

Section IX – Monitoring, Measurement, and Program Modifications

Background and Regulatory Requirements

The Statewide WDRs governing sanitary sewers specify that each Wastewater Collection Agency shall:

- maintain relevant information that can be used to establish and prioritize appropriate SSMP activities,
- monitor the implementation and measure the effectiveness of each element of the SSMP,
- assess the success of the preventative maintenance program,
- update program elements, as appropriate based on monitoring or performance evaluations, and
- identify and illustrate SSO trends, including frequency, location, and volume.

Maintaining the applicability of the SSMP to District activities necessitates ongoing evaluation of the activities the District performs, their success, and improvement if necessary. The first two of the following sections describe the ongoing evaluation of SSOs as they occur and discussion of preventative maintenance evaluations. The last sections describes the SSMP Evaluation Checklist used on an annual basis to evaluate the applicability and effectiveness of the District's SSMP. Completion of this evaluation will run concurrent with the annual SSMP audit.

Leucadia Wastewater District Actions

SSO Occurrences and Evaluation

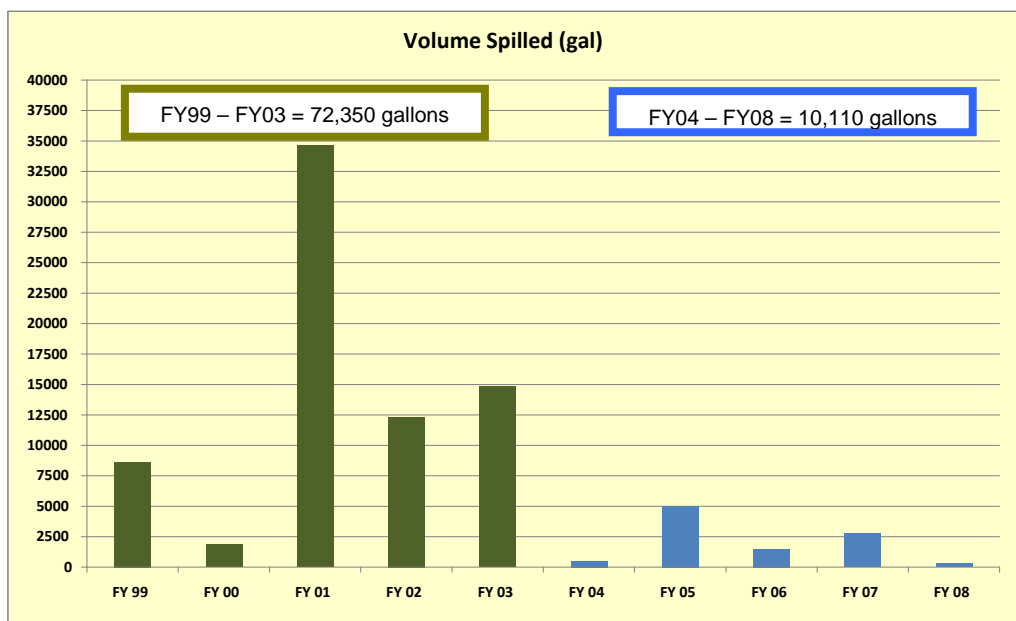
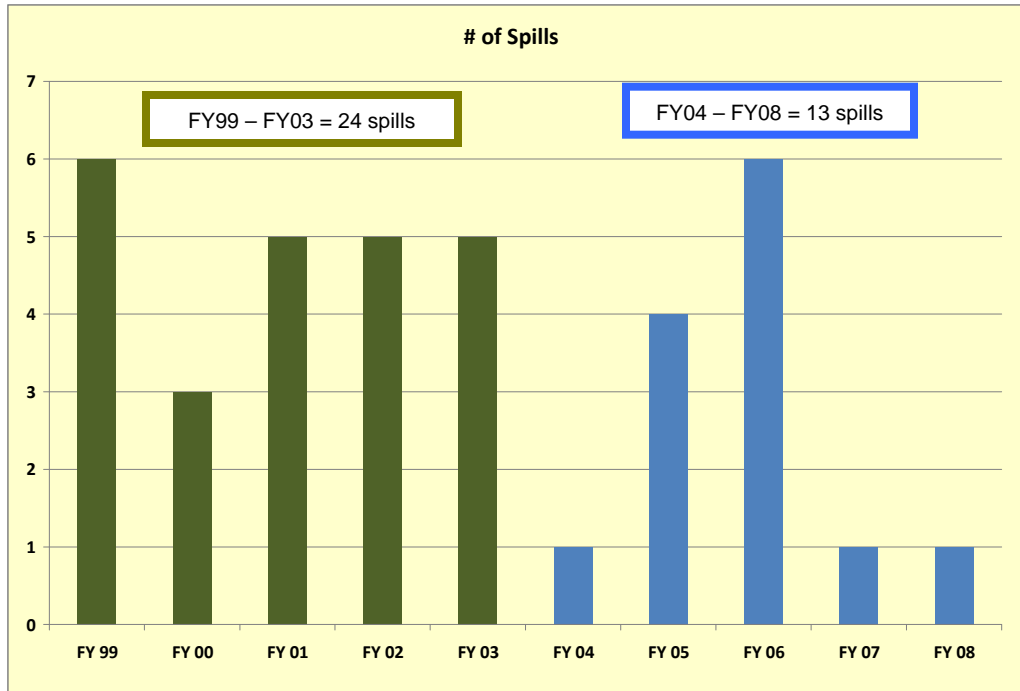
There have been a small number of spills in the District with small flow volumes. For each spill, the District staff critically evaluates the cause and identifies steps to prevent future spills. The District maintains the LWD Spill Summary which lists all spills dating back to 1996. The summary identifies the date, time, location, cause, size, and steps taken to mitigate and prelude future spills. All spills are included on this list whether public or private and regardless of whether the conditions required reporting to the regional board. The spill summary is included as an attachment to this section. This summary is continually updated and can be checked against California's spill database at:

http://www.waterboards.ca.gov/water_issues/programs/ciwqs/publicreports.shtml

As part of the District's spill response, a debriefing is held by key staff to review the cause of the every spill. The spill summary is updated and carefully reviewed for trends in frequency, location, and volume as part of completing the Spill Review Checklist (Attachment J to the Overflow Emergency Response Plan).

Preventative Maintenance Program Evaluation

A review of the District's recent spill history, clearly demonstrates the District's present preventative maintenance program has been successful. The graph below illustrates the decrease in the occurrence and volume of spills over the last ten years. This has been accomplished by implementing programs to minimize spills in addition to incentivizing District staff to maintain a low spill record. Examples of preventative maintenance programs implemented to address spill causes are discussed in the following paragraphs.



Since the addition of the second vactor crew in 2000, the majority of the spill causes have been due to unforeseen events that are neither indicators of a lacking preventative maintenance program nor capacity related. In those cases where a potential systematic problem was identified, the District implemented procedures or developed a solution to minimize or eliminate the spill cause. For example, in 2001 and 2002, there were two spills which occurred as a result of failed air release valves on the force mains. To mitigate this, the District replaced all of the air release valves on the two force mains of interest. Additionally, on a semiannual basis, field staff exercise and service, as necessary, all of the District's air release valves. The locations of the air release valves are maintained in the database and CWMS work orders are generated for these activities.

In review of spill causes, the District noticed an unusual number of spills due to unaccepted sewer lines still in construction by private developers. In response to this, a preventative maintenance program was instituted to monthly inspect any temporary construction connection plugs or traps. This is performed by a third party administrator on a monthly basis and reported to the District.

Although the District does not have a formal FOG control program, as discussed in Section VII of the SSMP, the District is aware of all food establishments in the District and has sufficient legal authority through the District's Wastewater Ordinance to appropriately address any FOG issues that arise with a District customer. With that said, the District will implement a formal FOG control program if the following conditions are met:

- If there are two occurrences of FOG related spills within a 500 foot length of gravity sewer line within 24 months, and
- If in review of the location of the 500 foot length it is reasonable that the cause is from food establishment and not a private residence, or
- Video inspection of an area clearly indicates that food establishments are not in compliance.

In addition to the District's active field preventative maintenance program, implementation of the Asset Management Master Plan also provides the mechanism for evaluating the integrity of the District's collection system assets. The Asset Management Master Plan included a predictive failure model to identify the relative failure potential of the District's gravity pipelines and manholes.

With a prioritized list in hand, the District is then evaluating the integrity of these lines and manholes via video inspection. The lines and manholes are then either identified for rehabilitation or replacement or placed back on the list for the next predictive failure cycle of evaluation. In addition to evaluation of the assets, the integrity inspections will also feedback to the workings of the predictive failure model and any updates or adjustments necessary to the model will be included. For example, the evaluation may determine that identifying the presence of a liner in either the pipeline or manhole would enhance useful life of the asset.

Monitoring, Measuring, and Modifying the SSMP Sections

Evaluation of SSO trends and the preventative maintenance program are the key elements of measuring the success of the District's SSMP. To ensure that all elements of the SSMP are implemented, relevant, and effective, the following evaluation is conducted on an annual basis concurrent with the SSMP Audit. The evaluation is conducted by the responsible party as identified in the implementation plan and schedule of SSMP Section 2. The evaluations, along with the annual SSMP audits, will be included with the next revision of the SSMP.

Additional discussion regarding the inter-relationship between the District's Organization, Goals, and Legal Authority is provided in the following paragraph to capture how these influence each other.

District Organization, Goals, and Legal Authority - On an annual fiscal year basis, the District Board of Directors reviews and adopts its Tactics and Action Plan to accomplish the goals defined in the *Leucadia Wastewater District Strategic Plan*. In turn, implementation of the Strategic Plan is a component of the District's broader Mission and Goals, which are also reviewed and adopted by the Board of Directors.

A core component of the Strategic Plan is a Situational Analysis which (1) reviews the past and present external business environment and internal abilities of the organization and (2) evaluates the strengths, weaknesses, opportunities, and threats of the District. Changes to the results of the current Situational Analysis could result in revising the Strategic Plan and thus the District's Mission and Goals. In addition to the District's Goals and Organization, the District's Legal Authority would be impacted and revised based on changes to the current Situational Analysis of the Strategic Plan. For example, should regulatory compliance issues increase, additional staff may be required.

District Documents Included In This Section

- LWD Spill Summary
- Overflow Emergency Response Plan, Attachment J – Spill Review Checklist
- SSMP Evaluation Checklist

Leucadia Wastewater District 1960 La Costa Avenue, Carlsbad, CA 92026 (760) 753-0155
Spill Summary (7/1/96 through 6/3/09)

<i>Date</i>	<i>Time</i>	<i>Vol (gal)</i>	<i>Dur-ation</i>	<i>Location of spill</i>	<i>City</i>	<i>Type of structure</i>	<i>Destination of spill</i>	<i>Beach posted</i>	<i>Cause of spill</i>	<i>Steps taken to mitigate effects of spill</i>	<i>Spill #</i>	<i>OES #</i>
12/10/1996	0700	800	60	1910 Saxony Road	Carlsbad	pump station	contained at pump station	no	power outage	Pump station outfitted with emergency generator		
6/6/1998	0830	750	30	2804 La Costa Avenue	Carlsbad	manhole	storm drain/San Marcos Creek	no	roots in 8 inch main sewer line	Root saw/CCTV Inspection	98-002	
7/10/1998	1150	200	130	2919 Segovia Way	Carlsbad	manhole	contained on site	no	contractor pushed dirt into manhole	District is member of USA Dig Alert	98-003	
8/29/1998	2230	150	50	2912 Managua	Carlsbad	manhole	storm drain/Batiquitos Lagoon	no	contractor left debris in main line	District Construction Manager meet with contractor	98-004	
10/7/1998	0825	200	20	1021 Hermes	Carlsbad	3 inch cleanout	contained and pumped to sewer	no	roots from private lateral	Root saw/CCTV Inspection	98-007	
12/2/1998	1025	100	20	La Costa Driving Range	Carlsbad	bypass pipeline	contained and pumped to sewer	no	contractor pump bypass line failed	by pass pump stopped immediately	98-008	
12/13/1998	0630	6,000	30	1960 La Costa Avenue	Carlsbad	sewer pipeline	storm drain/Batiquitos Lagoon	yes	corrosion of pipe	District replaced 500 ft of pipeline with PVC pipe	98-009	
3/4/1999	0710	2,000	80	1960 La Costa Avenue	Carlsbad	sewer pipeline	storm drain/Batiquitos Lagoon	yes	corrosion of pipe	District replaced 500 ft of pipeline with PVC pipe	99-001	
10/9/1999	1007	750	30	Piraeus @ Olympus	Encintas	manhole	storm drain/Batiquitos Lagoon	no	debris (possibly construction)	debris removed	99-002	
4/9/2000	1100	500	10	6547 Avenida Del Paraiso	Carlsbad	pump station	storm drain/San Marcos Creek	no	power outage	District has purchased second emergency generator	000001	
4/19/2000	1200	600	30	Rancho Santa Fe Rd @ Paseo Texco	Carlsbad	manhole	storm drain/Batiquitos Lagoon	no	vandalism	District install bolt down manhole covers in this area	000002	
11/18/2000	0740	420	10	Altisma @ Alicante	Carlsbad	manhole	storm drain/San Marcos creek	no	grease stoppage	District added second vector crew	000003	00-5423
11/21/2000	1923	420	57	7614 Calle Madero	Carlsbad	manhole	contained on site	no	roots/grease stoppage	District added second vector crew	000004	
11/30/2000	1100	500	50	Calina Way	Carlsbad	manhole	storm drain/dry wash	no	grease stoppage	District added second vector crew	000005	
1/9/2001	0611	28,400	44	La Costa Avenue @ El Camino Real	Carlsbad	air vacuum release valve	storm drain/Batiquitos Lagoon	yes	failed air vacuum release valve	District replaced air vac release	001001	01-0146

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Spill Summary (7/1/96 through 6/3/09)

Date	Time	Vol (gal)	Duration	Location of spill	City	Type of structure	Destination of spill	Beach posted	Cause of spill	Steps taken to mitigate effects of spill	Spill #	OES #
3/21/2001	1915	4,900	35	1960 La Costa Avenue	Carlsbad	pump station	contained on site	no	failure of pressure switch	District has added additional alarms	001003	01-1713
10/21/2001	1059	100	10	6547 Avenida Del Paraiso	Carlsbad	pump station	storm drain/San Marcos Creek	no	power outage	District has purchased second emergency generator	001005	
12/3/2001	1020	750	50	1900 Coast Hwy	Encinitas	manhole # 02-0490	storm drain/Batiquitos Lagoon	no	grease stoppage	Manhole put on trouble spot list for qtrly cleaning	001006	
4/3/2002	1330	10,000	40	Hwy 101 @ Avenida Encinas	Carlsbad	airvac # B2 - 020	storm drain/Batiquitos Lagoon	yes	corroded fitting	District replaced all air vacs on B2 & B3 forcemains	002001	02-1849
5/12/2002	0906	200	44	7400 Alicante Blvd	Carlsbad	manhole # 11-1105	contained on site	no	roots coming in from unused lateral	Manhole put on trouble spot list for qtrly cleaning	002002	
6/30/2002	2320	1,300	65	7500 Gibraltar St	Carlsbad	manhole # 10-1870	storm drain/San Marcos Creek	no	construction debris/grit	Manhole on trouble spot list	002003	02-3578
8/14/2002	1500	900	45	Costa del Mar Rd	Carlsbad	manhole # 11-0760	contained on site	no	roots coming in at dead end manhole	Manhole put on trouble spot list for qtrly cleaning	002005	
9/2/2002	0843	600	34	Corinthia	Carlsbad	manhole # 11-6065	storm Drain/San Marcos Creek	no	external cost. Debris/pieces concrete	Manhole put on trouble spot list for qtrly cleaning	002006	
2/7/2003	0937	50	26	418 Hillcrest Drive	Encinitas	manhole # 03-0560	storm drain/Batiquitos Lagoon	no	roots from lateral 361 Hillcrest	Lateral letters, TVI, clean all mains on Hillcrest	003001	
2/12/2003	1645	10,000	30	Hwy 101 @ Batiquitos Pump Station	Carlsbad	Vactor dump pit at Bat psta	Batiquitos Lagoon/Pacific Ocean	yes	2 of 3 VFD's destroyed by voltage surge	Mechanical Pump, new VFD's, Surge protection	003002	03-0820
3/19/2003	0657	900	50	7504 Gibraltar St	Carlsbad	manhole # 10-1870	San Marcos Creek/Bat Lagoon	yes	roots & rocks	Manhole put on trouble spot list for qtrly cleaning	003003	03-1510
5/28/2003	0830	810	41	Saxony Rd (S of La Costa Ave)	Encinitas	manhole # 04-0670	contained in desilting basin	no	roots and debris	Manhole put on trouble spot list for qtrly cleaning	003004	
9/8/2003	0723	500	22	1100 Rcho Santa Fe Rd	Encinitas	manhole # 08-0390	storm drain/Batiquitos Lagoon	no	construction debris	TVI, clean all lines on Rcho Santa Fe	003005	
10/1/2004	0900	200	5	Hwy 101 @ Avenida Encinas	Carlsbad	airvac # B3 - 030	percolated in ground - no storm	no	Contractor left drain valve open	Drain valves plugged all air vacs - removed handles	004001	
10/20/2004	1022	3,000	15	Alga Road @ Almaden	Carlsbad	unaccepted manhole	San Marcos Creek/Bat Lagoon	yes	Developer left manhole open in rain	Placed bulkhead in Public sewer at connection	004002	04-5474

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Date	Time	Vol (gal)	Duration	Location of spill	City	Type of structure	Destination of spill	Beach posted	Cause of spill	Steps taken to mitigate effects of spill	Spill #	OES #
1/30/2005	1008	800	40	Meadows 1 force main	Carlsbad	pump station	storm drain - percolated in arroyo	no	Ductile Iron Pipe holed	Repaired forcemain - station sked for demob	005001	
2/15/2005	0915	50	33	7683 Sequoia St	Carlsbad	recently accepted manhole	storm drain	no	miscommunication about installed plug	removed plug - instituted manhole plug protocol	005002	
2/18/2005	0858	720	12	7504 Gibraltar St	Carlsbad	manhole # 10-1855	storm drain/San Marcos Creek	no	grit and grease in flat line	Manhole on list for qtrly cleaning - CCTV	005003	
4/13/2005	1020	10	10	N Coast Hwy @ Bat Lagoon Bridge	Carlsbad	Air Vac B3-020 AV	water contained on bridge	no	leaking air vac	AV isolated, inspected, cleaned & rtn'd to service	005004	
11/23/2005	0725	1,350	30	Cam de Los Coches @ La Costa Ave	Carlsbad	unaccepted manhole	storm drain - Enc Crk - Bat Lag	no	construction debris	developer installed traps, lines cleaned	005005	05-6775
1/30/2006	1445	30	30	163 La Costa Ave @ Vulcan	Encinitas	manhole # 03-0855	captured all	no	blockage cleared, no cause determined	upstrm & dwnstrm lines cleared	006001	
2/3/2006	1150	20	20	240 Cereus St btwn Hygeia & Hermes	Encinitas	private cleanout	captured all	no	blockage cleared, no cause determined	upstrm & dwnstrm lines cleared	006002	
4/4/2006	0855	100	12	La Costa Ave, 1000yds W of ECR	Carlsbad	airvac # L2-AV-030	dried in curb & gutter	no	debris prevented airvac from seating	new airvac installed	006003	
6/30/2007	0830	2,750	55	2403 Jacaranda Avenue	Carlsbad	manhole # 03-0855	storm drain/Batiquitos Lagoon	no	roots at joint	cleared line, CCTV inspection, repaired joint in-situ	007001	07-3931
11/9/2007	0600	300	29	Estrella del Mar	Carlsbad	manhole # 11-11290	brow ditch	no	construction plug	removed plug from line, accepted sewer line	007002	
9/4/2008	2000	40	50	162 Range Street	Encinitas	cleanout # 02-0240	contained on site	no	Main line blockage (roots from lateral)	cleared line, installed burrito, CCTV inspection	008001	Cat 2
11/4/2008	1630	500	170	1602 Burgundy Road	Encinitas	inside house	contained on site, captured all	no	Main line blockage (roots from lateral)	cleared line, CCTV inspection	008002	Cat 2
11/11/2008	1030	110	95	1540 Caudor Street	Encinitas	inside house	contained on site captured all	no	Main line blockage (rags)	cleared line, CCTV inspection	008003	Cat 2
05/24/2009	1202	100	73	2154 Pleasant Grove Road	Encinitas	manhole # 06-9070	stormdrain	no	Roots at joint	cleared line, CCTV inspection, repaired joint in-situ	009001	09-3897

**Overflow Emergency Response Plan
Attachment J**

Spill Review Checklist		
Checklist Items	YES/Done	NO
Assemble information from:		
a. Emergency Action Report		
b. Work Order / Service Request		
c. Sewer Spill Data Sheet		
Map Location of the Above (provided or attached)		
Compare to previous 5 years and determine if there is a correlation for location		
Review Work Order / Service Request history for correlation with spill location (this includes review of the cleaning schedule and noting the last cleaning date at the spill location.		
a. If correlation, determine if all identified problems have been remedied.		
Record data from Spill Data Sheet to LWD Spill Summary		
Is spill related to food establishment and potentially a FOG related issue?		
a. If line recently cleaned, evaluate whether grease interceptors in area need to be inspected.		
Are there any resources which would have prevented or minimized the occurrence of the spill?		
a. If yes, identify which of the following (can be more than one) could have been improved on:		
i. Staff		
ii. Equipment		
iii. Training		
iv. Coordination with agencies		
v. Other – please explain		
Are there any resources which would have prevented or lessened the environmental impact of the spill?		
a. If yes, identify which of the following (can be more than one) could have been improved on:		
i. Staff		
ii. Equipment		
iii. Training		
iv. Coordination with agencies		
v. Other – please explain		

SSMP Evaluation Checklist

Date Evaluation Completed:

Last Date Checklist Revised: June 10, 2009

Monitoring, Measurement, and Modification Question	Yes	No	Update Needed in SSMP? *
Sections I, II, III (District Goals, Organization, Legal Authority)			
1. Has there been a noticeable change in the Strategic Plan Situational Analysis?			
2. Was the current organizational chart included in the annual financial plan?			
3. Were the District goals addressed in the annual Fiscal Year Tactics & Action Plan?			
4. Has the District's Legal Authority been reviewed considering new regulations?			
5. If appropriate for three year review cycle, has the District's Standard Spec been reviewed for necessary changes?			
6. Was the staff size and organizational chain of command sufficient for implementation of the preventative maintenance programs and SSO spill response?			
7. In review of the spill causes and environmental impacts (if any), would additional staff or a change in District organization lessened or eliminated the spill cause and environmental impact?			
8. In review of the spill causes and environmental impacts (if any), was their sufficient legal authority for the District to respond and take action as necessary?			
Section IV (Preventative Maintenance Program)			
1. Have all new construction or rehabilitation projects been entered into the GIS database?			
2. Have the new pipelines and manholes been included in CWMS?			
3. Were all scheduled preventative maintenance activities in the CWMS completed as scheduled (e.g., hydrocleaning, video inspection, air release valve exercising, pump station inspections, etc.)?			
a. If not, determine cause and if additional staff is necessary to complete required schedule.			
4. Were the pipeline, manhole segments, and pump station integrity inspections as part of the Asset Management Master Plan implementation completed?			
5. Is the Force Main Integrity inspection program on track?			
6. Have the following standard operating procedures been reviewed and up-to-date?			
a. SOP – Hydrocleaning Procedure Gravity System and Manholes			
b. SOP – Video Inspection Procedure			
c. SOP – Inaccessible Line Flushing Procedure			
d. SOP – Pump Station Duties			
7. Has the appropriate ongoing training for these SOPs been conducted and recorded?			
Section V (Design and Performance Provisions)			
1. Has the LWD Standard Spec been sufficient to address design and construction needs?			

SSMP Evaluation Checklist

Date Evaluation Completed:

Last Date Checklist Revised: June 10, 2009

Monitoring, Measurement, and Modification Question	Yes	No	Update Needed in SSMP? *
2. Has the LWD Standard Spec been sufficient to address inspection and testing needs?			
Section VI (Overflow Emergency Response Plan)			
1. Have the following standard operating procedures and their attachments been reviewed and up-to-date?			
a. SOP – Overflow Emergency Response Plan			
b. SOP – Pump Station Alarm Response			
c. SOP – Posting and Sampling Procedure			
d. SOP – SCADA Alarms and Alpha Numeric Pages			
e. SOP – Standby Duty Operator (On Call)			
2. Has the appropriate ongoing training for these SOPs been conducted?			
3. Have the newly hired employees been provided with these procedures and trained on these procedures, as appropriate?			
Section VII (FOG Control Program)			
1. Where permits processed for new food establishments in the District?			
a. If so, is there a FOG questionnaire completed and on file?			
2. In review of the SSO causes for the year, have any been attributable to FOG?			
3. In review of the SSO causes for the year, does the District need to consider implementation of a formal FOG Control Program? Based on conditions:			
a. If there are two occurrences of FOG related spills within a 500 foot length of gravity sewer line within 24 months, and			
b. If in review of the location of the 500 foot length it is reasonable that the cause is from food establishment and not a private residence, or			
c. CCTV inspection of an area clearly indicates that food establishments are not in compliance.			
Section VIII (System Evaluation & Capacity Assurance Plan)			
1. Did the monthly board meeting agenda packets include the appropriate flow summary?			
2. Have evaluations continued with respect to the inflow and infiltration?			
Section IX (Monitoring, Measurement, & Program Modifications)			
1. Has the checklist evaluation been completed for the fiscal year?			
2. Are there changes that need to be made to the Spill Review Procedures?			
3. Are there changes that need to be made to the evaluation checklist?			
a. If yes, are the changes substantial enough such that the SSMP needs to be revised? SSMP revisions will typically occur on a 5-year basis. The following is a list of items which would trigger a revision of the SSMP prior to the standard 5-year cycle update. Other minor changes within the District's organization, procedures, & activities would not necessitate an SSMP revision, but would be captured in the next revision cycle.			
i. A substantial change in organization such that the chain of command for spill response or reporting are altered.			

SSMP Evaluation Checklist

Date Evaluation Completed:

Last Date Checklist Revised: June 10, 2009

Monitoring, Measurement, and Modification Question	Yes	No	Update Needed in SSMP? *
ii. A substantial change in the regulations such that the District's legal authority (Standard Spec) is deemed by District counsel to provide insufficient authority to the District.			
iii. A substantial change in regional board reporting policy (or other regulatory agency) such that standard operating procedures for spill response must be substantially re-written.			
iv. Review SSO causes deems a formal FOG Control Program must be implemented.			
v. The ongoing monitoring of District flow results indicates that the current conclusion that sufficient capacity exists in the District collection system to accommodate buildout flows is no longer valid.			

Section X Evaluation (SSMP Program Audits)

1. Has the SSMP Program Audit been completed for the calendar year?			
2. Are there changes that need to be made to the audit checklist?			

Section XI Evaluation (Communication Program)

1. Is the SSMP section of the District website up-to-date?			
2. Has the District continued to attend meetings with Encina Wastewater Authority, the City of Carlsbad, and the City of Encinitas as appropriate?			
3. In review of the spill causes and environmental impacts (if any), would additional ongoing communication with the Encina Wastewater Authority, the City of Carlsbad, or the City of Encinitas lessened or eliminated the spill cause and environmental impact?			

*** If an update is needed in the SSMP,**

1. determine if the update is significant enough to warrant re-development and re-adoption of the SSMP prior to the 5-year re-adoption schedule and
2. describe the update needed below.

Sect.	Description of Update Needed for Next SSMP	Re-adopt prior to 5 year schedule?		