-1331 CELLULAR (213) 280-2375	(818) 345-2107 (661) 254-2625
TERRY DICKINSON	PAGER (213) 208-1343 CELLULAR (213) 610-6287	(213) 485-5891 (818) 996-4163
BRYANT JONES	PAGER (213) 208-1346 CELLULAR (213) 810-3987	(213) 485-5888 (323) 751-9292
GERALD WATSON	PAGER (213) 208-1335 CELULAR (213) 422-7780	(213) 485-5892
VENICE PUMP PLANT		(310) 822-0777 or (310) 823-5507

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

HYPERION TREATMENT PLANT	WORK NUMBERS
SHIFT SUPERINTENDANT	(310) 648-5856 OR (310) 648-5858
PLANT RECEPTIONIST	(310) 648-5000
FAX NUMBER	(310) 648-5047 / (310) 648-5539

REGIONAL WATER QUALITY CONTROL BOARD 320 W. 4 th Street, Suite 200 Los Angeles, CA 90013	WORK NUMBER	HOME NUMBER (SAT., SUN., HOL.) Between 9:00 AM and 6:00 PM for spills over 10,000 gallons only
AUGUSTINE ANIJELO	(213) 576-6657	
ARTHUR HEATH	(213) 576-6725	
GENERAL OFFICE	(213) 576-6600	
NOTE: If no personal contact is made, fax the spill information to FAX #s (213) 620-6140. FOLLOW UP WITH A PHONE CALL TO CONFIRM RECEIPT OF REPORT.		

LOS ANGELES COUNTY HEALTH DEPARTMENT	WORK NUMBERS
For all SSOs the Health Officer must be notified.	
COUNTY OPERATOR	(213) 974-1234 (24 HOURS)

CALIFORNIA OFFICE OF EMERGENCY SERVICES NOTE: OBTAIN AN OES REPORT NUMBER	WORK NUMBER
STATE WARNING CENTER	(800) 852-7550 (24 HOURS)

STATE DEPARTMENT OF HEALTH SERVICES	WORK NUMBER	HOME NUMBER
LA DIVISION –MAIN OFF. / FAX	Main Off. (213) 580-5723	FAX (818) 551-2054
Chi Diep	(818) 551-2016	

ENVIRONMENTAL PROTECTION AGENCY (EPA) – REGION #9	WORK NUMBER
NATIONAL RESPONSE CENTER	(800) 424-8802 (24 HOURS)

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

STATE DEPARTMENT OF FISH AND GAME	WORK NUMBER
BUSINESS HOURS	(916) 445-0045
AFTER HOURS OSPR (OFFICE OF SPILL PREVENTION RESPONSE)	(916) 358-1300 (24 HOURS)

BUREAU OF SANITATION ENVIRONMENTAL MONITORING DIVISION	WORK NUMBER	PAGER/CELLULAR NUMBER	HOME NUMBER
JEFF BELLER	(310) 648-5262	Cell (310) 948-5094	(909) 592-2017
STAN ASATO	(310) 648-5194	Cell (714) 315-8754	(714) 840-3072
IOANNICE LEE	(310) 648-5196	Cell (310) 365-8840	
MICRO LAB	(310) 648-5276	Cell (213) 712-7594	

LA COUNTY DEPARTMENT OF PUBLIC WORKS INFORMATION TECHNOLOGY DIVISION	WORK NUMBER
24 HOUR DISPATCH	(626) 458-HELP (or 458-4357)

LA CITY DWP – WATER CONTROL OFFICE	WORK NUMBER	PAGER/CELLULAR NUMBER
JOSE MARTINEZ	(213) 367-1062	CELL. (213) 798-6947
LAWS-DAC EMERGENCY HOT LINE	(213) 580-8118 (24 HOURS)	(254) 460-2558 (satellite phone-for emergencies)

WATERSHED PROTECTION DIVISION	WORK NUMBER	PAGER/CELLULAR NUMBER
HOTLINE	(800) 974-9794	
STEVE PEDERSEN	(323) 342-1571	(213) 725-6308
TRI TRAN	(323) 342-1524	(213) 725-6306
CHING PENG	(323) 342-1523	(213) 725-6309

BUREAU OF SANITATION INDUSTRIAL WASTE MANAGEMENT DIVISION	WORK NUMBER	PAGER/CELLULAR NUMBER
BHUPENDRA PATEL	(323) 342-6101	

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

CITY OF LONG BEACH DEPT. OF HEALTH AND HUMAN SERVICES	WORK NUMBER
Hann Tritten	CELLULAR (562) 843-2012 (24 HRS) OFFICE (562) 570-4095
LB HEATH DEPT ON-CALL PAGER	(562) 408-5049

HUMAN RESOURCES DEV. DIV.	WORK NUMBER/RADIO	HOME NUMBER	PAGER/CELL PHONE
MOHSEN MOAYEDI	(310) 648-5942	(949) 443-0222	Cell (213) 359-4377
CHUCK TURHOLLOW	(310) 648-5928 Radio (HRDEMER) HR -1	(310) 216-6896	Pager (877) 339-8457

HEAL THE BAY 1444 9 th St., Santa Monica, CA 90401	WORK NUMBER Fax (310) 496-1902	AFTER HOURS
KRISTIN JAMES	(310) 451-1500	

LA COUNTY LIFEGUARDS	WORK NUMBER
SANTA MONICA OFFICE (Marina del Ray to Topanga)	(310) 394-3261 (24 HRS)
HERMOSA BEACH OFFICE (Dockweiler)	(310) 372-2166 OR (310) 372-2162 (24 HRS)

LA COUNTY HARBOR PATROL LA County Sherriff's Marina Del Rey	WORK NUMBER
OFFICE	(310) 482-6033 (24 HRS)

LA COUNTY BEACHES AND HARBORS (If unable to reach other LA Co. Beach #s)	WORK NUMBER
OFFICE	(310) 305-9503

LA UNIFIED SCHOOL DISTRICT Environmental Health and Safety Office (Refer to attached list for schools)	WORK NUMBER (Between 7:00 AM AND 4:00 PM)
Administrative Phone No. Ask for the Sr. Safety Officer over the impacted school	(213) 241-3199
SCHOOL POLICE WATCH COMMANDER	(213) 625-6631 (24 HOURS)

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Chapter 3: EMD Emergency Spill Response Sample Collection and Analysis Protocol

This chapter contains the document developed by EMD for its emergency spill response program.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

ENVIRONMENTAL MONITORING DIVISION Emergency Spill Response Sample Collection and Analysis Protocol

Sample Collection and delivery: This document pertains to bacteria samples only.

Day	Time	Phone	Delivery Instruction
7 Days per week	24 hrs	Spill Cell Phone: 213-712-7594	Call on-call cell phone - arrange time to meet in Room 452 in the Pregerson Building to turn over custody of the sample. If you cannot immediately contact or meet on-call staff, please leave a voice message with the sample collection time and ETA to the lab; if after 4:00 pm*, please call the Shifty at 310-864-9296 . Meet Shifty or his designee to turn over custody of the sample. Shifty will place the sample in the lab refrigerator in Room 452 in the Pregerson Building.
During normal working hours	06:30am – 4:00 pm	Micro Lab: 310-648-5276 Supervisor: 310-648-5196	If Microbiology Unit on-call staff cannot be reached during the hours of 06:30 – 4:00pm*, please call the EMD Microbiology Lab at 310 648-5276 or Micro Unit supervisor at 310 648-5196 ; transport the sample (see Sample Collection) to HTP Pregerson Building, Rm 452.

**EMD Contacts	Office Phone	Home Phone	Cell Phone
Micro Lab (06:30 am – 4:00 pm) <small>06:30 am – 3:00pm during furlough period</small>	310 648-5276	-----	----
Ioannice Lee, Spill Response Supv	310 648-5196	-----	310 365-8840
Stan Asato, Spill Response Coord.	310 648-5194	714 840-3072	714 315-8754
Jeff Beller, Assist. Division Mgr	310 648-5262	909 592-2017	310 948-5094
Mas Dojiri, Division Mgr	310 648-5610	310 377-7768	310 467-3685

***Saturday and Sunday lab operating hours are 06:30 am – 3:00 pm.**

Information Essential for all Spill Samples:

Location of spill	Time of spill	Volume of spill	Did the spill reach receiving water or aquifer?	Will WPD bring samples for analysis?
Does Chain of Custody match sample container?	Was sample delivered to lab within the 6 hr holding time , beginning with sample collection time?	What was the estimated volume of the spill?	If yes, was WPD notified?	If yes, please notify on-call person that WPD will bring samples.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

ENVIRONMENTAL MONITORING DIVISION Detailed Emergency Spill Response Protocol

Introduction

The Regional Water Quality Control Board (ORDER NO. R4-2010-0200, NPDES Permit NO. CA0109991) requires the City of Los Angeles to cease and desist discharges of raw sewage onto streets and into waters of the State. The City is required to collect and analyze a Sanitary Sewer Overflow sample(s) (SSO) at each location per day of spill for spill volumes $\geq 1,000$ gal. (any spill if receiving waters or shallow ground water aquifer was reached by any portion of the spill; if receiving waters are reached, up-and-down stream receiving water samples are to be collected and analyzed also). The sample must be tested for three indicator bacteria. The chromogenic substrate method is to be used to test for total coliform, *E. coli*, and *Enterococcus* bacteria. Bacterial analysis should be performed in accordance with procedures recommended by the “Standard Methods for Examination of Water and Wastewater (APHA 1998).”

Samples delivered to EMD labs during normal working hours (6:30 am – 4:00 pm, seven days a week) will be tested by personnel in the Microbiology Unit, Room 452. An on-call staff member will analyze samples delivered after normal working hours. After hours, the Hyperion plant operations staff will store samples until the staff arrives to conduct the analysis. This protocol describes the procedure for handling samples that will be delivered after EMD’s normal working hours.

Sample Collection

Samples collected in the field must follow Standard Methods (APHA 2005) collection protocol. Sample must be collected in a water tight, sterile container. Label the sample container with the location of the spill and sample collection time. If the sample cannot be delivered to the Microbiology Lab (Pregerson Bldg, Rm 452) within 1 hour, it must be placed on **ice immediately** and delivered to the lab **within** six hours of collection. Any sample not meeting these criteria is “**Invalid**”. Recommended container is a 4 oz Sterile Sample Container, Fisher Brand Catalog No. 14-375-147.

Sample Delivery “After” EMD Working Hours

The sample collectors will notify Microbiology staff of delivery and deliver samples to the Microbiology laboratory at EMD, Room 452, in the Pregerson Building located at the Hyperion Treatment Plant. **These samples must meet the required six-hour delivery (holding) time to be considered valid.**

Day	Time	Delivery Instruction
Daily	24 hrs	Call on-call cell phone (213-712-7594) - arrange time to meet in Room 452 in the Pregerson Building to turn over custody of the sample. If you cannot immediately contact or meet on-call staff, please leave a voice message with sample collection time and ETA to the lab. Please call the Shifty at 310-864-9296 . Meet Shifty or his designee to turn over custody of the sample that will be placed in the refrigerator in Room 452 in the Pregerson Building and try calling on-call staff again.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

****Pertinent Phone Numbers (Numbers indicate preferred contact sequence for EMD)**

Environmental Monitoring Division

1) EMD On-call cell phone 213-712-7594
EMD Microbiology Lab 310-648-5276

3) Ioannice Lee, Spill Response Supervisor
Office 310-648-5196
Cell 310 365-8840

4) Stan Asato, Spill Response Coordinator
Office 310-648-5194
Cell 714 315-8754
Home 714 840-3072

EMD Management Contacts:

5) Jeff Beller, Assistant Division Manager
Office 310-648-5262
Cell 310-948-5094
Home 909-592-2017

6) Mas Dojiri, Division Manager
Office 310-648-5610
Cell 310-467-3685
Home 310-377-7768

Wastewater Collection System Division

Citywide Office: 213-485-7575

WCSD Management Contacts:

Barry Berggren, Wastewater Mgr III
Office 323-342-6002
Cell 213-359-8301
Home 909-592-4719

Robert Potter, Wastewater Mgr II
Office 323-342-6004
Cell 213-280-2668
Home 818-830-7174

Paul Blasman, Wastewater Mgr I
Office 310-575-8491
Cell 213-361-2632
Home 310-323-8214

Kent Carlson, Wastewater Mgr I
Office 213-485-4910
Cell 213-280-2375
Home 661-254-2625

Watershed Protection Division

WPD Management Contact:

Steven Pedersen, CH Env Comp Insp
Office 323-342-1571
Cell 213-725-6308

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Emergency Spill Response On-Call Protocol

On-Call Assignment

To provide the required testing after normal working hours, weekends, and holidays, EMD will have one person per day assigned to on-call duty. This person, drawn from a pool of volunteers, will be available as necessary for the spill response bacterial sample analysis.

EMD on-call hours

Each day's on-call assignment time period is for 24 hours. It is the responsibility of the staff on-call to provide the cell phone to the next on-call person on the day their assignment begins. The cell phone will be transferred to the next on-call staff by 7:30 a.m. at the end of the on-call assignment. If the on-call staff cannot transfer the phone to the next on-call person, it is the responsibility of the staff with the phone to notify the next on-call person in the case of a spill.

Responsibilities of On-Call Person

On-call person must check with Bench Leader during the day to determine if any samples from the previous night need to be read. Once the on-call assignment begins, it is the on-call person's responsibility to be available to respond to phone calls, **at all times during their on-call assignment**. Upon receiving a request to return to work, the EMD on-call person should ascertain the time the sample was taken and when the sample will likely be delivered to the laboratory. (If the sample has not yet been taken, the Wastewater Collection System Division (WCSD) person should be requested to call back when it has been). The on-call person has limited flexibility in reporting to the laboratory. **The on-call person must report soon enough so that testing begins no later than 8 hours (6 hours holding plus 2 hours processing) after the time the sample was collected.** The on-call person must be prepared to perform required analyses immediately upon arrival.

If an illness or family emergency prevents the scheduled on-call person from being available for on-call duty, that person must notify the EMD Emergency Spills Response Supervisor or Coordinator as soon as possible. For non-emergency situations when the scheduled on-call person cannot be available for an assigned on-call day, it is that person's responsibility to find a qualified replacement from among the established list of trained Laboratory Technicians. The assigned on-call person must confirm the change by transferring the designated cell phone to the replacement and give the name of the replacement to the EMD Emergency Spills Response Supervisor or Coordinator.

In the event of a spill that necessitates contacting the on-call supervisor, on-call staff must notify the supervisor or in absence of the supervisor, the EMD contacts in the list below in the order of listed priority, until verbal contact has been achieved.

Training

All on-call personnel must complete the training prior to being scheduled for on-call duty. The EMD Emergency Spills Response Supervisor is responsible for establishing a training schedule, and for coordinating the training program, including notification of all potential on-call staff, their supervisors, and the supervisor providing the training. Training for each on-call person should be completed at least two weeks before he or she is scheduled for on-call duty. Training will be conducted at the Microbiology Lab at HTP during employees' regular shift. The

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

City will provide transportation to the training. The Microbiology unit supervisor will arrange with the Microbiology staff professionals to conduct the training.

Compensation for On-call and Call-back Work

Compensation for EMD staff on-call after hours for emergency laboratory testing is covered by the MOU applicable to Laboratory Technicians. It currently provides for \$24.00 “per day” compensation when on-call and a minimum of 4 hours of overtime if called and required to report (“call-back pay”).

For purposes of determining “on-call” compensation, a “day” is considered the period of time from which a person who is “on-call” from the previous day transfers the cell phone to the person on the next on-call shift. If the previous on-call staff is unable to transfer the phone to the next on-call shift, it is their responsibility to call the staff on-call to notify them if a spill sample needs processing. The staff who processes the sample will receive the on-call compensation. On-call assignment is by rotating schedule, except for Sundays, assigned to one person. During regular working hours, the laboratory bench leader will be responsible for processing the sample.

Entrance to Work Location

EMD on-call staff at Hyperion may enter the plant at Gate B (Imperial gate) or Gate C (Vista del Mar gate) using their identification badge. Upon identifying themselves, they will be permitted to park adjacent to the Pregerson building. Room 452 is open 24 hours per day.

Safety

Normally, only one EMD staff person will respond to handle the emergency sample analysis; therefore, employee safety is of utmost concern. The Hyperion Plant is staffed 24-hours a day, 7-days a week. The on-call person is to inform the plant shift superintendent upon arrival and may request that a security guard or plant personnel accompany him/her to the lab and to secure the building.

Duties of On-call Person

Upon arrival at the workstation, the on-call person will follow the procedures listed below:

- A. Receive the chain-of-custody and sample (signature, date, and time);
- B. Process the sample; and
- C. Notify the supervisor that a spill sample was received, along with the day, location, volume, and time of the spill by email.

Before leaving the lab, the on-call person will, through e-mail, inform the lab supervisor of all work performed and any follow-up tasks that are required. **The on-call person must ensure that the sample is read by the end of the incubation time. If necessary, the staff must return to the lab, 24 hours after finishing the testing, to read and record the results, unless regular shift or on-call employees are scheduled to be there at that time.**

Current On-Call Staff

Nic Arzadon
Roberto Bautista

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Pertinent Phone Numbers (Numbers indicate preferred contact sequence for EMD)

Environmental Monitoring Division

- 1) EMD On-call cell phone 213-712-7594
- 2) EMD Microbiology Lab 310-648-5276

- 3) Ioannice Lee, Spill Response Supervisor
Office 310-648-5196
Cell 310 365-8840

EMD Emergency Spill Response Coordinator:

- 4) Stan Asato,
Office 310-648-5194
Cell 714 315-8754
Home 714 840-3072

EMD Management Contacts:

- 5) Jeff Beller, Assistant Division Manager
Office 310-648-5262
Cell 310-948-5094
Home 909-592-2017

- 6) Mas Dojiri, Division Manager
Office 310-648-5610
Cell 310-467-3685
Home 310-377-7768

Wastewater Collection Systems Division

Citywide Office: 213-485-7575

WCSD Management Contacts:

Barry Berggren, Wastewater Mgr III
Office 323-342-6002
Cell 213-359-8301
Home 909-592-4719

Robert Potter, Wastewater Mgr II
Office 323-342-6004
Cell 213-280-2668
Home 818-830-7174

Paul Blasman, Wastewater Mgr I
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Cell 213-361-2632
Home 310-323-8214

Kent Carlson, Wastewater Mgr I
Office 213-485-4910
Cell 213-280-2375
Home 661-254-2625

Chapter 4: WPD Sanitary Sewer Overflow Monitoring Protocol

This chapter contains documents developed by WPD for its sanitary sewer overflow monitoring program.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

WPD Sanitary Sewer Overflow Monitoring Protocol

I. Equipment Preparation

PAS shall provide the sampling equipment for the collection of indicator bacteria samples at the channel.

1. Basic Equipment:

- a. Sterile, 125-ml. polypropylene or high density polyethylene (HDPE) sample bottles (Figure 1) with autoclave tape (Figure 2)
- b. Sample bottles for relevant pollutants (if applicable). Add preservatives if needed.
- c. Sampling rod with attached sample holding cup (Figure 3)
- d. Ice chest filled with crushed ice
- e. Level "C" PPE or at the minimum latex or nitrile gloves
- f. Waterproof labels or tags
- g. Marker/pen
- h. Bottle of 70% ethanol solution
- i. Washing bottle with distilled water
- j. Paper towels
- k. Field laptop computer
- l. Traffic safety vest
- m. Flashlight or other illuminating equipment (night sampling)



Figure 1. Sterile 125-ml. polypropylene sample bottle.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL



Figure 2. Autoclaved tape on sample bottle. Autoclaved date written on tape.

If the bottles lack the autoclaved tape on the cap or the tape is not dated, the bottles should not be used.



Figure 3. Sampling rod with sample bottle holder cup attached



Figure 4. Sample bottle loaded in sample holding cup. (Cap to be removed). Prior to loading the sample bottle, sterilize the holding cup by rinsing holding cup with 70% ethanol.

On the sampling rod, the sampling holding cup shall be sterilized by

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

rinsing the holder with 70% ethanol. If sampling is taking place during the night hours, flashlight and other illumination devices shall be used to ensure that the proper sampling procedure is followed.

If WPD observes other relevant pollutants, WPD shall take additional sample bottles for the specific pollutant(s). The number and type of bottles for relevant pollutants are referenced in Appendix B and Standard Methods for the Examination of Water and Wastewater, edited by Clesceri et al.

II. Personnel Safety

Personnel safety at the work site is of primary importance to consider when, where, and how to conduct a channel sampling.

1. Safety Guidelines and Considerations

- a. The inspectors shall wear WPD-issued jackets or orange reflective vests.
- b. The WPD inspector shall secure the site to assure personnel safety and develop a sampling site safety plan using reflective traffic cones and vehicle traffic and safety lights, following Los Angeles Department of Transportation (LADOT) Worksite Traffic Control Plan [Appendix D].
- c. The lead inspector shall contact the local Los Angeles Police Department (LAPD) district office for assistance should personnel safety be in doubt.
- d. Samplers shall wear non-slip boots or rain boots while sampling to avoid slipping and falling. The sampler shall pay special attention to his or her footing while sampling on the overpass.
- e. Sampler shall maintain his or her body's center of gravity inside the bridge railing. At no time should a sampler lean out over the railing.

III. Sampling Operation

WPD shall obtain grab samples from the nearest upstream and downstream overpass bridges by the storm drain outlet. Sampling shall occur from the midpoint of the overpass. Locations of Status and Trends sampling sites are provided in Appendix C.

1. Sampling Procedure

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- a. The sampling crew shall label all the bottles (Date & Time, Case ID# , Sample #, Location (upstream or downstream), Type of Analysis, Sampler Name and Division) before commencing sampling operation.
- b. The samples shall be collected using a sampling rod coupled with a secured, sterile bottle (Figure 3).
- c. Sampler will open the sterile bottle and load it into the sample holding cup (Figure 4) at the far end of the sampling rod. During the process, the sampler should avoid any direct or indirect physical contact with the interior of the sterile bottle and the bottle cap.
- d. In order to reduce the risk of grab sample cross-contamination by sampling equipment, sampling will first commence at the upstream bridge overpass. The sampler collects liquid samples by immersing the bottle into the center of the water flow in the main channel at least a few inches below the water surface. This zone is typically the mixing zone. The sampler shall avoid collecting surface flow.
- e. While retrieving the filled sample bottle, sampler shall shake off liquid and leave sufficient air space before the bottle is capped and stored in the ice chest. The air space is required to allow mixing by shaking before analysis.
- f. The same process applies to the downstream sampling operation.
- g. Field observation data is to be collected as detailed in Chapter 6.

2. Sample Delivery

- a. The sampler shall complete a chain of custody before delivering the samples to EMD for analysis.
- b. The samples shall be delivered on ice to EMD within six (6) hours of the collection of the first sample. (Appendix B).

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

IV. Testing

EMD shall conduct testing and data analysis for total coliform and *E. coli* using IDEXX Colilert-18 method and enterococcus using IDEXX Enterolert method, according to EMD SOP (Chapter 7).

V. Data Management

The sewer spill incident is recorded as a WPD Hotline illicit discharge or illicit connection incident. Data and incident documentation is managed through Watershed Protection Information Management System (WPIMS). Investigation and Enforcement protocol shall follow the Illicit Connection/Illicit Discharge Elimination Program Manual.

VI. Reporting

1. EMD Reporting

EMD will report the test results to WPD as soon as the test results are available and subsequently submit to WPD an electronic report on the laboratory results. The sample results will include a comparison to background levels and an indication of the need to continue sampling (Chapter 8).

2. WPD Reporting

The WPD lead inspector will prepare a final report once monitoring activities are completed and the results obtained from EMD indicate the last two³ sampling events show bacterial levels/relevant pollutant concentrations have returned to background levels using Status and Trends data. The report shall be submitted to WPD management for further distribution.

In the event of a spill or bypass of raw or partially treated sewage from the Tillman or Los Angeles-Glendale Plant into the Los Angeles River System, **total** and **fecal** coliform analyses shall be made on grab samples collected at all potentially affected downstream receiving water stations and at least one unaffected upstream receiving water station. Coliform samples shall be collected at each station on the date of the spill or bypass, if possible, and daily on each of the following four days.

Once daily sampling operations have ceased, WPD will send an e-mail notification to all EMD and WCSD contacts (Appendix A).

³ A minimum of 4 days sampling is required for LAG or DCT bypasses that reach receiving waters. A minimum of 4 days of sampling is required for spills to the Los Angeles Harbor also.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

3. WCSD Reporting

If the spill involves the City's wastewater collection system, WCSD shall submit the final electronic report to the California Regional Water Quality Control Board, Los Angeles Region. Copies of the final report shall be electronically mailed to contacts at EMD and WPD.

If the spill does not involve the City's wastewater collection system, but does involve the storm water system, WPD shall submit the report with copies to contacts at EMD and WCSD.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

VII. Appendix

- A. SSO and Monitoring Contacts
- B. Field Sampling Guide
- C. Standard Operating Procedure-Pollution Assessment Section)
- D. LADOT Worksite Traffic Control Plan
- E. California Hazardous Material Spill/Release Notification Guidance

Appendix A: Sewer Spill and Monitoring Contacts

1. 3-1-1 Call Center Access:

From within the City Limit

Dial 3-1-1 from wired phone or Cingular wireless

From greater Los Angeles area

(866) 4-LA-CITY

From outside the greater Los Angeles area

(213) 978-3231

2. WPD/Enforcement (On-call Supervisors):

Steve Pedersen

(323) 342-1571

(213) 725-6308 cell

sspedersen@lacity.org

Ching Peng

(323) 342-1523

(213) 725-6309

cpeng@lacity.org

Joe Fortaleza

(323) 342-1526

(213) 725-6301

jfortale@lacity.org

Tri Tran

(323) 342-1524

(213) 272-8412

ttran@lacity.org

3. WPD – Pollution Assessment:

Nancy Chung

(323) 342-1558

nchung@lacity.org

4. WBSD:

Berry Berggren

(323) 342-6002

(213) 359-8301 cell

Robert Potter

(323) 342-6004

(213) 280-2668 cell

- 5. EMD – Microbiology Unit: (See Emergency Spill Response Sample Collection and Analysis Protocol—Chapter 3—for whom to call and when) In general, call EMD lab, Microbiologist, swing shift, or on-call cell phone first. If no response, call in sequence, Spill Response Supervisor, Microbiology Supervisor, Spill Response Coordinator, and EMD managers**

EMD Microbiology lab 310-648-5276
EMD On-call cell phone 213-712-7594

Stan Asato, Spill Response Coordinator
office 310-648-5194
cell 714-315-8754
home 714-840-3072
stan.asato@lacity.org

Ioannice Lee, Spill Response Supervisor
office 310-648-5196
office 310-648-5276
cell 310-365-8840
Ioannice.lee@lacity.org

Mas Dojiri, Division Manager
office (310) 648-5610
cell (310) 467-3685
mas.dojiri@lacity.org

Jeff Beller, Assistant Division Manager
office (310) 648-5262
cell (310) 948-5094
jeffrey.beller@lacity.org

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

**6. L.A. County Department of Health Services:
Hotline Number: (888) 700-9995**

**7. L.A. County Emergency Operator:
(213) 974-1234**

**8. State Regional Water Quality Control Board:
(213) 576-6600**

**9. State of California Office of Emergency Services:
(800) 852-7550**

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Appendix B: Field Sampling Guide

<u>Analyte</u>	<u>BottleType</u>	<u>BottleSize</u>	<u>NoBottle</u>	<u>Preservative</u>	<u>Comment</u>	<u>Holdingtime</u>
TTO	Glass	2 liter	2	4 C	(a)	7 days till extract, 40 days after
VOC	Glass	40 ml	2	4 C	Teflon line cap, no head space	7 days till extract, 40 days after
Oil & Grease	Glass	1 liter	1	H2SO4 to pH<2, 4 C		28 days
MBAS (Surfactant)	Glass/Plastic	1 liter	1	4 C		48 hrs
ICP Metals	Plastic	500 ml	1	HNO3 to pH<2	Include TTLC/STLC	6 months
Total and fecal coliform, ENT	Plastic	125 ml	1	Na2S2O3	Sterile bottle required	6 hrs
Ethylene Glycol	Brown Glass	1 liter	1	4 C	Teflon line cap	
pH	Glass/Plastic	100 ml	1	None required		Analyze immediately
COD	Glass/Plastic	100 ml	1	H2SO4 to pH<2, 4 C		28 days
BOD	Glass/Plastic	500 ml	1	4 C		48 hrs
TSS	Glass/Plastic	100 ml	1	4 C		7 days
Cyanide	Glass/Plastic	1 liter	1	NaOH to pH>12	(c)	14 days
Ammonia	Glass/Plastic	500 ml	1	H2SO4 to pH<2		28 days
Oil Sheen	Glass	40 ml	2	4 C	(b)	
Carbon Chain Speciation	Glass	2 liters	1	4 C, H2SO4 to pH<2	Teflon cap, No space	

(a) *Includes BNA, Pesticide, VOC, PCB, Dioxin, Phenol.*

(b) *Teflon cap with no head space; or with glass fiber swatch with blank.*

(c) *In the presence of chlorine residue, add ascorbic acid a few crystals at a time until no chlorine remains. Then add 0.6 g ascorbic acid per liter of sample*

Wednesday, May 14, 2003

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Appendix C: Standard Operating Procedure- Pollution Assessment Section

This appendix contains the following two sections:

- I. Status & Trends Water Quality Monitoring of Los Angeles River Main (revised 11/25/13)
- II. Status & Trends Water Quality Monitoring of Ballona Creek Main and Tributary Stations (rev. 11/25/13)

I was sent a document with maps showing Ballona Creek and Dominguez Channel locations. I had difficulty pasting it into this document, and have not included it. If we do include a map(s), it should show Los Angeles River and Ballona Creek stations. Dominguez Channel should not be included unless samples will be collected in it for the SSO program.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

I. Status & Trends Water Quality Monitoring of Los Angeles River Main (revised 11/25/13)

The Status & Trends Water Quality Monitoring Program has been developed to begin watershed monitoring over the length of our local waterways: Los Angeles River, Ballona Creek, and Dominguez Channel. This standard operating procedure details the methodology necessary to collect samples of urban runoff from eight designated stations along the length of the L.A. River and deliver these samples to the Environmental Monitoring Division (EMD) for subsequent testing and reporting. Sampling begins in the San Fernando Valley and follows the river to Long Beach. The stations are located at the following L.A. River overpasses: White Oak Avenue, Sepulveda Boulevard, Tujunga Avenue, Colorado Street, Figueroa Street, Washington Boulevard, Rosecrans Avenue, and Willow Street.

Each of these locations is tested for monthly for total and dissolved metals and weekly for total coliforms, *E. coli*, and *Enterococcus* using the Idexx Defined Substrate Technology.

This procedure is written for individuals who are familiar with good laboratory practices regarding proper sample collection and delivery.

Gather Equipment

- a. ice
- b. ice chest
- c. overpass sampling pole with reel
- d. gloves
- e. sterile bottles
- f. waterproof labels
- g. paper towels
- h. sampling device
- i. washing bottle with distilled water.
- j. Marker / pen.
- k. field collection sheet
- l. Thomas Guide or Mapquest map
- m. trash bag
- n. safety vest
- o. rain gear

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Coordinate with the Testing Laboratory

Notify the supervisors of the Microbiology Lab and Inorganic Chemistry Lab in order to avoid scheduling conflicts by sending them a copy of the Sample Chain of Custody (COC) sheet that usually prepared one day in advance. Sample arrival times should be arranged to allow enough time for lab personnel to begin testing for total and dissolved metals and bacteriological testing for total coliforms, *E. coli*, and *Enterococcus*. As a rule of thumb, for bacteriological testing using Idexx Defined Substrate Technology, allow a minimum of 10 minutes/sample to initiate the test.

Results will be emailed to Watershed Protection Division (WPD) upon completion of testing, data validation, and reporting.

Sampling Locations

General locations and rate of safety in the LA River to be sampled are given in Table 1.

Table 1. Status & Trends L.A. River locations for the monitoring program.

Sampling Location	General Area	Sampling Code	Coordinates
White Oak Avenue	Reseda	LA-M-WOK	531:B7
Sepulveda Boulevard	Sherman Oaks	LA-M-SPV	561:H3
Tujunga Avenue	Studio City	LA-M-TUJ	562:J6
Colorado St.	Glendale	LA-M-COL	564:C5
Figueroa St.	Los Angeles	LA-M-FIG	594:H7
Washington Boulevard	Los Angeles	LA-M-WSH	674:J1
Rosecrans Avenue	Paramount	LA-M-ROS	735:E3
Willow Street	Long Beach	LA-M-WIL	795:C3

Scheduling

Status and Trends sampling schedules for each month are completed on the last week of the preceding month.

Sampling

Each of these locations has a three-letter code. In addition to that, the acronym “WPD” (Watershed Protection Division) and a five-number code in sequence (Table 2) create a more unique identifier. Each of the codes will be tested in both total dissolved metals (METAL) and Idexx Quanti-tray testing for total coliforms, *E. coli*, and *Enterococcus* (BACTI). For example, WPD-00074 is a sample for BACTI at White Oak Ave. (LA-M-WOK).

A. *Sample nomenclature*

Stations are named for the watershed they represent, whether the sample is from the main channel or a tributary, and the nearest cross street or the name of the tributary. For example:

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

[LA-M-WOK] = [Los Angeles River Watershed – Main channel – White Oak Ave.]

Table 2. Sample nomenclature.

Ex. [LA-M-WOK: LA=Los Angeles River, M=Main, WOK=White Oak Ave.]

SAMPLE #	CODE	TEST REQ.
WPD-00073	LA-M-WOK	METAL
WPD-00074	LA-M-WOK	BACTI
WPD-00075	LA-M-SPV	METAL
WPD-00076	LA-M-SPV	BACTI
WPD-00077	LA-M-TUJ	METAL
WPD-00078	LA-M-TUJ	BACTI
WPD-00079	LA-M-COL	METAL
WPD-00080	LA-M-COL	BACTI
WPD-00081	LA-M-FIG	METAL
WPD-00082	LA-M-FIG	BACTI
WPD-00083	LA-M-WSH	METAL
WPD-00084	LA-M-WSH	BACTI
WPD-00085	LA-M-ROS	METAL
WPD-00086	LA-M-ROS	BACTI
WPD-00087	LA-M-WIL	METAL
WPD-00088	LA-M-WIL	BACTI

Some of the sample numbers involve monitoring every thirty minutes between 8:00 am and 12:30 p.m. in the same station (Table 3). Use military time, if desired. This time-series monitoring will be tested for Idexx Quanti-tray testing for total coliforms, *E. coli*, and *Enterococcus*.

Table 3: Time series monitoring.

[TS-WOK: TS=Time Series, WOK=White Oak Ave.]

SAMPLE #	TIME (PST)	CODE	TEST REQ.
WPD-00009	0800	TS-WOK	BACTI
WPD-00010	0830	TS-WOK	BACTI
WPD-00011	0900	TS-WOK	BACTI
WPD-00012	0930	TS-WOK	BACTI
WPD-00013	1000	TS-WOK	BACTI
WPD-00014	1030	TS-WOK	BACTI
WPD-00015	1100	TS-WOK	BACTI
WPD-00016	1130	TS-WOK	BACTI
WPD-00017	1200	TS-WOK	BACTI
WPD-00018	1230	TS-WOK	BACTI

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

The general plan for driving to the site:

White Oak Ave. at Victory Blvd. – 531:B7 (LA-M-WOK)

- A. Directions from Media Center Dr..
 - a. turn left on San Fernando Rd
 - b. take Glendale Frwy (2) south
 - c. take Golden State Frwy (5) north
 - d. take Ventura Frwy (134) west
 - e. take Ventura Frwy (101) north on left lane
 - f. exit on White Oak Ave. and turn right
- B. Description
 - a. parking: on the service road just south of the overpass (before the bridge).
 - b. sampling location: middle of the bridge
- C. Safety/concerns—light traffic



White Oak Ave. looking northwest.

Station # 2. Sepulveda Blvd. at Valleyheart Dr. – 561:H3 (LA-M-SPV)

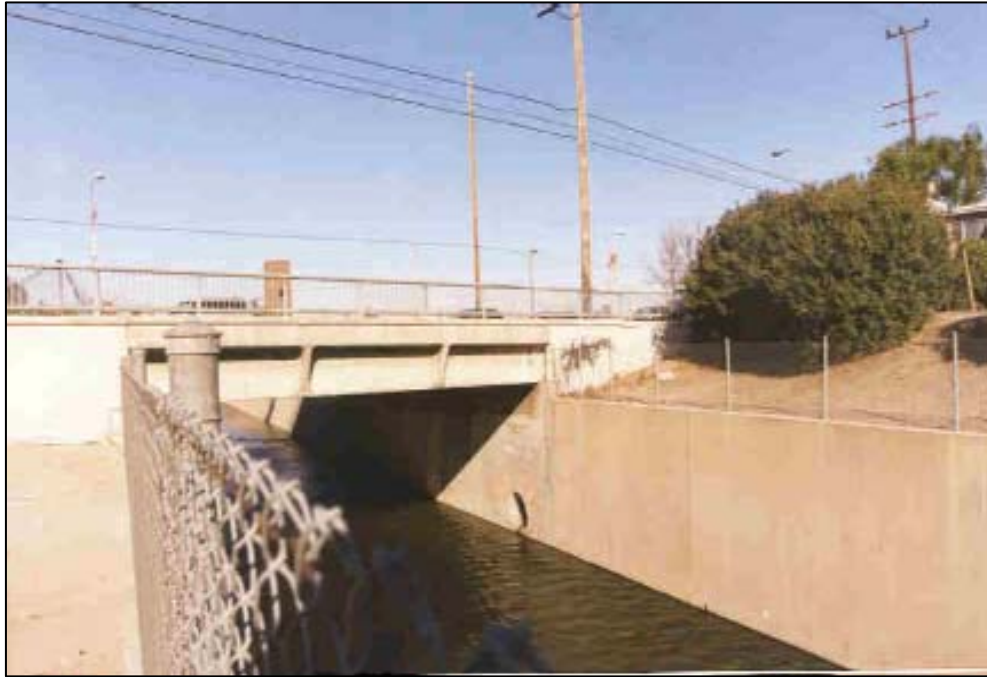
- A. Directions from White Oak and Victory Blvd.
 - a. Continue on White Oak Ave.
 - b. turn right on Victory Blvd.
 - c. turn right on Sepulveda Blvd.(past the San Diego Frwy (405) underpass)
 - d. turn left on Valleyheart Dr. before the Ventura Frwy (101) underpass

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

B. Description

- a. parking: south side of the bridge (before the bridge).
- b. sampling location: middle of the bridge
- c. depth of 1 ft.

C. Safety/concerns—heavy traffic; do not step back while taking samples



Sepulveda Blvd. looking northwest

Station # 3. Tujunga Ave. at Ventura Blvd. – 562:J6 (LA-M-TUJ)

Directions from Sepulveda Blvd. at Valleyheart Dr.

- a. continue on Valleyheart Dr.
- b. turn right on Kester Ave.
- c. left on Ventura Blvd. (5 miles)
- d. left on Tujunga Ave., at 7-11 store (after the curve on Tujunga Ave.)

Description

- a. parking: past the bridge (north)
- b. sampling: middle of the bridge

Safety/concerns—traffic is sometimes heavy – backing out to the street is not advised

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL



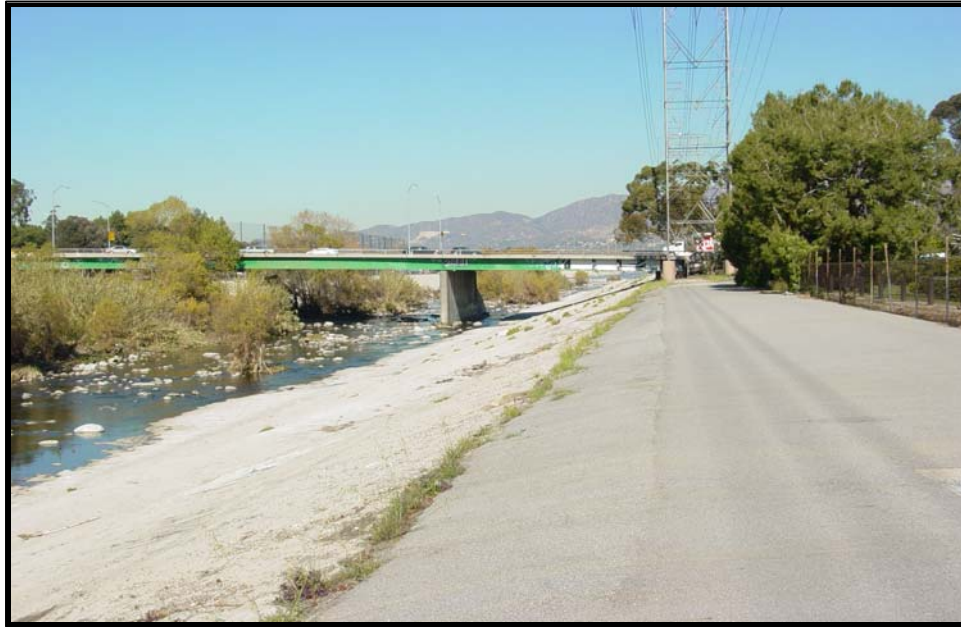
Tujunga Ave. looking southwest

Station # 4. Colorado St. freeway exit at Edenhurst Ave. – 564:C5 (LA-M-COL)

- A. Directions from Tujunga Ave. and Ventura Blvd.
 - a. continue north on Tujunga Ave.
 - b. turn right on Moorpark St.
 - c. turn left on Vineland Ave.
 - d. turn right on Riverside Dr.
 - e. turn left at the Ventura Frwy (134) east on-ramp
 - f. enter the Golden State Frwy (5) south
 - g. exit Colorado St., turn left.
 - h. turn right on Edenhurst Pl. and continue to the LAG Treatment Plant main entrance. Then drive toward the back gate at the southwest corner of the plant.
- B. Description
 - a. parking: at the back gate. City's key is required to open the gate.
 - b. sampling: along the river bed about 100 yards north of the plant's outfall.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- C. Safety/concerns—take samples with caution. Two staff must be present during sampling. Life vest must be worn when walking along the riverbed. If it is



raining or the flow is heavy – do not attempt to sample.

Colorado Blvd. looking upstream from LAG back gate

Station # 5. Riverside Dr. at N. Figueroa St. – 594:H7 (LA-M-FIG)

- A. Directions from Edenhurst Ave.
- Continue on Colorado St.
 - Turn right on minor San Fernando Rd.
 - San Fernando Rd will become Alger St.
 - Turn left on Chevy Chase Dr.
 - Turn right on San Fernando Rd.
 - Continue on San Fernando Rd. until past Home Depot
 - Turn right on Riverside Dr.
- B. Description
- parking: shoulder on the right side, middle of the bridge
 - sampling: middle of bridge
- C. Safety/concerns—bridge vibrates when vehicles approach past it which may cause to lose

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL



Figueroa St. looking southeast

Station # 6. Washington Blvd. at E. 23rd St. – 674:J1 (LA-M-WSH)

- A. Directions from N. Figueroa St.
 - a. continue on Riverside Dr.
 - b. turn left to take the Golden State Frwy (5) south (merge left quickly to two left lanes - right lanes are for 110 Frwy only)
 - c. exit Soto St.
 - d. turn right on Washington Blvd. (just past double overhead trellis)
 - e. make a U-turn after the bridge
- B. Description
 - a. parking: at curb on Washington Blvd. Turn on hazard lights.
 - b. sampling: either corners of the bridge
- C. Safety/concerns—trucks pass by the bridge and emit diesel fumes and sand, which are unpleasant to the sampler.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL



Washington Blvd. looking west

Station # 7. Rosecrans Ave. at 710 Fwy. – 735:E3 (LA-M-ROS)

- A. Directions from Washington Blvd.
 - a. continue on Washington Blvd.(east)
 - b. take the Long Beach Frwy (710) south
 - c. exit Rosecrans Ave., turn left
- B. Description
 - a. parking: past the bridge at turn-in (avoid blocking bike path)
 - b. sampling: middle of bridge facing south

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

C. Safety/concerns—heavy traffic



Rosecrans Ave. looking northeast

Station # 8. Willow St. at Golden Ave. – 795:C3 (LA-M-WIL)

- A. Directions from Rosecrans Ave..
 - a. Continue on Rosecrans Ave., then make a U turn at Orange Ave. to get back to the Long Beach Frwy (710) south
 - b. exit on Willow St. east (second exit)
 - c. go past the bridge to turn right on Golden Ave.
 - d. turn right on 25th Way
- B. Description
 - a. parking: W. 25th Wy. Corner San Francisco Ave. (one block west of Golden Ave.)
 - b. sampling: middle of bridge
- C. Safety/concerns—may slip going up or down the hill; use the fence to hold on.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL



Willow St. looking northeast

Hyperion Lab

Directions from Willow St.

- a. return to the Long Beach Frwy (710) north
- b. enter the San Diego Frwy (405) north
- c. enter the Century Frwy (105) west
- d. the Century Frwy (105) west becomes Imperial Hwy.
- e. turn left on Vista Del Mar
- f. turn left at 12000 Vista Del Mar, Gate C (first traffic light)

Media Center Drive.

Directions from Hyperion Lab

- a. go to the gate at Imperial Hwy., turn right
- b. to the left lane Imperial Hwy. becomes the Century Frwy (105) east
- c. take the Harbor Frwy (110) north
- d. take the Golden State Frwy (5) north
- e. take the Glendale Frwy (2) north
- f. exit San Fernando Rd, turn right
- g. turn right at Media Center Dr.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

B. *Specific Sampling Instructions*

1. Go to a designated station described in Table 1.
2. Place the label onto a sterile bottle with the appropriate information:
 - a. date
 - b. time
 - c. station (ex. WSH)
 - d. project (ex. ST-LAR)
 - e. sampler
 - f. analysis (ex. BACTI)
 - g. sample ID (ex. WPD-00037)
- Note: For metal samples, use label with letter A after the sample ID for 1L bottle and label with letter B after the sample ID for 500 mL bottle.*
3. Write down necessary information on the field collection sheet and on the label.
4. Wear gloves. Place sterile bottle into the bottle holder of the sampling device, make sure the bottle fits snugly in the holder.
5. Take a sampling pole and a washing bottle to the bridge.
6. Use sterile techniques. Prevent the inside of the cap from coming into contact with the ground.
7. Lay the sampling pole on the railing. With clicker on release the switch to lower the bottle. Use thumb to slow down the descent. Make sure that the bottle has enough sample.
8. Engage gears on reel. Reel the sample bottle in slightly until the metal bar is making contact with the surface of water to stabilize bottle before raising.
9. Reel the bottle in slowly. Put lid on the bottle.
10. Take the sample bottle out of the sampling device, then rinse the sampling device with water by using the washing bottle.
11. Take back the equipment to the vehicle. Store sample bottle in the ice. Dispose the gloves into trash bag.
12. Go to the next station and repeat steps 3-11. Once all the stations have been sampled, go to the microbiology laboratory at Hyperion and Vista Del Mar and give instructions to laboratory technicians on what test they need to perform.
13. Have the chain of custody signed by laboratory staff. The original chain of custody belongs to the laboratory. Its two copies belong to WPD.

Safety

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Always wear safety vest when working on the field. Floatation vest must be worn when sampling in-channel (by the bank of the river).

When sampling on the overpass, be alert to the potential dangers around you. ***Use hazard lights.*** Pay attention to your footing. Do not step back to the street where you can partially block the vehicles' path. In Colorado Street, to prevent from losing your balance on a vibrating bridge, it is imperative for you to kneel down before taking a sample. The same holds true for other locations, but less critical. Pay attention to glass debris; wear thicker shoes for better protection. Wear gloves when sampling to protect you from pathogens. The bridge is a dynamic place; be ready to deal with unforeseen hazards, environmentally and sociologically. Turbulent air from passing vehicles and its emitting fumes such as diesel can be distracting. Look at each location of the sidewalk before taking the sample. Use common sense when determining whether a sampling situation is safe or not. If conditions are not safe, do not sample the site. Record this information on the field collection sheet.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

II. Status & Trends Water Quality Monitoring of Ballona Creek Main and Tributary Stations (rev. 11/25/13)

The Status & Trends Water Quality Monitoring Program has been developed to begin watershed monitoring over the length of our local waterways: Los Angeles River, Ballona Creek, and Dominguez Channel. This standard operating procedure details the methodology necessary to collect samples of urban runoff from eight designated stations along the length of Ballona Creek and its tributaries, deliver these samples to the Environmental Monitoring Division (EMD) for subsequent testing and reporting. Sampling in Ballona Creek and its tributaries begins in Culver City and ends at Marina Del Rey. The stations are located at the following overpasses: National Boulevard, Duquesne Avenue, Overland Avenue, Culver Boulevard, Inglewood Boulevard, Alberta Drive, Del Rey Lagoon, and Pacific Avenue.

Each of these locations is tested for monthly for total and dissolved metals and weekly for total coliforms, *E. coli*, and *Enterococcus* using the Idexx Defined Substrate Technology.

This procedure is written for individuals who are familiar with good laboratory practices regarding proper sample collection and delivery.

Gather Equipment

- a. ice
- b. ice chest
- c. overpass sampling pole with reel
- d. gloves
- e. sterile bottles
- f. waterproof labels
- g. paper towels
- h. sampling device
- i. sampling weight
- j. flow meter equipment
- k. marker
- l. field collection sheet
- m. Thomas Guide or Mapquest map
- n. trash bag
- o. safety vest
- p. step stool
- q. rain gear

Coordinate with the Testing Laboratory

Notify the supervisors of the Microbiology Lab and Inorganic Chemistry Lab in order to avoid scheduling conflicts. Sample arrival times should be arranged to allow enough time for lab personnel to begin testing for total and dissolved metals and bacteriological testing for total coliforms, *E. coli*, and *Enterococcus*. As a rule of thumb, for bacteriological testing using Idexx Defined Substrate Technology, allow a minimum of

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

10 minutes/sample to initiate the test.

Results will be emailed to Watershed Protection Division (WPD) upon completion of testing, data validation, and reporting.

Sampling Locations

General locations and rate of safety in the Dominguez Channel and Ballona Creek to be sampled are given in Table 4.

Table 4. Status & Trends Ballona Creek locations for the monitoring program.

Sampling Location	General Area	Sampling Code	Coordinates
National Blvd.	Culver City	BC-M-NAT	632:J7
Duquesne Ave.	Benedict Canyon	BC-T-DUQ	672: H2
Overland Ave.	Culver City	BC-M-OVR	672:G3
Culver Blvd.	Sepulveda Channel	BC-T-CUL	672: E4
Inglewood Blvd.	Culver City	BC-M-ING	672:E6
Alberta Dr.	Centinela Creek	BC-T-ALB	672: E6
Pacific Ave.	Del Rey Lagoon	BC-T-DRL	702: A3
Pacific Ave.	Marina Del Rey	BC-M-PAC	702:A2

Scheduling

Status and Trends sampling schedules for each month are completed on the last week of the preceding month.

Sampling

Each of these locations has a three-letter code. In addition to that, the acronym “WPD” (Watershed Protection Division) and a five-number code in sequence (Table 5) create a more unique identifier. Each of the codes will be tested in both total dissolved metals (METAL) and Idexx Quanti-tray testing for total coliforms, *E. coli*, and *Enterococcus* (BACTI). For example, WPD-00090 is a sample for BACTI at National Blvd. (BC-M-NAT).

A. Sample nomenclature

Stations are named for the watershed they represent, whether the sample is from the main channel or a tributary, and the nearest cross street or the name of the tributary.

For example:

[BC-M-NAT] = [Dominguez Channel Watershed – Main channel – National Blvd.]

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Table 5. Sample nomenclature.

SAMPLE #	CODE	TEST REQ.
WPD-00089	BC-M-NAT	METAL
WPD-00090	BC-M-NAT	BACTI
WPD-00091	BC-T-DUQ	METAL
WPD-00092	BC-T-DUQ	BACTI
WPD-00093	BC-M-OVR	METAL
WPD-00094	BC-M-OVR	BACTI
WPD-00095	BC-T-CUL	METAL
WPD-00096	BC-T-CUL	BACTI
WPD-00097	BC-T-ALB	METAL
WPD-00098	BC-T-ALB	BACTI
WPD-00099	BC-M-ING	METAL
WPD-00100	BC-M-ING	BACTI
WPD-00102	BC-T-DRL	BACTI
WPD-00103	BC-M-PAC	METAL
WPD-00104	BC-M-PAC	BACTI

Some of the sample numbers involve monitoring every thirty minutes between 8:00 am and 12:30 p.m. in the same station (Table 6). Use military time, if desired. This time-series monitoring will be tested for Idexx Quanti-tray testing for total coliforms, *E. coli*, and *Enterococcus*.

Table 6: Time series monitoring.

Ex. [TS-BC-NAT: TS=Time Series, BC=Ballona Creek, NAT=National Blvd.]

SAMPLE #	TIME (PST)	CODE	TEST REQ.
WPD-00216	0800	TS-BC-NAT	BACTI
WPD-00217	0830	TS-BC-NAT	BACTI
WPD-00218	0900	TS-BC-NAT	BACTI
WPD-00219	0930	TS-BC-NAT	BACTI
WPD-00220	1000	TS-BC-NAT	BACTI
WPD-00221	1030	TS-BC-NAT	BACTI
WPD-00222	1100	TS-BC-NAT	BACTI
WPD-00223	1130	TS-BC-NAT	BACTI
WPD-00224	1200	TS-BC-NAT	BACTI
WPD-00225	1230	TS-BC-NAT	BACTI

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

The general plan for driving to the site:

National Blvd. and Jefferson Blvd. – 632:J7 (BC-M-NAT)

Directions from Media Center Drive

- turn right on San Fernando Rd.
- turn left on Avenue 26 (*just before Home Depot*)
- take Santa Ana Frwy (5) south
- take Santa Monica Frwy (10) west
- b. exit Washington Blvd., turn left
- c. left on S. Fairfax Ave. (becomes La Cienega Blvd.)
- d. right on Jefferson Blvd. (forks to National Blvd.)
- e. U-turn at Hayden Ave.

B. Description

- a. parking: parking lot near the train tracks (before bridge)
- b. sampling: near middle of bridge (on south side)

C. Safety/concerns: use caution when crossing the street



National Blvd. looking northeast

Duquesne Ave. – Benedict Canyon - 672: H2 (BC-T-DUQ)

- A. Directions from National Ave. at Jefferson Blvd.
 - a. go south on Jefferson Blvd. (1 mile)
 - b. right on Duquesne Ave.
 - c. make a U-turn after passing the bridge

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

B. Description

- a. parking: at curb, next to the bridge
- b. sampling location: walk down south side of the bike path to first tributary (if fast current, allow bottle to run with current to fill)
- c. 2 ft/s; 2" deep

C. Safety/concerns:

- a. watch out for bicycles; make sure that sampler is conspicuous while sampling
- b. do not drive vehicle on bike lane



Benedict Canyon Channel Duquesne Ave. looking north.

Overland Ave. and Ocean Dr. – 672:G3 (BC-M-OVR)

A. Directions from Duquesne Ave.

- a. continue on Duquesne Ave.
- b. right on Jefferson Blvd.
- c. right on Overland Ave.
- d. left on Ocean Dr.

B. Description

- a. parking: next to sidewalk on Ocean Dr. (*before the bridge*)
- b. sampling: middle of bridge

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

C. Safety/concerns: heavy traffic at times



Overland Ave. looking east.

Culver Blvd. and Slauson Ave. – Sepulv. Chan. – 672: E4 (BC-T-CUL)

- A. Directions from Overland Ave. and Ocean Dr.
 - a. continue on Ocean Dr.
 - b. left on Pickford Wy
 - c. left on Virginia Ave
 - d. left on Overland Ave.
 - e. left on Culver Blvd. (just past 405 Frwy)
 - f. right on Inglewood Blvd.
 - g. right on Culver Blvd. at end of service road
- B. Description
 - a. parking: next to the sidewalk on Culver Blvd. near tributary overpass
 - b. sampling: middle of the trellis where county's stream gage located.(county's key is required to open the gate)
 - c. 3 ft/s; 2" deep
- C. Safety/concerns: none.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL



Sepulveda Channel Culver Blvd. looking west.

Inglewood Blvd. at 90 Frwy – Cent. Creek – 672:F6 (BC-T-ALB)

- A. Directions from Culver Blvd. near Slauson Ave.
 - a. left on Inglewood Blvd.
 - b. left onto the service road next to the creek (just past 90 Frwy).
- B. Description
 - a. parking: at the service road.
 - b. sampling: at low flow channel
- C. Safety/concerns: medium traffic.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL



Centinela Creek at **Inglewood Blvd. looking west**

Inglewood Blvd. at Culver Dr. - 672: E6 (BC-M-ING)

- A. Directions from Inglewood Blvd. at 90 Frwy.
 - a. go back to previous direction on Inglewood Blvd.
- B. Description
 - a. parking: middle of the bridge
 - b. sampling: middle of the bridge (up stream)
- C. Safety/concerns: medium traffic.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL



Inglewood Blvd. looking upstream.

To Del Rey Lagoon - 702:A3 (BC-T-DRL)

Directions from Inglewood Blvd. at 90 Frwy

- a. continue on Inglewood Blvd.(take left lane immediately)
- b. left on Culver Dr.
- c. left on Centinela Ave..
- d. right on 90 Frwy West on-ramp.
- e. take 90 Frwy West to the end.
- f. left on Culver Blvd.
- g. right on Pacific Ave.

Description

- a. parking: parking lot next to the park
- b. sampling: dock on southwest side of lagoon
- c. lagoon is landlocked

C. Safety/concerns – dock sways slightly upon person's movement

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL



Del Rey Lagoon looking northeast.

Pacific Ave. – 702:A2 (BC-M-PAC)

- A. Directions from Del Rey Lagoon
 - a. continue west on Pacific Ave.
- B. Description
 - a. parking: at dead end street
 - b. sampling: middle of bridge
- C. Safety/concerns: none

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL



Pacific Ave. looking north

To Hyperion Lab

Directions from Pacific Ave.

- a. go south on Pacific Ave.
- b. right on Vista Del Mar
- c. left on Hyperion

To Media Center Drive

Directions from Hyperion Lab

- a. go to the gate at Imperial Hwy., turn right
- b. to the left lane Imperial Hwy becomes Ventura Frwy (105) east
- c. enter Harbor Frwy (110) north
- d. enter Golden State Frwy (5) north
- e. enter Glendale Frwy (2) north
- f. exit San Fernando Rd., turn right
- g. turn right at Media Center Dr.

Specific Sampling Instructions

1. Go to a designated station described in Table 4.
2. Place the label onto a sterile bottle with the appropriate information:

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- | | |
|--------------------------|------------------------------|
| a. Date | e. sampler |
| b. Time | f. analysis (ex. BACTI) |
| c. station (ex. NAT) | g. sample ID (ex. WPD-00037) |
| d. project (ex. ST-M-BC) | |
3. Write down necessary information on the field collection sheet and on the label.
 4. Wear gloves. Place sterile bottle into the bottle holder of sampling device, make sure the bottle fits snugly in the holder.
 5. Take a sampling pole and a washing bottle to the bridge.
 6. Use sterile techniques. Prevent the inside of the cap from coming into contact with the ground.
 7. Lay the sampling pole on the railing. With clicker on release the switch to lower the bottle. Use thumb to slow down the descent. Make sure that the bottle has enough sample.
 8. Engage gears on reel. Reel the sample bottle in slightly until the chain is making contact with the surface of water to stabilize bottle before raising.
 9. Reel the bottle in slowly. Put lid on the bottle.
 10. Take the sample bottle out of the sampling device, then rinse the sampling device with water from the washing bottle.
 11. Take back the equipment to the vehicle. Dispose the gloves into trash bag.
 12. Go to the next station and repeat steps 3-11. Once all the stations have been sampled, go to the microbiology laboratory at Hyperion and Vista Del Mar and give instructions to laboratory technicians on what test they need to perform.
 13. Have the chain of custody signed by laboratory staff. The original chain of custody belongs to the laboratory. Its two copies belong to WPD.

Safety

Always wear safety vest when working on the field. Floatation vest must be worn when sampling in-channel (by the bank of the river).

When sampling on the overpass, be alert to the potential dangers around you. Pay attention to your footing. Do not step back to the street where you can partially block the vehicles' path. Pay attention to glass debris; wear thicker shoes for better protection. Wear gloves when sampling to protect you from pathogens. The bridge is a dynamic place; be ready to deal with unforeseen hazards, environmentally and sociologically. Turbulent air from passing vehicles and its emitting fumes such as diesel can be

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

distracting. Look at each location of the sidewalk before taking the sample. Use common sense when determining whether a sampling situation is safe or not. If conditions are not safe, do not sample the site. Record this information on the field collection sheet.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Appendix D: LADOT Worksite Traffic Control Plan

**Appendix D is saved as a PDF file entitled: Appendix D----LADOT
WORKSITE TRAFFIC CONTROL PLANS**

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Appendix E: California Hazardous Material Spill/Release Notification Guidance

Appendix E is saved as a PDF file entitled: Appendix E----spillnot

Chapter 5: EMD Spill Sampling Protocol

This chapter contains SOPs developed by EMD for sampling sewer spills in Santa Monica Bay and Los Angeles Harbor, as well as, sampling discharges through the Hyperion Treatment Plant's 1-Mile Outfall.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL
City of Los Angeles
ENVIRONMENTAL MONITORING DIVISION
Microbiology Laboratory
STANDARD OPERATING PROCEDURE for
SANTA MONICA BAY SHORELINE
SEWAGE SPILLS

(Standard Methods 9060 A, B)

HTP SOP#

Effective Date:	<u>mm/dd/yy</u>
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TABLE OF CONTENTS

	Page
<u>TITLE PAGE</u>	
1. SCOPE AND APPLICATION	62
2. SUMMARY OF METHOD	62
3. INTERFERENCES	62
4. SAMPLE COLLECTION, PRESERVATION, AND HANDLING	62
5. APPARATUS	62-63
6. CHEMICALS AND REAGENTS	63
7. SAFETY	63
8. PROCEDURE	63-67
9. CALCULATION	67
10. DATA MANAGEMENT	67-68
11. QUALITY ASSURANCE AND QUALITY CONTROL	68
12. LOWEST REPORTING LEVEL	68
13. PRECISION AND BIAS STATEMENT	68
14. REFERENCES	68

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

1.0 SCOPE AND APPLICATION

- 1.1 Sampling is a critical part of laboratory analyses. The objective of sampling is to collect a portion of material small enough in volume to be transported conveniently and handled in the laboratory while still accurately representing the material being sampled.

2.0 SUMMARY OF METHOD

- 2.1 Sampling not only involves collection of a sample, but proper preservation and storage also. The sample must be handled in such a way that no significant changes in the composition occur before the necessary analytical laboratory tests are made
- 2.2 The sample collector is responsible for recording all pertinent information about the sample that might be significant in the evaluation and interpretation of the laboratory data. The resulting laboratory data is only as valid as the sample itself.

3.0 INTERFERENCES

- 3.1 Bacterial contamination of the sample may occur from improper collection, preservation, or handling. This may adversely affect test results.

4.0 SAMPLE COLLECTION, PRESERVATION, AND HANDLING

- 4.1. Samples for microbiological testing must be collected in sterile bottles or containers provided by the Micro lab. Commercially available sterile, disposable sample containers or whirl-pak bags also are acceptable. Samples collected in non-sterile containers will not be accepted by the lab for analysis.
- 4.2. Sample containers with sodium thiosulfate must be used when collecting samples that are chlorinated.
- 4.3. Samples that are not analyzed immediately should be refrigerated at 1 - 4°C.
- 4.4. The holding time for samples is 6 hours from sample collection to sample processing.

5.0 APPARATUS

- 5.1. Hard hat (if needed)
- 5.2. 125 ml sterile, polypropylene sample bottles or pre-sterilized sample bottles
- 5.3. Sampling pole or other sampling device (if needed)
- 5.4. Labeling tape
- 5.5. Permanent marking pen
- 5.6. Chain of Custody form/Sample Collection datasheet
- 5.7. Ice chest with ice

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 5.8. Disposable gloves
- 5.9. Paper towels
- 5.10. Alcohol foam
- 5.11. Rubber boots
- 5.12. First Aid kit
- 5.13. Accident forms
- 5.14. Beach observation table
- 5.15. Tire gauge
- 5.16. Thomas Guide
- 5.17. Shovel and tow strap
- 5.18. Cell phone
- 5.19. Watch

6.0 CHEMICALS AND REAGENTS

None

7.0 SAFETY

- 7.1. **All samples must be collected during daylight hours. No night sampling shall occur due to safety concerns.**
- 7.2. If a sample location is inaccessible or deemed to be unsafe and a sample cannot be collected, note this on the beach observation sheet as “IA” (inaccessible), record the time when you reached the station, and also notify supervisor.
- 7.3. Wear disposable gloves when collecting samples.
- 7.4. Inform laboratory personnel of your whereabouts prior to conducting sampling.

8.0 PROCEDURE

- 8.1. Preparation
 - 8.1.1. Inspect each sample container to ensure that its sterility has not been compromised. The container lid or cap should still be securely attached. There should not be any exposed holes, rips, tears, or openings in the sample container. Use only intact, sterile containers. Sample bottles received from the Micro lab should have a strip of autoclave tape on them. This tape looks like masking tape with dark stripes on it.
 - 8.1.2. With a marking pen, label the sample bottle or container with the following information:
 - 8.1.2.1. Sample location

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

8.1.2.2. Sample date

8.2. Sample Collection

- 8.2.1. All samples should be grab samples. Avoid multiple grabs.
- 8.2.2. Collect samples that are representative of the water or product being tested.
- 8.2.3. Once the sample is collected leave ample air space (about 1/2 - 1 inch) in the bottle to facilitate mixing by shaking. Do not rinse the bottle with sample prior to collecting the sample.
- 8.2.4. Use aseptic techniques throughout sample collection to avoid sample contamination. Caution must be used to prevent contaminating the sample with fingers, gloves, or other materials.
- 8.2.5. Keep sample bottle closed until it is to be filled. Remove the cap or lid as a unit. Do not contaminate the inner surface of the cap or neck of the bottle with your hands.
- 8.2.6. Depending upon the sample matrix, location and depth, samples can be collected by hand, or with a sample pole, or sampling device.
- 8.2.7. Sampling by hand or with a sample pole (normally used for shoreline sampling):
 - 8.2.7.1. Hold the bottle near its base with one hand and aseptically remove the lid or cap with the other hand. If using a sample pole, place the sample bottle securely in the sample pole and aseptically remove the lid or cap.
 - 8.2.7.2. Sample an **incoming** wave only. Plunge the bottle mouth down into the water to avoid introducing surface scum.
 - 8.2.7.3. Turn the bottle until the neck points slightly upward and the bottle mouth is directed toward the current away from the collector. Try to avoid getting sand in the bottle.
 - 8.2.7.4. If there is no current, artificially create one by pushing the bottle forward horizontally in a direction away from the collector.
 - 8.2.7.5. When sampling from a boat, obtain sample from the upstream side of the boat.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 8.2.7.6. After the sample has been collected, aseptically replace the lid or cap back on the bottle. Leave enough headspace for later mixing of the sample.

8.2.8. Sampling with a weighted bottle frame sampling device

- 8.2.8.1. Used when sampling from a bridge or other structure above a stream or body of water.
- 8.2.8.2. Place the sample bottle in the weighted sampler. Make sure the bottle is held securely in place.
- 8.2.8.3. Remove the bottle lid or cap and lower the sampler to the water. Use a nylon-type rope that does not absorb water and will not rot.
- 8.2.8.4. Face the sample bottle opening upstream and allow it to drop into the water, without slack in the rope.
- 8.2.8.5. Pull the sampler rapidly upstream and out of the water, simulating the scooping motion of a grab sample. Take care not to dislodge dirt or other material that might fall into the open sample bottle. Pull up the sampler and aseptically replace the bottle lid or cap.

8.2.9. Flopper bottle sampling device:

- 8.2.9.1. Used when sampling to a depth that cannot be reached with a sample pole.
- 8.2.9.2. Lower the flopper bottle into the water. The rope attached to the flopper bottle has one meter intervals marked with a strip of tape. Five meter intervals are marked with double strips of tape. Lower the flopper bottle to the desired depth, using the tape marks on the rope to measure the depth.
- 8.2.9.3. Raise and lower the flopper bottle three times to rinse it out.
- 8.2.9.4. Pull up the flopper bottle using a steady, continuous hand-over-hand motion. It is important that the flopper bottle rises continuously and is not allowed to go back down the water column. If this happens, the flopper bottle contents will empty and then refill. This will result in a sample being taken at the wrong depth.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 8.2.9.5. Discard some of the sample from the flopper bottle. This will rinse out the sample line.
- 8.2.9.6. Aseptically empty the sample contents from the flopper bottle into a sterile sample bottle. Leave enough headspace for later mixing of the sample. Tightly screw the cap back onto the sample bottle, again avoiding contamination.
- 8.2.10. Fill out the Chain of Custody/Beach Observation datasheet form. Make sure all sample information is recorded on the form.
- 8.2.11. Place sample container on ice immediately and deliver to the lab within six hours of collection. At no time should the sample container be allowed to become submerged in the melted ice water.
- 8.2.12. Upon arrival to the lab, process sample immediately. If sample cannot be processed, leave in ice chest or transfer to refrigerator. **Maximum** sample handling time is 6 hours from the time of collection to sample analysis.
- 8.3. Visual Observations
 - 8.3.1. See Sewage Spill Visual Observations SOP:Chapter 6
- 8.4. Duration of Sampling
 - 8.4.1. Monitoring shall be conducted on a daily basis from time the spill is known until the results of two consecutive sets of bacteriological monitoring indicate the return to background levels. Background levels will be considered met when AB411 limits are not exceeded for two consecutive days.
- 8.5. Sample Locations
 - 8.5.1. Shoreline affected by a known discharge of any volume raw sewage or partially treated sewage shall be sampled up coast and down coast of the point of entry of the spill if feasible, accessible, and safe. Locations to be sampled will depend of the magnitude of the spill reaching the receiving water as follows (Tables 7 & 8):

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Table 7.

Spill Volume	Spill Reach Receiving Water?	Sample Spill	Sample Receiving Water	Sampling Locations
Any volume	Yes	Yes	Yes	See Table 8
≥ 1000 gals	No	Yes	No	Spill Only
All other spills	No	Yes	No	Spill Only

Table 8. *

MAGNITUDE OF SPILL	EXTENT OF SAMPLING
< 1,000 gallons	Spill, 100 m up and down coast (3 samples)
1,000 – 10,000 gals	Spill, 100 m, and 0.5 mile up coast and down coast (5 samples)
10,000 – 100,000 gals	Spill, 100 m, 0.5, and 1 mile up coast and down coast (7 samples)
100,000 -1 million gals	Spill, 100 m, 0.5, 1, and 3 miles up coast and down coast (9 samples)
1 – 2 million gals	Spill, 100 m, 0.5, 1, 3, and 5 miles up coast and down coast (11 samples)
> 2 million gals	Spill, 100 m, 0.5, 1, 3, 5, and >5 miles up coast and down coast (13 samples)

*Circumstances and available information may dictate an alternative course of action. Stated locations are guidelines only, and may vary depending on geographical location of the spill, prevailing winds, ocean currents, and other circumstances. Distances are based upon, but are not identical to, guidelines employed by the Department of Health Services.

9.0 CALCULATION

None

10.0 DATA MANAGEMENT

- 10.1 Open up the Login sheet on the Desktop PC. Choose the “CS_SHO” worksheet tab that has today’s date (includes MS4 shoreline and any additional non-boat related

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

samples). Enter sample collection time, sampler's initials, analyses set time and incubation time.

10.2 Place data worksheet or Chain of Custody sheet in their designated trays.

11.0 QUALITY ASSURANCE AND QUALITY CONTROL

11.1 Ensure sample bottles have passed QA sterility tests.

11.2 Check the monthly sample calendar for the day's duplicate stations.

12.0 LOWEST REPORTING LEVEL

Not Applicable

13.0 PRECISION AND BIAS STATEMENT

Not Applicable

14.0 REFERENCES

14.1 *Standard Methods for the Examination of Water and Wastewater*, 20th Edition, 1998.

14.2 City of Los Angeles, Environmental Monitoring Division. *Sewage Spill Design Key*, Raw Sewage Spill.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

City of Los Angeles
ENVIRONMENTAL MONITORING DIVISION
Microbiology Laboratory
STANDARD OPERATING PROCEDURE for

1-MILE OUTFALL DIVERSION SAMPLE COLLECTION

(Standard Methods 9060 A, B)

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TABLE OF CONTENTS

	Page
<u>TITLE PAGE</u>	
1. SCOPE AND APPLICATION	70
2. SUMMARY OF METHOD	70
3. INTERFERENCES	70
4. SAMPLE COLLECTION, HANDLING	70
5. APPARATUS	70-71
6. CHEMICALS AND REAGENTS	71
7. SAFETY	71
8. PROCEDURE	71-74
9. CALCULATION	74
10. DATA MANAGEMENT	74
11. QUALITY ASSURANCE AND QUALITY CONTROL	74
12. LOWEST REPORTING LEVEL	74
13. PRECISION AND BIAS STATEMENT	74
14. REFERENCES	74

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

1.0 SCOPE AND APPLICATION

- 1.1 Sampling is a critical part of laboratory analyses. The objective of sampling is to collect a portion of material small enough in volume to be transported conveniently and handled in the laboratory while still accurately representing the material being sampled.

2.0 SUMMARY OF METHOD

- 2.1. Sampling not only involves the collection of a sample, but also the preservation and storage of the sample. The sample must be handled in such a way that no significant changes in the composition occur before the necessary analytical laboratory tests are made.
- 2.2. The sample collector is responsible for the recording of all pertinent information about the sample that might be significant in the evaluation and interpretation of the laboratory data. The resulting laboratory data is only as valid as the sample itself.

3.0 INTERFERENCES

- 3.2 Bacterial contamination of the sample may occur from improper collection, preservation, and handling, which may adversely affect test results.

4.0 SAMPLING AND SAMPLE HANDLING

- 4.1. Samples for microbiological testing must be collected in sterile bottles or containers provided by the Micro lab. Commercially available sterile, disposable sample containers or whirl-pak bags also are acceptable. Samples collected in non-sterile containers will not be accepted by the lab for analysis.
- 4.2. Sample containers with sodium thiosulfate must be used when collecting samples that are chlorinated.
- 4.3. Samples that are not analyzed immediately should be either refrigerated or kept on ice at 1 - 4°C.
- 4.4. The holding time for samples is 6 hours from sample collection to sample processing.

5.0 APPARATUS

- 5.1. Hard hat (if needed)
- 5.2. 125 ml sterile, polypropylene sample bottles or pre-sterilized sample bottles
- 5.3. Sampling pole or other sampling device (if needed)
- 5.4. Labeling tape

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 5.5. Permanent marking pen
- 5.6. Chain of Custody form/Sample Collection datasheet
- 5.7. Ice chest with ice
- 5.8. Disposable gloves
- 5.9. Paper towels
- 5.10. Alcohol foam
- 5.11. First Aid kit
- 5.12. Accident forms
- 5.13. Tire gauge
- 5.14. Thomas Guide
- 5.15. Cell phone
- 5.16. Watch

6.0 CHEMICALS AND REAGENTS

None

7.0 SAFETY

- 7.1 **All samples must be collected during daylight hours. No night sampling shall occur due to safety concerns.**
- 7.2 If a sample location is inaccessible or deemed to be unsafe and a sample cannot be collected, note this on the observation sheet as “IA” (inaccessible), record the time when you reached the station, and also notify supervisor.
- 7.3. Wear a hard hat and disposable gloves when collecting samples from the Plant.
- 7.4. Inform laboratory personnel of your whereabouts prior to conducting sampling.

8.0 PROCEDURE

- 8.1. Preparation
 - 8.1.1. Inspect each sample container to ensure that its sterility has not been compromised. The container lid or cap should still be securely attached. There should not be any exposed holes, rips, tears, or openings in the sample container. Use only intact, sterile containers. Sample bottles received from the Micro lab should have a strip of autoclave tape on them. This tape looks like masking tape with dark stripes on it.
 - 8.1.2. With a marking pen, label the sample bottle or container with the following information:
 - 8.1.2.1. Sample location

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

8.1.2.2. Sample date

8.2. Sample Collection

8.2.1. All samples must be grab samples. Avoid multiple grabs.

8.2.2.. Collect samples that are representative of the water or product being tested.

8.2.3. Once the sample is collected leave ample air space (about 1/2 - 1 inch) in the bottle to facilitate mixing by shaking. Do not rinse the bottle with sample prior to collecting the sample.

8.2.4. Use aseptic techniques throughout sample collection to avoid sample contamination. Caution must be used to prevent contaminating the sample with fingers, gloves, or other materials.

8.2.5. Keep sample bottle closed until it is to be filled. Remove the cap or lid as a unit. Do not contaminate the inner surface of the cap or neck of the bottle with your hands.

8.2.6. Depending upon location and depth, samples can be collected with a sample pole, or alternate sampling device.

8.2.7. Sampling with a sample pole:

8.2.7.1. Obtain sample from the upstream side of the boat.

8.2.7.2. Place the sample bottle securely in the sample pole and aseptically remove the lid or cap.

8.2.7.3. Plunge the bottle, mouth down, into the water, turn the bottle until the neck points slightly upward, and collect water 1 (one) meter below the surface.

8.2.7.4. After the sample has been collected, aseptically replace the lid or cap back on the bottle. Leave enough headspace for later mixing of the sample.

8.2.8. Flopper bottle sampling device:

8.2.8.1. Used when sampling to a depth that cannot be reached with a sample pole.

8.2.8.2. Lower the flopper bottle into the water. The rope attached to the flopper bottle has one meter intervals marked with a strip

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

of tape. Five meter intervals are marked with double strips of tape. Lower the flopper bottle to the desired depth, using the tape marks on the rope to measure the depth.

8.2.8.3. Raise and lower the flopper bottle three times to rinse it out.

8.2.8.4. Pull up the flopper bottle using a steady, continuous hand-over-hand motion. It is important that the flopper bottle rises continuously and is not allowed to go back down the water column. If this happens, the flopper bottle contents will empty and then refill. This will result in a sample being taken at the wrong depth.

8.2.8.5. Discard some of the sample from the flopper bottle. This will rinse out the sample line.

8.2.8.6. Aseptically empty the sample contents from the flopper bottle into a sterile sample bottle. Leave enough headspace for later mixing of the sample. Tightly screw the cap back onto the sample bottle, again avoiding contamination.

8.2.9. Fill out the Sewage Spill Observation datasheet form. Make sure all sample information is recorded on the form.

8.2.10. Place sample container in refrigerator or on ice immediately. Either process sample on the boat or deliver to the lab for processing within six hours of collection. At no time should the sample container be allowed to become submerged in the melted ice water.

8.2.11. Upon arrival to the lab, process sample immediately. If sample cannot be processed, leave in ice chest or transfer to refrigerator. **Maximum** sample holding time is 6 hours from the time of sample collection to sample processing.

8.3. Duration of Sampling

8.3.1. Monitoring shall be conducted once per discharge day.

8.4. Sample Locations

8.4.1. One sample is to be taken at the discharge point (A-2), surface and depth. Surface sample is taken one meter below the surface and depth sampling is to be done 2 meters (6.6 feet) above the seabed.

8.4.2. Two additional samples are to be taken within approximately 50 feet of the discharge point, surface and depth.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

8.4.3. A grab sample for total chlorine residual analysis must be collected also.

8.4.4. Sampling frequency is once per discharge day.

9.0 CALCULATION

None

10.0 DATA MANAGEMENT

10.1. Place data worksheet or Chain of Custody sheet in designated tray.

11.0 QUALITY ASSURANCE AND QUALITY CONTROL

11.1. Ensure sample bottles have passed QA sterility tests.

12.0 LOWEST REPORTING LEVEL

Not Applicable

13.0 PRECISION AND BIAS STATEMENT

Not Applicable

14.0 REFERENCES

14.1. *Standard Methods for the Examination of Water and Wastewater*, 20th Edition, 1998.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL
City of Los Angeles
ENVIRONMENTAL MONITORING DIVISION
Microbiology Laboratory
STANDARD OPERATING PROCEDURE for
LOS ANGELES HARBOR SEWAGE SPILLS

(Standard Methods 9060 A, B)

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TABLE OF CONTENTS

	Page
<u>TITLE PAGE</u>	
1. SCOPE AND APPLICATION	76
2. SUMMARY OF METHOD	76
3. INTERFERENCES	76
4. SAMPLING AND SAMPLE HANDLING	76
5. APPARATUS	76-77
6. CHEMICALS AND REAGENTS	77
7. SAFETY	77
8. PROCEDURE	77-80
9. CALCULATION	80
10. DATA MANAGEMENT	80-81
11. QUALITY ASSURANCE AND QUALITY CONTROL	81
12. LOWEST REPORTING LEVEL	81
13. PRECISION AND BIAS STATEMENT	81
14. REFERENCES	81

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

1.0 SCOPE AND APPLICATION

- 1.1 Sampling is a critical part of laboratory analyses. The objective of sampling is to collect a portion of material small enough in volume to be transported conveniently and handled in the laboratory while still accurately representing the material being sampled.

2.0 SUMMARY OF METHOD

- 2.1. Sampling not only involves collection of a sample, but how to properly preserve and store the sample. The sample must be handled in such a way that no significant changes in the composition occur before the necessary analytical laboratory tests are made.
- 2.2. The sample collector is responsible for recording all pertinent information about the sample that might be significant in the evaluation and interpretation of the laboratory data. The resulting laboratory data is only as valid as the sample itself.

3.0 INTERFERENCES

- 3.1 Bacterial contamination of the sample may occur from improper collection, preservation, or handling. This may adversely affect test results.

4.0 SAMPLING AND SAMPLE HANDLING

- 4.1. Samples for microbiological testing must be collected in sterile bottles or containers provided by the Micro lab. Commercially available sterile, disposable sample containers or whirl-pak bags also are acceptable. Samples collected in non-sterile containers will not be accepted by the lab for analysis.
- 4.2. Sample containers with sodium thiosulfate must be used when collecting samples that are chlorinated.
- 4.3. Samples that are not analyzed immediately should be refrigerated at 1 - 4°C.
- 4.4. The holding time for samples is 6 hours from sample collection to sample processing.

5.0 APPARATUS

- 5.1. Hard hat (if needed)
- 5.2. 125 ml sterile, polypropylene sample bottles or pre-sterilized sample bottles
- 5.3. Sampling pole or other sampling device (if needed)
- 5.4. Labeling tape
- 5.5. Permanent marking pen
- 5.6. Chain of Custody form/Sample Collection datasheet

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 5.7. Ice chest with ice
- 5.8. Disposable gloves
- 5.9. Paper towels
- 5.10. Alcohol foam
- 5.11. Rubber boots
- 5.12. First Aid kit
- 5.13. Accident forms
- 5.14. Beach observation table
- 5.15. Tire gauge
- 5.16. Thomas Guide
- 5.17. Shovel and tow strap
- 5.18. Cell phone
- 5.19. Watch

6.0 CHEMICALS AND REAGENTS

None

7.0 SAFETY

- 7.1 **All samples must be collected during daylight hours. No night sampling shall occur due to safety concerns.**
- 7.2 If a sample location is inaccessible or deemed to be unsafe and a sample cannot be collected, note this on the beach observation sheet as “IA” (inaccessible), record the time when you reached the station, and also notify supervisor.
- 7.3. Wear disposable gloves when collecting samples.
- 7.4. Inform laboratory personnel of your whereabouts prior to conducting sampling.

8.0 PROCEDURE

- 8.1. Preparation
 - 8.1.1. Inspect each sample container to ensure that its sterility has not been compromised. The container lid or cap should still be securely attached. There should not be any exposed holes, rips, tears, or openings in the sample container. Use only intact, sterile containers. Sample bottles received from the Micro lab should have a strip of autoclave tape on them. This tape looks like masking tape with dark stripes on it.
 - 8.1.2. With a marking pen, label the sample bottle or container with the following information:
 - 8.1.2.1. Sample location

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

8.1.2.2. Sample date

8.2. Sample Collection

- 8.2.1. All samples should be grab samples. Avoid multiple grabs.
- 8.2.2.. Collect samples that are representative of the water or product being tested.
- 8.2.3. Once the sample is collected, leave ample air space (about 1/2 - 1 inch) in the bottle to facilitate mixing by shaking. Do not rinse the bottle with sample prior to collecting the sample.
- 8.2.4. Use aseptic techniques throughout sample collection to avoid sample contamination. Caution must be used to prevent contaminating the sample with fingers, gloves, or other materials.
- 8.2.5. Keep sample bottle closed until it is to be filled. Remove the cap or lid as a unit. Do not contaminate the inner surface of the cap or neck of the bottle with your hands.
- 8.2.6. Depending upon the sample matrix, location and depth, samples can be collected by hand, or with a sample pole, or sampling device.
- 8.2.7. Sampling by hand or with a sample pole (normally used for shoreline sampling):
 - 8.2.7.1. Hold the bottle near its base with one hand and aseptically remove the lid or cap with the other hand. If using a sample pole, place the sample bottle securely in the sample pole and aseptically remove the lid or cap.
 - 8.2.7.2. Sample an **incoming** wave only. Plunge the bottle mouth down into the water to avoid introducing surface scum.
 - 8.2.7.3. Turn the bottle until the neck points slightly upward and the bottle mouth is directed toward the current away from the collector. Try to avoid getting sand in the bottle.
 - 8.2.7.4. If there is no current, artificially create one by pushing the bottle forward horizontally in a direction away from the collector.
 - 8.2.7.5. When sampling from a boat, obtain sample from the upstream side of the boat.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 8.2.7.6. After the sample has been collected, aseptically replace the lid or cap back on the bottle. Leave enough headspace for later mixing of the sample.

8.2.8. Sampling with a weighted bottle frame sampling device

- 8.2.8.1. Used when sampling from a bridge or other structure above a stream or body of water.
- 8.2.8.2. Place the sample bottle in the weighted sampler. Make sure the bottle is held securely in place.
- 8.2.8.3. Remove the bottle lid or cap and lower the sampler to the water. Use a nylon-type rope that does not absorb water and will not rot.
- 8.2.8.4. Face the sample bottle opening upstream and allow it to drop into the water, without slack in the rope.
- 8.2.8.5. Pull the sampler rapidly upstream and out of the water, simulating the scooping motion of a grab sample. Take care not to dislodge dirt or other material that might fall into the open sample bottle. Pull up the sampler and aseptically replace the bottle lid or cap.

8.2.9. Flopper bottle sampling device:

- 8.2.9.1. Used when sampling to a depth that cannot be reached with a sample pole.
- 8.2.9.2. Lower the flopper bottle into the water. The rope attached to the flopper bottle has one meter intervals marked with a strip of tape. Five meter intervals are marked with double strips of tape. Lower the flopper bottle to the desired depth, using the tape marks on the rope to measure the depth.
- 8.2.9.3. Raise and lower the flopper bottle three times to rinse it out.
- 8.2.9.4. Pull up the flopper bottle using a steady, continuous hand-over-hand motion. It is important that the flopper bottle rises continuously and is not allowed to go back down the water column. If this happens, the flopper bottle contents will empty and then refill. This will result in a sample being taken at the wrong depth.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

8.2.9.5. Discard some of the sample from the flopper bottle. This will rinse out the sample line.

8.2.9.6. Aseptically empty the sample contents from the flopper bottle into a sterile sample bottle. Leave enough headspace for later mixing of the sample. Tightly screw the cap back onto the sample bottle, again avoiding contamination.

8.2.10. Fill out the Chain of Custody/Beach Observation datasheet form. Make sure all sample information is recorded on the form.

8.2.11. Place sample container on ice immediately and deliver to the lab within six hours of collection. At no time should the sample container be allowed to become submerged in the melted ice water.

8.2.12. Upon arrival to the lab, process sample immediately. If sample cannot be processed, leave in ice chest or transfer to refrigerator. **Maximum** sample handling time is 6 hours from the time of collection to sample processing.

8.3. Visual Observations

8.3.1. See Sewage Spill_Visual Observations SOP

8.4. Duration of Sampling

Monitoring shall be conducted on the date of the spill or bypass and daily on each of the following four or until coliform levels in the receiving water are within normal range and the bypass or spill has ceased. The normal range will be considered met when AB411 limits, for all indicators, are not exceeded for two consecutive days.

8.5. Sample Locations and analytes

8.5.1. In the event of a spill or bypass of raw or partially treated sewage from the TITP into the Harbor, **total and fecal coliform** analyses shall be made on grab samples collected at all potentially affected receiving water stations and at least one unaffected ambient water station.

8.5.2. Additionally, the receiving water shall be monitored for BOD, suspended solids, settleable solids, and oil and grease, during any day the filters are bypassed, until it is demonstrated that the filter bypass has not caused an adverse impact on the receiving water.

9.0 CALCULATION

None

10.0 DATA MANAGEMENT

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 10.1 Open up the Login sheet on the Desktop PC. Choose the “CS_SHO” worksheet tab corresponding to the date of sample processing (includes MS4 shoreline and any additional non-boat related samples). Enter sample collection time, sampler’s initials, analyses set time and incubation time.
- 10.2 Place observation worksheet or Chain of Custody sheet in their designated trays.
- 10.3 The Data and Sample Management unit is responsible for the input of sample information into the EMD Laboratory Information Management System (LIMS) and a unique laboratory registration number will be generated for each sample collected.

11.0 QUALITY ASSURANCE AND QUALITY CONTROL

- 11.1 Ensure sample bottles have passed QA sterility tests.
- 11.2 Endure sample management procedures have been adhered to.

12.0 LOWEST REPORTING LEVEL

Not Applicable

13.0 PRECISION AND BIAS STATEMENT

Not Applicable

14.0 REFERENCES

- 14.1 *Standard Methods for the Examination of Water and Wastewater*, 20th Edition, 1998.
- 14.2 City of Los Angeles, Environmental Monitoring Division. Sewage Spill Design Key.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

OFFSHORE AMMONIA SAMPLE COLLECTION: SMB PLUME TRACKING / CENTRAL BIGHT COOPERATIVE WATER QUALITY SURVEY (CBCWQS) / SANITARY SEWER OVERFLOW

HTP SOP# XXXX

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TABLE OF CONTENTS

	Page
<u>TITLE PAGE</u>	
1. SCOPE AND APPLICATION	1
2. SUMMARY OF METHOD	1
3. INTERFERENCES	1
4. SAMPLE COLLECTION, PRESERVATION AND HANDLING	1
5. APPARATUS	1
6. MEDIA AND REAGENTS	2
7. SAFETY	2
8. PROCEDURE	2-5
9. CALCULATION	5
10. DATA MANAGEMENT	5
11. QUALITY ASSURANCE AND QUALITY CONTROL	6
12. LOWEST REPORTING LEVEL	6
13. PRECISION AND BIAS STATEMENT	6
14. REFERENCES	6
15. APPENDICES	7

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

1. SCOPE AND APPLICATION:

- 1.1 The waters of Santa Monica Bay are monitored quarterly for ammonia at four depths (surface, 15, 30, and 45 meters from the surface) at 21 stations to assess compliance with water quality standards as detailed in the Hyperion NPDES Permit (RWQCB 2010a).
- 1.2 The waters of Los Angeles Outer Harbor are monitored quarterly for ammonia at surface depth (less than 1-meter) to assess compliance with water quality standards as detailed in the Terminal Island Water Reclamation Permit NPDES Permit (RWQCB 2010b).
- 1.3 In the event of a Sanitary Sewer Overflow (SSO) $\geq 50,000$ gallons shoreline and offshore sampling is required pursuant State Water Resources Control Board Order No. WQ 2013-0058 EXEC, Monitoring and Reporting Program. Surface discrete ammonia samples will be collected according to sections 1.1, 1.2 (above), and the SSO Response Plan. Differing SSO volumes require different spatial and temporal sampling strategies. Any SSO is unplanned and accidental; therefore, no survey frequency is determined.

2. SUMMARY OF METHOD:

- 2.1 Samples are collected quarterly aboard the M/V *La Mer* or M/V *Marine Surveyor*. Upon collection, samples are stored on ice within a cooler onboard and are transferred to laboratory at the end of the field day.
- 2.2 The sample collector is responsible for the recording of all pertinent information about the sample that might be significant in the evaluation and interpretation of the laboratory data. The resulting laboratory data is only as valid as the sample itself.

3. INTERFERENCES:

- 3.1 Ammonia contamination of the sample may occur from improper collection, preservation and handling, which may adversely affect test results.

4. SAMPLE COLLECTION, PRESERVATION, AND HANDLING:

- 4.1 Samples are collected in clean bottles (see SOP#8002, section 8.7.1.8).
- 4.2 Sampling and handling of the sample must be done aseptically to prevent contaminants from being introduced into the samples. The sample must be handled in such a way that no significant changes in the composition occur before the necessary analytical laboratory tests are made.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 4.3 Sampling not only involves the collection of a sample, but also preservation and storage. Samples are immediately placed in ice or refrigerated at 1-4 °C.

5. APPARATUS:

- 5.1 Sterile, wide-mouth polypropylene sample bottles preserved with 0.9 mL of 1:1 hydrochloric acid (HCl) - 250 mL
- 5.2 Sampling poles - 250 mL
- 5.3 Flopper bottle sampler
- 5.4 CTD
- 5.5 Laptop with Field Data System (FDS) for recording sample metadata
- 5.6 Boat cart
- 5.6 Appropriate-size cooler with ice

6. CHEMICALS AND REAGENTS:

- 6.1 0.9 mL of 1:1 HCL is added to each sample bottle before sampling.

7. SAFETY:

- 7.1 Boat safety: Because sea conditions can vary from calm to rough, it is vital that everyone is familiar with boat safety procedures in the event of an emergency. Boat safety training is provided by the *La Mer* boat crew annually. New staff is also provided training on their first day aboard the vessel.
- 7.2 Non-swimmers must wear life vests.
- 7.3 Dress properly, according to safety protocol and weather conditions.
- 7.4 If susceptible to motion sickness, consult with a physician to determine if preventive medication or other measures are warranted. Those who are taking motion sickness medication and are experiencing drowsiness are advised not to do any driving (i.e. driving the ocean van to and from the marina).
- 7.5 At the laboratory, samples are analyzed using the EPA Method 350.1 (EPA 1993).
- 7.6 If necessary, use sunscreen.

8. PROCEDURE:

Lab Preparation:

- 8.1 Determine survey sample plan for each survey date.
- 8.3 Pack extra sample bottles in case you need them.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 8.4 Check the field sampling inventory sheet to verify that the necessary equipment and supplies to be taken to the boat are adequate.
- 8.5 Load all necessary equipment and supplies into the boat cart and transfer it to the ocean van.

Transportation to Boat

- 8.6 The ocean van is driven to Fisherman's Village in Marina del Rey or Ports-o-Call in San Pedro, where M/V *La Mer* and M/V *Marine Surveyor* are docked, respectively.

Boat Preparation:

- 8.7 Push the boat cart down to the boat. Carry all equipment and supplies aboard the boat and put them away in their proper locations.

Sample Collection:

- 8.8 When the boat comes to a station and stops, the skipper will announce the station name and wind and sea conditions. Label sample bottles with the station name depth, and sample time, according to "top of cast" in FDS.
- 8.9 1-, 15-, 30- and 45-Meter Samples: When CTD Carousel is Operational
 - 8.9.1 These samples are collected by the biologist with the CTD carousel mounted with Van Dorn or Niskin bottle samplers.
 - 8.9.2 Discard some of the sample from the sample line. This will rinse out the sample line.
 - 8.9.3 Aseptically empty the sample contents into a sterile sample bottle. **Do not** overflow the sample bottle. Tightly screw the cap back onto the sample bottle, again avoiding contamination.
- 8.10 Record sample collection time within the Water Quality module of FDS.
- 8.11 Place samples in cooler with ice immediately.
- 8.12 Surface Samples: When CTD Carousel cannot be used for Surface Sampling
 - 8.12.1 Collect the sample within the first meter of the water column beneath the surface of the water using a flopper bottle or sampling pole.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

8.12.2 Use 250 mL sterile, sample bottles preserved with 0.9 mL of 1:1 HCL.

8.12.1 Collect the 15-meter sample using the flopper bottle sampler.

8.12.2 *If flopper bottle is used*, lower the flopper bottle into the ocean. The line attached to the flopper bottle has one meter intervals marked with a strip of tape. Five meter intervals are marked with double strips of tape. Lower the flopper bottle to 15 meters, using the tape marks on the rope to measure the depth.

8.12.3 At the correct depth, raise and lower the flopper bottle three times to rinse it out.

8.12.4 Pull up the flopper bottle using a steady, continuous hand-over-hand motion. It may be necessary to adjust the rate of pulling the rope to accommodate the up and down motion of the boat. It is important that the flopper bottle rises continuously and is not allowed to go back down the water column. If this happens, the flopper bottle contents will empty and then refill. This will result in a sample being taken at the wrong depth.

8.12.5 Discard some of the sample from the flopper bottle. This will rinse out the sample line.

8.12.6 Aseptically empty the sample contents from the flopper bottle into a sterile sample bottle. **Do not** overflow the sample bottle. Tightly screw the cap back onto the sample bottle, again avoiding contamination.

8.12.7 *If sample pole is used*, safely lean over the boat rail, lower the sample pole within the first meter of the water column beneath the surface of the water. Holding the mouth of the sample bottle away from the boat, collect the sample using a sweeping motion of the pole. Collect the sample in one sweep. **Do not** collect the sample in multiple sweeps. If the volume of sample collected is insufficient, discard the sample and re-collect.

8.12.8 If sample pole is used, lift the sample pole out of the water and transfer the sample from the collecting bottle to the sample bottle. **Do not** overflow sample bottle.

8.13 15-Meter Samples: When CTD Carousel cannot be used for 15-Meter Sampling

8.13.1 Collect the 15-meter sample using the flopper bottle sampler.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 8.13.2 Lower the flopper bottle into the ocean. The line attached to the flopper bottle has one meter intervals marked with a strip of tape. Five meter intervals are marked with double strips of tape. Lower the flopper bottle to 15 meters, using the tape marks on the rope to measure the depth.
- 8.13.3 At the correct depth, raise and lower the flopper bottle three times to rinse it out.
- 8.13.4 Pull up the flopper bottle using a steady, continuous hand-over-hand motion. It may be necessary to adjust the rate of pulling the rope to accommodate the up and down motion of the boat. It is important that the flopper bottle rises continuously and is not allowed to go back down the water column. If this happens, the flopper bottle contents will empty and then refill. This will result in a sample being taken at the wrong depth.
- 8.13.5 Discard some of the sample from the flopper bottle. This will rinse out the sample line.
- 8.13.6 Aseptically empty the sample contents from the flopper bottle into a sterile sample bottle. **Do not** overflow the sample bottle. Tightly screw the cap back onto the sample bottle, again avoiding contamination.
- 8.14 30- and 45-Meter Samples:
 - 8.14.1 These samples are collected by the biologist with the Van Dorn or Niskin bottle sampler.
 - 8.14.2 Discard some of the sample from the sample line. This will rinse out the sample line.
 - 8.14.3 Aseptically empty the sample contents into a sterile sample bottle. **Do not** overflow the sample bottle. Tightly screw the cap back onto the sample bottle, again avoiding contamination.
- 8.15 Record sample collection time within FDS.
- 8.16 Place samples in cooler with ice immediately.
- 8.17 Transport samples to laboratory and submit to Sample Receiving with corresponding chain of custody records.

9. CALCULATION:

Not applicable

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

10. DATA MANAGEMENT:

Not applicable

11. QUALITY ASSURANCE AND QUALITY CONTROL:

Not applicable

12. LOWEST REPORTING LEVEL:

Not applicable

13. PRECISION AND BIAS STATEMENT:

Not applicable

14. REFERENCES:

14.1 Regional Water Quality Control Board, Los Angeles 2010a. Waste Discharge Requirements for City of Los Angeles (Hyperion Treatment Plant), Order R4-2010-0200, NPDES No. CA0109991.

14.2 Regional Water Quality Control Board, Los Angeles 2010b. Waste Discharge Requirements for City of Los Angeles (Terminal Island Water Reclamation Plant), Order R4-2010-0071, NPDES No. CA0053856.

14.3 RWQCB. See Regional Water Quality Control Board, Los Angeles.

14.4 Standard Methods for the Examination of Water and Wastewater, 21st Edition, 2005.

14.5 United States Environmental Protection Agency 1993. Method 350.1. Determination of Ammonia Nitrogen by Semi-Automated Colorimetry. 40 CFR Part 136.

14.6 USEPA. See United States Environmental Protection Agency.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Chapter 6: Sewage Spill Visual Observations

This chapter contains an SOP and a sample data sheet developed by EMD for making visual field observations when collecting receiving water samples due to sewer spills reaching those receiving waters.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL
City of Los Angeles
ENVIRONMENTAL MONITORING DIVISION
Microbiology Laboratory
STANDARD OPERATING PROCEDURE for

**SEWAGE SPILL
VISUAL OBSERVATIONS**

(Standard Methods 9060 A, B)

HTP SOP#

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TABLE OF CONTENTS

	Page
<u>TITLE PAGE</u>	
1. SCOPE AND APPLICATION	84
2. SUMMARY OF METHOD	84
3. APPARATUS	84
4. SAFETY	84
5. PROCEDURE	84-87
6. CALCULATION	87
7. DATA MANAGEMENT	87-88
8. REFERENCES	88

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

1.0 SCOPE AND APPLICATION

- 1.1 Field observation is a part of sampling. The objective of field observation is to select and record the conditions of the sampling environment. This information should be relevant to the sample being collected.

2.0 SUMMARY OF METHOD

- 2.1. Field observation not only involves the recording of data, but which information should be recorded.
- 2.2. The sample collector is responsible for recording all pertinent information about the sampling site that might be significant in the evaluation and interpretation of the laboratory data. The resulting laboratory data is only as valid as the sample itself.

3.0 APPARATUS

- 3.1. Hard hat (if needed)
- 3.2. Permanent marking pen
- 3.3. Paper towels
- 3.4. Rubber boots
- 3.5. First Aid kit
- 3.6. Accident forms
- 3.7. Beach observation table
- 3.8. Tire gauge
- 3.9. Thomas Guide
- 3.10. Shovel and tow strap
- 3.11. Cell phone
- 3.12. Watch
- 3.13. Chain of Custody form/Sample Collection datasheet

4.0 SAFETY

- 4.1.
- 4.1. If a sample location is inaccessible or deemed to be unsafe and field observation cannot be conducted, note this on the beach observation sheet as “IA” (inaccessible), record the time when you reached the station, and also notify Supervisor.
- 4.2. Inform laboratory personnel of your whereabouts prior to conducting observation.

5.0 PROCEDURE

- 5.1. Record all pertinent information about the sampling site that might be significant

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

in the evaluation and interpretation of the laboratory data. Observations for the physical conditions of the beach at each sampling site are to be noted and recorded. The observation area extends approximately 50 ft. on each side of the sampling site.

- 5.2. Any unusual observations (i.e., needles ...) not mentioned on the sample collection sheet should be noted under the "Comments" section on the beach observation sheet.

5.3. Shoreline Observations

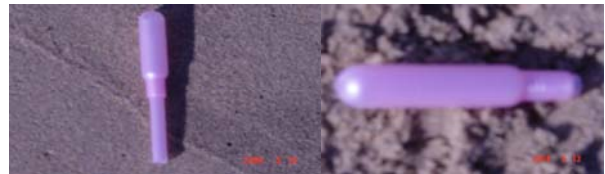
5.3.1. Observations of Sewage Discharge Origin

5.3.1.1. Rubber/Plastic Goods:

Rubber Goods = a rubber ring, approximately 1 inch in diameter and 1/8 inch thick, associated with the remains of a male prophylactic after treatment at a POTW.



Plastic Goods = elongated, round, plastic cylinders associated with feminine hygiene tampons.



- 1 = 1 - 2 pieces (Some)
- 2 = 3 - 4 pieces (Moderate)
- 3 = >4 pieces (Heavy)

5.3.1.2. Sewage Grease Particles

Grease balls typical of sewage discharge (small, off-white Styrofoam-like balls with a fecal odor). Determine the quantity by visually spreading the particles found along the high tide line for 50 feet. Then use the distance between the particles to quantify the amount using these guidelines:

- 1 = particles greater than 6 inches apart
- 2 = particles 1-6 inches apart
- 3 = particles 1 inch apart to continuous

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

5.3.1.3. Fecal material: feces, toilet tissue, etc.

- 1 = 1 - 2 pieces (Some)
- 2 = 3 - 4 pieces (Moderate)
- 3 = >4 pieces (Heavy)

5.3.1.4. Sewage Odor: odor of fecal matter

- 1 = Some,
- 2 = Moderate,
- 3 = Heavy

5.3.1.5. Injection Needles and Medical Waste: place in the biohazard container in the beach vehicle. Make a notation on the observation sheet.

5.3.1.6. Water Appearance : Note presence on observation sheet

- C = Clear M = Murky
- O = Oil Slick F = Foam
- FM = Floating Matter

5.3.1.7. Dead Aquatic Animals : Note presence on observation sheet

- B = Shore birds F = Fish OM = Other mammal
- S = Sea lions C = Crustacean
- J = Jellyfish M = Marine mammal

5.3.2. Storm Drain Observations (if any)

5.3.2.1. Storm Drain Flow: flow coming out of the storm drain.

- 0 = dry drain
- 1 = low flow (garden hose)
- 2 = medium flow (between 1 and 3)
- 3 = heavy amount (fire hose)
- 4 = ponded storm drain flow (does not reach surf)

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL



Poned Storm Drain



Flowing Storm Drain

- 5.3.2.2. Reached Surf: Note whether the flow, if “flowing” or “poned” has reached the surf or not using the following codes.

0 = No

1 = Yes

- 5.3.2.3. Storm Drain Position: Due to varying tide heights, storm drains may become buried in sand or submerged under water. Note this on the observation sheets using the following codes:

0 = buried in sand

1 = submerged

- 5.3.2.4. Reverse Flow: occurs during high tide when ocean water is flowing into the storm drain or creek. Note whether reverse flow was observed or not using the following codes:

0 = No

1 = Yes

6.0. CALCULATION

None

7.0 DATA MANAGEMENT

- 7.1. At present there is no data entry for spill observations. Data is kept on hard copy only.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 7.2. Place Chain of Custody/Observation sheet in designated tray.

8.0 REFERENCES

- 8.1 *Standard Methods for the Examination of Water and Wastewater*, 20th Edition, 1998.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

		Sewage Spill Observation											
DATE (Month/Day/Year):										SAMPLER NAME:			
STATION ID													
SAMPLE TIME													
Rubber/Plastic Goods													
Sewage Grease													
Fecal Material													
Sewage Odor													
Water Appearance													
Storm Drain Flow													
Storm Drain Reached Surf													
Storm Drain Position													
Storm Drain Reverse Flow													
Dead Aquatic Animals													

Page 1

CODE	0	1	2	3	4	5	Other Observations		
Rubber/Plastic Good		1-2 PIECES	3-4 PIECES	> 4 PIECES					
Sewage Grease Particles		>6" APART	1-6" APART	1" APART TO CONTINUOUS					
Fecal Material		1-2 PIECES	3-4 PIECES	> 4 PIECES					
Sewage Odor		SOME	MODERATE	HEAVY					
Storm Drain Resched Surf	No	Yes							
Storm Drain Position	Buried in Sand	Submerged							
Reverse Flow	No	Yes							
Storm Drain Flow	Dry	Low Flow	Med Flow	Heavy Flow	Ponded				

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Chapter 7: Bacteria and Ammonia Analyses Protocols

This chapter contains EMD's SOPs for analyzing indicator bacteria in water samples.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL
City of Los Angeles
ENVIRONMENTAL MONITORING DIVISION
Microbiology Laboratory
STANDARD OPERATING PROCEDURE for
CHROMOGENIC SUBSTRATE METHOD

(Standard Methods 9223 A, B)

HTP SOP#

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TABLE OF CONTENTS

	Page
<u>TITLE PAGE</u>	
1. SCOPE AND APPLICATION	92
2. SUMMARY OF METHOD	92
3. INTERFERENCES	92
4. SAMPLE COLLECTION, PRESERVATION AND HANDLING	92
5. APPARATUS	92-93
6. CHEMICALS AND REAGENTS	93
7. SAFETY	93
8. PROCEDURE	93-98
9. CALCULATION	98
10. DATA MANAGEMENT	98
11. QUALITY ASSURANCE AND QUALITY CONTROL	98-99
12. LOWEST REPORTING LEVEL	99
13. PRECISION AND BIAS STATEMENT	99
14. REFERENCES	99

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

1.0 SCOPE AND APPLICATION

- 1.1 Chromogenic Substrate (CS) method is based on “**Defined Substrate Technology® (DST®)**” that is specific for total coliform bacteria, *E. coli*, and enterococci. The method can be used for the analysis of drinking, marine, and source water samples.
- 1.2 The CS method is able to produce results for the above indicator bacteria more rapidly than either Membrane Filtration or Multiple Tube Fermentation.

2.0 SUMMARY OF METHOD

- 2.1 The CS method uses indicator nutrients that cause target microbes within the sample, when incubated in the DST® system, to produce a color change or fluorescence, consequently indicating and confirming their presence.
- 2.2 Results are reported in terms of the Most Probable Number (MPN) of microorganisms present per 100mL of sample.

3.0 INTERFERENCES

- 3.1 Water samples containing humus or other materials that can alter the color of the test medium may interfere with the reading of the sample, resulting in false-positives.

4.0 SAMPLE COLLECTION, PRESERVATION AND HANDLING

- 4.1 Collection and handling of the sample must be done aseptically to prevent contaminants from being introduced into the sample.
- 4.2 The holding time for samples is 6 hours from sample collection to sample processing. There is a 2-hour sample processing time for all samples after arriving at the lab (Total time of 8 hours; not to be exceeded).
- 4.3 Samples that are not analyzed immediately should be refrigerated at 1 – 4°C.

5.0 APPARATUS

- 5.1. Sterile, transparent, non-fluorescent sample vessel - 125 mL volume (Use vessels provided by Colilert kit if available)
- 5.2 Colilert-18 reagent packets (For marine water)
- 5.3 Colilert reagent packets (For source or fresh waters)
- 5.4 Enterolert reagent packets
- 5.5 Quanti-Tray/2000 trays (labeled)
- 5.6 Quanti-Tray Sealer
- 5.7 Graduated cylinder, sterile - 100 mL (optional)
- 5.8 Quanti-Tray/2000 rubber tray insert

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 5.9 UV cabinet or lamp - long wave, 366nm
- 5.10. De-ionized water (sterile)
- 5.11. Colilert Quanti-Tray/2000 color/fluorescence comparators
- 5.12. 70% Ethanol
- 5.13. Paper towels
- 5.14. 1 mL & 10 mL sterile disposable pipettes
- 5.15. Pipette bulb or automatic pipet-aid
- 5.16. Lab marking pen

6.0 CHEMICALS AND REAGENTS

- 6.1 Colilert-18 Reagent Packets (Can be used for source water, including marine water)
- 6.2 Colilert Reagent Packets (For source water, excluding marine water)
- 6.3 Enterolert Reagent Packets

7.0 SAFETY

- 7.1 When opening an IDEXX Reagent Packet, turn slightly away from the packet before snapping back the top of the score line to prevent inhalation of reagent powder that may become airborne.

8.0 PROCEDURE

- 8.1 Disinfect the workbench area with 70% ethanol. Then wipe and let air-dry.
- 8.2 Preparation of sample vessel:
 - 8.2.1 You will need one sterile vessel per sample. Label each sample vessel with station name and test to be performed. (Example: Vessel 1: S01, TC/EC). Include an additional vessel for a duplicate. Refer to monthly sample calendar.
 - 8.2.2 Remove the outer plastic ring/label seal around the vessel cap. Remove the vessel cap, being careful not to touch the inside of the cap. Pour sterile D.I. water from a flask into each vessel. Be careful not to touch the rim of the D.I. flask or the vessel. Pour the D.I. water to the 100 mL mark on each vessel and replace the cap. Replace the cap back onto the D.I. water flask if there is any D.I. water left in the flask.
 - 8.2.3 For Entero test, 10 mL of sample is added to 90 mL of D.I. water (using a sterile 10mL pipet, remove 10 mL of D.I. water from all sample vessels labeled for Entero). For TC/EC test, 1.5 mL of sample is added to 100 mL of D. I. Water. Except for Centinela and Pacific stations, 1 mL of sample is added to 100 mL of D.I. water for TC/EC test.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 8.2.4 You will need one Colilert-18 or Colilert reagent packet for each sample vessel labeled TC/EC and one Enterolert reagent packet for each vessel labeled Entero. Use Colilert for source water, excluding marine water. Colilert-18 can be used for source water, including marine water. Carefully separate one reagent snap packet from the strip, taking care not to accidentally open the adjacent packet. Tap the snap pack to ensure that all of the reagent powder is in the bottom part of the packet.
- 8.2.5 Open the pack by snapping back the top at the score line. Do not touch the opening of the pack.
- 8.2.6 Add the reagents to the appropriate sample vessels filled with D.I. water. Replace the cap on the vessel, tighten, and gently mix until the reagent is dissolved. Note that when the Colilert-18 (or Colilert) reagent is added to the D.I. water in the vessel, the solution is a clear color and when Enterolert reagent is added to the D.I. water, the solution is a yellow color.
- 8.2.7 Pipet the necessary amount of each sample into the appropriate sample vessels. Place the used pipets into the pipet biohazard vessel. Replace the sample vessel caps and mix gently.

8.3 Quanti-tray/2000

- 8.3.1 Turn on Quanti-tray[®] sealer.
- 8.3.2 You will need **one** Quanti-tray for **each** labeled sample vessel. And **one** more for duplicate sample.
- 8.3.3 Check to see that the green Ready Light (above the amber power light) is illuminated on the sealer. The sealer will not operate until both the amber power light and the green Ready Light are illuminated.
- 8.3.4 Using one hand, hold a Quanti-tray upright with the well side (plastic) facing your palm. Squeeze the upper part of the Quanti-tray so that it bends towards the palm of your hand. Using your other hand, gently pull the foil tab at the top of the tray to separate the foil from the top of the tray, creating an open pouch. Avoid touching the inside of the foil or tray and be careful not to tear the foil.
- 8.3.5 Pour the reagent/sample mixture directly into the Quanti-tray, avoiding contact with the foil tab at the top of the tray. Tap the small wells at the bottom of the tray to release any air bubbles. Allow any foam present to settle.
- 8.3.6 Place the sample-filled tray onto the rubber insert of the sealer with the well side (plastic) of the tray facing down. Align the small and large wells with

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

their corresponding holes in the rubber insert. Make sure the tray is properly seated in the rubber insert. With your hand, gently press on the back of the tray to distribute some of the liquid into the larger wells.

- 8.3.7 Slide the rubber insert into the sealer until the motor grabs the rubber insert and begins to draw it into the sealer.
- 8.3.8 In approximately 15 seconds, the tray will be sealed and partially ejected from the rear of the sealer. Remove the rubber insert and tray from the rear of the sealer.
- 8.3.9 If a misaligned tray is accidentally fed into the sealer, press and hold the **“reverse”** button (located on the top, front center of the sealer). This will reverse the motor and you can then remove the tray. Do not reverse the motor once the rubber insert has been drawn fully into the input slot of the sealer.
- 8.3.10 Repeat for each labeled tray. Turn off the sealer and unplug the unit when you are finished sealing all the trays.
- 8.3.11 Using a felt-tipped marker, label the front of each tray with the incubation time, analyses, sample date, station name, day of the week it needs to be read.
- 8.3.12 Place all Quanti-trays labeled "TC/EC" into the 35°C (Total coliform) incubator.
- 8.3.13 Place all Quanti-trays labeled "Entero" into the 41°C (Enterococcus) incubator.
- 8.3.14 For multiple samples of the same incubation time and analyses. It is better to wrap with labeling tape to assure all samples at that time are read.

8.4 QA Controls

- 8.4.1 Dispense 100mL of sterile DI water into each of two vessels. Label one “TC/EC Blank” and the other “Entero Blank”. Add the appropriate reagent to each vessel. These are reagent blanks. Follow steps 8.3.4 – 8.3.14.

8.5 Clean-up

- 8.5.1 Dispose of the empty used sample vessels in a large biohazard container.
- 8.5.2 Dispose of all pipet wrappers and empty reagent packets in the regular trash vessel. Return all lab supplies to their proper storage areas.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

8.5.3 Disinfect the workbench area with 70% ethanol. Then wipe and let air-dry.

8.6 Data Entry

8.6.1 Enter the time the samples were placed in the incubators and the start/finish set time for the samples in the sample login sheet on the desktop computer.

8.7 Reading Quanti-trays

8.7.1 Disinfect the workbench area with 70% ethanol. Let air-dry.

8.7.2 TOTAL COLIFORMS - read 24-28 hours after incubation. If using Colilert-18 (marine water) read 18-22 hours.

8.7.2.1 Remove the Quanti-trays from the 35°C (Total coliform) incubator. This is the large incubator close to the workbench.

8.7.2.2 Record the date, time, and analyst name or initials on the sample data sheet for the reading of Total Coliforms.

8.7.2.3 Compare the intensity of the yellow color of the sample wells to the intensity of the yellow color of the Comparator Quanti-tray. Any well with a yellow color of equal or greater intensity than the Comparator is considered a "positive" well. Wells with a clear color or a yellow intensity less than the Comparator are considered as "negative".

8.7.2.4 Count the number of positive large wells. Remember that the single, large well at the very top of the Quanti-tray should also be included in the count if it is positive. Record the number of positive large wells on the sample data sheet. Count and record the number of large positive wells for each sample dilution that was set.

8.7.2.5 Count the number of positive small wells. Record the number of positive small wells on the sample data sheet. Count and record the number of small positive wells for each sample dilution that was set.

8.7.3 *E. COLI* - read 24-28 hours after incubation. If using Colilert-18 (marine water) read 18-22 hours.

8.7.3.1 These results are read from the positive wells of Total coliform Quanti-trays.

8.7.3.2 Record the date, time, and analyst name or initials on the sample data sheet for the reading of *E. coli*.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

8.7.3.3 Plug the UV lamp into the power receptacle bar located at the rear of the bench top.

8.7.3.4 Press the white button on the top of the UV lamp to turn the lamp on. Make sure the lamp is pointed away from you.

8.7.3.5 Shine the UV lamp directly on the sample Quanti-tray within five inches of the tray. Count the number of large and small yellow that become fluorescent for each sample dilution. Remember that the single, large well at the very top of the Quanti-tray should also be included in the count for the large wells if it is positive. Record the results on the sample data sheet.

8.7.3.6 Press the black button on the top of the UV lamp to turn the lamp off.

8.7.3.7 If in doubt as to the fluorescence of a well, compare it to the negative-fluorescence of the Quanti-tray Comparator. This Comparator is "negative" for fluorescence. The appearance of a positive well should be yellow and fluorescence equal to or greater than the comparator.

8.7.4 ENTEROCOCCUS - read 24-28 hours after incubation

8.7.4.1 Remove the Quanti-trays from the 41°C (Enterococcus) incubator. This is the large incubator next to the sink in the room across the hall.

8.7.4.2 Record the date, time, and analyst name or initials on the sample data sheet for the reading of Enterococcus.

8.7.4.3 Plug the UV lamp into the power receptacle bar located at the rear of the bench top.

8.7.4.4 Press the red button on the top of the UV lamp to turn the lamp on. Make sure the lamp is pointed away from you.

8.7.4.5 Shine the UV lamp directly on the sample Quanti-tray within five inches of the tray. Count the number of large and small blue fluorescent wells for each sample dilution. Remember that the single, large well at the very top of the Quanti-tray should also be included in the count for the large wells if it is positive. Record the results on the sample data sheet.

8.7.4.6 Press the red button on the top of the UV lamp to turn the lamp off.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

8.7.4.7 When finished reading all the Quanti-trays, dispose of all trays into the large biohazard vessel located on the right side of the large refrigerator.

8.7.4.8 Disinfect the workbench area with 70% ethanol. Let air dry.

8.7.4.9 Leave the sample data sheets on the clipboard by the Quanti-tray sealer.

9.0 CALCULATION

9.1 Enter the number of positive large and small wells into the IDEXX generator or read from the Idexx MPN table. Multiply the number given in the table by the dilution factor used. If more than one dilution generates a result take the average.

Example: # Positive large wells: 23 From 1mL of a 1:100 dilution
 # Positive small wells: 16
 Idexx MPN table: 52.7

Calculation: 52.7 (**number from table**) x 100 (**dilution factor**) x 100
(**units in per 100 mL**) = 530,000 MPN/100 mL

10.0 DATA MANAGEMENT

10.1 Open up the LIMS “Micro Log-in” Excel worksheet on the PC computer. Choose the worksheet tab for the appropriate sampling program (CS_SHO) and has today’s date. Enter the sample collection times, sampler’s initials, analysis set time, and incubation time.

10.2 The raw bacterial counts from the data worksheets are entered into LIMS “Sample Data Entry” Excel worksheets on the PC desktop. The final bacterial densities of each sample are calculated by the computer, and a copy of the data worksheet is printed out. The results are validated and a report is generated and emailed to the LA County Health Department.

11.0 QUALITY ASSURANCE AND QUALITY CONTROL

11.1 QA checks (sterility, auto-fluorescence, positive and negative controls) are performed on each new lot of IDEXX reagents.

11.2 The Leak Test is performed on every new lot of IDEXX Quanti-trays to ensure that the seal around the Quanti-trays is intact.

11.3 Sample wells exhibiting typical positive reactions on Total coliform/*E.coli* and enterococcus Quanti-trays are verified each month.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 11.4 Duplicate chromogenic substrate analyses should be done on 10% of all samples or on at least one sample per test day.
- 11.5 Each analyst runs a QA daily blank for each set of samples run for Chromogenic Substrate.

12.0 LOWEST REPORTING LEVEL

- 12.1 The lowest reporting level is dependant on the sample volume and dilution used for the analysis and in calculating the MPN/100mL.

13.0 PRECISION AND BIAS STATEMENT

- 13.1 Calculation of the results is similar to Multiple Tube Fermentation, where the number of positive wells are counted and used to determine the Most Probable Number (MPN) per 100mL of sample. The precision of the test depends on the number of wells used. The number of sample portions selected will be governed by the desired precision of the result. MPN tables are based on the assumption of Poisson distribution (random dispersion). If the sample is not adequately shaken before the portions are removed or if there is clumping of bacterial cells, the MPN value will be an underestimate of the actual bacterial density.

14.0 REFERENCES

- 14.1 *Standard Methods for the Examination of Water and Wastewater*, 20th Edition, 1998.
- 14.2 “Membrane Filtration and Chromogenic Substrate Method Comparison Study”, CLA EMD, 2002.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

City of Los Angeles
ENVIRONMENTAL MONITORING DIVISION
Microbiology Laboratory
STANDARD OPERATING PROCEDURE for

MEMBRANE FILTRATION (MF) TECHNIQUE
TOTAL COLIFORMS, FECAL COLIFORMS, AND ENTEROCOCCUS

(Standard Methods 9222 A, B)

HTP SOP#

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TABLE OF CONTENTS

	Page
TITLE PAGE	
1. SCOPE AND APPLICATION	101
2. SUMMARY OF METHOD	101
3. INTERFERENCES	101
4. SAMPLE COLLECTION, PRESERVATION AND HANDLING	101
5. APPARATUS	102-103
6. CHEMICALS AND REAGENTS	103
7. SAFETY	103
8. PROCEDURE	103-116
9. CALCULATION	116-119
10. DATA MANAGEMENT	119
11. QUALITY ASSURANCE AND QUALITY CONTROL	119
12. LOWEST REPORTING LEVEL	120
13. PRECISION AND BIAS STATEMENT	120
14. REFERENCES	120

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

1.0 SCOPE AND APPLICATION

- 1.1 The membrane filtration (MF) technique is highly reproducible and can be used to test relatively large sample volumes of water. Numerical results have a much greater precision and are obtained more rapidly with MF than the multiple tube fermentation (MTF) procedure.

2.0 SUMMARY OF METHOD

- 2.1 The MF technique is a direct plating method for the detection and enumeration of bacteria in water. The technique employs specific agar media and incubation temperatures to selectively target the bacteria of interest (total coliform, fecal coliform, or enterococcus). Following incubation, bacterial colonies form and can be directly counted to calculate the bacterial density of the sample in CFU (colony forming units) per 100mL of sample.
- 2.2 Samples not suitable for analysis by the MF technique include those with high turbidity, large non-specific bacterial populations, and toxic substances.

3.0 INTERFERENCES

- 3.1 Agar media for the membrane filtration procedure is prepared using deionized water. Toxic or growth-promoting substances in the water may alter test results. The quality of the water must be checked prior to use.
- 3.2 Some commercial dehydrated media may require chemical additives to be included in the media mixture. These additives may serve to inhibit or encourage the growth of a particular group of bacteria. Failing to add these chemicals may affect the selectivity of the medium and thus, alter test results.

4.0 SAMPLE COLLECTION, PRESERVATION AND HANDLING

- 4.1 Collection and handling of the sample must be done aseptically to prevent contaminants from being introduced into the sample.
- 4.2 The holding time for samples is 6 hours from sample collection until arrival at the laboratory. There is a 2-hour sample processing time for all samples after arriving at the lab (Total time of 8 hours; not to be exceeded).
- 4.3 Samples that are not analyzed immediately should be refrigerated at 1 – 4°C.

5.0 APPARATUS

Plate Labeling

- 5.1 Indelible marking pen
- 5.2 Kimwipes
- 5.3 Prepared mEndo, mFC, and mE agar plates
- 5.4 Agar plate carrier with dark cover

Filtration

- 5.5 1 mL and 10 mL sterile, bacteriological or Mohr disposable pipet
- 5.6 Pipette biohazard container
- 5.7 Large biohazard container
- 5.8 Vacuum pump
- 5.9 Filtration manifold
- 5.10 Microfil vacuum support base
- 5.11 Microfil filter screen disc (in 95% alcohol jar)
- 5.12 Sterile, disposable Microfil funnel
- 5.13 Membrane filters - sterile, white, grid-marked, 7mm diameter filters with 0.45 μ M pore size
- 5.14 Membrane filters dispenser
- 5.15 Labeled mEndo, mFC, and mE agar plates in covered plate carrier
- 5.16 Alcohol lamp
- 5.17 95% and 70% ethanol
- 5.18 Glass safety jar with lid
- 5.19 Paper towels
- 5.20 Sterile, plastic squirt bottle
- 5.21 Forceps - smooth-tipped stainless steel
- 5.22 Pipette bulb / Automatic pipetters
- 5.23 Alcohol pads
- 5.24 Incubator, 35.0 \pm 0.5°C
- 5.25 Bleach solution (10%)
- 5.26 Incubator, 41.0 \pm 0.5°C
- 5.27 Solid heat-sink fecal coliform incubator, 44.5 \pm 0.2°C
- 5.28 Matches
- 5.29 Long-handled forceps
- 5.30 Sterile, phosphate-buffered rinse water
- 5.31 Sterile, phosphate-buffered water dilution tubes
- 5.32 Tupperware w/ wet sponge

Colony Counting

- 5.33 Binocular, stereoscopic microscope with fluorescent lamp
- 5.34 Disposable gloves

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 5.35. Data worksheets
- 5.36. Large biohazard container
- 5.37. Incubated mEndo, mFC, and mE agar plates
- 5.38. EIA agar plates
- 5.39. Counters
- 5.40. Timers
- 5.41. Forceps

6.0 CHEMICALS AND REAGENTS

- 6.1 mEndo Agar LES
- 6.2 mFC Agar
- 6.3 mE Agar
- 6.4 Esculin Iron Agar (EIA)
- 6.5 Phosphate Buffered Water
- 6.6 Tryptic Soy Broth (TSB)

7.0 SAFETY

- 7.1 When preparing media, wear appropriate lab attire. In particular, wear face masks (covering nose and mouth) to prevent the possible inhalation of dehydrated media that may become airborne.
- 7.2 Filter screen discs are applied onto the base of the membrane filtration apparatus. The discs are kept in 95% ethanol jars and are flame-sterilized. Care must be taken when flame-sterilizing filter discs. Filter discs immersed in 95% ethanol are highly flammable. Keep the bench area clear of items that may catch fire.

8.0 PROCEDURE

Media Preparation

- 8.1 mEndo Agar LES
 - 8.1.1 To rehydrate the medium, suspend 51 grams in 1 liter de-ionized water containing 20 mL 95% ethanol and heat to boiling to dissolve completely. Cool to 45-50°C. (If using the agarmatic, follow the agarmatic directions for making mEndo.) Aseptically dispense 4-5 mL amounts into the lower halves of 60x15 mm sterile, disposable petri dishes and allow to solidify. Final pH 7.2 ± 0.2 . Record pH results in the media prep log book.
 - 8.1.2 Set QA media controls.
 - 8.1.2.1 Sterility control - incubate a blank plate.
 - 8.1.2.2 Positive control - inoculate a plate with the *E. coli* control culture.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

8.1.2.3 Negative control - inoculate a plate with the *Staphylococcus aureus* control culture.

8.1.2.4 Incubate all QA control plates for 24 hours at $35 \pm 0.5^{\circ}\text{C}$.

8.1.2.5 Record the QA control results in the media prep log book.

8.1.3 Place agar plates in a labeled media container and refrigerate until needed. The holding time for agar plates is two weeks.

8.2 mFC Agar

8.2.1 To rehydrate the medium, suspend 52 grams in 1 liter de-ionized water and heat to boiling to dissolve completely. Add 10 mL of a 1% solution rosolic acid in 0.2N NaOH. Continue heating for 1 minute. Cool to $45 - 50^{\circ}\text{C}$. Aseptically dispense 4-5 mL amounts into the lower halves of 50-60x15 mm tight fitting sterile, disposable petri dishes and allow to solidify. Final pH 7.4 ± 0.2 . Record pH results in the media prep log book.

8.2.1.1 1% Rosolic Acid Solution - Add 0.1 grams rosolic acid to 10 mL of stock 0.2 N NaOH. Mix well.

8.2.1.2 Stock 0.2 N NaOH - Add 0.8 grams NaOH to 100 mL de-ionized water. Mix to dissolve. Store in a labeled polyethylene reagent bottle.

8.2.2. Set QA media controls.

8.2.2.1. Sterility control - incubate a blank plate.

8.2.2.2. Positive control - inoculate a plate with the *E. coli* control culture.

8.2.2.3. Negative control - inoculate a plate with the *Entbact. aerogenes* or *Entcoc. faecalis* control culture.

8.2.2.4. Incubate all QA control plates for 24 hours in a solid heat sink incubator at $44.5 \pm 0.2^{\circ}\text{C}$.

8.2.2.5. Record the QA control results in the media prep log book.

8.2.3. Place agar plates in a labeled Tupperware container and refrigerate until needed. The holding time for agar plates is two weeks.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

8.3. mE Agar

8.3.1 To rehydrate the medium, suspend 7.12 grams in 100 mL of de-ionized water. Heat to boiling to dissolve completely. Autoclave for 15 minutes at 121°C. Promptly remove from the autoclave and cool to 45-50°C. Add 0.024 grams Nalidixic Acid and 1.5 mL of a 1% solution of triphenyl tetrazolium chloride (TTC). Aseptically dispense 4-5 mL amounts into the lower halves of 60x15 mm sterile, disposable petri dishes and allow to solidify. Final pH 7.1 ± 0.2 . Record pH results in the media prep log book.

1% TTC Solution - Add 1 gram TTC to 100 mL of de-ionized water. Mix well. Using a sterile 0.22µm Millex-GS filter, filter-sterilize the solution into a sterile, labeled 500 mL reagent bottle. Store in the refrigerator.

8.3.2. Set QA media controls.

8.3.2.1. Sterility control - incubate a blank plate.

8.3.2.2. Positive control - inoculate a plate with the *Entcoc. faecalis* control culture.

8.3.2.3. Negative control - inoculate a plate with the *E. coli* control culture.

8.3.2.4. Incubate all QA control plates for 48 hours at $41.0 \pm 0.5^\circ\text{C}$.

8.3.2.5. Record the QA control results in the media prep log book.

8.3.3. Place agar plates in a labeled Tupperware container and refrigerate until needed. The holding time for agar plates is two weeks.

8.4. Esculin Iron Agar (EIA)

8.4.1. To rehydrate the medium, suspend 1.65 grams in 100 mL of de-ionized water. Heat to boiling to dissolve completely. Autoclave for 15 minutes at 121°C. Promptly remove from the autoclave and cool to 45-50°C. (If using the agarmatic, follow the agarmatic directions for making EIA.) Aseptically dispense 4-5 mL amounts into the lower halves of 60x15 mm sterile, disposable petri dishes and allow to solidify. Final pH 7.1 ± 0.2 . Record pH results in the media prep log book.

8.4.2. Set QA media controls.

8.4.2.1. Sterility control - incubate a blank plate.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 8.4.2.2. Positive control - inoculate a plate with the *Entcoc. faecalis* control culture.
- 8.4.2.3. Negative control - inoculate a plate with the *E. coli* control culture.
- 8.4.2.4. Incubate all QA controls for 48 hours at $41.0 \pm 0.5^{\circ}\text{C}$.
- 8.4.2.5. Record the QA control results in the media prep log book.
- 8.4.3. Place agar plates in a labeled Tupperware container and refrigerate until needed. The holding time for agar plates is two weeks.
- 8.5. Phosphate-Buffered Water
 - 8.5.1 1 N NaOH - Carefully add 4 grams NaOH to 100 mL de-ionized water. Mix to dissolve. Store in a labeled polyethylene reagent bottle.
 - 8.5.2. Stock Phosphate Buffer Solution - add 34.0 grams potassium dihydrogen phosphate (KH_2PO_4) to 500 mL de-ionized water and mix to dissolve. Adjust pH to 7.2 ± 0.5 with 1 N NaOH and bring volume to 1 liter, using a 1 liter volumetric flask. Transfer to a reagent bottle and autoclave for 15 minutes at 121°C . Let cool and refrigerate. Discard if turbidity is present.
 - 8.5.3. Stock Magnesium Chloride Solution - add 81.1 grams $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$ to 1 liter de-ionized water and mix to dissolve. Transfer to a reagent bottle and autoclave for 15 minutes at 121°C . Let cool and refrigerate. Discard if turbidity is present.
 - 8.5.4 Working Solution of Phosphate-Buffered Dilution/Rinse Water
 - 8.5.4.1 Add 1.25 mL stock phosphate buffer solution and 5 mL stock magnesium chloride solution to 1 liter de-ionized water. Adjust pH to approximately 7.6-7.7 with 1 N NaOH. Mix and dispense approximately 9.5 mL into specially marked dilution test tubes. Autoclave at 121°C for 15 minutes. If phosphate-buffered rinse water is needed, autoclave 1-2 L volumes in large flasks for 45 minutes at 121°C .
 - 8.5.4.2 Cool and check that buffered water level is at the marked line (9 mL) on the test tube. Aseptically adjust water level if necessary. Tightened test tube or flask caps and store at room temperature. Holding time for screw-capped media is 3 months. Final pH 7.2 ± 0.1 .
 - 8.5.4.3 Sterility control - test the sterility of the buffered dilution water by

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

aseptically pouring 2 test tubes of dilution water into a sterile bottle containing 100 mL of Tryptic Soy Broth. Test the sterility of the liter flasks of rinse water by aseptically adding 20 mL buffer to a sterile bottle containing 100 mL TSB. Incubate the bottle for 48 hours at $35.0 \pm 0.5^{\circ}\text{C}$. Record pH and sterility check results in the media prep log book.

8.6. Tryptic Soy Broth (TSB)

8.6.1. To rehydrate the medium, suspend 30 grams in 1 liter of de-ionized water and mix to dissolve completely. Dispense 100 mL of broth into 125 mL Nalgene bottles. Autoclave for 15 minutes at 121°C . Promptly remove from the autoclave when done. Let cool and then tighten caps. Final pH 7.3 ± 0.2 . Record pH results in the media prep log book.

8.6.2. Set QA media controls.

8.6.2.1. Sterility control - incubate one bottle.

8.6.2.2. Positive control - inoculate a bottle with any QA control culture. This is a general growth media so any bacterial culture should grow in it.

8.6.2.3. Incubate QA control bottles for 24 hours at 35°C .

8.6.2.4. Record the QA control results in the media prep log book.

8.6.3. Place TSB bottles in the refrigerator until needed. The holding time for screw-capped media is three months.

Plate Labeling Procedure

8.7. Clean and wipe the bench-top work area with 70% ethanol and let air dry.

8.8. Check the monthly sample calendar for the samples and duplicates scheduled for the day. Check with the supervisor to see if any special samples are to be done.

8.9. Check the QA results of the prepared agar plates to be used. These results are recorded in the media prep log book. Use only media that have passed the sterility, positive control, negative control checks, and are not expired.

8.10. Record the media preparation dates for all the agar plates being labeled. The dates are recorded in the media prep log book under "Prep Date of Media in Use".

8.11. Inspect all agar plates.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 8.11.1. Discard any plates that have bubbles that will interfere with bacterial growth when the membrane filter is placed on the agar surface.
- 8.11.2. Check plates for contamination of any kind (bacterial growth, mold, or strange color). Discard any contaminated plates into a biohazard bag.
- 8.12. Using an indelible marking pen or pre-printed labels, label each plate with the station name or location at the top of the petri dish, sample volume or dilution in the middle, and sample date at the bottom of the dish.
 - 8.12.1. Consult the Sample Dilution Table for the necessary dilutions for each sample type.
 - 8.12.2. mEndo and mFC agar plates are labeled on the bottom (agar side) of the petri dish.
 - 8.12.3. mE agar plates are labeled on the top (lid side) and the bottom (agar side) of the petri dish.
- 8.13. Stack all the agar plates for the same station together after the plates are labeled. Stack plates by ascending volume order (smallest volume on top).
- 8.14. When stacking, be sure to place all plates agar side up.
- 8.15. Place the stack of plates for each sample into a slot in one of the agar plate carriers.
- 8.16. Add a small stack of unlabelled mEndo agar plates to the carrier. These plates will be used for QA blanks as needed during filtering.
- 8.17. Label the cover of each plate carrier with the sample stations or locations for all plates in the carrier. Include duplicate stations on the label for all boat plate carriers.
- 8.18. If plates are labeled one day in advance of use, refrigerate the plate carriers. Labeled plates that is refrigerated need to be taken out of the refrigerator on the day of use.
- 8.19. If plates are labeled on the day of use, the plate carriers can be left out at room temperature until needed.

Filtration Procedure

- 8.20. Clean and wipe the bench top work area with 70% ethanol and let air dry.
- 8.21. Gather the necessary filtration equipment.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 8.22. Aseptically transfer sterile, phosphate-buffered rinse water into a sterile squirt bottle.
- 8.23. Select samples to be filtered. Select the proper agar plates for the samples and check the plate stacking order to make sure sample volumes are in ascending order.
- 8.24. Make 1:10 serial dilutions if needed.
 - 8.24.1. Shake the sample vigorously for several seconds (about 25 - 30 times) to break up any bacterial cell aggregates, to separate cells from particulate matter, and to make the sample homogenous.
 - 8.24.2. Aseptically pipet 1 mL of the sample into a sterile 9 mL dilution test tube and shake or vortex vigorously. This is a 1:10 (10^{-1}) dilution of the sample.
 - 8.24.3. Aseptically pipet 1 mL of the 10^{-1} dilution into a second 9 mL dilution tube and shake or vortex vigorously. This is a 1:100 (10^{-2}) dilution.
 - 8.24.4. Aseptically pipet 1 mL from the second (10^{-2}) dilution tube into a third 9 mL dilution tube and shake or vortex vigorously. This is a 1:1000 (10^{-3}) dilution.
 - 8.24.5. Continue making 1:10 serial dilutions as needed.
- 8.25. Fill the alcohol lamp with 95% ethanol and light it.
- 8.26. Prepare filtration equipment, one filtration unit per sample.
 - 8.26.1. Wipe the Microfil support base with an alcohol pad. Let dry.
 - 8.26.2. Remove filter screen disc from the 95% alcohol jar using the long-handled forceps. Gently shake the disc over the alcohol jar to remove any excess alcohol. Flame-sterilize the disc. Allow flame to self-extinguish. Place disc onto the Microfil support base.
 - 8.26.3. Squirt the disc with a small amount of sterile buffer to wash any residual alcohol off the disc. Apply vacuum to drain the buffer off the disc.
 - 8.26.4. Aseptically remove a membrane filter from the filter dispenser, using an alcohol flame-sterilized forceps. Place the filter, grid-side-up on filter support base.
 - 8.26.5. Aseptically remove a sterile, disposable Microfil funnel from the funnel dispenser.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 8.26.6. Put the funnel over the filter on the support base. Place thumbs and index fingers of both hands on the upper, outside ridge of the funnel. Evenly push down on the funnel to securely lock it into place.
- 8.27. Shake sample vigorously for several seconds (about 25 - 30 times) to break up any bacterial cell aggregates, to separate cells from particulate matter, and to make the sample homogenous. Place bottle at a slant to let any sand or debris in the sample settle to the bottom sides of the bottle.
- 8.28. Record filtering start time and initials in the LIMS “Micro Log-in” Excel worksheet on the PC computer. Move the cursor to the appropriate cell for the sample being filtered.
 - 8.28.1. Enter the time using a colon, ex. “10:25 or 14:00”.
- 8.29. Before filtering the sample, determine if a QA sterility blank needs to be done.
 - 8.29.1 A QA blank is filtered under the following conditions.
 - 8.29.1.1. A new flask of sterile, phosphate-buffered rinse water is opened.
 - 8.29.1.2. A new bag of Microfil funnels is opened.
 - 8.29.1.3. After a break from filtering, a previously used buffer squirt bottle is used again.
 - 8.29.2 If a QA sterility blank is to be filtered:
 - 8.29.2.1. Label a mEndo agar plate with the sample name of one of the samples to be filtered, “B” (for blank), and the date. Place the agar plate on the top of the stack of plates for that sample.
 - 8.29.2.2. Rinse the Microfil funnel with approximately 30 mL of sterile rinse water and check for leaks. This is the QA control blank for the sample.
 - 8.29.2.3. Apply a steady but controlled vacuum to let the buffer drain through the filter. Turn off the vacuum after all the liquid has been drained off.
 - 8.29.2.4. With one hand on the outside walls of the funnel, use a backwards and upwards motion to pop the funnel off the support base. Continue to hold the funnel with your hand. Use your other hand to aseptically remove the filter with a flame-sterilized forceps (one sterile forceps per membrane filter). Aseptically

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

replace the funnel back on the support base.

- 8.29.2.5. Aseptically place the filter, grid side up, on the agar surface of the blank-labeled mEndo plate, using a rolling motion to avoid trapping air between the agar and the filter which will result in the formation of bubbles. If any air is trapped under the filter, reset the membrane filter onto the agar surface. Place the used forceps into the jar of ethanol.
- 8.29.2.6. Using a fresh, flame-sterilized forceps, place a new membrane filter on the funnel base after lifting up the funnel. Replace the funnel securely on the support base. Place the used forceps into the ethanol jar.
- 8.30. Wet the membrane filter with an adequate amount of sterile rinse water before adding sample aliquots delivered with a pipet. Add the sample aliquot to the filter according to the plate stacking order. Use a new filter for each sample aliquot.
- 8.31. Use sterile pipets for sample volumes ≤ 20 mL. If the pipet is to be used again, rest the pipet tip against the inner lip of the sample bottle. Do not let the pipet tip rest on the bottom of the sample bottle. Discard used pipets into the pipet biohazard container.
- 8.32. For sample volumes of 50 mL or 100 mL, aseptically pour the sample to the measured lines on the Microfil funnel. If an excess amount of sample is poured into the funnel, use a sterile pipet to remove the excess. Discard the excess sample along with the pipet into the pipet biohazard container.
- 8.33. Before applying the vacuum, swirl the sample in Microfil funnel by moving the funnel in a gentle circular motion to evenly distribute bacterial cells on the membrane filter surface.
- 8.34. Apply vacuum, letting the sample drain through the filter.
- 8.35. Thoroughly rinse down the walls of the funnel two times with a generous amount of sterile rinse water. This will wash down any bacteria that may adhere to the sides of the funnel.
- 8.36. With one hand on the outside walls of the funnel, use a backwards and upwards motion to pop the funnel off the support base. Continue to hold the funnel with your hand. Use your other hand to aseptically remove the filter with a flame-sterilized forceps (one sterile forceps per membrane filter). Aseptically replace the funnel back on the support base.
- 8.37. Aseptically place the filter on the surface of the appropriate agar plate, using a rolling motion to avoid trapping air between the agar and the filter which will

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

result in the formation of bubbles. If any air is trapped under the filter, reset the membrane filter onto the agar surface. Place the used forceps into the jar of ethanol.

- 8.38. Stack finished plates by sample and media type. Remember to always position finished plates agar (bottom) side up. This is to avoid any condensation dripping onto the surface of the filter during incubation which may interfere with or distort bacterial growth.
- 8.39. Continue filtering the sample, following the steps detailed above in sections 8.26.4 - 8.27 and 8.30 - 8.38 for each sample volume or dilution labeled on the stack of plates.
- 8.40. If a duplicate sample is being filtered, the same pipets and dilution tubes (if needed) may be used for both the regular sample and the duplicate sample.
- 8.41. When the sample is finished being filtered, place the mEndo and mE agar plates in the covered incubation container (with moist sponges) according to media type. Fecal coliform mFC agar plates are placed directly into the $44.5 \pm 0.2^{\circ}\text{C}$ incubators.
- 8.42. Record filtrations finish time, initials, and fecal coliform incubation time in the LIMS "Micro Log-in" Excel worksheet on the PC computer.
- 8.43. The incubation containers should be labeled with the indicator bacteria, test date, and incubation time. Also record the incubation times in the LIMS "Micro Log-in" Excel worksheet on the PC computer.
- 8.44. Incubate agar plates for the appropriate time and at the appropriate temperature.
 - 8.44.1. Total coliform mEndo agar plates are incubated for 24 ± 2 hours at $35.0 \pm 0.5^{\circ}\text{C}$.
 - 8.44.2. Fecal coliform mFC agar plates are incubated for 24 ± 2 hours at $44.5 \pm 0.2^{\circ}\text{C}$. It is important that these plates are incubated within 20 minutes of filtration to ensure heat-shock of the non-fecal bacteria. Plates are incubated in either the dry heat-sink incubators or sealed in waterproof bags and placed in the $44.5 \pm 0.2^{\circ}\text{C}$ water bath.
 - 8.44.3. Enterococcus mE agar plates are incubated for 48 ± 2 hours at $41.0 \pm 0.5^{\circ}\text{C}$.
 - 8.44.4. Do not place any containers of plates on the bottom floor of the incubator. Only put them on incubator shelves.
- 8.45. Place used Microfil funnels in the biohazard bag for the funnels. Place sample

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

bottles, empty buffer flasks (remove buffer label and place it on the media form), and used squirt bottles (if not being used for filtering more samples) in a tub for later washing.

- 8.46. Wipe down the bench-top work area with 70% ethanol and let air dry.
- 8.47. To filter another set of samples, wipe the Microfil support base and filter screen disc with a new alcohol pad. Rinse the disc with sterile rinse water. Repeat procedure as detailed in sections 8.26.4 - 8.27 and 8.30 - 8.38.
- 8.48. When taking a long break between filtering samples, wipe the Microfil support base and filter screen disc with a new alcohol pad. Leave the alcohol pad on the screen disc. Place an alcohol-wiped cap over the Microfil unit. Before filtering again, remove the cap and re-wipe the Microfil unit and filter screen disc with the alcohol pad. Rinse the disc with sterile rinse water. Repeat procedure as detailed in sections 8.26.4 - 8.27 and 8.30 - 8.38.
- 8.49. When all samples have been filtered, remove the filter screen disc from the Microfil support base and put in the 95% alcohol jar. Wipe the Microfil support base with a new alcohol pad. Leave the alcohol pad in the empty disc space. Place an alcohol-wiped cap over the Microfil unit.

Colony Counting Procedure

- 8.50. Check the LIMS “Micro Log-in” Excel worksheet for the incubation times of the plates that need to be read that day. Determine when the plates can be read according to their required incubation times.
- 8.51. Gather the necessary data worksheets for all samples to be read. Each test and sample type has separate data worksheets.
- 8.52. Record the time the plates are read and analyst initials in the LIMS “Micro Log-in” Excel worksheet and also on the data worksheets.
 - 8.52.1. Enter the time using a colon, ex. “10:25 or 14:00”.
- 8.53. If desired, wear disposable gloves when handling and reading the plates.
- 8.54. Remove plates from the incubator when it is time to read them and arrange them in ascending volume order for each station.
- 8.55. Use the stereoscopic microscope with a fluorescent lamp to aid in identifying and counting colonies.
- 8.56. Starting with the control blank plate if one was done, examine the filter for bacterial contamination or any notable changes on the filter or agar media.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 8.57. Examine and count all the plates set for a single sample, starting with the smallest sample volume filtered or the most dilute sample.
- 8.58. Colonies that have grown into each other should be counted individually. Separate nuclei or a fine line of contact may usually be seen.
- 8.59. Colonies in each and every filter grid square within the filtering area are to be counted.
- 8.60. To make counting easy and simple, start counting at the top of the filter. Count from left to right, following the grid lines, and continue to the bottom of the filter.
- 8.61. Countable ranges - Due to the possible adverse effect of colony crowding on sheen or color development on the filter membrane, and to be assured of a statistically valid colony count, minimum and maximum bacterial levels have been set for each of the indicator bacteria.
 - 8.61.1. Total bacteria: <200 total colonies (background and indicator bacteria).
 - 8.61.2. Total Coliform: 20 - 80 coliform colonies
 - 8.61.3. Fecal Coliform: 20 - 60 fecal coliform colonies
 - 8.61.4. Enterococcus: 20 - 60 enterococcus colonies
- 8.62. Colony Morphology
 - 8.62.1. Total Coliforms
 - 8.62.1.1. The typical colony has a pink to dark-red color with a shiny, greenish-gold, metallic surface sheen. The sheen may cover the entire colony, or it may appear only in the central area or on the periphery.
 - 8.62.1.2. This sheen is produced as a by-product of lactose fermentation (acid aldehyde complex) in combination with the Schiff's reagent (fuschin sulfite) in the mEndo media.
 - 8.62.2. Fecal Coliforms
 - 8.62.2.1. Any colony exhibiting any light or dark blue color, whether covering the entire colony or only in or on part of the colony.
 - 8.62.2.2. This blue color is a result of the acid produced by the fermentation of lactose combining with the aniline blue dye in

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

the mFC media.

8.62.2.3. Colonies exhibiting a cream or gray color are not fecal coliforms.

8.62.3. Enterococcus

8.62.3.1. After 48 ± 2 hours incubation, mE filters with growth on them are transferred to room temperature EIA plates.

8.62.3.1.1. Using a forceps, remove the filter (handling the filter by its edge, outside of the filtration area) from the mE plate and roll it onto the agar surface of the EIA plate.

8.62.3.1.2. Replace the top of the EIA plate with the labeled top lid of the original mE plate.

8.62.3.1.3. Incubate the EIA plates for 20 minutes at $41.0 \pm 0.5^\circ\text{C}$.

8.62.3.2. Enterococci are pink to carmine-red colonies with black or reddish-brown precipitate or halos on the underside of the filter when placed on EIA agar.

8.62.3.3. The colony color is due to the reduction of the vital indicator TTC (2,3,5-Triphenyl tetrazolium chloride) to non-reversible formazin. The dark precipitate or halo is the result of the hydrolysis of esculin.

8.63. Record all colony counts and any other notable information on the data worksheet. Comments should include information about unusual conditions on the filter, such as the presence of solids, artifacts or high background counts. The condition of the growth on the filter should also be noted, such as confluent areas or confluent growth over the filter.

8.63.1. CG = confluent bacterial growth with indistinct or non-discrete colonies.

8.63.2. CGS = confluent bacterial growth with indistinct or non-discrete colonies with some green, metallic sheen colonies.

8.63.3. TNTC = Too Numerous To Count

8.63.4. >200 = greater than 200 background and indicator colonies on a filter.

8.64. If there are any questions regarding counting colonies or any unusual or suspicious plates, save all plates for that sample and show them to a microbiologist.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 8.65. Dispose of all plates and gloves in a biohazard container. Autoclave at the end of the day.

9.0 CALCULATION

- 9.1. Due to the possible adverse effect of colony crowding on sheen or color development on the filter membrane, and to be assured of a statistically valid colony count, minimum and maximum bacterial levels have been set for each of the indicator bacteria.
 - 9.1.1. Total bacteria: <200 total colonies (background and indicator bacteria).
 - 9.1.2. Total Coliform: 20 - 80 coliform colonies
 - 9.1.3. Fecal Coliform: 20 - 60 fecal coliform colonies
 - 9.1.4. Enterococcus: 20 - 60 enterococcus colonies
- 9.2. Indicator bacteria are expressed as bacterial density (CFU) per 100 mL of sample.
- 9.3. The raw bacterial counts from the data worksheets are entered into LIMS "Sample Data Entry" Excel worksheets on the PC computer. The computer calculates the final bacterial densities for each sample and prints a copy of the data worksheet. See the LIMS Data Entry SOP for more details.
- 9.4. The supervisor verifies the daily calculated bacterial densities. Daily bacterial density reports are printed out by the computer and E-mailed to the County Health Department. The data reports are kept in a labeled notebook and the original data worksheets are kept in the data file cabinet. See the LIMS Data Validation SOP for more details.
- 9.5. If the final bacterial densities need to be calculated by hand, the following guidelines should be used. All calculated values should have only 1 or 2 significant figures, depending on the colony counts.
 - 9.5.1. Countable Range (Std.Meth., EPA):

$$\text{Countable range number of colonies/Filter volume} \times 100 = (\text{value}) \text{ CFU/100 mL}$$

Disregard non-countable range counts and volumes.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

<u>Volume</u>	<u>Count</u>	
Blank	0	
0.5	0	
5.0	6	$35/20 \times 100 = \mathbf{180 \text{ CFU/100 mL}}$
20	35	
50	95	

9.5.2. Two volumes in the countable range (EPA):

Calculate each count independently as in 9.5.1. above and then average the results.

<u>Volume</u>	<u>Count</u>	
Blank	0	$20/20 \times 100 = 100$ $60/50 \times 100 = 120$
0.5	0	
5.0	6	
20	20	$(100 + 120)/2 = \mathbf{110 \text{ CFU/100 mL}}$
50	60	

9.5.3. Counts less than the countable range (Std. Method):

Add all colonies/ Total all volumes x 100 = (value) CFU/100 mL

<u>Volume</u>	<u>Count</u>	
Blank	0	
0.5	0	
5.0	1	$(19 + 4 + 1 + 0)/(50 + 20 + 5 + 0.5) \times 100 = \mathbf{32 \text{ CFU/100 mL}}$
20	4	
50	19	

9.5.4. No counts on any filter volume (EPA):

1/Largest vol. filtered x 100 = < (value) CFU/100 mL

<u>Volume</u>	<u>Count</u>	
Blank	0	
0.5	0	$1/50 \times 100 = \mathbf{<2 \text{ CFU/100 mL}}$
5.0	0	
20	0	
50	0	

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 9.5.5. Counts greater than the countable range - too numerous to count (TNTC) or confluent growth (CG) (EPA):

Highest upper limit count/Smallest vol. filtered x 100 = >(value) CFU/ 100 mL

<u>Volume</u>	<u>Count</u>	<i>For Total Coliforms:</i>
Blank	0	80/0.5 x 100 = >16,000 CFU/100 mL
0.5*	TNTC or CG	
5.0	TNTC or CG	<i>For Fecal Coliforms or Enterococci:</i>
20	TNTC or CG	60/0.5 x 100 = >12,000 CFU/100 mL
50	TNTC or CG	

*NOTE: If the count at the lowest dilution is TNTC, try to estimate the count on the plate. Estimate the count in a quadrant if necessary. Use this number to calculate the count per 100 mL.

- 9.5.6. Confluent Growth Counts (Std. Method, EPA):

Disregard all dilution volumes that are confluent growth. Analyze remaining counts and volumes.

<u>Volume</u>	<u>Count</u>	<u>Volume</u>	<u>Count</u>
Blank	0	Blank	0
0.5	0	0.5	3
5.0	CG	5.0	20
20	CG	20	CG
50	CG	50	CG
1/0.5 x 100 = <200 CFU/100 mL		20/5.0 x 100 = 400 CFU/100 mL	

- 9.5.7. Total bacterial count (background bacteria plus indicator bacteria) greater than 200 colonies (Std. Method):

Analyze counts and volumes. Report as a greater than value.

<u>Volume</u>	<u>Count</u>	<u>Volume</u>	<u>Count</u>
Blank	0	Blank	0
0.5	0 (>200)	0.5	0
5.0	0 (>200)	5.0	3
20	CG	20	18 (>200)
50	CG	50	60 (>200)
1/5 x 100 = >20 CFU/100 mL		60/50 x 100 = >120 CFU/100 mL	

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

9.5.8. Total colonies less than 200, but indicator bacteria greater than upper limit (Std. Method):

If plate has well isolated, discrete colonies that can be easily counted, use the higher count.

<u>Volume</u>	<u>Count</u>	<u>Volume</u>	<u>Count</u>
Blank	0	Blank	0
0.5	85	0.5	2
5.0	TNTC	5.0	95
20	TNTC	20	TNTC
50	TNTC	50	CG
$85/0.5 \times 100 = \mathbf{17,000 \text{ CFU/100 mL}}$ $95/5 \times 100 = \mathbf{1,900 \text{ CFU/100 mL}}$			

10.0 DATA MANAGEMENT

- 10.1 Open up the LIMS “Micro Log-in” Excel worksheet on the PC computer. Choose the worksheet tab for the appropriate sampling program (ex. LAH weekly, SMB Inshore) that has today’s date. Enter the sample collection times, sampler’s initials, analysis set time and incubation time.
- 10.2 The raw bacterial counts from the data worksheets are entered into LIMS “Sample Data Entry” Excel worksheets on the PC computer. The final bacterial densities of each sample are calculated by the computer and a copy of the data worksheet is printed out. The results are validated and a report is generated and emailed to the County Health Department.

11.0 QUALITY ASSURANCE AND QUALITY CONTROL

- 11.1 Prepared media must be checked for sterility and against positive and negative controls prior to use.
- 11.2 Duplicate membrane filtration analyses should be done on 10% of all samples or on at least one sample per test day.
- 11.3 QA blanks are performed at the start of membrane filtration.
- 11.4 Duplicate analyses results are entered into the QA/QC Duplicate spreadsheets for Precision Criteria analysis.
- 11.5 Colony verifications are performed once a month for each indicator bacteria.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

12.0 LOWEST REPORTING LEVEL

- 12.1 The lowest reporting level is dependant on the sample volume and dilution used for the analysis and in calculating the final CFU/100mL.

13.0 PRECISION AND BIAS STATEMENT

- 13.1 Since the membrane filtration technique can test larger sample volumes of water and a direct count can be obtained from the test, as opposed to an estimation (most probable number), the numerical results have much greater precision.

14.0 REFERENCES

- 14.1 *Standard Methods for the Examination of Water and Wastewater*, 20th Edition, 1998.
- 14.2 *Water Microbiology Laboratory and Field Procedures Manual*, Millipore Corp., 1992.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

ENVIRONMENTAL MONITORING DIVISION - WET CHEMISTRY LABORATORY STANDARD OPERATING PROCEDURE for

AMMONIA NITROGEN PHENOLATE SEMI-AUTOMATED COLORIMETRY FOR SEAWATER EPA Method 350.1 EMD SOP# 4000

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TABLE OF CONTENTS

0.	TITLE PAGE
13.	SCOPE AND APPLICATION
14.	SUMMARY OF METHOD
15.	INTERFERENCES
16.	SAMPLE COLLECTION, PRESERVATION, AND HANDLING
17.	EQUIPMENTS AND SUPPLIES
18.	CHEMICALS AND REAGENTS
19.	SAFETY
20.	PROCEDURE
21.	DOCUMENTATION & CALCULATION
22.	DATA MANAGEMENT
23.	QUALITY ASSURANCE AND QUALITY CONTROL
24.	REPORTING LIMITS
25.	PRECISION AND BIAS STATEMENT
26.	REFERENCES
27.	APPENDICES
16.	DOCUMENT CONTROL PAGE

AMMONIA NITROGEN
SEAWATER
PHENOLATE AMMONIA SEMI-AUTOMATED COLORIMETRY
EPA Method 350.1
EMD SOP# 4000
Revised Date: 11/6/13

1. SCOPE AND APPLICATION

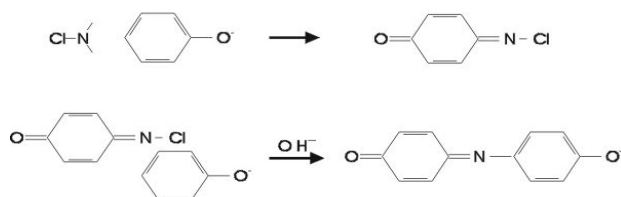
- 1.1 This method is specifically written for seawater and brackish water but can be used for low level ammonia samples such as ground, surface, and drinking waters.
- 1.2 The applicable concentration range is 0.02 to 0.50 mg/L NH₃ as N. Samples with higher concentration need to be diluted so the final concentration of the working samples fall within this range.

2. SUMMARY OF METHOD

- 2.1 This method is based on the Berthelot reaction. The Berthelot reaction mechanism consists of two steps. In the first step, hypochlorite added to the sample reacts with ammonia to form mono-chloramine. Care has to be taken to keep the pH of the solution high (~11) to minimize the formation of di-chloramine and tri-chloramine.



- 2.2 In the second step phenol added to the sample reacts with mono-chloramine to form indophenol blue. The blue color formed is intensified by sodium nitroprusside added in the reaction mixture. The absorbance of the blue color is measured at 630 nm. The absorbance is proportional to the concentration of ammonia present in the sample. The color reaction and absorbance reading is performed automatically using a Lachat flow injection analyzer (FIA).



3. INTERFERENCES

- 3.1 Calcium and magnesium ions may precipitate if present in sufficient concentration. Tartrate or EDTA added to the sample in-line prevents this problem.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 3.2 Color, turbidity, and certain organic species may interfere. Turbidity is removed by manual filtration. Sample color may be corrected by running the samples through the manifold without color formation.
- 3.3 Eliminate any marked variation in acidity or alkalinity among samples because intensity of measured color is pH dependent. Likewise, ensure that pH of standard ammonia solutions approximates that of sample.

4. **SAMPLE COLLECTION, PRESERVATION, AND HANDLING**

- 4.1 Ocean water samples should be collected in 250 mL plastic bottles and preserved with 0.9 mL of 1:1 HCl to a pH <2 and cooled to 4 °C. Samples should be analyzed as soon as possible after collection. Preserved sample maintained at 4 °C may be held for up to 28 days.

5. **EQUIPMENT AND SUPPLIES**

- 5.1 Balance - analytical, capable of accurately weighing to the nearest 0.0001 g.
- 5.2 Glassware - Class A volumetric flasks and pipettes or automatic pipettors calibrated to $\pm 1\%$ accuracy.
- 5.3 Flow injection analysis equipment (Lachat QuickChem FIA, 8000 Series) with the following accessories, designed to deliver and react sample and reagents in the required order and ratios.
 - Sampler
 - Multichannel proportioning pump
 - Reaction unit or manifold
 - Colorimetric detector
 - Data system
 - Heating unit

PVC pump tubes must be used for this method.

6. **CHEMICALS AND REAGENTS**

6.1 Preparation of calibration standards

6.11 Stock Standard (1000 mg/L N)

In a 1 L volumetric flask dissolve 3.819 g ammonium chloride (NH_4Cl) that has been dried for two hours at 105 °C in about 800 mL RO water. Add 1 mL 1:1 HCl. Dilute to the mark and invert to mix (or use purchased standards, 1000 mg/L $\text{NH}_3\text{-N}$).

6.12 Intermediate Standard (10 mg/L N)

In a 100 mL volumetric flask add 1.0 mL of Stock Standard (1000 mg/L N). Dilute to the mark with RO water and invert to mix.

6.13 Calibration Standards:

0.500 mg/L N: In a 100 mL flask add 5.0 mL of Intermediate Standard (6.12) and dilute to volume with pH 2 water.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

0.300 mg/L N: In a 100 mL flask add 3.0 mL of Intermediate Standard (6.12) and dilute to volume with pH 2 water.

0.200 mg/L N: In a 100 mL flask add 2.0 mL of Intermediate Standard (6.12) and dilute to volume with pH 2 water.

0.100 mg/L N: In a 100 mL flask add 1.0 mL of Intermediate Standard (6.12) and dilute to volume with pH 2 water.

0.050 mg/L N: In a 100 mL flask add 0.5 mL of Intermediate Standard (6.12) and dilute to volume with pH 2 water.

0.020 mg/L N: In a 100 mL flask add 0.2 mL of Intermediate Standard (6.12) and dilute to volume with pH 2 water.

0.0 mg/L N: use pH 2 water.

Use standards for the preparation of calibration standards and use QC solutions from different sources or lot numbers.

6.2 Preparation of Laboratory Control Standard (LCS) and Matrix Spike (MS) solutions

6.2.1 Stock LCS Solution (200 mg/L N): In a 1000 mL volumetric flask, dissolve 0.7604 g ammonium chloride (NH_4Cl) that has been dried for two hours at 105 °C in about 400 mL RO water. Add 0.5 mL 1:1 HCl. Dilute to the mark and invert to mix. Keep for 6 months.

6.2.2 Intermediate LCS Solution and MS Solution (10 mg/L): In a 100 mL volumetric flask, add 5.0 mL of Stock LCS Solution (6.2.1) and dilute to volume with RO water.

6.2.3 Working LCS Solution (0.3 mg/L): In a 200 mL volumetric flask, add 6.0 mL of Intermediate LCS Solution (6.2.2) and dilute to volume with pH 2 water.

6.3 CHEMICALS AND REAGENTS

Use laboratory's on-line RO water for reagent preparation. Use all reagent grade chemicals.

6.3.1 Sodium Phenolate:

In a 250 mL volumetric flask, dissolve 22 mL of 88% liquefied phenol ($\text{C}_6\text{H}_5\text{OH}$) in approximately 150 mL RO water. While stirring, slowly add 8 g sodium hydroxide (NaOH). Cool, dilute to the mark and invert to mix. Prepare fresh every 3 to 5 days. Discard when reagent turns dark brown. Caution: Wear gloves. Phenol causes severe burns and is rapidly absorbed into the body through skin.

6.3.2 Sodium Hypochlorite:

In a 200 mL volumetric flask, dilute 100 mL (4% to 6%) sodium hypochlorite (NaOCl) to the mark with RO water. Invert to mix. Prepare fresh daily.

6.3.3 Sodium Nitroprusside:

In a 1 L volumetric flask dissolve 3.5 g sodium nitroprusside (Sodium Nitroferricyanide, $\text{Na}_2\text{Fe}(\text{CN})_5\text{NO}\cdot 2\text{H}_2\text{O}$). Dilute to the mark with RO water and invert to mix. Prepare fresh monthly.

6.3.4 Buffer:

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

In a 1 L volumetric flask, dissolve 50.0 g disodium ethylenediamine tetra acetic acid (Na_2EDTA) and 5.5 g sodium hydroxide (NaOH) in approximately 900 mL RO water. Mix with a magnetic stirrer until dissolved and dilute with water up to the mark. Prepare fresh monthly.

6.3.5 Seawater (adjusted to pH 2)

Ask Biologists for 10 L of seawater from Point Dume. Read absorbance (follow the Procedure in section 8 but without running the standards) of this sample as well as any saved Point Dume samples from the past. Select a Point Dume sample that has the lowest signal. If necessary, combine these Point Dume samples for blank and for preparing standards, QC, and spike solutions. Filter these combined seawater through 0.45 μm filter membrane. Adjust pH to 2 ± 0.2 (with pH meter).

7. SAFETY

- 7.1 Goggles, gloves, and protective clothing should be worn when handling samples and chemicals. Refer to MSDS sheets for toxicity of reagents and chemicals used. Good laboratory practice should be enforced at all times.
- 7.2 Phenol, sodium nitroferricyanide, and sodium hydroxide have the potential to be highly toxic or hazardous, for detailed explanation consult the MSDS.

8. PROCEDURE

- 8.1 Free Ammonia Matrix Preparation:
 - 8.1.1 Mix some ocean samples in a 1 L bottle.
 - 8.1.2 Transfer about 150 mL to a beaker, put in a magnetic stirrer bar, then mark the volume as initial volume.
 - 8.1.3 Move beaker on a heater with stirrer, start heating with stirrer on.
 - 8.1.4 Add one scoop (about 2 g) of EDTA in low pH ocean sample, after it's dissolved, then add 30% NaOH drop by drop and test pH by pH paper until pH above 10. (If see any cloudy hydroxide forms, add a little more EDTA.)
 - 8.1.5 Keep heating to boil and stay boiling for 1 hr. (Occasionally adding RO water to keep the initial volume)
 - 8.1.6 After heating, adjust pH to 2 (solution should be exactly initial volume), then filter for analysis. (Run 3 vials at least)
- 8.2 Lachat analysis procedure:
 - 8.2.1 Turn on the main switch (the switch to the power strip).
 - 8.2.2 Crimp down on the peristaltic pump line (till it clicks). Move the lever up to lock in the tubing (turn the lever to full lock position and then release the lever till there is sound of a click).
 - 8.2.3 Turn on the peristaltic pump at speed of 35 (press normal run).
 - 8.2.4 Put the tubes in the RO water container. Make sure the RO water container is full (but replace the RO water daily). Check for leaks and check the flow of each tube.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 8.2.5 Open the Omnion 3.0 software program by clicking the icon on the desktop of the computer.
- 8.2.6 Open the most recent Ammonia-Seawater file by clicking on “Run,” “Open” and clicking on the most recent ammonia-seawater file.
- 8.2.7 Make changes to the sample list. Note the position of the rack of the auto sampler. Positions S1 to S7 are for the calibration standards: 0.500, 0.300, 0.200, 0.100, 0.050, 0.020, and 0.0 mg/L N.
- 8.2.8 Fill the vials with LCS, matrix spike/matrix spike duplicate (MS/MSD), and samples (prefiltered with 0.45 µm filter paper) previously adjusted to pH 2 with 6 N NaOH and 1:1 HCl. (Prepare MS/MSD by combining 9.7 mL sample and 0.3 mL MS solution.)
- 8.2.9 When ready, remove the tubes from the RO water container and put the corresponding tubes (follow the labels on tubes) into the proper containers for reagents. The tubing without the label remains in the RO water container. Put the waste tubing coming out from the detector to the container labeled “Phenolate waste.” After a few minutes, check the baseline by pressing “Preview” on the Omnion software. If the baseline looks okay, press “Stop” and then “Start.”
- 8.2.10 After the run is over, print the report (make sure area counts and graph are showing in the report).
- 8.2.11 Remove the tubing from the respective containers and put in RO water container for a few minutes (to clean out the lines). Place all lines to the acid cleaning solution to clean out the yellow stain, then put back to RO water for about 10 more minutes.
- 8.2.12 Remove the tubing from the RO water container and let air dry for a few minutes. Press “Stop” on the pump.
- 8.2.13 Loosen the tubing from the pump (so that the tubing does not get crimped without the pump running).
- 8.2.14 Turn off the main switch (the switch to the power strip) to turn off the Lachat. Leave the computer on.
- 8.2.15 Maintenance: Follow the procedure attached in the back of the maintenance logbook cover.

9. DOCUMENTATION & CALCULATION

- 9.1 Fill out the Lachat – operation logbook.
- 9.2 Fill out the Lachat – standard solution preparation logbook.
Enter results in excel spreadsheet. Use area counts for absorbance values.
- 9.3 Lachat automatically creates the file of the test run.
- 9.4 Save all the print-outs of the graph and data.
- 9.5 Check the worksheets against the instrument print-outs.
- 9.6 Enter data in Excel, follow the instruction under Excel Data Entry to transfer the data into LIMS. Be sure that the data are approved by the supervisor or the designee prior to transfer into LIMS.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 9.7 File all the hard copies of the Excel & Lachat print-outs in the current month's folder.

The Federal Register entry which defines standard EPA NPDES and NPDWR methods states that "Manual Distillation is **NOT** required if comparability data on representative effluent samples are on company file to show that this preliminary distillation step is not necessary; however, manual distillation will be required to resolve any controversies."

Wet chemistry Laboratory performed recovery studies on representative sample types. The data showed that the non-distilled samples gave the same recoveries as the distilled samples. The comparison data are available for review.

10. **DATA MANAGEMENT**

- 10.1 Check and sign the worksheet.
10.2 Have a second person check and then enter the data into LIMS.
10.3 The analyst is responsible for assuring compliance with QA/QC requirements. The supervisor is notified when results are out of range. Analysis is repeated to confirm outliers.

11. **QUALITY ASSURANCE AND QUALITY CONTROL**

- 11.1 Standard reference material for determination of ammonia nitrogen has been tested by Wet Chemistry Laboratory for the purpose of test certification, of which passing results have been achieved. Test results were within acceptable ranges for that sample.
11.2 A formal quality control program is required to operate this method.
11.3 A Method Blank (MB), Laboratory Control Standard (LCS) (0.3 mg/L NH₃-N), Matrix Spike (MS), and Matrix Spike Duplicate (MSD) (0.3 mg/L NH₃-N) are required for every 10 routine samples.
11.4 MB values that exceed the Method Detection Limit (MDL) indicate laboratory or reagent contamination. Repeat the analysis.
11.5 Analyze 0.300 mg/L N and 0 mg/L N calibration standards (Continuing Calibration Verification [CCV]) before and after every 10 samples and at the end of the run. The percent recovery of the 0.300 mg/L N standard must be between 90-110%. The 0 mg/L N calibration standard must be less than 0.01 mg/L N. The correlation coefficient (r) must be 0.995 or better for the calibration curve. If not, repeat the calibration.
11.6 Recovery of the LCS and the MS/MSD must be between 90-110%. The relative percent difference (RPD) between replicates should not be greater than 15%. If the recovery of the MS/MSD falls outside of the range, corrective action needs to be taken. However, if the LCS, the 0.300 mg/L N CCV, and the 0 mg/L N CCV are all within acceptable range and the procedures have been followed accurately, then the recovery problem is probably due to matrix interference, and not instrument related. A qualifier explaining the situation must be documented along with such data report.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 11.7 Laboratory control charts for spike recovery and RPD are established as sufficient laboratory data become available. The chart should be updated at least annually. The cause of any data falling out of the control area or any significant trend towards outside the control area should be investigated for taking appropriate corrective action.
- 11.8 The updated control chart is in the following file:
\\httpfs1\emd\WetChem\WET_CHEM\DATABASE\QC\DATA.MDB

12. REPORTING LIMITS

- 12.1 The Method Detection Limit (MDL) for $\text{NH}_3\text{-N}$ is 0.02 mg/L.
- 12.2 The Minimum Level (ML) for $\text{NH}_3\text{-N}$ is 0.02 mg/L.
- 12.3 The Reporting Limit (RL) for $\text{NH}_3\text{-N}$ is 0.02 mg/L.

13. PRECISION AND BIAS STATEMENT

- 13.1 The relative percent difference (RPD) between replicates should not be greater than 15%.

14. REFERENCES

- 14.1 EPA Method 350.1, Revision 1978.
- 14.2 QuikChem Method 31-107-06-1-B, Revision Date: January 7, 2002, Lachat Instruments.
- 14.3 M.P.E. Berthelot, Repertoire de Chimie Appliquee, 1859, 1, 284, 1859.

15. APPENDICES

- 15.1 See the attachment, "Ammonia Manifold Diagram."

16. DOCUMENT CONTROL PAGE

Review Frequency: As Needed				
Prepared/Revised/Reviewed		Description of Changes	Approved	
Date	By		Date	By
9/28/05	T. Card	Substituted "City of Los Angeles" for "Hyperion Treatment Plant". Added Quality Assurance Officer & signature line. Added Document Control Page.		
2/2/09	J. Kim	Formatting changes.		
9/6/12	G. Aleman	Substituted "Environmental Monitoring Division" for "City of Los Angeles, Bureau of Sanitation." Substituted "City of Los Angeles" for "Environmental Monitoring Division." Added link for Control Chart. Updated MDL values.		
10/3/12	G. Aleman	Changed nomenclature of QA/QC terms. These include Method Blank (MB), Laboratory Control Standard (LCS).		

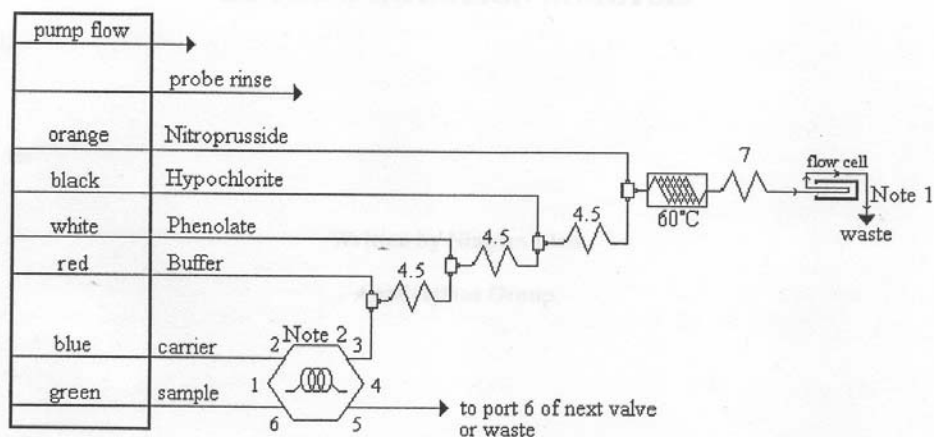
SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

		Matrix Spike (MS), Matrix Spike Duplicate (MSD), and Continuing Calibration Verification (CCV). Updated values for Standards preparation.		
10/24/12	G. Aleman	Added a statement regarding standard reference material to QA/QC section.		
12/7/12	J. Kim	Changed section 6.34: NaOH weight to 5.5 g from 11 g.		
11/6/13	J. Kim	Changed section 4.1 preservative to HCl.		

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

11.3. AMMONIA MANIFOLD DIAGRAM

DETERMINATION OF AMMONIA IN BRACKISH OR SEAWATER BY FLOW INJECTION ANALYSIS




Carrier: DI water

Manifold Tubing: 0.8 mm (0.032 in) i.d. This is 5.2 $\mu\text{L}/\text{cm}$.

QC8000 Sample Loop: 150 cm x 0.042" i.d.

Interference Filter: 630 nm

Apparatus: An injection valve, a 10 mm path length flow cell, and a colorimetric detector module is required. The  shows 650 cm of tubing wrapped around the heater block at the specified temperature.

4.5: 70 cm of tubing on a 4.5 cm coil support

7: 135 cm of tubing on a 7 cm coil support

Note 1: 100 cm back pressure coil of 0.5 mm (0.022" i.d.)

Note 2: The sample loop should be cut at a 30-45° angle for the best fit.

Note 3: PVC PUMP TUBES MUST BE USED FOR THIS METHOD.

LACHAT INSTRUMENTS
6645 WEST MILL ROAD
MILWAUKEE, WI 53218-1239 USA

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Chapter 8: Data Validation and Reporting Protocols

This chapter contains EMD's SOPs for validating sewage spill data and transmitting the data to WCSD and WPD.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

City of Los Angeles
ENVIRONMENTAL MONITORING DIVISION
Microbiology Laboratory
STANDARD OPERATING PROCEDURE for

**SEWAGE SPILL DATA VALIDATION AND DATA SHIPMENT
TO SANITARY SEWER OVERFLOW GROUP**

HTP SOP#

Effective Date:	<u>mm/dd/yy</u>
Version No.:	<u>xx.x</u>
Total Number of pages:	<u>5</u>
Pages Revised:	<u>N/A</u>

APPROVAL:

Laboratory Manager (Acting):	Ioannice Lee
Signature:	_____
Quality Assurance Officer:	Mahesh Pujari
Signature:	_____
Quality Assurance Manager:	Jeffrey Beller
Signature:	_____

TABLE OF CONTENTS

	Page
<u>TITLE PAGE</u>	
1. SCOPE AND APPLICATION	123
2. PROCEDURE	123-134

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

1.0 Scope and Application

The Regional Water Quality Control Board requires the City of Los Angeles to cease and desist discharges of raw sewage onto streets and into waters of the State. The City has implemented an emergency response protocol to include the collection and laboratory analysis of at least one Sanitary Sewer Overflow at each location per day for all spills greater than 1000 gallons. For spills of 500 gallons or more that reach the receiving waters both a spill sample and receiving water samples up- and down-stream/coast of the spill are collected and analyzed. For Hyperion One-Mile Outfall bypasses and overflows, samples are collected at the discharge point (Station A-2) and at two additional stations within 50 feet of the discharge point (surface and bottom). Samples are analyzed for total coliforms, fecal coliforms or *E. coli*, and enterococci using either the membrane filtration (MF) or the chromogenic substrate (CS) methods, where appropriate. Data generated from these samples are validated and submitted to the Wastewater Collections System Division and the Watershed Protection Division; collectively name the Sanitary Sewer Overflow (SSO) Group for reporting purposes. The data is then archived in the LIMS database.

2.0 Procedure

2.1. Generate and Print Reports

- 2.1.1. Access the Lims_Micro directory on the Htpfs1 server and double click on the IDEXX MPN Generator, a program that calculates the bacterial densities of a CS sample by MPN/100ml.
- 2.1.2. Using the raw data sheets, enter the CS counts in the MPN Generator. The calculated densities are then entered on the raw data sheet.
- 2.1.3. Open the spill sample report template and enter the results. Save the file under a different name. In the report, include the sample collection date, sample ID, and results for total coliforms, *E. coli* and enterococci.
- 2.1.4. Check sampling criteria table to see if any more samples are to be collected and note this in the report. Receiving water monitoring is to be done on a daily basis from the time the spill is known until the results of two consecutive sets samples⁴ indicate that bacterial counts have returned to background levels or the County Department of Health Services authorizes cessation of monitoring.

⁴ For spills from the Tillman or Los Angeles-Glendale Plant into the Los Angeles River system, receiving water samples are to be collected on the day of the spill and daily for the following four days. The same is required for spills from the Terminal Island Plant into the Los Angeles Harbor, but sampling cannot end until coliform levels in the receiving water are within normal range and the bypass or spill has ceased. For these POTW spill or bypasses, only total and fecal coliform monitoring is required

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 2.1.5. Check that the correct information and values have been entered. Print the report and submit for data validation.

2.2. Validate the Reports

- 2.2.1 The reports must be checked for accuracy. Use the IDEXX MPN Generator to check that the calculated values are indeed correct. Compare the values in the report with the calculated values.

- 2.2.2 Check when the samples were collected and analyzed. Ensure that the samples were analyzed within the 6-hour holding time. If not, make a note on the report.

- 2.2.3. Electronic copies of the reports are saved in Htpfs1\Lims_Micro.

- 2.2.4. All data and reports must have a secondary review by either the unit supervisor or a WMB, before emailing to the client.

2.3. Determine if bacterial concentrations have returned to background levels or if sampling must be continued on subsequent days.

- 2.3.1. Santa Monica Bay and Los Angeles Harbor—This will be considered achieved if either of the following conditions are met:

- 1) AB 411 single sample limits are not exceeded for two consecutive days. These limits are:

Total coliform density shall not exceed 10,000/100 mL

Fecal coliform density shall not exceed 400/100 mL

Enterococcus density shall not exceed 104/100 mL

Total coliform density shall not exceed 1,000/100 mL if the ratio of fecal-to-total coliform exceeds 0.1

- 2) The beach is no longer closed to the public due to the spill.

- 2.3.2. Inland Waters—This will be considered achieved if one of the following two conditions are met: 1) The Basin Plan single sample limits are not exceeded for two consecutive days. These limits are:

Waters designated REC-1 (water contact recreation)

E. coli density shall not exceed 235/100 mL

Fecal coliform density shall not exceed 400/100mL

Waters designated REC-2 (non- water contact recreation)

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

E. coli density shall not exceed 4000/100 mL⁵

Many inland waters are listed as impaired for bacteria; therefore, the single sample limits are not likely to be met in these waters even without an SSO, and this second option is needed. 2) A comparison of upstream versus downstream bacterial densities or downstream versus Status and Trends Baseline Levels indicate for two consecutive days that the high bacteria densities are not due to the sewage spill. An objective procedure for making this determination is described below in the section entitled: Evaluating Background Levels.

2.3.3. Evaluating Background Levels

The first step is to compare bacterial densities at receiving water sites upstream and downstream of the point where the spill enters the receiving water. It is reasonable to assume that bacterial densities would be higher at the downstream site if the receiving water is being impacted by a sewage spill. This concept is shown in Figure 5.

The criteria for making this assessment are provided in Table 9. Indicator bacteria baseline levels for the main channel and tributaries of the Los Angeles River, Ballona Creek, and Dominguez Channel are provided in Table 10. Station location information is provided in Appendices F-I.

Relative Impact and Bacteria Source in Receiving Waters:

		Upstream Sample	
		Bacteria Indicator Levels	
		low	high
Downstream Sample	low	No impact	Impacted: Not SSO, maybe other sources
	high	Impacted: SSO maybe source	Impacted: Source maybe the natural background bacteria levels

	Discontinue sampling for SSO (sanitary sewage overflow)
	May need to continue sampling for SSO.

⁵ The Basin Plan does not contain a single sample limit for REC-2 waters. The geometric mean is 2000/100 mL with not more than 10% of the samples during any 30-day period exceeding 4000/100 mL.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Fig 5.

Table 9. Guidance Criteria for Continuance of Sanitary Sewage Overflow Monitoring

Step 1: Compare Bacteria Levels in Samples

	Location A		Location B	Result	Action
Indicator Bacteria	Upstream Sample	\geq	Downstream Sample	Spill not source of impact	Discontinue sampling for spill if all three indicator bacteria levels are determined not from spill impact
	Upstream Sample	$* \ll$	Downstream Sample	Spill maybe source of impact	Go to Step 2: Compare downstream bacteria level with baseline level

* \ll Downstream greater than upstream sample by at least 25%

Step 2: Compare Bacteria Sample with Nearest Status and Trends Monitoring Station (Refer to Indicator Bacteria Baseline Level)

	Location B		Nearest S&T Station*	Result	Action
Indicator Bacteria	Downstream Sample	$>$	Indicator Bacteria Baseline Level	Above Baseline Level	Continue sampling for spill until all three bacteria levels are below baseline levels for 2 consecutive days.
	Downstream Sample	\leq	Indicator Bacteria Baseline Level	Below Baseline Level	Discontinue sampling if all 3 indicator bacteria levels are below baseline levels

*Sample **not** influence by WRP should be compared with nearest station not effected by WRP
Refer to Appendix A-D for S&T Station Location

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Indicator Bacteria Baseline Level

Main Channel						
Los Angeles River						
S&T Station	Dry Weather			Wet Weather		
	TC	EC	ENT	TC	EC	ENT
White Oak	1.E+05	2.E+03	2.E+03	1.E+05	4.E+03	5.E+03
Sepulveda	5.E+04	3.E+02	3.E+02	1.E+05	2.E+03	2.E+03
Tujunga	8.E+04	2.E+03	6.E+02	2.E+05	4.E+03	5.E+03
Colorado	8.E+04	9.E+02	6.E+02	2.E+05	6.E+03	5.E+03
Figueroa	5.E+04	2.E+02	2.E+02	1.E+05	5.E+03	4.E+03
Washington	8.E+04	8.E+02	2.E+02	2.E+05	5.E+03	5.E+03
Rosecrans	8.E+04	2.E+03	3.E+02	2.E+05	8.E+03	4.E+03
Willow	8.E+04	2.E+03	3.E+02	2.E+05	1.E+04	6.E+03

Tributary						
Los Angeles River Tributary						
S&T Station	Dry Weather			Wet Weather		
	TC	EC	ENT	TC	EC	ENT
Winnetka	6.E+04	2.E+03	9.E+02	3.E+05	1.E+04	3.E+04
Aliso Creek	9.E+04	2.E+03	2.E+03	1.E+05	9.E+03	4.E+04
Bull Creek	4.E+04	1.E+03	2.E+03	3.E+05	5.E+04	4.E+04
Tujunga Wash	7.E+04	1.E+03	2.E+03	3.E+05	8.E+04	3.E+04
Burbank Western	2.E+03	2.E+02	5.E+01	2.E+02	1.E+02	2.E+01
Verdugo Wash	6.E+04	5.E+03	1.E+03	3.E+05	7.E+03	3.E+04
Arroyo Seco	3.E+04	4.E+03	2.E+03	4.E+05	1.E+04	3.E+04
Rio Hondo	1.E+05	2.E+03	2.E+03	3.E+05	2.E+05	3.E+04
Compton Creek	2.E+04	4.E+02	2.E+02	3.E+05	3.E+05	3.E+04

Ballona Creek						
S&T Station	Dry Weather			Wet Weather		
	TC	EC	ENT	TC	EC	ENT
National	4.E+04	1.E+03	4.E+02	3.E+05	3.E+04	2.E+04
Overland	4.E+04	8.E+02	1.E+02	3.E+05	4.E+04	2.E+04
Centinela	4.E+04	8.E+02	1.E+02	3.E+05	2.E+04	2.E+04
Pacific	3.E+04	4.E+02	1.E+02	2.E+05	1.E+04	3.E+04

Ballona Creek Tributary						
S&T Station	Dry Weather			Wet Weather		
	TC	EC	ENT	TC	EC	ENT
Benedict Canyon	6.E+04	2.E+03	1.E+03	3.E+05	2.E+03	7.E+03
Sepulveda Channel	6.E+04	2.E+03	9.E+02	3.E+05	1.E+04	3.E+03
Centinela Creek	1.E+05	4.E+03	2.E+03	3.E+05	1.E+04	6.E+03
Del Rey Lagoon	2.E+04	9.E+02	2.E+02	2.E+05	1.E+04	4.E+03

Dominguez Channel						
S&T Station	Dry Weather			Wet Weather		
	TC	EC	ENT	TC	EC	ENT
El Segundo	1.E+04	4.E+02	3.E+02	1.E+04	1.E+03	3.E+02
Western	6.E+04	1.E+03	7.E+02	3.E+04	2.E+03	1.E+03
Wilmington	1.E+04	4.E+02	8.E+01	2.E+05	6.E+03	5.E+03
Henry Ford	2.E+03	2.E+02	3.E+01	7.E+04	1.E+03	1.E+03

Dominguez Channel Tributary						
S&T Station	Dry Weather			Wet Weather		
	TC	EC	ENT	TC	EC	ENT
Carson Plaza	2.E+05	2.E+03	3.E+03	3.E+05	7.E+03	3.E+04
Yukon	4.E+04	1.E+03	7.E+02	3.E+05	2.E+04	4.E+04

Notes:

Status and Trends Monitoring Program provided data from years 2001-2004 used to determine the indicator bacteria baseline levels (IBBL).

IBBL is the calculated geometric mean plus two standard deviations for Total coliform (TC), E. coli (EC) and Enterococcus (ENT).

IBBL is divided into dry and wet weather, and rain days with greater than 0.10 inches and 3 days following the rain event constitute as wet weather events.

IBBL uses rain data obtained from county stream gauge 482 at the downtown USC location.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

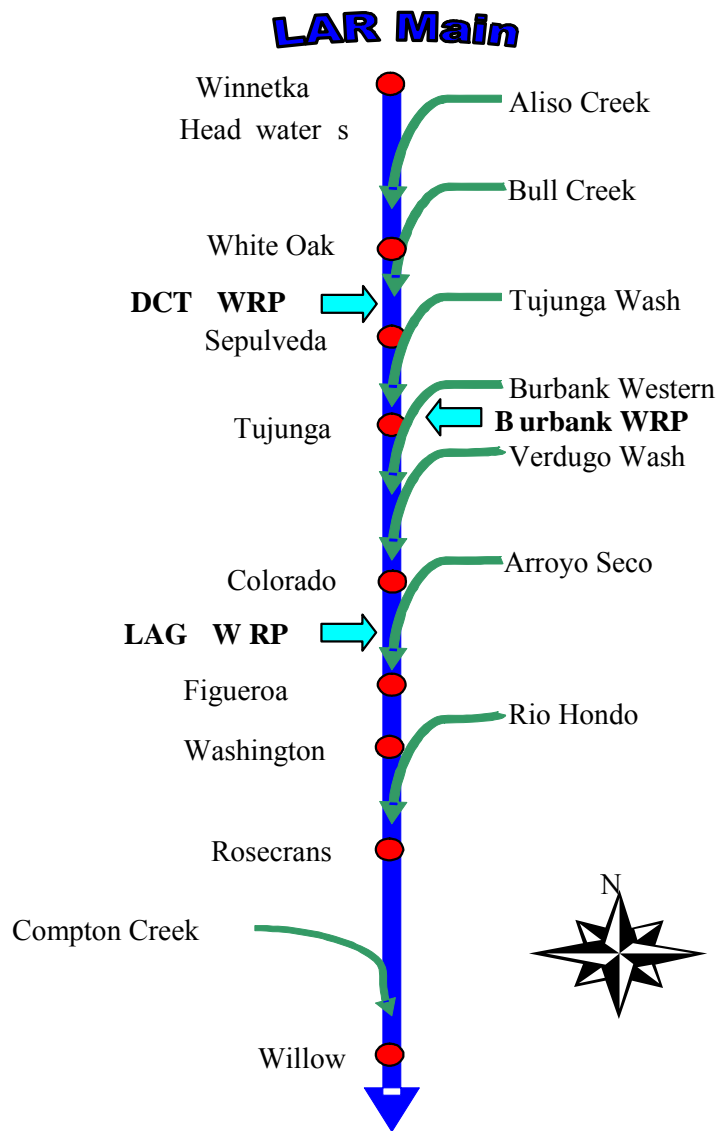
Appendix F

Los Angeles River			
S&T Station	General Area	Location	Thomas Guild Coordinates
Winnetka	Winnetka	Winnetka Ave.	530: E6
Aliso Creek	Reseda	Crebs Ave.	530: H6
White Oak	Reseda	White Oak Ave.	531: B7
Bull Creek	Reseda	Vanowen St.	531: D6
Sepulveda	Sherman Oaks	Sepulveda Blvd.	561: H3
Tujunga Wash	Studio City	Moorpark St.	562: G4
Tujunga	Studio City	Tujunga Ave.	562: J6
Burbank Western	Glendale	Riverside Dr.	563: H3
Verdugo Wash	Glendale	Concorde St.	564: C4
Colorado	Glendale	Colorado Blvd.	564: C5
San Fernando	Cypress Park	San Fernando Rd.	594: J7
Figueroa	Los Angeles	Figueroa St.	594: H7
Washington	Los Angeles	Washington Blvd.	674: J1
Rio Hondo	Downey	Garfield Ave.	705: G5
Rosecrans	Paramount	Rosecrans Ave.	735: G5
Compton Creek	Carson	Del Amo Blvd.	765: B4
Willow	Long Beach	Willow St.	795: C3

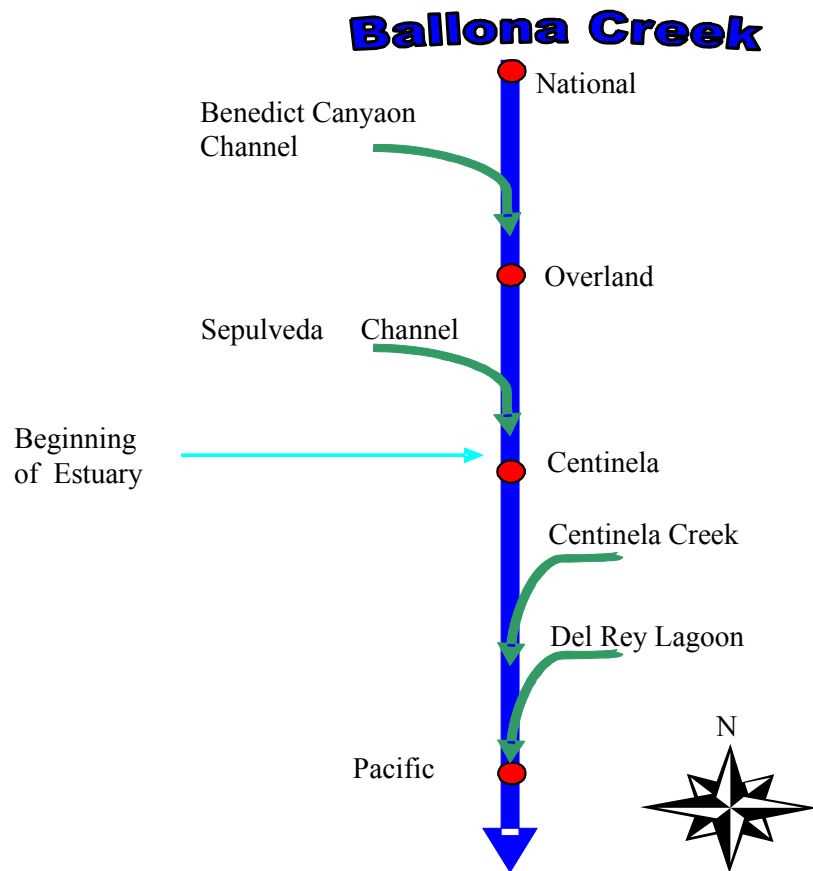
Ballona Creek			
S&T Station	General Area	Location	Thomas Guild Coordinates
National	Culver City	National Blvd.	632:J7
Duquesne	Benedict Canyon	Duquesne Ave.	672: H2
Overland	Culver City	Overland Ave.	672:G3
Culver	Sepulveda Channel	Culver Blvd.	672: E4
Centinela	Culver City	Centinela Blvd.	672:E6
Alberta	Centinela Creek	Alberta Dr.	672: E6
Del Rey Lagoon	Del Rey Lagoon	Pacific Ave.	702: A3
Pacific	Marina Del Rey	Pacific Ave.	702:A2

Dominguez Channel			
S&T Station	General Area	Location	Thomas Guild Coordinates
El Segundo	Inglewood	El Segundo Blvd.	733:G2
Yukon	Hawthorne	Yukon Ave.	733: E2
Western	Gardena	Western Ave.	763:H1
Carson Plaza	Carson	Carson Plaza Dr.	764: E4
Wilmington	Carson	Wilmington Ave.	764:G7
Henry Ford	Long Beach	Henry Ford Ave.	794:H7

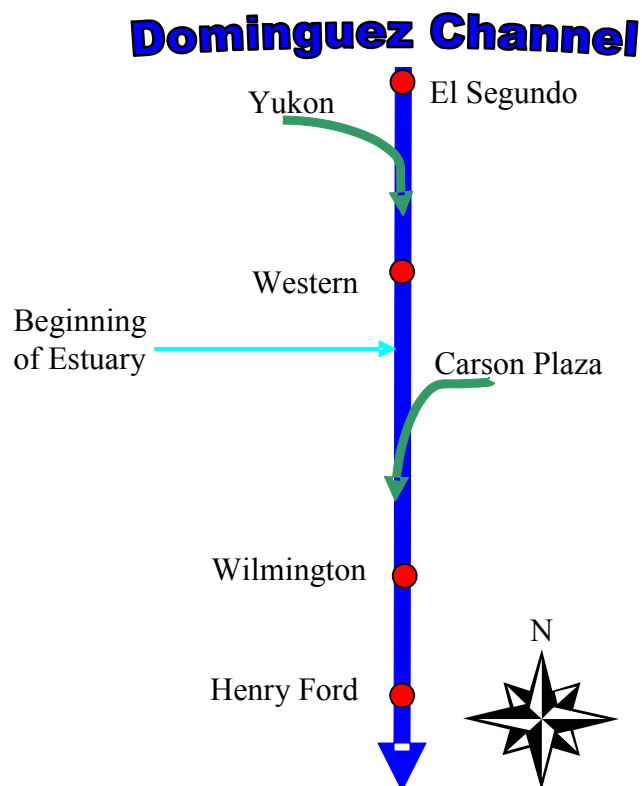
Appendix G



Appendix H



Appendix I



2.3.4. EMD to notify sampling Division (EMD for SMB and LAH; WPD for all other locations) if sampling needs to be continued. **This is to be sent with the data report as soon as the data are available.**

2.4. Setup Email

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

Since the reports are sent to several people, a “group” of people should be established in the sender’s Groupwise Address Book.

2.4.1. Create Email Addresses in Groupwise

Log onto Groupwise and click the ADDRESS BOOK button. Select the FREQUENT CONTACTS tab and create the following email addresses using the ADD button:

Does anyone need to be added or deleted from this list?

Anthony Winston	awinston@san.lacity.org
Barry Berggren	bgberggr@san.lacity.org
Steve Pedersen	sspedersen@san.lacity.org
Joe Fortaleza	jfortale@san.lacity.org
Ching Peng	cpeng@san.lacity.org
Tri Tran	ttran@san.lacity.org
Nancy Chung	nchung@san.lacity.org
Cris Villorante	ccvillor@san.lacity.org
Karen Ingalla	keingall@san.lacity.org
Kosta Kaporis	KKaporis@san.lacity.org
Paul Blasman	pblasman@san.lacity.org
Richard Sabath	RHS@san.lacity.org
Roshanak Aflaki	raflaki@san.lacity.org
Stan Asato	stan.asato@lacity.org
Ioannice Lee	ioannice.lee@lacity.org
Mas Dojiri	mas.dojiri@lacity.org
Jeffrey Beller	jeffrey.beller@lacity.org

2.4.2. Create the Sanitary Sewer Overflow (SSO) “Group”

Click the SAVE GROUP button at the bottom and name the group “SSO”.

2.5 Send Reports to the SSO

2.5.1 In Groupwise, click the CREATE NEW MAIL button. In the “TO:” window type “SSO”. Use the Tab key on the keyboard to go to the SUBJECT line and type the Title “Spill Response Data.”

2.5.2. In the “message window” include “Please see attached datafile” or a message in kind.

2.5.3. Use the ATTACH button to attach the report files that are in the Lims_Micro directory on the Htpfs1 server. Press the SEND button.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

2.5.4. Data Archiving; Currently performed by Data and Sample Management Unit

Spill sample data is archived in the LIMS database. A specific HTP login number must first be created before any data can be submitted to LIMS.

2.5.5. Double-click on Seedpak Lims. Enter username and password to gain access.

2.5.6. At the top of the Seedpak LIMS screen, go to “Sample Management” and then choose “Login.”

2.5.7. A “Specify Login” dialog box will appear. At the bottom, click “Template,” type in “SSO” under template ID, and then click OK.

2.5.8. A “Sample Definition” dialog box will appear. At the top of the screen, choose “Copy” then “Copy Template.”

2.5.9. A “Copy Template” dialog box will open. Enter “SSO” under Source Template and the sample collection date under Receive Date and Collect Date. Click OK. An HTP login number has just been created.

2.5.10. Under Client ID, enter the location or address where the spill occurred and the date and time when the sample was collected. In addition, enter the initials of the sample collector. Click Save.

Once an HTP login number is created, the data can be sent to LIMS by way of an excel template linked to the LIMS interface. For samples analyzed by the CS method:

2.5.11. Double-click on the “Data Entry” icon on the PC desktop.

2.5.12. A Microsoft Excel dialog box will appear. Select the “Enable Macros” button.

2.5.13. Enter the sample date in the dialog box and select “Spill” under sample type. Select OK.

2.5.14. An excel data entry template will appear. Fill in the following information.

- 2.5.14.1. Enter the HTP login number under “LIMS ID.”
- 2.5.14.2. Enter the sample location/address under “Description”.
- 2.5.14.3. Enter when the samples were read and the analyst’s initials.

SANITARY SEWER OVERFLOW SAMPLING PROTOCOL

- 2.5.14.4. Do the above for each worksheet (Total, *E. coli*, and Entero).
- 2.5.14.5. Enter the CS counts under the appropriate sample dilution/volume used for the analysis.
- 2.5.14.6. Once all the information has been entered and checked for correctness, click on the “Send Data to LIMS” macro.
- 2.5.14.7. Save the report and then exit out of the data entry file.

For samples analyzed by the MF method:

- 2.5.15. Double-click on the “Data Entry” icon on the PC desktop.
- 2.5.16. A Microsoft Excel dialog box will appear. Select the “Enable Macros” button.
- 2.5.17. Enter the sample date in the dialog box and select “Special” under sample type. Select OK.
- 2.5.18. An excel data entry template will appear. Fill in the following information.
 - 2.5.18.1. Enter the sample location/address
 - 2.5.18.2. Enter when the samples were read and the analyst’s initials.
 - 2.5.18.3. Do the above for each worksheet (Total, and fecal coliforms, and enterococcus).
 - 2.5.18.4. Enter the MF counts under the appropriate sample dilution/volume used for the analysis.
 - 2.5.18.5. Once all the information has been entered and checked for correctness, click on the “Send Data to LIMS” macro.
 - 2.5.18.5. Save the report and then exit out of the data entry file.

Date: _____



Department of Public Works
Bureau of Sanitation

Sample Chain of Custody

EMD

LIMS #: _____

Environmental Monitoring Division

Micro Lab 6:30AM - 4PM (310) 648-5276

On Call 4PM - 6:30AM (213) 712-7594

EMD Sample ID: _____

Project Name: _____

Sampling Information:	
Sampling Agency: _____	Sampling Program: _____
Agency Sample ID#: _____	_____
Phone Number: _____	_____
Fax Number: _____	Purpose of program: _____
Contact Person: _____	_____
email address: _____	Report Time Frame: _____
_____	_____
Sampler's Name: _____	_____
Sampler's Title _____	_____
_____	_____
Sampler's Signature: _____	_____
_____	_____
Witness: Name _____	Sample Date: _____
Title _____	_____
_____	Sampling Time: _____
Name _____	_____
Title _____	_____
_____	_____
Sample Location: _____	Sampling Address: _____
_____	_____
_____	_____

Requested Analysis:	Metals: <input type="checkbox"/>	Microbiological: <input checked="" type="checkbox"/>
	Organics: <input type="checkbox"/>	Toxicity: <input type="checkbox"/>
	Conventional Chemistry: <input type="checkbox"/>	Air Testing: <input type="checkbox"/>
See back of page for specifics analyses		

Sample Notification:

PC: _____	Date: _____	Toxicity: _____	Date: _____
Wet: _____	Date: _____	Metals: _____	Date: _____
Micro: _____	Date: _____	Semi-Vol: _____	Date: _____
		Volatile: _____	Date: _____

Current Holder Name	Signature	Title	Received Date	Received Time	Released Date

Analysis to be performed on the Sample(s):

EMD

LIMS #:

Locator:	Collection Time:	Locator:	Collection Time:
-1	_____	-6	_____
-2	_____	-7	_____
-3	_____	-8	_____
-4	_____	-9	_____
-5	_____	-10	_____

Sample Information: Liquid: ☒ Solid: ☐ Other: ☐ Temperature _____
Grab ☒ Composite: ☐
Start time: _____ Finish time: _____ pH _____
Container: Glass Size: _____ Color: _____ Number: _____
Plastic Size: _____ Color: _____ Number: _____ Residual Cl2 _____
Preservative ☐ Number of samples:

Metals:

<input type="checkbox"/> Ag	<input type="checkbox"/> Cu	<input type="checkbox"/> Pb	<input type="checkbox"/> Other: _____
<input type="checkbox"/> Al	<input type="checkbox"/> Fe	<input type="checkbox"/> Sb	
<input type="checkbox"/> As	<input type="checkbox"/> Hg	<input type="checkbox"/> Se	
<input type="checkbox"/> Ba	<input type="checkbox"/> K	<input type="checkbox"/> Sn	
<input type="checkbox"/> Be	<input type="checkbox"/> Mg	<input type="checkbox"/> Sr	<input type="checkbox"/> Total
<input type="checkbox"/> Ca	<input type="checkbox"/> Mn	<input type="checkbox"/> Tl	<input type="checkbox"/> Dissolved
<input type="checkbox"/> Cd	<input type="checkbox"/> Mo	<input type="checkbox"/> V	
<input type="checkbox"/> Co	<input type="checkbox"/> Na	<input type="checkbox"/> Zn	
<input type="checkbox"/> Cr	<input type="checkbox"/> Ni		

Organics:

<input type="checkbox"/> VOC	<input type="checkbox"/> Pesticides/PCB	<input type="checkbox"/> Clopyralid	<input type="checkbox"/> Air VOC
<input type="checkbox"/> BNA	<input type="checkbox"/> Dioxin - screen	<input type="checkbox"/> Dioxin - low resolution	<input type="checkbox"/> Fixed Gases
<input type="checkbox"/> TOX	<input type="checkbox"/> Other: _____	<input type="checkbox"/> Dioxin - high resolution	<input type="checkbox"/> GC Sulfur
<input type="checkbox"/> Herbicides		<input type="checkbox"/> Tributyltin	<input type="checkbox"/> Siloxanes

Conventional Chemical:

<input type="checkbox"/> Alkalinity	<input type="checkbox"/> MBAS	<input type="checkbox"/> Solids:
<input type="checkbox"/> BOD	<input type="checkbox"/> Nitrogen:	<input type="checkbox"/> Total Solids
<input type="checkbox"/> Boron	<input type="checkbox"/> Ammonia Nitrogen	<input type="checkbox"/> Total Dissolved Solids
<input type="checkbox"/> Chloride	<input type="checkbox"/> Nitrate-N	<input type="checkbox"/> Total Suspended Solids
<input type="checkbox"/> COD	<input type="checkbox"/> Nitrite-N	<input type="checkbox"/> Settleable Solids
<input type="checkbox"/> Conductivity	<input type="checkbox"/> Organic-N	<input type="checkbox"/> Volatile Suspended Solids
<input type="checkbox"/> Cyanide (Free)	<input type="checkbox"/> Kjeldahl Nitrogen	<input type="checkbox"/> Volatile Total Solids
<input type="checkbox"/> Cyanide (Total)	<input type="checkbox"/> Oil & Grease	<input type="checkbox"/> Sulfates
<input type="checkbox"/> Flashpoint	<input type="checkbox"/> pH	<input type="checkbox"/> Sulfides, Total
<input type="checkbox"/> Fluoride	<input type="checkbox"/> Phenols	<input type="checkbox"/> Sulfides, Dissolved
<input type="checkbox"/> Grain Size	<input type="checkbox"/> Phosphate, Total	<input type="checkbox"/> Thiosulfate
<input type="checkbox"/> Hardness	<input type="checkbox"/> Phosphate, Dissolved	<input type="checkbox"/> TOC
<input type="checkbox"/> Hexavalent Chromium	<input type="checkbox"/> Radioactivity	<input type="checkbox"/> Turbidity
<input type="checkbox"/> H ₂ S	<input type="checkbox"/> Salinity	<input type="checkbox"/> Other: Ferric Chloride

Biological:

<input checked="" type="checkbox"/> Total Coliform	<input type="checkbox"/> Salmonella	<input type="checkbox"/> Other: _____
<input type="checkbox"/> Fecal Coliform	<input type="checkbox"/> Acute Toxicity (Fresh water)	_____
<input checked="" type="checkbox"/> E. coli	<input type="checkbox"/> Chronic Toxicity (Sea water)	_____
<input checked="" type="checkbox"/> Enterococcus	<input type="checkbox"/> Chronic Toxicity (Fresh water)	

Remarks: _____

APPENDIX B

Sanitary Sewer Overflow Estimation Guidelines

SPILL VOLUME ESTIMATION

Background

- Spill Date: March 26, 1999
- Approximate Spill Duration: 0050 hours to 0150 hours for a total 60 minutes
- Location: Beverly Drive at Sutton Way
- Sewer: 8-inch sewer at a slope of 1.6%

Spill Volume Calculation

Spill volume estimation can be estimated using a number of methods depending on the available data and information. These methods include, but not limited to, 1) flow computation based on flow depth measurement, 2) flow computation based on number of properties served, 3) flow computation using maintenance hole hydraulic (orifice) equation based on field observation, 4) flow computation based on open channel drainage flow along gutter, and 5) flow computation based on downstream or upstream flow monitor or pumping station.

Based on the information available for this incident, the following three methods were used to estimate the overflow volume:

Method No. 1:

- At approximately 1700 on March 26, 1999, a crew was sent to the same spill location to measure the depth of the flow in the sewer. The crew reported a depth of 2 inches in the 8-inch sewer. The flow measurement at 1730 hours is representative of the peak flow in a small sanitary sewer.
- Assume that the 2-inch measurement is the average flow depth for this sewer. This is a very conservative assumption since peak flow is about twice the average flow.
- Based on the pipe size, the slope of the pipe, the depth of the water, the average flow in the sewer is 87 gpm.

Using table 7-14 of the Kings' Handbook of Hydraulics with a depth to diameter ratio of 0.25 (2"/8"), the flowrate

$$Q \text{ in cfs} = 0.0634/0.014 * (8/12)^{8/3} * (0.016)^{1/2} = 0.2 \text{ cfs}$$

$$Q \text{ in gpm} = 0.2 \text{ cfs} * 448 \text{ gpm} = 87 \text{ gpm}$$

- Since the spill occurred at the early morning hours around 0100 hours, the flow in the 8-inch sewer is minimum flow (low flow). Minimum or low flow is approximately 10-15% of the average flow. Per ASCE design manual title "Design and Construction of Sanitary Sewers and Storm Drains", the ratio of peak flow to average flow is 2 to 1, the ratio of peak flow to minimum is 20 to 1, and ratio of average to minimum is 10 to 1.
- Assuming that the minimum or low flow is 15% of the average flow of 87 gpm, the spill flowrate is 13 gpm ($Q_{\text{low flow}} = 0.15 * 87 = 13 \text{ gpm}$).
- Based on a spill duration of 60 minutes, the spill volume is 783 gallons (Volume_{Spill} = 13 gpm * 60 minutes).

Method No. 2:

- Using the sewer maps, the crew leader counted 250 properties tributary to the spill location.
- Average flow rate per property is approximately 225 gallons per day (gpd). This is based on 3 people per house at 75 gallons per capita per day.
- Using the 250 properties and 225 gpd per property, the average flow is 56,250 gpd or 39 gpm.
- Assuming a conservative factor of 2 to account for additional uncounted properties and multiple dwellings, the average flow is estimated at 78 gpm.
- Assuming that the minimum or low flow is 15% of the average flow of 78 gpm, the spill flowrate is 12 gpm ($Q_{\text{low flow}} = 0.15 \times 78 = 12 \text{ gpm}$).
- Based on a spill duration of 60 minutes, the spill volume is 720 gallons (Volume_{spill} = 12 gpm * 60 minutes).

Method No. 3:

- The crew leader reported in his field notes that two maintenance hole were overflowing from two pickholes. The water coming out of the maintenance hole pickholes was 4 to 6 inches high.
- Using the orifice equation ($Q = C \cdot a \cdot (2 \cdot 32.2 \cdot h)^{1/2}$) for a pick hole of $\frac{3}{4}$ inch ($a = \text{area} = 0.0031$ square feet) and a water height (h) of 5 inches, the flow rate from each pickhole is $Q \text{ (gpm)} = 0.639 \cdot (0.0031) \cdot (2 \cdot 32.2 \cdot 0.41)^{1/2} \cdot 448 = 4.5 \text{ gpm}$
- For two pickholes, overflow rate = 9 gpm
- Overflow volume from two pickholes in 60 minutes = 540 gallons.
- Assuming an additional 2 gpm from around frame and cover, additional volume from two maintenance holes is 240 gallons ($2 \cdot 2 \text{ gpm} \cdot 60 \text{ minutes}$)
- Total overflow volume is 780 gallons.

All three estimation methods calculated approximately the same spill volume.
Accordingly, the overflow volume can be conservatively estimated at about 800 gpm.

Estimated volume in gallons based on an area 1-inch deep.
(Multiply by area depth in inches to determine volume in gallons)

		L E N G T H (ft)																				
	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	
W I D T H (ft)	1	3	6	10	10	20	20	20	20	30	30	30	40	40	40	50	50	50	60	60	60	
	5	20	30	50	60	80	90	110	120	140	160	170	190	200	220	230	250	260	280	300	310	
	10	30	60	90	120	160	190	220	250	280	310	340	370	410	440	470	500	530	560	590	620	
	15	50	90	140	190	230	280	330	370	420	470	510	560	610	650	700	750	790	840	890	940	
	20	60	120	190	250	310	370	440	500	560	620	690	750	810	870	940	1000	1100	1100	1200	1200	
	25	80	160	230	310	390	470	550	620	700	780	860	940	1000	1100	1200	1200	1300	1400	1500	1600	
	30	90	190	280	370	470	560	650	750	840	940	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	
	35	110	220	330	440	550	650	760	870	980	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	
	40	120	250	370	500	620	750	870	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	
	45	140	280	420	560	700	840	980	1100	1300	1400	1500	1700	1800	2000	2100	2200	2300	2400	2500	2600	2700
	50	160	310	470	620	780	940	1100	1200	1400	1600	1700	1900	2000	2200	2300	2500	2600	2800	3000	3100	3300
55	170	340	510	690	860	1000	1200	1400	1500	1700	1900	2100	2200	2400	2600	2700	2900	3100	3300	3400	3600	
60	190	370	560	750	940	1100	1300	1500	1700	1900	2100	2200	2400	2600	2800	3000	3200	3400	3600	3700	3900	
65	200	410	610	810	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3100	3300	3500	3700	3900	4100	4300	
70	220	440	650	870	1100	1300	1500	1700	2000	2200	2400	2600	2800	3100	3300	3500	3700	4000	4200	4400	4600	
75	230	470	700	940	1200	1400	1600	1900	2100	2300	2600	2800	3000	3300	3500	3700	4000	4200	4500	4700	4900	
80	250	500	750	1000	1200	1500	1700	2000	2200	2500	2700	3000	3200	3500	3700	4000	4200	4500	4800	5000	5200	
85	260	530	790	1100	1300	1600	1900	2100	2400	2600	2900	3200	3400	3600	3900	4200	4500	4800	5000	5300	5500	
90	280	560	840	1100	1400	1700	2000	2200	2500	2800	3100	3400	3600	3800	4100	4400	4700	5000	5300	5600	5900	
95	300	590	890	1200	1500	1800	2100	2400	2700	3000	3300	3600	3800	4100	4400	4700	5000	5300	5600	5900	6200	
100	310	620	940	1200	1600	1900	2200	2500	2800	3100	3400	3700	4100	4400	4700	5000	5300	5600	5900	6200	6500	

Example 1: Spill area of 30' x 30' and 4" deep, the volume is 560x4= 2,240 gal.

Example 2: Spill area of 10' x 20' and 1 ft (12") deep, the volume is 120x12 = 1,440 gal.

ESTIMATE LOW RATE (gpm)									
Flow Level	Pipe Diameter (inches)								
(d/D)	8	10	12	15	16	18	20	21	
10%	10	10	20	20	30	40	40	50	
15%	20	30	40	60	70	80	100	110	
20%	30	50	70	100	120	150	180	200	
25%	50	70	100	160	180	230	290	320	
30%	70	100	150	230	260	330	410	450	
35%	90	140	200	310	350	450	550	610	
40%	110	180	250	400	450	570	710	780	
45%	140	220	310	490	560	710	870	960	
50%	170	260	380	590	670	850	1,050	1,160	
55%	200	310	440	690	780	990	1,230	1,350	
60%	220	350	510	790	900	1,140	1,410	1,550	
65%	250	400	570	890	1,010	1,280	1,580	1,740	
70%	280	440	630	990	1,120	1,420	1,750	1,930	
75%	310	480	690	1,070	1,220	1,550	1,910	2,100	
80%	330	510	740	1,150	1,310	1,660	2,050	2,260	
85%	340	540	780	1,210	1,380	1,750	2,160	2,380	
90%	360	560	800	1,260	1,430	1,810	2,230	2,460	
95%	360	560	810	1,270	1,440	1,820	2,250	2,480	
100%	330	520	750	1,180	1,340	1,700	2,090	2,310	

WASTEWATER COLLECTION
SEWAGE SPILL NOTIFICATION LIST

APPENDIX C

Sanitary Sewer Overflow Notification and Contact List

NOTE: Numbers listed for all agencies are to be called in the order listed, until contact is made.

Revised: June 26, 2017

WASTEWATER COLLECTION SEWAGE SPILL NOTIFICATION LIST

BUREAU OF SANITATION MANAGEMENT Office No.: 213-485-2210	CELLULAR NUMBER FAX # (213) 485-2979	HOME NUMBER
ADEL HAGEKHALIL	(213) 359-0312	(714) 992-2632
ENRIQUE ZALDIVAR	(213) 359-3052	(909) 931-1237

BOARD OF PUBLIC WORKS Office No.: 213-978-0251	CELLULAR NUMBER	HOME NUMBER
KEVIN JAMES	(213) 703-3929	
HEATHER REPENNING	(323) 373-7881	

PUBLIC AFFAIRS OFFICE Office No.: 213-978-0319	CELLULAR NUMBER	HOME NUMBER
ELENA STERN	(213) 454-6875	(310) 379-2019

WASTEWATER COLLECTION SYSTEMS DIVISION	CELLULAR NUMBER	WORK NUMBER/ HOME NUMBER
BARRY G. BERGGREN	(213) 271-8168	(323) 342-6002 (909) 592-4719
BRIAN Mc CORMICK	(213) 359-9554	(323) 342-1577 (661) 273-3132
PAUL BLASMAN	(213) 361-2632	(213) 485-5892 (310) 323-8214
KENT CARLSON	(213) 280-2375	(213) 485-5888 (661) 254-2625
BRYANT JONES	(213) 810-3987	(818) 345-2107 (323) 751-9292
GERALD WATSON	(213) 422-7780	(213) 485-5892
VENICE PUMP PLANT		(310) 822-0777 or (310) 823-5507

HYPERION TREATMENT PLANT	WORK NUMBERS
SHIFT SUPERINTENDANT	(310) 648-5856 OR (310) 648-5858
PLANT RECEPTIONIST	(310) 648-5000
FAX NUMBER	(310) 648-5047 / (310) 648-5539

NOTE: Numbers listed for all agencies are to be called in the order listed, until contact is made.

Revised: June 26, 2017

WASTEWATER COLLECTION SEWAGE SPILL NOTIFICATION LIST

REGIONAL WATER QUALITY CONTROL BOARD 320 W. 4 th Street, Suite 200 Los Angeles, CA 90013	WORK NUMBER	CELLULAR NUMBER (AFTER HOURS) For spills over 10,000 gallons only
AUGUSTINE ANIJELO	(213) 576-6657	(213) 305-2284
ARTHUR HEATH	(213) 576-6725	(213) 305-2253
GENERAL OFFICE	(213) 576-6600	
NOTE: If no personal contact is made, fax the spill information to FAX #s (213) 620-6140. FOLLOW UP WITH A PHONE CALL TO CONFIRM RECEIPT OF REPORT.		

LOS ANGELES COUNTY HEALTH DEPARTMENT	WORK NUMBERS
For all SSOs the Health Officer must be notified.	
COUNTY OPERATOR	(213) 974-1234 (24 HOURS)

CALIFORNIA OFFICE OF EMERGENCY SERVICES NOTE: OBTAIN AN OES REPORT NUMBER	WORK NUMBER
STATE WARNING CENTER	(800) 852-7550 (24 HOURS)

HEAL THE BAY 1444 9 th St., Santa Monica, CA 90401	WORK NUMBER Fax (310) 496-1902	AFTER HOURS
KRISTIN JAMES	(310) 451-1500	

STATE DEPARTMENT OF HEALTH SERVICES	WORK NUMBER	HOME NUMBER
LA DIVISION –MAIN OFF. / FAX	Main Off. (213) 580-5723	FAX (818) 551-2054
Chi Diep	(818) 551-2016	

ENVIRONMENTAL PROTECTION AGENCY (EPA)	WORK NUMBER
NATIONAL RESPONSE CENTER	(800) 424-8802 (24 HOURS)
REGION 9	WORK NUMBER
KEN GREENBERG	(415) 972-3577
	FAX(415) 947-3545

NOTE: Numbers listed for all agencies are to be called in the order listed, until contact is made.

Revised: June 26, 2017

WASTEWATER COLLECTION SEWAGE SPILL NOTIFICATION LIST

CITY OF LONG BEACH DEPT. OF HEALTH AND HUMAN SERVICES	WORK NUMBER
NELSON KERR	CELLULAR (562) 843-2012 (24 HRS) OFFICE (562) 570-4095
LB HEATH DEPT ON-CALL PAGER	(562) 408-5049

STATE DEPARTMENT OF FISH AND GAME	WORK NUMBER
BUSINESS HOURS	(916) 445-0045
AFTER HOURS OSPR (OFFICE OF SPILL PREVENTION RESPONSE)	(916) 358-1300 (24 HOURS)

BUREAU OF SANITATION ENVIRONMENTAL MONITORING DIVISION	WORK NUMBER	CELLULAR NUMBER
IOANNICE LEE	(310) 648-5196	(310) 365-8840
MICRO LAB	(310) 648-5276	(213) 712-7594

LA COUNTY DEPARTMENT OF PUBLIC WORKS INFORMATION TECHNOLOGY DIVISION	WORK NUMBER
24 HOUR DISPATCH	(626) 458-HELP (or 458-4357)

LA CITY DWP – WATER CONTROL OFFICE	WORK NUMBER	PAGER/CELLULAR NUMBER
JOSE MARTINEZ	(213) 367-1062	CELL. (213) 798-6947
LAWS-DAC EMERGENCY HOT LINE	(213) 580-8118 (24 HOURS)	(254) 460-2558 (satellite phone-for emergencies)

WATERSHED PROTECTION DIVISION	WORK NUMBER	PAGER/CELLULAR NUMBER
HOTLINE	(800) 974-9794	
STEVE PEDERSEN	(323) 342-1571	(213) 725-6308
TRI TRAN	(323) 342-1524	(213) 725-6306
CHING PENG	(323) 342-1523	(213) 725-6309

BUREAU OF SANITATION INDUSTRIAL WASTE MANAGEMENT DIVISION	WORK NUMBER	PAGER/CELLULAR NUMBER
BHUPENDRA PATEL	(323) 342-6101	

NOTE: Numbers listed for all agencies are to be called in the order listed, until contact is made.

Revised: June 26, 2017

WASTEWATER COLLECTION SEWAGE SPILL NOTIFICATION LIST

HUMAN RESOURCES DEV. DIV.	WORK NUMBER/RADIO	HOME NUMBER	PAGER/CELL PHONE
MOHSEN MOAYEDI	(310) 648-5942	(949) 443-0222	Cell (213) 359-4377

LA COUNTY LIFEGUARDS	WORK NUMBER
SANTA MONICA OFFICE (Marina del Ray to Topanga)	(310) 394-3261 (24 HRS)
HERMOSA BEACH OFFICE (Docweiler)	(310) 372-2166 OR (310) 372-2162 (24 HRS)

LA COUNTY HARBOR PATROL LA County Sherriff's Marina Del Rey OFFICE	WORK NUMBER
	(310) 482-6033 (24 HRS)

LA COUNTY BEACHES AND HARBORS (If unable to reach other LA Co. Beach #s) OFFICE	WORK NUMBER
	(310) 305-9503

LA UNIFIED SCHOOL DISTRICT Environmental Health and Safety Office (Refer to attached list for schools)	WORK NUMBER (Between 7:00 AM AND 4:00 PM)
Administrative Phone No. Ask for the Sr. Safety Officer over the impacted school	(213) 241-3199
SCHOOL POLICE WATCH COMMANDER	(213) 625-6631 (24 HOURS)

NOTE: Numbers listed for all agencies are to be called in the order listed, until contact is made.

Revised: June 26, 2017

APPENDIX D

Sanitary Sewer Overflow Report

City of Los Angeles Sanitary Sewer Overflow Report

Date of Incident: 12/4/2013

Zip Code: 91604

Longitude: -118.415681

Downstream MH: 442-07-101

Age of Pipe: 71 YEARS

Time Event Over: 4:50 PM

Beach Posted? NO

Indicate impacted water: Pacific Ocean

Point of Entry: City Catch Basin

Amount Recovered (Gallons): 94

SUMMARY OF EVENTS

Summary of events including corrective actions taken, remediation/cleanup measures taken, and property damage:

On Wednesday, December 04, 2013, at 4:00 PM, the Wastewater Collection Systems Division (WCSD) received a report of sewer trouble at 12958 West Valleyheart Drive (562-D5). The initial crew arrived at 4:28 PM. and determined that the 8-inch main line sewer serving the referenced area had backed up due to a blockage. The cause of the blockage in the sewer line was attributed to root intrusion. The crew was able to remove the blockage and the backup ceased at 4:50 PM. Then all necessary clean up was performed.

It was estimated that approximately 144 gallons of sewage backed out of the sewer as a result of the blockage. The crew was able to establish containment and subsequently 94 gallons of the back up amount was returned to the sanitary sewer system. The remaining amount entered an adjacent City of Los Angeles catch basin, which is tributary to the Los Angeles River.

The Los Angeles County Department of Public Health and the Long Beach Department of Health Services were notified and determined that the overflow did not necessitate any beach closures. The sewer location where the backup occurred will be televised to determine the exact cause and to determine the necessary actions to prevent future incidents at this location.

All appropriate notifications have been made. The California Office of Emergency Services (OES) Report Number is 13-7443.

Notification Log

Agency	Contact Person	Date	Time
LA DHS	Ticket: #87108 (213) 974-1234	12/4/2013	5:10 P.M.
SDHS	Chi Deip – Massage (818) 551-2016	12/4/2013	5:16 P.M.
State OES (including Control Number)	Sibyl 13-7443 (800) 852-7550	12/4/2013	6:27 P.M.
RWQCB	Augustine Anijielo – Message (213) 576-6657	12/4/2013	5:14 P.M.
EPA	Petty Officer - Huggins 1067590 (800) 424-8802	12/4/2013	6:39 P.M.
LB DHS	Hann Tritten Message	12/4/2013	6:50 P.M.



Wastewater Spill Report

CIWQS Information Sheet - Page 1 of 3

SSO - General Information

SSO Event ID:	801415	Regional Water Board:	REGION 4 - LOS ANGELES
Spill Location Name:	12958 W VALLEYHEART DR	Agency:	LOS ANGELES CITY, BUREAU OF SANITATION
WISE Spill No:	5854	Sanit. Sewer System:	HYPERION CS
SSO Type:	CATEGORY 1	Version:	

CIWQS Transaction Log

WISE Spill Report #	CIWQS Event ID	Date Entered	Manager Employee ID	CIWQS Cert. Amendment #	CIWQS Version #	CIWQS Status	Amendment Reason
5854	801415	12/04/2013	28191	0	1.0	E	

Physical Location Details

Spill Location:			
Latitude:	<input type="text"/> deg. <input type="text"/> min. <input type="text"/> sec. OR <input type="text"/>	34.146777	decimal degrees
Longitude:	<input type="text"/> deg. <input type="text"/> min. <input type="text"/> sec. OR <input type="text"/>	-118.415681	decimal degrees
Street Number:	12958	Street Dir:	WEST
Street Name:	VALLEYHEART	Street Type:	DRIVE Suite/Apt: <input type="text"/>
Cross Street:			
City:	Los Angeles	State:	CA Zip Code: 91604
County:	LOS ANGELES		
Spill Loc. Desc:	RESIDENTIAL		
Regional Water Quality Control Board:	REGION 4 - LOS ANGELES		

Spill Details

Spill Appearance Point:	MANHOLE	
Spill Appearance Point Explanation: (required is spill appearance point is "Other")		
Did the spill discharge to a drainage channel and or surface water?	NO	
Did the spill discharge to a storm drainpipe that was not fully captured and returned to the sanitary sewer system?	YES	
Private lateral spill?	NO	
Name of responsible party (for private lateral spill only, if known):		
Final Spill Destination:	STORM DRAIN, SURFACE WATER	
Explanation Of Final Destination:		
Estimated Spill Volume:	144	
Estimated Volume Of Spill Recovered:	94	
Estimated Spill Rate (if applicable) :		
Estimated Spill Start Date/Time:	12/4/2013	4:00:00 PM
Date and time sanitary sewer system agency was notified of or discovered spill:	12/4/2013	4:00:00 PM
Estimated Operator arrival date/time:	12/4/2013	4:28:00 PM
Estimated spill end date/time:	12/4/2013	4:50:00 PM



Wastewater Spill Report

CIWQS Information Sheet - Page 2 of 3

SSO - General Information

SSO Event ID: 801415

Regional Water Board: REGION 4 - LOS ANGELES

Spill Location Name: 12958 W VALLEYHEART DR

Agency: LOS ANGELES CITY, BUREAU OF SANITATION

WISE Spill No: 5854

Sanit. Sewer System: HYPERION CS

SSO Type: CATEGORY 1

Version:

Spill Details (continued)

Spill Cause: ROOTS

Spill Cause Explanation:

If spill caused by wet weather, choose size of storm:

Diameter of sewer pipe at the point of blockage or spill cause (if applicable):

8

Material of sewer pipe at the point of blockage or spill cause (if applicable):

VITRIFIED CLAY PIPE

Estimated age of sewer pipe at the point of blockage or spill cause (if applicable):

71

Description of terrain surrounding the point of blockage or spill cause (if applicable):

FLAT

Where failure occurred:

Explanation of where failure occurred:

Spill Response Activities:

INSPECTED SEWER USING CCTV TO DETERMINE CAUSE, RESTORED FLOW, RETURNED ALL OR PORTION OF SPILL TO SAN SEWER SYSTEM

Explanation of spill response activities: (required if spill response activities is "Other")

ON WEDNESDAY, DECEMBER 04, 2013, AT 4:00 PM, THE WASTEWATER COLLECTION SYSTEMS DIVISION (WCSD) RECEIVED A REPORT OF SEWER TROUBLE AT 12958 WEST

Spill Response Completion Date Time:

12/4/2013

4:50:00 PM

Visual inspection results from impacted receiving water:

Health warnings posted:

NO

Name of impacted beach(es) (enter NA if not applicable):

Is there an ongoing investigation:

YES

Water quality samples analyzed for:

BIOLOGICAL INDICATOR(S) - SPECIFY BELOW

Explanation of water quality samples analyzed for:

ECOLI, ENTROCOCCUS, TOTAL COLIFORMS

Water quality sample results reported to:

REGIONAL WATER QUALITY CONTROL BOARD

Explanation of water quality sample results reported to:

Spill corrective action taken:

ADJUSTED SCHEDULE/METHOD OF PREVENTIVE MAINTENANCE, PLANNED REHABILITATION OR REPLACEMENT OF SEWER

Explanation of spill corrective action taken: (required if spill corrective action is "Other")

Overall Spill Description:

ON WEDNESDAY, DECEMBER 04, 2013, AT 4:00 PM, THE WASTEWATER COLLECTION SYSTEMS DIVISION (WCSD) RECEIVED A REPORT OF SEWER TROUBLE AT 12958 WEST



Wastewater Spill Report

CIWQS Information Sheet - Page 3 of 3

SSO - General Information

SSO Event ID: 801415

Regional Water Board: REGION 4 - LOS ANGELES

Spill Location Name: 12958 W VALLEYHEART DR

Agency: LOS ANGELES CITY, BUREAU OF SANITATION

WISE Spill No: 5854

Sanit. Sewer System: HYPERION CS

SSO Type: CATEGORY 1

Version:

Notification Details

OES Control Number 13-7443

(Required for Category 1 spill report if estimated
spill volume \geq 1000 Gals and spill reached surface
water or storm drainpipe):

OES Called Date Time: 12/4/2013

6:27:00 PM

(Required for Category 1 spill report if estimated
spill volume \geq 1000 Gals and spill reached surface
water or storm drainpipe):

Regional Water Quality Control Board notified date/time: 12/4/2013

5:14:00 PM

Other Agency Notified: BRYANT JONES (WCSD), TICKET # 87108 (DHS), HANN TITTEN - TELEPHONIC

Was any of this spill report information
submitted via fax to the Regional Water
Quality Control Board?

MESSAGE (LONG BEACH DHS), CHI DEIP - TELEPHONIC MESSAGE (DHS), SIBYL 13-7443

YES

Date and time spill report information was
submitted via fax to the Regional Water
Quality Control Board:

12/5/2013

7:31:00 AM

(Required if spill report information submitted via fax
to Regional Water Board is "Yes")


[Menu](#) | [Help](#) | [Log out](#)

 Navigate to:

You are logged-in as: pblasman. If this account does not belong to you, please log out.

Spill - General Information [?](#)
[SSO Menu](#)

Spill Event ID:	801415	Regional Water Board:	Region 4 - Los Angeles
Spill Location Name:	12958 West Valleyheart Drive	Agency:	Los Angeles City Bureau of Sanitation
WDID:	4SSO10450	Sanitary Sewer System:	Hyperion CS

[General Info](#) | [Spill Related Parties](#) | [Attachments](#)
Spill - General Information, Screen 2

Certified by Barry G. Berggren (Division Manager) on 12/10/2013 at Los Angeles
(Certification ID 604730)

 You have minutes to save your report before your session expires.

Note: Questions with "*" are required to be answered for 'Save Work in Progress'.

Questions with "*" are required to be answered for 'Submit Draft'.

Questions with "*" are required to be answered for 'Ready to Certify'.

Submit Draft On: 12/10/2013

 Last Updated By: [Barry Berggren](#)

1 - Spill Type: Category 1

Version: 1.3

***2 - Estimate Spill Volumes**

 a) Estimated spill volume that reached a separate storm drain that flows to a surface water body? gallons

 b) Estimated spill volume recovered from the separate storm drain that flows to a surface water body? (Do not include water used for clean-up) gallons

 c) Estimated spill volume that reached a drainage channel that flows to a surface water body? gallons

 d) Estimated spill volume recovered from a drainage channel that flows to a surface water body? gallons

 e) Estimated spill volume discharged directly to a surface water body? gallons

 f) Estimated spill volume recovered from surface water body? gallons

 g) Estimated spill volume discharged to land? (Includes discharges directly to land, and discharges to a storm drain system or drainage channel that flows to a storm water infiltration/retention structure, field, or other non-surface water location.) gallons

 h) Estimated spill volume recovered from the discharge to land? (Do not include water used for clean-up) gallons

Estimated Total spill volume to Reach Surface Water (a+b+c+e)	Estimated Total spill volume to Reach Land (g)	Estimated Total spill volume Recovered (b+d+f+h)	Estimated Total spill volume (a+c+e+g)
<input type="text" value="50.0"/>	<input type="text" value="0.0"/>	<input type="text" value="94.0"/>	<input type="text" value="144.0"/>

 *3 - Did the spill discharge to a drainage channel and/or surface water?

 *4 - Did the spill reach a storm drainpipe that is not part of a combined sewer system?

 *5 - If spill reached a separate storm drainpipe, was all of the wastewater fully captured from the separate storm drain and returned to the sanitary sewer system?
Physical Location Details

 *6 - Spill location name:

 *7 - Latitude of spill location: deg. min. sec. OR decimal degrees [\[Map \]](#)

 *8 - Longitude of spill location: deg. min. sec. OR decimal degrees [\[Map \]](#)

 *9 - County:

 *10 - Regional Water Quality Control Board:

 11 - Spill location description:
(Use attachment if location description is more than 2000 characters)

Spill Details

*12 - Number Of appearance points:

1

*13 - Spill appearance point:

(Hold Ctrl key to Select Multiple answers from the list)

Combined Sewer D.I. (Combined CS Only)
Force Main
Gravity Mainline

*14 - Spill appearance point explanation:

(Required if spill appearance point is "Other" and/or multiple appearance points are selected)

**15 - Final spill destination:

(Hold Ctrl key to Select Multiple answers from the list)

Beach
Building or Structure
Combined Storm Drain (Combined CS only)

16 - Explanation of final spill destination:

(Required if final spill destination is "Other")

The crew was able to establish containment and subsequently 94 gallons of sewage was returned to the sanitary sewer system. The remaining 50 gallons entered

*17 - Estimated spill start date/time:

12/04/2013 16:00 Date Format: MM/DD/YYYY

*18 - Date and time sanitary sewer system agency was notified of or discovered spill:

12/04/2013 16:00 Date Format: MM/DD/YYYY

*19 - Estimated Operator arrival date/time:

12/04/2013 16:28 Date Format: MM/DD/YYYY

**20 - Estimated spill end date/time:

12/04/2013 16:50 Date Format: MM/DD/YYYY

**21 - Spill cause:

Root Intrusion

22 - Spill cause explanation:

(Required if spill Cause is "Other")

**23 - Where did failure occur?

Gravity Mainline

24 - Explanation of Where Failure Occurred:

(Required if Where Failure Occurred is "Other")

**25 - Was this spill associated with a storm event?

No

26 - Diameter of sewer pipe at the point of blockage or failure:

8 inches

27 - Material of sewer pipe at the point of blockage or failure:

VCP

28 - Estimated age of sewer asset at the point of blockage or failure: (months)

71

**29 - Spill response activities:

(Hold Ctrl key to Select Multiple answers from the list)

Cleaned-Up
Mitigated Effects of Spill
Contained all or portion of spill

30 - Explanation of spill response activities:

(Required if spill response activities is "Other", use attachment if the text is more than 1700 characters)

The initial crew arrived at 4:28 P.M. and discovered a 8-inch mainline sewer serving the referenced area backed up due to a blockage. The crew removed the blockage and

**31 - Spill response completion date:

12/05/2013 09:40 Date Format: MM/DD/YYYY

**32 - Spill corrective action taken:

(Hold Ctrl key to Select Multiple answers from the list)

Added sewer to preventive maintenance program
Adjusted schedule/method of preventive maintenance
Enforcement action against FOG source

33 - Explanation of spill corrective action taken:

(Required if spill corrective action is "Other")

The Closed Circuit Television (CCTV) inspection revealed no defects, which require repair at this time. In an effort to prevent any future incidents at this location this sewer will

**34a - Is there an ongoing investigation?

No

34b - Reason for ongoing investigation?

35 - Visual inspection results from impacted receiving water:

**36 - Health warnings posted?

No

**37 - Did the spill result in a beach closure (If YES, answer questions 38)?

No

**38 - Name of impacted beach(es) (enter NA if None):

None

39 - Name of impacted surface water(s) (enter Un-named Tributary to XXXXX where XXXXX is the name of first named downstream tributary if receiving surface water body is un-named):

Los Angeles River

****40 - Water quality samples analyzed for:**

(Hold Ctrl key to Select Multiple answers from the list)

Dissolved oxygen
 Other chemical indicator(s) - specify below
 Biological indicator(s) - specify below

41 - Explanation of water quality samples analyzed for:

(Required if water quality samples analyzed for is "Other chemical indicator(s)", "Biological indicator(s)", or "Other")

Enterococcus
 E.Coli
 Total Coliforms

****42 - Water quality sample results reported to:**

(Hold Ctrl key to Select Multiple answers)

County Health Agency
 Regional Water Quality Control Board
 Other (specify below)

43 - Explanation of water quality sample results reported to:

(Required if water quality sample results reported to is "Other")

**** 44 - Explanation of volume estimation methods used:**

(Describe how you developed spill volume estimates for this spill)

The SSO volume was estimated utilizing a standardized template, which calculates the volume by using a standard orifice equation.

Notification Details**45 - Cal OES Control Number**(Required for **Category 1** - see SSO Monitoring and Reporting Program Requirements):

137443

46 - Cal OES Called Date/Time(Required for **Category 1** - see SSO Monitoring and Reporting Program Requirements):

12/04/2013 18 : 27 Date Format: MM/DD/YYYY

*** 47(a) - Name and Title (Contact person who can answer specific questions about this SSO)**

Bryant Jones

*** 47(b) - Contact Person Phone Number**

2134855888



Wastewater Spill Report

Part I of IV - Information Sheet

Form 310

Spill Report No:	<input type="text" value="5854"/>		EMPAC Work Order:	<input type="text"/>
Date of Incident:	<input type="text" value="12/04/2013"/>		CIWQS Event ID:	<input type="text" value="801415"/>
Location:	Block <input type="text" value="12958"/>	Dir <input type="text" value="W"/>	Street <input type="text" value="VALLEYHEART"/>	Type <input type="text" value="DR"/>

Thomas Bros Map Guide:	<input type="text" value="562-D5"/>			
U/S MH:	<input type="text" value="442-07-102"/>	D/S MH:	<input type="text" value="442-07-101"/>	Line No: <input type="text"/>
Pumping Plant?	<input type="text" value="NO"/>	Pumping Plant:	<input type="text"/>	Pipe ID: <input type="text" value="4420710244207101A"/>
Wye Map No:	<input type="text" value="1028-6"/>	Pipe Material:	<input type="text" value="VCP"/>	Inlet/Outlet: <input type="text"/>
Time Call Received:	<input type="text" value="4:00 PM"/>	Size of Pipeline:	<input type="text" value="8"/>	
Time Arrived On Scene:	<input type="text" value="4:28 PM"/>	Time Event Started:	<input type="text" value="4:00 PM"/>	
Response Time:	<input type="text" value="28"/> Minutes	Date Event Over:	<input type="text" value="12/04/2013"/>	
Primary Cause:	<input type="text" value="ROOTS"/>	Time Event Over:	<input type="text" value="4:50 PM"/>	
Area District:	<input type="text" value="372"/>	Disinfection?	<input type="text" value="NO"/>	Beach Posted?
			<input type="text" value="NO"/>	<input type="text" value="NO"/>

Water Impacted	Receiving Waters?	<input type="text" value="YES"/>	Indicate Impacted Water:	<input type="text" value="LOS ANGELES RIVER"/>
	Ground Waters?	<input type="text" value="YES"/>	Point of Entry:	<input type="text" value="CITY CB"/>
Amount Spilled (Gallons):	<input type="text" value="144"/>	Category:	<input type="text" value="1"/>	
Amount Recovered (Gallons):	<input type="text" value="94"/>			
Amount Reaching Receiving Waters (Gallons):	<input type="text" value="50"/>			
Amount Bypassed (Gallons):	<input type="text" value="0"/>			
Method of Estimation:	<input type="text" value="FLOW RATE IN PICKHOLE"/>	Entered Calculations?	<input type="text" value="YES"/>	
Responsible Party, if not the City:	<input type="text"/>			

District Responding:	<input type="text" value="W372"/>		
Yard Supervisor:	<input type="text" value="WINSTON"/>	<input type="text" value="ANTHONY"/>	<input type="text" value="000038342"/>
Crew Leader:	<input type="text" value="TIETZE"/>	<input type="text" value="NORMAN A"/>	<input type="text" value="000052546"/>
Crew Members:	<input type="text" value="REYNA"/>	<input type="text" value="JUAN"/>	<input type="text" value="000037405"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>

SUMMARY OF EVENTS - Summary of events including corrective actions taken, remediation/cleanup measures taken, and property damage.

ON WEDNESDAY, DECEMBER 04, 2013, AT 4:00 PM, THE WASTEWATER COLLECTION SYSTEMS DIVISION (WCSD) RECEIVED A REPORT OF SEWER TROUBLE AT 12958 WEST VALLEYHEART DRIVE (562-D5). THE INITIAL CREW ARRIVED AT 4:28 PM. AND DETERMINED THAT THE 8-INCH MAIN LINE SEWER SERVING THE REFERENCED AREA HAD BACKED UP DUE TO A BLOCKAGE. THE CAUSE OF THE BLOCKAGE IN THE SEWER LINE WAS ATTRIBUTED TO ROOT INTRUSION. THE CREW WAS ABLE TO REMOVE THE BLOCKAGE AND THE BACKUP CEASED AT 4:50 PM. THEN ALL NECESSARY CLEAN UP WAS PERFORMED.

Photos Taken?



Wastewater Spill Report

Part II of IV - Information Sheet

Agency	Contact Person	Date	Time
WCSD Mgmt			
Bureau			
LA DHS	TICKET # 87108	12/04/2013	5:10 PM
	FAX to DHS	12/05/2013	8:27 AM
Long Beach DHS	HANN TITTEN - TELEPHONIC MESSAGE	12/04/2013	6:50 PM
SDHS	CHI DEIP - TELEPHONIC MESSAGE	12/04/2013	5:16 PM
State OES	SIBYL 13-7443	12/04/2013	6:27 PM
OES Control Number	13-7443	OES Date/Time	12/04/2013
RWQCB	AUGUSTINE ANIJELO - TELEPHONIC MESSAGE	12/04/2013	5:14 PM
	FAX to RWQCB	12/05/2013	7:31 AM
EPA	PETTY OFFICER - HUGGINS 1067590	12/04/2013	6:39 PM
EMD (Lab)			
LACDPW			
LAUSD/Other School			
WPD			
Fish & Game			

<u>Sampling Performed:</u>	YES
Test for:	Result
Total Coliform	6.9 X 10 ⁶
E. Coli	8.6 X 10 ⁵
Enterococcus	2.0 X 10 ⁴



Wastewater Spill Report

Part III of IV - Information Sheet

Form 310

Previous Maintenance History:

13-027917-230 HY 09/18/2013 CR2; 2/YR; 13-006492-285 HY 03/16/2013 CG1; 2/YR; 12-020548-320 HY 09/15/2012 CG1; 2/YR; 12-004164-465 HY 03/22/2012 CG2; 2/YR; 11-024293-273 HY 09/28/2011 CCL; 2/YR; 08-032888-353 IN 04/20/2011 ; 11-005578-493 HY 03/17/2011 CD1; 2/YR; 10-025057-251 HY 09/16/2010 CCL; 2/YR; 10-005923-398 HY 03/10/2010 CR1; 2/YR; 09-027621-222 MC 09/15/2009 CR1; 2/YR; 06-039324-353 IN 11/28/2006 CCL; 06-043790-286 HY 11/27/2006 CD1; 04-043746-213 CS 11/04/2004 CCL; 02-043590-255 CS 12/11/2002 CCL; 02-018775-000 HY 01/16/2002 CG1; 00-132469-000 IN 06/25/2001

Previous History of Spills:**Recommendations:****Spill Review Committee Recommendations:****Spill Post Comments:**



Wastewater Spill Report

Part IV of IV - Information Sheet

Form 310

Method of Calculation: Please provide the full calculations used to estimate the amount of the spill.

FLOWRATE OUT OF PICKHOLE:

DIAMETER = .75 INCHES
HEIGHT = .5 INCHES
OF PICKHOLES = 2
DURATION = 50 MINUTES

TOTAL = 144 GALLONS

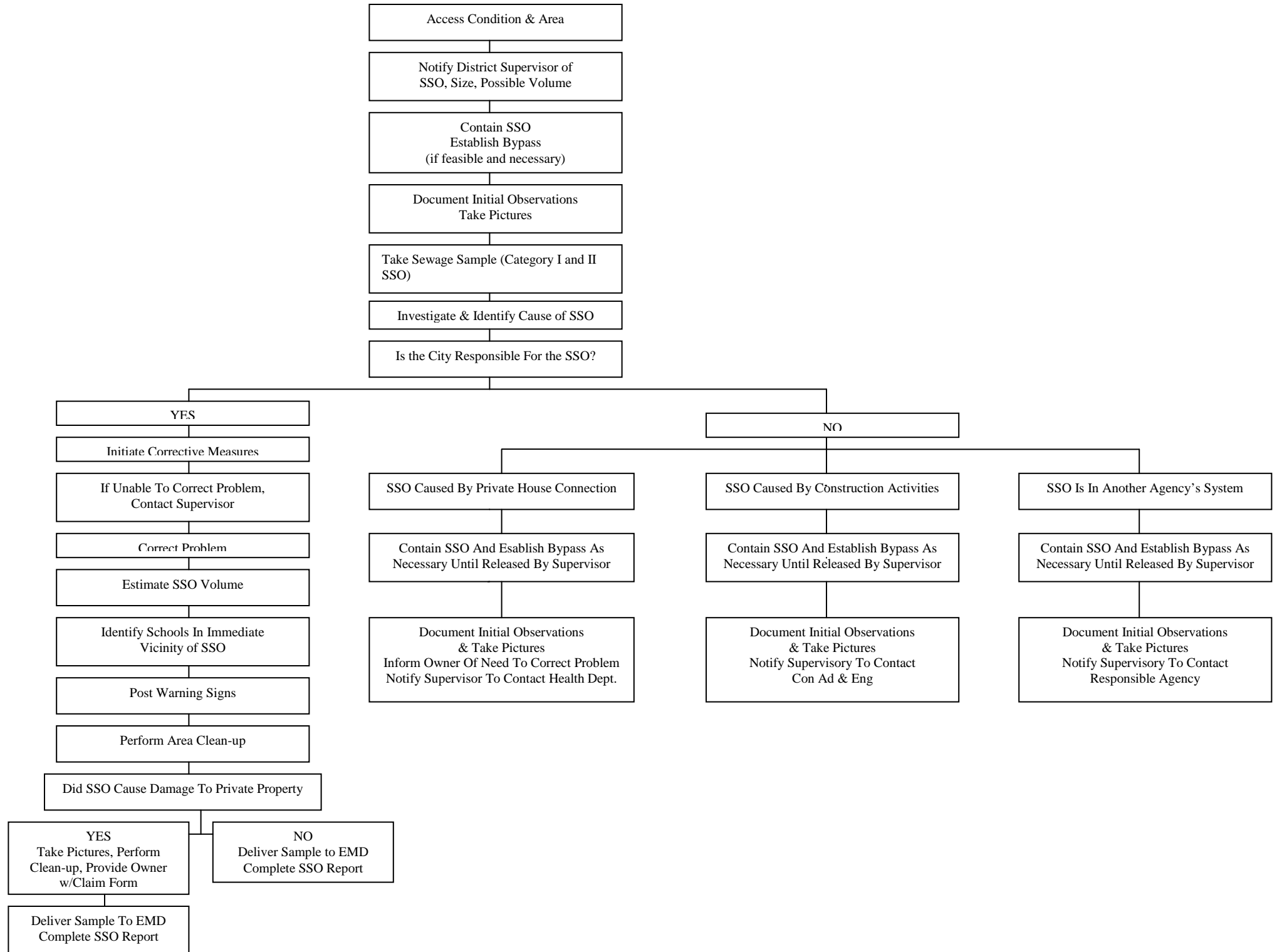
Spill Volume Estimate:

144

APPENDIX E

Sanitary Sewer Overflow Response and Notification Flow Charts

SSO RESPONSE PROCEDURES FOR CREW LEADER



APPENDIX F

Sample Sani-Gram

CITY OF LOS ANGELES
INTER-DEPARTMENTAL CORRESPONDENCE

DATE: December 5, 2013

TO: Honorable Kevin James, President
Honorable, Monica Rodriguez, Vice President
Honorable Matt Szabo, President Pro Tempore
Honorable Michael R. Davis, Commissioner
Honorable Barbara Romero, Commissioner

FROM: Enrique C. Zaldivar, Director
Bureau of Sanitation

SANI-GRAM

EVENT: WASTEWATER SPILL—12958 West Valleyheart Drive, CD# 5

On Wednesday, December 04, 2013, at 4:00 PM, the Wastewater Collection Systems Division (WCSD) received a report of sewer trouble at 12958 West Valleyheart Drive (562-D5). The initial crew arrived at 4:28 PM. and determined that the 8-inch main line sewer serving the referenced area had backed up due to a blockage. The cause of the blockage in the sewer line was attributed to root intrusion. The crew was able to remove the blockage and the backup ceased at 4:50 PM. Then all necessary clean up was performed.

It was estimated that approximately 144 gallons of sewage backed out of the sewer as a result of the blockage. The crew was able to establish containment and subsequently 94 gallons of the back up amount was returned to the sanitary sewer system. The remaining amount entered an adjacent City of Los Angeles catch basin, which is tributary to the Los Angeles River.

The Los Angeles County Department of Public Health and the Long Beach Department of Health Services were notified and determined that the overflow did not necessitate any beach closures. The sewer location where the backup occurred will be televised to determine the exact cause and to determine the necessary actions to prevent future incidents at this location.

All appropriate notifications have been made. The California Office of Emergency Services (OES) Report Number is 13-7443.

C: All Council Members
Mayor's Office: Guy Lipa, Greg Good, Doane Liu
CAO's Office: Miguel Santana, Patricia Huber, David Hirano, Wilson Poon
CLA's Office: Gerry Miller, Sharon Tso, Karen Kalfayan, Rafael Prieto, Charles Modica
Cora Jackson-Fossett, Public Affairs Office
Gary L. Moore, City Engineer
City Attorney: Edward Jordan, John Carvalho, Jim Clark
Kristin James, Heal the Bay
Liz Crosson, LA Water Keeper
Mark Pestrella, LA County Public Works
Pacific Palisades County Council
George Wolfberg, Santa Monica Canyon Civic Association
L.A. County Public Health: Alfonso Medina, Bernard Franklin
Katherine Rubin, Department of Water & Power
Norman Kulla, Councilman Mike Bonin's Office
Laura McLennan, Councilman Mike Bonin, District 11
Susan Nissman, County Supervisor Zev Yaroslavsky's Office
Elan Shultz, Health Deputy for Supervisor Zev Yaroslavsky's Office

David Attaway, Recreation & Parks, Department of
Marsiela Reyes, Bureau of Sanitation Liaison

APPENDIX G

Sample of Report to the RWQCB

CITY OF LOS ANGELES

CALIFORNIA



ERIC GARCETTI

MAYOR

BOARD OF PUBLIC WORKS MEMBERS

—
KEVIN JAMES
PRESIDENT

MONICA RODRIGUEZ
VICE PRESIDENT

MATT SZABO
PRESIDENT PRO TEMPORE

MICHAEL R. DAVIS
COMMISSIONER

BARBARA ROMERO
COMMISSIONER

BUREAU OF SANITATION

—
ENRIQUE C. ZALDIVAR
DIRECTOR

TRACI J. MINAMIDE
CHIEF OPERATING OFFICER

VAROUJ S. ABKIAN
ADEL H. HAGEKHALIL
ALEXANDER E. HELOU
ASSISTANT DIRECTORS

NEIL M. GUGLIELMO
CHIEF FINANCIAL OFFICER

—
1149 SOUTH BROADWAY, 9TH FLOOR
LOS ANGELES, CA 90015
TEL: (213) 485-2210
FAX: (213) 485-2979

December 10, 2013

Sam Unger, Executive Officer
Los Angeles Regional Water Quality Control Board
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Dear Mr. Unger:

REPORT OF UNANTICIPATED DISCHARGE OF UNTREATED WASTEWATER

The information contained herein is a follow-up to our telephone report to your agency regarding the unanticipated discharge of untreated wastewater:

Location: 12958 West Valleyheart Drive, (TBM 562-D5).
Latitude: 34.146777 Longitude: -118.415681
Date: December 4, 2013
City notified of the
Discharge at: 4:00 P.M., Wednesday, December 4, 2013
Discharge ceased at: 4:50 P.M., Wednesday, December 4, 2013

Chronology of Events and Corrective Measures Taken:

On Wednesday, December 4, 2013, at 4:00 P.M., the Wastewater Collection Systems Division (WCSD) received a report of sewer trouble at 12958 West Valleyheart Drive, (562-D5). The initial crew arrived at 4:28 P.M. and determined that the 8-inch main line sewer serving the referenced area had backed up due to a blockage. The cause of the blockage in the sewer line was attributed to root intrusion. The crew was able to remove the blockage and the backup ceased at 4:50 P.M. All necessary clean-up was then performed. The sewer serving the referenced area was installed in 1942.

It was estimated that 144 gallons of sewage backed out of the sewer as a result of the blockage. The crew was able to establish containment and subsequently 94 gallons of sewage was returned to the sewer system. The remaining backup amount entered an adjacent City of Los Angeles catch basin, which is tributary to the Los Angeles River.



The Los Angeles County Department of Public Health and the Long Beach Department of Health Services were notified and determined that the overflow did not necessitate any beach closures.

All appropriate notifications have been made. The California Office of Emergency Services (OES) Report Number is 13-7443. The California Integrated Water Quality System (CIWQS) SSO Event Identification number is 801415 and the Certification Identification number is 604730. The final CIWQS report was certified on December 10, 2013.

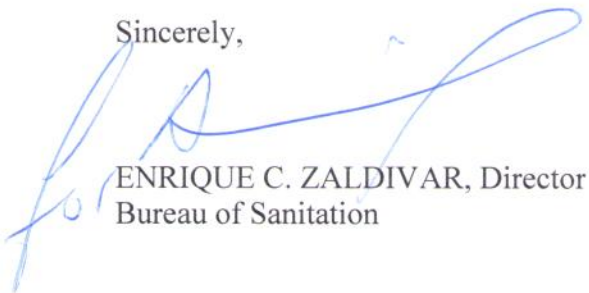
As required, sampling of the Sanitary Sewer Overflow (SSO) and Receiving Waters were conducted. The results of the SSO sample are summarized below and the Receiving Water samples are attached.

SSO Sample	
Total Coliform	6.9×10^6 MPN/100ml
E. Coli	8.6×10^5 MPN/100ml
Enterococcus	2.0×10^4 MPN/100ml

As part of our quality assurance program, this sewer was inspected by Closed Circuit Television (CCTV) to determine the exact cause of this event and the proper corrective actions to be taken. The post-overflow CCTV inspection revealed no defects that required repair at this time. In an effort to prevent further incidents at this location the sewer line will be placed in the chemical root control program.

If you have any questions regarding this report, please contact Barry Berggren at (323) 342-6002.

Sincerely,



ENRIQUE C. ZALDIVAR, Director
Bureau of Sanitation

BGB:RP:KJC

C: Adel H. Hagekhalil
Executive Division File
WCSD Management

ENVIRONMENTAL MONITORING DIVISION
BIOLOGY SECTION - MICROBIOLOGY UNIT

Sanitary Sewer Overflow
Los Angeles River

Sample Date	Sample Time	Sampler	Sampling Agency	Analysis Date	Lab Analyst	Sample Location	Total Coliforms MPN/100 mL	<i>E. coli</i> MPN/100 mL	Enterococcus MPN/100 mL
12/4/13	6:45 PM	R. Mayes	WCSD	12/4/13	N. Arzadon	12958 Valleyheart Drive	6.9×10^5	8.6×10^5	2.0×10^4
12/5/13	11:00 AM	E. Garcia	WPD	12/5/13	P. Patel	Upstream - LA River at Dixie Cyn	2.3×10^4	310	30
12/5/13	11:20 AM	E. Garcia	WPD	12/5/13	P. Patel	Downstream - LA River at Coldwater Cyn	1.7×10^4	100	52
12/6/13	11:00 AM	E. Garcia	WPD	12/6/13	N. Arzadon	Upstream - LA River at Dixie Cyn	1.4×10^4	100	20
12/6/13	11:10 AM	E. Garcia	WPD	12/6/13	N. Arzadon	Downstream - LA River at Coldwater Cyn	9.6×10^3	200	41

12/4/13 WCSD Bacteria densities indicate the presence sewage.

12/5/13 WPD The upstream and downstream bacterial densities are equivalent to each other and are below background levels* for the area during dry-weather. There is no apparent impact from sewage. Sampling will continue until two consecutive days show no impact from sewage.

12/6/13 WPD The upstream and downstream bacterial densities are equivalent to each other and are below background levels* for the area during dry-weather. There is no apparent impact from sewage. This is the second consecutive days show no impact from sewage. Sampling has been discontinued.

* Los Angeles River Indicator Bacteria Baseline Levels for Dry-Weather - Tujunga

TC EC ENT
 8.0×10^4 2.0×10^3 6.0×10^2

Note: Baseline levels are the closest reference to the sample locations.

Note: Samples analyzed by Standard Methods SM9223B (APHA 1998) and Enterolert™, Idexx Laboratories, Inc., per manufacturer's Instructions.

APPENDIX H

Claim for Damages Form

OFFICE OF THE CITY CLERK

City of Los Angeles

Claims for Damages Form

Please mail the original signed form to (copies and faxes not accepted):

Address: Office of the City Clerk
200 North Spring Street
Room 395, City Hall
Los Angeles, CA 90012

Hours: 8:00 am to 4:30 pm, Monday – Friday

Phone: (213) 978-1133

You may also bring the form to our Public Counter at the above address during regular business hours.

Reminder: Please make a copy for your own records.

RESERVE FOR FILING STAMP

CLAIM NO. _____

CLAIM FOR DAMAGES

TO PERSON OR PROPERTY

INSTRUCTIONS

1. Claims for death, injury to person or to personal property must be filed not later than six months after the occurrence. (Gov. Code Sec. 911.2).
2. Claims for damages relating to any other type of occurrence must be filed not later than one year after the occurrence. (Gov. Code Sec. 911.2).
3. Read entire claim before filing. Claim can be mailed or filed in person. No faxes accepted.
4. See Page 3 for diagram upon which to locate place of accident.
5. This claim form must be signed on Page 3 at bottom.
6. Attach separate sheets, if necessary, to give full details. **SIGN EACH SHEET.**
7. Fill out in duplicate. **ONE COPY TO BE RETAINED BY CLAIMANT.**
8. Claim must be filed with CITY CLERK, (Gov. Code Sec. 915A)
200 NORTH SPRING STREET, ROOM 395, CITY HALL, LOS ANGELES, CA 90012

TO: CITY OF LOS ANGELES

Name of Claimant

Age of Claimant

Home address of Claimant

City, State and Zip Code

Home Telephone Number

Business address of Claimant

City, State and Zip Code

Business Telephone Number

Give address to which you desire notices or communications to be sent regarding this claim:

How did DAMAGE or INJURY occur? Please include as much detail as possible.

When did DAMAGE or INJURY occur? Please include the date and time of the damage or injury.

Where did DAMAGE or INJURY occur? Please describe fully, and locate on the diagram on the reverse side of this sheet.

Where appropriate, please give street names and addresses or measurements from specific landmarks:

What particular ACT or OMISSION do you claim caused the injury or damage? Please give names of City employees causing the injury or damage and identify any vehicles involved by license plate number, if known.

Please list names and address of Witnesses, Doctors and Hospitals:

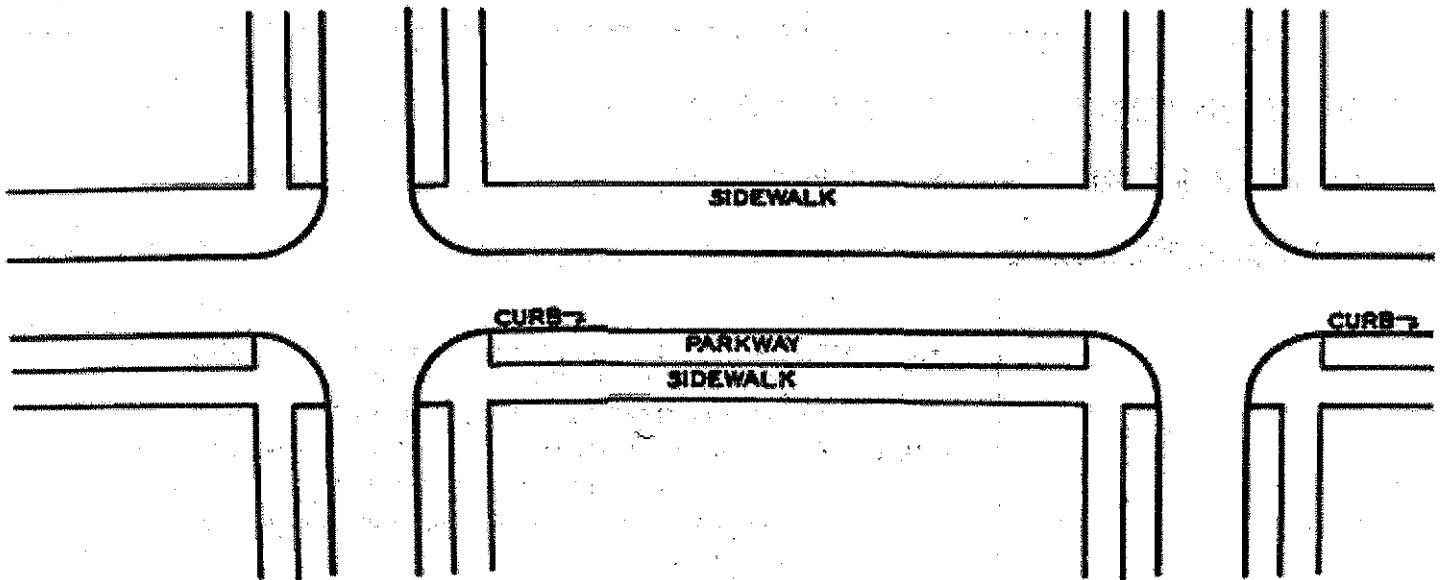
What DAMAGE or INJURIES do you claim resulted? Please give full extent of injuries or damages claimed:

What is the AMOUNT of your claim? Please itemize your damages:

If you have received any insurance payments, please give the names of the insurance companies:

For all accident claims please place on the following diagram the names of the streets where the accident occurred and the nearest cross-streets; indicate the place of the accident by an "X" and by showing the nearest address and distances to street corners. Please indicate where North is on the diagram.

Note: if the diagram does not fit the situation, please attach your own diagram.



Signature of Claimant or person filing
on claimant's behalf giving relationship
to claimant:

Print Name:

Date:

APPENDIX I

Statewide General Waste Discharge Requirements for Sanitary Sewer Systems

FACT SHEET

STATE WATER RESOURCES CONTROL BOARD

ORDER NO. 2006-0003

STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR SANITARY SEWER SYSTEMS

The State Water Resources Control Board (State Water Board) adopted Resolution 2004-80 in November 2004, requiring staff to work with a diverse group of stakeholders (known as the SSO Guidance Committee) to develop a regulatory mechanism to provide a consistent statewide approach for reducing Sanitary Sewer Overflows (SSOs). Over the past 14 months, State Water Board staff in collaboration with the SSO Guidance Committee, developed draft statewide general waste discharge requirements (WDRs) and a reporting program. The WDRs and reporting program reflect numerous ideas, opinions, and comments provided by the SSO Guidance Committee.

The SSO Guidance Committee consists of representatives from the State Water Board's Office of Chief Counsel, several Regional Water Quality Control Boards (Regional Water Boards), United States Environmental Protection Agency (USEPA), Region IX, non-governmental environmental organizations, as well as publicly-owned sanitary sewer collection system agencies. The draft WDRs, reporting program, and associated documents result from a collaborative attempt to create a robust and rigorous program, which will serve as the basis for consistent and appropriate management and operation of sanitary sewer systems.

During the collaborative process, several key issues regarding the draft WDRs were identified. These include:

- Is there a need for statewide collection system requirements?
- Should these systems be regulated under a National Pollutant Discharge Elimination System (NPDES) permit issued pursuant to the Federal Clean Water Act or under WDRs issued pursuant to the California Water Code (the Porter-Cologne Water Quality Control Act or Porter-Cologne)?
- Should the regulatory mechanism include a prohibition of discharge and, if so, should the prohibition encompass only SSOs that reach surface waters, ground water, or should all SSOs be prohibited?
- Should a regulatory mechanism include a permitted discharge, an affirmative defense, or explicit enforcement discretion?
- Should the regulated facilities include publicly-owned facilities, privately owned facilities, satellite systems (public and private), and/or private laterals?

- Should all SSOs be reported, and if not, what should the reporting thresholds be; and what should the reporting timeframes be?
- How will existing permits and reporting requirements incorporate these new WDRs?
- How much will compliance with these new WDRs cost?

The WDRs and Reporting Program considered the comments of all stakeholders and others who commented on the two drafts circulated to the public. These documents also incorporate legal requirements and other revisions to improve the effectiveness and management of the regulatory program. Following is a discussion of the above issues, comments received on the drafts and an explanation of how issues were resolved.

The Need

As California's wastewater collection system infrastructure begins to age, the need to proactively manage this valuable asset becomes increasingly important. The first step in this process is to have a reliable reporting system for SSOs. Although there are some data systems to record spills and various spill-reporting requirements have been developed, inconsistent requirements and enforcement have led to poor data quality. A few Regional Water Boards have comprehensively tracked SSOs over the last three to five years, and from this information we have been able to determine that the majority of collection systems surveyed have had SSOs within this time period.

Both the San Diego and Santa Ana Regional Water Boards have issued WDRs over the last several years to begin regulating wastewater collection systems in an attempt to quantify and reduce SSOs. In fact, 44 out of 46 collection system agencies regulated by the San Diego Regional Water Board have reported spills over the last four and a half years, resulting in 1467 reported SSOs. Twenty-five out of 27 collection system agencies subject to the Santa Ana Regional Water Board's general WDRs reported SSOs between the years of 1999-2004. During this time period, 1012 SSOs were reported.

The 2004 Annual Ocean and Bay Water Quality Report issued by the Orange County Environmental Health Care Agency shows the number of SSOs increasing from 245 in 1999 to 399 in 2003. While this number indicates a concerning trend, the total annual spill volume from these SSOs has actually decreased dramatically, as has the number of beach closures due to SSOs. It is likely, therefore, that the rise in number of SSOs reflects better reporting, and not an actual increase in the number of SSOs.

This information also suggests that the Santa Ana Regional Water Board's WDRs, which contain sanitary sewer management plan (SSMP) requirements similar to those in the proposed statewide general WDRs, have been effective in

not only increasing the number of spills that are reported but also in mitigating the impacts of SSOs that do occur.

Data supports the conclusion that virtually all collection systems have SSOs and that implementation of a regulatory measure requiring SSO reporting and collection system management, along with required measures to limit SSOs, will greatly benefit California water quality. Implementation of these requirements will also greatly benefit and prolong the useful life of the sanitary sewer system, one of California's most valuable infrastructure items.

NPDES vs. WDRs

Porter-Cologne subjects a broader range of waste discharges to regulation than the Federal Clean Water Act. In general, the Clean Water Act prohibits the discharge of pollutants from point sources to surface waters of the United States unless authorized under an NPDES permit. (33 U.S.C. §§1311, 1342). Since not all SSOs result in a discharge to surface water, however, not all SSOs violate the Clean Water Act's NPDES permitting requirements. Porter-Cologne, on the other hand, covers all existing and proposed waste discharges that could affect the quality of state waters, including both surface waters and groundwater. (Wat. Code §§13050(e), 13260). Hence, under Porter-Cologne, a greater SSO universe is potentially subject to regulation under WDRs. In addition, WDRs under Porter-Cologne can address both protection of water quality as well as the prevention of public nuisance associated with waste disposal. (*Id.* §13263).

Some commenters contend that because all collection systems have the potential to overflow to surface waters the systems should be regulated under an NPDES permit. A recent decision by the United States Court of Appeals for the 2nd Circuit, however, has called into question the states' and USEPA's ability to regulate discharges that are only "potential" under an NPDES permit. In *Waterkeeper Alliance v. United States Environmental Protection Agency* (2005) 399 F.3d 486, 504-506, the appellate court held that USEPA can only require permits for animal feedlots with "an actual addition" of pollutants to surface waters. While this decision may not be widely followed, especially in the area of SSOs, these are clearly within the jurisdiction of the California Water Code.

USEPA defines a publicly owned treatment works (POTW) as both the wastewater treatment facility and its associated sanitary sewer system (40 C.F.R. §403.3(o)¹). Historically, only the portion of the sanitary sewer system that is owned by the same agency that owns the permitted wastewater treatment facility has been subject to NPDES permit requirements. Satellite sewer collection systems (i.e. systems not owned or operated by the POTW) have not been

¹ The regulation provides that a POTW include sewers, pipes, and other conveyances only if they convey wastewater to a POTW.

typically regulated as part of the POTW and, therefore, have not generally been subject to NPDES permit requirements.

Comments were received that argued every collection system leading to a POTW that is subject to an NPDES permit should also be permitted based upon the USEPA definition of POTW. Under this theory, all current POTW NPDES permits could be expanded to include all satellite sewer collection systems, or alternatively, the satellite system owners or operators could be permitted separately. However, this interpretation is not widely accepted and USEPA has no official guidance to this fact.

There are also many wastewater treatment facilities within California that do not have discharges to surface water, but instead use percolation ponds, spray irrigation, wastewater reclamation, or other means to dispose of the treated effluent. These facilities, and their satellite systems, are not subject to the NPDES permitting process and could not be subject to a statewide general NPDES permit. POTWs that fall into this category, though, can be regulated under Porter-Cologne and do have WDRs.

In light of these factors, the State Water Board has determined that the best approach is to propose statewide general WDRs at this time.

Prohibition of Discharge

The Clean Water Act prohibits the discharge of wastewater to surface waters except as authorized under an NPDES permit. POTWs must achieve secondary treatment, at a minimum, and any more stringent limitations that are necessary to achieve water quality standards. (33 U.S.C. §1311(b)(1)(B) and (C)). Thus, an SSO that results in the discharge of raw sewage to surface waters is prohibited under the Clean Water Act.

Additionally, California Water Code section 13263 requires the State Water Board to, after any necessary hearing, prescribe requirements as to the nature of any proposed discharge, existing discharge, or material change in an existing discharge. The requirements shall, among other things, take into consideration the need to prevent nuisance.

California Water Code section 13050 (m), defines nuisance as anything which meets all of the following requirements:

- a. Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
- b. Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.

- c. Occurs during, or as a result of, the treatment or disposal of wastes.

Some SSOs do create a nuisance as defined in state law. Therefore, based upon these statutory requirements, the WDRs include prohibitions in Section C. of the WDRs. Section C. states:

C. PROHIBITIONS

- 1. Any SSO that results in a discharge of untreated or partially treated wastewater to waters of the United States is prohibited.
- 2. Any SSO that results in a discharge of untreated or partially treated wastewater, which creates a nuisance as defined in California Water Code section 13050(m) is prohibited.

Furthermore, the State Water Board acknowledges the potential for more stringent water quality standards that may exist pursuant to a Regional Water Board requirement. Language included in Section D.2 of the WDRs allows for these more stringent instances.

D. PROVISIONS

- 2. It is the intent of the State Water Board that sanitary sewer systems be regulated in a manner consistent with the general WDRs. Nothing in the general WDRs shall be:
 - (i) Interpreted or applied in a manner inconsistent with the Federal Clean Water Act, or supersede a more specific or more stringent state or federal requirement in an existing permit, regulation, or administrative/judicial order or Consent Decree;
 - (ii) Interpreted or applied to authorize an SSO that is illegal under either the Clean Water Act, an applicable Basin Plan prohibition or water quality standard, or the California Water Code;
 - (iii) Interpreted or applied to prohibit a Regional Water Board from issuing an individual NPDES permit or WDRs, superseding the general WDRs, for a sanitary sewer system, authorized under the Clean Water Act or California Water Code; or
 - (iv) Interpreted or applied to supersede any more specific or more stringent WDRs or enforcement order issued by a Regional Water Board.

Permitted Discharge, Affirmative Defense, and Enforcement Discretion

Commenters from the discharger community have requested inclusion of an affirmative defense to an SSO on the grounds that certain SSO events are unforeseen and unavoidable, such as SSOs due to extreme wet weather events. An affirmative defense is a mechanism whereby conduct that otherwise violates WDRs or a permit will be excused, and not subject to an enforcement action, under certain circumstances. Since many collection system industry experts believe that not all SSOs may be prevented, given certain circumstances (such as unforeseen vandalism, extreme wet weather, or other acts of God), many

collection system owner representatives believe this should formally be recognized by including an affirmative defense for these unavoidable SSOs.

Previous informal drafts of the general WDRs included affirmative defense language, which was contingent upon appropriate development and implementation of sanitary sewer management plan (SSMP) requirements, as well as a demonstration that the SSO was exceptional and unavoidable. Other stakeholders, including USEPA and the environmental groups opposed the concept of an affirmative defense for SSOs. They argued that its inclusion in the WDRs would undermine the Clean Water Act and inappropriately limit both Regional Water Board and third party enforcement.

After considering input from all stakeholders, and consulting with USEPA, staff is not recommending inclusion of an affirmative defense. Rather, the draft WDRs incorporate the concept of enforcement discretion, and explicitly identify what factors must be considered during any civil enforcement proceeding. The enforcement discretion portion of the WDRs is contained within Sections D. 6 and 7, and is consistent with enforcement discretion provisions within the California Water Code.

Facilities Subject to WDRs

Collection systems consist of pipelines and their appurtenances, which are intended to transport untreated wastewater to both publicly-owned and private wastewater treatment facilities. While wastewater treatment facilities are owned by a wide variety of public and private entities, public agencies (state and federal agencies, cities, counties, and special districts) own the vast majority of this infrastructure.

Collection systems that transport wastewater to POTWs could be grouped into four different categories:

1. Publicly-owned treatment works – pipelines and appurtenances that are owned by a public agency that also owns a wastewater treatment facility;
2. Publicly-owned satellites – pipelines and appurtenances that are owned by a public agency that does not own a wastewater treatment facility; and
3. Private laterals - pipelines and appurtenances that are not owned by a public agency, but rather discharge into one of the above types of facilities.
4. Privately owned treatment works – pipelines and appurtenances that are owned by a private entity, which also owns a wastewater treatment facility (often a septic tank and leach field).

The WDRs require all public agencies, which own wastewater collection systems (category 1 and 2 above) to enroll in the WDRs. Privately owned systems (categories 3 and 4) are not subject to the WDRs; however, a Regional Water

Board may at its discretion issue WDRs to these facilities on a case-by-case or region wide basis.

Collection systems discharging into POTWs (categories 1, 2, and 3) represent, by far, the greatest amount of collection system infrastructure within California. Since regulating private entities (categories 3 and 4) on a statewide basis would be unmanageable and impractical (because of the extremely large number and lack of contact information and other associated records), staff believes focusing on the public sector is the best option for meaningful and consistent outcomes. The legal authority and reporting provisions contained in the WDR do require limited oversight of private laterals (category 3) by public entities. Given this limited responsibility of oversight, public entities are not responsible or liable for private laterals.

State Water Board staff will notify all known public agencies that own wastewater collection systems, regarding their obligation to enroll under these WDRs. However, because of data inaccuracies, State Water Board staff may inadvertently not contact an agency that should enroll in the WDRs or erroneously contact a public agency that does not own a collection system. Staff will make every effort to accurately identify public agencies. In the event that a public agency is overlooked or omitted, however, it is the agency's responsibility to contact the State Water Board for information on the application process. An agency can find the appropriate contact by visiting the State Water Board's SSO homepage at www.waterboards.ca.gov/ss0.

SSO Reporting

SSOs can be distinguished between those that impact water quality and/or create a nuisance, and those that are indicators of collection system performance. Additionally, SSO liability is attributed to either private entities (homeowners, businesses, private communities, etc...) or public entities. Although all types of SSOs are important to track, the reporting time frames and the type of information that need to be conveyed differ.

The Reporting Program and Online SSO Database clearly distinguish the type of spill (major or minor) and the type of entity that owns the portion of the collection system that experienced the SSO (public or private entity). The reason to require SSO reporting for SSOs that do not necessarily impact public health or the environment is because these types of SSOs are indicators of collection system performance and management program effectiveness, and may serve as a sign of larger and more serious problems that should be addressed. Although these types of spills are important and must be regulated by collection system owners, the information that should be tracked and the time required to get them into the online reporting system are not as stringent.

Obviously, SSOs that are large in nature, affect public health, or affect the environment must be reported as soon as practicable and information associated with both the spill and efforts to mitigate the spill must be detailed. Since the Online SSO Database is a web based application requiring computer connection to the internet and is typically not as available as telephone communication would be, the Online Database will not replace emergency notification, which may be required by a Regional Water Board, Office of Emergency Services, or a County Health or Environmental Health Agency.

Incorporating Existing Permits

It is the State Water Board's intent to have one statewide regulatory mechanism that lays out the foundation for consistent collection system management requirements and SSO reporting. While there are a significant number of collection systems that are not actively regulated by the State or Regional Water Boards, some efforts have been made to regulate these agencies on a facility-by-facility or region-by-region basis. General WDRs, individual WDRs, NPDES permits, and enforcement orders that specifically include collections systems are mechanisms that have been used to regulate collection system overflows.

However, because of these varying levels of regulatory oversight, confusion exists among collection system owners as to regulatory expectations on a consistent and uniform basis (especially with reporting spills). Currently, there are a myriad of different SSO reporting thresholds and a number of different spill report repositories. Because of the varying levels of reporting thresholds and the lack of a common database to capture this information, an accurate picture of SSOs throughout California is unobtainable.

In order to provide a consistent and effective SSO prevention program, as well as to develop reasonable expectations for collection system management, these General WDRs should be the primary regulatory mechanism to regulate public collection systems. The draft WDRs detail requirements associated with SSMP development and implementation and SSO reporting.

All NPDES permits for POTWs currently include federally required standard conditions, three of which apply to collection systems. NPDES permits must clarify that the following three conditions apply to that part of the collection system that is owned or operated by the POTW owner or operator. These conditions are:

- Duty to mitigate discharges (40 CFR 122.41(d))
- Requirement to properly operate and maintain facilities (40 CFR 122.41(e))
- Requirement to report non-compliance (40 CFR 122.41(l)(6) and (7))

Understandably, revising existing regulatory measures will not occur immediately. However, as time allows and, at a minimum, upon readopting existing WDRs or WDRs that serve as NPDES permits, the Regional Water Boards should rescind redundant or inconsistent collection system requirements. In addition, the Regional Water Boards must ensure that existing NPDES permits clarify that the three standard permit provisions discussed above apply to the permittee's collection system.

Although it is the State Water Board's intent that this Order be the primary regulatory mechanism for sanitary sewer systems statewide, there will be some instances when Regional Water Boards will need to impose more stringent or prescriptive requirements. In those cases, more specific or more stringent WDRs or an NPDES permit issued by a Regional Water Board will supersede this Order. Finding number 11, in the WDRs states:

11. Some Regional Water Boards have issued WDRs or WDRs that serve as National Pollution Discharge Elimination System (NPDES) permits to sanitary sewer system owners/operators within their jurisdictions. This Order establishes minimum requirements to prevent SSOs. Although it is the State Water Board's intent that this Order be the primary regulatory mechanism for sanitary sewer systems statewide, Regional Water Boards may issue more stringent or more prescriptive WDRs for sanitary sewer systems. Upon issuance or reissuance of a Regional Water Board's WDRs for a system subject to this Order, the Regional Water Board shall coordinate its requirements with stated requirements within this Order, to identify requirements that are more stringent, to remove requirements that are less stringent than this Order, and to provide consistency in reporting.

Cost of Compliance

While the proposed WDRs contain requirements for systems and programs that should be in place to effectively manage collection systems, many communities have not implemented various elements of a good management plan. Some agencies are doing an excellent job managing their collection systems and will incur very little additional costs. Other agencies will need to develop and implement additional programs and will incur greater costs. However, any additional costs that a public agency may incur in order to comply with these General WDRs are costs that an agency would necessarily incur to effectively manage and preserve its infrastructure assets, protect public health and prevent nuisance conditions. These General WDRs prescribe minimum management requirements that should be present in all well managed collection system agencies.

In order to estimate the compliance costs associated with the proposed WDRs, staff analyzed costs associated with implementing the Santa Ana Regional Water Board's general WDRs. Twenty-one agencies, which discharge to Orange County Sanitation District, submitted financial summaries for the last five years, representing both pre- and post-WDRs adoption. Operation and maintenance costs, program development costs, as well as capital improvement costs were

considered and fairly accurately represent what can be expected statewide with the adoption of the General WDRs.

After extrapolating the sample to yield a statewide cost perspective, the projected annual cost of implementing the statewide WDRs is approximately \$870 million. This total represents \$345.6 million in O&M costs and \$524.5 for capital improvement projects.

While this sum is substantial, presenting the costs on a per capita or per household basis puts the figure in perspective. Department of Finance estimated the total population for Californians that may be subject to the WDRs to be 30.3 million persons (1/1/05). Dividing the population by the approximate average household size of 2.5 yields 12 million households. The average household in California is assumed to be 2.5 persons. The increased average annual cost (in order to comply with these WDRs) per person is estimated to be \$28.74 and \$71.86 per household (or \$5.99 per month per household)

Given these average costs there will be some communities that realize higher costs on a per household basis and some that realize less cost. Furthermore, larger communities will probably also realize an economy of scale, which is dependent upon a community's size. While larger communities may see lower costs associated with compliance, smaller communities will probably see a higher cost associated with compliance. Costs for compliance in small communities may be as high as \$40 per month per household.

**STATE WATER RESOURCES CONTROL BOARD
ORDER NO. 2006-0003-DWQ**

**STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS
FOR
SANITARY SEWER SYSTEMS**

The State Water Resources Control Board, hereinafter referred to as "State Water Board", finds that:

1. All federal and state agencies, municipalities, counties, districts, and other public entities that own or operate sanitary sewer systems greater than one mile in length that collect and/or convey untreated or partially treated wastewater to a publicly owned treatment facility in the State of California are required to comply with the terms of this Order. Such entities are hereinafter referred to as "Enrollees".
2. Sanitary sewer overflows (SSOs) are overflows from sanitary sewer systems of domestic wastewater, as well as industrial and commercial wastewater, depending on the pattern of land uses in the area served by the sanitary sewer system. SSOs often contain high levels of suspended solids, pathogenic organisms, toxic pollutants, nutrients, oxygen-demanding organic compounds, oil and grease and other pollutants. SSOs may cause a public nuisance, particularly when raw untreated wastewater is discharged to areas with high public exposure, such as streets or surface waters used for drinking, fishing, or body contact recreation. SSOs may pollute surface or ground waters, threaten public health, adversely affect aquatic life, and impair the recreational use and aesthetic enjoyment of surface waters.
3. Sanitary sewer systems experience periodic failures resulting in discharges that may affect waters of the state. There are many factors (including factors related to geology, design, construction methods and materials, age of the system, population growth, and system operation and maintenance), which affect the likelihood of an SSO. A proactive approach that requires Enrollees to ensure a system-wide operation, maintenance, and management plan is in place will reduce the number and frequency of SSOs within the state. This approach will in turn decrease the risk to human health and the environment caused by SSOs.
4. Major causes of SSOs include: grease blockages, root blockages, sewer line flood damage, manhole structure failures, vandalism, pump station mechanical failures, power outages, excessive storm or ground water inflow/infiltration, debris blockages, sanitary sewer system age and construction material failures, lack of proper operation and maintenance, insufficient capacity and contractor-caused damages. Many SSOs are preventable with adequate and appropriate facilities, source control measures and operation and maintenance of the sanitary sewer system.

SEWER SYSTEM MANAGEMENT PLANS

5. To facilitate proper funding and management of sanitary sewer systems, each Enrollee must develop and implement a system-specific Sewer System Management Plan (SSMP). To be effective, SSMPs must include provisions to provide proper and efficient management, operation, and maintenance of sanitary sewer systems, while taking into consideration risk management and cost benefit analysis. Additionally, an SSMP must contain a spill response plan that establishes standard procedures for immediate response to an SSO in a manner designed to minimize water quality impacts and potential nuisance conditions.
6. Many local public agencies in California have already developed SSMPs and implemented measures to reduce SSOs. These entities can build upon their existing efforts to establish a comprehensive SSMP consistent with this Order. Others, however, still require technical assistance and, in some cases, funding to improve sanitary sewer system operation and maintenance in order to reduce SSOs.
7. SSMP certification by technically qualified and experienced persons can provide a useful and cost-effective means for ensuring that SSMPs are developed and implemented appropriately.
8. It is the State Water Board's intent to gather additional information on the causes and sources of SSOs to augment existing information and to determine the full extent of SSOs and consequent public health and/or environmental impacts occurring in the State.
9. Both uniform SSO reporting and a centralized statewide electronic database are needed to collect information to allow the State Water Board and Regional Water Quality Control Boards (Regional Water Boards) to effectively analyze the extent of SSOs statewide and their potential impacts on beneficial uses and public health. The monitoring and reporting program required by this Order and the attached Monitoring and Reporting Program No. 2006-0003-DWQ, are necessary to assure compliance with these waste discharge requirements (WDRs).
10. Information regarding SSOs must be provided to Regional Water Boards and other regulatory agencies in a timely manner and be made available to the public in a complete, concise, and timely fashion.
11. Some Regional Water Boards have issued WDRs or WDRs that serve as National Pollution Discharge Elimination System (NPDES) permits to sanitary sewer system owners/operators within their jurisdictions. This Order establishes minimum requirements to prevent SSOs. Although it is the State Water Board's intent that this Order be the primary regulatory mechanism for sanitary sewer systems statewide, Regional Water Boards may issue more stringent or more

prescriptive WDRs for sanitary sewer systems. Upon issuance or reissuance of a Regional Water Board's WDRs for a system subject to this Order, the Regional Water Board shall coordinate its requirements with stated requirements within this Order, to identify requirements that are more stringent, to remove requirements that are less stringent than this Order, and to provide consistency in reporting.

REGULATORY CONSIDERATIONS

12. California Water Code section 13263 provides that the State Water Board may prescribe general WDRs for a category of discharges if the State Water Board finds or determines that:

- The discharges are produced by the same or similar operations;
- The discharges involve the same or similar types of waste;
- The discharges require the same or similar treatment standards; and
- The discharges are more appropriately regulated under general discharge requirements than individual discharge requirements.

This Order establishes requirements for a class of operations, facilities, and discharges that are similar throughout the state.

13. The issuance of general WDRs to the Enrollees will:

- a) Reduce the administrative burden of issuing individual WDRs to each Enrollee;
- b) Provide for a unified statewide approach for the reporting and database tracking of SSOs;
- c) Establish consistent and uniform requirements for SSMP development and implementation;
- d) Provide statewide consistency in reporting; and
- e) Facilitate consistent enforcement for violations.

14. The beneficial uses of surface waters that can be impaired by SSOs include, but are not limited to, aquatic life, drinking water supply, body contact and non-contact recreation, and aesthetics. The beneficial uses of ground water that can be impaired include, but are not limited to, drinking water and agricultural supply. Surface and ground waters throughout the state support these uses to varying degrees.

15. The implementation of requirements set forth in this Order will ensure the reasonable protection of past, present, and probable future beneficial uses of water and the prevention of nuisance. The requirements implement the water quality control plans (Basin Plans) for each region and take into account the environmental characteristics of hydrographic units within the state. Additionally, the State Water Board has considered water quality conditions that could reasonably be achieved through the coordinated control of all factors that affect

water quality in the area, costs associated with compliance with these requirements, the need for developing housing within California, and the need to develop and use recycled water.

16. The Federal Clean Water Act largely prohibits any discharge of pollutants from a point source to waters of the United States except as authorized under an NPDES permit. In general, any point source discharge of sewage effluent to waters of the United States must comply with technology-based, secondary treatment standards, at a minimum, and any more stringent requirements necessary to meet applicable water quality standards and other requirements. Hence, the unpermitted discharge of wastewater from a sanitary sewer system to waters of the United States is illegal under the Clean Water Act. In addition, many Basin Plans adopted by the Regional Water Boards contain discharge prohibitions that apply to the discharge of untreated or partially treated wastewater. Finally, the California Water Code generally prohibits the discharge of waste to land prior to the filing of any required report of waste discharge and the subsequent issuance of either WDRs or a waiver of WDRs.
17. California Water Code section 13263 requires a water board to, after any necessary hearing, prescribe requirements as to the nature of any proposed discharge, existing discharge, or material change in an existing discharge. The requirements shall, among other things, take into consideration the need to prevent nuisance.
18. California Water Code section 13050, subdivision (m), defines nuisance as anything which meets all of the following requirements:
 - a. Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
 - b. Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
 - c. Occurs during, or as a result of, the treatment or disposal of wastes.
19. This Order is consistent with State Water Board Resolution No. 68-16 (Statement of Policy with Respect to Maintaining High Quality of Waters in California) in that the Order imposes conditions to prevent impacts to water quality, does not allow the degradation of water quality, will not unreasonably affect beneficial uses of water, and will not result in water quality less than prescribed in State Water Board or Regional Water Board plans and policies.
20. The action to adopt this General Order is exempt from the California Environmental Quality Act (Public Resources Code §21000 et seq.) because it is an action taken by a regulatory agency to assure the protection of the environment and the regulatory process involves procedures for protection of the environment. (Cal. Code Regs., tit. 14, §15308). In addition, the action to adopt

this Order is exempt from CEQA pursuant to Cal.Code Regs., title 14, §15301 to the extent that it applies to existing sanitary sewer collection systems that constitute “existing facilities” as that term is used in Section 15301, and §15302, to the extent that it results in the repair or replacement of existing systems involving negligible or no expansion of capacity.

21. The Fact Sheet, which is incorporated by reference in the Order, contains supplemental information that was also considered in establishing these requirements.
22. The State Water Board has notified all affected public agencies and all known interested persons of the intent to prescribe general WDRs that require Enrollees to develop SSMPs and to report all SSOs.
23. The State Water Board conducted a public hearing on February 8, 2006, to receive oral and written comments on the draft order. The State Water Board received and considered, at its May 2, 2006, meeting, additional public comments on substantial changes made to the proposed general WDRs following the February 8, 2006, public hearing. The State Water Board has considered all comments pertaining to the proposed general WDRs.

IT IS HEREBY ORDERED, that pursuant to California Water Code section 13263, the Enrollees, their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted hereunder, shall comply with the following:

A. DEFINITIONS

1. **Sanitary sewer overflow (SSO)** - Any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from a sanitary sewer system. SSOs include:
 - (i) Overflows or releases of untreated or partially treated wastewater that reach waters of the United States;
 - (ii) Overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States; and
 - (iii) Wastewater backups into buildings and on private property that are caused by blockages or flow conditions within the publicly owned portion of a sanitary sewer system.
2. **Sanitary sewer system** – Any system of pipes, pump stations, sewer lines, or other conveyances, upstream of a wastewater treatment plant headworks used to collect and convey wastewater to the publicly owned treatment facility. Temporary storage and conveyance facilities (such as vaults, temporary piping, construction trenches, wet wells, impoundments, tanks, etc.) are considered to be part of the sanitary sewer system, and discharges into these temporary storage facilities are not considered to be SSOs.

For purposes of this Order, sanitary sewer systems include only those systems owned by public agencies that are comprised of more than one mile of pipes or sewer lines.

3. **Enrollee** - A federal or state agency, municipality, county, district, and other public entity that owns or operates a sanitary sewer system, as defined in the general WDRs, and that has submitted a complete and approved application for coverage under this Order.
4. **SSO Reporting System** – Online spill reporting system that is hosted, controlled, and maintained by the State Water Board. The web address for this site is <http://ciwqs.waterboards.ca.gov>. This online database is maintained on a secure site and is controlled by unique usernames and passwords.
5. **Untreated or partially treated wastewater** – Any volume of waste discharged from the sanitary sewer system upstream of a wastewater treatment plant headworks.
6. **Satellite collection system** – The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility to which the sanitary sewer system is tributary.
7. **Nuisance** - California Water Code section 13050, subdivision (m), defines nuisance as anything which meets all of the following requirements:
 - a. Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
 - b. Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
 - c. Occurs during, or as a result of, the treatment or disposal of wastes.

B. APPLICATION REQUIREMENTS

1. **Deadlines for Application** – All public agencies that currently own or operate sanitary sewer systems within the State of California must apply for coverage under the general WDRs within six (6) months of the date of adoption of the general WDRs. Additionally, public agencies that acquire or assume responsibility for operating sanitary sewer systems after the date of adoption of this Order must apply for coverage under the general WDRs at least three (3) months prior to operation of those facilities.
2. **Applications under the general WDRs** – In order to apply for coverage pursuant to the general WDRs, a legally authorized representative for each agency must submit a complete application package. Within sixty (60) days of adoption of the general WDRs, State Water Board staff will send specific instructions on how to

apply for coverage under the general WDRs to all known public agencies that own sanitary sewer systems. Agencies that do not receive notice may obtain applications and instructions online on the Water Board's website.

3. Coverage under the general WDRs – Permit coverage will be in effect once a complete application package has been submitted and approved by the State Water Board's Division of Water Quality.

C. PROHIBITIONS

1. Any SSO that results in a discharge of untreated or partially treated wastewater to waters of the United States is prohibited.
2. Any SSO that results in a discharge of untreated or partially treated wastewater that creates a nuisance as defined in California Water Code Section 13050(m) is prohibited.

D. PROVISIONS

1. The Enrollee must comply with all conditions of this Order. Any noncompliance with this Order constitutes a violation of the California Water Code and is grounds for enforcement action.
2. It is the intent of the State Water Board that sanitary sewer systems be regulated in a manner consistent with the general WDRs. Nothing in the general WDRs shall be:
 - (i) Interpreted or applied in a manner inconsistent with the Federal Clean Water Act, or supersede a more specific or more stringent state or federal requirement in an existing permit, regulation, or administrative/judicial order or Consent Decree;
 - (ii) Interpreted or applied to authorize an SSO that is illegal under either the Clean Water Act, an applicable Basin Plan prohibition or water quality standard, or the California Water Code;
 - (iii) Interpreted or applied to prohibit a Regional Water Board from issuing an individual NPDES permit or WDR, superseding this general WDR, for a sanitary sewer system, authorized under the Clean Water Act or California Water Code; or
 - (iv) Interpreted or applied to supersede any more specific or more stringent WDRs or enforcement order issued by a Regional Water Board.
3. The Enrollee shall take all feasible steps to eliminate SSOs. In the event that an SSO does occur, the Enrollee shall take all feasible steps to contain and mitigate the impacts of an SSO.
4. In the event of an SSO, the Enrollee shall take all feasible steps to prevent untreated or partially treated wastewater from discharging from storm drains into

flood control channels or waters of the United States by blocking the storm drainage system and by removing the wastewater from the storm drains.

5. All SSOs must be reported in accordance with Section G of the general WDRs.
6. In any enforcement action, the State and/or Regional Water Boards will consider the appropriate factors under the duly adopted State Water Board Enforcement Policy. And, consistent with the Enforcement Policy, the State and/or Regional Water Boards must consider the Enrollee's efforts to contain, control, and mitigate SSOs when considering the California Water Code Section 13327 factors. In assessing these factors, the State and/or Regional Water Boards will also consider whether:
 - (i) The Enrollee has complied with the requirements of this Order, including requirements for reporting and developing and implementing a SSMP;
 - (ii) The Enrollee can identify the cause or likely cause of the discharge event;
 - (iii) There were no feasible alternatives to the discharge, such as temporary storage or retention of untreated wastewater, reduction of inflow and infiltration, use of adequate backup equipment, collecting and hauling of untreated wastewater to a treatment facility, or an increase in the capacity of the system as necessary to contain the design storm event identified in the SSMP. It is inappropriate to consider the lack of feasible alternatives, if the Enrollee does not implement a periodic or continuing process to identify and correct problems.
 - (iv) The discharge was exceptional, unintentional, temporary, and caused by factors beyond the reasonable control of the Enrollee;
 - (v) The discharge could have been prevented by the exercise of reasonable control described in a certified SSMP for:
 - Proper management, operation and maintenance;
 - Adequate treatment facilities, sanitary sewer system facilities, and/or components with an appropriate design capacity, to reasonably prevent SSOs (e.g., adequately enlarging treatment or collection facilities to accommodate growth, infiltration and inflow (I/I), etc.);
 - Preventive maintenance (including cleaning and fats, oils, and grease (FOG) control);
 - Installation of adequate backup equipment; and
 - Inflow and infiltration prevention and control to the extent practicable.
 - (vi) The sanitary sewer system design capacity is appropriate to reasonably prevent SSOs.

- (vii) The Enrollee took all reasonable steps to stop and mitigate the impact of the discharge as soon as possible.
7. When a sanitary sewer overflow occurs, the Enrollee shall take all feasible steps and necessary remedial actions to 1) control or limit the volume of untreated or partially treated wastewater discharged, 2) terminate the discharge, and 3) recover as much of the wastewater discharged as possible for proper disposal, including any wash down water.

The Enrollee shall implement all remedial actions to the extent they may be applicable to the discharge and not inconsistent with an emergency response plan, including the following:

- (i) Interception and rerouting of untreated or partially treated wastewater flows around the wastewater line failure;
 - (ii) Vacuum truck recovery of sanitary sewer overflows and wash down water;
 - (iii) Cleanup of debris at the overflow site;
 - (iv) System modifications to prevent another SSO at the same location;
 - (v) Adequate sampling to determine the nature and impact of the release; and
 - (vi) Adequate public notification to protect the public from exposure to the SSO.
8. The Enrollee shall properly, manage, operate, and maintain all parts of the sanitary sewer system owned or operated by the Enrollee, and shall ensure that the system operators (including employees, contractors, or other agents) are adequately trained and possess adequate knowledge, skills, and abilities.
9. The Enrollee shall allocate adequate resources for the operation, maintenance, and repair of its sanitary sewer system, by establishing a proper rate structure, accounting mechanisms, and auditing procedures to ensure an adequate measure of revenues and expenditures. These procedures must be in compliance with applicable laws and regulations and comply with generally acceptable accounting practices.
10. The Enrollee shall provide adequate capacity to convey base flows and peak flows, including flows related to wet weather events. Capacity shall meet or exceed the design criteria as defined in the Enrollee's System Evaluation and Capacity Assurance Plan for all parts of the sanitary sewer system owned or operated by the Enrollee.
11. The Enrollee shall develop and implement a written Sewer System Management Plan (SSMP) and make it available to the State and/or Regional Water Board upon request. A copy of this document must be publicly available at the Enrollee's office and/or available on the Internet. This SSMP must be approved by the Enrollee's governing board at a public meeting.

12. In accordance with the California Business and Professions Code sections 6735, 7835, and 7835.1, all engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. Specific elements of the SSMP that require professional evaluation and judgments shall be prepared by or under the direction of appropriately qualified professionals, and shall bear the professional(s)' signature and stamp.
13. The mandatory elements of the SSMP are specified below. However, if the Enrollee believes that any element of this section is not appropriate or applicable to the Enrollee's sanitary sewer system, the SSMP program does not need to address that element. The Enrollee must justify why that element is not applicable. The SSMP must be approved by the deadlines listed in the SSMP Time Schedule below.

Sewer System Management Plan (SSMP)

- (i) **Goal:** The goal of the SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. This will help reduce and prevent SSOs, as well as mitigate any SSOs that do occur.
- (ii) **Organization:** The SSMP must identify:
 - (a) The name of the responsible or authorized representative as described in Section J of this Order.
 - (b) The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. The SSMP must identify lines of authority through an organization chart or similar document with a narrative explanation; and
 - (c) The chain of communication for reporting SSOs, from receipt of a complaint or other information, including the person responsible for reporting SSOs to the State and Regional Water Board and other agencies if applicable (such as County Health Officer, County Environmental Health Agency, Regional Water Board, and/or State Office of Emergency Services (OES)).
- (iii) **Legal Authority:** Each Enrollee must demonstrate, through sanitary sewer system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to:
 - (a) Prevent illicit discharges into its sanitary sewer system (examples may include I/I, stormwater, chemical dumping, unauthorized debris and cut roots, etc.);

- (b) Require that sewers and connections be properly designed and constructed;
 - (c) Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the Public Agency;
 - (d) Limit the discharge of fats, oils, and grease and other debris that may cause blockages, and
 - (e) Enforce any violation of its sewer ordinances.
- (iv) **Operation and Maintenance Program.** The SSMP must include those elements listed below that are appropriate and applicable to the Enrollee's system:
- (a) Maintain an up-to-date map of the sanitary sewer system, showing all gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable stormwater conveyance facilities;
 - (b) Describe routine preventive operation and maintenance activities by staff and contractors, including a system for scheduling regular maintenance and cleaning of the sanitary sewer system with more frequent cleaning and maintenance targeted at known problem areas. The Preventative Maintenance (PM) program should have a system to document scheduled and conducted activities, such as work orders;
 - (c) Develop a rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short- and long-term plans plus a schedule for developing the funds needed for the capital improvement plan;
 - (d) Provide training on a regular basis for staff in sanitary sewer system operations and maintenance, and require contractors to be appropriately trained; and

- (e) Provide equipment and replacement part inventories, including identification of critical replacement parts.

(v) **Design and Performance Provisions:**

- (a) Design and construction standards and specifications for the installation of new sanitary sewer systems, pump stations and other appurtenances; and for the rehabilitation and repair of existing sanitary sewer systems; and
 - (b) Procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.
- (vi) **Overflow Emergency Response Plan** - Each Enrollee shall develop and implement an overflow emergency response plan that identifies measures to protect public health and the environment. At a minimum, this plan must include the following:
- (a) Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner;
 - (b) A program to ensure an appropriate response to all overflows;
 - (c) Procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities (e.g. health agencies, Regional Water Boards, water suppliers, etc.) of all SSOs that potentially affect public health or reach the waters of the State in accordance with the MRP. All SSOs shall be reported in accordance with this MRP, the California Water Code, other State Law, and other applicable Regional Water Board WDRs or NPDES permit requirements. The SSMP should identify the officials who will receive immediate notification;
 - (d) Procedures to ensure that appropriate staff and contractor personnel are aware of and follow the Emergency Response Plan and are appropriately trained;
 - (e) Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities; and
 - (f) A program to ensure that all reasonable steps are taken to contain and prevent the discharge of untreated and partially treated wastewater to waters of the United States and to minimize or correct any adverse impact on the environment resulting from the SSOs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge.

(vii) **FOG Control Program:** Each Enrollee shall evaluate its service area to determine whether a FOG control program is needed. If an Enrollee determines that a FOG program is not needed, the Enrollee must provide justification for why it is not needed. If FOG is found to be a problem, the Enrollee must prepare and implement a FOG source control program to reduce the amount of these substances discharged to the sanitary sewer system. This plan shall include the following as appropriate:

- (a) An implementation plan and schedule for a public education outreach program that promotes proper disposal of FOG;
- (b) A plan and schedule for the disposal of FOG generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of FOG generated within a sanitary sewer system service area;
- (c) The legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG;
- (d) Requirements to install grease removal devices (such as traps or interceptors), design standards for the removal devices, maintenance requirements, BMP requirements, record keeping and reporting requirements;
- (e) Authority to inspect grease producing facilities, enforcement authorities, and whether the Enrollee has sufficient staff to inspect and enforce the FOG ordinance;
- (f) An identification of sanitary sewer system sections subject to FOG blockages and establishment of a cleaning maintenance schedule for each section; and
- (g) Development and implementation of source control measures for all sources of FOG discharged to the sanitary sewer system for each section identified in (f) above.

(viii) **System Evaluation and Capacity Assurance Plan:** The Enrollee shall prepare and implement a capital improvement plan (CIP) that will provide hydraulic capacity of key sanitary sewer system elements for dry weather peak flow conditions, as well as the appropriate design storm or wet weather event. At a minimum, the plan must include:

- (a) **Evaluation:** Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows (including flows from SSOs

that escape from the system) associated with conditions similar to those causing overflow events, estimates of the capacity of key system components, hydraulic deficiencies (including components of the system with limiting capacity) and the major sources that contribute to the peak flows associated with overflow events;

- (b) **Design Criteria:** Where design criteria do not exist or are deficient, undertake the evaluation identified in (a) above to establish appropriate design criteria; and
 - (c) **Capacity Enhancement Measures:** The steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, I/I reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding.
 - (d) **Schedule:** The Enrollee shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a)-(c) above. This schedule shall be reviewed and updated consistent with the SSMP review and update requirements as described in Section D. 14.
- (ix) **Monitoring, Measurement, and Program Modifications:** The Enrollee shall:
- (a) Maintain relevant information that can be used to establish and prioritize appropriate SSMP activities;
 - (b) Monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP;
 - (c) Assess the success of the preventative maintenance program;
 - (d) Update program elements, as appropriate, based on monitoring or performance evaluations; and
 - (e) Identify and illustrate SSO trends, including: frequency, location, and volume.
- (x) **SSMP Program Audits** - As part of the SSMP, the Enrollee shall conduct periodic internal audits, appropriate to the size of the system and the number of SSOs. At a minimum, these audits must occur every two years and a report must be prepared and kept on file. This audit shall focus on evaluating the effectiveness of the SSMP and the

Enrollee's compliance with the SSMP requirements identified in this subsection (D.13), including identification of any deficiencies in the SSMP and steps to correct them.

- (xi) **Communication Program** – The Enrollee shall communicate on a regular basis with the public on the development, implementation, and performance of its SSMP. The communication system shall provide the public the opportunity to provide input to the Enrollee as the program is developed and implemented.

The Enrollee shall also create a plan of communication with systems that are tributary and/or satellite to the Enrollee's sanitary sewer system.

14. Both the SSMP and the Enrollee's program to implement the SSMP must be certified by the Enrollee to be in compliance with the requirements set forth above and must be presented to the Enrollee's governing board for approval at a public meeting. The Enrollee shall certify that the SSMP, and subparts thereof, are in compliance with the general WDRs within the time frames identified in the time schedule provided in subsection D.15, below.

In order to complete this certification, the Enrollee's authorized representative must complete the certification portion in the Online SSO Database Questionnaire by checking the appropriate milestone box, printing and signing the automated form, and sending the form to:

State Water Resources Control Board
Division of Water Quality
Attn: SSO Program Manager
P.O. Box 100
Sacramento, CA 95812

The SSMP must be updated every five (5) years, and must include any significant program changes. Re-certification by the governing board of the Enrollee is required in accordance with D.14 when significant updates to the SSMP are made. To complete the re-certification process, the Enrollee shall enter the data in the Online SSO Database and mail the form to the State Water Board, as described above.

15. The Enrollee shall comply with these requirements according to the following schedule. This time schedule does not supersede existing requirements or time schedules associated with other permits or regulatory requirements.

Sewer System Management Plan Time Schedule

<u>Task and Associated Section</u>	Completion Date			
	Population > 100,000	Population between 100,000 and 10,000	Population between 10,000 and 2,500	Population < 2,500
Application for Permit Coverage Section C	6 months after WDRs Adoption			
Reporting Program Section G	6 months after WDRs Adoption ¹			
SSMP Development Plan and Schedule No specific Section	9 months after WDRs Adoption ²	12 months after WDRs Adoption ²	15 months after WDRs Adoption ²	18 months after WDRs Adoption ²
Goals and Organization Structure Section D 13 (i) & (ii)	12 months after WDRs Adoption ²		18 months after WDRs Adoption ²	
Overflow Emergency Response Program Section D 13 (vi)	24 months after WDRs Adoption ²	30 months after WDRs Adoption ²	36 months after WDRs Adoption ²	39 months after WDRs Adoption ²
Legal Authority Section D 13 (iii)				
Operation and Maintenance Program Section D 13 (iv)				
Grease Control Program Section D 13 (vii)				
Design and Performance Section D 13 (v)	36 months after WDRs Adoption	39 months after WDRs Adoption	48 months after WDRs Adoption	51 months after WDRs Adoption
System Evaluation and Capacity Assurance Plan Section D 13 (viii)				
Final SSMP, incorporating all of the SSMP requirements Section D 13				

1. In the event that by July 1, 2006 the Executive Director is able to execute a memorandum of agreement (MOA) with the California Water Environment Association (CWEA) or discharger representatives outlining a strategy and time schedule for CWEA or another entity to provide statewide training on the adopted monitoring program, SSO database electronic reporting, and SSMP development, consistent with this Order, then the schedule of Reporting Program Section G shall be replaced with the following schedule:

Reporting Program Section G	
Regional Boards 4, 8, and 9	8 months after WDRs Adoption
Regional Boards 1, 2, and 3	12 months after WDRs Adoption
Regional Boards 5, 6, and 7	16 months after WDRs Adoption

If this MOU is not executed by July 1, 2006, the reporting program time schedule will remain six (6) months for all regions and agency size categories.

2. In the event that the Executive Director executes the MOA identified in note 1 by July 1, 2006, then the deadline for this task shall be extended by six (6) months. The time schedule identified in the MOA must be consistent with the extended time schedule provided by this note. If the MOA is not executed by July 1, 2006, the six (6) month time extension will not be granted.

E. WDRs and SSMP AVAILABILITY

1. A copy of the general WDRs and the certified SSMP shall be maintained at appropriate locations (such as the Enrollee's offices, facilities, and/or Internet homepage) and shall be available to sanitary sewer system operating and maintenance personnel at all times.

F. ENTRY AND INSPECTION

1. The Enrollee shall allow the State or Regional Water Boards or their authorized representative, upon presentation of credentials and other documents as may be required by law, to:
 - a. Enter upon the Enrollee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order;
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order;

- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and
- d. Sample or monitor at reasonable times, for the purposes of assuring compliance with this Order or as otherwise authorized by the California Water Code, any substances or parameters at any location.

G. GENERAL MONITORING AND REPORTING REQUIREMENTS

1. The Enrollee shall furnish to the State or Regional Water Board, within a reasonable time, any information that the State or Regional Water Board may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. The Enrollee shall also furnish to the Executive Director of the State Water Board or Executive Officer of the applicable Regional Water Board, upon request, copies of records required to be kept by this Order.
2. The Enrollee shall comply with the attached Monitoring and Reporting Program No. 2006-0003 and future revisions thereto, as specified by the Executive Director. Monitoring results shall be reported at the intervals specified in Monitoring and Reporting Program No. 2006-0003. Unless superseded by a specific enforcement Order for a specific Enrollee, these reporting requirements are intended to replace other mandatory routine written reports associated with SSOs.
3. All Enrollees must obtain SSO Database accounts and receive a "Username" and "Password" by registering through the California Integrated Water Quality System (CIWQS). These accounts will allow controlled and secure entry into the SSO Database. Additionally, within 30 days of receiving an account and prior to recording spills into the SSO Database, all Enrollees must complete the "Collection System Questionnaire", which collects pertinent information regarding a Enrollee's collection system. The "Collection System Questionnaire" must be updated at least every 12 months.
4. Pursuant to Health and Safety Code section 5411.5, any person who, without regard to intent or negligence, causes or permits any untreated wastewater or other waste to be discharged in or on any waters of the State, or discharged in or deposited where it is, or probably will be, discharged in or on any surface waters of the State, as soon as that person has knowledge of the discharge, shall immediately notify the local health officer of the discharge. Discharges of untreated or partially treated wastewater to storm drains and drainage channels, whether man-made or natural or concrete-lined, shall be reported as required above.

Any SSO greater than 1,000 gallons discharged in or on any waters of the State, or discharged in or deposited where it is, or probably will be, discharged in or on any surface waters of the State shall also be reported to the Office of Emergency Services pursuant to California Water Code section 13271.

H. CHANGE IN OWNERSHIP

1. This Order is not transferable to any person or party, except after notice to the Executive Director. The Enrollee shall submit this notice in writing at least 30 days in advance of any proposed transfer. The notice must include a written agreement between the existing and new Enrollee containing a specific date for the transfer of this Order's responsibility and coverage between the existing Enrollee and the new Enrollee. This agreement shall include an acknowledgement that the existing Enrollee is liable for violations up to the transfer date and that the new Enrollee is liable from the transfer date forward.

I. INCOMPLETE REPORTS

1. If an Enrollee becomes aware that it failed to submit any relevant facts in any report required under this Order, the Enrollee shall promptly submit such facts or information by formally amending the report in the Online SSO Database.

J. REPORT DECLARATION

1. All applications, reports, or information shall be signed and certified as follows:
 - (i) All reports required by this Order and other information required by the State or Regional Water Board shall be signed and certified by a person designated, for a municipality, state, federal or other public agency, as either a principal executive officer or ranking elected official, or by a duly authorized representative of that person, as described in paragraph (ii) of this provision. (For purposes of electronic reporting, an electronic signature and accompanying certification, which is in compliance with the Online SSO database procedures, meet this certification requirement.)
 - (ii) An individual is a duly authorized representative only if:
 - (a) The authorization is made in writing by a person described in paragraph (i) of this provision; and
 - (b) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity.

K. CIVIL MONETARY REMEDIES FOR DISCHARGE VIOLATIONS

1. The California Water Code provides various enforcement options, including civil monetary remedies, for violations of this Order.
2. The California Water Code also provides that any person failing or refusing to furnish technical or monitoring program reports, as required under this Order, or

falsifying any information provided in the technical or monitoring reports is subject to civil monetary penalties.

L. SEVERABILITY

1. The provisions of this Order are severable, and if any provision of this Order, or the application of any provision of this Order to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Order, shall not be affected thereby.
2. This order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the Enrollee from liability under federal, state or local laws, nor create a vested right for the Enrollee to continue the waste discharge.

CERTIFICATION

The undersigned Clerk to the State Water Board does hereby certify that the foregoing is a full, true, and correct copy of general WDRs duly and regularly adopted at a meeting of the State Water Resources Control Board held on May 2, 2006.

AYE: Tam M. Doduc
Gerald D. Secundy

NO: Arthur G. Baggett

ABSENT: None

ABSTAIN: None



Song Her
Clerk to the Board

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

ORDER NO. WQ 2008-0002-EXEC

ADOPTING AMENDED MONITORING AND REPORTING REQUIREMENTS FOR
STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR SANITARY SEWER
SYSTEMS

The State of California, Water Resources Control Board (State Water Board) finds:

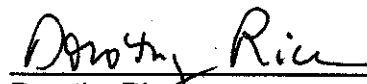
1. The State Water Board is authorized to prescribe statewide general waste discharge requirements for categories of discharges that involve the same or similar operations and the same or similar types of waste pursuant to Water Code 13263, subdivision (i).
2. The State Water Board on May 2, 2006, adopted Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, Order No. 2006-0003-DWQ, pursuant to that authority.
3. The State Water Board on May 2, 2006, adopted Monitoring and Reporting Requirements to implement the General Waste Discharge Requirements for Sanitary Sewer Systems.
4. State Water Board Order No. 2006-0003-DWQ, paragraph G.2., and the Monitoring and Reporting Requirements, both provide that the Executive Director may modify the terms of the Monitoring and Reporting Requirements at any time.
5. The time allowed in those Monitoring and Reporting Requirements for the filing of the initial report of an overflow is too long to adequately protect the public health and safety or the beneficial uses of the waters of the state when there is a sewage collection system spill. An additional notification requirement is necessary and appropriate to ensure the Office of Emergency Services, local public health officials, and the applicable regional water quality control board are apprised of a spill that reaches a drainage channel or surface water.
6. Further, the burden of providing a notification as soon as possible is de minimis and will allow response agencies to take action as soon as possible to protect public health and safety and beneficial uses of the waters of the state.

IT IS HEREBY ORDERED THAT:

Pursuant to the authority delegated by Resolution No. 2002-0104 and Order No. 2006-0003-DWQ, the Monitoring and Reporting Requirements for Statewide General Waste Discharge Requirements for Sanitary Sewer Systems No. 2006-0003-DWQ is hereby amended as shown in Attachment A, with new text indicated by double-underline.

Dated:

February 20, 2008


Dorothy Rice
Executive Director

ATTACHMENT A

STATE WATER RESOURCES CONTROL BOARD MONITORING AND REPORTING PROGRAM NO. 2006-0003-DWQ (AS REVISED BY ORDER NO. WQ 2008-0002-EXEC)

STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR SANITARY SEWER SYSTEMS

This Monitoring and Reporting Program (MRP) establishes monitoring, record keeping, reporting and public notification requirements for Order No. 2006-2003-DWQ, "Statewide General Waste Discharge Requirements for Sanitary Sewer Systems." Revisions to this MRP may be made at any time by the Executive Director, and may include a reduction or increase in the monitoring and reporting.

NOTIFICATION

Although State and Regional Water Board staff do not have duties as first responders, this Monitoring and Reporting Program is an appropriate mechanism to ensure that the agencies that do have first responder duties are notified in a timely manner in order to protect public health and beneficial uses.

1. For any discharges of sewage that results in a discharge to a drainage channel or a surface water, the Discharger shall, as soon as possible, but not later than two (2) hours after becoming aware of the discharge, notify the State Office of Emergency Services, the local health officer or directors of environmental health with jurisdiction over affected water bodies, and the appropriate Regional Water Quality Control Board.
2. As soon as possible, but no later than twenty-four (24) hours after becoming aware of a discharge to a drainage channel or a surface water, the Discharger shall submit to the appropriate Regional Water Quality Control Board a certification that the State Office of Emergency Services and the local health officer or directors of environmental health with jurisdiction over the affected water bodies have been notified of the discharge.

A. SANITARY SEWER OVERFLOW REPORTING

SSO Categories

1. Category 1 - All discharges of sewage resulting from a failure in the Enrollee's sanitary sewer system that:
 - A. Equal or exceed 1000 gallons, or
 - B. Result in a discharge to a drainage channel and/or surface water; or
 - C. Discharge to a storm drainpipe that was not fully captured and returned to the sanitary sewer system.

2. Category 2 – All other discharges of sewage resulting from a failure in the Enrollee's sanitary sewer system.
3. Private Lateral Sewage Discharges – Sewage discharges that are caused by blockages or other problems within a privately owned lateral.

SSO Reporting Timeframes

4. Category 1 SSOs – Except as provided above, all SSOs that meet the above criteria for Category 1 SSOs must be reported as soon as: (1) the Enrollee has knowledge of the discharge, (2) reporting is possible, and (3) reporting can be provided without substantially impeding cleanup or other emergency measures. Initial reporting of Category 1 SSOs must be reported to the Online SSO System as soon as possible but no later than 3 business days after the Enrollee is made aware of the SSO. Minimum information that must be contained in the 3-day report must include all information identified in section 9 below, except for item 9.K. A final certified report must be completed through the Online SSO System, within 15 calendar days of the conclusion of SSO response and remediation. Additional information may be added to the certified report, in the form of an attachment, at any time.

The above reporting requirements are in addition to do not preclude other emergency notification requirements and timeframes mandated by other regulatory agencies (local County Health Officers, local Director of Environmental Health, Regional Water Boards, or Office of Emergency Services (OES)) or State law.

5. Category 2 SSOs – All SSOs that meet the above criteria for Category 2 SSOs must be reported to the Online SSO Database within 30 days after the end of the calendar month in which the SSO occurs (e.g. all SSOs occurring in the month of January must be entered into the database by March 1st).
6. Private Lateral Sewage Discharges – All sewage discharges that meet the above criteria for Private Lateral sewage discharges may be reported to the Online SSO Database based upon the Enrollee's discretion. If a Private Lateral sewage discharge is recorded in the SSO Database, the Enrollee must identify the sewage discharge as occurring and caused by a private lateral, and a responsible party (other than the Enrollee) should be identified, if known.
7. If there are no SSOs during the calendar month, the Enrollee will provide, within 30 days after the end of each calendar month, a statement through the Online SSO Database certifying that there were no SSOs for the designated month.
8. In the event that the SSO Online Database is not available, the enrollee must fax all required information to the appropriate Regional Water Board office in

accordance with the time schedules identified above. In such event, the Enrollee must also enter all required information into the Online SSO Database as soon as practical.

Mandatory Information to be Included in SSO Online Reporting

All Enrollees must obtain SSO Database accounts and receive a "Username" and "Password" by registering through the California Integrated Water Quality System (CIWQS). These accounts will allow controlled and secure entry into the SSO Database. Additionally, within thirty (30) days of receiving an account and prior to recording SSOs into the SSO Database, all Enrollees must complete the "Collection System Questionnaire", which collects pertinent information regarding an Enrollee's collection system. The "Collection System Questionnaire" must be updated at least every 12 months.

At a minimum, the following mandatory information must be included prior to finalizing and certifying an SSO report for each category of SSO:

9. Category 2 SSOs:

- A. Location of SSO by entering GPS coordinates;
- B. Applicable Regional Water Board, i.e. identify the region in which the SSO occurred;
- C. County where SSO occurred;
- D. Whether or not the SSO entered a drainage channel and/or surface water;
- E. Whether or not the SSO was discharged to a storm drain pipe that was not fully captured and returned to the sanitary sewer system;
- F. Estimated SSO volume in gallons;
- G. SSO source (manhole, cleanout, etc.);
- H. SSO cause (mainline blockage, roots, etc.);
- I. Time of SSO notification or discovery;
- J. Estimated operator arrival time;
- K. SSO destination;
- L. Estimated SSO end time; and
- M. SSO Certification. Upon SSO Certification, the SSO Database will issue a Final SSO Identification (ID) Number.

10. Private Lateral Sewage Discharges:

- A. All information listed above (if applicable and known), as well as;
- B. Identification of sewage discharge as a private lateral sewage discharge; and
- C. Responsible party contact information (if known).

11. Category 1 SSOs:

- A. All information listed for Category 2 SSOs, as well as;
- B. Estimated SSO volume that reached surface water, drainage channel, or not recovered from a storm drain;
- C. Estimated SSO amount recovered;
- D. Response and corrective action taken;
- E. If samples were taken, identify which regulatory agencies received sample results (if applicable). If no samples were taken, NA must be selected.
- F. Parameters that samples were analyzed for (if applicable);
- G. Identification of whether or not health warnings were posted;
- H. Beaches impacted (if applicable). If no beach was impacted, NA must be selected;
- I. Whether or not there is an ongoing investigation;
- J. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;
- K. OES control number (if applicable);
- L. Date OES was called (if applicable);
- M. Time OES was called (if applicable);
- N. Identification of whether or not County Health Officers were called;
- O. Date County Health Officer was called (if applicable); and
- P. Time County Health Officer was called (if applicable).

Reporting to Other Regulatory Agencies

These reporting requirements do not preclude an Enrollee from reporting SSOs to other regulatory agencies pursuant California state law. These reporting requirements do not replace other Regional Water Board telephone reporting requirements for SSOs.

1. The Enrollee shall report SSOs to OES, in accordance with California Water Code Section 13271.

Office of Emergency Services
Phone (800) 852-7550

2. The Enrollee shall report SSOs to County Health officials in accordance with California Health and Safety Code Section 5410 et seq.
3. The SSO database will automatically generate an e-mail notification with customized information about the SSO upon initial reporting of the SSO and final certification for all Category 1 SSOs. E-mails will be sent to the appropriate County Health Officer and/or Environmental Health Department if the county desires this information, and the appropriate Regional Water Board.

B. Record Keeping

1. Individual SSO records shall be maintained by the Enrollee for a minimum of five years from the date of the SSO. This period may be extended when requested by a Regional Water Board Executive Officer.

[2. Omitted.]

3. All records shall be made available for review upon State or Regional Water Board staff's request.
4. All monitoring instruments and devices that are used by the Enrollee to fulfill the prescribed monitoring and reporting program shall be properly maintained and calibrated as necessary to ensure their continued accuracy;
5. The Enrollee shall retain records of all SSOs, such as, but not limited to and when applicable:
 - a. Record of Certified report, as submitted to the online SSO database;
 - b. All original recordings for continuous monitoring instrumentation;
 - c. Service call records and complaint logs of calls received by the Enrollee;
 - d. SSO calls;
 - e. SSO records;
 - f. Steps that have been and will be taken to prevent the SSO from recurring and a schedule to implement those steps.
 - g. Work orders, work completed, and any other maintenance records from the previous 5 years which are associated with responses and investigations of system problems related to SSOs;
 - h. A list and description of complaints from customers or others from the previous 5 years; and
 - i. Documentation of performance and implementation measures for the previous 5 years.
6. If water quality samples are required by an environmental or health regulatory agency or State law, or if voluntary monitoring is conducted by the Enrollee or its agent(s), as a result of any SSO, records of monitoring information shall include:
 - a. The date, exact place, and time of sampling or measurements;
 - b. The individual(s) who performed the sampling or measurements;
 - c. The date(s) analyses were performed;
 - d. The individual(s) who performed the analyses;
 - e. The analytical technique or method used; and,
 - f. The results of such analyses.

C. Certification

1. All final reports must be certified by an authorized person as required by Provision J of the Order.
2. Registration of authorized individuals, who may certify reports, will be in accordance with the CIWQS' protocols for reporting.

Monitoring and Reporting Program No. 2006-0003 will become effective on the date of adoption by the State Water Board. The notification requirements added by Order No. WQ 2008-0002-EXEC will become effective upon issuance by the Executive Director.

CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of an order amended by the Executive Director of the State Water Board.

A handwritten signature in cursive script, reading "Jeanne Townsend", is written over a horizontal line.

Jeanne Townsend
Clerk to the Board

STATE OF CALIFORNIA
WATER RESOURCES CONTROL BOARD
ORDER NO. WQ 2013-0058-EXEC

AMENDING MONITORING AND REPORTING PROGRAM
FOR
STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR
SANITARY SEWER SYSTEMS

The State of California, Water Resources Control Board (hereafter State Water Board) finds:

1. The State Water Board is authorized to prescribe statewide general Waste Discharge Requirements (WDRs) for categories of discharges that involve the same or similar operations and the same or similar types of waste pursuant to Water Code section 13263(i).
2. Water Code section 13193 *et seq.* requires the Regional Water Quality Control Boards (Regional Water Boards) and the State Water Board (collectively, the Water Boards) to gather Sanitary Sewer Overflow (SSO) information and make this information available to the public, including but not limited to, SSO cause, estimated volume, location, date, time, duration, whether or not the SSO reached or may have reached waters of the state, response and corrective action taken, and an enrollee's contact information for each SSO event. An enrollee is defined as the public entity having legal authority over the operation and maintenance of, or capital improvements to, a sanitary sewer system greater than one mile in length.
3. Water Code section 13271, *et seq.* requires notification to the California Office of Emergency Services (Cal OES), formerly the California Emergency Management Agency, for certain unauthorized discharges, including SSOs.
4. On May 2, 2006, the State Water Board adopted Order 2006-0003-DWQ, "Statewide Waste Discharge Requirements for Sanitary Sewer Systems"¹ (hereafter SSS WDRs) to comply with Water Code section 13193 and to establish the framework for the statewide SSO Reduction Program.
5. Subsection G.2 of the SSS WDRs and the Monitoring and Reporting Program (MRP) provide that the Executive Director may modify the terms of the MRP at any time.
6. On February 20, 2008, the State Water Board Executive Director adopted a revised MRP for the SSS WDRs to rectify early notification deficiencies and ensure that first responders are notified in a timely manner of SSOs discharged into waters of the state.
7. When notified of an SSO that reaches a drainage channel or surface water of the state, Cal OES, pursuant to Water Code section 13271(a)(3), forwards the SSO notification information² to local government agencies and first responders including local public health officials and the applicable Regional Water Board. Receipt of notifications for a single SSO event from both the SSO reporter

¹ Available for download at:

http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2006/wqo/wqo2006_0003.pdf

² Cal OES Hazardous Materials Spill Reports available Online at:

[http://w3.calema.ca.gov/operational/mal haz.nsf/\\$defaultview](http://w3.calema.ca.gov/operational/mal haz.nsf/$defaultview) and <http://w3.calema.ca.gov/operational/mal haz.nsf>

and Cal OES is duplicative. To address this, the SSO notification requirements added by the February 20, 2008 MRP revision are being removed in this MRP revision.

8. In the February 28, 2008 Memorandum of Agreement between the State Water Board and the California Water and Environment Association (CWEA), the State Water Board committed to re-designing the CIWQS³ Online SSO Database to allow "event" based SSO reporting versus the original "location" based reporting. Revisions to this MRP and accompanying changes to the CIWQS Online SSO Database will implement this change by allowing for multiple SSO appearance points to be associated with each SSO event caused by a single asset failure.
9. Based on stakeholder input and Water Board staff experience implementing the SSO Reduction Program, SSO categories have been revised in this MRP. In the prior version of the MRP, SSOs have been categorized as Category 1 or Category 2. This MRP implements changes to SSO categories by adding a Category 3 SSO type. This change will improve data management to further assist Water Board staff with evaluation of high threat and low threat SSOs by placing them in unique categories (i.e., Category 1 and Category 3, respectively). This change will also assist enrollees in identifying SSOs that require Cal OES notification.
10. Based on over six years of implementation of the SSS WDRs, the State Water Board concludes that the February 20, 2008 MRP must be updated to better advance the SSO Reduction Program⁴ objectives, assess compliance, and enforce the requirements of the SSS WDRs.

IT IS HEREBY ORDERED THAT:

Pursuant to the authority delegated by Water Code section 13267(f), Resolution 2002-0104, and Order 2006-0003-DWQ, the MRP for the SSS WDRs (Order 2006-0003-DWQ) is hereby amended as shown in Attachment A and shall be effective on September 9, 2013.

8/6/13

Date



Thomas Howard
Executive Director

³ California Integrated Water Quality System (CIWQS) publicly available at
<http://www.waterboards.ca.gov/ciwqs/publicreports.shtml>

⁴ Statewide Sanitary Sewer Overflow Reduction Program information is available at:
http://www.waterboards.ca.gov/water_issues/programs/ssol/

ATTACHMENT A

STATE WATER RESOURCES CONTROL BOARD ORDER NO. WQ 2013-0058-EXEC

AMENDING MONITORING AND REPORTING PROGRAM FOR STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR SANITARY SEWER SYSTEMS

This Monitoring and Reporting Program (MRP) establishes monitoring, record keeping, reporting and public notification requirements for Order 2006-0003-DWQ, "Statewide General Waste Discharge Requirements for Sanitary Sewer Systems" (SSS WDRs). This MRP shall be effective from September 9, 2013 until it is rescinded. The Executive Director may make revisions to this MRP at any time. These revisions may include a reduction or increase in the monitoring and reporting requirements. All site specific records and data developed pursuant to the SSS WDRs and this MRP shall be complete, accurate, and justified by evidence maintained by the enrollee. Failure to comply with this MRP may subject an enrollee to civil liabilities of up to \$5,000 a day per violation pursuant to Water Code section 13350; up to \$1,000 a day per violation pursuant to Water Code section 13268; or referral to the Attorney General for judicial civil enforcement. The State Water Resources Control Board (State Water Board) reserves the right to take any further enforcement action authorized by law.

A. SUMMARY OF MRP REQUIREMENTS

Table 1 – Spill Categories and Definitions

CATEGORIES	DEFINITIONS [see Section A on page 5 of Order 2006-0003-DWQ, for Sanitary Sewer Overflow (SSO) definition]
CATEGORY 1	Discharges of untreated or partially treated wastewater of <u>any volume</u> resulting from an enrollee's sanitary sewer system failure or flow condition that: <ul style="list-style-type: none">• Reach surface water and/or reach a drainage channel tributary to a surface water; or• Reach a Municipal Separate Storm Sewer System (MS4) and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond).
CATEGORY 2	Discharges of untreated or partially treated wastewater of <u>1,000 gallons or greater</u> resulting from an enrollee's sanitary sewer system failure or flow condition that <u>do not</u> reach surface water, a drainage channel, or a MS4 unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.
CATEGORY 3	All other discharges of untreated or partially treated wastewater resulting from an enrollee's sanitary sewer system failure or flow condition.
PRIVATE LATERAL SEWAGE DISCHARGE (PLSD)	Discharges of untreated or partially treated wastewater resulting from blockages or other problems <u>within a privately owned sewer lateral</u> connected to the enrollee's sanitary sewer system or from other private sewer assets. PLSDs that the enrollee becomes aware of may be <u>voluntarily</u> reported to the California Integrated Water Quality System (CIWQS) Online SSO Database.

Table 2 – Notification, Reporting, Monitoring, and Record Keeping Requirements

ELEMENT	REQUIREMENT	METHOD
NOTIFICATION (see section B of MRP)	<ul style="list-style-type: none"> Within two hours of becoming aware of any Category 1 SSO <u>greater than or equal to 1,000 gallons discharged to surface water or spilled in a location where it probably will be discharged to surface water</u>, notify the California Office of Emergency Services (Cal OES) and obtain a notification control number. 	Call Cal OES at: (800) 852-7550
REPORTING (see section C of MRP)	<ul style="list-style-type: none"> Category 1 SSO: Submit draft report within three business days of becoming aware of the SSO and certify within 15 calendar days of SSO end date. Category 2 SSO: Submit draft report within 3 business days of becoming aware of the SSO and certify within 15 calendar days of the SSO end date. Category 3 SSO: Submit certified report within 30 calendar days of the end of month in which SSO the occurred. SSO Technical Report: Submit within 45 calendar days after the end date of any Category 1 SSO in which 50,000 gallons or greater are spilled to surface waters. “No Spill” Certification: Certify that no SSOs occurred within 30 calendar days of the end of the month or, if reporting quarterly, the quarter in which no SSOs occurred. Collection System Questionnaire: Update and certify every 12 months. 	Enter data into the CIWQS Online SSO Database (http://ciwqs.waterboards.ca.gov/), certified by enrollee’s Legally Responsible Official(s).
WATER QUALITY MONITORING (see section D of MRP)	<ul style="list-style-type: none"> Conduct water quality sampling <u>within 48 hours</u> after initial SSO notification for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters. 	Water quality results are required to be uploaded into CIWQS for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters.
RECORD KEEPING (see section E of MRP)	<ul style="list-style-type: none"> SSO event records. Records documenting Sanitary Sewer Management Plan (SSMP) implementation and changes/updates to the SSMP. Records to document Water Quality Monitoring for SSOs of 50,000 gallons or greater spilled to surface waters. Collection system telemetry records if relied upon to document and/or estimate SSO Volume. 	Self-maintained records shall be available during inspections or upon request.

B. NOTIFICATION REQUIREMENTS

Although Regional Water Quality Control Boards (Regional Water Boards) and the State Water Board (collectively, the Water Boards) staff do not have duties as first responders, this MRP is an appropriate mechanism to ensure that the agencies that have first responder duties are notified in a timely manner in order to protect public health and beneficial uses.

1. For any Category 1 SSO greater than or equal to 1,000 gallons that results in a discharge to a surface water or spilled in a location where it probably will be discharged to surface water, either directly or by way of a drainage channel or MS4, the enrollee shall, as soon as possible, but not later than two (2) hours after (A) the enrollee has knowledge of the discharge, (B) notification is possible, and (C) notification can be provided without substantially impeding cleanup or other emergency measures, notify the Cal OES and obtain a notification control number.
2. To satisfy notification requirements for each applicable SSO, the enrollee shall provide the information requested by Cal OES before receiving a control number. Spill information requested by Cal OES may include:
 - i. Name of person notifying Cal OES and direct return phone number.
 - ii. Estimated SSO volume discharged (gallons).
 - iii. If ongoing, estimated SSO discharge rate (gallons per minute).
 - iv. SSO Incident Description:
 - a. Brief narrative.
 - b. On-scene point of contact for additional information (name and cell phone number).
 - c. Date and time enrollee became aware of the SSO.
 - d. Name of sanitary sewer system agency causing the SSO.
 - e. SSO cause (if known).
 - v. Indication of whether the SSO has been contained.
 - vi. Indication of whether surface water is impacted.
 - vii. Name of surface water impacted by the SSO, if applicable.
 - viii. Indication of whether a drinking water supply is or may be impacted by the SSO.
 - ix. Any other known SSO impacts.
 - x. SSO incident location (address, city, state, and zip code).
3. Following the initial notification to Cal OES and until such time that an enrollee certifies the SSO report in the CIWQS Online SSO Database, the enrollee shall provide updates to Cal OES regarding substantial changes to the estimated volume of untreated or partially treated sewage discharged and any substantial change(s) to known impact(s).
4. PLSDs: The enrollee is strongly encouraged to notify Cal OES of discharges greater than or equal to 1,000 gallons of untreated or partially treated wastewater that result or may result in a discharge to surface water resulting from failures or flow conditions within a privately owned sewer lateral or from other private sewer asset(s) if the enrollee becomes aware of the PLSD.

C. REPORTING REQUIREMENTS

1. **CIWQS Online SSO Database Account:** All enrollees shall obtain a CIWQS Online SSO Database account and receive a “Username” and “Password” by registering through CIWQS. These accounts allow controlled and secure entry into the CIWQS Online SSO Database.
2. **SSO Mandatory Reporting Information:** For reporting purposes, if one SSO event results in multiple appearance points in a sewer system asset, the enrollee shall complete one SSO report in the CIWQS Online SSO Database which includes the GPS coordinates for the location of the SSO appearance point closest to the failure point, blockage or location of the flow condition that caused the SSO, and provide descriptions of the locations of all other discharge points associated with the SSO event.
3. **SSO Categories**
 - i. **Category 1** – Discharges of untreated or partially treated wastewater of any volume resulting from an enrollee’s sanitary sewer system failure or flow condition that:
 - a. Reach surface water and/or reach a drainage channel tributary to a surface water; or
 - b. Reach a MS4 and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond).
 - ii. **Category 2** – Discharges of untreated or partially treated wastewater greater than or equal to 1,000 gallons resulting from an enrollee’s sanitary sewer system failure or flow condition that does not reach a surface water, a drainage channel, or the MS4 unless the entire SSO volume discharged to the storm drain system is fully recovered and disposed of properly.
 - iii. **Category 3** – All other discharges of untreated or partially treated wastewater resulting from an enrollee’s sanitary sewer system failure or flow condition.
4. **Sanitary Sewer Overflow Reporting to CIWQS - Timeframes**
 - i. **Category 1 and Category 2 SSOs** – All SSOs that meet the above criteria for Category 1 or Category 2 SSOs shall be reported to the CIWQS Online SSO Database:
 - a. Draft reports for Category 1 and Category 2 SSOs shall be submitted to the CIWQS Online SSO Database within three (3) business days of the enrollee becoming aware of the SSO. Minimum information that shall be reported in a draft Category 1 SSO report shall include all information identified in section 8.i.a. below. Minimum information that shall be reported in a Category 2 SSO draft report shall include all information identified in section 8.i.c below.
 - b. A final Category 1 or Category 2 SSO report shall be certified through the CIWQS Online SSO Database within 15 calendar days of the end date of the SSO. Minimum information that shall be certified in the final Category 1 SSO report shall include all information identified in section 8.i.b below. Minimum information that shall be certified in a final Category 2 SSO report shall include all information identified in section 8.i.d below.

- ii. **Category 3 SSOs** – All SSOs that meet the above criteria for Category 3 SSOs shall be reported to the CIWQS Online SSO Database and certified within 30 calendar days after the end of the calendar month in which the SSO occurs (e.g., all Category 3 SSOs occurring in the month of February shall be entered into the database and certified by March 30). Minimum information that shall be certified in a final Category 3 SSO report shall include all information identified in section 8.i.e below.
- iii. **“No Spill” Certification** – If there are no SSOs during the calendar month, the enrollee shall either 1) certify, within 30 calendar days after the end of each calendar month, a “No Spill” certification statement in the CIWQS Online SSO Database certifying that there were no SSOs for the designated month, or 2) certify, quarterly within 30 calendar days after the end of each quarter, “No Spill” certification statements in the CIWQS Online SSO Database certifying that there were no SSOs for each month in the quarter being reported on. For quarterly reporting, the quarters are Q1 - January/ February/ March, Q2 - April/May/June, Q3 - July/August/September, and Q4 - October/November/December.

If there are no SSOs during a calendar month but the enrollee reported a PLSD, the enrollee shall still certify a “No Spill” certification statement for that month.
- iv. **Amended SSO Reports** – The enrollee may update or add additional information to a certified SSO report within 120 calendar days after the SSO end date by amending the report or by adding an attachment to the SSO report in the CIWQS Online SSO Database. SSO reports certified in the CIWQS Online SSO Database prior to the adoption date of this MRP may only be amended up to 120 days after the effective date of this MRP. After 120 days, the enrollee may contact the SSO Program Manager to request to amend an SSO report if the enrollee also submits justification for why the additional information was not available prior to the end of the 120 days.

5. **SSO Technical Report**

The enrollee shall submit an SSO Technical Report in the CIWQS Online SSO Database within 45 calendar days of the SSO end date for any SSO in which 50,000 gallons or greater are spilled to surface waters. This report, which does not preclude the Water Boards from requiring more detailed analyses if requested, shall include at a minimum, the following:

- i. **Causes and Circumstances of the SSO:**
 - a. Complete and detailed explanation of how and when the SSO was discovered.
 - b. Diagram showing the SSO failure point, appearance point(s), and final destination(s).
 - c. Detailed description of the methodology employed and available data used to calculate the volume of the SSO and, if applicable, the SSO volume recovered.
 - d. Detailed description of the cause(s) of the SSO.
 - e. Copies of original field crew records used to document the SSO.
 - f. Historical maintenance records for the failure location.
- ii. **Enrollee’s Response to SSO:**
 - a. Chronological narrative description of all actions taken by enrollee to terminate the spill.
 - b. Explanation of how the SSMP Overflow Emergency Response plan was implemented to respond to and mitigate the SSO.

- c. Final corrective action(s) completed and/or planned to be completed, including a schedule for actions not yet completed.

iii. **Water Quality Monitoring:**

- a. Description of all water quality sampling activities conducted including analytical results and evaluation of the results.
- b. Detailed location map illustrating all water quality sampling points.

6. **PLSDs**

Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the enrollee's sanitary sewer system or from other private sanitary sewer system assets may be voluntarily reported to the CIWQS Online SSO Database.

- i. The enrollee is also encouraged to provide notification to Cal OES per section B above when a PLSD greater than or equal to 1,000 gallons has or may result in a discharge to surface water. For any PLSD greater than or equal to 1,000 gallons regardless of the spill destination, the enrollee is also encouraged to file a spill report as required by Health and Safety Code section 5410 et. seq. and Water Code section 13271, or notify the responsible party that notification and reporting should be completed as specified above and required by State law.
- ii. If a PLSD is recorded in the CIWQS Online SSO Database, the enrollee must identify the sewage discharge as occurring and caused by a private sanitary sewer system asset and should identify a responsible party (other than the enrollee), if known. Certification of PLSD reports by enrollees is not required.

7. **CIWQS Online SSO Database Unavailability**

In the event that the CIWQS Online SSO Database is not available, the enrollee must fax or e-mail all required information to the appropriate Regional Water Board office in accordance with the time schedules identified herein. In such event, the enrollee must also enter all required information into the CIWQS Online SSO Database when the database becomes available.

8. **Mandatory Information to be Included in CIWQS Online SSO Reporting**

All enrollees shall obtain a CIWQS Online SSO Database account and receive a "Username" and "Password" by registering through CIWQS which can be reached at CIWQS@waterboards.ca.gov or by calling (866) 792-4977, M-F, 8 A.M. to 5 P.M. These accounts will allow controlled and secure entry into the CIWQS Online SSO Database. Additionally, within thirty (30) days of initial enrollment and prior to recording SSOs into the CIWQS Online SSO Database, all enrollees must complete a Collection System Questionnaire (Questionnaire). The Questionnaire shall be updated at least once every 12 months.

i. **SSO Reports**

At a minimum, the following mandatory information shall be reported prior to finalizing and certifying an SSO report for each category of SSO:

- a. **Draft Category 1 SSOs:** At a minimum, the following mandatory information shall be reported for a draft Category 1 SSO report:
1. SSO Contact Information: Name and telephone number of enrollee contact person who can answer specific questions about the SSO being reported.
 2. SSO Location Name.
 3. Location of the overflow event (SSO) by entering GPS coordinates. If a single overflow event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the SSO appearance point explanation field.
 4. Whether or not the SSO reached surface water, a drainage channel, or entered and was discharged from a drainage structure.
 5. Whether or not the SSO reached a municipal separate storm drain system.
 6. Whether or not the total SSO volume that reached a municipal separate storm drain system was fully recovered.
 7. Estimate of the SSO volume, inclusive of all discharge point(s).
 8. Estimate of the SSO volume that reached surface water, a drainage channel, or was not recovered from a storm drain.
 9. Estimate of the SSO volume recovered (if applicable).
 10. Number of SSO appearance point(s).
 11. Description and location of SSO appearance point(s). If a single sanitary sewer system failure results in multiple SSO appearance points, each appearance point must be described.
 12. SSO start date and time.
 13. Date and time the enrollee was notified of, or self-discovered, the SSO.
 14. Estimated operator arrival time.
 15. For spills greater than or equal to 1,000 gallons, the date and time Cal OES was called.
 16. For spills greater than or equal to 1,000 gallons, the Cal OES control number.
- b. **Certified Category 1 SSOs:** At a minimum, the following mandatory information shall be reported for a certified Category 1 SSO report, in addition to all fields in section 8.i.a :
1. Description of SSO destination(s).
 2. SSO end date and time.
 3. SSO causes (mainline blockage, roots, etc.).
 4. SSO failure point (main, lateral, etc.).
 5. Whether or not the spill was associated with a storm event.
 6. Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the overflow; and a schedule of major milestones for those steps.
 7. Description of spill response activities.
 8. Spill response completion date.
 9. Whether or not there is an ongoing investigation, the reasons for the investigation and the expected date of completion.

10. Whether or not a beach closure occurred or may have occurred as a result of the SSO.
 11. Whether or not health warnings were posted as a result of the SSO.
 12. Name of beach(es) closed and/or impacted. If no beach was impacted, NA shall be selected.
 13. Name of surface water(s) impacted.
 14. If water quality samples were collected, identify parameters the water quality samples were analyzed for. If no samples were taken, NA shall be selected.
 15. If water quality samples were taken, identify which regulatory agencies received sample results (if applicable). If no samples were taken, NA shall be selected.
 16. Description of methodology(ies) and type of data relied upon for estimations of the SSO volume discharged and recovered.
 17. SSO Certification: Upon SSO Certification, the CIWQS Online SSO Database will issue a final SSO identification (ID) number.
- c. **Draft Category 2 SSOs**: At a minimum, the following mandatory information shall be reported for a draft Category 2 SSO report:
1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO.
- d. **Certified Category 2 SSOs**: At a minimum, the following mandatory information shall be reported for a certified Category 2 SSO report:
1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO and Items 1-9, and 17 in section 8.i.b above for Certified Category 1 SSO.
- e. **Certified Category 3 SSOs**: At a minimum, the following mandatory information shall be reported for a certified Category 3 SSO report:
1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO and Items 1-5, and 17 in section 8.i.b above for Certified Category 1 SSO.
- ii. **Reporting SSOs to Other Regulatory Agencies**
- These reporting requirements do not preclude an enrollee from reporting SSOs to other regulatory agencies pursuant to state law. In addition, these reporting requirements do not replace other Regional Water Board notification and reporting requirements for SSOs.
- iii. **Collection System Questionnaire**
- The required Questionnaire (see subsection G of the SSS WDRs) provides the Water Boards with site-specific information related to the enrollee's sanitary sewer system. The enrollee shall complete and certify the Questionnaire at least every 12 months to facilitate program implementation, compliance assessment, and enforcement response.
- iv. **SSMP Availability**
- The enrollee shall provide the publicly available internet web site address to the CIWQS Online SSO Database where a downloadable copy of the enrollee's approved SSMP, critical supporting documents referenced in the SSMP, and proof of local governing board approval of the SSMP is posted. If all of the SSMP documentation listed in this subsection is not publicly available on the Internet, the enrollee shall comply with the following procedure:

- a. Submit an **electronic** copy of the enrollee's approved SSMP, critical supporting documents referenced in the SSMP, and proof of local governing board approval of the SSMP to the State Water Board, within 30 days of that approval and within 30 days of any subsequent SSMP re-certifications, to the following mailing address:

State Water Resources Control Board
Division of Water Quality
Attn: SSO Program Manager
1001 I Street, 15th Floor, Sacramento, CA 95814

D. WATER QUALITY MONITORING REQUIREMENTS:

To comply with subsection D.7(v) of the SSS WDRs, the enrollee shall develop and implement an SSO Water Quality Monitoring Program to assess impacts from SSOs to surface waters in which 50,000 gallons or greater are spilled to surface waters. The SSO Water Quality Monitoring Program, shall, at a minimum:

1. Contain protocols for water quality monitoring.
2. Account for spill travel time in the surface water and scenarios where monitoring may not be possible (e.g. safety, access restrictions, etc.).
3. Require water quality analyses for ammonia and bacterial indicators to be performed by an accredited or certified laboratory.
4. Require monitoring instruments and devices used to implement the SSO Water Quality Monitoring Program to be properly maintained and calibrated, including any records to document maintenance and calibration, as necessary, to ensure their continued accuracy.
5. Within 48 hours of the enrollee becoming aware of the SSO, require water quality sampling for, at a minimum, the following constituents:
 - i. Ammonia
 - ii. Appropriate Bacterial indicator(s) per the applicable Basin Plan water quality objective or Regional Board direction which may include total and fecal coliform, enterococcus, and e-coli.

E. RECORD KEEPING REQUIREMENTS:

The following records shall be maintained by the enrollee for a minimum of five (5) years and shall be made available for review by the Water Boards during an onsite inspection or through an information request:

1. General Records: The enrollee shall maintain records to document compliance with all provisions of the SSS WDRs and this MRP for each sanitary sewer system owned including any required records generated by an enrollee's sanitary sewer system contractor(s).
2. SSO Records: The enrollee shall maintain records for each SSO event, including but not limited to:
 - i. Complaint records documenting how the enrollee responded to all notifications of possible or actual SSOs, both during and after business hours, including complaints that do not

result in SSOs. Each complaint record shall, at a minimum, include the following information:

- a. Date, time, and method of notification.
 - b. Date and time the complainant or informant first noticed the SSO.
 - c. Narrative description of the complaint, including any information the caller can provide regarding whether or not the complainant or informant reporting the potential SSO knows if the SSO has reached surface waters, drainage channels or storm drains.
 - d. Follow-up return contact information for complainant or informant for each complaint received, if not reported anonymously.
 - e. Final resolution of the complaint.
- ii. Records documenting steps and/or remedial actions undertaken by enrollee, using all available information, to comply with section D.7 of the SSS WDRs.
 - iii. Records documenting how all estimate(s) of volume(s) discharged and, if applicable, volume(s) recovered were calculated.
3. Records documenting all changes made to the SSMP since its last certification indicating when a subsection(s) of the SSMP was changed and/or updated and who authorized the change or update. These records shall be attached to the SSMP.
 4. Electronic monitoring records relied upon for documenting SSO events and/or estimating the SSO volume discharged, including, but not limited to records from:
 - i. Supervisory Control and Data Acquisition (SCADA) systems
 - ii. Alarm system(s)
 - iii. Flow monitoring device(s) or other instrument(s) used to estimate wastewater levels, flow rates and/or volumes.

F. CERTIFICATION

1. All information required to be reported into the CIWQS Online SSO Database shall be certified by a person designated as described in subsection J of the SSS WDRs. This designated person is also known as a Legally Responsible Official (LRO). An enrollee may have more than one LRO.
2. Any designated person (i.e. an LRO) shall be registered with the State Water Board to certify reports in accordance with the CIWQS protocols for reporting.
3. Data Submitter (DS): Any enrollee employee or contractor may enter draft data into the CIWQS Online SSO Database on behalf of the enrollee if authorized by the LRO and registered with the State Water Board. However, only LROs may certify reports in CIWQS.
4. The enrollee shall maintain continuous coverage by an LRO. Any change of a registered LRO or DS (e.g., retired staff), including deactivation or a change to the LRO's or DS's contact information, shall be submitted by the enrollee to the State Water Board within 30 days of the change by calling (866) 792-4977 or e-mailing help@ciwqs.waterboards.ca.gov.

5. A registered designated person (i.e., an LRO) shall certify all required reports under penalty of perjury laws of the state as stated in the CIWQS Online SSO Database at the time of certification.

CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of an order amended by the Executive Director of the State Water Resources Control Board.

Date

7/30/13


Jeanine Townsend
Clerk to the Board

APPENDIX J

Sanitary Sewer Overflow Technical Report Outline

RESPONSE AND REPORTING PROCEDURES FOR SANITARY SEWER OVERFLOWS
AND SEWER OR STORMWATER CONTAMINATION

December 9, 2013

Page 1

Sanitary Sewer Overflow Technical Report¹

A SSO Technical Report shall be submitted in the CIWQS Database within 45 calendar days of the SSO end date for any SSO in which 50,000 gallons or greater are spilled to surface waters. This report, which does not preclude the Water Boards from requiring more detailed analysis if requested, shall include, at a minimum, the following:

i. **Causes and Circumstances of the SSO:**

- a. Complete and detailed explanation of how and when the SSO was discovered
- b. Diagram showing the SSO failure point, appearance point(s), and final destination(s).
- c. Detailed description of the methodology employed and available data used to calculate the volume of the SSO and, if applicable, the SSO volume recovered.
- d. Detailed description of the cause(s) of the SSO.
- e. Copies of the original field crew records used to document the SSO.
- f. Historical maintenance records for the failure location.

ii. **Response to the SSO:**

- a. Chronological narrative description of all actions taken to terminate the spill.
- b. Explanation of how the SSMP Overflow Emergency Response Plan was implemented to respond to and mitigate the SSO.
- c. Final corrective action(s) completed and/or planned to be completed, including a schedule for actions not yet completed.

iii. **Water Quality Monitoring**

- a. Description of all water quality sampling activities conducted including analytical results and evaluation of the results.
- b. Detailed location map illustrating all water quality sampling points.

¹ MRP Order 2013-0058-EXEC, Section 5