

ATTACHMENT

Neary Lagoon

Pumping Summary and Discharge Report Forms

Monitoring Data

Neary Lagoon Summary

Dry Season Diversion & Wet Weather Pumping Discharges

Monitoring

Dry Weather Diversion from Neary Lagoon to Wastewater Treatment Facility *(previously SWMP BMP #MO-17)*

During the dry season, Neary Lagoon discharge is diverted to the WWTF via a 12-inch bypass line so that this water is treated prior to discharge into the Pacific Ocean. The bypass line runs only if the water level is high enough in the lagoon. The City may divert lagoon water to the WWTF during the “wet weather season” if the treatment plant has adequate capacity, including both hydraulic and organic loading, at that time. This is done upon occasion to maintain consistent lagoon levels, and to minimize pump operation and discharges to the beach, in addition to treating the water prior to discharge.

The dry weather diversion to the WWTF is important for the receiving water quality because during the spring and summer months the bacteria levels in Neary Lagoon tend to increase primarily due to the reduced freshwater flows into the lagoon and the presence of the many birds and fish found at the lagoon. Thus, this water is diverted to the treatment plant for treatment prior to discharge to the Pacific Ocean in lieu of being discharged to Cowell Beach,

During the permit year, Neary Lagoon water was diverted to the Wastewater Treatment Facility (WWTF) year round until rains forced the gravity outlet opening. Lagoon water was diverted to the WWTF on the following dates: 6/30/13 to 2/10/13 and 3/1/14 to 6/30/14. Thus, during the permit year, lagoon water was diverted a total of 250 days.

Clean Neary Lagoon Storm Drain Lines and Discharge Bacteria Laden Water to the Sanitary Sewer System *(previously SWMP BMP #MO-18)*

The City typically cleans these lines and discharges the water to the sewer system for several weeks each year during the Fall Season. An accounting of the pumping, including the duration and amount of water discharged to the sanitary sewer system, is included in the Neary Lagoon Summary Attachment as part of the City’s storm water annual report.

During the permit year, cleaning of the 66" force main and 66" gravity line consisted of dewatering with a bypass pump from 9/30/13 to 10/26/13. A total of 3,051,000 gallons was diverted to the sanitary sewer/treatment plant for treatment during this time period.

Wet Weather Neary Lagoon Pumping Discharges

The City’s Wastewater Mains Division manually turns on the pump station pumps as needed during the wet season to prevent flooding. This brief operation of the pumps helps to remove the accumulation of sand blocking the Neary gravity storm drain line pipe opening at the beach outlet vault and thus allows lagoon water to flow/exit from this pipeline at Cowell Beach. Pump operation is typically about 10 minutes each time.

During the permit year, the pumps were operated twice during the wet season as follows:

- February 8, 2014
- March 4, 2014

Monitoring: Dry Season Line Cleaning & Wet Weather Pump Operations

City Environmental Compliance (EC) and Laboratory (Lab) staff collected the “Before Line Flushing” samples on September 23, 2013 prior to the Wastewater Mains Division annual cleaning/flushing of the Neary storm drain outlet pipes to Cowell Beach. EC staff then collected the “After Line Flushing” samples on November 12, 2013. These sampling results are included in the Neary Lagoon Summary Attachment along with the pumping discharge information for Neary Lagoon.

City EC and Lab staff collected receiving water samples both “before” and “after” the first pumping discharge of the wet season on February 8, 2014. These samples were collected on February 7 and February 10, 2014 respectively. The sampling results are also included in the Neary Lagoon Summary Attachment.

As discussed with RWQCB staff and included in past Storm Water Annual Reports, the City requested amending the timing of the SWMP requirement to conduct receiving water monitoring for the first discharge of the wet weather season that requires operation of the flood control pumps. The City requested that the “before” and “after” monitoring timing be modified because of the unpredictability of winter storms and potential flooding. This is because, since it’s difficult to predict if and when the pumps will need to be turned on, it is difficult to schedule the sampling and lab staff with little advance notice. Also, because Wastewater Mains staff tries to turn on the flood control pumps during the evening or early morning hours in order to minimize the impact on beachgoers, the timing is often very late at night, in the early morning hours, or during off-hours when sampling staff is not readily available. Thus, we requested modification of sampling timing during the first pumping event of the wet weather season due to unpredictability of storms/flooding and the benefits of minimizing the impact on beachgoers.

Revisions Requested Per the City’s Guidance Document

Per the City of Santa Cruz Guidance Document currently under review by the CCRWQCB and per past discussions with RWQCB staff, the City requested the following revisions to the Neary Lagoon Management Program sections: Dry Weather Season Lagoon Sampling and Wet Weather Season Receiving Water Monitoring in the City of Santa Cruz SWMP (2008-2013), Chapter 1: Municipal Operations Program. This is because the unpredictability of winter storms and flooding potential makes it difficult to estimate exactly when the pumps will need to be turned on and, thus, schedule sampling staff in advance. In addition, City staff tries to turn on the flood control pumps during late night or early morning hours in order to minimize impacts on beachgoers. However, since this timing is often during off-hours, sampling staff is not readily available. Thus, the City’s requested revisions in the Guidance Document so that these sections read as follows:

Dry Weather Season: Lagoon Water Sampling

Coinciding with the pumping/flushing process described in the above BMP (#MO-18), the City conducts sampling inside the lagoon to assess water quality, particularly bacteria levels. Sampling is conducted as detailed below:

Sampling is conducted at the following times:

- 1) Before pumping to the sanitary sewer commences
- 2) After pumping to the sanitary sewer is terminated

Grab samples are taken at the following locations:

- 1) At the pump station (at the trash rack)
- 2) At the outlet from the lagoon into the gravity storm drain line (under the trestle, at the manhole with a slotted grate)
- 3) At the outlet from the lagoon into the force main storm drain pipe (at the manhole under the trestle at the force main)
- 4) At the head wall at Cowell Beach (inside the box)

The samples are analyzed for the following parameters:

- 1) Fecal coliform bacteria
- 2) Enterococci bacteria
- 3) TOC (Total Organic Carbon)
- 4) Ammonia
- 5) pH

The City will maintain information about lagoon water monitoring, including sampling results, on file. Lagoon water sample results will be provided in the SWMP annual reports.

Wet Weather Season

During the rainy season when the lagoon elevation becomes too high, the City manually operates the flood control pumps in order to prevent flooding of the adjacent areas. In addition, the City abides by the following conditions for flood control pump operations:

1. Two hours prior to operation of the flood control pumps, the City will notify in writing, by fax or email, the following agencies of the date of discharge: the Central Coast Regional Water Quality Control Board (RWQCB), the Monterey Bay National Marine Sanctuary, the Coastal Commission, and the County of Santa Cruz Environmental Health Department. If two hours' notice is not possible, due to unforeseeable circumstances such as the weather, the City may provide less notice. The City, as its discretion, will also notify other interested parties if possible.
2. Prior to pump operation, the City will notify the public in the area of the impending discharge. In addition, the City has a permanent warning sign posted at the outfall structure stating that "Water from Storm Drain unsafe for swimming or water contact." Also, the County of Santa Cruz, Department of Environmental Health, provides signage as necessary concerning health risks at Cowell Beach.

3. Prior to pump operation, whenever possible, the City will prepare the beach in front of the outfall structure to form a channel leading to the beach.

In addition, during the wet weather months the Wastewater Mains Division strives to maintain an open gravity system from the Lagoon to Cowell's Beach via the 66" gravity storm pipeline. This helps to reduce complaints from the public about pump operations and odors from the force main water.

Receiving Water Monitoring

It is often difficult to predict whether it will be necessary to operate the pump station pumps for flood control purposes or to determine when they should be turned on as there are many factors involved. These variables include the following: precipitation and forecast rain events; lagoon water levels just prior to and during rain events; the ability of Neary Lagoon to discharge at Cowell Beach via the gravity outlet (the pipe opening is often blocked and/or buried in sand); whether it is high or low tide; and the level of the tide. In addition to these factors, the City also strives to minimize the impact of the discharge on beach users so the pumps are turned on in the evening or early morning hours when possible.

The City will conduct receiving water monitoring coinciding with the first discharge of the wet weather season that requires operation of the flood control pumps. If this is not possible, then the City will conduct receiving water monitoring coinciding with the second discharge of the wet weather season that requires operation of the flood control pumps.

Grab samples will be collected at the times and locations indicated below. Sampling will be done according to approved protocols. The current protocol includes using a utility pole to avoid stepping into the water so as not to stir up the sand at the sampling point. The receiving water monitoring will be conducted as follows:

- 1) Sampling will be conducted within two business days BEFORE discharge:
 - a. At the shoreline in front of the outfall structure
- 2) Sampling will be conducted within two business days AFTER discharge:
 - a. At the point of contact at the shoreline
 - b. At the point of contact in the channel created by the discharge

Samples will be analyzed in accordance with the following:

CONSTITUENTS	OCEAN WATER CONTACT STANDARDS FOR A SINGLE SAMPLE
Fecal coliform bacteria (tested via membrane filter method or approved equivalent as promulgated in 40CFR 136 Table 1A)	400 fecal coliform bacteria per 100 ml
Enterococci	104 enterococcus bacteria per 100 ml
pH	NA
TOC	20,000 ppb

During both sampling times, the City will record the following information about the sampling conditions:

- a) Weather observations
- b) A description of receiving water characteristics
- c) A description of the sampling stations

The City will maintain information about receiving water monitoring, including sampling results and a description of the sampling conditions on file; and all information of this type will be provided in the SWMP annual reports. The information will include the analytical results for each station and identification of the test methods used.

**Neary Lagoon
Wastewater Mains Report
FY 2013-2014**

Dry Weather Season

Wastewater Mains flushing of the 66" force main and 66" gravity lines:

- Flushing conducted from 9-30-13 till 10-26-13
- Flushing discharged 3,051,000 gallons of water to the sanitary sewer

Wet Weather Season

Summary of Neary Lagoon pumping from July 1, 2013-June 30, 2014:

- Total of two pumping events (pumps only had to be turned on twice during winter to open the gravity line)
- Date of pumping events: February 8, 2014 and March 4, 2014
- Total pump run time for both events = 20 minutes



DEPARTMENT OF PUBLIC WORKS
WASTEWATER MAINS

NEARY LAGOON DISCHARGE REPORTING FORM

Date form completed: 3-11-11

Name of person completing form: CHRIS CAVE

Public Works Division (or other): WASTE WATER COLLECTION Flood Control

Date of discharge: 3-11-11

1. Is the flow pump or gravity discharge, or both? Pump

2. Estimated amount of total discharge (gallons). 5911,000

3. Estimated duration of total discharge. 18 x 33,000
Pump time: #1 12 hrs #2 6 hrs #3 _____ hrs
min min

4. Time of day or night (military time). 0500 hrs

5. Treatment plant influent flow rate (gallons) 11.2 mGD

6. Weather: Actual LGT Rain Forecasted Showers

7. Information indicating a potential flood condition in lagoon area:
LAGOON LEVEL AT 7.8MSL

8. Comments and observations on beach usage, signage, ocean conditions, etc.:
Beach CLEAR, NO SWIMMERS, Monitored Through
Duration of Pumping.

* To be completed as soon as possible following observation of pump operation or gravity discharge on a daily basis. Submit weekly to Assistant Director of Public Works. Annual discharge report to be submitted to Regional Water Quality Control Board by May 15th of each year by Assistant Director.



DEPARTMENT OF PUBLIC WORKS
WASTEWATER MAINS

NEARY LAGOON DISCHARGE REPORTING FORM

Date form completed: 2-10-14

Name of person completing form: Chris Cavel

Public Works Division (or other): WASTE WATER COLLECTION / FLOOD CONTROL

Date of discharge: 2-8-14

1. Is the flow pump or gravity discharge, or both? Both

2. Estimated amount of total discharge (gallons). 264,000

3. Estimated duration of total discharge. 8 min
Pump time: #1 6 hrs #2 0 hrs #3 0 hrs
min

4. Time of day or night (military time). 1030 hrs

5. Treatment plant influent flow rate (gallons) 12.89

6. Weather: Actual RAIN Forecasted RAIN

7. Information indicating a potential flood condition in lagoon area.
LAGOON LEVEL AT 7.8 MSL

8. Comments and observations on beach usage, signage, ocean conditions, etc.:
BEACH CLEAR, NO SWIMMERS. PUMPING LASTED 8 min TO ESTABLISH GRAVITY FLOW.

* To be completed as soon as possible following observation of pump operation or gravity discharge on a daily basis. Submit weekly to Assistant Director of Public Works. Annual discharge report to be submitted to Regional Water Quality Control Board by May 15th of each year by Assistant Director.



City of Santa Cruz Wastewater Laboratory
ELAP CA 1176

Client: City of Santa Cruz - Storm Water Management Program

Contact: Akin Babatola for Suzanne Healy

Project Title: Storm Water Management Program - Neary Lagoon

Sampling Event: 9-23-2013

Samplers: DM

Analytical Method				SM 5310 B	SM4500-NH3 D	SM 9222 D	EPA 1600	EPA 4500-H+
Date/Time Collected	Sample Type	Sample Description	LIMS ID	TOC (mg/L)	NH ₃ (mg/L as N)	Fecal Coliforms (CFU/100ml)	Enterococcus (CFU/100ml)	Field pH
9-23-13 @ 10:48	Grab	Pump House	AA53778-81	13.5	<0.10	>40,000	1,367	8.3
9-23-13 @ 11:01	Grab	Force Main	AA53782-85	3.0	<0.10	2	12	8.4
9-23-13 @ 11:11	Grab	Gravity Main	AA53786-89	18.2	0.25	>100,000	5,300	8.6
9-23-13 @ 11:25	Grab	Beach Vault	AA53790-93	34.4	0.10	>20,000	500	8.2
QC								
Method Blank				<0.2	<0.10	<1	<1	
Media Controls						pass	pass	
CRM %Recov				96.9%	100%			
Spike %Recov				98.2%	102%			
Spike RPD				0.69%				
Duplicate RPD				0.41%	5.0%			

Lab Manager: _____

Date: _____

QC Chemist _____

Date: _____



City of Santa Cruz Wastewater Laboratory
ELAP CA 1176

Client: City of Santa Cruz - Storm Water Management Program

Contact: Akin Babatola for Suzanne Healy

Project Title: Storm Water Management Program - Neary Lagoon

Sampling Event: 11-12-2013

Samplers: DM

Analytical Method				SM 5310 B	SM4500-NH3 D	SM 9222 D	EPA 1600	EPA 4500-H+	
	Date/Time Collected	Sample Type	Sample Description	LIMS ID	TOC (mg/L)	NH ₃ (mg/L as N)	Fecal Coliforms (CFU/100ml)	Enterococcus (CFU/100ml)	Field pH
	11-12-13 @ 10:50	Grab	Pump House	AA54631-34	4.6	0.68	170	368	8.6
	11-12-13 @ 10:30	Grab	Force Main	AA54623-26	4.7	<0.50	4	<4	8.4
	11-12-13 @ 10:41	Grab	Gravity Main	AA54627-30	4.3	<0.50	30	80	8.4
	11-12-13 @ 10:15	Grab	Beach Vault	AA54619-22	4.5	4.30	<4	<4	8.5
QC									
Method Blank					<0.2	<0.50	<1	<1	
Media Controls							pass	pass	
CRM %R					98.3%	97.7%			
Spike %R					98.2%	99.5%			
RPD%					1.4%	3.5%			

Analysis subbed to
Alpha Analytical

Lab Manager: _____

Date: _____

QC Chemist _____

Date: _____



City of Santa Cruz Wastewater Laboratory
ELAP CA 1176

Client: City of Santa Cruz - Storm Water Management Program

Contact: Akin Babatola for Suzanne Healy

Project Title: Storm Water Management Program - Neary Lagoon Breached into Nearshore

Sampling Event: 2-7-2014 Sampler: FB							
Analytical Method				SM 5310 B	SM4500-H+	SM 9222 D	EPA 1600
Date/Time Collected	Sample Type	Sample Description	Lab ID No.	TOC (mg/L)	Field pH	Fecal Coliforms (CFU/100ml)	Enterococcus (CFU/100ml)
2-7-14 @ 11:04	Grab	NL Outlet Channel	AA56081	5.8	8.0	5,600	19,000
2-7-14 @ 11:15	Grab	NL Outfall with Ocean	AA56082	1.5	8.0	37	11
QC							
Method Blank				<0.4		<1	<1
Media Controls						fail*	pass
CRM %R				102.2%			
Spike %R				96.6%			
RPD%				0.02%			
<p>*Positive Control produced no colonies. Other quality parameters passed.</p> <p>WEATHER OBSERVATIONS: Overcast with light rain and wind RECEIVING WATER CHARACTERISTICS: W-NW swell 3-4 ft. and choppy</p> <p>SAMPLING OBSERVATIONS: Some foam in channel. No wildlife in channel, 1 gull and 1 egret within 100 ft. of sample point for AA56082</p>							

Sampling Event: 2-10-2014 Sampler: FB							
Analytical Method				SM 5310 B	SM4500-H+	SM 9222 D	EPA 1600
Date/Time Collected	Sample Type	Sample Description	Lab ID No.	TOC (mg/L)	Field pH	Fecal Coliforms (CFU/100ml)	Enterococcus (CFU/100ml)
2-10-14 @ 08:35	Grab	NL Outlet Channel	AA56118	7.2	8.0	1,068	2,900
2-10-14 @ 08:42	Grab	NL Outfall with Ocean	AA56119	3.0	8.0	153	620
QC							
Method Blank				<0.3		<1	<1
Media Controls						pass	pass
CRM %R				102.6%			
Spike %R				100.6%			
RPD%				3.2%			
<p>WEATHER OBSERVATIONS: Cloudy with chance of rain, W wind @ 9 knots RECEIVING WATER CHARACTERISTICS: W-NW swell 3-4 ft</p> <p>SAMPLING OBSERVATIONS: Channel is open and flowing with no wildlife / 6 gulls within 100 ft of Outfall sampling point</p>							

Lab Manager

QA/QC Chemist: