2012 JAN 13 P 4:34

Preliminary Final Report
for
Investigative Order No. R9-2011-0070

January 2011

SAN DIEGO REGIONAL
WATER QUALITY
CONTROL BOARD
2012 JAN 13 P 4:34

City of San Diego
Public Utilities Department
Environmental Monitoring and Technical Services Division

THE CITY OF SAN DIEGO

January 13, 2012

Mr. James G. Smith
Assistant Executive Officer
Regional Water Quality Control Board
91174 Sky Park Court, Suite 100
San Diego, CA 92123-4340

Dear Mr. Smith:

268022

Subject: **631595:JHAAS**
Response to Investigative Order (IO) No. R9-2011-0070, Pertaining to Discharge of Untreated Sewage to Los Penasquitos Creek on September 8, 2011, Caused by Loss of Power at Pump Station 64

As described in my letter of January 5, 2012, we are not able to submit a complete Final Report as described in Section C. of the IO. Field work related to collecting the required Water Chemistry and Bioassessment monitoring was completed on December 28, 2011 to comply with the three month monitoring period specified in the Investigative Order. However there has not been sufficient time to complete laboratory analyses or the assessments and a full evaluation of the data by scientists or outside consultants. Due to a number of factors (such as the need to relocate two monitoring sites to comply with the stipulated protocols, a greater number of early season rain storms, and laboratory capacity limitations) several scheduled Bioassessment Collection and Habitat Assessment monitoring events had to be postponed. An already very aggressive monitoring plan (less than three months) was pushed beyond the ability of the process to complete field work, yield appropriate data, and still provide sufficient time for a proper scientific review and evaluation.

I appreciate your understanding of our circumstances as you noted in your email of January 11, 2012. I expect that all reviews and evaluations will be complete and a comprehensive supplemental Final Report will be submitted not later than February 17, 2012. If you have any questions or need additional information, please don't hesitate to contact me at 619-758-2300 or email at smeyer@sandiego.gov.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate,

DIVERSITY

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and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

Steve Meyer
Deputy Public Utilities Director

Enclosure: Preliminary Final Report for IO No. R9-2011-0070

Preliminary Final Report
for
Investigative Order No. R9-2011-0070

January 2011

City of San Diego
Public Utilities Department
Environmental Monitoring and Technical Services Division

Preliminary Final Report for Investigative Order R9-2011-0070

Investigative Order Section C: Continued Monitoring Program and Reports

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12 b and c: Station Map and GIS Coordinates

The five monitoring stations were selected based on the Investigative Order's (IO) requirement as described in Item 13.a.i and are presented as attachment C13.MAP1 and C13.MAP2 to this report. Stations D and Lagoon were replaced by Station D1 and Lagoon1, after the start of the monitoring effort. On October 19, 2011 Station D was moved 200 feet upstream after it was determined by the Biologists from Weston and the City that the station was too deep for the Bioassessment study and that it extended beneath the railroad tracks, making it unsafe for extended field work. And on November 2, 2011 the Lagoon Station was changed to Lagoon1. It was moved to the Mudflats near the mouth of the Los Penasquitos Lagoon after consulting with the Regional Board on the requirements for the Eutrophication Study. The sites descriptions, their GPS Coordinates, the sampling period and the total number of samples are in Attachment C13.1 as per Item 12.a.i and 12.a.ii.The weekly field monitoring required in Items 13.b.i and 13.b.ii was performed by Public Utilities Department's (PUD) staff Biologists beginning on October 6, 2011 and ending on December 28, 2011. Each sampling event started one hour prior to sunrise.

13: Water Chemistry Monitoring and Reporting

Water Chemistry and Physical Parameters Measurements Methods

The creek's and lagoon transects were measured at approximately the same location each time. The field measurements taken were: width, depth and flow (ft/sec). If the flow meter's propeller did not move the measurement was recorded as "Not Detected" (ND). Flow measurements were not taken when creek levels and velocity were too high after storms due to staff safety concerns. Flow measurements are reported (in cubic feet/second) as an average over the width of the creek's stations and the lagoon's stations. Two flow meters were used for measurements. A Swoffer flow meter Model 2100 and a Global Water flow meter model: Flow Probe 101. The meter's detection range is: 0.1 to 25 feet/second.

Multi-Probe Water Profilers YSI/Hydrolab were used for all field chemistry parameter measurements. The probes were calibrated in the laboratory each event prior to field measurements. Barometric pressure was acquired from Gillespie Field Airport and relevant tide conditions data was acquired from Scripps Institute of Oceanography before each sampling day. Attachment C13.2 shows sample dates, field instruments descriptions, sunrise and tide times.

For the field data acquisition the multi-probe was placed in the water at approximately the same location at each monitoring event and station. The parameters measured were: Dissolved Oxygen (DO) Concentration, DO Saturation, Temperature, pH, and the time of day. Data acquired by the datalogger was later downloaded into the working spreadsheet.

To assess water chemistry, samples were collected in a 2 liter and a 250 mls bottles. The samples were transported and delivered to the laboratory in a cooler with blue ice and analyzed within the holding times for the parameters specified on the IO's Section 13.b.ii.

Field sampling and measurements performed by Environmental Monitoring and Technical Services staff were conducted according to SWRCB Surface Water Ambient Monitoring Program (SWAMP) guidelines. Monitoring equipment was calibrated and checked for accuracy according to the SWAMP Quality Assurance Program Plan. Chemical analyses for this investigative order were performed by California Department of Public Health (CDPH) Environmental Laboratory Accreditation Program (ELAP) certified laboratories in the Environmental Monitoring and Technical Services Division of the City of San Diego Public Utilities Department. Specifically, work was performed by the Water Quality Laboratory (ELAP Certification #1058) and Wastewater Chemistry Services (ELAP Certification #1609). A full report of quality assurance and quality control activities will be included in the supplemental Final Report.

All monitoring station metadata (site descriptions, GPS coordinates, sampling dates, etc.) and raw water chemistry data are included on CD in an EXCEL file. This EXCEL file also contains descriptive statistics for each parameter by station, and a summary of all water quality objective thresholds used in this report. The enclosed CD also contains a copy of this report, with all tables and figures, including a site map.

Dissolved Oxygen (DO) and DO Percent Saturation

Due to the distance and access between the five stations only three sites could be sampled within the one hour prior and the one hour after sunrise, as specified by the IO. In order to be consistent, the stations were sampled in the same order each monitoring event.

DO results: As reported in Attachment C13.3, weekly results following the spill, excluding the October 06, 2011 sample event, demonstrate that Dissolved Oxygen (DO) levels returned to above Water Quality Objectives (WQO) established by the Basin Plan (>5mg/L) at all stations on October 12, 2011 at all stations, including D1 which is the station just downstream from the spill's entry point into the creek.

Oxygen saturation is calculated as the percentage of dissolved oxygen concentration relative to that when completely saturated at the temperature of the measurement depth. As temperature increases, the concentration at 100% saturation decreases and vice-versa. Figure C 13.1 shows comparative field chemistry results for DO Concentration and % Saturation across all stations.

pH

pH values returned to WQO levels returned to WQO since September 13, 2011, shortly after the spill and have remained within the expected range (6.5 – 8.5 pH units). Field measured pH values for all stations are presented in Attachment C13.3 and Figure C13.5 shows DO, DO% Saturation, temperature and pH for the reference and impacted stations by sample event.

Flow and Velocity

The Los Penasquitos Creek (LPC) is the largest of the three creeks in the Los Penasquitos Watershed Hydrologic Unit and potentially the largest contributor of sediment to the Los Penasquitos Lagoon, before flowing into the Pacific Ocean through a narrow mouth at Torrey Pines State Beach. LPC flows year round due to land use development and urban runoff. Peak flows are during the rainy season,

which is from mid-October through mid-April. During the three months of post-spill monitoring by PUD's staff, approximately 3.51" of rain fell from 16 separate rain evens. During these events flow and velocity in the LPC peaked at Stations E and Lagoon1. Flow could not be detected by the instrument on several occasions at stations A, C, and D. Stations A (up to 70 feet wide) and D (up to 100 feet wide) are located in sections of the creek that are impounded by large mats of aquatic vegetation on the streambed (cattails), and willows along the banks. Station C was impounded by overgrown vegetation both up and downstream from the sample site. As a historical note, this section upstream of the Carroll Creek and Los Penasquitos Creek confluence is known by it's over flowing of the banks just about every winter. Flow and Velocity graphs across all stations are shown in Figure C13.2. The same parameters plus rainfall by sampling event (for the three months monitoring) period are shown in Figure C13.6.

Nutrients

Nutrients data for the five stations is presented in its non-analyzed form in Attachment C13.4, and Attachment C13.5 includes the descriptive statistics for all parameters by station. Figures C13.3,and C13.4 show the statistical result of each parameter by station, and C13.7 and C13.8 show all parameters plotted by sample date.

The Water Quality Objectives for Inland Surface Water are listed in Table 3.2 at the link below: http://www.swrcb.ca.gov/sandiego/water_issues/programs/basin_plan/ and in the SWAMP document http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/factsheets/305breport2006.pdf

The results of PUD's nutrient study were compared to baseline data displayed by the San Diego Coastkeepers on their website, and by reviewing the Receiving Waters and Urban Runoff Monitoring Reports, produced by Weston Solutions for the Municipal Copermittees covered under a municipal National Pollutant Discharge Elimination System (NPDES) permit for discharge of urban runoff to waters of the United States.

The data shows that nutrient levels have returned to ambient levels, and that spikes in a few of the post-spill samples coincide with storm flows that may have dislodged settled organic matter. Each subsequent sample event shows a downward spike in values. From this information it appears that long term nutrient impact on the creek and lagoon was probably negligible. Actual nutrient concentrations in these water bodies were found to be within normal range of values measured by others in a similar period in years prior.

While some dissolved nutrients would have been taken up by plants in the creek and lagoon channels, it is assumed that most of the dissolved nutrients were carried out of the system during the creek pumping operations that took place immediately after the spill. Any remaining nutrients were flushed out by storm flows in the three subsequent months. Future rainfall events this winter season will continue to flush the channels.

Multivariate Analysis

Methods

Multivariate analyses were performed using PRIMER (Plymouth Routines in Multivariate Ecological Research) software to determine whether: (1) significant differences in water chemistry existed between impacted and reference areas, and (2) to determine whether water chemistry differences

existed among individual stations. Parameters included dissolved oxygen, ammonia as N, nitrate, nitrite, nitrate_nitrite, total nitrogen, total phosphorus, ortho_phosphorus, total suspended solids. A Euclidean distance matrix was created from the untransformed data matrix with station type (i.e., impacted, reference) and station identifier (i.e., A, C, D1, E, LAG1) provided as factors. Data from LAG1 on 10 November 2011 were not included due to a missing NH_4 value. A one-way analysis of similarity (ANOSIM) was conducted for each factor to determine whether significant differences existed. To visually depict relationships among individual sites, the untransformed data matrix was averaged by station, and a non-metric multidimensional scaling (nMDS) ordination and a cluster dendrogram were created. Similarity profile (SIMPROF) analysis was used to confirm the non-random structure of the cluster dendrogram.

Preliminary Results

Using rigorous statistical analyses on multiple water chemistry variables, no significant differences were found amongst the Los Penasquitos creek sites sampled between October 6 and December 28, 2011. Global-R of the one-way ANOSIM that tested for differences among all individual stations was non-significant (0.137, $p = 0.0006$); however, individual pair-wise tests among sites revealed water chemistry at the lagoon site (LAG1) to be significantly different from all creek sites (r-value range = 0.387-0.644, all p-values were significant). In addition, a one-way ANOSIM by station type found no significant difference in water chemistry between reference and impacted areas (Global R = 0.014, p = 0.236). The significant difference in water chemistry between the lagoon site and creek sites was likely caused by the natural diurnal tidal flushing and brackish water conditions found at LAG1 that are absent in creek settings. Although LAG1 clustered apart from creek sites in the cluster dendrogram, structure of the clades was supported by SIMPROF analysis.

Conclusion

Potential Effects and Creek Recovery

Short-term Effects

Taken singularly the sewage spill may have had an impact on the aquatic biota of the Los Penasquitos Creek. The effect of the wastewater in the creek was immediate once its concentration reached high enough level of nutrients input to deplete dissolved oxygen to below threshold limits (<5 mg/L). Although some fish kill was observed and documented, this impact was very short term and there were no long-term effects on the aquatic habitat. The creek was suitable for re-habitation just a few weeks after the spill event (see attached tables of dissolved oxygen readings). In fact a few fish were observed at the confluence of Carroll and Los Penasquitos Creek less than a month after the spill. These fish were able to escape upstream (on Carroll Ck.) after the initial sewage input and returned when conditions had improved. Water boatman, mayfly nymph, scuds, and dragonfly naiads were collected from the most downstream monitoring station during the spill/creek pumping operations. Blue herons were observed fishing from the railroad trestle on Vista Sorrento Parkway and mullets were seen at the lower reaches of the creek in the Torrey Pines Preserve.

If it were deemed appropriate to foster the recovery of non-native fish and crayfish into LPC, it is likely that little would be required. Re-establishment (if in fact they were ever present in large numbers)

would likely happen through natural migration downstream from source populations upstream. When they do re-colonize the affected parts of the creek, they should have no problem establishing stable populations as most of the species (crayfish, green sunfish, carp, mosquitofish) are highly invasive.

Investigative Order Section C: Bioassessment Monitoring and Reporting

14 a: Monitoring and Sampling Site Locations
14b: Sampling Period and Frequency

Weston Solutions, Inc. was contracted to perform all bioassessment monitoring and reporting as required under section C. 14 of the Investigative Order.

Weston was provided a provisional Notice to Proceed for the project on October 3, 2011. According to the Investigative Order and the contract agreement with the City of San Diego, Weston was to perform six algal cover surveys, three full stream bioassessment surveys and one eutrophication assessment in the lagoon. The algal cover surveys were to occur every other week, three of which were conducted in conjunction with the bioassessment surveys. The first algal survey began on October 14 and a schedule to conduct the five additional surveys every other week was instituted, as per the IO. This initial schedule would have had the final survey completed by December 19. Due to a series of significant rain events in early to mid November, surveys were postponed for nearly two weeks due to high water levels, and the final survey was not conducted until December 29, 2011. Data from the analytical laboratories for the final surveys were received in total by Weston on January 10, 2012. All data was compiled into draft tables by January 12 and submitted to the City of San Diego (COSD) Staff for review. Final QA/QC has yet to be performed on many of the draft tables and the final assessments and scientific review by Weston is underway.

References

Clean Water Act Section 305b Report, 2006
Water Quality Assessment of the Condition of California Coastal Waters and Wadeable Streams, October 2006.

Regional Water Quality Control Board (RWQCB). 1994. Water Quality Control Plan for the San Diego Basin. Tables 2-2–2-5. September 8, 1994 amendments adopted through February 8, 2006. http://www.swrcb.ca.gov/sandiego/water_issues/programs/basin_plan/

Project Clean Water Website: http://www.projectcleanwater.org/index.html

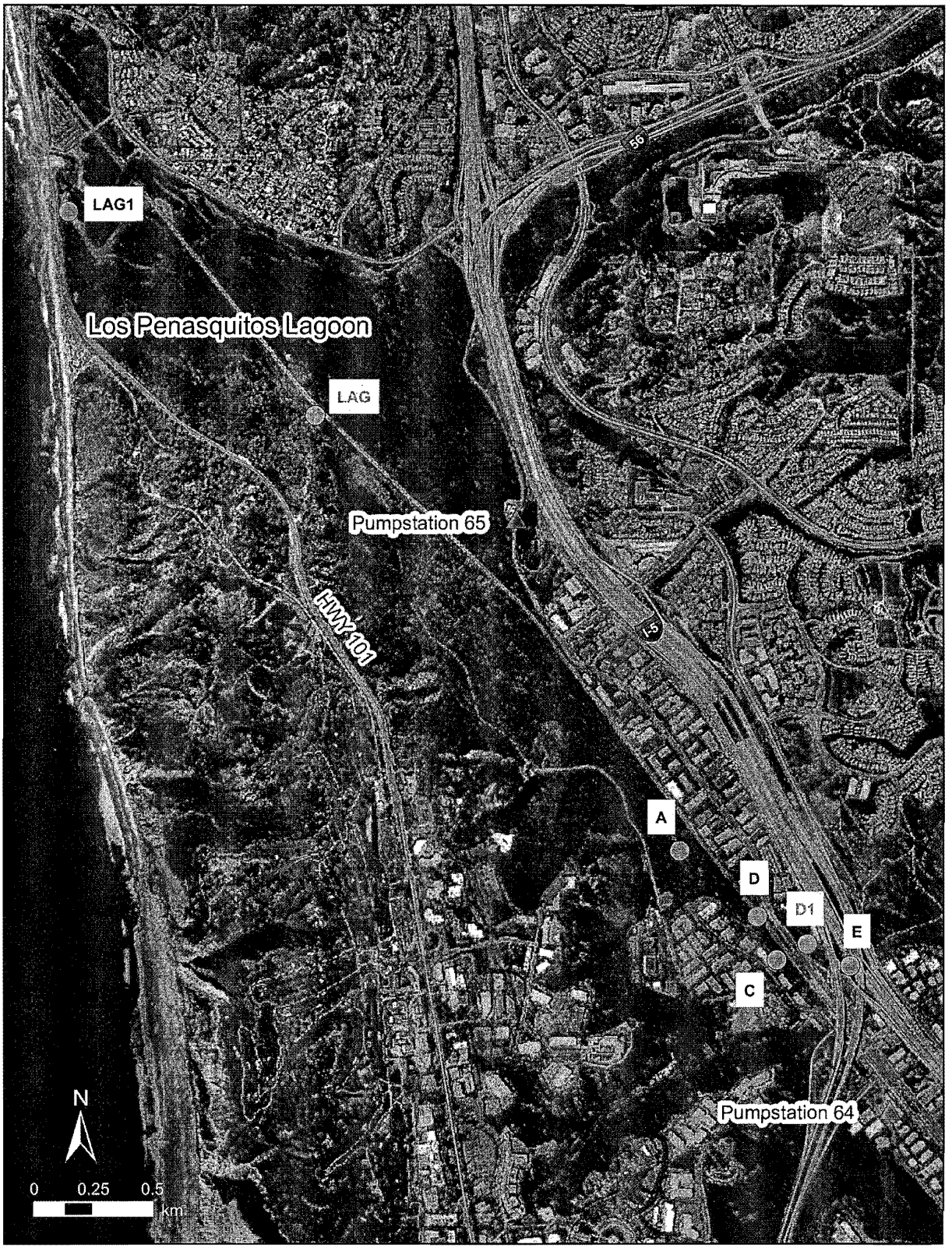
WESTON (Weston Solutions, Inc.). 2007. *San Diego County Municipal Copermittees 2005–2006 Urban Runoff Monitoring*. Prepared for the County of San Diego. January 2007.

WESTON (Weston Solutions, Inc.). 2008. *San Diego County Municipal Copermittees 2006–2007 Urban Runoff Monitoring*. Prepared for the County of San Diego. January 2008.

WESTON (Weston Solutions, Inc.). 2009. *San Diego County Municipal Copermittees 2007–2008 Urban Runoff Monitoring*. Prepared for the County of San Diego. January 2009

SAN Diego Coastkeepers Water Quality Monitoring Website LPQ-020, LPQ-030, LPQ-040 Watershed Wiki: http://www.sdwatersheds.org/wiki/Los_Penasquitos_Watershed

Surface Water Ambient Monitoring Program (SWAMP). 2007 Report on the Penasquitos Hydrologic Unit, Final Technical Report: http://www.swrcb.ca.gov/water_issues/programs/swamp/docs/reglrpts/rb9_penasquitos_hydrologic.pdf



Attachment C13.MAP1

Map of stations sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070.

Attachment C13.1

Summary of stations sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data include station descriptions, locations, sampling dates, and the total number of samples collected.

Station			GPS Coordinates		Sampling Period		Total Number
Full Name	Abbr.	Type	Lat (N)	Long (W)	Start	End	of Events*
BIOASSESS A	A	Impacted	32.90847	117.23181	6-Oct	28-Dec	13
BIOASSESS C	C	Reference	32.90439	117.22743	6-Oct	28-Dec	13
BIOASSESS D	D	Impacted	32.90601	117.22831	6-Oct	12-Oct	2
BIOASSESS D1	D1	Impacted	32.90500	117.22608	19-Oct	28-Dec	11
BIOASSESS E	E	Reference	32.90419	117.22414	6-Oct	28-Dec	13
LAGOON BIOASSESS	LAG	Impacted	32.92473	117.24834	6-Oct	26-Oct	4
LAGOON BIOASSESS 1	LAG1	Impacted	32.93232	117.25953	2-Nov	28-Dec	9

* Sampling events occurred weekly over the course of the sampling period, and included the collection of data using a multi-parameter probe and a water sample for chemical analyses.

Site Descriptions:

A: Downstream from confluence

C: Upstream from confluence on Carroll Creek

D: Upstream of confluence of Carroll Canyon and Penasquitos Creeks

D1: Upstream of confluence of Carroll Canyon and Penasquitos Creeks (replaced BIOASSESS D on Oct 19)

E: Upstream from confluence on Los Penasquitos Creek

LAG: in the lagoon by second rail road trestle

LAG1: in the lagoon, mudflat east of Torrey Pines (replaced LAGOON BIOASSESS on Nov 2)

Attachment C13.2

Supplemental details for each sampling event, including date of event, field instrument used, time of sunrise, and relevant tides.

				Low Tide**		High Tide**		
Date	Stations	Instrument*	Sunrise	Time	Feet	Time	Feet	Comments
6-Oct	A, C, D, E, LAG	39347	0646	1253	2.10	0719	4.89	
12-Oct	A, C, D, E, LAG	02H1258	0650	0333	1.27	0944	6.13	
19-Oct	A, C, D1, E, LAG	02H1258	0655	0759	3.37	1429	4.80	
26-Oct	A, C, D1, E, LAG	39347	0701	—	—	0854	6.70	
2-Nov	A, C, D1, E, LAG1	39347	0708	0946	2.90	—	—	
10-Nov	A, C, D1, E, LAG1	06L1583	0615	—	—	0759	5.90	
16-Nov	A, C, D1, E, LAG1	06L1583	0620	—	—	1130	4.80	1.12 inches rain received on 11/12/11
22-Nov	A, C, D1, E, LAG1	39347	0626	1258	-0.50	0611	6.30	1" rain received one day prior to sampling
30-Nov	A, C, D1, E, LAG1	39348	0633	0629	2.70	1221	4.60	Water clear at all sites
7-Dec	A, C, D1, E, LAG1	39348	0638	1340	-0.10	0635	5.60	Water clear at all sites
14-Dec	A, C, D1, E, LAG1	39348	0644	1340	-0.10	0635	5.60	Water turbid at all sites, received ~ 1" rain previous 48 hrs
21-Dec	A, C, D1, E, LAG1	39348	0648	1257	-0.80	0547	6.20	Water clear at all sites
28-Dec	A, C, D1, E, LAG1	39348	0651	0455	2.00	1057	5.20	

*Instruments 39347 and 39348 are both HydroLab Mini-sonde 4a probes; instrument 06L1583 is a YSI 6600V2 probe and 02H1258 is a YSI 6600 probe

**tide data are from the pier at Scripps Institution of Oceanography

Attachment C13.3

All data collected in the field from stations sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data include time of sample collection (Time), temperature (Temp), pH, dissolved oxygen (DO) as mg/L and percent saturation (%Sat), site width, site depth, velocity (Vel) as average feet per second (fps), flow as cubic feet/second (f^3ps), and flow as gallons per minute (gpm).

Date	Station	Time	Temp (°C)	pH	DO (mg/L)	DO (%Sat)	Width (feet)	Depth (avg feet)	Vel (avg fps)*	Flow (f^3ps)*	Flow (gpm)*	Comments**
10/6/2011	A	7:31:24	17.09	7.34	3.76	39.30	NS	NS	NS	NS	NS	Stream unsafe to enter
10/6/2011	C	6:50:48	16.10	7.57	4.92	50.30	NS	NS	NS	NS	NS	Stream unsafe to enter
10/6/2011	D	9:22:24	17.40	7.31	2.75	29.00	NS	NS	NS	NS	NS	Stream unsafe to enter
10/6/2011	E	8:55:58	15.90	7.56	6.76	69.60	8.50	0.50	2.61	10.97	4936.50	none
10/6/2011	LAG	10:16:57	17.21	7.24	5.15	54.00	10.00	1.33	1.02	14.21	6394.50	none
10/12/2011	A	8:06:02	15.46	7.50	5.46	55.20	57.00	1.87	ND	ND	ND	water clairity improved from last week
10/12/2011	C	7:35:54	17.13	7.71	6.98	73.40	16.00	3.15	ND	ND	ND	water clairity improved from last week
10/12/2011	D	7:12:59	14.86	7.48	5.52	55.10	40.00	5.40	NS	NS	NS	unable to enter stream to measure depth beyond bank due to high depth
10/12/2011	E	6:37:16	13.58	7.78	8.14	79.00	10.00	0.63	0.42	2.73	1228.50	none
10/12/2011	LAG	9:08:56	16.11	7.53	5.91	63.40	10.00	2.63	ND	ND	ND	Flow appears to be affected by high tide which occurs at 0930
10/19/2011	A	8:19:38	17.52	7.55	4.85	51.20	58.00	2.20	ND	ND	ND	water clarity good
10/19/2011	C	7:55:35	17.95	7.68	6.92	73.90	17.00	2.70	ND	ND	ND	water clarity is good; numerous fish observed in creek
10/19/2011	D1	7:37:13	16.77	7.72	6.56	68.20	93.00	1.50	ND	ND	ND	Site location moved 200 meters up stream; water clarity good
10/19/2011	E	6:52:52	16.77	7.78	7.74	80.50	9.00	0.41	0.93	3.52	1584.00	Water clarity good
10/19/2011	LAG	9:20:01	17.30	7.81	8.06	84.80	10.40	0.70	0.46	3.24	1458.00	Water clarity good
10/26/2011	A	8:16:29	17.13	8.02	5.16	55.00	70.00	2.15	ND	ND	ND	none
10/26/2011	C	7:54:07	17.07	8.51	6.95	74.20	18.00	3.15	ND	ND	ND	none
10/26/2011	D1	7:28:34	15.97	8.43	6.46	67.20	100.00	1.51	ND	ND	ND	none
10/26/2011	E	7:00:35	15.89	8.16	7.86	81.60	9.00	0.46	0.95	3.71	1669.50	none
10/26/2011	LAG	9:12:09	16.73	7.97	4.87	56.10	12.00	3.60	ND	ND	ND	light rain

Attachment C13.3 *continued*

Date	Station	Time	Temp (°C)	pH	DO (mg/L)	DO (%Sat)	Width (feet)	Depth (avg feet)	Vel (avg fps)*	Flow (f^3ps)*	Flow (gpm)*	Comments**
11/2/2011	A	8:27:35	13.66	8.22	7.56	74.90	56.40	2.06	ND	ND	ND	water clairity good
11/2/2011	C	8:00:57	15.14	8.38	7.95	81.50	17.50	2.84	ND	ND	ND	water clairity good; bank vegitation is in process of being removed downstream
11/2/2011	D1	7:37:50	12.38	8.32	7.23	69.60	93.50	1.52	ND	ND	ND	water clairity good
11/2/2011	E	7:13:50	12.34	8.05	8.96	86.10	10.00	0.45	1.55	2.04	918.00	water clairity good
11/2/2011	LAG 1	9:13:32	13.55	8.55	6.55	75.60	75.70	1.32	0.06	7.03	3163.50	Lagoon site moved closer to ocean; water clairity good
11/10/2011	A	7:14:55	10.77	7.67	8.55	77.60	56.10	2.70	ND	ND	ND	none
11/10/2011	C	6:49:27	11.83	7.93	9.42	87.90	18.00	4.20	ND	ND	ND	none
11/10/2011	D1	6:34:14	9.65	7.78	9.72	86.00	93.15	2.00	ND	ND	ND	none
11/10/2011	E	6:06:27	9.61	7.74	9.70	85.70	13.00	0.70	1.00	9.50	4275.00	none
11/10/2011	LAG 1	7:59:46	14.55	8.03	8.58	102.40	NS	NS	NS	NS	NS	unable to access stream channel due to depth
11/16/2011	A	7:14:31	14.13	7.59	7.26	71.10	53.10	3.40	ND	ND	ND	none
11/16/2011	C	6:51:30	14.43	7.83	8.88	87.70	19.00	3.80	ND	ND	ND	a lot of vegitation has been removed from stream channel
11/16/2011	D1	6:39:30	13.61	7.69	8.33	80.60	87.60	2.22	ND	ND	ND	none
11/16/2011	E	6:18:37	13.59	7.69	8.45	81.80	11.00	0.80	1.32	11.66	5247.00	none
11/16/2011	LAG 1	7:56:22	14.50	7.64	7.86	88.00	79.40	1.77	0.00	0.00	0.00	none
11/22/2011	A	8:08:00	12.06	9.28	8.05	75.70	59.70	3.55	0.11	26.97	12136.50	1" rain received one day prior to sampling; water turbid presumably from rain runoff
11/22/2011	C	7:43:49	10.80	9.35	10.19	93.30	17.00	4.07	ND	ND	ND	water turbid presumably from rain runoff; instream & bank vegitation removed
11/22/2011	D1	7:14:11	11.42	7.83	8.39	77.80	92.50	2.82	0.10	26.33	11848.50	water turbid presumably from rain runoff
11/22/2011	E	6:45:05	11.37	7.54	8.94	82.80	23.50	0.76	2.13	40.86	18387.00	water turbid presumably from rain runoff
11/22/2011	LAG 1	8:55:09	12.50	9.21	6.70	70.00	150.20	1.90	1.02	390.72	175824.00	water turbid presumably from rain runoff
11/30/2011	A	7:25:55	10.50	7.79	8.50	78.10	60.00	2.18	ND	ND	ND	water clear
11/30/2011	C	7:06:30	11.15	7.96	9.66	90.30	18.50	3.23	ND	ND	ND	water clear
11/30/2011	D1	6:44:07	9.91	7.74	8.64	78.30	88.90	2.10	ND	ND	ND	water clear
11/30/2011	E	6:16:59	9.82	7.74	9.93	89.80	14.00	0.46	1.64	12.21	5494.50	water clear
11/30/2011	LAG 1	8:03:54	10.97	7.67	8.05	86.20	75.10	1.48	0.04	4.16	1872.00	water clear; Flow measurement from flooding tide

Attachment C13.3 *continued*

Date	Station	Time	Temp (°C)	pH	DO (mg/L)	DO (%Sat)	Width (feet)	Depth (avg feet)	Vel (avg fps)*	Flow (f^3ps)*	Flow (gpm)*	Comments**
12/7/2011	A	7:29:10	6.67	7.82	9.90	82.50	59.40	2.50	ND	ND	ND	water clear
12/7/2011	C	7:08:43	7.41	7.94	11.67	99.30	18.50	3.50	ND	ND	ND	water clear
12/7/2011	D1	6:48:01	5.62	7.81	10.43	84.70	91.20	2.02	ND	ND	ND	water clear
12/7/2011	E	6:22:05	5.70	7.87	11.39	92.60	14.00	0.48	0.92	6.94	3123.00	water clear
12/7/2011	LAG 1	8:17:31	11.26	7.98	9.09	100.70	147.60	2.05	0.39	150.50	67725.00	water clear; Flow measurement from ebbing tide
12/14/2011	A	7:57:10	9.59	7.67	9.55	84.80	61.00	3.70	0.15	38.11	17149.50	Water turbid
12/14/2011	C	7:35:59	9.65	7.76	10.90	97.00	18.50	4.10	ND	ND	ND	Water turbid
12/14/2011	D1	7:13:07	9.27	7.67	10.34	91.20	97.00	3.00	0.12	34.15	15367.50	Water turbid
12/14/2011	E	6:38:57	9.37	7.68	10.54	93.10	33.70	1.20	1.24	47.24	21258.00	Water turbid
12/14/2011	LAG 1	8:43:42	14.13	8.10	9.11	109.30	91.80	2.45	0.36	93.07	41881.50	Water turbid; flow measurement from flooding tide
12/21/2011	A	8:44:43	10.05	7.80	8.62	78.30	63.30	2.70	ND	ND	ND	
12/21/2011	C	8:25:17	10.87	8.11	10.13	93.90	18.50	3.10	ND	ND	ND	
12/21/2011	D1	8:07:51	8.83	7.83	9.20	81.20	94.50	2.07	ND	ND	ND	
12/21/2011	E	10:07:20	8.77	7.90	10.06	88.60	15.75	0.57	0.80	6.10	2745.00	Water clear; Equipment failure, prob measurements gathered 3.5 hr after grab sample
12/21/2011	LAG 1	9:21:52	11.72	7.95	7.86	89.40	157.40	1.88	0.75	303.90	136755.00	Flow due to ebbing tide
12/28/2011	A	8:02:53	6.18	7.56	10.22	84.10	65.30	2.90	ND	ND	ND	water a little turbid
12/28/2011	C	7:43:42	7.63	7.69	10.96	93.70	18.00	3.35	ND	ND	ND	water clear
12/28/2011	D1	7:24:40	5.50	7.62	10.65	86.20	97.40	2.17	ND	ND	ND	water clear
12/28/2011	E	6:58:22	5.50	7.66	11.36	91.80	16.50	0.68	0.58	5.78	2601.00	water clear
12/28/2011	LAG 1	8:39:17	13.08	7.81	8.13	96.70	80.70	1.90	0.57	95.29	42880.50	water clear; Flow due to a flooding tide

NS = no data collected

*ND (= not detected) indicates flow was below detection limit; flow data were collected using a Swoffer, Model #2100 and a Global Water, Model #Flow Probe 101; flow meter detection range: 0.1 -> 25 ft/sec

**see Attachment C13.2 for tide information

Attachment C13.4

All water chemistry data from stations sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data include ammonia as N (NH_4), nitrate (NO_3), nitrate_nitrite (NO_3_NO_2), nitrite (NO_2), total nitrogen, total phosphorus (PO_4), ortho-phosphate (O_PO_4), and total suspended solids (TSS).

Date	Station	NH_4 (mg/L)	NO_3 (mg/L)	$NO_3\_NO_2$ (mg/L)	NO_2 (mg/L)	Total Nitrogen (mg/L)	PO_4 (mg/L)	O_PO_4 (mg/L)	TSS (mg/L)
10/6/2011	A	0.194	3.030	3.250	0.219	0.939	0.198	0.874	18.5
10/6/2011	C	0.200	3.730	4.040	0.310	1.130	0.145	0.992	50.0
10/6/2011	D	0.285	4.020	4.300	0.277	1.340	0.238	0.940	21.0
10/6/2011	E	ND	0.564	0.601	0.037	ND	0.218	0.946	47.0
10/6/2011	LAG	0.143	3.620	3.960	0.338	1.110	0.247	0.986	19.0
10/12/2011	A	0.060	0.270	0.299	0.029	0.188	0.828	0.763	1.7
10/12/2011	C	ND	ND	ND	ND	ND	ND	ND	1.2
10/12/2011	D	0.044	0.219	0.256	0.037	ND	1.190	0.820	4.3
10/12/2011	E	ND	0.307	0.307	ND	ND	1.220	0.752	3.1
10/12/2011	LAG	0.034	0.352	0.391	0.039	ND	0.183	0.777	4.5
10/19/2011	A	0.062	0.081	0.104	0.023	ND	0.155	0.885	2.1
10/19/2011	C	ND	ND	ND	ND	ND	ND	ND	ND
10/19/2011	D1	ND	0.108	0.108	ND	ND	0.195	0.862	1.6
10/19/2011	E	ND	0.163	0.163	ND	ND	0.132	0.811	5.1
10/19/2011	LAG	0.037	0.198	0.254	0.056	ND	0.480	0.851	146.0
10/26/2011	A	0.063	ND	0.091	0.019	ND	0.190	0.699	1.2
10/26/2011	C	ND	0.087	0.087	ND	ND	0.092	ND	1.1
10/26/2011	D1	ND	ND	ND	ND	ND	0.170	0.732	2.0
10/26/2011	E	ND	ND	ND	ND	ND	0.127	0.685	4.7
10/26/2011	LAG	ND	0.205	0.230	0.024	0.089	0.324	0.694	9.3
11/2/2011	A	0.038	0.091	0.091	ND	0.081	0.121	0.716	1.8
11/2/2011	C	ND	ND	ND	ND	ND	ND	ND	ND
11/2/2011	D1	ND	0.114	0.114	ND	0.189	0.138	0.765	2.3
11/2/2011	E	ND	0.234	0.234	ND	ND	0.115	0.753	8.6
11/2/2011	LAG 1	0.087	ND	0.089	0.020	0.163	0.078	1.240	5.6
11/10/2011	A	ND	1.140	1.160	0.018	0.460	0.121	0.799	1.5
11/10/2011	C	ND	0.266	0.266	ND	0.172	ND	< 0.426	1.5
11/10/2011	D1	ND	1.070	1.070	ND	0.394	0.112	0.829	ND
11/10/2011	E	ND	1.130	1.130	ND	0.415	0.111	0.843	2.1
11/10/2011	LAG 1	NR	ND	ND	ND	ND	ND	ND	4.3

Attachment C13.4 *continued*

Date	Station	NH_4 (mg/L)	NO_3 (mg/L)	$NO_3\_NO_2$ (mg/L)	NO_2 (mg/L)	Total Nitrogen (mg/L)	PO_4 (mg/L)	O_PO_4 (mg/L)	TSS (mg/L)
11/16/2011	A	ND	0.732	0.749	0.017	0.229	0.136	0.857	2.7
11/16/2011	C	ND	0.356	0.356	ND	ND	ND	0.703	10.5
11/16/2011	D1	ND	0.739	0.739	ND	0.182	0.131	0.884	2.4
11/16/2011	E	ND	0.807	0.807	ND	0.216	0.110	0.821	3.5
11/16/2011	LAG 1	0.093	0.560	0.594	0.035	0.228	0.120	2.060	13.9
11/22/2011	A	ND	1.040	1.080	0.041	0.340	0.143	0.930	7.3
11/22/2011	C	ND	1.210	1.240	0.030	0.329	ND	0.732	2.7
11/22/2011	D1	ND	1.010	1.050	0.040	0.289	0.146	0.958	2.5
11/22/2011	E	ND	1.090	1.090	0.034	0.307	0.150	0.914	4.3
11/22/2011	LAG 1	0.065	0.244	0.279	0.036	ND	0.101	ND	15.4
11/30/2011	A	ND	0.216	0.216	ND	ND	0.090	0.796	2.0
11/30/2011	C	ND	0.500	0.500	ND	ND	ND	ND	4.6
11/30/2011	D1	ND	0.088	0.088	ND	ND	0.170	0.841	1.5
11/30/2011	E	ND	0.152	0.152	ND	ND	ND	0.790	2.2
11/30/2011	LAG 1	0.061	0.131	0.131	ND	ND	ND	ND	6.9
12/7/2011	A	ND	0.100	0.100	ND	ND	0.079	1.380	1.4
12/7/2011	C	ND	ND	ND	ND	ND	ND	ND	2.1
12/7/2011	D1	ND	0.106	0.106	ND	ND	ND	0.783	1.2
12/7/2011	E	ND	0.154	0.154	ND	ND	ND	0.782	ND
12/7/2011	LAG 1	0.069	ND	ND	ND	0.193	ND	ND	17.7
12/14/2011	A	ND	1.110	1.150	0.039	0.378	0.114	0.871	4.4
12/14/2011	C	ND	1.350	1.450	0.100	0.397	ND	0.783	10.2
12/14/2011	D1	ND	1.080	1.110	0.028	0.359	0.138	0.910	12.7
12/14/2011	E	ND	1.160	1.190	0.030	0.372	0.107	0.887	9.0
12/14/2011	LAG 1	0.039	0.756	0.793	0.037	0.334	0.087	1.690	10.1
12/21/2011	A	ND	ND	ND	ND	ND	0.123	0.781	16.2
12/21/2011	C	0.041	0.121	0.142	0.021	0.178	ND	ND	3.2
12/21/2011	D1	ND	ND	ND	ND	ND	0.101	0.794	1.0
12/21/2011	E	ND	ND	ND	ND	0.336	0.11	0.773	1.4
12/21/2011	LAG 1	0.157	ND	ND	ND	ND	ND	ND	19.8
12/28/2011	A	ND	ND	ND	ND	ND	0.087	0.781	2.25
12/28/2011	C	ND	ND	ND	ND	ND	ND	ND	1.5
12/28/2011	D1	ND	ND	ND	ND	ND	0.084	0.806	1.5
12/28/2011	E	ND	ND	ND	ND	ND	ND	0.807	1.3
12/28/2011	LAG 1	0.161	ND	ND	ND	0.216	ND	ND	29.6

"<" = data run in duplicate, where one result = ND

ND = not detected; NR = not reportable

Attachment C13.5

Descriptive statistics for each parameter by station sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data include number of samples, minimum, maximum, median and mean values, with standard deviation (Std Dev), coefficient of variation (CoV), and the 95% confidence interval (95% CI) provided as measures of dispersion. Zeros indicate values below method detection limits. Discontinued stations (D, LAG) are not included.

	STATION				
	A	**C**	**D1**	**E**	**LAG1**
Dissolved Oxygen (mg/L)					
No. of samples	13	13	11	13	9
Minimum	3.76	4.92	6.46	6.76	6.55
Maximum	10.22	11.67	10.65	11.39	9.11
Median	8.05	9.42	8.64	8.96	8.05
Mean	7.50	8.89	8.72	9.22	7.99
Std Dev	2.08	2.00	1.51	1.43	0.91
CoV	27.70	22.53	17.30	15.49	11.37
95% CI	1.13	1.09	0.89	0.78	0.59
Dissolved Oxygen (percent saturation)					
No. of samples	13	13	11	13	9
Minimum	39.30	50.30	67.20	69.60	70.00
Maximum	84.80	99.30	91.20	93.10	109.30
Median	75.70	87.90	80.60	85.70	89.40
Mean	69.83	84.34	79.18	84.85	90.92
Std Dev	14.62	13.54	7.97	6.63	12.77
CoV	20.93	16.06	10.07	7.81	14.04
95% CI	7.95	7.36	4.71	3.60	8.34
pH					
No. of samples	13	13	11	13	9
Minimum	7.34	7.57	7.62	7.54	7.64
Maximum	9.28	9.35	8.43	8.16	9.21
Median	7.67	7.93	7.78	7.74	7.98
Mean	7.83	8.03	7.86	7.78	8.10
Std Dev	0.49	0.48	0.27	0.18	0.49
CoV	6.28	6.00	3.38	2.29	6.10
95% CI	0.27	0.26	0.16	0.10	0.32
Temperature (°C)					
No. of samples	13	13	11	13	9
Minimum	6.18	7.41	5.50	5.50	10.97
Maximum	17.52	17.95	16.77	16.77	14.55
Median	12.06	11.83	9.91	11.37	13.08
Mean	12.37	12.86	10.81	11.40	12.92
Std Dev	3.83	3.65	3.69	3.69	1.38
CoV	30.95	28.36	34.16	32.40	10.68
95% CI	2.08	1.98	2.18	2.01	0.90

Attachment C13.5 *continued*

	STATION				
	A	C	D1	E	LAG1
Velocity (average feet/second)					
No. of samples	12	12	11	13	8
Minimum	0.00	0.00	0.00	0.42	0.00
Maximum	0.15	0.00	0.12	2.61	1.02
Median	0.00	0.00	0.00	1.00	0.38
Mean	0.02	0.00	0.02	1.24	0.40
Std Dev	0.05	0.00	0.04	0.62	0.37
CoV	236.84	0.00	223.61	49.88	92.03
95% CI	0.03	0.00	0.03	0.34	0.25
Flow (cubic feet/second)					
No. of samples	12	12	11	13	8
Minimum	0.00	0.00	0.00	2.04	0.00
Maximum	38.11	0.00	34.15	47.24	390.72
Median	0.00	0.00	0.00	6.94	94.18
Mean	5.42	0.00	5.50	12.56	130.58
Std Dev	12.89	0.00	12.36	14.44	145.93
CoV	237.62	0.00	224.75	115.00	111.75
95% CI	7.29	0.00	7.30	7.85	101.12
Ammonia as N (mg/L)					
No. of samples	13	13	11	13	8
Minimum	0.00	0.00	0.00	0.00	0.04
Maximum	0.19	0.20	0.00	0.00	0.16
Median	0.00	0.00	0.00	0.00	0.08
Mean	0.03	0.02	0.00	0.00	0.09
Std Dev	0.06	0.06	0.00	0.00	0.04
CoV	173.38	300.39	0.00	0.00	48.94
95% CI	0.03	0.03	0.00	0.00	0.03
Nitrate (mg/L)					
No. of samples	13	13	11	13	9
Minimum	0.00	0.00	0.00	0.00	0.00
Maximum	3.03	3.73	1.08	1.16	0.76
Median	0.22	0.12	0.11	0.23	0.00
Mean	0.60	0.59	0.39	0.44	0.19
Std Dev	0.86	1.05	0.47	0.45	0.28
CoV	142.40	178.95	120.34	101.95	151.02
95% CI	0.47	0.57	0.28	0.25	0.19
Nitrate_Nitrite (mg/L)					
No. of samples	13	13	11	13	9
Minimum	0.00	0.00	0.00	0.00	0.00
Maximum	3.25	4.04	1.11	1.19	0.79
Median	0.22	0.14	0.11	0.23	0.09
Mean	0.64	0.62	0.40	0.45	0.21
Std Dev	0.91	1.13	0.48	0.46	0.29
CoV	142.04	182.32	120.86	101.88	140.08
95% CI	0.49	0.62	0.28	0.25	0.19

Attachment C13.5 *continued*

	STATION				
	A	C	D1	E	LAG1
Nitrite (mg/L)					
No. of samples	13	13	11	13	9
Minimum	0.00	0.00	0.00	0.00	0.00
Maximum	0.22	0.31	0.04	0.04	0.04
Median	0.02	0.00	0.00	0.00	0.00
Mean	0.03	0.04	0.01	0.01	0.01
Std Dev	0.06	0.09	0.01	0.01	0.02
CoV	187.37	245.69	226.68	190.92	123.54
95% CI	0.03	0.05	0.01	0.01	0.01
Total Nitrogen (mg/L)					
No. of samples	13	13	11	13	9
Minimum	0.00	0.00	0.00	0.00	0.00
Maximum	0.94	1.13	0.39	0.42	0.33
Median	0.08	0.00	0.00	0.00	0.16
Mean	0.20	0.17	0.13	0.13	0.13
Std Dev	0.28	0.32	0.16	0.17	0.13
CoV	137.66	188.64	124.31	136.03	101.61
95% CI	0.15	0.17	0.09	0.09	0.08
Ortho_Phosphate (mg/L)					
No. of samples	13	13	11	13	9
Minimum	0.70	0.00	0.73	0.69	0.00
Maximum	1.38	0.99	0.96	0.95	2.06
Median	0.80	0.00	0.83	0.81	0.00
Mean	0.86	0.28	0.83	0.81	0.55
Std Dev	0.17	0.39	0.07	0.07	0.86
CoV	20.01	138.15	8.02	8.79	154.50
95% CI	0.09	0.21	0.04	0.04	0.56
Total Phosphorus (mg/L)					
No. of samples	13	13	11	13	9
Minimum	0.08	0.00	0.00	0.00	0.00
Maximum	0.83	0.15	0.20	1.22	0.12
Median	0.12	0.00	0.14	0.11	0.00
Mean	0.18	0.02	0.13	0.18	0.04
Std Dev	0.20	0.05	0.05	0.32	0.05
CoV	107.37	251.21	41.88	172.01	121.43
95% CI	0.11	0.02	0.03	0.17	0.03
Total Suspended Solids (mg/L)					
No. of samples	13.00	13.00	11.00	13.00	9.00
Minimum	1.20	0.00	0.00	0.00	4.30
Maximum	18.50	50.00	12.70	47.00	29.60
Median	2.10	2.10	1.60	3.50	13.90
Mean	4.85	6.82	2.61	7.10	13.70
Std Dev	5.80	13.42	3.42	12.28	8.08
CoV	119.65	196.89	131.22	173.08	58.97
95% CI	3.15	7.29	2.02	6.68	5.28

Attachment C13.6

Sources of thresholds used to evaluate data collected as part of the continued monitoring program for Investigative Order No. R9-2011-0070.

Parameter	Limit	Units	Source(s)
Dissolved Oxygen	5	mg/L	CA Basin Plan Water Quality Objectives[1]
Dissolved Oxygen (%saturation)	44	%	Represents percent saturation at 20°C for DO concentration of 4.0 ppm, considered the minimum to sustain life.[2]
pH	> 6.5 and < 9.0	pH	CA Basin Plan Water Quality Objectives[1]
Temperature	NA		
Ammonia as N	0.025	mg/L	CA Basin Plan Water Quality Objectives[1]
Nitrate as N	10	mg/L	
Nitrate + Nitrite as N	10	mg/L	CA Basin Plan Water Quality Objectives[1]
Nitrite as N	1	mg/L	
Total Nitrogen	NA		
Phosphorus as P, Total	2	mg/L	CA Basin Plan Water Quality Objectives[1]
Ortho_phosphate	NA		
Total Suspended Solids	100	mg/L	MSGP 2000[3]

NA = indicates no criteria or published value was available for, or applicable to, this project

[1] State of California. (1994). Water Quality Control Plan for the San Diego Basin (9). California Regional Water Quality Control Board San Diego Region, San Diego, CA.

[2] [USEPA] United States Environmental Protection Agency. (1995). Short-term methods for estimating the chronic toxicity of effluents and receiving waters to west coast marine and estuarine organisms. EPA/600/R-95-136.

[3] [USEPA] United States Environmental Protection Agency. (2000) Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity. FR Doc. 00–25469

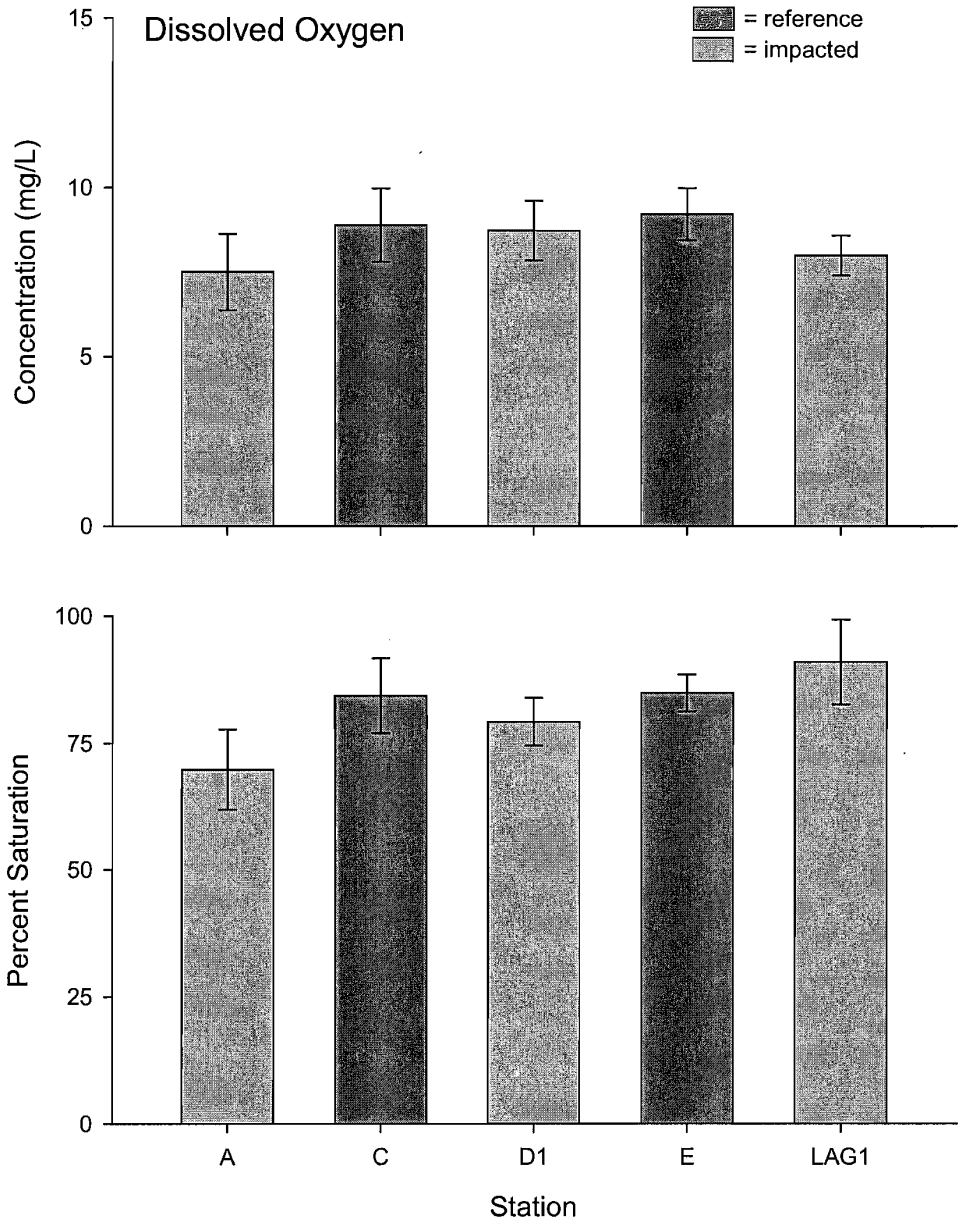


Figure C13.1
Comparison of dissolved oxygen across stations sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data are means +/- 95% confidence intervals; discontinued stations (D, LAG) are not included.

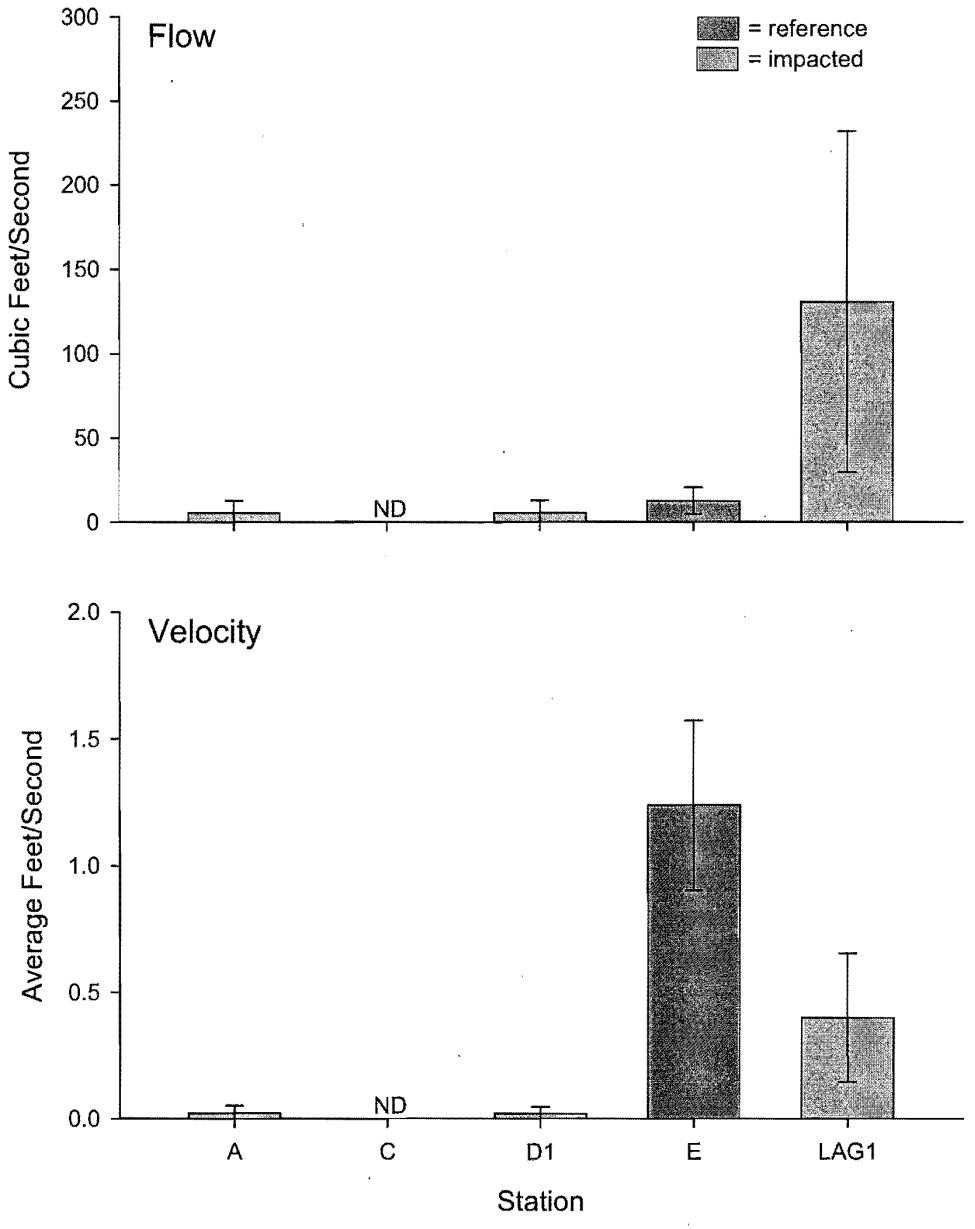


Figure C13.2
Comparison of flow and velocity across stations sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data are means +/- 95% confidence intervals; discontinued stations (D, LAG) are not included. Note that both parameters were strongly influenced by tides at the lagoon site, such that all flow measurements appeared to be due to changes in tidal currents. ND = not detected (i.e., flow was below detection limit).

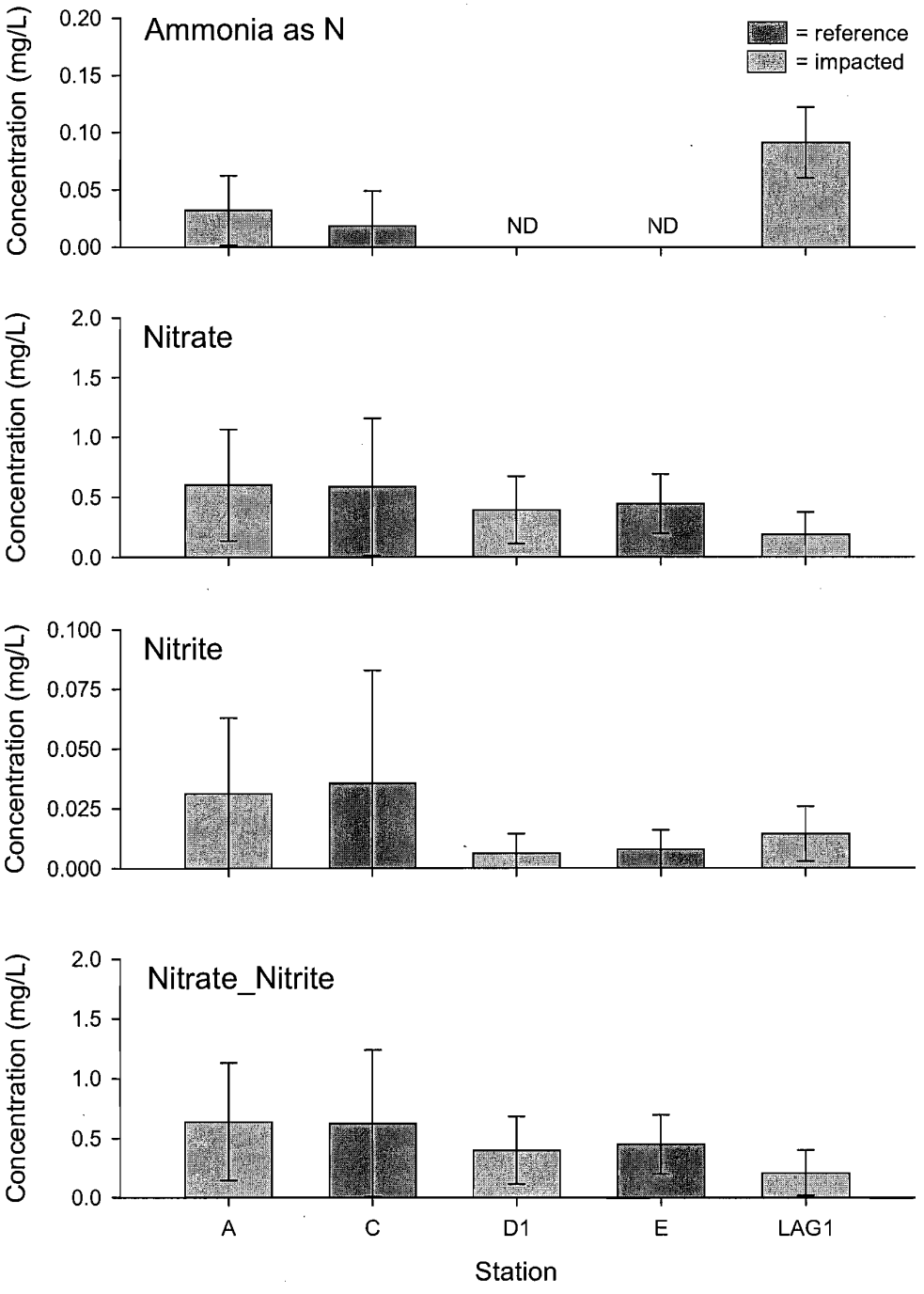


Figure C13.3
Comparison of ammonia (as N), nitrate, nitrite, and nitrate_nitrite across stations sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data are means +/- 95% confidence intervals, with zeros substituted for values below detection limits (ND = not detected). Discontinued stations (D, LAG) are not included.

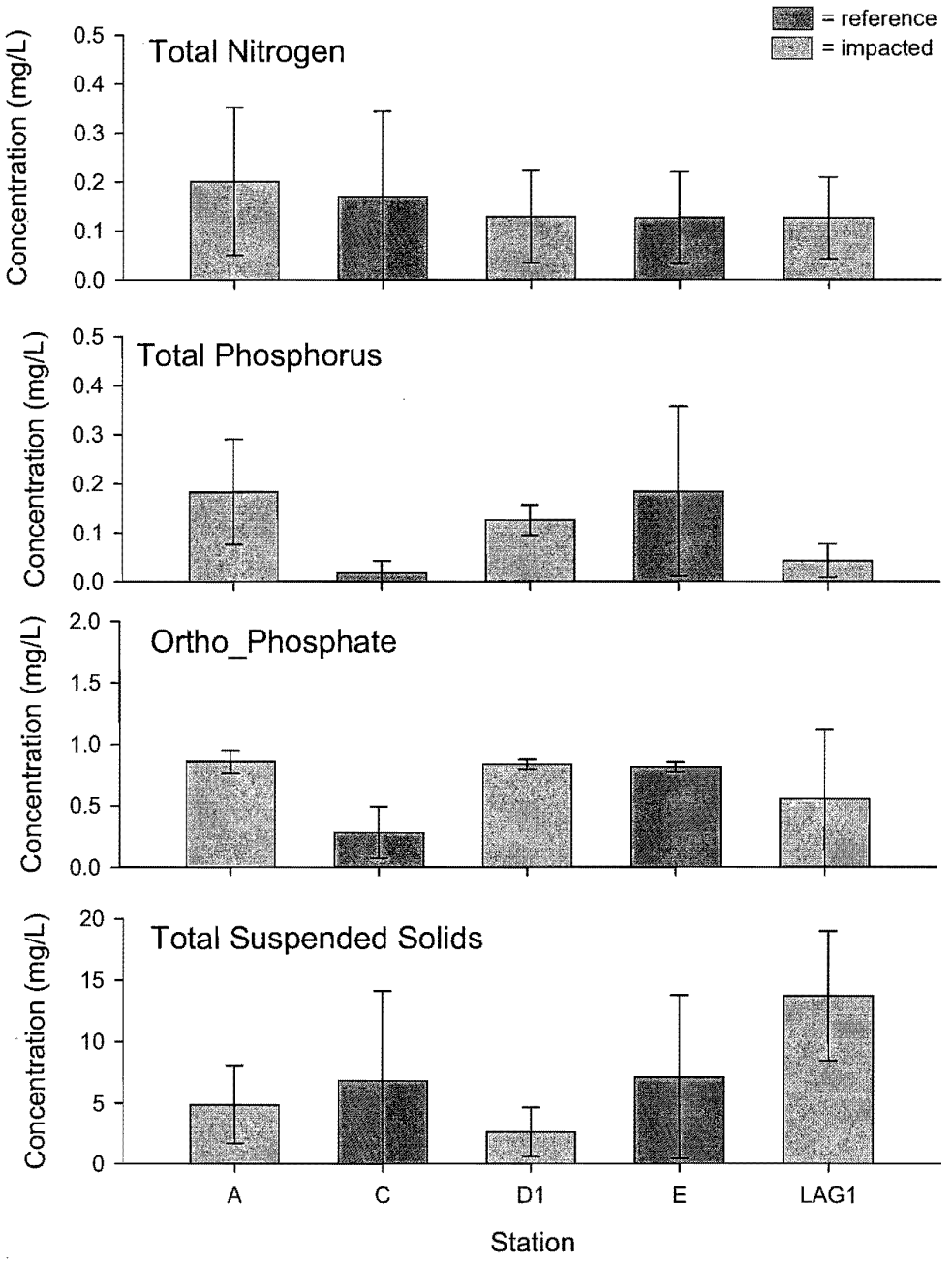


Figure C13.4
Comparison of total nitrogen, total phosphorus, ortho_phosphate, and total suspended solids across stations sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data are means +/- 95% confidence intervals, with zeros substituted for values below detection limits. Discontinued stations (D, LAG) are not included.

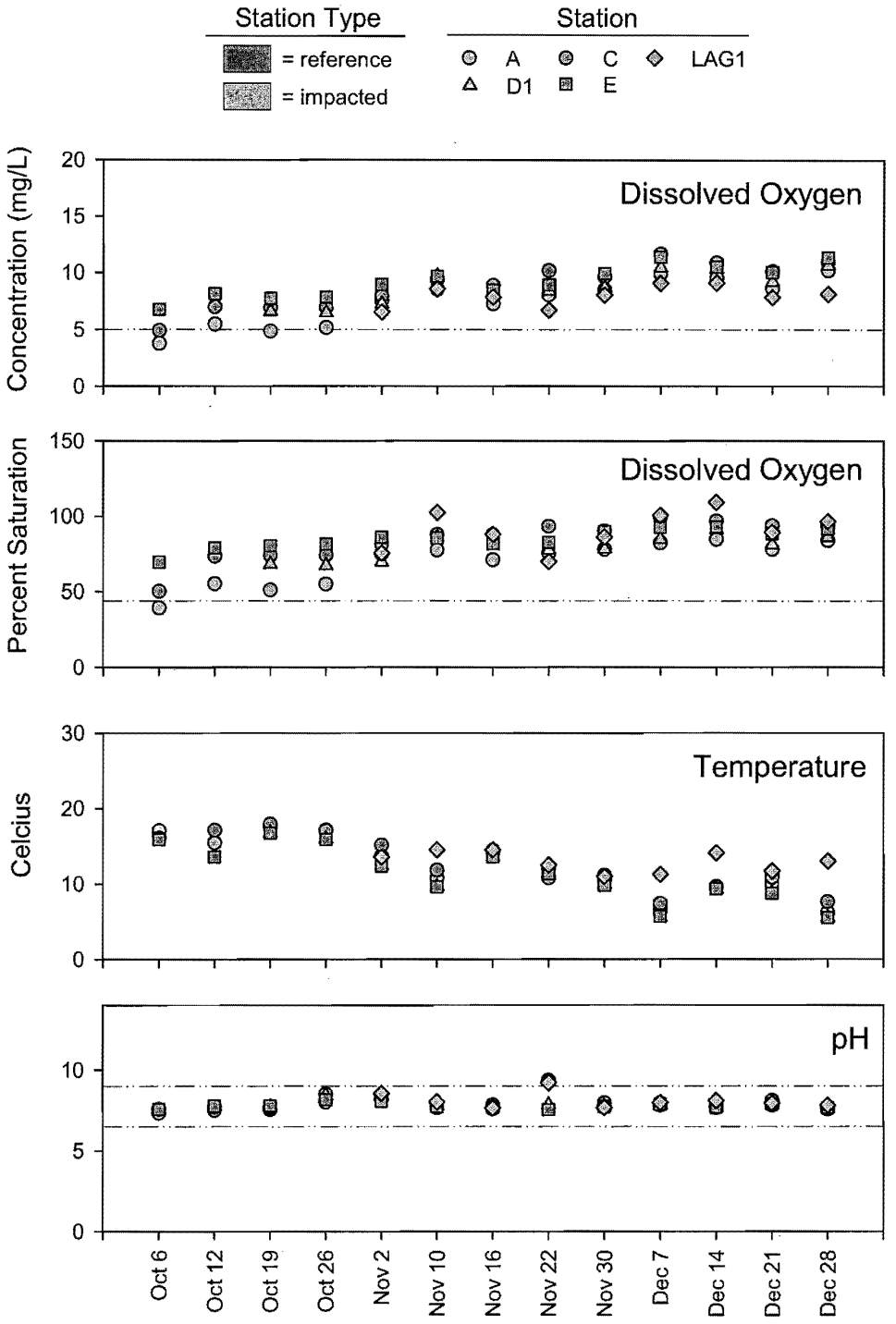


Figure C13.5

Dissolved oxygen and supplemental parameters (temperature, pH) plotted for each station by sample date. Red lines indicate threshold values used to evaluate data; see Attachment C13.6. Discontinued stations (D, LAG) are not included.

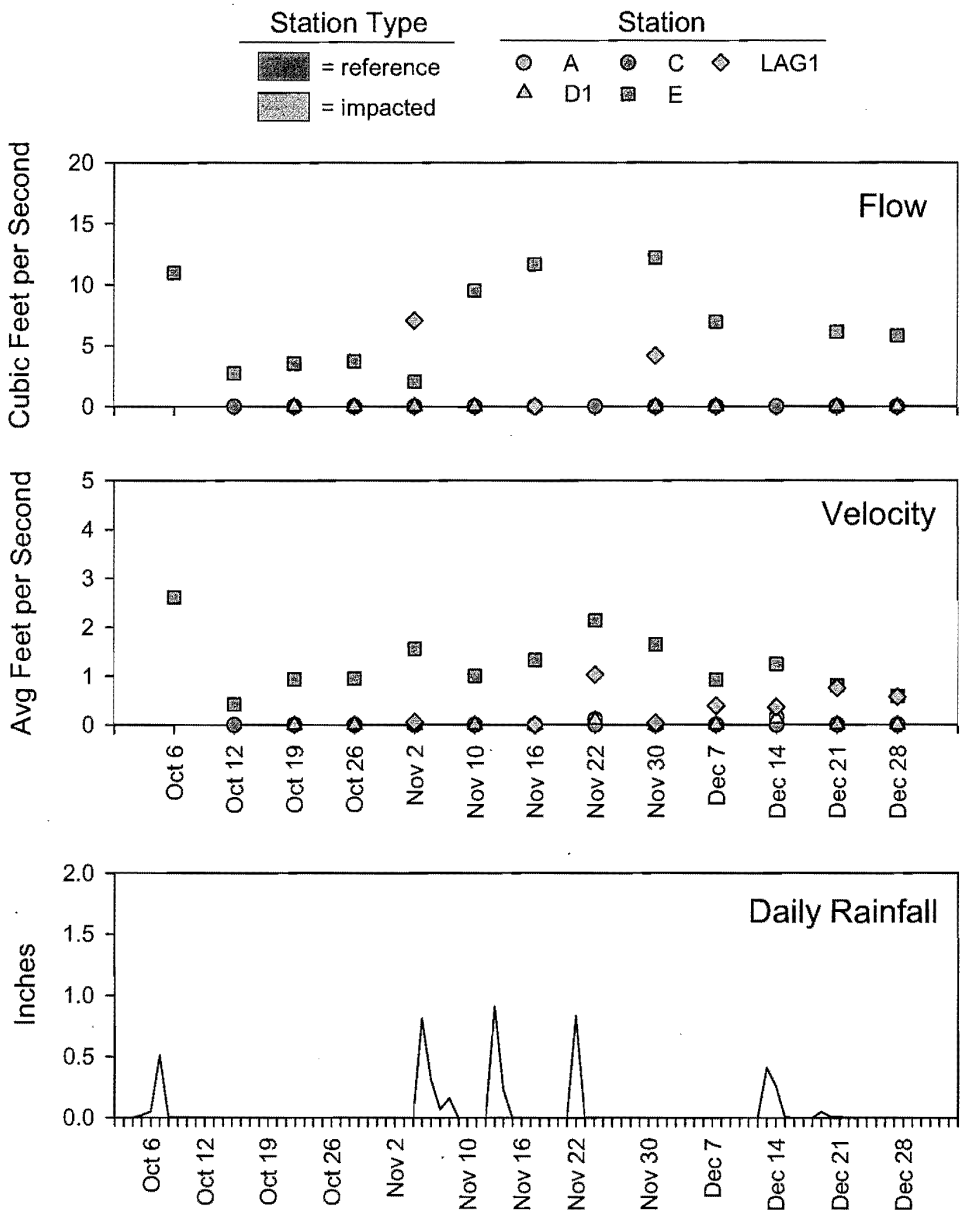


Figure C13.6

Flow and velocity plotted for each station by sample date, as well as daily rainfall plotted between October 2 and December 31, 2011. Rainfall data are from Miramar. Note that zeros were substituted for values below the detection limit and flow and velocity at lagoon stations were related to tides, not rainfall. See Table C13.2 for tide information. Discontinued stations (D, LAG) are not included.

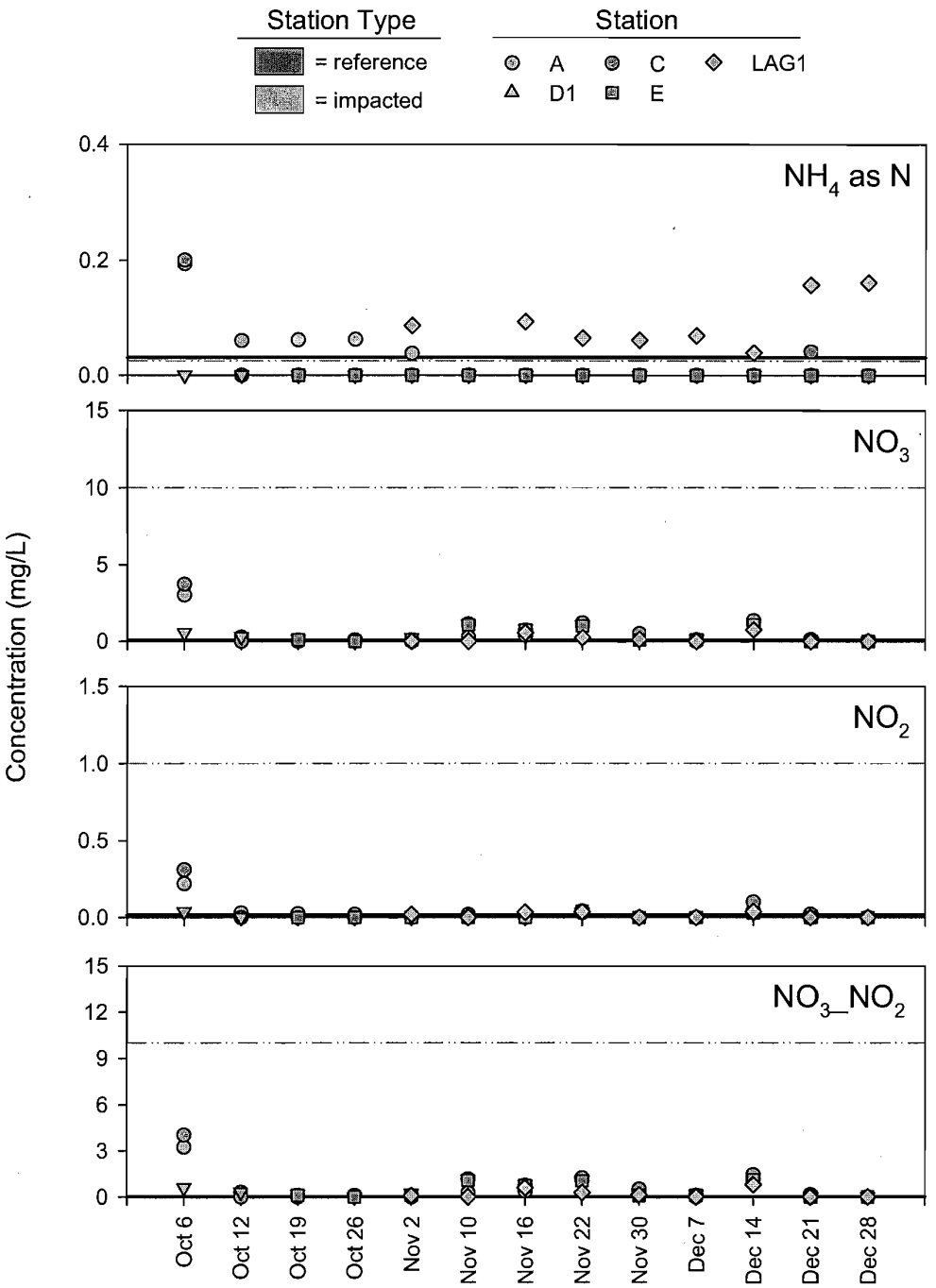


Figure C13.7

Ammonia as N (NH_4), nitrate (NO_3), nitrite (NO_2), and nitrate_nitrite (NO_3_NO_2) plotted for each station by sample date. Zeros indicate values below method detection limits, indicated by solid black lines. Red lines indicate threshold values used to evaluate data; see Attachment C13.6. Discontinued stations (D, LAG) are not included.

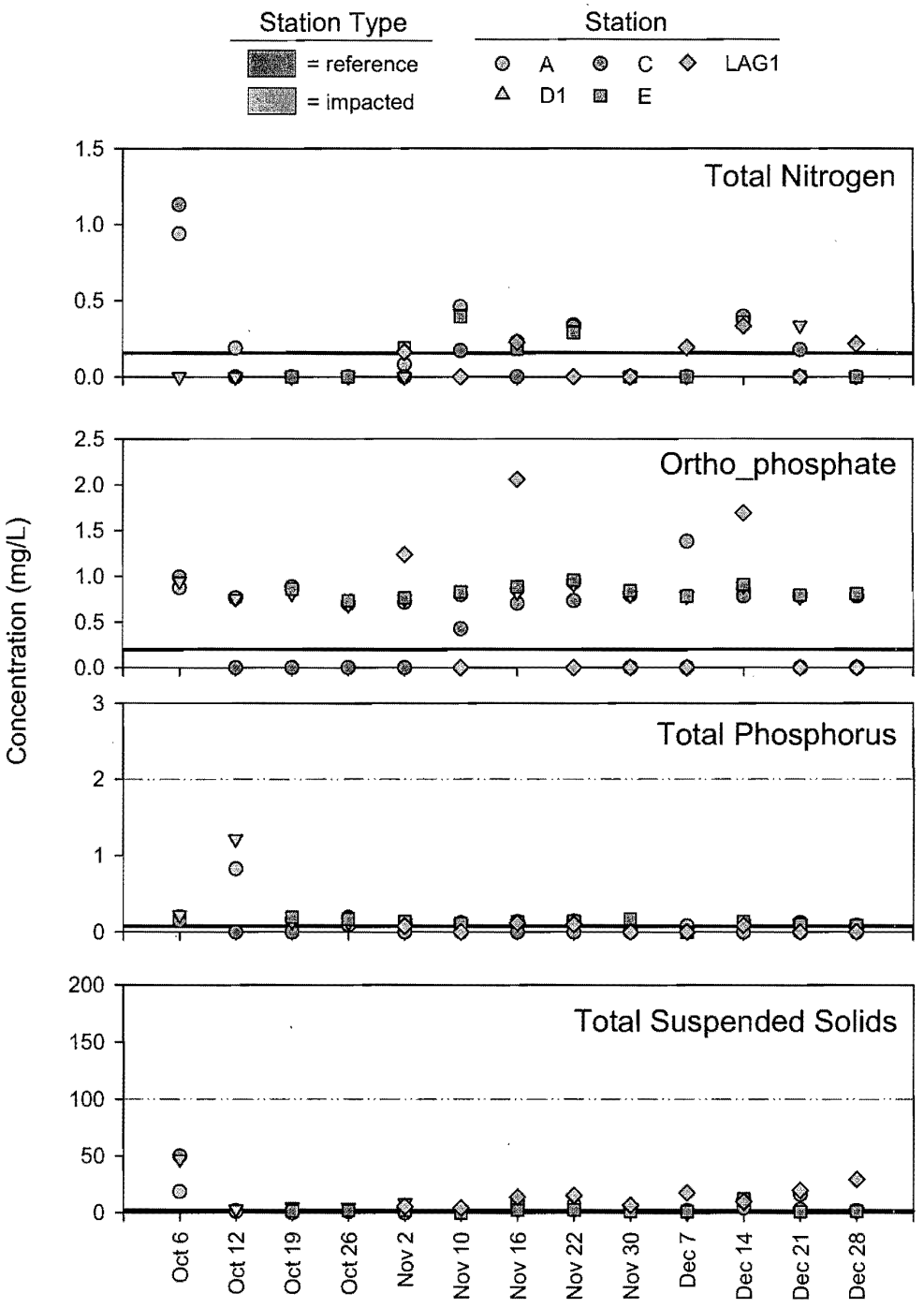


Figure C13.8

Total nitrogen, ortho_phosphate, total phosphorus, and total suspended solids plotted for each station by sample date. Zeros indicate values below method detection limits, indicated by solid black lines. Red lines indicate threshold values used to evaluate data; see Attachment C13.6. Discontinued stations (D, LAG) are not included.

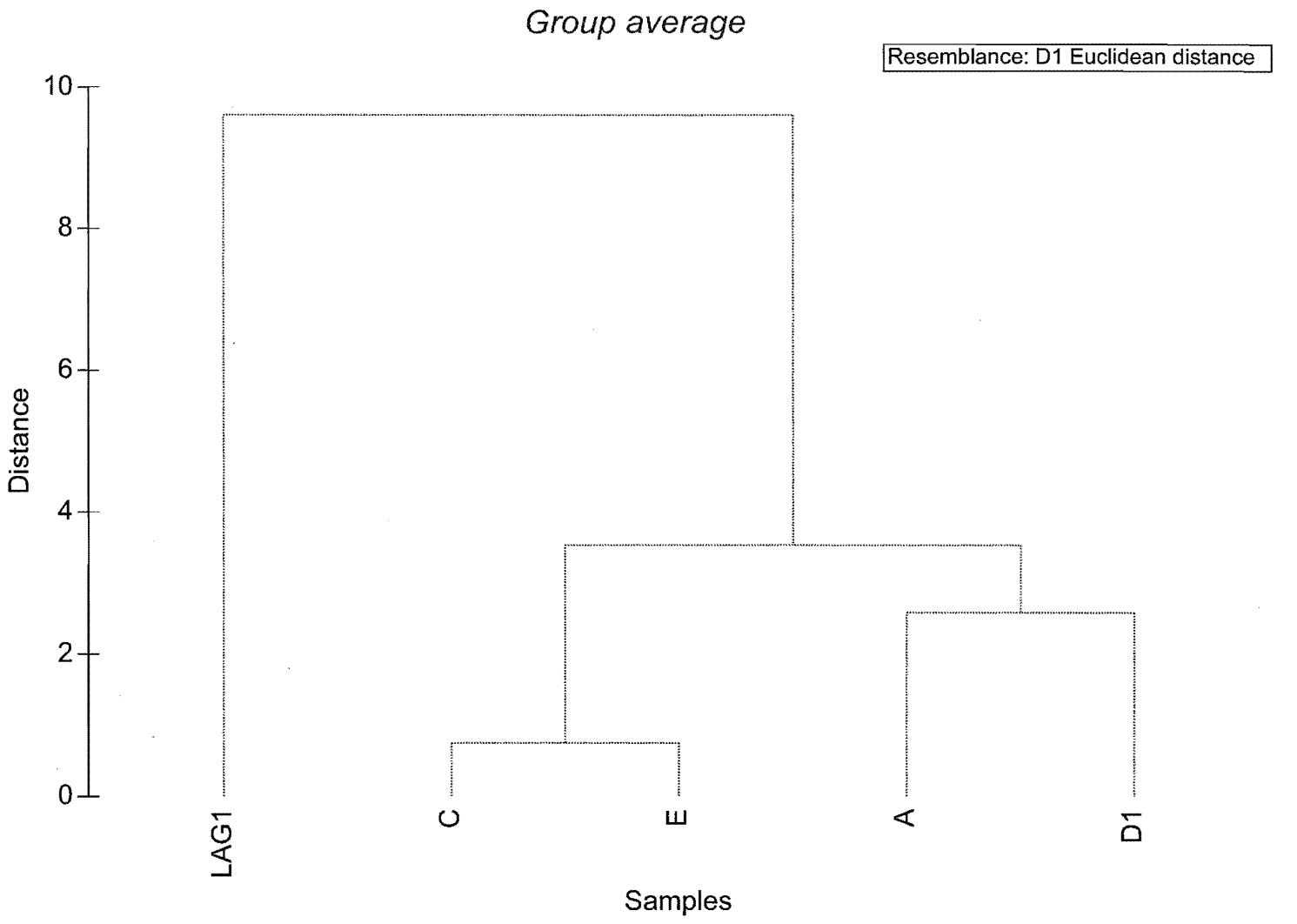


Figure C13.9
Cluster dendrogram depicting relationship of sites (data from multiple sampling dates averaged). Red lines indicate that non-random structure of the dendrogram was not confirmed.

THE CITY OF SAN DIEGO

SAN DIEGO REGIONAL
WATER QUALITY
CONTROL BOARD

2012 FEB 17 P 1:24

February 17, 2012

Mr. James G. Smith
Assistant Executive Officer
Regional Water Quality Control Board
91174 Sky Park Court, Suite 100
San Diego, CA 92123-4340

Dear Mr. Smith:

Subject: **631595:JHAAS**
Response to Investigative Order (IO) No. R9-2011-0070, Pertaining to Discharge of Untreated Sewage to Los Penasquitos Creek on September 8, 2011, Caused by Loss of Power at Pump Station 64

As described in my January 13, 2012 letter, we are not able to submit a complete final report as described in Section C. *Continued Monitoring Program and Reports* of the IO. I appreciate your understanding of our circumstances as you noted in your email of January 11, 2012. Enclosed with this letter is the Comprehensive Supplemental Final Report as promised in my January 13, 2012 letter. Enclosures I and II (with attachment and appendices) provides a comprehensive report on the studies described in Section C. *Continued Monitoring Program and Reports* of the IO. The report evaluates the nature, circumstances, extent, and impacts of the accidental discharge of sewage on September 8, 2011 as described in the City's Technical Report of October 14, 2011.

The provisions stipulated in Section D. *Provisions*, have been adhered to.

All analyses were conducted at a laboratory certified for such analyses by the CDPH in accordance with current procedures approved by the United States Environmental Protection Agency. These laboratories also hold certification by the CDPH Environmental Laboratory Accreditation Program (ELAP) for the Fields of Testing and methods used in this study, where such certifications exist.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate,

and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions or need additional information, please don't hesitate to contact me at 619-758-2300 or email (smeyer@sandiego.gov).

Sincerely,

Steve Meyer
Deputy Public Utilities Director

Enclosure: I. IO Sections C12 & C13: Water Chemistry Monitoring Program and Reports
II. IO Section C14: Bioassessment Monitoring and Reporting

(Supplemental)
Final Report
for
Investigative Order No. R9-2011-0070

February 2012

City of San Diego
Public Utilities Department
Environmental Monitoring and Technical Services Division

THE CITY OF SAN DIEGO

February 17, 2012

Mr. James G. Smith
Assistant Executive Officer
Regional Water Quality Control Board
91174 Sky Park Court, Suite 100
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Environmental Monitoring and Technical Services Division • Public Utilities
2392 Kincaid Road • San Diego, CA 92101-0811
Tel (619) 758-2300 Fax (619) 758-2309

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Sincerely,

Steve Meyer
Deputy Public Utilities Director

Enclosure: I. IO Sections C12 & C13: Water Chemistry Monitoring Program and Reports
II. IO Section C14: Bioassessment Monitoring and Reporting

Enclosure I

Investigative Order Sections C12 & C13:

Water Chemistry
Monitoring Program and Reports

City of San Diego
Public Utilities Department
Environmental Monitoring and Technical Services Division

Comprehensive Supplemental Final Report for Investigative Order R9-2011-0070

Investigative Order Sections C12 & C13:
Water Chemistry Monitoring Program and Reports

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12 b and c: Station Map and GIS Coordinates

The five monitoring stations were selected based on the Investigative Order's (IO) requirement as described in Item 13.a.i of the Order and are presented as Attachment C12.1 and C12.2 to this report. Stations D and Lagoon were replaced by Station D1 and Lagoon1, after the start of the monitoring effort. On October 19, 2011 Station D was moved 200 feet upstream after it was determined by the Biologists from Weston and the City that the station was too deep for the Bioassessment study and that it extended beneath the railroad tracks, making it unsafe for extended field work. On November 2, 2011 the Lagoon Station was changed to Lagoon1. It was moved to the Mudflats near the mouth of the Los Penasquitos Lagoon after consulting with the Regional Board on the requirements for the Eutrophication study. The sites descriptions, their GPS Coordinates, the sampling period and time and the total number of samples are in Attachment C12.2 as per Item 12.a.i and 12.a.ii.The weekly field monitoring required in Items 13.b.i and 13.b.ii was performed by Public Utilities Department's (PUD) staff Biologists beginning on October 6, 2011 and ending on December 28, 2011. Each sampling event started as soon as it was light enough to safely access the stations, usually 30-35 minutes prior to sunrise.

13: Water Chemistry Monitoring and Reporting

<u>Water Chemistry and Physical Parameters Measurements Methods</u>

The creek's and lagoon transects were measured at approximately the same location each time. The field measurements taken were: width, depth and flow (ft/sec). If the flow meter's propeller did not move the measurement was recorded as "Not Detected" (ND). Flow measurements were not taken when creek levels and velocity were too high after storms due to staff safety concerns. Flow measurements are reported (in cubic feet/second) as an average over the width of the creek's stations and the lagoon's stations. Two flow meters were used for measurements. A Swoffer flow meter Model 2100 and a Global Water flow meter model: Flow Probe 101. The meter's detection range is: 0.1 to 25 feet/second.

Multi-Probe Water Profilers YSI/Hydrolab were used for all field chemistry parameter measurements. The probes were calibrated in the laboratory each event prior to field measurements. Barometric pressure was acquired from Gillespie Field Airport and relevant tide conditions data was acquired from

Scripps Institute of Oceanography before each sampling day. Attachment C13.1 shows sample dates, field instruments descriptions, sunrise and tide times.

For the field data acquisition the multi-probe was placed in the water at approximately the same location at each monitoring event and station. The parameters measured were: Dissolved Oxygen (DO) Concentration, DO Saturation, Temperature, pH, and the time of day. Data acquired by the data-logger was later downloaded into the working spreadsheet.

Water chemistry samples were collected from each station in a 2 liter and a 250 ml bottle. The samples were transported and delivered to the laboratory in a cooler with blue ice and analyzed within the holding times for the parameters specified on the IO's Section 13.b.ii.

Field sampling and measurements performed by Environmental Monitoring and Technical Services staff were conducted according to State Water Resources Control Board Surface Water Ambient Monitoring Program (SWAMP) guidelines. Monitoring equipment was calibrated and checked for accuracy following SWAMP Quality Assurance Program Plan. Chemical analyses for this investigative order were performed by California Department of Public Health (CDPH) Environmental Laboratory Accreditation Program (ELAP) certified laboratories in the Environmental Monitoring and Technical Services Division of the City of San Diego Public Utilities Department. Specifically, work was performed by the Water Quality Laboratory (ELAP Certification #1058) and Wastewater Chemistry Services (ELAP Certification #1609). A full report of quality assurance and quality control activities is included as Appendix C13.A.

All monitoring station metadata (site descriptions, GPS coordinates, sampling dates, etc.) and raw water chemistry data are included on CD in an EXCEL file. This EXCEL file also contains descriptive statistics for each parameter by station, and a summary of all water quality objective thresholds used in this report. The enclosed CD also contains a copy of this report, with all tables and figures, including a site map.

Dissolved Oxygen (DO) and DO Percent Saturation

Due to the distance and access between the five stations only two sites could be sampled within the 30-35 minutes prior and the one hour after sunrise, as specified by the IO. In order to be consistent, the stations were sampled in the same order each monitoring event.

DO results: As reported in Attachment C13.2, weekly results following the spill, excluding the initial October 06, 2011 sample event, demonstrate that Dissolved Oxygen (DO) levels returned to above Water Quality Objectives (WQO) established by the Basin Plan (>5mg/L) by October 12, 2011 at all stations, including D1 which is the station just downstream from the spill's entry point into the creek.

Oxygen saturation is calculated as the percentage of dissolved oxygen concentration relative to that when completely saturated at the temperature of the measurement depth. As temperature increases, the concentration at 100% saturation decreases and vice-versa. Attachment C13.3 shows comparative field chemistry results for DO Concentration and % Saturation across all stations.

pH

pH values returned to WQO levels shortly after the spill on September 13, 2011 (during the preliminary monitoring), and remained within the expected range (6.5 – 8.5 pH units) throughout the comprehensive monitoring. Field measured pH values for all stations are presented in Attachment C13.2, and Attachment C13.4 shows DO, DO% Saturation, temperature and pH for the reference and impacted stations by sample event.

Flow and Velocity

The Los Penasquitos Creek (LPC) is the largest of the three creeks in the Los Penasquitos Watershed Hydrologic Unit and potentially the largest contributor of sediment to the Los Penasquitos Lagoon, before flowing into the Pacific Ocean through a narrow mouth at Torrey Pines State Beach. LPC flows year round due to land use development and urban runoff. Peak flows are during the rainy season, which is from mid-October through mid-April. During the three months of post-spill monitoring by PUD's staff, approximately 3.51" of rain fell from 16 separate rain events. During these events flow and velocity in the LPC peaked at Stations E and Lagoon1.

Flow could not be detected by the instrument on several occasions at stations A, C, and D1. Stations A (up to 70 feet wide) and D1 (up to 100 feet wide) are located in sections of the creek that are impounded by large mats of aquatic vegetation on the streambed (cattails), and willows along the banks. Station C is impounded by overgrown vegetation both up and downstream from the sample site. As a historical note, this section upstream of the Carroll Creek and Los Penasquitos Creek confluence is known for overflowing its banks just about every winter. Flow and Velocity graphs across all stations are shown in Attachment C13.5. The same parameters plus rainfall by sampling event (for the three months monitoring) period are shown in Attachment C13.6.

Nutrients

Nutrients raw data for the five stations is presented in Attachment C13.7 and Attachment C13.8 and includes the descriptive statistics for all physical and chemical parameters by station. Attachment C13.9 and C13.10 show the graphed results of each parameter by station, and C13.11 and C13.12 show all parameters plotted by sample date.

Data were compared to various thresholds, listed in Attachment C13.13. Some of these included the Water Quality Objectives for Inland Surface Water, which are listed in Table 3.2 at: http://www.swrcb.ca.gov/sandiego/water_issues/programs/basin_plan/ and in the SWAMP document: http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/factsheets/305breport2006.pdf.

Transient increases in nutrient concentrations in a few of the post-spill samples coincide with storm flows that may have scoured settled organic matter and each subsequent sample event shows a downward trend in values.

From this information it appears that long term nutrient impact on the creek and lagoon was probably negligible. Actual nutrient concentrations in these water bodies were found to be within normal range of values measured by Coastkeepers in 2009, 2010 and 2011, and the RW-URMP reports of 2010/2011, which monitored the creeks during the 'wet season".

While some dissolved nutrients would have been taken up by plants in the creek and lagoon channels, it is assumed that most of the dissolved nutrients were removed from the system during the creek's pumping operations that took place immediately after the spill. Any remaining nutrients were probably flushed out by storm flows in the three subsequent months. Future rainfall events this winter season will continue to flush the channels.

Multivariate Analysis of Water Chemistry Data (October 6 – December 28, 2011)

Multivariate analyses were performed using PRIMER (Plymouth Routines in Multivariate Ecological Research) software to determine whether: (1) significant differences in water chemistry existed between impacted and reference areas, and (2) to determine whether water chemistry differences existed among individual stations. Parameters included dissolved oxygen, ammonia as N, nitrate, nitrite, nitrate nitrite, total nitrogen, total phosphorus, ortho-phosphate, total suspended solids. A Euclidean distance matrix was created from the untransformed data matrix with station type (i.e., impacted, reference) and station identifier (i.e., A, C, D1, E, LAG1) provided as factors. Data from LAG1 on 10 November 2011 were not included due to a missing ammonia value. A one-way analysis of similarity (ANOSIM) was conducted for each factor to determine whether significant differences existed. To visually depict relationships among individual sites, the untransformed data matrix was averaged by station, and a non-metric multidimensional scaling (nMDS) ordination and a cluster dendrogram were created. Similarity profile (SIMPROF) analysis was used to confirm the non-random structure of the cluster dendrogram.

No significant differences were found amongst the Los Penasquitos creek sites sampled between October 6 and December 28, 2011. Global-R of the one-way ANOSIM that tested for differences among all individual stations was non-significant (0.137, $p = 0.0006$); however, individual pair-wise tests among sites revealed water chemistry at the lagoon site (LAG1) to be significantly different from all creek sites (r-value range = 0.387-0.644, all *p*-values were significant). In addition, a one-way ANOSIM by station type found no significant difference in water chemistry between reference and impacted areas (Global R = 0.014, p = 0.236). The significant difference in water chemistry between the lagoon site and creek sites was likely caused by the natural diurnal tidal flushing and brackish water conditions found at LAG1 that are absent in creek settings. Although LAG1 clustered apart from creek sites in the cluster dendrogram (Attachment C13.14), structure of the clades was supported by SIMPROF analysis.

Supplemental Analysis

Subsequent to the Preliminary Final Report for Investigative Order R9-2011-0070 submitted to the Regional Board on January 13, several additional analyses were performed to compare conditions in Los

Penasquitos creek during the initial monitoring efforts (September 13-26, 2011) to those during the continued monitoring efforts (October 6-December 28, 2011). Attachment C13.15 lists all stations from both sample periods, along with their GPS coordinates, sample dates, and total number of samples collected; Attachment C13.16 is a map of all sites. We also compared data to the two reference (i.e., sampled pre-spill) locations monitored as part of the San Diego County Co-Permittees Urban Runoff Monitoring Program by Weston Solutions, Inc. (see Attachment C13.15, Attachment C13.16).

Additional multivariate analysis of the water quality data was performed and is explained in the next section. (see attachments C13.17-C13.21). Attachment C13.17 also includes summary statistics for nitrate, total phosphorus, and total suspended solids from the two reference stations.

This report compares the comprehensive data to the data from the immediate post-spill monitoring and to results from Project Clean Water's 2010-2011 Urban Runoff Monitoring Report (listed in References). The data results for both projects are presented in C13.17-C13.19.

Attachments C13.20 and C13.21 illustrate the relationship of the results from all three sets of data for DO, DO Percent Saturation, pH and Temperature.

The City's data show that temperature, pH, ammonia, nitrate, total phosphorus, total suspended solids levels have returned to ambient levels as reported in the RW-URMP annual report for 2010/2011, their most recent wet weather monitoring results for two of their sampling locations closest to or at the same site monitored by the City.

Multivariate Analysis of Water Chemistry Data (September 13-December 28, 2011)

A matrix containing all available ammonia, dissolved oxygen, pH, and temperature data from stations sampled during initial monitoring efforts (September 13-26, 2011; including 1, 2, 3, 4, 5, 6) and subsequent monitoring efforts (October 6-December 28, 2011; including A, C, D1, E, LAG1) was created, and draftsman plots were produced to examine relationships among variables (see Attachment C13.23). Because relationships among data were evident, likely values of missing ammonia data were estimated using PRIMER (Plymouth Routines in Multivariate Ecological Research) software. Subsequently, multivariate analyses were performed using PRIMER to determine whether: (a) a temporal difference of variables occurred at each station, and (b) a spatial difference of variables occurred among stations. Before analyses, all data were normalized to unitless values where the mean of each column was 0 and the standard deviation was 1, and a Euclidean distance matrix was created. A 2-way nested analysis of similarity (ANOSIM) with date nested within station was conducted. Since no significant temporal differences within stations were detected (see Results below), data were averaged by station to create a dendrogram depicting the relationship of stations based on analyzed data. Similarity profile (SIMPROF) analysis was used to confirm the non-random structure of the dendrogram.

A two-way nested ANOSIM (date nested within station) revealed that water chemistry conditions did not differ significantly during the period within which each station was sampled (Global R = 0.146, p = 0.0001). However, water chemistry conditions differed significantly among stations (Global R = 0.485, p = 0.0001; Attachment C13.24). A cluster dendrogram (Attachment C13.25) revealed which stations possessed water chemistry conditions that were the most similar; impacted sites sampled between

September 13 and 26, 2011 were found to have distinct water chemistry conditions compared to reference sites sampled during the same period and all sites (reference and impacted) sampled between October 6 and December 28, 2011.

Conclusion

Potential Effects and Creek Recovery

Short-term Effects

Taken singularly the sewage spill may have had an impact on the aquatic biota of the Los Penasquitos Creek. The effect of the wastewater in the creek was immediate once its concentration reached high enough level of nutrients input to deplete dissolved oxygen to below threshold limits (<5 mg/L). Although some fish kill was observed and documented, this impact was very short-term and there were no long-term effects on the aquatic habitat. The creek was suitable for re-habitation just a few weeks after the spill event (see attached tables of dissolved oxygen readings). In fact a largemouth bass were observed at the confluence of Carroll and Los Penasquitos Creek less than a month after the spill. These fish were able to escape upstream (on Carroll Ck.) after the initial sewage input and returned when conditions had improved. Water boatman, mayfly nymph, scuds, and dragonfly naiads were collected from the most downstream monitoring station during the spill/creek pumping operations. Blue herons were observed fishing from the railroad trestle on Vista Sorrento Parkway and mullets were seen at the lower reaches of the creek in the Torrey Pines Preserve.

If it were deemed appropriate to foster the recovery of non-native fish and crayfish into LPC, it is likely that little would be required. Re-establishment (if in fact they were ever present in large numbers) would likely happen through natural migration downstream from source populations upstream. When they do re-colonize the affected parts of the creek, they should have no problem establishing stable populations as most of the species (crayfish, green sunfish, carp, mosquitofish) are highly invasive.

Long-term Effects

Residual nutrients left in the system (mostly in particulate form) have the potential to breakdown this coming spring and summer. Some nutrients in the sewage may have settled out in deeper areas of the creek (Stations A and D1), which are “pocketed out” by overgrown aquatic vegetation. The creek forms a deep pond, especially immediately east and west of the railroad tracks, near Station D1 and water movement is very slow due to the heavy wetlands vegetation on the sides and middle of the channels. Although Station A is also impounded by thick vegetation, flows through this part of the creek will likely increase during the rainy season as a result of the vegetation removal work by the City of San Diego’s Transportation and Storm Water Department that took place between October 17, 2011 and December 6, 2011. Crews performed hand removal of vegetation and debris from approximately a 0.84 acre (36,400 square feet) area along Soledad Creek over a seven week period. This work was performed in a 1,400 foot section that runs from about 10920 Roselle Street to 11065 Roselle Street. If sufficient nutrients are present, an algal bloom could occur in the summer as high daily temperatures warm the water during the seasonal

low flow periods of dry weather. The potential for an eutrophication effect could cause some fish die-off downstream.

Finally, the apparent absence of spill effects is probably due to dilution by subsequent rain events , the presence of chronic urban nutrient inputs to the creek and lagoon and the comparatively short duration of the spill (relative to the chronic nutrient inputs from storm water runoff).

Summary

As a result of the power outage sewage spill the City of San Diego implemented an aggressive, comprehensive and pro-active environmental monitoring response to evaluate the impact on the Los Penasquitos Creek.

- Between September 13 and 26, 2011 PUD's scientists and technicians collected and analyzed 221 samples from seven sampling stations along the creek making 1,110 measurements and determinations.
- Between October 6 and December 28, 2011 PUD's scientists and technicians collected 195 water samples from five stations and made 780 quantitative determinations as required by the IO for the expanded post spill monitoring.
- The Department's consultant for the Bioassessment, algae and eutrophication study (Weston Solutions, Inc.) produced 131 water chemistry data points.
- They also collected and identified 7,208 benthic macroinvertebrates (BMI) for the Bioassessment study.
- In the end a total of 2,021 water chemistry sample data points were analyzed between September 13 and December 28, 2011. The Department's Wastewater and Water Quality laboratories performed 93.5% of the chemical testing.
- A comparative analysis of the Continued Monitoring parameters was performed vs. the data from the RW-URMP 2010/2011 report. The preliminary report compared the City's data to the (citizen monitoring group) Coastkeepers data. The RW-URMP 2010/2011 studies done by Weston on behalf of the Copermittees, was a more comprehensive and robust data set with comparable methodologies.
- Weston's Bioassessment data was compiled into an Index of Biological Integrity (IBI) score.
- Weston Solutions, Inc. also did the algal biomass and chlorophyll *a* study.
- A two-way nested ANOSIM (date nested within station) revealed that water chemistry conditions did not differ significantly during the period within which each station was sampled (Global R = 0.146, p = 0.0001). However, water chemistry conditions differed significantly among stations (Global R = 0.485, p = 0.0001; Attachment C13.24).
- A cluster dendrogram (Attachment C13.25) revealed which stations possessed water chemistry conditions that were the most similar; impacted sites sampled between September 13 and 26, 2011 were found to have distinct water chemistry conditions compared to reference sites sampled during the same period and all sites (reference and impacted) sampled between October 6 and December 28, 2011.

Pooling all these data together clearly indicates the following:

- Dissolved Oxygen and pH returned to nominal levels by 10/12/11. See attachment C13.2.
- Comparative results between the initial post spill monitoring, the comprehensive monitoring and the RW-URMP report show the creek has returned to its pre-spill condition for pH and DO. See Attachment C13.20 and C13.21.
- Nitrogen (NO2, NO3, NH4 & TN) were all below the Basin Plan WQO. See attachment C13.11.
- Phosphorus (ortho-PO4 & TP) and TSS have returned to nominal levels and in some cases were not detected.
- Bioassessment results and the IBI score show that all four stations support impaired communities that are typical of urbanized streams. The "reference" stations C and E and the "impaired" stations A and D1 were not statistically significantly different from each other. Stations C, D1, and E scored in the Very Poor category Attachment C14.13) and the impaired station A scored higher than the others but just by 4 points and in the low end of the Poor range. If these impaired communities were indeed impacted by the sewage spill they have clearly recovered to their previously impaired status.
- While there was an increase in algae cover at impacted Station A one month after the spill, algae cover also increased at reference Station E. Impacted and reference Stations D1 and E had little change. Algae cover decreased at all stations in November. In December Stations A and E (again an impacted and a reference) experienced an increase in algae cover. These increases and decreases were variable through all stations. Station D1 which experienced the least change in algal cover is also the station that supported the least amount of benthic organisms. Being that benthic algae are the base of the base of the food web, this result is expected. The opposite occurred at Station A. it experienced the highest change in algal cover and it supports the most diverse population of aquatic insects. Although it had the highest IBI score, those insects were also the ones with the highest Tolerance Value score.
- The Eutrophication study was performed early December, which is not the best index period for this type of analysis. This study results did not exceed the Basin Plan WQO and compared in line with the Bight 08 study.
- Additionally, we selected two stations from the RW-URMP report from 2010/2011that were similar to our reference stations C and E for comparison purposes. The four IBI scores were very similar. Interestingly, Station A, the most downstream station in our study, still scored better or equal to the RW-URMP stations.
- Comparison with results from the San Diego County Urban Runoff Monitoring program (2010-2011 surveys) indicated that the results of the current study were similar to historical BMI community conditions at Stations A, C, and E while Station D1 was of lower quality. (Weston Solutions, Inc. Enclosure II, Section C14 of this report).

References

Clean Water Act Section 305b Report, 2006
Water Quality Assessment of the Condition of California Coastal Waters and Wadeable Streams, October 2006.

Regional Water Quality Control Board (RWQCB). 1994. Water Quality Control Plan for the San Diego Basin. Tables 2-2–2-5. September 8, 1994 amendments adopted through February 8, 2006. http://www.swrcb.ca.gov/sandiego/water_issues/programs/basin_plan/

Project Clean Water Website: http://www.projectcleanwater.org/index.html

http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=191%3A2010-11-urban-runoff-monitoring-annual-report&catid=17&Itemid=91

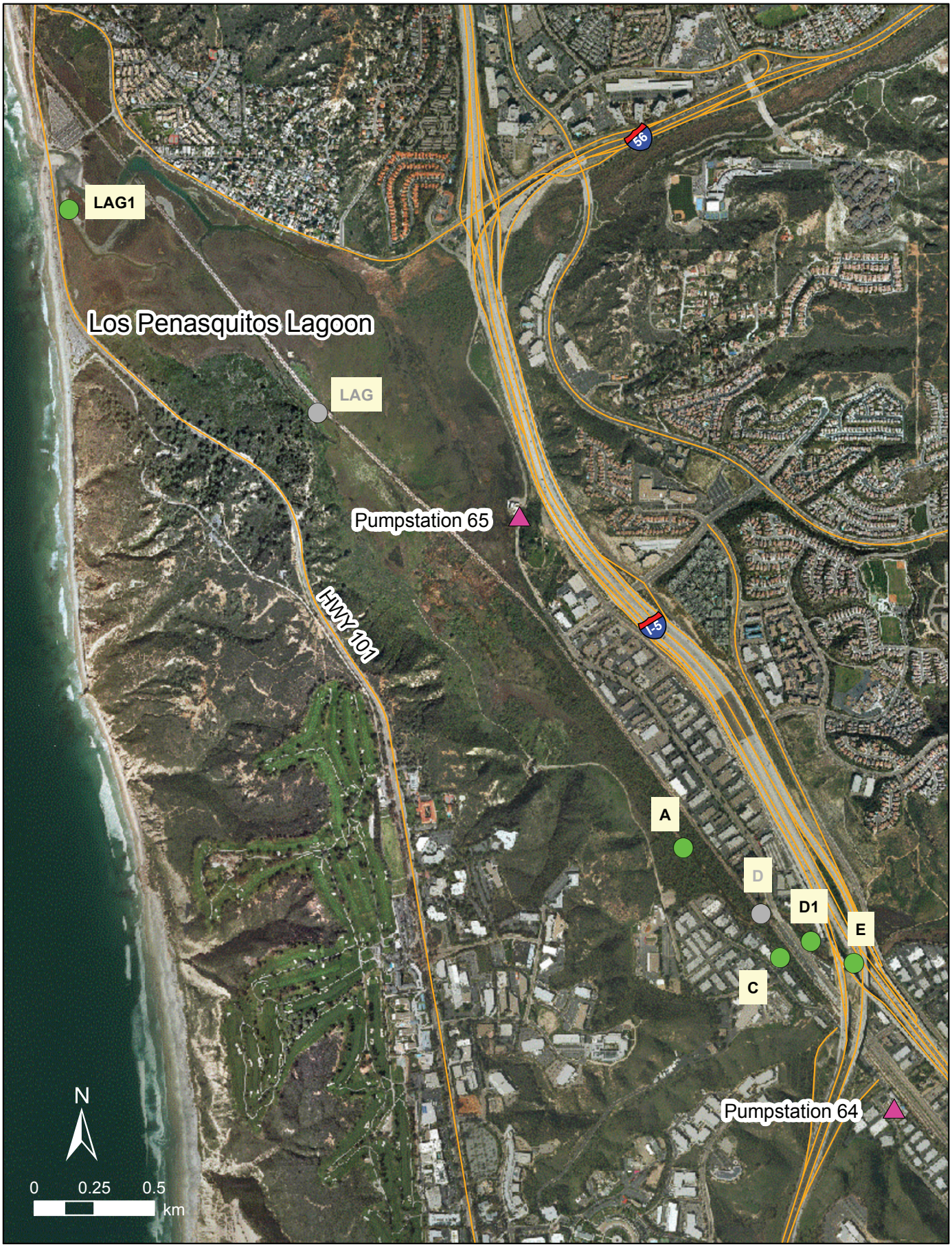
SAN Diego Coastkeepers Water Quality Monitoring Website LPQ-020, LPQ-030, LPQ-040 Watershed Wiki: http://www.sdwatersheds.org/wiki/Los_Penasquitos_Watershed

Surface Water Ambient Monitoring Program (SWAMP). 2007 Report on the Penasquitos Hydrologic Unit, Final Technical Report:
http://www.swrcb.ca.gov/water_issues/programs/swamp/docs/reglrpts/rb9_penasquitos_hydrologic.pdf

Comprehensive Supplemental Final Report for Investigative Order R9-2011-0070

Investigative Order Section C: Continued Monitoring Program and Reports

Attachments C12 & C13:
Water Chemistry Monitoring and Reporting
Tables and Figures



Attachment C12.1

Map of stations sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070.

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Attachment C12.2

Summary of stations sampled in 2011 as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data include station descriptions, locations, sampling dates, and the total number of samples collected.

Station			GPS Coordinates		Sampling Period		Total Number
Full Name	Abbr.	Type	Lat (N)	Long (W)	Start	End	of Events*
BIOASSESS A	A	Impacted	32.90847	117.23181	6-Oct	28-Dec	13
BIOASSESS C	C	Reference	32.90439	117.22743	6-Oct	28-Dec	13
BIOASSESS D	D	Impacted	32.90601	117.22831	6-Oct	12-Oct	2
BIOASSESS D1	D1	Impacted	32.90500	117.22608	19-Oct	28-Dec	11
BIOASSESS E	E	Reference	32.90419	117.22414	6-Oct	28-Dec	13
LAGOON BIOASSESS	LAG	Impacted	32.92473	117.24834	6-Oct	26-Oct	4
LAGOON BIOASSESS 1	LAG1	Impacted	32.93232	117.25953	2-Nov	28-Dec	9

* Sampling events occurred weekly over the course of the sampling period, and included the collection of data using a multi-parameter probe and a water sample for chemical analyses.

Site Descriptions:

A: Downstream from confluence

C: Upstream from confluence on Carroll Canyon Creek

D: Upstream of confluence of Carroll Canyon and Penasquitos Creeks

D1: Upstream of confluence of Carroll Canyon and Penasquitos Creeks (replaced BIOASSESS D on Oct 19)

E: Upstream from confluence on Los Penasquitos Creek

LAG: in the lagoon by second railroad trestle

LAG1: in the lagoon, mudflat east of Torrey Pines (replaced LAGOON BIOASSESS on Nov 2)

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Attachment C13.1

Supplemental details for each sampling event, including date of event, field instrument used, time of sunrise, and relevant tides.

				Low Tide**		High Tide**		
Date	**Stations**	**Instrument***	**Sunrise**	**Time**	**Feet**	**Time**	**Feet**	**Comments**
6-Oct	A, C, D, E, LAG	39347	0646	1253	2.10	0719	4.89	
12-Oct	A, C, D, E, LAG	02H1258	0650	0333	1.27	0944	6.13	
19-Oct	A, C, D1, E, LAG	02H1258	0655	0759	3.37	1429	4.80	
26-Oct	A, C, D1, E, LAG	39347	0701	—	—	0854	6.70	
2-Nov	A, C, D1, E, LAG1	39347	0708	0946	2.90	—	—	
10-Nov	A, C, D1, E, LAG1	06L1583	0615	—	—	0759	5.90	
16-Nov	A, C, D1, E, LAG1	06L1583	0620	—	—	1130	4.80	1.12 inches rain received on 11/12/11
22-Nov	A, C, D1, E, LAG1	39347	0626	1258	-0.50	0611	6.30	1" rain received one day prior to sampling
30-Nov	A, C, D1, E, LAG1	39348	0633	0629	2.70	1221	4.60	Water clear at all sites
7-Dec	A, C, D1, E, LAG1	39348	0638	1340	-0.10	0635	5.60	Water clear at all sites
14-Dec	A, C, D1, E, LAG1	39348	0644	1340	-0.10	0635	5.60	Water turbid at all sites, received ~ 1" rain previous 48 hrs
21-Dec	A, C, D1, E, LAG1	39348	0648	1257	-0.80	0547	6.20	Water clear at all sites
28-Dec	A, C, D1, E, LAG1	39348	0651	0455	2.00	1057	5.20	

*Instruments 39347 and 39348 are both HydroLab Mini-sonde 4a probes; instrument 06L1583 is a YSI 6600V2 probe and 02H1258 is a YSI 6600 probe

**tide data are from the pier at Scripps Institution of Oceanography

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Attachment C13.2

All data collected in the field from stations sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data include time of sample collection (Time), temperature (Temp), pH, dissolved oxygen (DO) as mg/L and percent saturation (%Sat), site width, site depth, velocity (Vel) as average feet per second (fps), flow as cubic feet/second (f^3ps), and flow as gallons per minute (gpm).

Date	Station	Time	Temp (^0C)	pH	DO (mg/L)	DO (%Sat)	Width (feet)	Depth (avg feet)	Vel (avg fps)*	Flow (f^3ps)*	Flow (gpm)*	Comments**
10/6/2011	A	7:31:24	17.09	7.34	3.76	39.30	NS	NS	NS	NS	NS	Stream unsafe to enter
10/6/2011	C	6:50:48	16.10	7.57	4.92	50.30	NS	NS	NS	NS	NS	Stream unsafe to enter
10/6/2011	D	9:22:24	17.40	7.31	2.75	29.00	NS	NS	NS	NS	NS	Stream unsafe to enter
10/6/2011	E	8:55:58	15.90	7.56	6.76	69.60	8.50	0.50	2.61	10.97	4936.50	none
10/6/2011	LAG	10:16:57	17.21	7.24	5.15	54.00	10.00	1.33	1.02	14.21	6394.50	none
10/12/2011	A	8:06:02	15.46	7.50	5.46	55.20	57.00	1.87	ND	ND	ND	water clairity improved from last week
10/12/2011	C	7:35:54	17.13	7.71	6.98	73.40	16.00	3.15	ND	ND	ND	water clairity improved from last week
10/12/2011	D	7:12:59	14.86	7.48	5.52	55.10	40.00	5.40	NS	NS	NS	unable to enter stream to measure depth beyond bank due to depth
10/12/2011	E	6:37:16	13.58	7.78	8.14	79.00	10.00	0.63	0.42	2.73	1228.50	none
10/12/2011	LAG	9:08:56	16.11	7.53	5.91	63.40	10.00	2.63	ND	ND	ND	Flow appears to be affected by high tide which occurs at 0930
10/19/2011	A	8:19:38	17.52	7.55	4.85	51.20	58.00	2.20	ND	ND	ND	water clarity good
10/19/2011	C	7:55:35	17.95	7.68	6.92	73.90	17.00	2.70	ND	ND	ND	water clarity is good; numerous fish observed in creek
10/19/2011	D1	7:37:13	16.77	7.72	6.56	68.20	93.00	1.50	ND	ND	ND	Site location moved 200 meters up stream; water clarity good
10/19/2011	E	6:52:52	16.77	7.78	7.74	80.50	9.00	0.41	0.93	3.52	1584.00	Water clarity good
10/19/2011	LAG	9:20:01	17.30	7.81	8.06	84.80	10.40	0.70	0.46	3.24	1458.00	Water clarity good
10/26/2011	A	8:16:29	17.13	8.02	5.16	55.00	70.00	2.15	ND	ND	ND	none
10/26/2011	C	7:54:07	17.07	8.51	6.95	74.20	18.00	3.15	ND	ND	ND	none
10/26/2011	D1	7:28:34	15.97	8.43	6.46	67.20	100.00	1.51	ND	ND	ND	none
10/26/2011	E	7:00:35	15.89	8.16	7.86	81.60	9.00	0.46	0.95	3.71	1669.50	none
10/26/2011	LAG	9:12:09	16.73	7.97	4.87	56.10	12.00	3.60	ND	ND	ND	light rain
11/2/2011	A	8:27:35	13.66	8.22	7.56	74.90	56.40	2.06	ND	ND	ND	water clairity good

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Attachment C13.2 *continued*

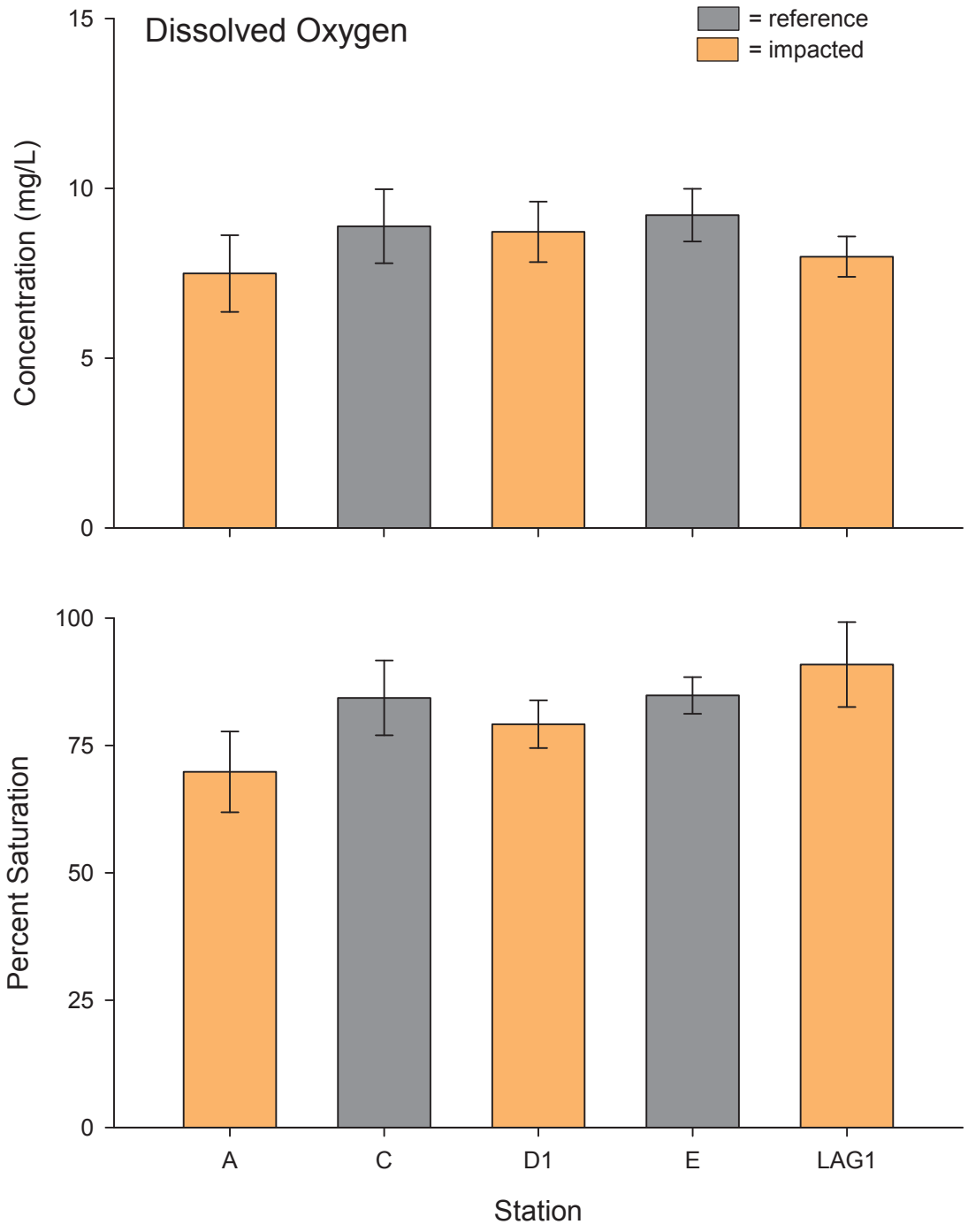
Date	Station	Time	Temp (^{0}C)	pH	DO (mg/L)	DO (%Sat)	Width (feet)	Depth (avg feet)	Vel (avg fps)*	Flow (f^3ps)*	Flow (gpm)*	Comments**
11/2/2011	C	8:00:57	15.14	8.38	7.95	81.50	17.50	2.84	ND	ND	ND	water clairity good; bank vegitation is in process of being removed downstream
11/2/2011	D1	7:37:50	12.38	8.32	7.23	69.60	93.50	1.52	ND	ND	ND	water clairity good
11/2/2011	E	7:13:50	12.34	8.05	8.96	86.10	10.00	0.45	1.55	2.04	918.00	water clairity good
11/2/2011	LAG 1	9:13:32	13.55	8.55	6.55	75.60	75.70	1.32	0.06	7.03	3163.50	Lagoon site moved closer to ocean; water clairity good
11/10/2011	A	7:14:55	10.77	7.67	8.55	77.60	56.10	2.70	ND	ND	ND	none
11/10/2011	C	6:49:27	11.83	7.93	9.42	87.90	18.00	4.20	ND	ND	ND	none
11/10/2011	D1	6:34:14	9.65	7.78	9.72	86.00	93.15	2.00	ND	ND	ND	none
11/10/2011	E	6:06:27	9.61	7.74	9.70	85.70	13.00	0.70	1.00	9.50	4275.00	none
11/10/2011	LAG 1	7:59:46	14.55	8.03	8.58	102.40	NS	NS	NS	NS	NS	unable to access stream channel due to depth
11/16/2011	A	7:14:31	14.13	7.59	7.26	71.10	53.10	3.40	ND	ND	ND	none
11/16/2011	C	6:51:30	14.43	7.83	8.88	87.70	19.00	3.80	ND	ND	ND	a lot of vegitation has been removed from stream channel
11/16/2011	D1	6:39:30	13.61	7.69	8.33	80.60	87.60	2.22	ND	ND	ND	none
11/16/2011	E	6:18:37	13.59	7.69	8.45	81.80	11.00	0.80	1.32	11.66	5247.00	none
11/16/2011	LAG 1	7:56:22	14.50	7.64	7.86	88.00	79.40	1.77	0.00	0.00	0.00	none
11/22/2011	A	8:08:00	12.06	9.28	8.05	75.70	59.70	3.55	0.11	26.97	12136.50	1" rain received one day prior to sampling; water turbid presumably from rain runoff
11/22/2011	C	7:43:49	10.80	9.35	10.19	93.30	17.00	4.07	ND	ND	ND	water turbid presumably from rain runoff; instream & bank vegitation removed
11/22/2011	D1	7:14:11	11.42	7.83	8.39	77.80	92.50	2.82	0.10	26.33	11848.50	water turbid presumably from rain runoff
11/22/2011	E	6:45:05	11.37	7.54	8.94	82.80	23.50	0.76	2.13	40.86	18387.00	water turbid presumably from rain runoff
11/22/2011	LAG 1	8:55:09	12.50	9.21	6.70	70.00	150.20	1.90	1.02	390.72	175824.00	water turbid presumably from rain runoff
11/30/2011	A	7:25:55	10.50	7.79	8.50	78.10	60.00	2.18	ND	ND	ND	water clear
11/30/2011	C	7:06:30	11.15	7.96	9.66	90.30	18.50	3.23	ND	ND	ND	water clear
11/30/2011	D1	6:44:07	9.91	7.74	8.64	78.30	88.90	2.10	ND	ND	ND	water clear
11/30/2011	E	6:16:59	9.82	7.74	9.93	89.80	14.00	0.46	1.64	12.21	5494.50	water clear
11/30/2011	LAG 1	8:03:54	10.97	7.67	8.05	86.20	75.10	1.48	0.04	4.16	1872.00	water clear; flow measurement from flooding tide

Attachment C13.2 *continued*

Date	Station	Time	Temp (^{0}C)	pH	DO (mg/L)	DO (%Sat)	Width (feet)	Depth (avg feet)	Vel (avg fps)*	Flow (f^3ps)*	Flow (gpm)*	Comments**
12/7/2011	A	7:29:10	6.67	7.82	9.90	82.50	59.40	2.50	ND	ND	ND	water clear
12/7/2011	C	7:08:43	7.41	7.94	11.67	99.30	18.50	3.50	ND	ND	ND	water clear
12/7/2011	D1	6:48:01	5.62	7.81	10.43	84.70	91.20	2.02	ND	ND	ND	water clear
12/7/2011	E	6:22:05	5.70	7.87	11.39	92.60	14.00	0.48	0.92	6.94	3123.00	water clear
12/7/2011	LAG 1	8:17:31	11.26	7.98	9.09	100.70	147.60	2.05	0.39	150.50	67725.00	water clear; flow measurement from ebbing tide
12/14/2011	A	7:57:10	9.59	7.67	9.55	84.80	61.00	3.70	0.15	38.11	17149.50	Water turbid
12/14/2011	C	7:35:59	9.65	7.76	10.90	97.00	18.50	4.10	ND	ND	ND	Water turbid
12/14/2011	D1	7:13:07	9.27	7.67	10.34	91.20	97.00	3.00	0.12	34.15	15367.50	Water turbid
12/14/2011	E	6:38:57	9.37	7.68	10.54	93.10	33.70	1.20	1.24	47.24	21258.00	Water turbid
12/14/2011	LAG 1	8:43:42	14.13	8.10	9.11	109.30	91.80	2.45	0.36	93.07	41881.50	Water turbid; flow measurement from flooding tide
12/21/2011	A	8:44:43	10.05	7.80	8.62	78.30	63.30	2.70	ND	ND	ND	
12/21/2011	C	8:25:17	10.87	8.11	10.13	93.90	18.50	3.10	ND	ND	ND	
12/21/2011	D1	8:07:51	8.83	7.83	9.20	81.20	94.50	2.07	ND	ND	ND	
12/21/2011	E	10:07:20	8.77	7.90	10.06	88.60	15.75	0.57	0.80	6.10	2745.00	Water clear; equipment failure, prob measurements gathered 3.5 hr after grab sample
12/21/2011	LAG 1	9:21:52	11.72	7.95	7.86	89.40	157.40	1.88	0.75	303.90	136755.00	Flow due to ebbing tide
12/28/2011	A	8:02:53	6.18	7.56	10.22	84.10	65.30	2.90	ND	ND	ND	water a little turbid
12/28/2011	C	7:43:42	7.63	7.69	10.96	93.70	18.00	3.35	ND	ND	ND	water clear
12/28/2011	D1	7:24:40	5.50	7.62	10.65	86.20	97.40	2.17	ND	ND	ND	water clear
12/28/2011	E	6:58:22	5.50	7.66	11.36	91.80	16.50	0.68	0.58	5.78	2601.00	water clear
12/28/2011	LAG 1	8:39:17	13.08	7.81	8.13	96.70	80.70	1.90	0.57	95.29	42880.50	water clear; flow due to a flooding tide

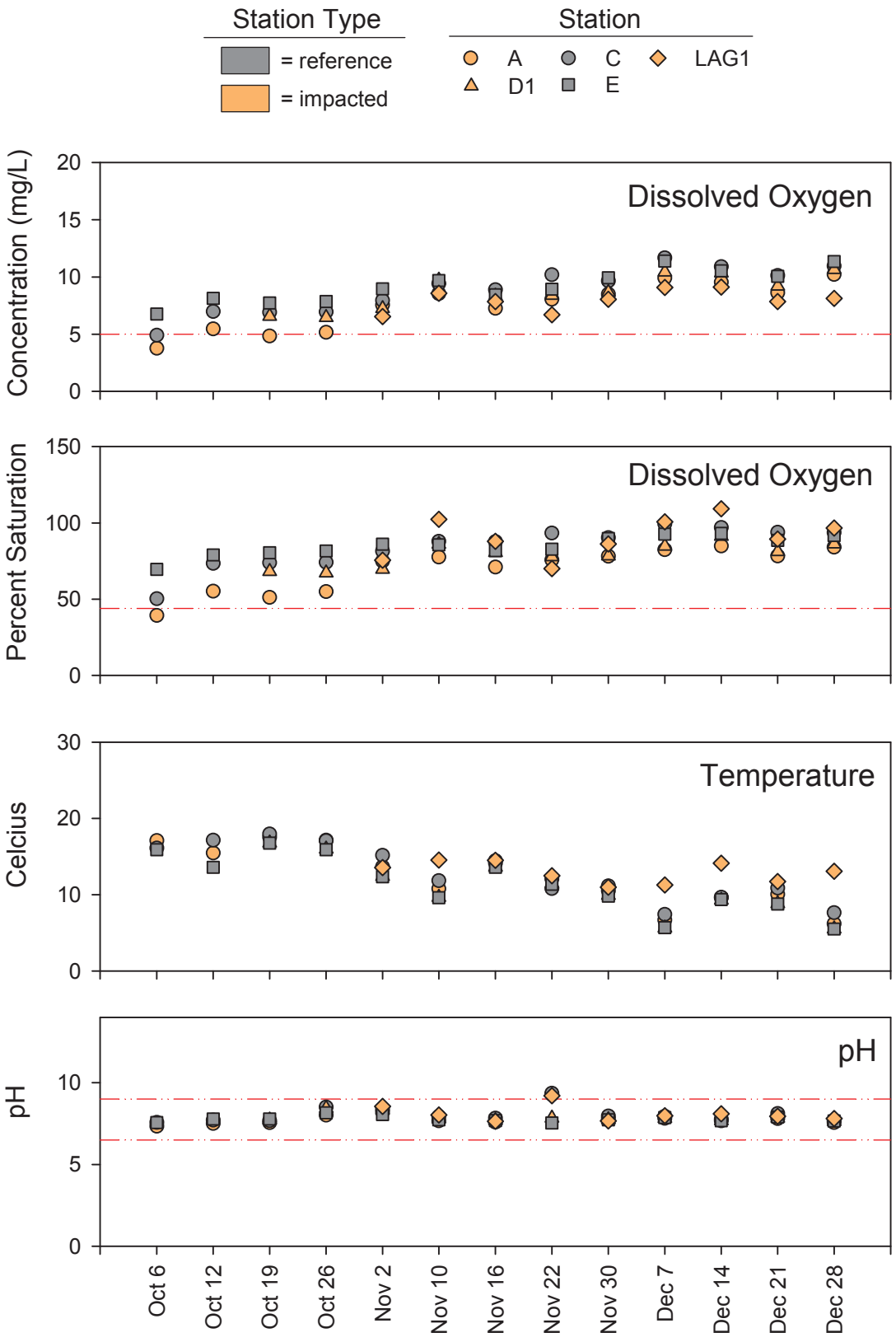
NS = no data collected

*ND (= not detected) indicates flow was below detection limit; flow data were collected using a Swoffer, Model #2100 and a Global Water, Model #Flow Probe 101; flow meter detection range: 0.1 -> 25 ft/sec



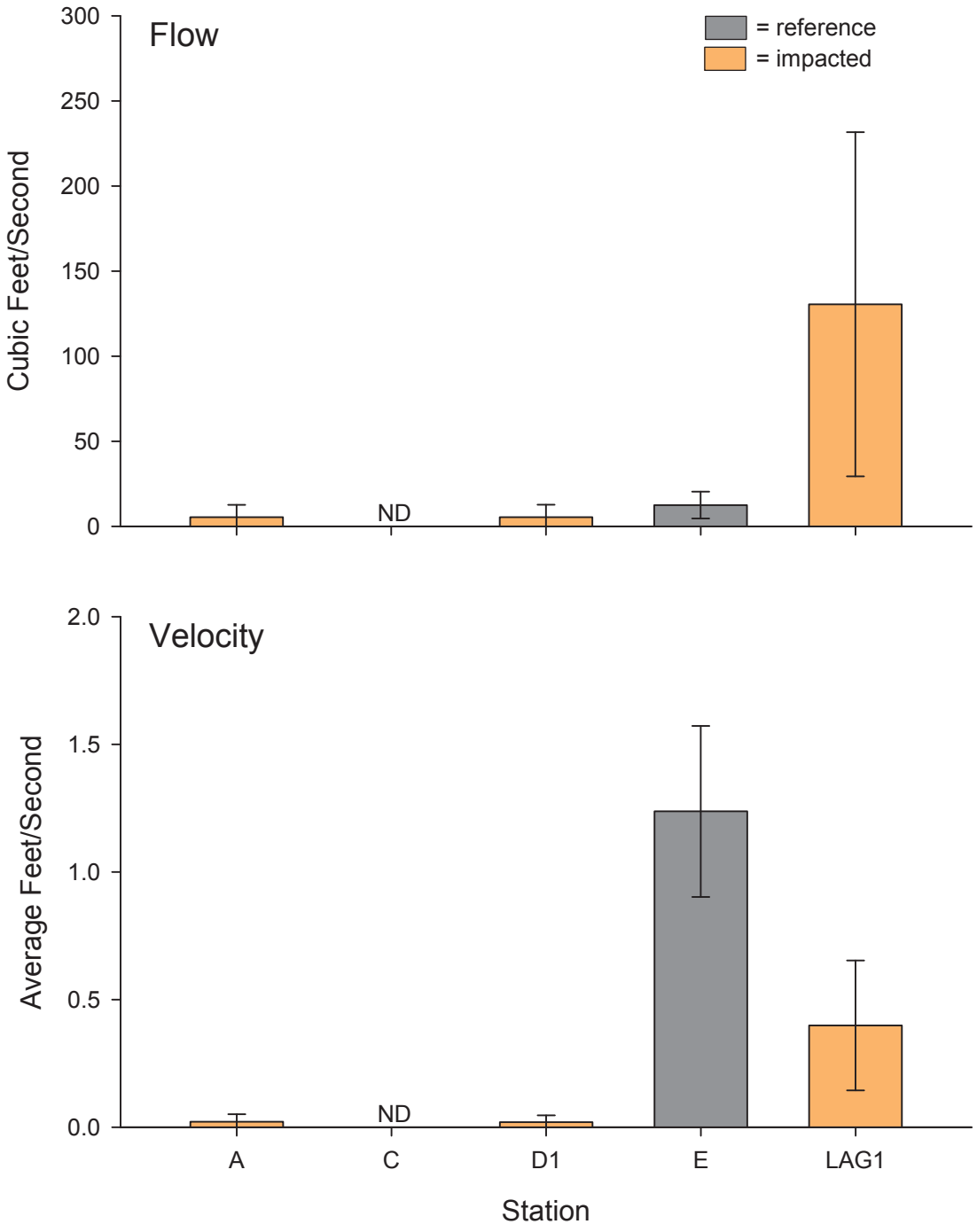
Attachment C13.3

Comparison of dissolved oxygen across stations sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data are means +/- 95% confidence intervals; discontinued stations (D, LAG) are not included.



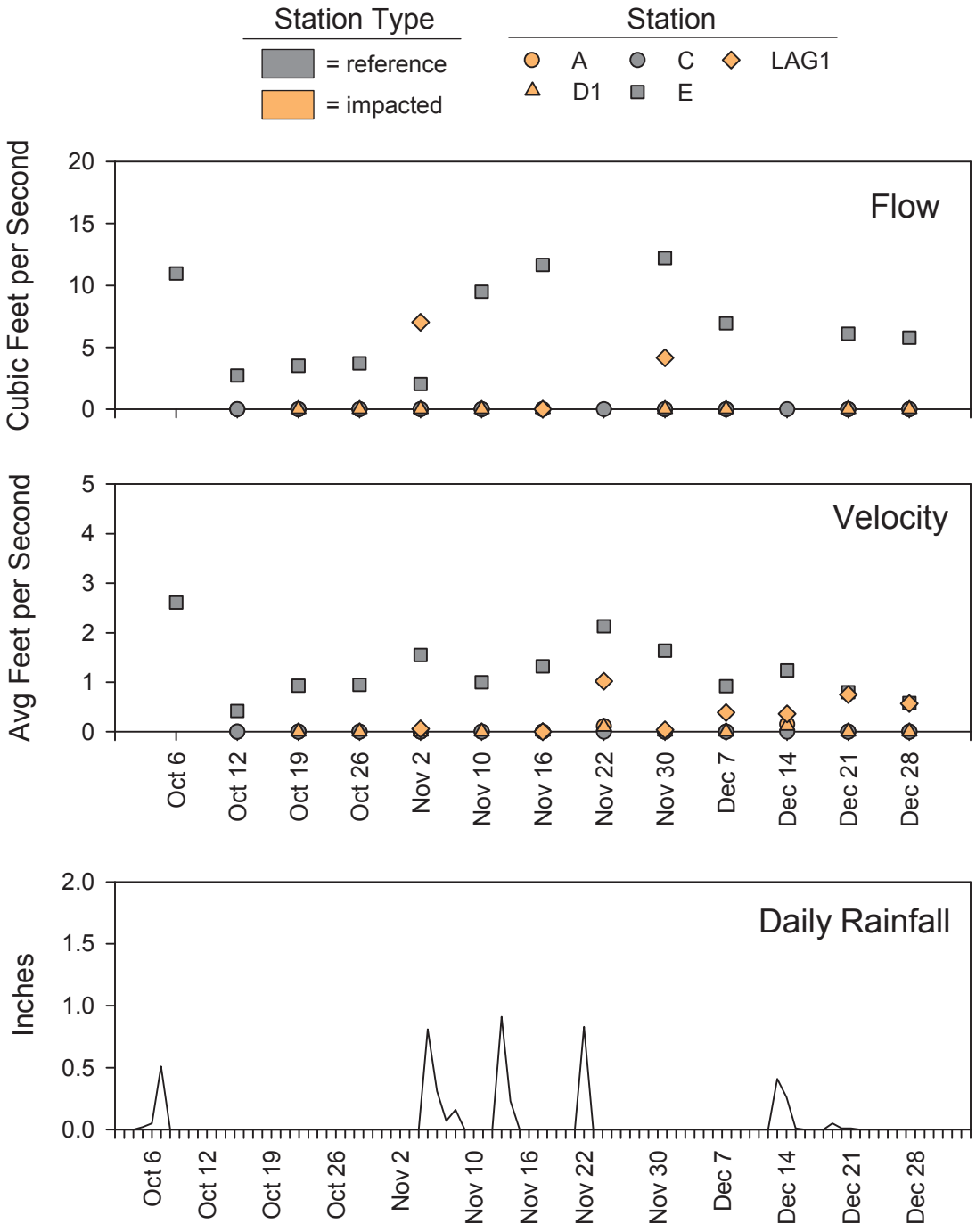
Attachment C13.4

Dissolved oxygen and supplemental parameters (temperature, pH) plotted for each station by sample date. Red lines indicate threshold values used to evaluate data; see Attachment C13.13. Discontinued stations (D, LAG) are not included.



Attachment C13.5

Comparison of flow and velocity across stations sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data are means +/- 95% confidence intervals; discontinued stations (D, LAG) are not included. Note that both parameters were strongly influenced by tides at the lagoon site, such that all flow measurements appeared to be due to changes in tidal currents. ND = not detected (i.e., flow was below detection limit).



Attachment C13.6

Flow and velocity plotted for each station by sample date, as well as daily rainfall plotted between October 2 and December 31, 2011. Rainfall data are from Miramar Naval Air Station. Note that zeros were substituted for values below the detection limit and flow and velocity at lagoon stations were related to tides, not rainfall. See Attachment C13.1 for tide information. Discontinued stations (D, LAG) are not included.

Attachment C13.7

All water chemistry data from stations sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data include ammonia as N (NH_4), nitrate (NO_3), nitrate_nitrite ($NO_3\_NO_2$), nitrite (NO_2), total nitrogen, total phosphorus (TP), ortho-phosphate (O_PO_4), and total suspended solids (TSS).

Date	Station	NH_4 (mg/L)	NO_3 (mg/L)	$NO_3\_NO_2$ (mg/L)	NO_2 (mg/L)	Total Nitrogen (mg/L)	TP (mg/L)	O_PO_4 (mg/L)	TSS (mg/L)
10/6/2011	A	0.194	3.030	3.250	0.219	0.939	0.198	0.874	18.5
10/6/2011	C	0.200	3.730	4.040	0.310	1.130	0.145	0.992	50.0
10/6/2011	D	0.285	4.020	4.300	0.277	1.340	0.238	0.940	21.0
10/6/2011	E	ND	0.564	0.601	0.037	ND	0.218	0.946	47.0
10/6/2011	LAG	0.143	3.620	3.960	0.338	1.110	0.247	0.986	19.0
10/12/2011	A	0.060	0.270	0.299	0.029	0.188	0.828	0.763	1.7
10/12/2011	C	ND	ND	ND	ND	ND	ND	ND	1.2
10/12/2011	D	0.044	0.219	0.256	0.037	ND	1.190	0.820	4.3
10/12/2011	E	ND	0.307	0.307	ND	ND	1.220	0.752	3.1
10/12/2011	LAG	0.034	0.352	0.391	0.039	ND	0.183	0.777	4.5
10/19/2011	A	0.062	0.081	0.104	0.023	ND	0.155	0.885	2.1
10/19/2011	C	ND	ND	ND	ND	ND	ND	ND	ND
10/19/2011	D1	ND	0.108	0.108	ND	ND	0.195	0.862	1.6
10/19/2011	E	ND	0.163	0.163	ND	ND	0.132	0.811	5.1
10/19/2011	LAG	0.037	0.198	0.254	0.056	ND	0.480	0.851	146.0
10/26/2011	A	0.063	ND	0.091	0.019	ND	0.190	0.699	1.2
10/26/2011	C	ND	0.087	0.087	ND	ND	0.092	ND	1.1
10/26/2011	D1	ND	ND	ND	ND	ND	0.170	0.732	2.0
10/26/2011	E	ND	ND	ND	ND	ND	0.127	0.685	4.7
10/26/2011	LAG	ND	0.205	0.230	0.024	0.089	0.324	0.694	9.3
11/2/2011	A	0.038	0.091	0.091	ND	0.081	0.121	0.716	1.8
11/2/2011	C	ND	ND	ND	ND	ND	ND	ND	ND
11/2/2011	D1	ND	0.114	0.114	ND	0.189	0.138	0.765	2.3
11/2/2011	E	ND	0.234	0.234	ND	ND	0.115	0.753	8.6
11/2/2011	LAG 1	0.087	ND	0.089	0.020	0.163	0.078	1.240	5.6
11/10/2011	A	ND	1.140	1.160	0.018	0.460	0.121	0.799	1.5
11/10/2011	C	ND	0.266	0.266	ND	0.172	ND	< 0.426	1.5
11/10/2011	D1	ND	1.070	1.070	ND	0.394	0.112	0.829	ND
11/10/2011	E	ND	1.130	1.130	ND	0.415	0.111	0.843	2.1
11/10/2011	LAG 1	NR	ND	ND	ND	ND	ND	ND	4.3
11/16/2011	A	ND	0.732	0.749	0.017	0.229	0.136	0.857	2.7
11/16/2011	C	ND	0.356	0.356	ND	ND	ND	0.703	10.5

Attachment C13.7 *continued*

Date	Station	NH_4 (mg/L)	NO_3 (mg/L)	$NO_3\_NO_2$ (mg/L)	NO_2 (mg/L)	Total Nitrogen (mg/L)	TP (mg/L)	O_PO_4 (mg/L)	TSS (mg/L)
11/16/2011	D1	ND	0.739	0.739	ND	0.182	0.131	0.884	2.4
11/16/2011	E	ND	0.807	0.807	ND	0.216	0.110	0.821	3.5
11/16/2011	LAG 1	0.093	0.560	0.594	0.035	0.228	0.120	2.060	13.9
11/22/2011	A	ND	1.040	1.080	0.041	0.340	0.143	0.930	7.3
11/22/2011	C	ND	1.210	1.240	0.030	0.329	ND	0.732	2.7
11/22/2011	D1	ND	1.010	1.050	0.040	0.289	0.146	0.958	2.5
11/22/2011	E	ND	1.090	1.090	0.034	0.307	0.150	0.914	4.3
11/22/2011	LAG 1	0.065	0.244	0.279	0.036	ND	0.101	ND	15.4
11/30/2011	A	ND	0.216	0.216	ND	ND	0.090	0.796	2.0
11/30/2011	C	ND	0.500	0.500	ND	ND	ND	ND	4.6
11/30/2011	D1	ND	0.088	0.088	ND	ND	0.170	0.841	1.5
11/30/2011	E	ND	0.152	0.152	ND	ND	ND	0.790	2.2
11/30/2011	LAG 1	0.061	0.131	0.131	ND	ND	ND	ND	6.9
12/7/2011	A	ND	0.100	0.100	ND	ND	0.079	1.380	1.4
12/7/2011	C	ND	ND	ND	ND	ND	ND	ND	2.1
12/7/2011	D1	ND	0.106	0.106	ND	ND	ND	0.783	1.2
12/7/2011	E	ND	0.154	0.154	ND	ND	ND	0.782	ND
12/7/2011	LAG 1	0.069	ND	ND	ND	0.193	ND	ND	17.7
12/14/2011	A	ND	1.110	1.150	0.039	0.378	0.114	0.871	4.4
12/14/2011	C	ND	1.350	1.450	0.100	0.397	ND	0.783	10.2
12/14/2011	D1	ND	1.080	1.110	0.028	0.359	0.138	0.910	12.7
12/14/2011	E	ND	1.160	1.190	0.030	0.372	0.107	0.887	9.0
12/14/2011	LAG 1	0.039	0.756	0.793	0.037	0.334	0.087	1.690	10.1
12/21/2011	A	ND	ND	ND	ND	ND	0.123	0.781	16.2
12/21/2011	C	0.041	0.121	0.142	0.021	0.178	ND	ND	3.2
12/21/2011	D1	ND	ND	ND	ND	ND	0.101	0.794	1.0
12/21/2011	E	ND	ND	ND	ND	0.336	0.11	0.773	1.4
12/21/2011	LAG 1	0.157	ND	ND	ND	ND	ND	ND	19.8
12/28/2011	A	ND	ND	ND	ND	ND	0.087	0.781	2.25
12/28/2011	C	ND	ND	ND	ND	ND	ND	ND	1.5
12/28/2011	D1	ND	ND	ND	ND	ND	0.084	0.806	1.5
12/28/2011	E	ND	ND	ND	ND	ND	ND	0.807	1.3
12/28/2011	LAG 1	0.161	ND	ND	ND	0.216	ND	ND	29.6

"<" = data run in duplicate, where one result = ND

ND = not detected; NR = not reportable

Attachment C13.8

Descriptive statistics for each parameter by station sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data include number of samples, minimum, maximum, median and mean values, with standard deviation (Std Dev), coefficient of variation (CoV), and the 95% confidence interval (95% CI) provided as measures of dispersion. Zeros indicate values below method detection limits. Discontinued stations (D, LAG) are not included.

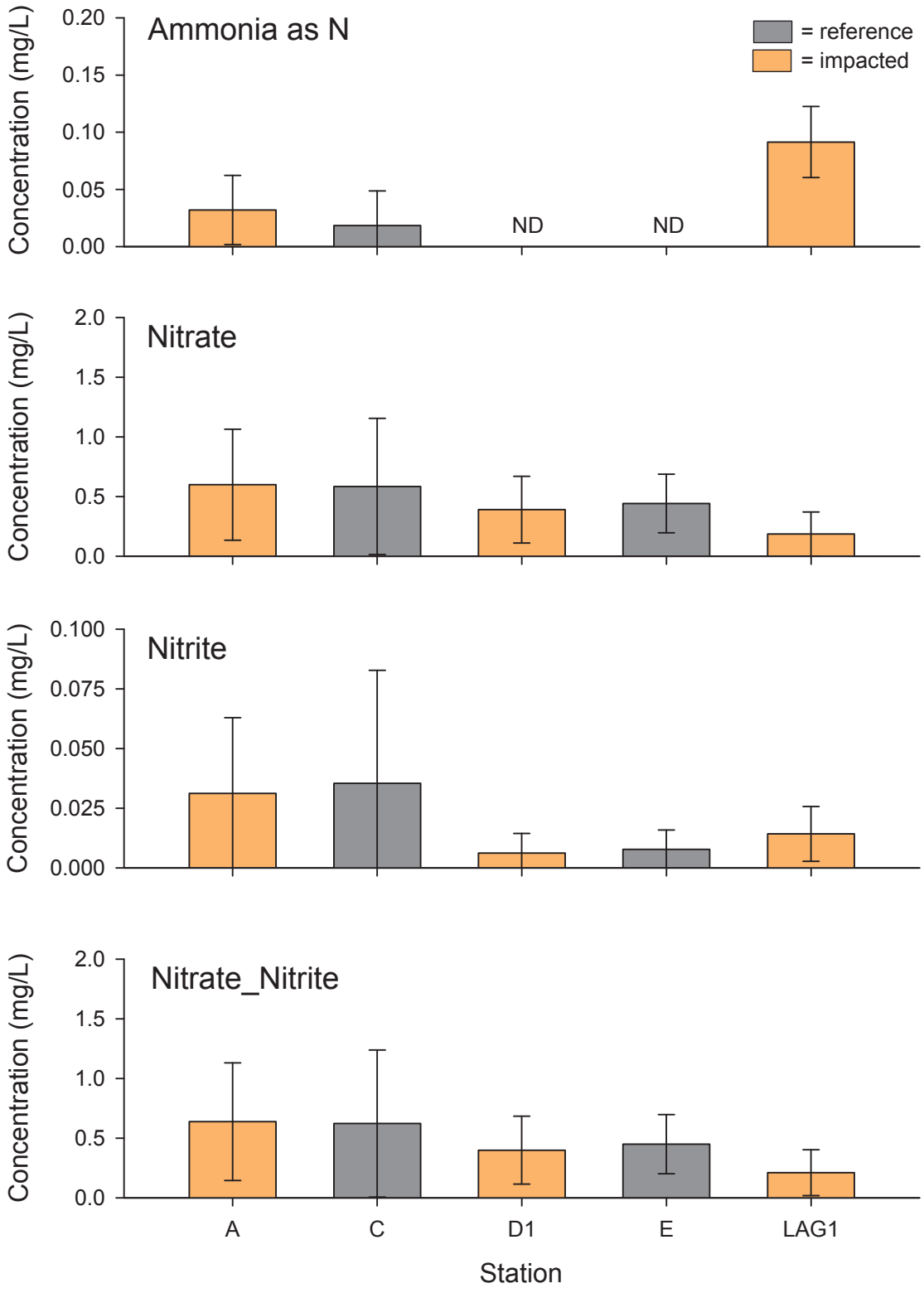
	STATION				
	A	**C**	**D1**	**E**	**LAG1**
Dissolved Oxygen (mg/L)					
Median	8.05	9.42	8.64	8.96	8.05
Mean	7.50	8.89	8.72	9.22	7.99
Maximum	10.22	11.67	10.65	11.39	9.11
Minimum	3.76	4.92	6.46	6.76	6.55
Std Dev	2.08	2.00	1.51	1.43	0.91
CoV	27.70	22.53	17.30	15.49	11.37
95% CI	1.13	1.09	0.89	0.78	0.59
No. of samples	13	13	11	13	9
Dissolved Oxygen (percent saturation)					
Median	75.70	87.90	80.60	85.70	89.40
Mean	69.83	84.34	79.18	84.85	90.92
Maximum	84.80	99.30	91.20	93.10	109.30
Minimum	39.30	50.30	67.20	69.60	70.00
Std Dev	14.62	13.54	7.97	6.63	12.77
CoV	20.93	16.06	10.07	7.81	14.04
95% CI	7.95	7.36	4.71	3.60	8.34
No. of samples	13	13	11	13	9
pH					
Median	7.67	7.93	7.78	7.74	7.98
Mean	7.83	8.03	7.86	7.78	8.10
Maximum	9.28	9.35	8.43	8.16	9.21
Minimum	7.34	7.57	7.62	7.54	7.64
Std Dev	0.49	0.48	0.27	0.18	0.49
CoV	6.28	6.00	3.38	2.29	6.10
95% CI	0.27	0.26	0.16	0.10	0.32
No. of samples	13	13	11	13	9
Temperature (^{o}C)					
Median	12.06	11.83	9.91	11.37	13.08
Mean	12.37	12.86	10.81	11.40	12.92
Maximum	17.52	17.95	16.77	16.77	14.55
Minimum	6.18	7.41	5.50	5.50	10.97
Std Dev	3.83	3.65	3.69	3.69	1.38
CoV	30.95	28.36	34.16	32.40	10.68
95% CI	2.08	1.98	2.18	2.01	0.90
No. of samples	13	13	11	13	9

Attachment C13.8 *continued*

	STATION				
	A	C	D1	E	LAG1
Velocity (average feet/second)					
Median	0.00	0.00	0.00	1.00	0.38
Mean	0.02	0.00	0.02	1.24	0.40
Maximum	0.15	0.00	0.12	2.61	1.02
Minimum	0.00	0.00	0.00	0.42	0.00
Std Dev	0.05	0.00	0.04	0.62	0.37
CoV	236.84	0.00	223.61	49.88	92.03
95% CI	0.03	0.00	0.03	0.34	0.25
No. of samples	12	12	11	13	8
Flow (cubic feet/second)					
Median	0.00	0.00	0.00	6.94	94.18
Mean	5.42	0.00	5.50	12.56	130.58
Maximum	38.11	0.00	34.15	47.24	390.72
Minimum	0.00	0.00	0.00	2.04	0.00
Std Dev	12.89	0.00	12.36	14.44	145.93
CoV	237.62	0.00	224.75	115.00	111.75
95% CI	7.29	0.00	7.30	7.85	101.12
No. of samples	12	12	11	13	8
Ammonia as N (mg/L)					
Median	0.00	0.00	0.00	0.00	0.08
Mean	0.03	0.02	0.00	0.00	0.09
Maximum	0.19	0.20	0.00	0.00	0.16
Minimum	0.00	0.00	0.00	0.00	0.04
Std Dev	0.06	0.06	0.00	0.00	0.04
CoV	173.38	300.39	0.00	0.00	48.94
95% CI	0.03	0.03	0.00	0.00	0.03
No. of samples	13	13	11	13	8
Nitrate (mg/L)					
Median	0.22	0.12	0.11	0.23	0.00
Mean	0.60	0.59	0.39	0.44	0.19
Maximum	3.03	3.73	1.08	1.16	0.76
Minimum	0.00	0.00	0.00	0.00	0.00
Std Dev	0.86	1.05	0.47	0.45	0.28
CoV	142.40	178.95	120.34	101.95	151.02
95% CI	0.47	0.57	0.28	0.25	0.19
No. of samples	13	13	11	13	9
Nitrate_Nitrite (mg/L)					
Median	0.22	0.14	0.11	0.23	0.09
Mean	0.64	0.62	0.40	0.45	0.21
Maximum	3.25	4.04	1.11	1.19	0.79
Minimum	0.00	0.00	0.00	0.00	0.00
Std Dev	0.91	1.13	0.48	0.46	0.29
CoV	142.04	182.32	120.86	101.88	140.08
95% CI	0.49	0.62	0.28	0.25	0.19
No. of samples	13	13	11	13	9

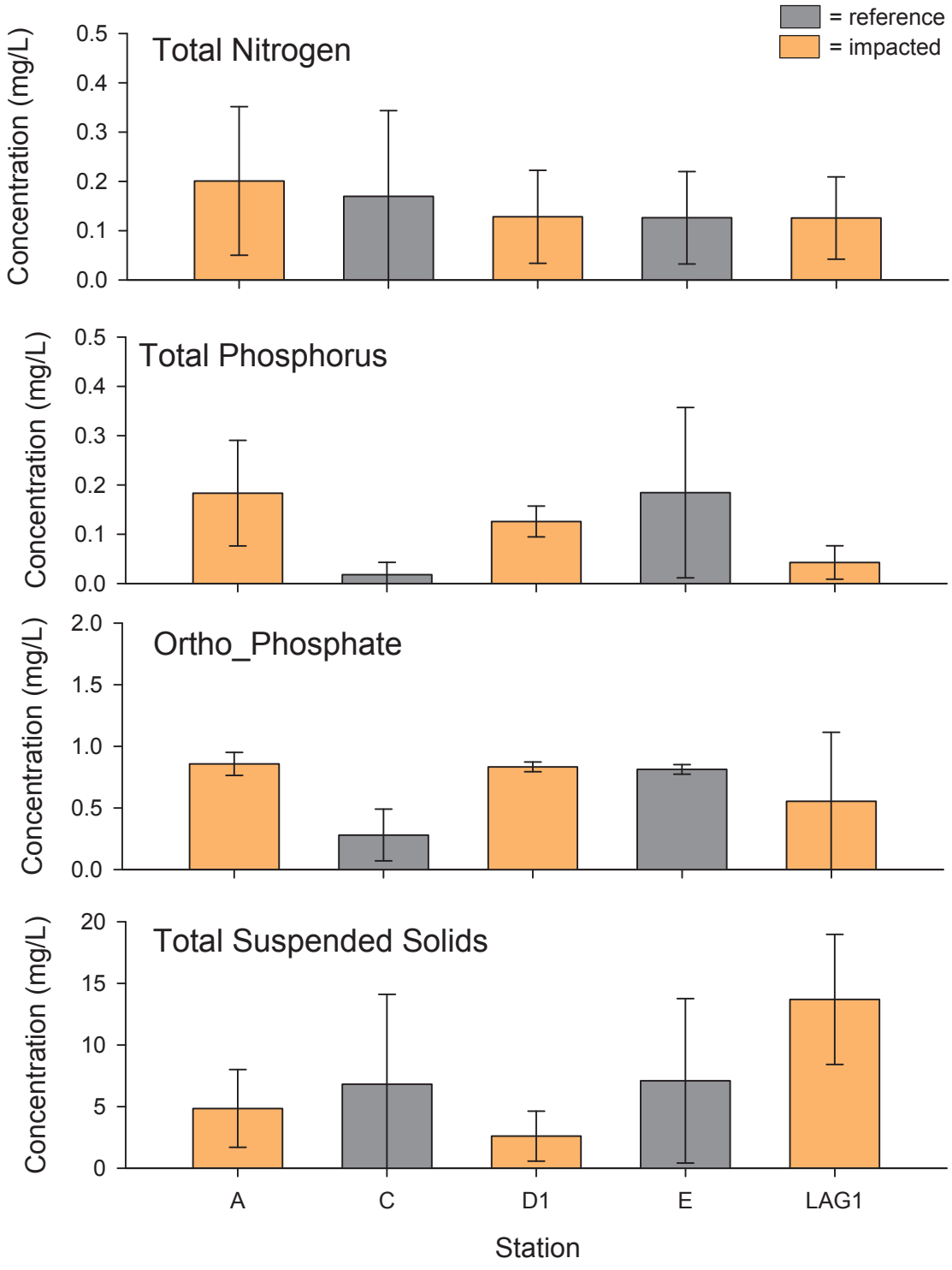
Attachment C13.8 *continued*

	STATION				
	A	C	D1	E	LAG1
Nitrite (mg/L)					
Median	0.02	0.00	0.00	0.00	0.00
Mean	0.03	0.04	0.01	0.01	0.01
Maximum	0.22	0.31	0.04	0.04	0.04
Minimum	0.00	0.00	0.00	0.00	0.00
Std Dev	0.06	0.09	0.01	0.01	0.02
CoV	187.37	245.69	226.68	190.92	123.54
95% CI	0.03	0.05	0.01	0.01	0.01
No. of samples	13	13	11	13	9
Total Nitrogen (mg/L)					
Median	0.08	0.00	0.00	0.00	0.16
Mean	0.20	0.17	0.13	0.13	0.13
Maximum	0.94	1.13	0.39	0.42	0.33
Minimum	0.00	0.00	0.00	0.00	0.00
Std Dev	0.28	0.32	0.16	0.17	0.13
CoV	137.66	188.64	124.31	136.03	101.61
95% CI	0.15	0.17	0.09	0.09	0.08
No. of samples	13	13	11	13	9
Ortho_Phosphate (mg/L)					
Median	0.80	0.00	0.83	0.81	0.00
Mean	0.86	0.28	0.83	0.81	0.55
Maximum	1.38	0.99	0.96	0.95	2.06
Minimum	0.70	0.00	0.73	0.69	0.00
Std Dev	0.17	0.39	0.07	0.07	0.86
CoV	20.01	138.15	8.02	8.79	154.50
95% CI	0.09	0.21	0.04	0.04	0.56
No. of samples	13	13	11	13	9
Total Phosphorus (mg/L)					
Median	0.12	0.00	0.14	0.11	0.00
Mean	0.18	0.02	0.13	0.18	0.04
Maximum	0.83	0.15	0.20	1.22	0.12
Minimum	0.08	0.00	0.00	0.00	0.00
Std Dev	0.20	0.05	0.05	0.32	0.05
CoV	107.37	251.21	41.88	172.01	121.43
95% CI	0.11	0.02	0.03	0.17	0.03
No. of samples	13	13	11	13	9
Total Suspended Solids (mg/L)					
Median	2.10	2.10	1.60	3.50	13.90
Mean	4.85	6.82	2.61	7.10	13.70
Maximum	18.50	50.00	12.70	47.00	29.60
Minimum	1.20	0.00	0.00	0.00	4.30
Std Dev	5.80	13.42	3.42	12.28	8.08
CoV	119.65	196.89	131.22	173.08	58.97
95% CI	3.15	7.29	2.02	6.68	5.28
No. of samples	13	13	11	13	9



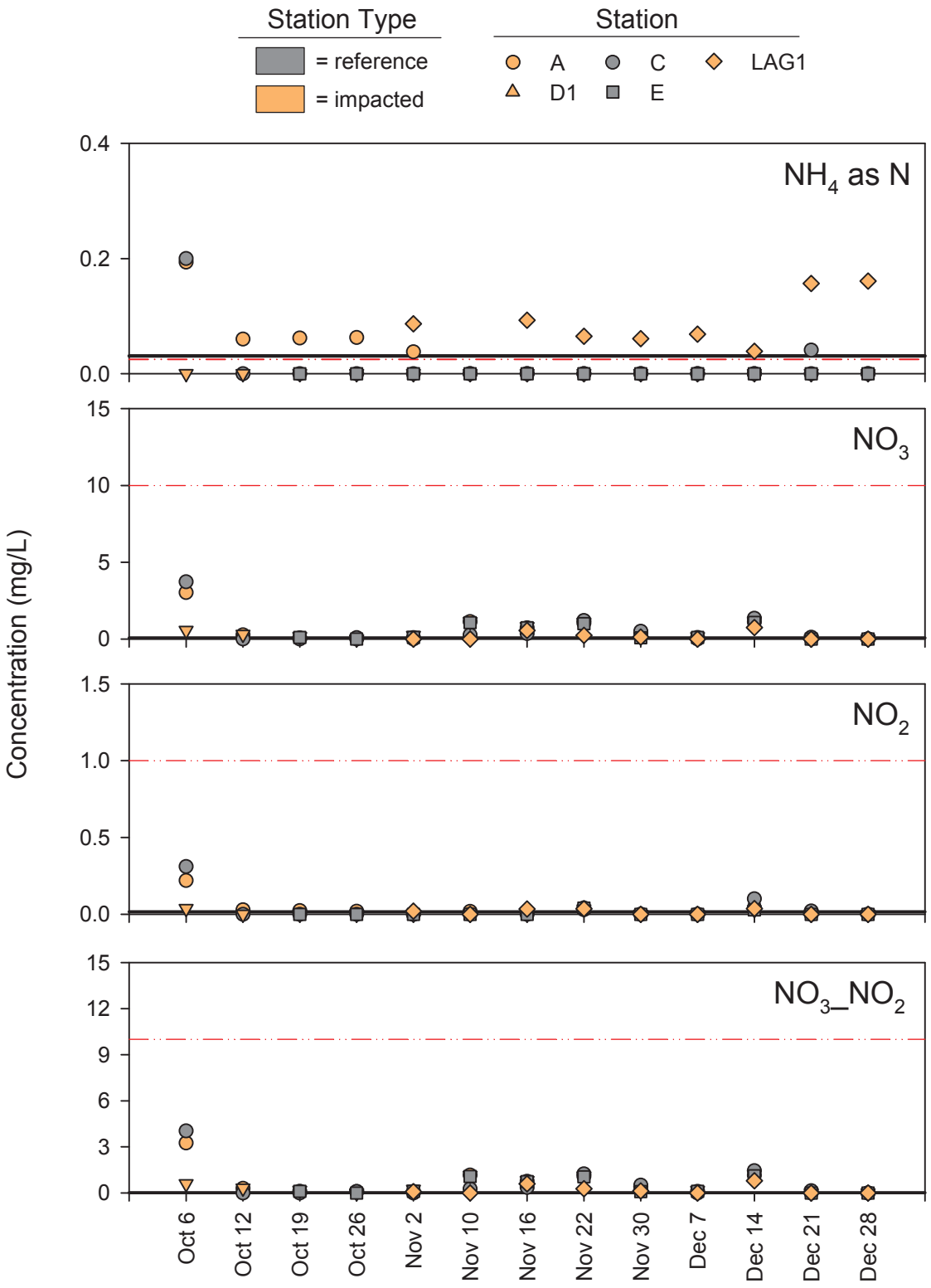
Attachment C13.9

Comparison of ammonia (as N), nitrate, nitrite, and nitrate_nitrite across stations sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data are means +/- 95% confidence intervals, with zeros substituted for values below detection limits (ND = not detected). Discontinued stations (D, LAG) are not included.



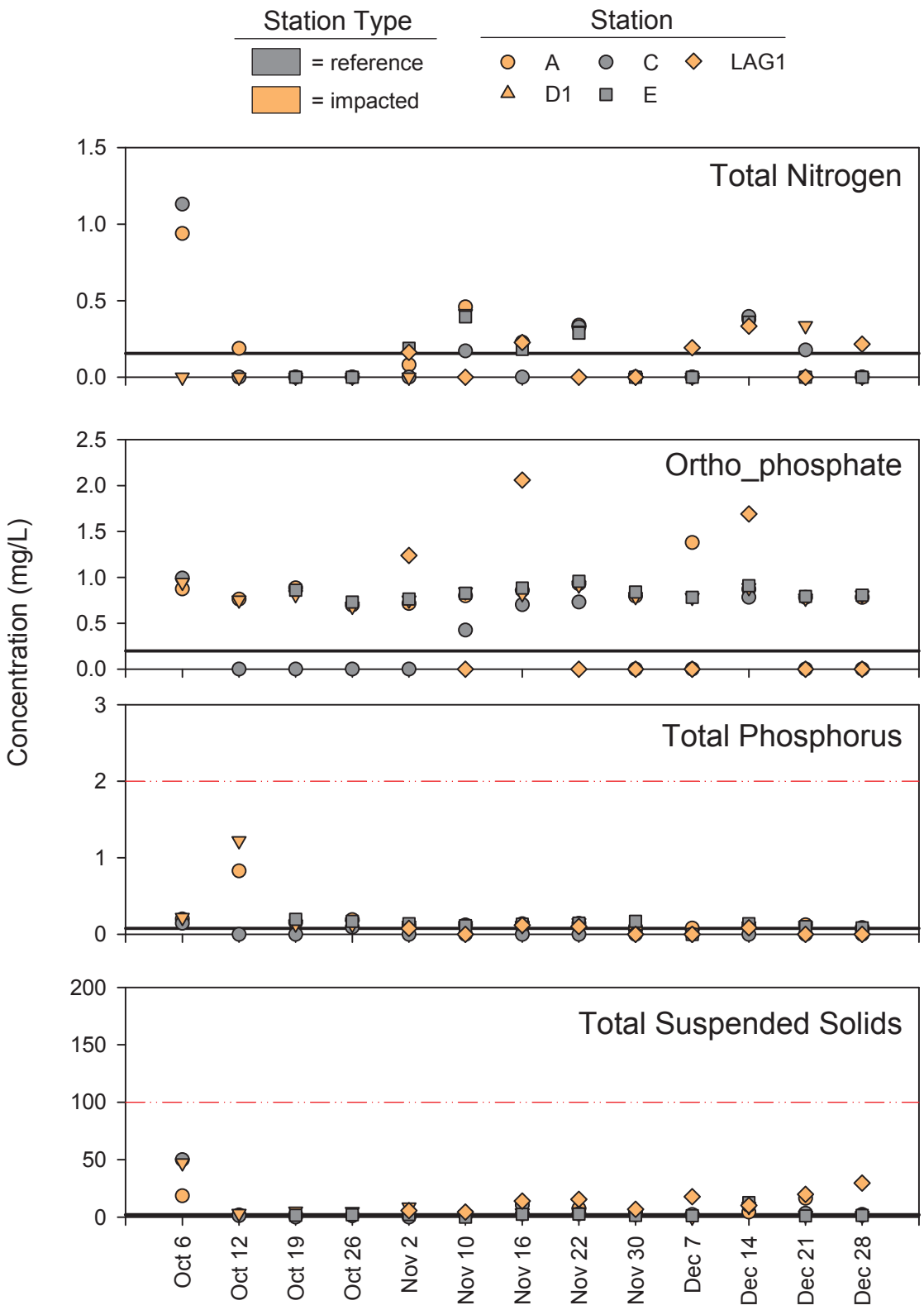
Attachment C13.10

Comparison of total nitrogen, total phosphorus, ortho_phosphate, and total suspended solids across stations sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data are means +/- 95% confidence intervals, with zeros substituted for values below detection limits. Discontinued stations (D, LAG) are not included.



Attachment C13.11

Ammonia as N (NH4), nitrate (NO3), nitrite (NO2), and nitrate_nitrite (NO3_NO2) plotted for each station by sample date. Zeros indicate values below method detection limits, indicated by solid black lines. Red lines indicate threshold values used to evaluate data; see Attachment C13.13. Discontinued stations (D, LAG) are not included.



Attachment C13.12

Total nitrogen, ortho_phosphate, total phosphorus, and total suspended solids plotted for each station by sample date. Zeros indicate values below method detection limits, indicated by solid black lines. Red lines indicate threshold values used to evaluate data; see Attachment C13.13. Discontinued stations (D, LAG) are not included.

Attachment C13.13

Sources of thresholds used to evaluate data collected as part of the continued monitoring program for Investigative Order No. R9-2011-0070.

Parameter	Limit	Units	Source(s)
Dissolved Oxygen	5	mg/L	CA Basin Plan Water Quality Objectives[1]
Dissolved Oxygen (%saturation)	44	%	Represents percent saturation at 20°C for DO concentration of 4.0 ppm, considered the minimum to sustain life.[2]
pH	> 6.5 and < 9.0	pH	CA Basin Plan Water Quality Objectives[1]
Temperature	NA		
Ammonia as N	0.025	mg/L	CA Basin Plan Water Quality Objectives[1]
	1.0	mg/L	Stormwater Action Levels[3]
Nitrate as N	10	mg/L	
Nitrate + Nitrite as N	10	mg/L	CA Basin Plan Water Quality Objectives[1]
Nitrite as N	1	mg/L	
Total Nitrogen	NA		
Phosphorus as P, Total	2	mg/L	CA Basin Plan Water Quality Objectives[1]
Ortho_phosphate	NA		
Total Suspended Solids	100	mg/L	MSGP 2000[4]

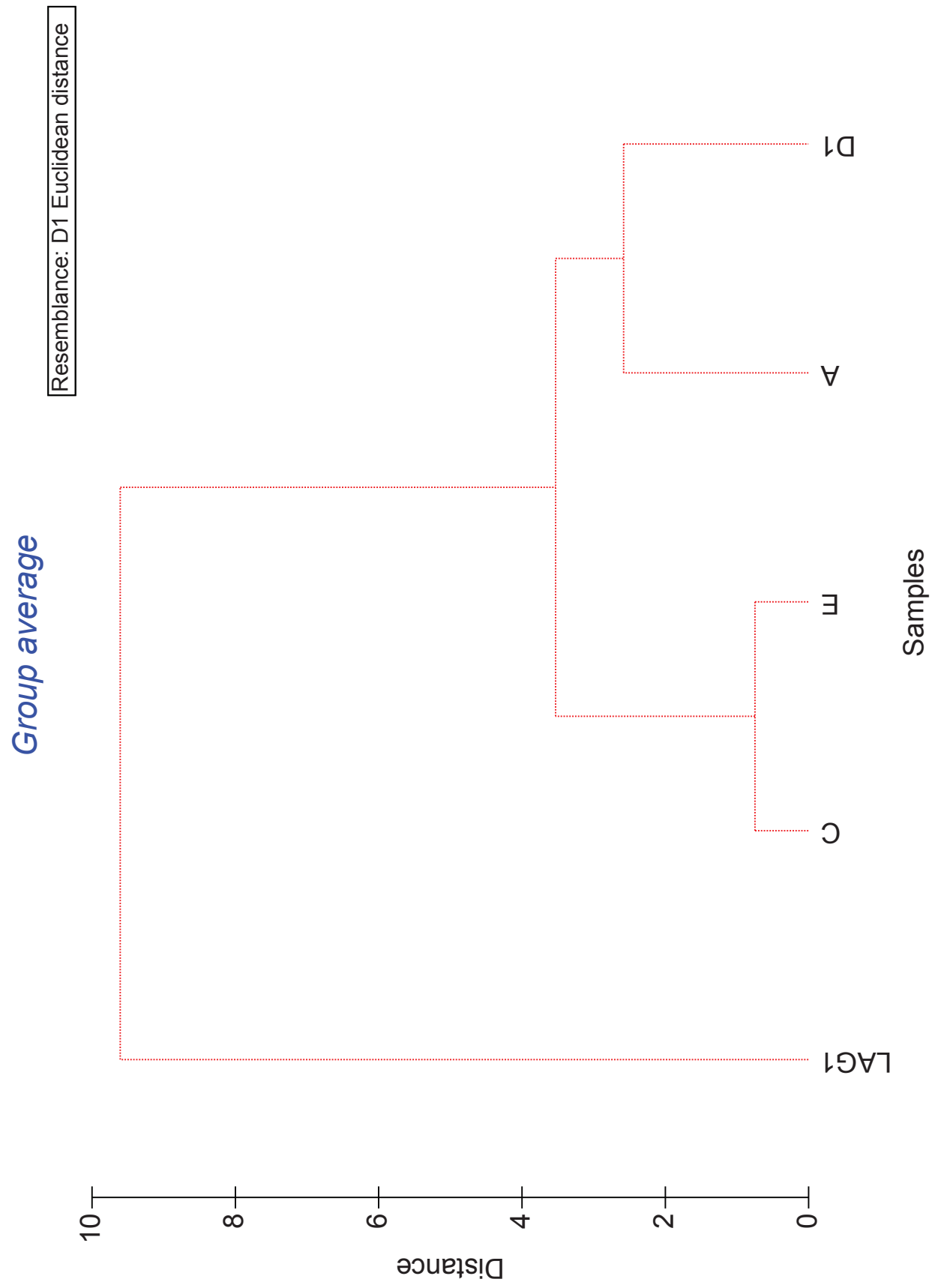
NA = indicates no criteria or published value was available for, or applicable to, this project

[1] State of California. (1994). Water Quality Control Plan for the San Diego Basin (9). California Regional Water Quality Control Board San Diego Region, San Diego, CA.

[2] [USEPA] United States Environmental Protection Agency. (1995). Short-term methods for estimating the chronic toxicity of effluents and receiving waters to west coast marine and estuarine organisms. EPA/600/R-95-136.

[3] Action levels are set by the Storm Water Division and co-permittees for use in storm drain monitoring during dry weather. Exceedances of these levels initiate investigation and follow up response. Levels are based on a combination of regulatory limits, previous sampling years, and workgroup experience.

[4][USEPA] United States Environmental Protection Agency. (2000) Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity. FR Doc. 00–25469.



Attachment C13.14
Cluster dendrogram depicting relationship of sites (data from multiple sampling dates averaged). Red lines indicate that non-random structure of the dendrogram was not confirmed.

Attachment C13.15

Summary of all stations sampled near and within Los Penasquitos Creek in response to the sewage spill on September 8, 2011.

Station			GPS Coordinates		Sampling Period		Total Number
Full Name	**Abbr.**	**Type**	**Lat (N)**	**Long (W)**	**Start**	**End**	**of Events**
Initial Monitoring Efforts							
LOSPEN_CR1	1	Impacted	32.9056	117.2289	9/13/2011	9/26/2011	14
LOSPEN_CR2	2	Reference	32.9044	117.2273	9/13/2011	9/26/2011	14
LOSPEN_CR3	3	Impacted	32.9072	117.2305	9/13/2011	9/26/2011	14
LOSPEN_CR4	4	Impacted	32.9059	117.2274	9/14/2011	9/26/2011	12
LOSPEN_CR5	5	Impacted	32.9062	117.2282	9/14/2011	9/26/2011	12
LOSPEN_CR6	6	Reference	32.9043	117.2234	9/16/2011	9/25/2011	10
Continued Monitoring Efforts							
BIOASSESS A	A	Impacted	32.9085	117.2318	10/6/2011	12/28/2011	13
BIOASSESS C	C	Reference	32.9044	117.2274	10/6/2011	12/28/2011	13
BIOASSESS D	D	Impacted	32.9060	117.2283	10/6/2011	10/12/2011	2
BIOASSESS D1	D1	Impacted	32.9050	117.2261	10/19/2011	12/28/2011	11
BIOASSESS E	E	Reference	32.9042	117.2241	10/6/2011	12/28/2011	13
LAGOON BIOASSESS	LAG	Impacted	32.9247	117.2483	10/6/2011	10/26/2011	4
LAGOON BIOASSESS 1	LAG1	Impacted	32.9323	117.2595	11/2/2011	12/28/2011	9
Reference Locations*							
Los Penasquitos Creek	LPC-MLS		32.9046	117.2226	9/21/2010	5/12/2011	36
Carroll Canyon Creek	LPC-TWAS-1		32.9005	117.2233	9/23/2010	5/12/2011	34

* Data are from Weston Solutions, Inc. LPC-TWAS-1 is located approximately 2,300 meters upstream of Station C in Carroll Canyon Creek, and LPC-MLS is in virtually the same location as Station E.

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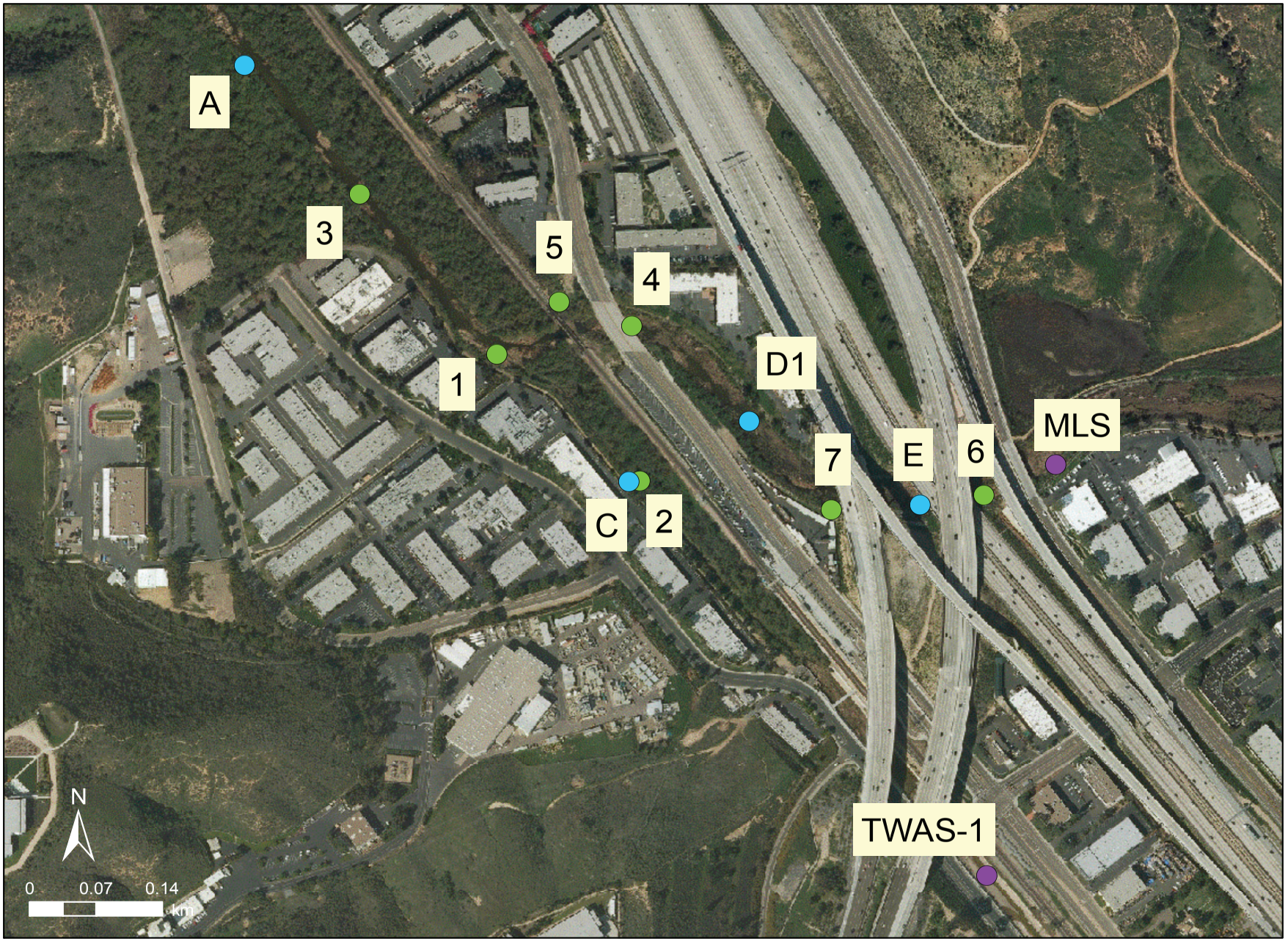


Attachment C13.16

Map of all creek stations sampled for Investigative Order No. R9-2011-0070, along with two reference sites. Green circles indicate stations sampled during initial monitoring efforts; blue circles indicate stations sampled during subsequent monitoring efforts; purple circles indicate stations sampled prior to the spill. See Attachment C13.15 for details.

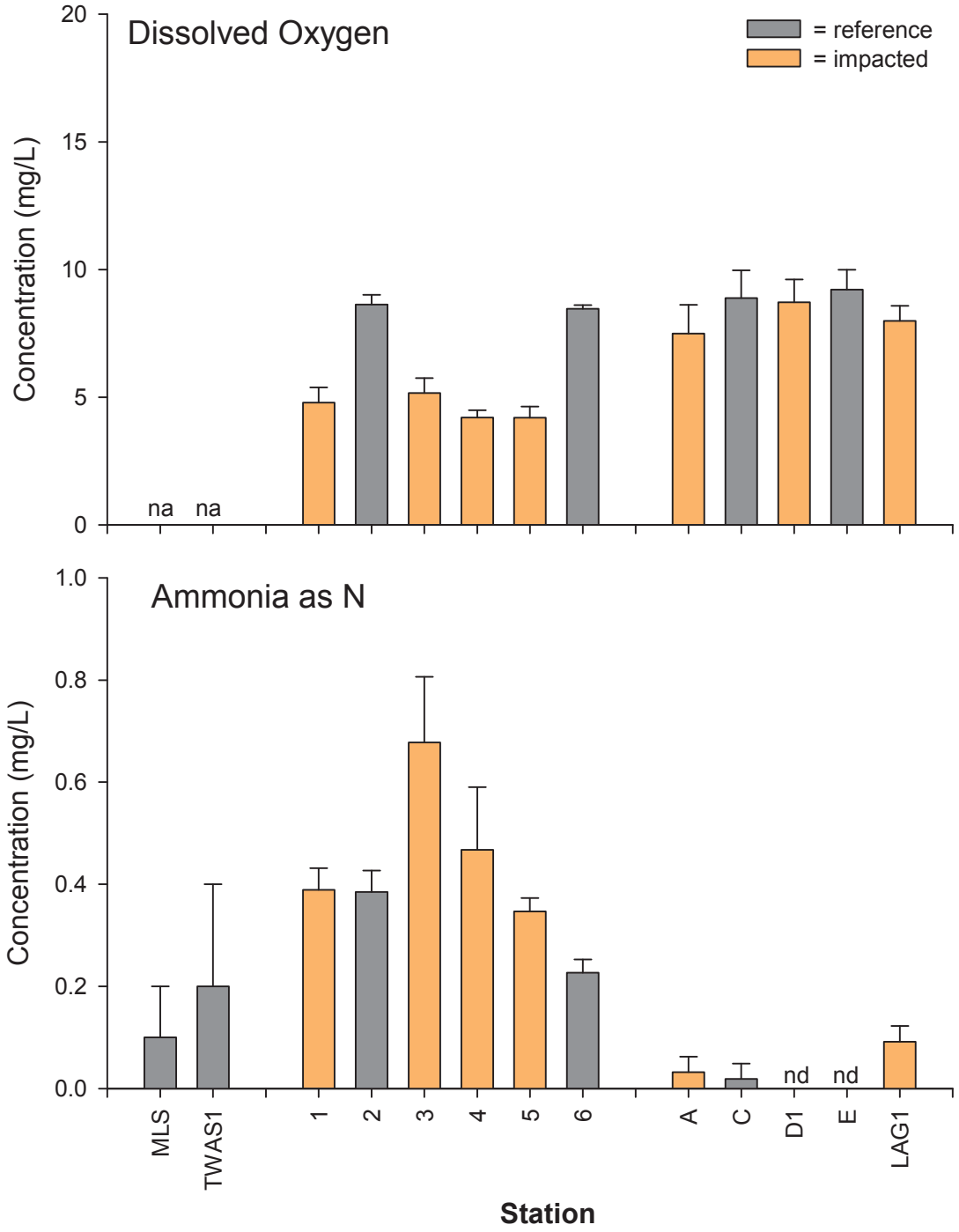
Attachment C13.17

Descriptive statistics for various parameters from all stations sampled for Investigative Order No. R9-2011-0070 and two reference sources. Data include number of samples, minimum, maximum, median and mean values, with standard deviation (Std Dev), coefficient of variation (CoV), and the 95% confidence interval (95% CI) provided as measures of dispersion. Zeros indicate values below method detection limits; na = not available.

	Initial Monitoring Stations						Subsequent Monitoring Stations					Reference	
	1	2	3	4	5	6	A	C	D1	E	LAG1	MLS	TWAS1
Dissolved Oxygen (mg/L)													
Median	4.8	8.6	5.4	4.1	4.2	8.5	8.1	9.4	8.6	9.0	8.1	na	na
Mean	4.8	8.6	5.2	4.2	4.2	8.5	7.5	8.9	8.7	9.2	8.0	na	na
Maximum	8.6	10.9	8.3	6.0	6.6	9.3	10.2	11.7	10.7	11.4	9.1	na	na
Minimum	1.1	4.5	1.7	2.6	1.3	7.9	3.8	4.9	6.5	6.8	6.6	na	na
Std Dev	2.0	1.3	1.9	0.8	1.3	0.4	2.1	2.0	1.5	1.4	0.9	na	na
CoV	41.0	14.6	37.6	19.9	30.4	4.7	27.7	22.5	17.3	15.5	11.4	na	na
95% CI	0.6	0.4	0.6	0.3	0.4	0.1	1.1	1.1	0.9	0.8	0.6	na	na
No. of samples	42	42	42	33	33	29	13	13	11	13	9	na	na
pH													
Median	7.7	7.8	7.7	7.7	7.7	8.0	7.7	7.9	7.8	7.7	8.0	8.0	7.8
Mean	7.6	7.8	7.6	7.6	7.7	8.0	7.8	8.0	7.9	7.8	8.1	7.8	7.6
Maximum	8.0	8.2	8.0	7.9	7.9	8.1	9.3	9.4	8.4	8.2	9.2	8.1	8.3
Minimum	7.1	6.9	7.3	7.0	6.9	7.7	7.3	7.6	7.6	7.5	7.6	7.3	6.4
Std Dev	0.3	0.3	0.2	0.2	0.2	0.1	0.5	0.5	0.3	0.2	0.5	0.3	0.7
CoV	3.3	3.2	2.8	3.1	2.9	1.5	6.3	6.0	3.4	2.3	6.1	4.3	9.3
95% CI	0.1	0.1	0.1	0.1	0.1	0.0	0.3	0.3	0.2	0.1	0.3	0.2	0.5
No. of samples	42	42	42	33	33	29	13	13	11	13	9	8	7
Temperature (°C)													
Median	20.3	20.4	20.5	20.4	20.1	20.2	12.1	11.8	9.9	11.4	13.1	17.1	16.2
Mean	20.7	20.9	21.0	20.6	20.5	20.5	12.4	12.9	10.8	11.4	12.9	15.7	19.5
Maximum	24.4	25.1	25.5	24.7	24.7	27.0	17.5	18.0	16.8	16.8	14.6	18.2	28.5
Minimum	16.4	17.0	16.9	16.8	16.7	16.4	6.2	7.4	5.5	5.5	11.0	10.4	14.8
Std Dev	1.8	1.8	2.0	1.8	1.8	2.3	3.8	3.6	3.7	3.7	1.4	3.3	6.2
CoV	8.9	8.4	9.5	8.6	8.7	11.0	30.9	28.4	34.2	32.4	10.7	21.0	31.8
95% CI	0.6	0.5	0.6	0.6	0.6	0.8	2.1	2.0	2.2	2.0	0.9	2.3	4.6
No. of samples	42	42	42	33	33	29	13	13	11	13	9	8	7
Ammonia as N (mg/L)													
Median	0.4	0.4	0.5	0.3	0.3	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.2
Mean	0.4	0.4	0.7	0.5	0.3	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.2
Maximum	1.0	0.8	1.7	1.7	0.5	0.4	0.2	0.2	0.0	0.0	0.2	0.2	0.5
Minimum	0.2	0.1	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Std Dev	0.1	0.1	0.4	0.4	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.2
CoV	35.9	35.2	61.5	75.9	21.5	31.4	173.4	300.4	0.0	0.0	48.9	115.6	118.3
95% CI	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
No. of samples	42	40	40	32	32	29	13	13	11	13	8	4	4

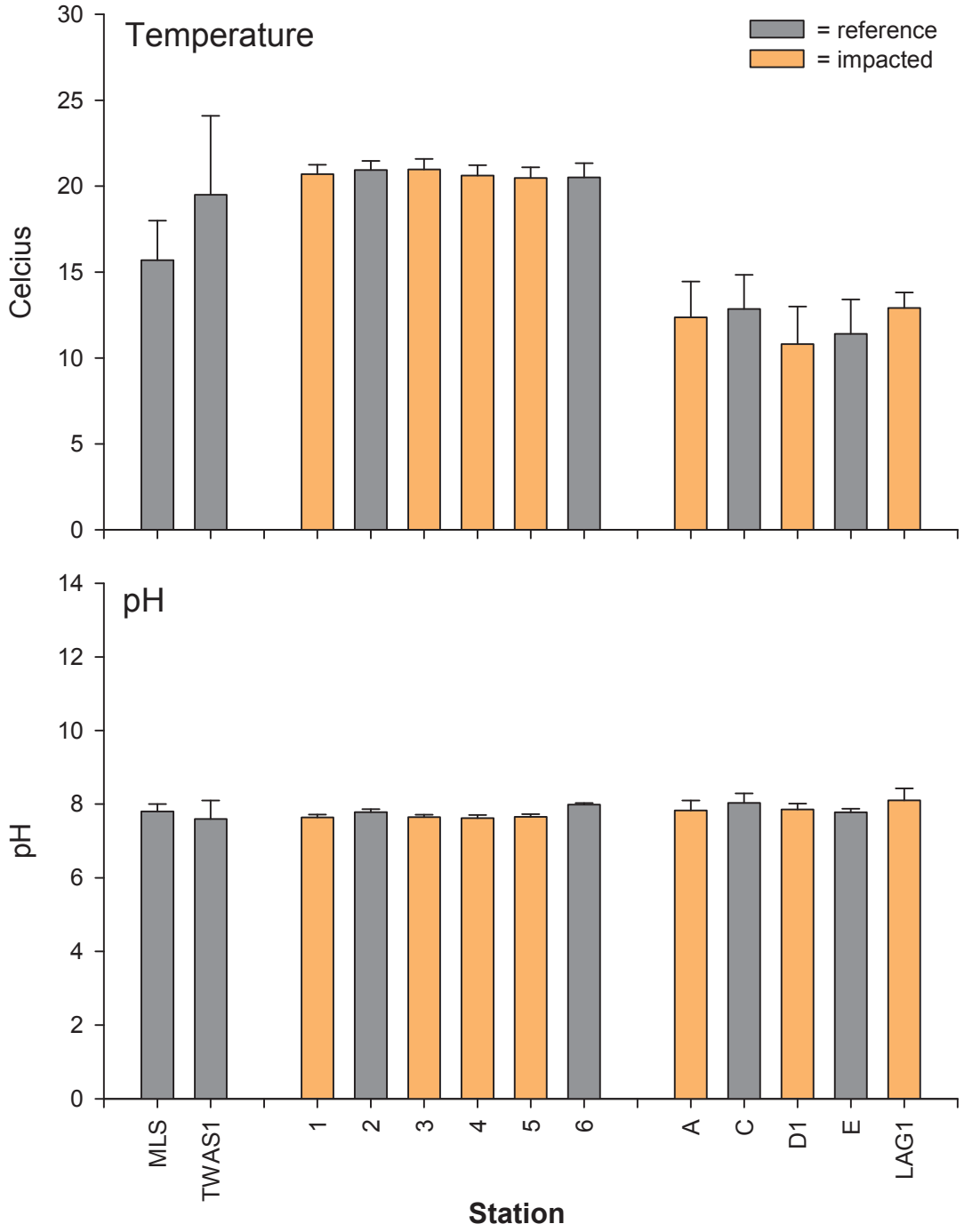
Attachment C13.17 *continued*

	Initial Monitoring Stations						Subsequent Monitoring Stations					Reference	
	1	2	3	4	5	6	A	C	D1	E	LAG1	MLS	TWAS1
Nitrate (mg/L)													
Median	na	na	na	na	na	na	0.2	0.1	0.1	0.2	0.0	0.1	0.1
Mean	na	na	na	na	na	na	0.6	0.6	0.4	0.4	0.2	0.2	0.2
Maximum	na	na	na	na	na	na	3.0	3.7	1.1	1.2	0.8	0.9	0.5
Minimum	na	na	na	na	na	na	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Std Dev	na	na	na	na	na	na	0.9	1.0	0.5	0.5	0.3	0.3	0.2
CoV	na	na	na	na	na	na	142.4	178.9	120.3	101.9	151.0	175.7	117.4
95% CI	na	na	na	na	na	na	0.5	0.6	0.3	0.2	0.2	0.2	0.1
No. of samples	na	na	na	na	na	na	13	13	11	13	9	8	8
Total Phosphorus (mg/L)													
Median	na	na	na	na	na	na	0.1	0.0	0.1	0.1	0.0	0.2	0.3
Mean	na	na	na	na	na	na	0.2	0.0	0.1	0.2	0.0	0.2	0.3
Maximum	na	na	na	na	na	na	0.8	0.1	0.2	1.2	0.1	0.4	0.8
Minimum	na	na	na	na	na	na	0.1	0.0	0.0	0.0	0.0	0.1	0.0
Std Dev	na	na	na	na	na	na	0.2	0.0	0.1	0.3	0.1	0.1	0.4
CoV	na	na	na	na	na	na	107.4	251.2	41.9	172.0	121.4	62.8	119.9
95% CI	na	na	na	na	na	na	0.1	0.0	0.0	0.2	0.0	0.1	0.4
No. of samples	na	na	na	na	na	na	13	13	11	13	9	4	4
Total Suspended Solids (mg/L)													
Median	na	na	na	na	na	na	2.1	2.1	1.6	3.5	13.9	17.0	111.0
Mean	na	na	na	na	na	na	4.9	6.8	2.6	7.1	13.7	17.8	138.0
Maximum	na	na	na	na	na	na	18.5	50.0	12.7	47.0	29.6	34.0	330.0
Minimum	na	na	na	na	na	na	1.2	0.0	0.0	0.0	4.3	3.0	0.0
Std Dev	na	na	na	na	na	na	5.8	13.4	3.4	12.3	8.1	14.7	164.4
CoV	na	na	na	na	na	na	119.6	196.9	131.2	173.1	59.0	82.6	119.2
95% CI	na	na	na	na	na	na	3.2	7.3	2.0	6.7	5.3	14.4	161.2
No. of samples	na	na	na	na	na	na	13	13	11	13	9	4	4



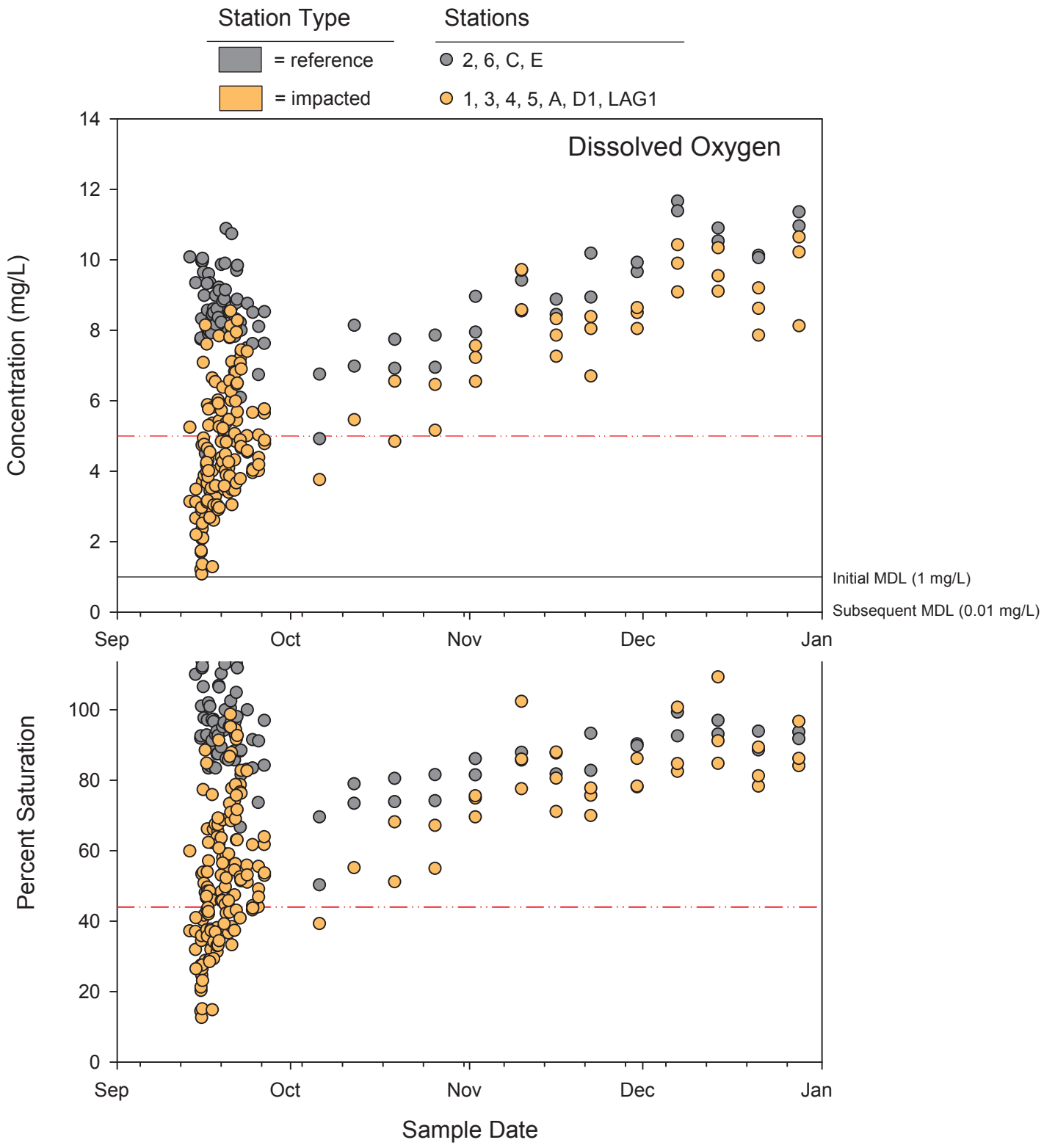
Attachment C13.18

Comparison of dissolved oxygen and ammonia (as N) across all stations sampled for Investigative Order No. R9-2011-0070, plus two reference sites. See Attachments C13.15 and C13.6 for station locations and sample dates. Data are means +/- 95% confidence intervals, with zeros substituted for values below detection limits; nd = not detected; na = not available.



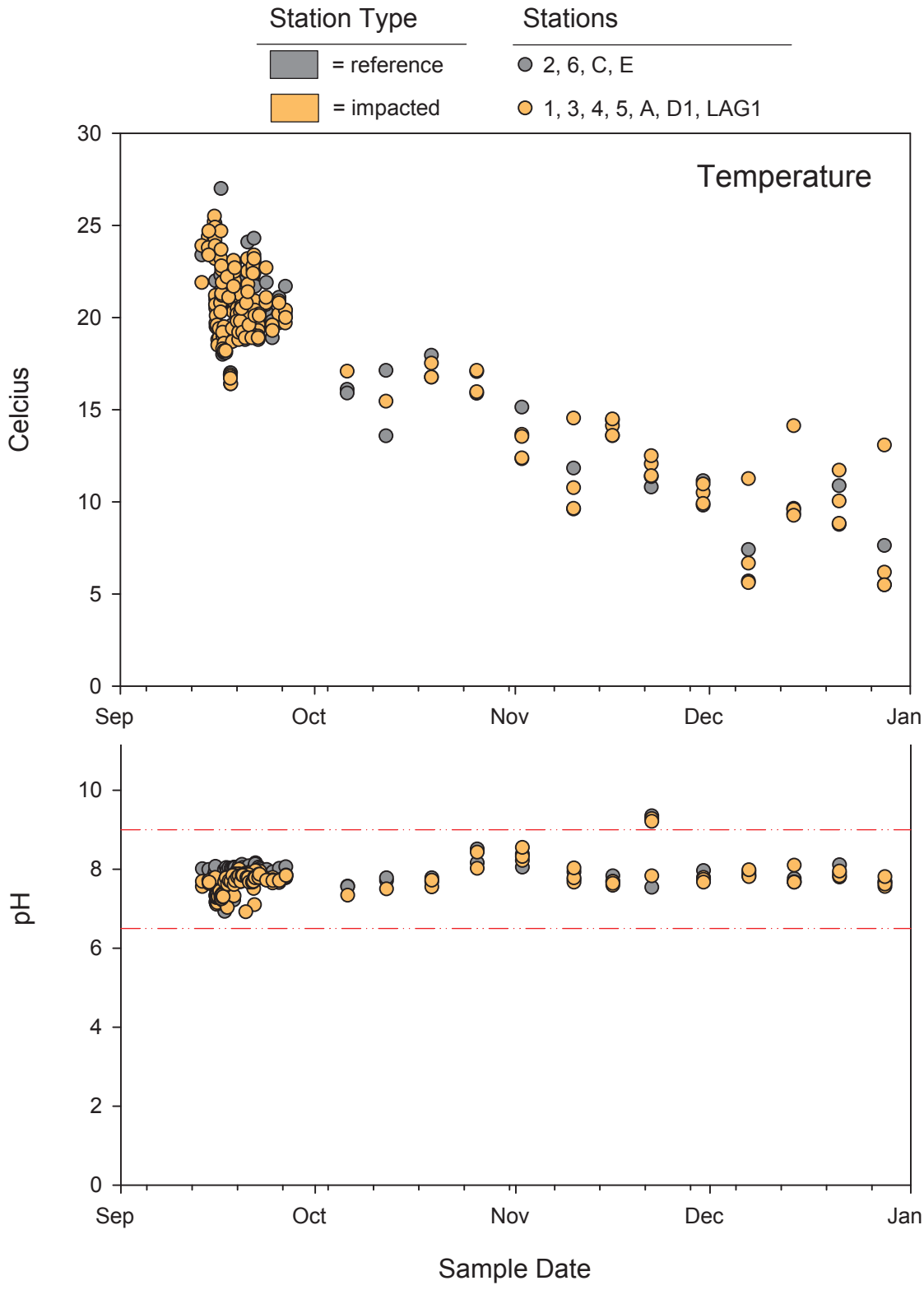
Attachment C13.19

Comparison of temperature and pH across all stations sampled for Investigative Order No. R9-2011-0070, plus two reference sites. See Attachments C13.15 and C13.6 for station locations and sample dates. Data are means +/- 95% confidence intervals, with zeros substituted for values below detection limits.



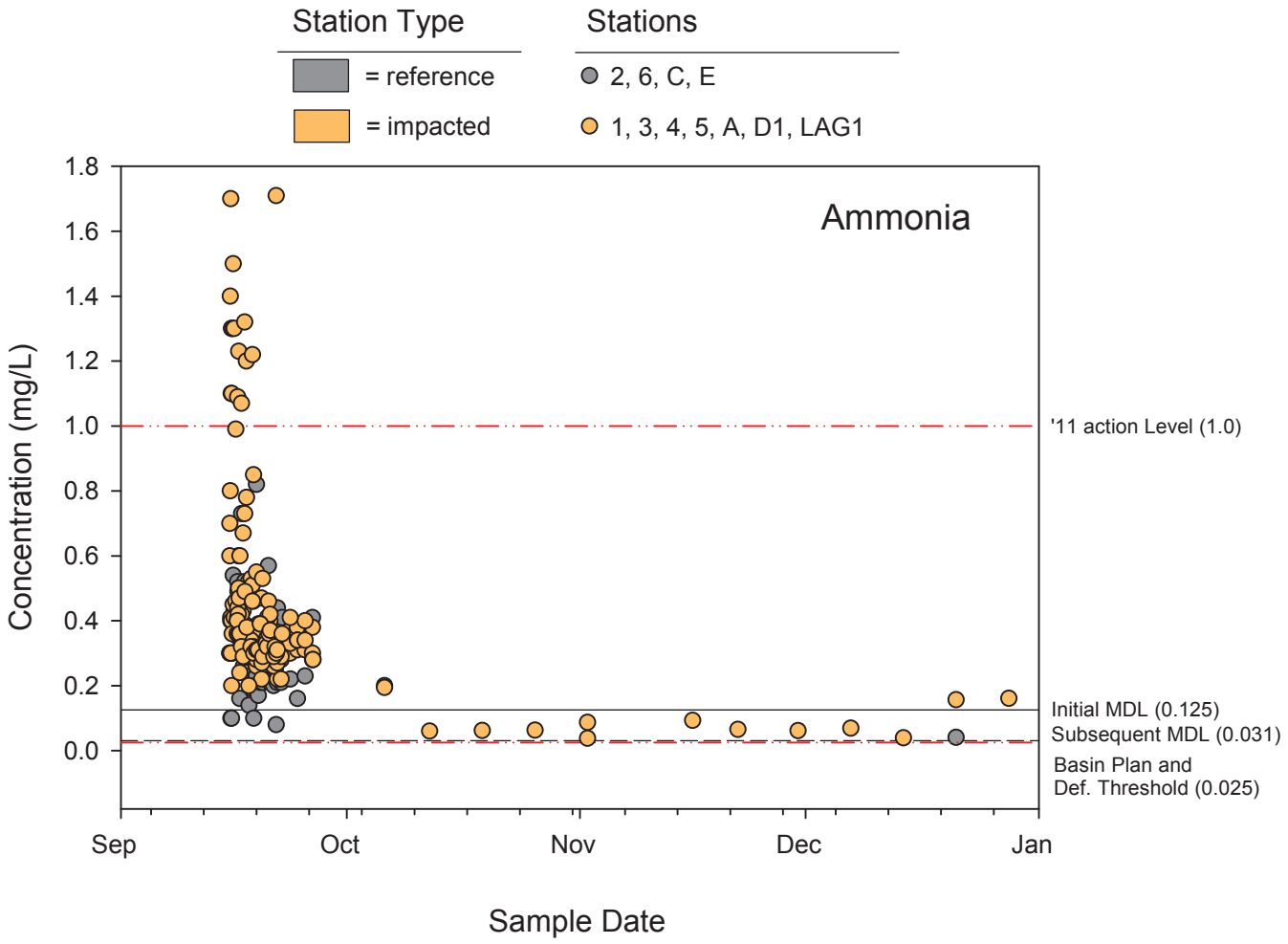
Attachment C13.20

Dissolved oxygen plotted for all stations sampled for Investigative Order No. R9-2011-0070 by sample date. See Attachments C13.15 and C13.6 for station locations and sample dates. Method detection limits indicated by black lines. Red lines indicate threshold values used to evaluate data; see Attachment C13.13.



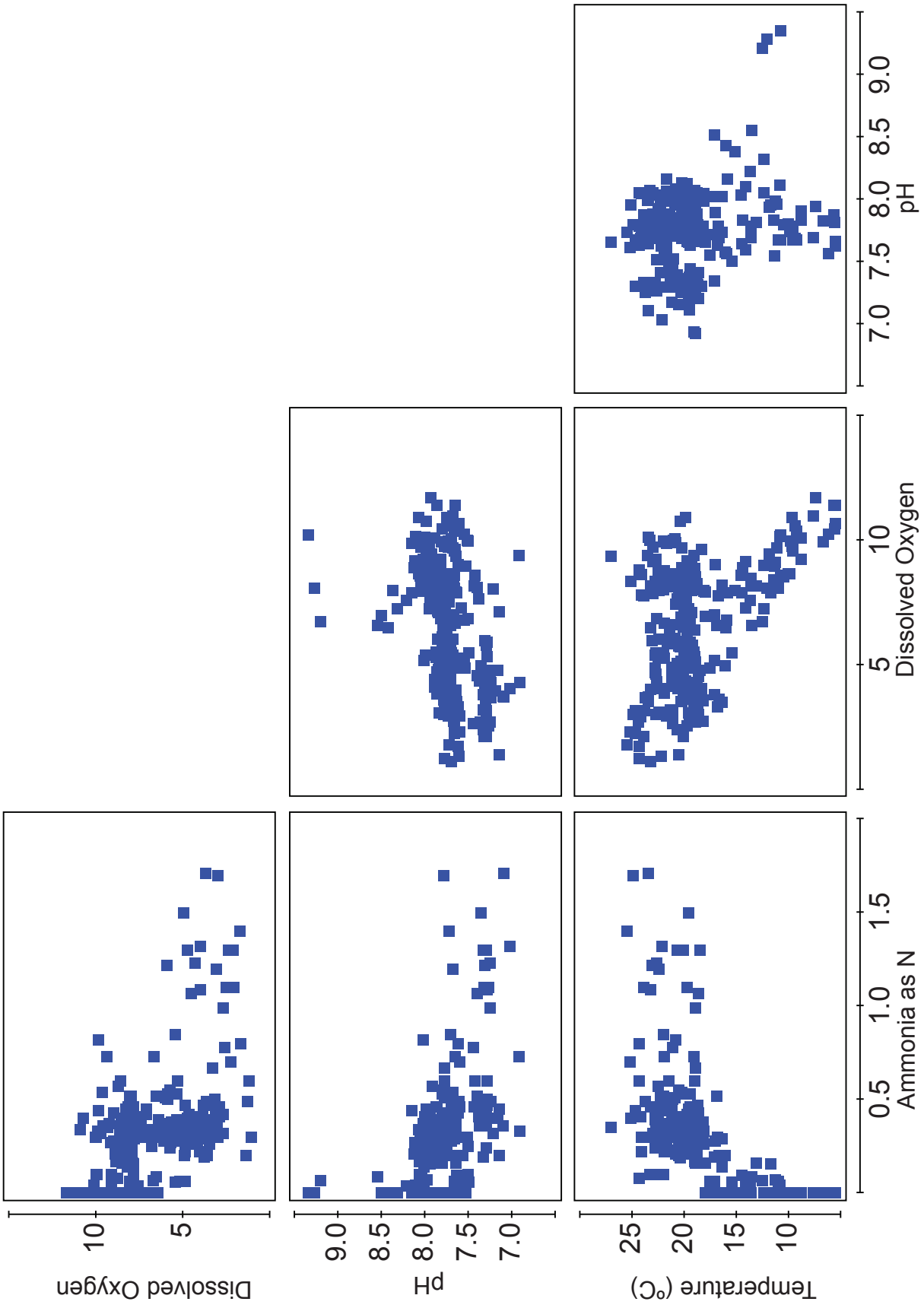
Attachment C13.21

Temperature and pH plotted for all stations sampled for Investigative Order No. R9-2011-0070 by sample date. See Attachments C13.15 and C13.6 for station locations and sample dates. Red lines indicate threshold values used to evaluate data; see Attachment C13.13.



Attachment C13.22

Ammonia as N plotted for all stations sampled for Investigative Order No. R9-2011-0070 by sample date. See Attachments C13.15 and C13.6 for station locations and sample dates. Method detection limits indicated by black lines. Red lines indicate threshold values used to evaluate data; see Attachment C13.13.



Attachment C13.23
Draftsman plots showing relationships of ammonia (as N), dissolved oxygen, pH, and temperature to each other.

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Attachment C13.24

Pair-wise comparisons among sites from 2-way nested ANOSIM (date nested within site). Yellow highlighting indicates sites that were significantly different from each other.

	A	C	CR1	CR2	CR3	CR4	CR5	CR6	D1	E	LAG1
C	0.009862										
CR1	0.601405	0.656122									
CR2	0.693998	0.647929	0.448251								
CR3	0.547142	0.582223	0.003925	0.236965							
CR4	0.592637	0.66729	0.003943	0.720845	0.087428						
CR5	0.579728	0.655671	-0.02036	0.679406	0.073931	-0.03572					
CR6	0.577633	0.474368	0.670788	0.249155	0.459972	0.924869	0.909216				
D1	-0.02182	-0.02329	0.893658	0.890856	0.791007	0.914225	0.903143	0.795492			
E	0.015855	0.006372	0.898108	0.889427	0.786625	0.936165	0.919916	0.799937	-0.04674		
LAG1	0.017394	-0.03974	0.827084	0.839145	0.659293	0.849855	0.845497	0.73471	0.091575	0.11441	

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Supporting Document No. 5

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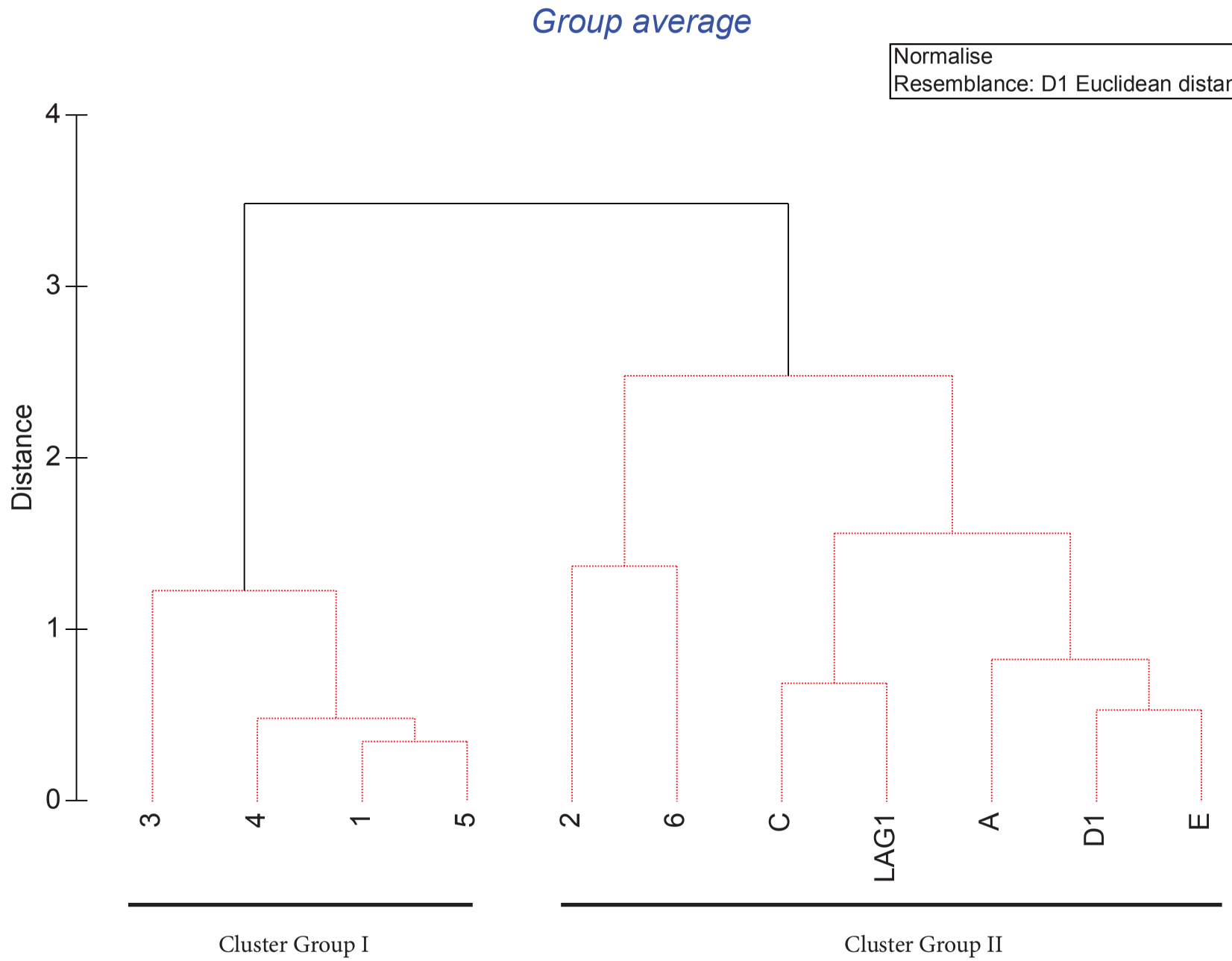

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Agenda Item No.8
Supporting Document No. 5

Attachment C13.25

Dendrogram depicting relationship of sites (temporal data averaged by site). Black lines indicate statistically supported struture of dendrogram. Results show that sites in Cluster Group I (i.e., impacted sites sampled between September 13 and 26, 2011) are distinct from sites in Cluster Group II (i.e., reference sites sampled between September 13 and 26 and all sites sampled between October 6 and December 28, 2011).

Comprehensive Supplemental Final Report for Investigative Order R9-2011-0070

Investigative Order Section C: Continued Monitoring Program and Reports

Water Chemsitry Monitoring and Reporting
Appendix C13.A
QA/QC Report

City of San Diego
Water Quality Laboratory
Environmental Monitoring and Technical Services Division
5530 Kiowa Drive • Mail Station 85A • La Mesa, CA 91942
Tel: (619) 668-3232 • Fax: (619) 668-3250
California ELAP Certificate No. 1058

Report of Analysis

Date of Report: February 13, 2012
Project: Water Chemistry Monitoring and Report for I.O. R9-2011-0070
Client: Steve Meyer, Deputy Public Utilities Director

All analyses were conducted at a laboratory certified for such analyses by the CDPH in accordance with current procedures approved by the United States Environmental Protection Agency. The included report of analyses was done in accordance with the methods listed by one or more of the certified laboratory certifications listed above and are subject only to the summary and limitations listed.

Reviewed and Approved: _____
Doug Campbell
Senior Chemist/Water Quality Laboratory

Summary:
77 samples were obtained from seven different field sampling locations for this investigation. All samples were analyzed for Total Phosphorus, Total Nitrogen, Ammonia-N, Nitrite, Nitrate+Nitrite, Nitrate (by subtraction), and Total Suspend Solids according to the methodology presented in Appendix Table D18.6. by the City of San Diego Water Quality Laboratory.

All samples were obtained between October 6th, 2011 and December 28th, 2011 and analyzed within SWAMP Quality Assurance Program Plan (QAPrP) holding times.

Notes:
A number of abbreviations are routinely used in reports, including the following:
NA = not analyzed; **ND** = Not detected; **NS** = not sampled;

If you have any further questions on this report, please contact Nita Torres at 619.668.3232

City of San Diego
Wastewater Chemistry Services
Environmental Monitoring and Technical Services Division
5530 Kiowa Drive • Mail Station 85A • La Mesa, CA 91942
Tel: (619) 668-3212 • Fax: (619) 668-3284
California ELAP Certificate Nos. 1609, 2474, 2477, 2478, & 2539

Report of Analysis

Date of Report: February 16, 2012
Project: Water Chemistry Monitoring and Report for I.O. R9-2011-0070
Client: Water Quality Laboratory-City of San Diego

All analyses were conducted at a laboratory certified for such analyses by the CDPH in accordance with current procedures approved by the United States Environmental Protection Agency. The included report of analyses was done in accordance with the methods listed by one or more of the certified laboratory certifications listed above and are subject only to the summary and limitations listed.

Reviewed and Approved: Brent G. Bowman
Brent G. Bowman
Senior Chemist/Laboratory Director

Summary:
77 samples were received by the Wastewater Chemistry Services Section Laboratory for analysis of Ortho-Phosphate by EPA method 300.0. All of the samples were received and analyzed within holding times between October 6th, 2011 and December 28th, 2011. Samples were stored and handled in conformance with CFR 136 Table 2.

Notes:
A number of abbreviations are routinely used in reports, including the following:
NA = not analyzed; **ND** = Not detected; **NS** = not sampled;

If you have any further questions on this report, please contact Lee King of my staff at 619.668.3213.

Preliminary Final Report for Investigative Order R9-2011-0070

Investigative Order Section C: Continued Monitoring Program and Reports
Appendix C13.A: Quality Assurance / Quality Control Report

Summary

Chemistry sampling and analyses were performed by laboratory sections within the City of San Diego Environmental Monitoring and Technical Services Division (EMTS). Sampling and field analyses were performed by the Microbiology Section; analyses of Total Phosphate, Total Nitrogen, Ammonia-N, nitrate, nitrite, and TSS were performed by the Water Quality Laboratory (WQL), and analysis of Ortho-Phosphate was conducted by the Wastewater Chemistry Services (WCS) Section.

All chemistry analyses performed by EMTS laboratories for this investigation met or exceeded requirements of SWAMP Quality Assurance Program Plan (QAPrP) and/or California Environmental Laboratory Accreditation Program (ELAP)-approved methodology. All Quality Control parameter frequency requirements were met for a 100% success rate. 1194 quality control determinations were tabulated for this project. Of these, there are two laboratory duplicate Relative Percent Difference (RPD) results and seven field duplicate RPDs that are outside laboratory evaluation criteria or QAPrP Measurement Quality Objectives (MQOs). These appear to be related to issues with either result proximity to Method Detection Limit or sample site inhomogeneity. Overall the success rate for quality control determinations for this report is 99.2%.

Table C13.A1 - Summary of Quality Control Determinations by EMTS Laboratories.

Quality Control Parameter	Number of Determinations	Success Rate
Method Blank	332	100%
Continuing Calibration Verification	306	100%
Matrix Spike and Matrix Spike Duplicate	241	100%
Laboratory Control Spike / Laboratory Fortified Blank	101	100%
Laboratory Duplicate	98	98.0%
Field Duplicate	77	90.9%
Field Analysis Accuracy Check	39	100%
Total	1194	99.2%

Laboratory Qualifications

Analyses of Total Phosphate, Total Nitrogen, Ammonia-N, nitrate, nitrite, and TSS were performed in the City of San Diego Water Quality Laboratory (WQL), under certification from the California Department of Public Health Environmental Laboratory Accreditation Program (ELAP; Certification number 1058, expires 11/30/2013). Ortho-phosphate analysis was performed by the City of San Diego Wastewater Chemistry Services section, ELAP Certification number 1609.

Analytical Methods

All determinations were performed using approved methods and Standard Operating Procedures (SOPs). Methodology was previously submitted to the San Diego Regional Water Quality Board and is summarized in Appendix Table C13.A9.

Quality Assurance and Quality Control (QA/QC)

The data submitted by the City of San Diego in response to California Regional Water Quality Control Board – San Diego Region Investigative Order R9-2011-0070 and included in this report was generated by California ELAP certified laboratories using EPA methodology governed by comprehensive Quality Assurance Plans. Field sampling and analysis was conducted under the guidelines of the SWAMP Quality Assurance Program Plan (QAPrP) dated September 1, 2008. Data quality for Conventional Analytes in Water and Field Measurements is demonstrated through analysis of the following Data Quality Indicators:

- Laboratory Method Blanks
- Continuing Calibration Verification
- Matrix Spikes and Matrix Spike Duplicates
- Certified Reference Materials/Laboratory Control Spikes
- Laboratory Duplicates
- Field Duplicates

Field Data for this project has been evaluated using the Measurement Quality Objectives (MQOs) found in the SWAMP QAPrP. Laboratory data has been validated according to WQL and WCS ELAP-approved EPA methodology, and has also been compared to QAPrP MQOs for completeness.

The acceptance criteria for method blanks, continuing calibration verification, matrix spikes and matrix spike duplicates, external checks / laboratory fortified blanks, laboratory duplicates, and field duplicates are presented in Appendix Table C13.A10. This table incorporates MQOs from the SWAMP QAPrP as

well as acceptance criteria from EMTS Standard Operating Procedures. All Quality Control sample data is included in this report as Appendix Tables C13.A13 through C13.A21.

Laboratory Method Blanks

Laboratory method blanks are used to assess the background level of target analyte resulting from sample preparation and analysis. Method blanks are carried through precisely the same procedures as field samples. Blanks that exceed Method Detection Limits (MDLs) require corrective action to bring the concentrations down to acceptable levels. This may involve changing reagents, cleaning equipment, or even modifying the methodology used. WQL laboratory protocol calls for the analysis of one method blank per batch or, for large batches, per 10 samples; WCS calls for one method blank per batch or per 20 samples for large batches. The SWAMP QAPrP MQO for method blanks is one per 20 samples or one per batch, whichever is more frequent. All analytical batches that include data used in this report contain laboratory method blanks at the required frequency or better. In the WQL a Laboratory Reagent Blank (LRB) is analyzed at the beginning of the run, and Calibration Blanks are included in the batch at a frequency of every ten samples.

Method blanks are considered acceptable if target analyte concentrations are below their respective Method Detection Limit (MDL) or project Reporting Limit (RL). All laboratory method blanks from batches with data included in this report were below the MDL for that analysis.

Continuing Calibration Verification

Continuing calibration verification (CCV) standards are mid-level standards analyzed at specified intervals during the course of the analytical run. CCVs are used to monitor sensitivity changes in the instrument during analysis. In order to properly assess these sensitivity changes, the standards used to perform CCVs should be from the same set of working standards used to calibrate the instrument. Use of a second source standard is not necessary for CCV standards, since other QC samples are designed to assess the accuracy of the calibration standards. Analysis of CCVs using the calibration standards limits this QC sample to assessing only instrument sensitivity changes. CCV samples are run at the beginning and end of each batch, and every 10 samples, along with a Calibration Blank. CCV acceptance criteria is 90 – 110% recovery for EMTS Laboratories, and the QAPrP MQO is 80 – 120%. Continuing Calibration Standards were included at the proper frequency in every analytical batch containing data submitted in this report where continuing calibration is applicable. This includes Total Nitrogen, Phosphorus, Ammonia as N, Nitrate, Nitrite, and Ortho-Phosphate. Continuing Calibration is not applicable to the analysis of Total Suspended Solids. 306 Continuing Calibration Standards were run in batches containing data related to this study; the average recovery was 100% with a standard deviation of 2.9% and a range of 81.6% to 107%.

Matrix Spikes and Matrix Spike Duplicates

Laboratory-fortified sample matrix spikes (MS) and laboratory-fortified sample matrix spike duplicates (MSD) are used to evaluate the effect of the sample matrix on the recovery of target analytes. Matrix spikes are prepared by adding a known concentration of target analyte to a field sample, which is then subjected to the entire analytical procedure. Individually, these samples were used to assess the bias from an environmental sample matrix plus normal method performance. In addition, matrix spike duplicate samples can be used collectively to assess analytical precision, where applicable.

The SWAMP QAPrP Measurement Quality Objective for conventional analyses is at least one MS/MSD pair per 20 samples or one per batch, whichever is more frequent. WQL methodology requires matrix spikes once per 10 samples for all applicable analyses (matrix spikes do not apply for Total Suspended Solids); WCS methodology calls for one matrix spike per 20 samples. The SOP for Total Nitrogen and Total Phosphorus calls for one MSD pair per batch or per 30 samples; the SOP for Ammonia-N, Nitrate, and Nitrite does not require MSDs, as the precision requirement is generally satisfied by the use of laboratory duplicates. WCS methodology for ortho-phosphate calls for one MSD pair per 20 samples.

The relative percent difference (RPD) between the MS and the MSD can be used to evaluate how matrix affects precision. Precision evaluation can also be satisfied by the use of laboratory duplicates, where the ambient concentration of target analyte is greater than the MDL.

The success or failure of the matrix spikes is evaluated by calculating the percent recovery, where:

$$\%\ \text{recovery} = \frac{\left(v_{MS} - v_{ambient}\right)}{v_{spike}} \times 100$$

v_{MS}: the concentration of the spiked sample

$v_{ambient}$: the concentration of the original (unspiked) sample

v_{spike}: the concentration of the spike added

In samples where the concentration of analyte in the unspiked sample falls below the MDL for that analyte, a value of zero was used to calculate spike recovery.

The relative percent difference (RPD) between the MS and the MSD can be used to evaluate how matrix affects precision. Precision evaluation can also be satisfied by the use of laboratory duplicates, where the ambient concentration of target analyte is greater than the MDL.

$$RPD = \left| \frac{\left(v_{MS} - v_{MSD}\right)}{mean} \right| \times 100$$

.

v_{MS}: the concentration for the matrix spike

v_{MSD}: the concentration of the matrix spike duplicate

mean: the mean of the two concentrations (MS + MSD)

Matrix spike acceptance criteria for the EMTS Laboratories is 80-120% for Ammonia-N and Nitrite, 75% - 125% for Ortho-Phosphate, and is 90-110% for Nitrate+Nitrite, Total Phosphorus, and Total Nitrogen. The SQAMP QAPrP MQO is 80-120% recovery. WQL MSD RPD criteria, where applicable, is <10%, while SWAMP QAPrP has an objective of 25% RPD or less.

All spike and MSD results in batches containing samples relating to this IO fall within the QAPrP DQOs. There are some spike results that fall outside WQL criteria, but still within QAPrP MQOs. These results for Total Phosphorus, Total Nitrogen, and Nitrate+Nitrite fall just above the upper end of WQL criteria. The minimum spike recovery for all data reported in this project is 81.9%, and the maximum is 117%. According to the EPA methodology that forms the basis for WQL Standard Operating Procedures, spike results that fall outside the designated range are judged to be either matrix or solution related, and not system related.

Table C13.A2: Summary of Matrix Spike results for Water Chemistry analyses performed by EMTS Laboratories

Analyte	Average Recovery	Standard Deviation	Range
Total Phosphorus	104%	5.4%	93.1 – 117%
Total Nitrogen	101%	4.9%	91.2 – 111%
Ammonia as N	101%	3.9%	89.0 – 114%
Nitrate+Nitrite	106%	3.7%	99.8 – 113%
Nitrite	97.3%	3.3%	91.0 – 105%
Ortho-Phosphate	89.5%	3.9%	81.9 – 94.0%

Table C13.A3: Summary of Matrix Spike Duplicate results for Water Chemistry analyses performed by EMTS Laboratories

Analyte	Average RPD	Standard Deviation	Range
Total Phosphorus	1.6%	1.3%	0 – 4.0%
Total Nitrogen	1.4%	1.1%	0.4 – 3.3%
Ortho-Phosphate	0.4%	0.2%	0.1 – 0.7%

External Check Samples

Evaluation of the accuracy of laboratory procedures is achieved through the preparation and analysis of external check samples with each analytical batch. These samples should be similar in matrix and concentration range to the samples being prepared and analyzed. These check samples are prepared from a source different from that used to prepare calibration standards, and are analyzed using the same preparation, reagents, and analytical methods as field samples. EMTS laboratories require one external check per batch; the SWAMP QAPrP has an objective of one check per 20 samples or per analytical batch, whichever is more frequent. EMTS Acceptance limits are 90-110% recovery; the QAPrP MQO is 80-120% recovery. In batches containing samples reported in this study, an external check sample was analyzed at a frequency of one per batch or better for all analyses.

The accuracy of the results is assessed through the calculation of a percent recovery.

$$\%\ \text{recovery} = \frac{V_{analyzed}}{V_{certified}} \times 100$$

Where:

$v_{analyzed}$: the analyzed concentration of the reference material

$v_{certified}$: the certified concentration of the reference material

All recoveries fall within the 90-110% acceptance limits and are summarized in the table below.

Table C13.A4: Summary of External Check results for Water Chemistry Analyses Performed by EMTS Laboratories

Analyte	Average Recovery	Standard Deviation	Range
Total Phosphorus	101%	2.7%	96.8 – 104%
Total Nitrogen	103%	3.9%	97.6 – 107%
Ammonia as N	100%	2.5%	94.1 – 104%
Nitrate+Nitrite	105%	2.4%	101 – 110%
Nitrite	100%	1.2%	99.3 – 103%
Total Suspended Solids	93.8%	2.0%	92.9 – 101%
Ortho-Phosphate	101%	2.5%	95.0 – 105%

Laboratory Duplicates

Laboratory duplicates (DUPs) are analyzed to assess the precision of the analytical process. A matrix sample is selected to be duplicated throughout the preparation, analysis, and reporting process. EMTS laboratories requires laboratory duplicates to be analyzed at a frequency of one per batch; the QAPrP MQO is one per 20 samples or per analytical batch, whichever is more frequent. All batches containing data reported in this study include laboratory duplicates performed at the required frequency.

Following analysis, the results from the duplicate samples are evaluated by calculating the RPD.

$$\text{RPD} = \left| \frac{\left(v_{\text{sample}} - v_{\text{duplicate}} \right)}{\text{mean}} \right| \times 100$$

Where:

v_{sample}: the concentration of the original sample digest

$v_{\text{duplicate}}$: the concentration of the duplicate sample digest

mean: the mean concentration of both sample digests

EMTS Laboratory ELAP-approved SOPs for Total Nitrogen, Total Phosphorus, and Total Suspended Solids require RPDs of 10% or less; the SOP for Ortho-Phosphate specifies RPDs of 20% or less; and the SOPs for Ammonia-N, Nitrate+Nitrite, and Nitrite do not specify RPDs. The QAPrP MQO is 25% or less RPD for

all Conventionals in water. All laboratory duplicates analyzed in batches containing data reported in this study have an RPD of 14.0% or less.

Table C13.A5 - Summary of Laboratory Duplicate results for Water Chemistry Analyses Performed by EMTS Laboratories

Analyte	Average RPD	Standard Deviation	Range
Total Phosphorus	2.8%	n/a	n/a
Total Nitrogen	1.2%	0.7%	0.7 – 1.7%
Ammonia as N	2.4%	4.1%	0 – 14%
Nitrate+Nitrite	0.6%	0.6%	0 – 2.1%
Nitrite	2.5%	3.6%	0 – 11%
Total Suspended Solids	4.7%	3.0%	0 – 8.7%
Ortho-Phosphate	2.0%	1.5%	0 – 5.4%

Two laboratory duplicate results fell outside the WQL Control Limit of 10% RPD (SWAMP QAPrP MQO is 25%); values are 14.0% and 10.6%. The cause can be traced to the proximity of the result to the Method Detection Limit. Decreased precision is expected in results up to five times the MDL; as measured values approach the MDL, uncertainty by definition approaches 100%. One set of laboratory duplicates for Ammonia-N has values of 0.0428 and 0.0372 mg/L; the MDL is 0.031 mg/L. Both values are less than twice the MDL, and the RPD is 14.0%. Similarly a set of nitrite laboratory duplicates with an RPD of 10.6% has values of 0.0258 and 0.0232 mg/L; the MDL is 0.016 mg/L.

Field Duplicates

Field duplicates were analyzed to assess variability introduced by field sampling procedures. Field duplicate samples were taken by collecting a separate grab sample immediately following the collection of the field sample. Field duplicates were collected at every monitoring location reported in this investigation with the exception of BIOASSESS D, which was replaced with BIOASSESS D1 very early in the study. SWAMP QAPrP has a Measurement Quality Objective for field duplicates of 5% of total project sample count. 11 sets of field replicates were collected over the three month monitoring period; these eleven field duplicates represent 14.2 % of the total project sample count. A different station was

chosen for field duplication during each sampling event from October 19th through the last sampling on December 28th. The dates each station was chosen for duplicate field events are as follows:

Table C13.A6: Field duplicate sampling events for Water Chemistry Monitoring conducted by EMTS Laboratories

Station	**Dates field duplicates collected**
BIOASSESS A	November 2, December 28
BIOASSESS C	November 10, November 22, November 30
BIOASSESS D1	December 7
BIOASSESS E	October 19, December 14
LAGOON BIOASSESS	October 26
LGN BIOASSESS1	November 16, December 21

The precision of field duplicates is evaluated by calculating the RPD between the involved samples.

$$\text{RPD} = \left| \frac{\left(v_{\text{field sample}} - v_{\text{field duplicate}} \right)}{\text{mean}} \right| \times 100$$

Where:

$v_{\text{field sample}}$: the concentration of the original field sample

$v_{\text{field duplicate}}$: the concentration of the field duplicate

Field duplicate values were compared to field sample values from each site and RPDs were calculated; individual results are tabulated in the attached Appendix Tables. The QAPrP has a Measurement Quality Objective of <25% for field duplicate samples. There were some field duplicate samples where one or both samples have results below the MDL for that analysis; in these cases RPDs do not apply. The majority of the field duplicate RPDs – 70 out of 77 (90.9%) - fall within the QAPrP Measurement Quality Objective of 25%. There were some results that fell above this MQO, and in some cases, significantly above this MQO. RPD values >25%, which represent just 9.1% of the total field duplicate measurements (7 out of 77), are tabulated below. All other field duplicate RPDs are less than 25%.

Table C13.A7: Summary of field duplicate results above the 25% RPD Data Quality Objective for Water Chemistry analyses performed by EMTS Laboratories.

Date	Location	Analyte	Results [mg/L]	RPD	Method Detection Limit
10/26/2011	LAGOON BIOASSESS	Phosphorus	0.462 0.185	85.63%	0.078
10/26/2011	LAGOON BIOASSESS	TSS	6.9 11.6	50.81%	1.0
11/10/2011	BIOASSESS C	TSS	1.8 1.2	40.00%	1.0
11/22/2011	BIOASSESS C	Nitrite	0.0256 0.0337	27.32%	0.016
11/22/2011	BIOASSESS C	TSS	3.2 2.2	37.04%	1.0
11/30/2011	BIOASSESS C	TSS	2.4 6.8	95.65%	1.0
12/21/2011	LGN BIOASSESS1	TSS	26.6 12.9	69.37%	1.0

These results appear to fall into two categories:

1. Field Duplicate values near the MDL: Similar to the above mentioned issues with laboratory duplicates. This appears to apply to the TSS analysis of the 11/10/11 BIOASSESS C sample, which had values of 1.8 and 1.2 mg/L, and an MDL of 1.0 mg/L. As noted above, 40 CFR 136 MDL determinations by definition have uncertainty approaching 100% as values approach the MDL.

2. Field Duplicate values that may be due to the sampling process. These field duplicate results that are significantly different and do not appear to be sufficiently near the MDL to have uncertainty affect the RPD.

    a. On October 26, 2011 field duplicate samples of the LAGOON BIOASSESS source were obtained. RPD for Nitrate+Nitrite is 3.05% and for Nitrite is 5.74%. However Total Phosphorus RPD is 85.63% with values of 0.462 and 0.185 mg/L. TSS RPD is 50.8%, with values of 6.9 and 11.6 mg/L. This sample was taken at high tide, with no measurable flow, at a time when water depth was noted to be approximately three times that of previous visits. Samples were obtained from the stream bank by reaching as far out as possible. This monitoring site was later moved to the Mudflats near the mouth of the Los Penasquitos Lagoon to satisfy the requirements of the Eutrophication Study.

    b. The BIOASSESS C site was chosen for field duplicate sampling on November 22, 2011. RPDs for Total Phosphorus, Total Nitrogen, Ammonia-N, and Nitrate+Nitrite are n/a or less than 25%; however, the RPD for Nitrite is 27.32% and for TSS is 37.04%. All results for nitrite and TSS are within about three times the MDL for that analysis. It was noted during this sampling event that the water was turbid, presumably from rain-associated runoff, and that stream and bank vegetation had been recently removed.

    c. The BIOASSESS C site was again sampled in duplicate on November 30, 2011. All RPDs are less than 25% except for TSS, which had quite dissimilar values of 2.4 and 6.8 mg/L.

    d. Similar results were observed for field duplicate samples from the LGN BIOASSESS1 site from December 21, 2011. All RPDs are under 25% save for TSS, which has values of 26.6 and 12.9 mg/L. These samples were obtained during an ebbing tide with an average stream velocity of 0.75 f^3ps.

Taken as a collective group, field duplicate RPDs are excellent. The average RPD of samples above the MDL is 15.2%, with a median of 5.0%. It is not believed that these RPDs represent variability in sampling approach. Rather, they appear to reflect the non-homogenous nature of the water stream or lagoon in these areas at any given time.

Field Data Measurements

The procedures followed when conducting routine field data measurements for SWAMP can be found in the SWAMP Quality Assurance Program Plan. Per the SWAMP QAPrP calibration and accuracy checks are required for DO meters and pH meters. After post-calibration checks are performed, the percent drift should be evaluated. Calibration and Accuracy Check requirements are summarized in Table B42 of the SWAMP QAPrP (included as Appendix Table C13.A11). Dissolved oxygen probes must be calibrated before every monitoring day, and an accuracy check performed after every monitoring day or the next

morning. Allowable drift is 0.5 mg/L or 10%. pH must be calibration before every monitoring day, and accuracy checked every evening or next morning. Allowable drift is 0.2. Temperature must be checked for accuracy once annually; allowable drift is 0.5 ^{o}C or 10%.

All QAPrP requirements for calibration and accuracy check frequency were met for dissolved oxygen, pH, and temperature. The multi-probe was calibrated for both dissolved oxygen and pH prior to each field sampling event, and accuracy checked upon return from the field. Dissolved oxygen accuracy checks were performed following each sampling event by measuring with the field probe water with a dissolved oxygen value previously determined by Winkler titration. pH accuracy checks were performed by measuring with the field probe purchased pH buffers with a value of 7 or 8. Temperature was checked with each sampling event against a certified thermometer.

Dissolved oxygen and pH accuracy checks, and Temperature calibration checks, all fell within the Data Quality Objectives of the SWAMP QAPrP. Results are summarized below; full results are available in Appendix Table C13.A18.

Table C13.A8: Summary of Accuracy Check results for Field Parameters measured by EMTS.

	Dissolved Oxygen Drift (%)	Dissolved Oxygen Drift (mg/L)	pH Drift (%)	pH Drift	Temperature Drift (%)	Temperature Drift (^{o}C)
Average	2.00%	0.18	0.93%	0.07	0.59%	0.13
Standard Deviation	2.43%	0.22	1.01%	0.07	0.58%	0.12
Maximum	8.99%	0.80	2.71%	0.19	2.06%	0.41
Minimum	0.11%	0.01	0.00%	0.00	0.09%	0.02

Holding Times

SWAMP holding time objectives, as tabulated in Table B1 of the QAPrP (Appendix C13.A12), match the holding times for EMTS Laboratories. Holding times are 48 hours for Ammonia-N, Nitrate+Nitrite, Nitrate, Nitrite, and Ortho-Phosphate; 28 days for Total Phosphorus and Total Nitrogen, and the WQL holding time for TSS is 7 days. All samples with data included in this report were analyzed within prescribed holding times.

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Appendix C13.A9

City of San Diego Environmental Monitoring and Technical Services Division
IO R9-2011-0070 – Methodology for Laboratory Water Chemistry Analyses

	Analysis	Matrix	Reporting Units	SWAMP Suggested Analytical Method	City of San Diego Analytical Method	ELAP Certification info	Target Reporting Limit (TRL) [mg/L]	City of San Diego Method Detection Limit (MDL) [mg/L]
Nitrogen	Nitrite	Water (dissolved)	mg/L	EPA 300.A EPA 353.2 SM 4500-NO2 B	EPA 353.2	Cert #1058 FOT 108.232	0.01	0.0156
	Nitrate + Nitrite	Water (dissolved)	mg/L	EPA 353.2 SM 4500-NO3 E,F	EPA 353.2	Cert #1058 FOT 108.232	0.1	0.078
	Nitrate calculated	Water (dissolved)	mg/L	EPA 300.A EPA 353.3 SM 4500-NO3, E F	EPA 353.2	Cert #1058 FOT 108.231	0.01	0.078
	Ammonia (as N)	Water (dissolved)	mg/L	EPA 350.3 EPA 350.2 SM 4500-NH3 B,C	EPA 350.1 Skalar Autoanalyzer	Skalar instrumentation is certified for nitrate/nitrite; ammonia is part of the analysis	0.1	0.031
	Total Nitrogen	Water	mg/L	None	Modified EPA 351.1; Skalar w/UV Digestion	None		0.156
Phosphorus	Ortho-Phosphate (as P)	Water (dissolved)	mg/L	EPA 300.0A EPA 365.3 SM 4500-P E&F	EPA 300.0	Cert #1509 FOT 108.120	0.01	0.07
	Total Phosphorus	Water	mg/L	EPA 365.1-4 SM 4500-P B(5), E&F	Modified EPA 365.1; Skalar w/UV Digestion	Cert #1058 FOT 108.261	0.05	0.078
	Total Suspended Solids	Water	mg/L	EPA 160.2 SM 2540D APHA 1997	SM 2540D	Cert #1058 FOT 108.442	0.5	1.0

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Appendix Table C13.A10

Summary of Water Quality Laboratory QC Requirements and SWAMP QAPrP Data Quality Objectives.

Measurement Quality Objectives – Conventional Analytes in Water	EMTS SOP Frequency	SWAMP QAPrP Frequency	EMTS SOP Acceptance Criteria	SWAMP QAPrP MQO
Laboratory Blank	1 per batch or per 10 samples, whichever is more frequent	Per 20 samples or per analytical batch, whichever is more frequent	< MDL	< RL for target analyte
Continuing Calibration Verification	Beginning and end of run and every 10 samples (n/a for TSS)	Per 10 analytical runs	90 – 110% recovery	80 – 120% recovery
External Check / Laboratory Fortified Blank	One per batch	Per 20 samples or per analytical batch, whichever is more frequent	90 – 110% recovery	80 – 120% recovery
Matrix Spike	One every 10 samples	Per 20 samples or per analytical batch, whichever is more frequent	80 – 120% recovery; if outside limits and all other QC acceptable, data is reportable with comments on matrix	80 – 120% recovery
Matrix Spike Duplicate	1 per batch for Total Nitrogen, Total Phosphorus, and Ortho-Phosphate; n/a for ammonia, nitrate, and nitrite	Per 20 samples or per analytical batch, whichever is more frequent	80 – 120% recovery, <10% RPD for Total Nitrogen and Phosphorus; None for ammonia, nitrate, nitrite (for information only)	80 – 120% recovery RPD < 25%
Laboratory Duplicate	One per batch	Per 20 samples or per analytical batch, whichever is more frequent	<10% RPD for Total Nitrogen and Phosphorus; None for ammonia, nitrate, nitrite (for information only)	
Field Duplicate	n/a	5% of total project sample count	n/a	RPD < 25% (n/a if native concentration of either sample < RL

Appendix C13.A11

SWAMP QAPrP Field Measurement calibration and Accuracy Check criteria.

Table B42: Sampling and Preservation - Field Measurements[a]

Water Quality Parameter	Points Per Calibration[b]	Pre-Measurement Calibration Adjustment Frequency[e]	Accuracy Check (Post-Calibration Check) Frequency	Allowable Drift (Measurement Accuracy)[c, d, e]
Depth	2	n/a	Quarterly	± 0.02 or 2%
Dissolved Oxygen	1	Before every monitoring day (and more often when changing elevation)	After every monitoring day or next morning	± 0.5 or 10%
pH	2	Before every monitoring day	Every evening or next morning	± 0.2
Salinity	2	Per drift rate (instrument-specific)	Per drift rate (instrument-specific	± 4 or 10%
Specific Conductivity	2	Per manufacturer's instructions	Per manufacturer's instructions	± 4 or 10%
Temperature	2	n/a	Once annually	± 0.5 or 10%
Total Chlorophyll	Follow manufacturer's instructions	Per manufacturer's instructions	Per manufacturer's instructions	Follow manufacturer's instructions
Turbidity	2	Per manufacturer's instructions	Per manufacturer's instructions	± 2 or 10%
Velocity	Follow manufacturer's instructions	Per manufacturer's instructions	Per manufacturer's instructions	Follow manufacturer's instructions

a: This table may not include all field analyses. Please refer to method or manufacturer instructions for guidance
b: Unless otherwise specified by method or manufacturer instructions.
c: Manufacturers often provide accuracy specifications that relate to the intrinsic capabilities of the instrument. These must not be confused with measurement output or drift between two consecutive calibration adjustments.
d: Unit or percentage, whichever is greater
e: Recalibration is recommended if an elevation change of 500 feet occurs (especially for Dissolved Oxygen).

Appendix C13.A12

Field sampling provisions from SWAMP QAPrP.

Table B1: Sampling and Preservation - Conventionals in Water

Analyte	Units	Recommended Container	Recommended Sample Volume	Recommended Preservation	Required Holding Time
Alkalinity (as $CaCO_3$)	mg/L	Polyethylene Bottles	300 mL	Cool to 6 °C and store in the dark	14 days
Ammonia (as N)	mg/L	Polyethylene Bottles	500 mL	Cool to 6 °C and store in the dark. Samples may be preserved with 2 mL of $H2SO_4$ per L	48 hours; 28 days if acidified
Biochemical Oxygen Demand	mg/L	4-L cubitainer	4000 mL	Add 1 g FAS crystals per liter if residual Cl present; Cool to 6 °C and store in the dark	48 hours
Boron	mg/L	Polyethylene Bottles Only plastic apparatus should be used when the determinations of boron and silica are critical.	600 mL	Acidify with (1+1) HNO_3 to pH <2	6 months
Calcium	mg/L	Polyethylene Bottles Glass or plastic filtering apparatus are recommended to avoid possible contamination.	600 mL	Acidify with (1+1) HNO_3 to pH <2	6 months
Chemical Oxygen Demand (Titrametric)	mg/L	1-L cubitainer Collect the samples in glass bottles, if possible. Use of plastic containers is permissible if it is known that no organic contaminants are present in the containers.	1000 mL	Preserve to pH <2 with ~2 mL of conc. H_2SO_4; Cool to 6 °C and store in the dark	28 days Biologically active samples should be tested as soon as possible. Samples containing settleable material must be well mixed, preferably homogenized, to permit removal of representative aliquots.
Chloride	mg/L	Polyethylene Bottles	300 mL	Cool to 6 °C and store in the dark	28 days
Chlorophyll a Pheophytin a	µg/L	Please refer to method requirements	500 mL	Centrifuge or filter as soon as possible after collection. If processing must be delayed, hold samples on ice or at 6 °C and store in the dark.	Samples must be frozen or analyzed within 4 hours of collection. Filters can be stored frozen for 28 days.
Cyanide	mg/L	1-L cubitainer	1000 mL	Preserve to pH>12 with ~ 2 mL 1:1 NaOH, Add 0.6 g $C_6H_8O_6$ if residual Cl present; Cool to 6 °C and store in the dark	14 days

Appendix C13.A12 *continued*
Field sampling provisions from SWAMP QAPrP.

Table B1: Sampling and Preservation - Conventionals in Water (continued)

Analyte	Units	Recommended Container	Recommended Sample Volume	Recommended Preservation	Required Holding Time
Fluoride	mg/L	Polyethylene Bottles	300 mL	Cool to 6 ˚C and store in the dark	28 days
Hardness (as $CaCO_3$)	mg/L	Polyethylene Bottles	300 mL	Cool to 6 ˚C and store in the dark. Acidify with HNO_3 to pH<2	6 months
Iron	mg/L	Please refer to method requirements	600 mL	Cool to 6 ˚C and acidify with (1+1) HNO_3 to pH <2	6 months
Kjeldahl Nitrogen (Total)	mg/L	Polyethylene Bottles	600 mL	Cool to 6 ˚C and store in the dark. Acidify with H_2SO_4 to pH<2	7 days or 28 days if acidified
Magnesium	mg/L	Polyethylene Bottles Glass or plastic filtering apparatus are recommended to avoid possible contamination.	600 mL	Acidify with (1+1) HNO_3 to pH <2	6 months
Nitrate (as N)	mg/L	Polyethylene Bottles	300 mL	Cool to 6 ˚C and store in the dark	48 hours unless calculated from nitrate + nitrite (as N) and nitrite (as N) analyses
Nitrate + Nitrite (as N)	mg/L	Polyethylene Bottles	150 mL	Cool to 6 ˚C and store in the dark. Acidify with H_2SO_4 to pH<2	48 hours or 28 days if acidified
Nitrite (as N)	mg/L	Polyethylene Bottles	150 mL	Cool to 6 ˚C and store in the dark	48 hours
Oil and Grease (HEM)	mg/L	1-L glass jar (w/Teflon lined lid and rinsed with hexane or methylene chloride)	1000 mL	Preserve to pH <2 with ~2 mL of conc. H_2SO_4 Cool to 6 ˚C and store in the dark	28 days
Organic Carbon (Total)	mg/L	40-mL glass vial	40 mL	Cool to 6 ˚C and store in the dark. If analysis is to occur more than two hours after sampling, acidify (pH < 2) with HCl or H_2SO_4.	28 days

Appendix C13.A12 *continued*

Field sampling provisions from SWAMP QAPrP.

Table B1: Sampling and Preservation - Conventionals in Water (continued)

Analyte	Units	Recommended Container	Recommended Sample Volume	Recommended Preservation	Required Holding Time
Organic Carbon (Dissolved)	mg/L	40-mL glass vial	40 mL	Cool to 6 °C and store in the dark	28 days
Orthophosphate (Total, as P)	mg/L	Polyethylene Bottles	150 mL	Cool to 6 °C and store in the dark	48 hours
Orthophosphate (Dissolved, as P) ***Soluble Reactive Phosphorus***	mg/L	Polyethylene Bottles	150 mL	Filter within 15 minutes of collection; Cool to 6 °C and store in the dark	48 hours
Perchlorate	µg/L	Plastic or glass	300 mL	Protect from temperature extremes	28 days
Phenols	mg/L	1-L glass jar w/ Teflon lined lid	1000 mL	Preserve to pH <2 with ~2 mL of concentrated H_2SO_4; Cool to 6 °C and store in the dark	Samples must be extracted within 7 days of collection, and analyzed within 28 days of extraction.
Phosphorus (Total, as P)	mg/L	Polyethylene Bottles	300 mL	Cool to 6 °C and store in the dark	28 days
Phosphorus (Dissolved, as P)	mg/L	Polyethylene Bottles	300 mL	Cool to 6 °C and store in the dark	28 days
Potassium	mg/L	Polyethylene Bottles	600 mL	Acidify with (1+1) HNO_3 to pH <2	6 months
Silica	mg/L	Only plastic apparatus should be used when the determinations of boron and silica are critical.	300 mL	Acidify with (1+1) HNO_3 to pH <2.	6 months
Specific Conductivity	µS/cm	Polyethylene Bottles	500 mL	Cool to 6 °C and store in the dark If analysis is not completed within 24 hours of sample collection, sample should be filtered through a 0.45 micron filter and stored in the dark at 6 °C.	28 days

Table B1: Sampling and Preservation - Conventionals in Water (continued)

Analyte	Units	Recommended Container	Recommended Sample Volume	Recommended Preservation	Required Holding Time
Sulfate	mg/L	Polyethylene Bottles	300 mL	Cool to 6 °C and store in the dark	28 days
Sodium	mg/L	Polyethylene Bottles Glass or plastic filtering apparatus are recommended to avoid possible contamination.	600 mL	Acidify with (1+1) HNO_3 to pH <2.	6 months
Turbidity	NTU	Polyethylene Bottles	300 mL	Cool to 6 °C and store in the dark	48 hours

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Appendix C13.A13

Method Blank results for analyses of Total Phosphorus, Total Nitrogen, Ammonia-N, Nitrate_Nitrite, Nitrite, and Total Suspended Solids (TSS), as performed by the City of San Diego Water Quality Laboratory. All values and Method Detection Limits (MDL) are in mg/L.

Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	MDL
21-Oct-11	W827056	11286NP91	Laboratory Reagent Blank	PHOSPHORUS	1	ND	0.078
21-Oct-11	W827056	11286NP91	Laboratory Reagent Blank	PHOSPHORUS	2	ND	0.078
21-Oct-11	W827056	11286NP91	Laboratory Reagent Blank	PHOSPHORUS	3	ND	0.078
21-Oct-11	W827056	11286NP91	Laboratory Reagent Blank	PHOSPHORUS	4	ND	0.078
21-Oct-11	W827056	11286NP91	Laboratory Reagent Blank	PHOSPHORUS	5	ND	0.078
21-Oct-11	W827056	11286NP91	Laboratory Reagent Blank	PHOSPHORUS	6	ND	0.078
21-Oct-11	W827056	11286NP91	Laboratory Reagent Blank	PHOSPHORUS	7	ND	0.078
18-Nov-11	W831342	11322NP53	Laboratory Reagent Blank	PHOSPHORUS	1	ND	0.078
18-Nov-11	W831342	11322NP53	Laboratory Reagent Blank	PHOSPHORUS	2	ND	0.078
18-Nov-11	W831342	11322NP53	Laboratory Reagent Blank	PHOSPHORUS	3	ND	0.078
18-Nov-11	W831342	11322NP53	Laboratory Reagent Blank	PHOSPHORUS	4	ND	0.078
18-Nov-11	W831342	11322NP53	Laboratory Reagent Blank	PHOSPHORUS	5	ND	0.078
5-Dec-11	W833626	11339NP19	Laboratory Reagent Blank	PHOSPHORUS	1	ND	0.078
5-Dec-11	W833626	11339NP19	Laboratory Reagent Blank	PHOSPHORUS	2	ND	0.078
5-Dec-11	W833626	11339NP19	Laboratory Reagent Blank	PHOSPHORUS	3	ND	0.078
5-Dec-11	W833626	11340NP54	Laboratory Reagent Blank	PHOSPHORUS	1	ND	0.078
5-Dec-11	W833626	11340NP54	Laboratory Reagent Blank	PHOSPHORUS	2	ND	0.078
5-Dec-11	W833626	11340NP54	Laboratory Reagent Blank	PHOSPHORUS	3	ND	0.078
5-Dec-11	W833626	11340NP54	Laboratory Reagent Blank	PHOSPHORUS	4	ND	0.078
5-Dec-11	W833626	11340NP54	Laboratory Reagent Blank	PHOSPHORUS	5	ND	0.078
29-Dec-11	W837684	11363NP93	Laboratory Reagent Blank	PHOSPHORUS	1	ND	0.078
29-Dec-11	W837684	11363NP93	Laboratory Reagent Blank	PHOSPHORUS	2	ND	0.078
29-Dec-11	W837684	11363NP93	Laboratory Reagent Blank	PHOSPHORUS	3	ND	0.078
29-Dec-11	W837684	11363NP93	Laboratory Reagent Blank	PHOSPHORUS	4	ND	0.078
29-Dec-11	W837684	11363NP93	Laboratory Reagent Blank	PHOSPHORUS	5	ND	0.078
29-Dec-11	W837684	11363NP93	Laboratory Reagent Blank	PHOSPHORUS	6	ND	0.078
29-Dec-11	W837684	11363NP93	Laboratory Reagent Blank	PHOSPHORUS	7	ND	0.078
29-Dec-11	W837684	11363NP93	Laboratory Reagent Blank	PHOSPHORUS	8	ND	0.078
21-Oct-11	W827056	11286NP91	Laboratory Reagent Blank	NITROGEN_TOTAL	1	ND	0.156
21-Oct-11	W827056	11286NP91	Laboratory Reagent Blank	NITROGEN_TOTAL	2	ND	0.156

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Appendix C13.A13 *continued*

Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	MDL
21-Oct-11	W827056	11286NP91	Laboratory Reagent Blank	NITROGEN_TOTAL	3	ND	0.156
21-Oct-11	W827056	11286NP91	Laboratory Reagent Blank	NITROGEN_TOTAL	4	ND	0.156
21-Oct-11	W827056	11286NP91	Laboratory Reagent Blank	NITROGEN_TOTAL	5	ND	0.156
21-Oct-11	W827056	11286NP91	Laboratory Reagent Blank	NITROGEN_TOTAL	6	ND	0.156
21-Oct-11	W827056	11286NP91	Laboratory Reagent Blank	NITROGEN_TOTAL	7	ND	0.156
18-Nov-11	W831342	11322NP53	Laboratory Reagent Blank	NITROGEN_TOTAL	1	ND	0.156
18-Nov-11	W831342	11322NP53	Laboratory Reagent Blank	NITROGEN_TOTAL	2	ND	0.156
18-Nov-11	W831342	11322NP53	Laboratory Reagent Blank	NITROGEN_TOTAL	3	ND	0.156
18-Nov-11	W831342	11322NP53	Laboratory Reagent Blank	NITROGEN_TOTAL	4	ND	0.156
18-Nov-11	W831342	11322NP53	Laboratory Reagent Blank	NITROGEN_TOTAL	5	ND	0.156
5-Dec-11	W833626	11339NP19	Laboratory Reagent Blank	NITROGEN_TOTAL	1	ND	0.156
5-Dec-11	W833626	11339NP19	Laboratory Reagent Blank	NITROGEN_TOTAL	2	ND	0.156
5-Dec-11	W833626	11339NP19	Laboratory Reagent Blank	NITROGEN_TOTAL	3	ND	0.156
5-Dec-11	W833626	11340NP54	Laboratory Reagent Blank	NITROGEN_TOTAL	1	ND	0.156
5-Dec-11	W833626	11340NP54	Laboratory Reagent Blank	NITROGEN_TOTAL	2	ND	0.156
5-Dec-11	W833626	11340NP54	Laboratory Reagent Blank	NITROGEN_TOTAL	3	ND	0.156
5-Dec-11	W833626	11340NP54	Laboratory Reagent Blank	NITROGEN_TOTAL	4	ND	0.156
5-Dec-11	W833626	11340NP54	Laboratory Reagent Blank	NITROGEN_TOTAL	5	ND	0.156
29-Dec-11	W837684	11363NP93	Laboratory Reagent Blank	NITROGEN_TOTAL	1	ND	0.156
29-Dec-11	W837684	11363NP93	Laboratory Reagent Blank	NITROGEN_TOTAL	2	ND	0.156
29-Dec-11	W837684	11363NP93	Laboratory Reagent Blank	NITROGEN_TOTAL	3	ND	0.156
29-Dec-11	W837684	11363NP93	Laboratory Reagent Blank	NITROGEN_TOTAL	4	ND	0.156
29-Dec-11	W837684	11363NP93	Laboratory Reagent Blank	NITROGEN_TOTAL	5	ND	0.156
29-Dec-11	W837684	11363NP93	Laboratory Reagent Blank	NITROGEN_TOTAL	6	ND	0.156
29-Dec-11	W837684	11363NP93	Laboratory Reagent Blank	NITROGEN_TOTAL	7	ND	0.156
29-Dec-11	W837684	11363NP93	Laboratory Reagent Blank	NITROGEN_TOTAL	8	ND	0.156
4-Oct-11	W823916	11279NNN94	Calibration Blank	AMMONIA_N	1	ND	0.031
4-Oct-11	W823916	11279NNN94	Calibration Blank	AMMONIA_N	2	ND	0.031
4-Oct-11	W823916	11279NNN94	Calibration Blank	AMMONIA_N	3	ND	0.031
4-Oct-11	W823916	11279NNN94	Calibration Blank	AMMONIA_N	4	ND	0.031
4-Oct-11	W823916	11279NNN94	Calibration Blank	AMMONIA_N	5	ND	0.031
4-Oct-11	W823915	11279NNN94	Laboratory Reagent Blank	AMMONIA_N	1	ND	0.031
7-Oct-11	W824772	11280NNN75	Calibration Blank	AMMONIA_N	1	ND	0.031

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Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	MDL
7-Oct-11	W824772	11280NNN75	Calibration Blank	AMMONIA_N	2	ND	0.031
7-Oct-11	W824771	11280NNN75	Laboratory Reagent Blank	AMMONIA_N	1	ND	0.031
11-Oct-11	W825094	11286NNN41	Calibration Blank	AMMONIA_N	1	ND	0.031
11-Oct-11	W825094	11286NNN41	Calibration Blank	AMMONIA_N	2	ND	0.031
11-Oct-11	W825094	11286NNN41	Calibration Blank	AMMONIA_N	3	ND	0.031
11-Oct-11	W825094	11286NNN41	Calibration Blank	AMMONIA_N	4	ND	0.031
11-Oct-11	W825094	11286NNN41	Calibration Blank	AMMONIA_N	5	ND	0.031
11-Oct-11	W825093	11286NNN41	Laboratory Reagent Blank	AMMONIA_N	1	ND	0.031
19-Oct-11	W826371	11292NNN33	Calibration Blank	AMMONIA_N	1	ND	0.031
19-Oct-11	W826371	11292NNN33	Calibration Blank	AMMONIA_N	2	ND	0.031
19-Oct-11	W826371	11292NNN33	Calibration Blank	AMMONIA_N	3	ND	0.031
19-Oct-11	W826371	11292NNN33	Calibration Blank	AMMONIA_N	4	ND	0.031
19-Oct-11	W826371	11292NNN33	Calibration Blank	AMMONIA_N	5	ND	0.031
19-Oct-11	W826371	11292NNN33	Calibration Blank	AMMONIA_N	6	ND	0.031
19-Oct-11	W826370	11292NNN33	Laboratory Reagent Blank	AMMONIA_N	1	ND	0.031
25-Oct-11	W827318	11298NNN76	Calibration Blank	AMMONIA_N	1	ND	0.031
25-Oct-11	W827318	11298NNN76	Calibration Blank	AMMONIA_N	2	ND	0.031
25-Oct-11	W827318	11298NNN76	Calibration Blank	AMMONIA_N	3	ND	0.031
25-Oct-11	W827318	11298NNN76	Calibration Blank	AMMONIA_N	4	ND	0.031
25-Oct-11	W827318	11298NNN76	Calibration Blank	AMMONIA_N	5	ND	0.031
25-Oct-11	W827317	11298NNN76	Laboratory Reagent Blank	AMMONIA_N	1	ND	0.031
25-Oct-11	W827318	11299NNN93	Calibration Blank	AMMONIA_N	1	ND	0.031
25-Oct-11	W827318	11299NNN93	Calibration Blank	AMMONIA_N	2	ND	0.031
25-Oct-11	W827318	11299NNN93	Calibration Blank	AMMONIA_N	3	ND	0.031
25-Oct-11	W827318	11299NNN93	Calibration Blank	AMMONIA_N	4	ND	0.031
25-Oct-11	W827318	11299NNN93	Calibration Blank	AMMONIA_N	5	ND	0.031
25-Oct-11	W827317	11299NNN93	Laboratory Reagent Blank	AMMONIA_N	1	ND	0.031
1-Nov-11	W828982	11307NNN05	Calibration Blank	AMMONIA_N	1	ND	0.031
1-Nov-11	W828982	11307NNN05	Calibration Blank	AMMONIA_N	2	ND	0.031
1-Nov-11	W828982	11307NNN05	Calibration Blank	AMMONIA_N	3	ND	0.031
1-Nov-11	W828982	11307NNN05	Calibration Blank	AMMONIA_N	4	ND	0.031
1-Nov-11	W828981	11307NNN05	Laboratory Reagent Blank	AMMONIA_N	1	ND	0.031
9-Nov-11	W829894	11314NNN47	Calibration Blank	AMMONIA_N	1	ND	0.031

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Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	MDL
9-Nov-11	W829894	11314NNN47	Calibration Blank	AMMONIA_N	2	ND	0.031
9-Nov-11	W829894	11314NNN47	Calibration Blank	AMMONIA_N	3	ND	0.031
9-Nov-11	W829893	11314NNN47	Laboratory Reagent Blank	AMMONIA_N	1	ND	0.031
15-Nov-11	W830640	11321NNN07	Calibration Blank	AMMONIA_N	1	ND	0.031
15-Nov-11	W830640	11321NNN07	Calibration Blank	AMMONIA_N	2	ND	0.031
15-Nov-11	W830640	11321NNN07	Calibration Blank	AMMONIA_N	3	ND	0.031
15-Nov-11	W830640	11321NNN07	Calibration Blank	AMMONIA_N	4	ND	0.031
15-Nov-11	W830639	11321NNN07	Laboratory Reagent Blank	AMMONIA_N	1	ND	0.031
22-Nov-11	W831575	11326NNN32	Calibration Blank	AMMONIA_N	1	ND	0.031
22-Nov-11	W831575	11326NNN32	Calibration Blank	AMMONIA_N	2	ND	0.031
22-Nov-11	W831575	11326NNN32	Calibration Blank	AMMONIA_N	3	ND	0.031
22-Nov-11	W831575	11326NNN32	Calibration Blank	AMMONIA_N	4	ND	0.031
22-Nov-11	W831575	11326NNN32	Calibration Blank	AMMONIA_N	5	ND	0.031
22-Nov-11	W831575	11326NNN32	Calibration Blank	AMMONIA_N	6	ND	0.031
22-Nov-11	W831574	11326NNN32	Laboratory Reagent Blank	AMMONIA_N	1	ND	0.031
29-Nov-11	W832533	11335NNN40	Calibration Blank	AMMONIA_N	1	ND	0.031
29-Nov-11	W832533	11335NNN40	Calibration Blank	AMMONIA_N	2	ND	0.031
29-Nov-11	W832533	11335NNN40	Calibration Blank	AMMONIA_N	3	ND	0.031
29-Nov-11	W832533	11335NNN40	Calibration Blank	AMMONIA_N	4	ND	0.031
29-Nov-11	W832532	11335NNN40	Laboratory Reagent Blank	AMMONIA_N	1	ND	0.031
6-Dec-11	W834124	11342NNN53	Calibration Blank	AMMONIA_N	1	ND	0.031
6-Dec-11	W834124	11342NNN53	Calibration Blank	AMMONIA_N	2	ND	0.031
6-Dec-11	W834124	11342NNN53	Calibration Blank	AMMONIA_N	3	ND	0.031
6-Dec-11	W834124	11342NNN53	Calibration Blank	AMMONIA_N	4	ND	0.031
6-Dec-11	W834124	11342NNN53	Calibration Blank	AMMONIA_N	5	ND	0.031
6-Dec-11	W834123	11342NNN53	Laboratory Reagent Blank	AMMONIA_N	1	ND	0.031
13-Dec-11	W834939	11348NNN16	Calibration Blank	AMMONIA_N	1	ND	0.031
13-Dec-11	W834939	11348NNN16	Calibration Blank	AMMONIA_N	2	ND	0.031
13-Dec-11	W834939	11348NNN16	Calibration Blank	AMMONIA_N	3	ND	0.031
13-Dec-11	W834939	11348NNN16	Calibration Blank	AMMONIA_N	4	ND	0.031
13-Dec-11	W834939	11348NNN16	Calibration Blank	AMMONIA_N	5	ND	0.031
13-Dec-11	W834938	11348NNN16	Laboratory Reagent Blank	AMMONIA_N	1	ND	0.031
21-Dec-11	W836333	11355NNN55	Calibration Blank	AMMONIA_N	1	ND	0.031

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Appendix C13.A13 *continued*

Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	MDL
21-Dec-11	W836333	11355NNN55	Calibration Blank	AMMONIA_N	2	ND	0.031
21-Dec-11	W836333	11355NNN55	Calibration Blank	AMMONIA_N	3	ND	0.031
21-Dec-11	W836333	11355NNN55	Calibration Blank	AMMONIA_N	4	ND	0.031
21-Dec-11	W836333	11355NNN55	Calibration Blank	AMMONIA_N	5	ND	0.031
21-Dec-11	W836333	11355NNN55	Calibration Blank	AMMONIA_N	6	ND	0.031
21-Dec-11	W836333	11355NNN55	Calibration Blank	AMMONIA_N	7	ND	0.031
21-Dec-11	W836332	11355NNN55	Laboratory Reagent Blank	AMMONIA_N	1	ND	0.031
27-Dec-11	W836663	11363NNN85	Calibration Blank	AMMONIA_N	1	ND	0.031
27-Dec-11	W836663	11363NNN85	Calibration Blank	AMMONIA_N	2	ND	0.031
27-Dec-11	W836663	11363NNN85	Calibration Blank	AMMONIA_N	3	ND	0.031
27-Dec-11	W836662	11363NNN85	Laboratory Reagent Blank	AMMONIA_N	1	ND	0.031
4-Oct-11	W823916	11279NNN94	Calibration Blank	NITRATE_NITRITE	1	ND	0.078
4-Oct-11	W823916	11279NNN94	Calibration Blank	NITRATE_NITRITE	2	ND	0.078
4-Oct-11	W823916	11279NNN94	Calibration Blank	NITRATE_NITRITE	3	ND	0.078
4-Oct-11	W823916	11279NNN94	Calibration Blank	NITRATE_NITRITE	4	ND	0.078
4-Oct-11	W823916	11279NNN94	Calibration Blank	NITRATE_NITRITE	5	ND	0.078
4-Oct-11	W823915	11279NNN94	Laboratory Reagent Blank	NITRATE_NITRITE	1	ND	0.078
7-Oct-11	W824772	11280NNN75	Calibration Blank	NITRATE_NITRITE	1	ND	0.078
7-Oct-11	W824772	11280NNN75	Calibration Blank	NITRATE_NITRITE	2	ND	0.078
7-Oct-11	W824771	11280NNN75	Laboratory Reagent Blank	NITRATE_NITRITE	1	ND	0.078
11-Oct-11	W825094	11286NNN41	Calibration Blank	NITRATE_NITRITE	1	ND	0.078
11-Oct-11	W825094	11286NNN41	Calibration Blank	NITRATE_NITRITE	2	ND	0.078
11-Oct-11	W825094	11286NNN41	Calibration Blank	NITRATE_NITRITE	3	ND	0.078
11-Oct-11	W825094	11286NNN41	Calibration Blank	NITRATE_NITRITE	4	ND	0.078
11-Oct-11	W825094	11286NNN41	Calibration Blank	NITRATE_NITRITE	5	ND	0.078
11-Oct-11	W825093	11286NNN41	Laboratory Reagent Blank	NITRATE_NITRITE	1	ND	0.078
19-Oct-11	W826371	11292NNN33	Calibration Blank	NITRATE_NITRITE	1	ND	0.078
19-Oct-11	W826371	11292NNN33	Calibration Blank	NITRATE_NITRITE	2	ND	0.078
19-Oct-11	W826371	11292NNN33	Calibration Blank	NITRATE_NITRITE	3	ND	0.078
19-Oct-11	W826371	11292NNN33	Calibration Blank	NITRATE_NITRITE	4	ND	0.078
19-Oct-11	W826371	11292NNN33	Calibration Blank	NITRATE_NITRITE	5	ND	0.078
19-Oct-11	W826371	11292NNN33	Calibration Blank	NITRATE_NITRITE	6	ND	0.078
19-Oct-11	W826370	11292NNN33	Laboratory Reagent Blank	NITRATE_NITRITE	1	ND	0.078

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Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	MDL
25-Oct-11	W827318	11298NNN76	Calibration Blank	NITRATE_NITRITE	1	ND	0.078
25-Oct-11	W827318	11298NNN76	Calibration Blank	NITRATE_NITRITE	2	ND	0.078
25-Oct-11	W827318	11298NNN76	Calibration Blank	NITRATE_NITRITE	3	ND	0.078
25-Oct-11	W827318	11298NNN76	Calibration Blank	NITRATE_NITRITE	4	ND	0.078
25-Oct-11	W827318	11298NNN76	Calibration Blank	NITRATE_NITRITE	5	ND	0.078
25-Oct-11	W827317	11298NNN76	Laboratory Reagent Blank	NITRATE_NITRITE	1	ND	0.078
25-Oct-11	W827318	11299NNN93	Calibration Blank	NITRATE_NITRITE	1	ND	0.078
25-Oct-11	W827318	11299NNN93	Calibration Blank	NITRATE_NITRITE	2	ND	0.078
25-Oct-11	W827318	11299NNN93	Calibration Blank	NITRATE_NITRITE	3	ND	0.078
25-Oct-11	W827318	11299NNN93	Calibration Blank	NITRATE_NITRITE	4	ND	0.078
25-Oct-11	W827318	11299NNN93	Calibration Blank	NITRATE_NITRITE	5	ND	0.078
25-Oct-11	W827317	11299NNN93	Laboratory Reagent Blank	NITRATE_NITRITE	1	ND	0.078
1-Nov-11	W828982	11307NNN05	Calibration Blank	NITRATE_NITRITE	1	ND	0.078
1-Nov-11	W828982	11307NNN05	Calibration Blank	NITRATE_NITRITE	2	ND	0.078
1-Nov-11	W828982	11307NNN05	Calibration Blank	NITRATE_NITRITE	3	ND	0.078
1-Nov-11	W828982	11307NNN05	Calibration Blank	NITRATE_NITRITE	4	ND	0.078
1-Nov-11	W828981	11307NNN05	Laboratory Reagent Blank	NITRATE_NITRITE	1	ND	0.078
9-Nov-11	W829894	11314NNN47	Calibration Blank	NITRATE_NITRITE	1	ND	0.078
9-Nov-11	W829894	11314NNN47	Calibration Blank	NITRATE_NITRITE	2	ND	0.078
9-Nov-11	W829894	11314NNN47	Calibration Blank	NITRATE_NITRITE	3	ND	0.078
9-Nov-11	W829893	11314NNN47	Laboratory Reagent Blank	NITRATE_NITRITE	1	ND	0.078
15-Nov-11	W830640	11321NNN07	Calibration Blank	NITRATE_NITRITE	1	ND	0.078
15-Nov-11	W830640	11321NNN07	Calibration Blank	NITRATE_NITRITE	2	ND	0.078
15-Nov-11	W830640	11321NNN07	Calibration Blank	NITRATE_NITRITE	3	ND	0.078
15-Nov-11	W830640	11321NNN07	Calibration Blank	NITRATE_NITRITE	4	ND	0.078
15-Nov-11	W830639	11321NNN07	Laboratory Reagent Blank	NITRATE_NITRITE	1	ND	0.078
22-Nov-11	W831575	11326NNN32	Calibration Blank	NITRATE_NITRITE	1	ND	0.078
22-Nov-11	W831575	11326NNN32	Calibration Blank	NITRATE_NITRITE	2	ND	0.078
22-Nov-11	W831575	11326NNN32	Calibration Blank	NITRATE_NITRITE	3	ND	0.078
22-Nov-11	W831575	11326NNN32	Calibration Blank	NITRATE_NITRITE	4	ND	0.078
22-Nov-11	W831575	11326NNN32	Calibration Blank	NITRATE_NITRITE	5	ND	0.078
22-Nov-11	W831575	11326NNN32	Calibration Blank	NITRATE_NITRITE	6	ND	0.078
22-Nov-11	W831574	11326NNN32	Laboratory Reagent Blank	NITRATE_NITRITE	1	ND	0.078

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Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	MDL
29-Nov-11	W832533	11335NNN40	Calibration Blank	NITRATE_NITRITE	1	ND	0.078
29-Nov-11	W832533	11335NNN40	Calibration Blank	NITRATE_NITRITE	2	ND	0.078
29-Nov-11	W832533	11335NNN40	Calibration Blank	NITRATE_NITRITE	3	ND	0.078
29-Nov-11	W832533	11335NNN40	Calibration Blank	NITRATE_NITRITE	4	ND	0.078
29-Nov-11	W832532	11335NNN40	Laboratory Reagent Blank	NITRATE_NITRITE	1	ND	0.078
6-Dec-11	W834124	11342NNN53	Calibration Blank	NITRATE_NITRITE	1	ND	0.078
6-Dec-11	W834124	11342NNN53	Calibration Blank	NITRATE_NITRITE	2	ND	0.078
6-Dec-11	W834124	11342NNN53	Calibration Blank	NITRATE_NITRITE	3	ND	0.078
6-Dec-11	W834124	11342NNN53	Calibration Blank	NITRATE_NITRITE	4	ND	0.078
6-Dec-11	W834124	11342NNN53	Calibration Blank	NITRATE_NITRITE	5	ND	0.078
6-Dec-11	W834123	11342NNN53	Laboratory Reagent Blank	NITRATE_NITRITE	1	ND	0.078
13-Dec-11	W834939	11348NNN16	Calibration Blank	NITRATE_NITRITE	1	ND	0.078
13-Dec-11	W834939	11348NNN16	Calibration Blank	NITRATE_NITRITE	2	ND	0.078
13-Dec-11	W834939	11348NNN16	Calibration Blank	NITRATE_NITRITE	3	ND	0.078
13-Dec-11	W834939	11348NNN16	Calibration Blank	NITRATE_NITRITE	4	ND	0.078
13-Dec-11	W834939	11348NNN16	Calibration Blank	NITRATE_NITRITE	5	ND	0.078
13-Dec-11	W834938	11348NNN16	Laboratory Reagent Blank	NITRATE_NITRITE	1	ND	0.078
21-Dec-11	W836333	11355NNN55	Calibration Blank	NITRATE_NITRITE	1	ND	0.078
21-Dec-11	W836333	11355NNN55	Calibration Blank	NITRATE_NITRITE	2	ND	0.078
21-Dec-11	W836333	11355NNN55	Calibration Blank	NITRATE_NITRITE	3	ND	0.078
21-Dec-11	W836333	11355NNN55	Calibration Blank	NITRATE_NITRITE	4	ND	0.078
21-Dec-11	W836333	11355NNN55	Calibration Blank	NITRATE_NITRITE	5	ND	0.078
21-Dec-11	W836333	11355NNN55	Calibration Blank	NITRATE_NITRITE	6	ND	0.078
21-Dec-11	W836333	11355NNN55	Calibration Blank	NITRATE_NITRITE	7	ND	0.078
21-Dec-11	W836332	11355NNN55	Laboratory Reagent Blank	NITRATE_NITRITE	1	ND	0.078
27-Dec-11	W836663	11363NNN85	Calibration Blank	NITRATE_NITRITE	1	ND	0.078
27-Dec-11	W836663	11363NNN85	Calibration Blank	NITRATE_NITRITE	2	ND	0.078
27-Dec-11	W836663	11363NNN85	Calibration Blank	NITRATE_NITRITE	3	ND	0.078
27-Dec-11	W836662	11363NNN85	Laboratory Reagent Blank	NITRATE_NITRITE	1	ND	0.078
4-Oct-11	W823916	11279NNN94	Calibration Blank	NITRITE	1	ND	0.0156
4-Oct-11	W823916	11279NNN94	Calibration Blank	NITRITE	2	ND	0.0156
4-Oct-11	W823916	11279NNN94	Calibration Blank	NITRITE	3	ND	0.0156
4-Oct-11	W823916	11279NNN94	Calibration Blank	NITRITE	4	ND	0.0156

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Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	MDL
4-Oct-11	W823916	11279NNN94	Calibration Blank	NITRITE	5	ND	0.0156
4-Oct-11	W823915	11279NNN94	Laboratory Reagent Blank	NITRITE	1	ND	0.0156
7-Oct-11	W824772	11280NNN75	Calibration Blank	NITRITE	1	ND	0.0156
7-Oct-11	W824772	11280NNN75	Calibration Blank	NITRITE	2	ND	0.0156
7-Oct-11	W824771	11280NNN75	Laboratory Reagent Blank	NITRITE	1	ND	0.0156
11-Oct-11	W825094	11286NNN41	Calibration Blank	NITRITE	1	ND	0.0156
11-Oct-11	W825094	11286NNN41	Calibration Blank	NITRITE	2	ND	0.0156
11-Oct-11	W825094	11286NNN41	Calibration Blank	NITRITE	3	ND	0.0156
11-Oct-11	W825094	11286NNN41	Calibration Blank	NITRITE	4	ND	0.0156
11-Oct-11	W825094	11286NNN41	Calibration Blank	NITRITE	5	ND	0.0156
11-Oct-11	W825093	11286NNN41	Laboratory Reagent Blank	NITRITE	1	ND	0.0156
19-Oct-11	W826371	11292NNN33	Calibration Blank	NITRITE	1	ND	0.0156
19-Oct-11	W826371	11292NNN33	Calibration Blank	NITRITE	2	ND	0.0156
19-Oct-11	W826371	11292NNN33	Calibration Blank	NITRITE	3	ND	0.0156
19-Oct-11	W826371	11292NNN33	Calibration Blank	NITRITE	4	ND	0.0156
19-Oct-11	W826371	11292NNN33	Calibration Blank	NITRITE	5	ND	0.0156
19-Oct-11	W826371	11292NNN33	Calibration Blank	NITRITE	6	ND	0.0156
19-Oct-11	W826370	11292NNN33	Laboratory Reagent Blank	NITRITE	1	ND	0.0156
25-Oct-11	W827318	11298NNN76	Calibration Blank	NITRITE	1	ND	0.0156
25-Oct-11	W827318	11298NNN76	Calibration Blank	NITRITE	2	ND	0.0156
25-Oct-11	W827318	11298NNN76	Calibration Blank	NITRITE	3	ND	0.0156
25-Oct-11	W827318	11298NNN76	Calibration Blank	NITRITE	4	ND	0.0156
25-Oct-11	W827318	11298NNN76	Calibration Blank	NITRITE	5	ND	0.0156
25-Oct-11	W827317	11298NNN76	Laboratory Reagent Blank	NITRITE	1	ND	0.0156
25-Oct-11	W827318	11299NNN93	Calibration Blank	NITRITE	1	ND	0.0156
25-Oct-11	W827318	11299NNN93	Calibration Blank	NITRITE	2	ND	0.0156
25-Oct-11	W827318	11299NNN93	Calibration Blank	NITRITE	3	ND	0.0156
25-Oct-11	W827318	11299NNN93	Calibration Blank	NITRITE	4	ND	0.0156
25-Oct-11	W827318	11299NNN93	Calibration Blank	NITRITE	5	ND	0.0156
25-Oct-11	W827317	11299NNN93	Laboratory Reagent Blank	NITRITE	1	ND	0.0156
1-Nov-11	W828982	11307NNN05	Calibration Blank	NITRITE	1	ND	0.0156
1-Nov-11	W828982	11307NNN05	Calibration Blank	NITRITE	2	ND	0.0156
1-Nov-11	W828982	11307NNN05	Calibration Blank	NITRITE	3	ND	0.0156

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Appendix C13.A13 *continued*

Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	MDL
1-Nov-11	W828982	11307NNN05	Calibration Blank	NITRITE	4	ND	0.0156
1-Nov-11	W828981	11307NNN05	Laboratory Reagent Blank	NITRITE	1	ND	0.0156
9-Nov-11	W829894	11314NNN47	Calibration Blank	NITRITE	1	ND	0.0156
9-Nov-11	W829894	11314NNN47	Calibration Blank	NITRITE	2	ND	0.0156
9-Nov-11	W829894	11314NNN47	Calibration Blank	NITRITE	3	ND	0.0156
9-Nov-11	W829893	11314NNN47	Laboratory Reagent Blank	NITRITE	1	ND	0.0156
15-Nov-11	W830640	11321NNN07	Calibration Blank	NITRITE	1	ND	0.0156
15-Nov-11	W830640	11321NNN07	Calibration Blank	NITRITE	2	ND	0.0156
15-Nov-11	W830640	11321NNN07	Calibration Blank	NITRITE	3	ND	0.0156
15-Nov-11	W830640	11321NNN07	Calibration Blank	NITRITE	4	ND	0.0156
15-Nov-11	W830639	11321NNN07	Laboratory Reagent Blank	NITRITE	1	ND	0.0156
22-Nov-11	W831575	11326NNN32	Calibration Blank	NITRITE	1	ND	0.0156
22-Nov-11	W831575	11326NNN32	Calibration Blank	NITRITE	2	ND	0.0156
22-Nov-11	W831575	11326NNN32	Calibration Blank	NITRITE	3	ND	0.0156
22-Nov-11	W831575	11326NNN32	Calibration Blank	NITRITE	4	ND	0.0156
22-Nov-11	W831575	11326NNN32	Calibration Blank	NITRITE	5	ND	0.0156
22-Nov-11	W831575	11326NNN32	Calibration Blank	NITRITE	6	ND	0.0156
22-Nov-11	W831574	11326NNN32	Laboratory Reagent Blank	NITRITE	1	ND	0.0156
29-Nov-11	W832533	11335NNN40	Calibration Blank	NITRITE	1	ND	0.0156
29-Nov-11	W832533	11335NNN40	Calibration Blank	NITRITE	2	ND	0.0156
29-Nov-11	W832533	11335NNN40	Calibration Blank	NITRITE	3	ND	0.0156
29-Nov-11	W832533	11335NNN40	Calibration Blank	NITRITE	4	ND	0.0156
29-Nov-11	W832532	11335NNN40	Laboratory Reagent Blank	NITRITE	1	ND	0.0156
6-Dec-11	W834124	11342NNN53	Calibration Blank	NITRITE	1	ND	0.0156
6-Dec-11	W834124	11342NNN53	Calibration Blank	NITRITE	2	ND	0.0156
6-Dec-11	W834124	11342NNN53	Calibration Blank	NITRITE	3	ND	0.0156
6-Dec-11	W834124	11342NNN53	Calibration Blank	NITRITE	4	ND	0.0156
6-Dec-11	W834124	11342NNN53	Calibration Blank	NITRITE	5	ND	0.0156
6-Dec-11	W834123	11342NNN53	Laboratory Reagent Blank	NITRITE	1	ND	0.0156
13-Dec-11	W834939	11348NNN16	Calibration Blank	NITRITE	1	ND	0.0156
13-Dec-11	W834939	11348NNN16	Calibration Blank	NITRITE	2	ND	0.0156
13-Dec-11	W834939	11348NNN16	Calibration Blank	NITRITE	3	ND	0.0156
13-Dec-11	W834939	11348NNN16	Calibration Blank	NITRITE	4	ND	0.0156

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Appendix C13.A13 *continued*

Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	MDL
13-Dec-11	W834939	11348NNN16	Calibration Blank	NITRITE	5	ND	0.0156
13-Dec-11	W834938	11348NNN16	Laboratory Reagent Blank	NITRITE	1	ND	0.0156
21-Dec-11	W836333	11355NNN55	Calibration Blank	NITRITE	1	ND	0.0156
21-Dec-11	W836333	11355NNN55	Calibration Blank	NITRITE	2	ND	0.0156
21-Dec-11	W836333	11355NNN55	Calibration Blank	NITRITE	3	ND	0.0156
21-Dec-11	W836333	11355NNN55	Calibration Blank	NITRITE	4	ND	0.0156
21-Dec-11	W836333	11355NNN55	Calibration Blank	NITRITE	5	ND	0.0156
21-Dec-11	W836333	11355NNN55	Calibration Blank	NITRITE	6	ND	0.0156
21-Dec-11	W836333	11355NNN55	Calibration Blank	NITRITE	7	ND	0.0156
21-Dec-11	W836332	11355NNN55	Laboratory Reagent Blank	NITRITE	1	ND	0.0156
27-Dec-11	W836663	11363NNN85	Calibration Blank	NITRITE	1	ND	0.0156
27-Dec-11	W836663	11363NNN85	Calibration Blank	NITRITE	2	ND	0.0156
27-Dec-11	W836663	11363NNN85	Calibration Blank	NITRITE	3	ND	0.0156
27-Dec-11	W836662	11363NNN85	Laboratory Reagent Blank	NITRITE	1	ND	0.0156
12-Oct-11	W825709	11285TSS16	Laboratory Reagent Blank	TSS	1	< 1	n/a
13-Oct-11	W825898	11286TSS48	Laboratory Reagent Blank	TSS	1	< 1	n/a
24-Oct-11	W827212	11297TSS59	Laboratory Reagent Blank	TSS	1	< 1	n/a
28-Oct-11	W828206	11300TSS37	Laboratory Reagent Blank	TSS	1	< 1	n/a
7-Nov-11	W829491	11311TSS95	Laboratory Reagent Blank	TSS	1	< 1	n/a
14-Nov-11	W830586	11318TSS89	Laboratory Reagent Blank	TSS	1	< 1	n/a
17-Nov-11	W831284	11321TSS92	Laboratory Reagent Blank	TSS	1	< 1	n/a
22-Nov-11	W831610	11326TSS75	Laboratory Reagent Blank	TSS	1	< 1	n/a
2-Dec-11	W833537	11336TSS21	Laboratory Reagent Blank	TSS	1	< 1	n/a
8-Dec-11	W834628	11342TSS16	Laboratory Reagent Blank	TSS	1	< 1	n/a
8-Dec-11	W834628	11342TSS16	Laboratory Reagent Blank	TSS	2	< 1	n/a
19-Dec-11	W835858	11353TSS08	Laboratory Reagent Blank	TSS	1	< 1	n/a
22-Dec-11	W836549	11356TSS02	Laboratory Reagent Blank	TSS	1	< 1	n/a
4-Jan-12	W838017	12004TSS63	Laboratory Reagent Blank	TSS	1	< 1	n/a

ND = not detected

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Matrix Spike (MS) and Matrix Spike Duplicate (MSD) results for analyses of Total Phosphorus, Total Nitrogen, Ammonia-N, Nitrate_Nitrite, and Nitrite as performed by the City of San Diego Water Quality Laboratory. All values are in mg/L. RPD = Relative Percent Difference. Ambient analyte concentration has been subtracted prior to spike recovery calculation.

Date	ID #	Batch #	Source	Analyte	Test #	Value	Spike Amount	Recovery	RPD
6-Oct-11	W824130	11286NP91	BAA-0	PHOSPHORUS	1	1.37	1.25	109.6%	0.00%
6-Oct-11	W824130	11286NP91	BAA-0	PHOSPHORUS	2	1.37	1.25	109.6%	
6-Oct-11	W824186	11286NP91	BIOASSESS C	PHOSPHORUS	1	1.42	1.25	102.0%	
10-Oct-11	W825020	11286NP91	SPECIAL	PHOSPHORUS	1	1.33	1.25	106.4%	
10-Oct-11	W825030	11286NP91	SPECIAL	PHOSPHORUS	1	1.59	1.25	93.9%	0.86%
10-Oct-11	W825030	11286NP91	SPECIAL	PHOSPHORUS	2	1.58	1.25	93.1%	
17-Oct-11	W825909	11286NP91	HGB-GA75	PHOSPHORUS	1	2.24	1.25	106.0%	
19-Oct-11	W827060	11286NP91	BIOASSESS E	PHOSPHORUS	1	1.4	1.25	101.4%	
25-Oct-11	W827252	11322NP53	HGW_GVC2	PHOSPHORUS	1	1.48	1.25	104.4%	
31-Oct-11	W828235	11322NP53	HGB-GA75	PHOSPHORUS	1	1.54	1.25	111.4%	
2-Nov-11	W829005	11322NP53	BIOASSESS A	PHOSPHORUS	1	1.35	1.25	98.4%	3.99%
2-Nov-11	W829005	11322NP53	BIOASSESS A	PHOSPHORUS	2	1.4	1.25	102.4%	
14-Nov-11	W825851	11322NP53	MAR_MIC_PRP_MQ1	PHOSPHORUS	1	1.25	1.25	100.0%	2.43%
14-Nov-11	W825851	11322NP53	MAR_MIC_PRP_MQ1	PHOSPHORUS	2	1.22	1.25	97.6%	
7-Nov-11	W829181	11339NP19	HGB-0	PHOSPHORUS	1	1.49	1.25	102.3%	0.78%
7-Nov-11	W829181	11339NP19	HGB-0	PHOSPHORUS	2	1.5	1.25	103.1%	
9-Nov-11	W829538	11339NP19	OTA-BTM	PHOSPHORUS	1	1.4	1.25	112.0%	
14-Nov-11	W829226	11340NP54	SVA-0	PHOSPHORUS	1	1.37	1.25	109.6%	2.21%
14-Nov-11	W829226	11340NP54	SVA-0	PHOSPHORUS	2	1.34	1.25	107.2%	
16-Nov-11	W830700	11340NP54	BIOASSESS E	PHOSPHORUS	1	1.42	1.25	104.8%	
22-Nov-11	W831405	11340NP54	BIOASSESS E	PHOSPHORUS	1	1.4	1.25	100.0%	
29-Nov-11	W832484	11340NP54	HGW_TEM1	PHOSPHORUS	1	1.33	1.25	106.4%	
5-Dec-11	W832603	11363NP93	87 SYS	PHOSPHORUS	1	1.25	1.25	100.0%	0.80%
5-Dec-11	W832603	11363NP93	87 SYS	PHOSPHORUS	2	1.26	1.25	100.8%	
5-Dec-11	W833408	11363NP93	HGB-GA75	PHOSPHORUS	1	1.59	1.25	101.6%	
6-Dec-11	W833676	11363NP93	MUA-BTM	PHOSPHORUS	1	1.28	1.25	102.4%	
7-Dec-11	W834272	11363NP93	BIOASSESS E	PHOSPHORUS	1	1.34	1.25	107.2%	1.48%
7-Dec-11	W834272	11363NP93	BIOASSESS E	PHOSPHORUS	2	1.36	1.25	108.8%	
12-Dec-11	W834646	11363NP93	HGB-BTM	PHOSPHORUS	1	1.55	1.25	104.8%	

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Date	ID #	Batch #	Source	Analyte	Test #	Value	Spike Amount	Recovery	RPD
21-Dec-11	W836255	11363NP93	BIOASSESS A	PHOSPHORUS	1	1.49	1.25	109.4%	
28-Dec-11	W836908	11363NP93	BIOASSESS E	PHOSPHORUS	1	1.47	1.25	117.6%	
6-Oct-11	W824130	11286NP91	BAA-0	NITROGEN_TOTAL	1	2.56	2.5	102.4%	1.93%
6-Oct-11	W824130	11286NP91	BAA-0	NITROGEN_TOTAL	2	2.61	2.5	104.4%	
6-Oct-11	W824186	11286NP91	BIOASSESS C	NITROGEN_TOTAL	1	3.67	2.5	101.6%	
10-Oct-11	W825020	11286NP91	SPECIAL	NITROGEN_TOTAL	1	2.7	2.5	108.0%	
10-Oct-11	W825030	11286NP91	SPECIAL	NITROGEN_TOTAL	1	3.01	2.5	106.1%	0.38%
10-Oct-11	W825030	11286NP91	SPECIAL	NITROGEN_TOTAL	2	3.02	2.5	106.5%	
17-Oct-11	W825909	11286NP91	HGB-GA75	NITROGEN_TOTAL	1	> 5	2.5	n/a	
19-Oct-11	W827060	11286NP91	BIOASSESS E	NITROGEN_TOTAL	1	2.48	2.5	99.2%	
25-Oct-11	W827252	11322NP53	HGW_GVC2	NITROGEN_TOTAL	1	2.85	2.5	105.8%	
31-Oct-11	W828235	11322NP53	HGB-GA75	NITROGEN_TOTAL	1	3.07	2.5	109.7%	
2-Nov-11	W829005	11322NP53	BIOASSESS A	NITROGEN_TOTAL	1	2.75	2.5	103.6%	0.39%
2-Nov-11	W829005	11322NP53	BIOASSESS A	NITROGEN_TOTAL	2	2.74	2.5	103.2%	
14-Nov-11	W825851	11322NP53	MAR_MIC_PRP_MQ1	NITROGEN_TOTAL	1	2.58	2.5	103.2%	2.68%
14-Nov-11	W825851	11322NP53	MAR_MIC_PRP_MQ1	NITROGEN_TOTAL	2	2.65	2.5	106.0%	
7-Nov-11	W829181	11339NP19	HGB-0	NITROGEN_TOTAL	1	3.05	2.5	96.6%	3.26%
7-Nov-11	W829181	11339NP19	HGB-0	NITROGEN_TOTAL	2	3.13	2.5	99.8%	
9-Nov-11	W829538	11339NP19	OTA-BTM	NITROGEN_TOTAL	1	2.97	2.5	108.6%	
14-Nov-11	W829226	11340NP54	SVA-0	NITROGEN_TOTAL	1	2.43	2.5	97.2%	0.41%
14-Nov-11	W829226	11340NP54	SVA-0	NITROGEN_TOTAL	2	2.42	2.5	96.8%	
16-Nov-11	W830700	11340NP54	BIOASSESS E	NITROGEN_TOTAL	1	2.56	2.5	93.8%	
22-Nov-11	W831405	11340NP54	BIOASSESS E	NITROGEN_TOTAL	1	2.68	2.5	94.9%	
29-Nov-11	W832484	11340NP54	HGW_TEM1	NITROGEN_TOTAL	1	2.28	2.5	91.2%	
5-Dec-11	W832603	11363NP93	87 SYS	NITROGEN_TOTAL	1	3.27	2.5	98.4%	1.64%
5-Dec-11	W832603	11363NP93	87 SYS	NITROGEN_TOTAL	2	3.23	2.5	96.8%	
5-Dec-11	W833408	11363NP93	HGB-GA75	NITROGEN_TOTAL	1	3.65	2.5	99.2%	
6-Dec-11	W833676	11363NP93	MUA-BTM	NITROGEN_TOTAL	1	2.7	2.5	98.4%	
7-Dec-11	W834272	11363NP93	BIOASSESS E	NITROGEN_TOTAL	1	2.53	2.5	101.2%	0.79%
7-Dec-11	W834272	11363NP93	BIOASSESS E	NITROGEN_TOTAL	2	2.51	2.5	100.4%	
12-Dec-11	W834646	11363NP93	HGB-BTM	NITROGEN_TOTAL	1	3.37	2.5	99.9%	
21-Dec-11	W836255	11363NP93	BIOASSESS A	NITROGEN_TOTAL	1	2.77	2.5	110.8%	
28-Dec-11	W836908	11363NP93	BIOASSESS E	NITROGEN_TOTAL	1	2.5	2.5	100.0%	

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Appendix C13.A14 *continued*

Date	ID #	Batch #	Source	Analyte	Test #	Value	Spike Amount	Recovery	RPD
4-Oct-11	W822973	11279NNN94	112 SYS	AMMONIA_N	1	1.04	1.00	100.3%	
5-Oct-11	W822950	11279NNN94	292 SYS_B1 BOT	AMMONIA_N	1	1.33	1.00	101.3%	
5-Oct-11	W823191	11279NNN94	335 SYS_ELV1113	AMMONIA_N	1	1.02	1.00	102.0%	
5-Oct-11	W823232	11279NNN94	114 SYS	AMMONIA_N	1	1.56	1.00	101.9%	
6-Oct-11	W824173	11280NNN75	OTA-0	AMMONIA_N	1	1.02	1.00	102.0%	
11-Oct-11	W824356	11286NNN41	112 SYS	AMMONIA_N	1	1.1	1.00	105.2%	
11-Oct-11	W824378	11286NNN41	50A SYS	AMMONIA_N	1	1.39	1.00	103.5%	
12-Oct-11	W824509	11286NNN41	11 SYS	AMMONIA_N	1	1.61	1.00	103.5%	
12-Oct-11	W824524	11286NNN41	238 SYS	AMMONIA_N	1	1.37	1.00	97.1%	
17-Oct-11	W825365	11292NNN33	110 SYS	AMMONIA_N	1	1.38	1.00	103.7%	
17-Oct-11	W825391	11292NNN33	292 SYS_B1 BOT	AMMONIA_N	1	1.48	1.00	95.5%	
18-Oct-11	W825449	11292NNN33	223 SYS	AMMONIA_N	1	1.72	1.00	102.8%	
18-Oct-11	W825511	11292NNN33	3 SYS	AMMONIA_N	1	1.81	1.00	98.2%	
18-Oct-11	W825576	11292NNN33	269 SYS	AMMONIA_N	1	1.55	1.00	98.1%	
24-Oct-11	W826548	11298NNN76	110 SYS	AMMONIA_N	1	1.27	1.00	98.9%	
24-Oct-11	W826566	11298NNN76	21 SYS_MID	AMMONIA_N	1	1.04	1.00	100.8%	
24-Oct-11	W826573	11298NNN76	292 SYS_B1 BOT	AMMONIA_N	1	1.07	1.00	98.4%	
25-Oct-11	W826674	11298NNN76	6 SYS	AMMONIA_N	1	1.53	1.00	96.8%	
25-Oct-11	W826595	11299NNN93	112 SYS	AMMONIA_N	1	1.05	1.00	97.0%	
25-Oct-11	W826647	11299NNN93	65 SYS	AMMONIA_N	1	1.53	1.00	97.0%	
26-Oct-11	W826752	11299NNN93	12S SYS_MID	AMMONIA_N	1	1.45	1.00	98.7%	
26-Oct-11	W826761	11299NNN93	238 SYS	AMMONIA_N	1	1.13	1.00	99.4%	
1-Nov-11	W827593	11307NNN05	128 SYS	AMMONIA_N	1	1.64	1.00	98.3%	
2-Nov-11	W827671	11307NNN05	14 SYS	AMMONIA_N	1	1.12	1.00	97.6%	
2-Nov-11	W827686	11307NNN05	22 SYS	AMMONIA_N	1	1.19	1.00	99.0%	
9-Nov-11	W828776	11314NNN47	12N SYS_MID	AMMONIA_N	1	1.4	1.00	101.5%	
9-Nov-11	W828787	11314NNN47	22 SYS	AMMONIA_N	1	1.09	1.00	101.5%	
15-Nov-11	W830199	11321NNN07	128 SYS	AMMONIA_N	1	1.74	1.00	101.1%	
16-Nov-11	W829808	11321NNN07	11 SYS	AMMONIA_N	1	1.61	1.00	95.4%	
16-Nov-11	W829825	11321NNN07	22 SYS	AMMONIA_N	1	1.29	1.00	99.8%	
21-Nov-11	W830845	11326NNN32	110 SYS	AMMONIA_N	1	1.02	1.00	102.0%	
21-Nov-11	W830870	11326NNN32	292 SYS_B1 BOT	AMMONIA_N	1	1.46	1.00	97.6%	
22-Nov-11	W831092	11326NNN32	112 SYS	AMMONIA_N	1	1.18	1.00	98.7%	

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Date	ID #	Batch #	Source	Analyte	Test #	Value	Spike Amount	Recovery	RPD
22-Nov-11	W831137	11326NNN32	67 SYS	AMMONIA_N	1	1.24	1.00	89.0%	
22-Nov-11	W831186	11326NNN32	43 SYS	AMMONIA_N	1	1.3	1.00	98.2%	
29-Nov-11	W831795	11335NNN40	1 SYS	AMMONIA_N	1	1.02	1.00	102.0%	
29-Nov-11	W831845	11335NNN40	108 SYS_MID	AMMONIA_N	1	1.14	1.00	114.0%	
30-Nov-11	W831858	11335NNN40	14 SYS	AMMONIA_N	1	1.08	1.00	99.2%	
6-Dec-11	W832873	11342NNN53	128 SYS	AMMONIA_N	1	1.82	1.00	100.7%	
6-Dec-11	W832977	11342NNN53	95 SYS	AMMONIA_N	1	1.91	1.00	100.4%	
7-Dec-11	W833024	11342NNN53	238 SYS	AMMONIA_N	1	1.46	1.00	101.2%	
7-Dec-11	W833030	11342NNN53	335 SYS_ELV1113	AMMONIA_N	1	1.46	1.00	103.3%	
13-Dec-11	W834041	11348NNN16	128 SYS	AMMONIA_N	1	1.55	1.00	95.8%	
14-Dec-11	W829621	11348NNN16	CWA_SAMPLE4	AMMONIA_N	1	1.44	1.00	99.6%	
14-Dec-11	W833807	11348NNN16	11 SYS	AMMONIA_N	1	1.48	1.00	101.3%	
14-Dec-11	W833827	11348NNN16	335 SYS_ELV1113	AMMONIA_N	1	1.39	1.00	102.3%	
19-Dec-11	W835274	11355NNN55	110 SYS	AMMONIA_N	1	1.67	1.00	106.0%	
19-Dec-11	W835299	11355NNN55	292 SYS_B1 BOT	AMMONIA_N	1	1.42	1.00	104.8%	
20-Dec-11	W835359	11355NNN55	223 SYS	AMMONIA_N	1	1.8	1.00	108.1%	
20-Dec-11	W835419	11355NNN55	3 SYS	AMMONIA_N	1	1.79	1.00	107.4%	
20-Dec-11	W835483	11355NNN55	269 SYS	AMMONIA_N	1	1.41	1.00	106.5%	
21-Dec-11	W835501	11355NNN55	12S SYS_MID	AMMONIA_N	1	1.79	1.00	108.3%	
28-Dec-11	W836040	11363NNN85	11 SYS	AMMONIA_N	1	1.65	1.00	101.3%	
28-Dec-11	W836048	11363NNN85	12S SYS_MID	AMMONIA_N	1	1.66	1.00	100.6%	
4-Oct-11	W822973	11279NNN94	112 SYS	NITRATE_NITRITE	1	4.94	1.6	101.6%	
5-Oct-11	W823232	11279NNN94	114 SYS	NITRATE_NITRITE	1	3	1.6	110.0%	
5-Oct-11	W822950	11279NNN94	292 SYS_B1 BOT	NITRATE_NITRITE	1	3.45	1.6	108.1%	
5-Oct-11	W823191	11279NNN94	335 SYS_ELV1113	NITRATE_NITRITE	1	4.59	1.6	106.9%	
6-Oct-11	W824173	11280NNN75	OTA-0	NITRATE_NITRITE	1	1.81	1.6	113.1%	
11-Oct-11	W824356	11286NNN41	112 SYS	NITRATE_NITRITE	1	4.76	1.6	100.3%	
11-Oct-11	W824378	11286NNN41	50A SYS	NITRATE_NITRITE	1	3.35	1.6	101.3%	
12-Oct-11	W824509	11286NNN41	11 SYS	NITRATE_NITRITE	1	2.39	1.6	107.3%	
12-Oct-11	W824524	11286NNN41	238 SYS	NITRATE_NITRITE	1	2.93	1.6	105.6%	
17-Oct-11	W825365	11292NNN33	110 SYS	NITRATE_NITRITE	1	3.56	1.6	100.3%	
17-Oct-11	W825391	11292NNN33	292 SYS_B1 BOT	NITRATE_NITRITE	1	2.88	1.6	100.6%	
18-Oct-11	W825449	11292NNN33	223 SYS	NITRATE_NITRITE	1	2.44	1.6	102.0%	

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Date	ID #	Batch #	Source	Analyte	Test #	Value	Spike Amount	Recovery	RPD
18-Oct-11	W825576	11292NNN33	269 SYS	NITRATE_NITRITE	1	3.02	1.6	100.6%	
18-Oct-11	W825511	11292NNN33	3 SYS	NITRATE_NITRITE	1	2.51	1.6	99.8%	
24-Oct-11	W826548	11298NNN76	110 SYS	NITRATE_NITRITE	1	3.8	1.6	107.2%	
24-Oct-11	W826566	11298NNN76	21 SYS_MID	NITRATE_NITRITE	1	4.53	1.6	100.0%	
24-Oct-11	W826573	11298NNN76	292 SYS_B1 BOT	NITRATE_NITRITE	1	4.29	1.6	101.9%	
25-Oct-11	W826674	11298NNN76	6 SYS	NITRATE_NITRITE	1	2.49	1.6	106.2%	
25-Oct-11	W826595	11299NNN93	112 SYS	NITRATE_NITRITE	1	4.63	1.6	100.0%	
25-Oct-11	W826647	11299NNN93	65 SYS	NITRATE_NITRITE	1	2.59	1.6	104.3%	
26-Oct-11	W826752	11299NNN93	12S SYS_MID	NITRATE_NITRITE	1	3.15	1.6	111.3%	
26-Oct-11	W826761	11299NNN93	238 SYS	NITRATE_NITRITE	1	3.43	1.6	108.1%	
1-Nov-11	W827593	11307NNN05	128 SYS	NITRATE_NITRITE	1	2.49	1.6	108.5%	
2-Nov-11	W827671	11307NNN05	14 SYS	NITRATE_NITRITE	1	4.22	1.6	103.1%	
2-Nov-11	W827686	11307NNN05	22 SYS	NITRATE_NITRITE	1	4.09	1.6	103.8%	
9-Nov-11	W828776	11314NNN47	12N SYS_MID	NITRATE_NITRITE	1	3.58	1.6	104.1%	
9-Nov-11	W828787	11314NNN47	22 SYS	NITRATE_NITRITE	1	4.54	1.6	102.5%	
15-Nov-11	W830199	11321NNN07	128 SYS	NITRATE_NITRITE	1	2.5	1.6	107.3%	
16-Nov-11	W829808	11321NNN07	11 SYS	NITRATE_NITRITE	1	2.57	1.6	106.9%	
16-Nov-11	W829825	11321NNN07	22 SYS	NITRATE_NITRITE	1	3.32	1.6	107.5%	
21-Nov-11	W830845	11326NNN32	110 SYS	NITRATE_NITRITE	1	> 5	1.6	n/a	
21-Nov-11	W830870	11326NNN32	292 SYS_B1 BOT	NITRATE_NITRITE	1	2.65	1.6	108.6%	
22-Nov-11	W831092	11326NNN32	112 SYS	NITRATE_NITRITE	1	4.97	1.6	103.1%	
22-Nov-11	W831186	11326NNN32	43 SYS	NITRATE_NITRITE	1	4.3	1.6	106.9%	
22-Nov-11	W831137	11326NNN32	67 SYS	NITRATE_NITRITE	1	3.91	1.6	107.5%	
29-Nov-11	W831795	11335NNN40	1 SYS	NITRATE_NITRITE	1	2.62	1.6	109.3%	
29-Nov-11	W831845	11335NNN40	108 SYS_MID	NITRATE_NITRITE	1	4.56	1.6	105.0%	
30-Nov-11	W831858	11335NNN40	14 SYS	NITRATE_NITRITE	1	4.71	1.6	110.0%	
6-Dec-11	W832873	11342NNN53	128 SYS	NITRATE_NITRITE	1	2.37	1.6	111.3%	
6-Dec-11	W832977	11342NNN53	95 SYS	NITRATE_NITRITE	1	2.04	1.6	111.1%	
7-Dec-11	W833024	11342NNN53	238 SYS	NITRATE_NITRITE	1	3.12	1.6	110.6%	
7-Dec-11	W833030	11342NNN53	335 SYS_ELV1113	NITRATE_NITRITE	1	3.11	1.6	110.0%	
13-Dec-11	W834041	11348NNN16	128 SYS	NITRATE_NITRITE	1	2.2	1.6	111.0%	
14-Dec-11	W833807	11348NNN16	11 SYS	NITRATE_NITRITE	1	2.77	1.6	107.5%	
14-Dec-11	W833827	11348NNN16	335 SYS_ELV1113	NITRATE_NITRITE	1	2.9	1.6	109.4%	

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Date	ID #	Batch #	Source	Analyte	Test #	Value	Spike Amount	Recovery	RPD
14-Dec-11	W829621	11348NNN16	CWA_SAMPLE4	NITRATE_NITRITE	1	2.16	1.6	110.3%	
19-Dec-11	W835274	11355NNN55	110 SYS	NITRATE_NITRITE	1	3.04	1.6	105.3%	
19-Dec-11	W835299	11355NNN55	292 SYS_B1 BOT	NITRATE_NITRITE	1	2.33	1.6	104.0%	
20-Dec-11	W835359	11355NNN55	223 SYS	NITRATE_NITRITE	1	2.77	1.6	104.4%	
20-Dec-11	W835483	11355NNN55	269 SYS	NITRATE_NITRITE	1	3.72	1.6	103.1%	
20-Dec-11	W835419	11355NNN55	3 SYS	NITRATE_NITRITE	1	2.74	1.6	105.0%	
21-Dec-11	W835501	11355NNN55	12S SYS_MID	NITRATE_NITRITE	1	3.09	1.6	108.1%	
28-Dec-11	W836040	11363NNN85	11 SYS	NITRATE_NITRITE	1	2.99	1.6	110.6%	
28-Dec-11	W836048	11363NNN85	12S SYS_MID	NITRATE_NITRITE	1	3.17	1.6	108.1%	
4-Oct-11	W822973	11279NNN94	112 SYS	NITRITE	1	> 1	0.4	n/a	
5-Oct-11	W823232	11279NNN94	114 SYS	NITRITE	1	0.452	0.4	94.4%	
5-Oct-11	W822950	11279NNN94	292 SYS_B1 BOT	NITRITE	1	0.503	0.4	96.5%	
5-Oct-11	W823191	11279NNN94	335 SYS_ELV1113	NITRITE	1	> 1	0.4	n/a	
6-Oct-11	W824173	11280NNN75	OTA-0	NITRITE	1	0.403	0.4	100.8%	
11-Oct-11	W824356	11286NNN41	112 SYS	NITRITE	1	> 1	0.4	n/a	
11-Oct-11	W824378	11286NNN41	50A SYS	NITRITE	1	0.629	0.4	93.8%	
12-Oct-11	W824509	11286NNN41	11 SYS	NITRITE	1	0.415	0.4	94.3%	
12-Oct-11	W824524	11286NNN41	238 SYS	NITRITE	1	0.507	0.4	97.8%	
17-Oct-11	W825365	11292NNN33	110 SYS	NITRITE	1	0.422	0.4	97.3%	
17-Oct-11	W825391	11292NNN33	292 SYS_B1 BOT	NITRITE	1	0.401	0.4	93.1%	
18-Oct-11	W825449	11292NNN33	223 SYS	NITRITE	1	0.376	0.4	94.0%	
18-Oct-11	W825576	11292NNN33	269 SYS	NITRITE	1	0.583	0.4	93.3%	
18-Oct-11	W825511	11292NNN33	3 SYS	NITRITE	1	0.376	0.4	94.0%	
24-Oct-11	W826548	11298NNN76	110 SYS	NITRITE	1	0.666	0.4	96.8%	
24-Oct-11	W826566	11298NNN76	21 SYS_MID	NITRITE	1	0.991	0.4	101.8%	
24-Oct-11	W826573	11298NNN76	292 SYS_B1 BOT	NITRITE	1	0.833	0.4	100.3%	
25-Oct-11	W826674	11298NNN76	6 SYS	NITRITE	1	0.4	0.4	100.0%	
25-Oct-11	W826595	11299NNN93	112 SYS	NITRITE	1	> 1	0.4	n/a	
25-Oct-11	W826647	11299NNN93	65 SYS	NITRITE	1	0.39	0.4	97.5%	
26-Oct-11	W826752	11299NNN93	12S SYS_MID	NITRITE	1	0.555	0.4	104.3%	
26-Oct-11	W826761	11299NNN93	238 SYS	NITRITE	1	0.42	0.4	105.0%	
1-Nov-11	W827593	11307NNN05	128 SYS	NITRITE	1	0.394	0.4	91.2%	
2-Nov-11	W827671	11307NNN05	14 SYS	NITRITE	1	0.917	0.4	97.0%	

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Continuing Calibration Standard and External Standard results for analyses of Total Phosphorus, Total Nitrogen, Ammonia-N, Nitrate_Nitrite, Nitrite, and Total Suspended Solids (TSS) as performed by the City of San Diego Water Quality Laboratory. CCC = Continuing Calibration Check; IPC = Instrument Performance Check; LFB = Laboratory Fortified Blank (i.e. External Check or Reference Material). All values are in mg/L.

Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	True Value	Recovery
21-Oct-11	W827055	11286NP91	CCC	PHOSPHORUS	1	1.25	1.25	100.0%
21-Oct-11	W827055	11286NP91	CCC	PHOSPHORUS	2	1.27	1.25	101.6%
21-Oct-11	W827055	11286NP91	CCC	PHOSPHORUS	3	1.24	1.25	99.2%
21-Oct-11	W827055	11286NP91	CCC	PHOSPHORUS	4	1.23	1.25	98.4%
21-Oct-11	W827055	11286NP91	CCC	PHOSPHORUS	5	1.34	1.25	107.2%
21-Oct-11	W827055	11286NP91	CCC	PHOSPHORUS	6	1.28	1.25	102.4%
21-Oct-11	W827055	11286NP91	CCC	PHOSPHORUS	7	1.24	1.25	99.2%
21-Oct-11	**W827057**	**11286NP91**	**LFB**	**PHOSPHORUS**	**1**	**1.26**	**1.25**	**100.8%**
18-Nov-11	W831341	11322NP53	CCC	PHOSPHORUS	1	1.21	1.25	96.8%
18-Nov-11	W831341	11322NP53	CCC	PHOSPHORUS	2	1.26	1.25	100.8%
18-Nov-11	W831341	11322NP53	CCC	PHOSPHORUS	3	1.31	1.25	104.8%
18-Nov-11	W831341	11322NP53	CCC	PHOSPHORUS	4	1.23	1.25	98.4%
18-Nov-11	W831341	11322NP53	CCC	PHOSPHORUS	5	1.29	1.25	103.2%
18-Nov-11	**W831343**	**11322NP53**	**LFB**	**PHOSPHORUS**	**1**	**1.21**	**1.25**	**96.8%**
5-Dec-11	W833624	11339NP19	CCC	PHOSPHORUS	1	1.28	1.25	102.4%
5-Dec-11	W833624	11339NP19	CCC	PHOSPHORUS	2	1.25	1.25	100.0%
5-Dec-11	W833624	11339NP19	CCC	PHOSPHORUS	3	1.25	1.25	100.0%
5-Dec-11	**W833625**	**11339NP19**	**LFB**	**PHOSPHORUS**	**1**	**1.28**	**1.25**	**102.4%**
5-Dec-11	W833624	11340NP54	CCC	PHOSPHORUS	1	1.25	1.25	100.0%
5-Dec-11	W833624	11340NP54	CCC	PHOSPHORUS	2	1.22	1.25	97.6%
5-Dec-11	W833624	11340NP54	CCC	PHOSPHORUS	3	1.22	1.25	97.6%
5-Dec-11	W833624	11340NP54	CCC	PHOSPHORUS	4	1.19	1.25	95.2%
5-Dec-11	W833624	11340NP54	CCC	PHOSPHORUS	5	1.21	1.25	96.8%
5-Dec-11	**W833625**	**11340NP54**	**LFB**	**PHOSPHORUS**	**1**	**1.27**	**1.25**	**101.6%**
29-Dec-11	W837683	11363NP93	CCC	PHOSPHORUS	1	1.29	1.25	103.2%
29-Dec-11	W837683	11363NP93	CCC	PHOSPHORUS	2	1.29	1.25	103.2%
29-Dec-11	W837683	11363NP93	CCC	PHOSPHORUS	3	1.3	1.25	104.0%
29-Dec-11	W837683	11363NP93	CCC	PHOSPHORUS	4	1.26	1.25	100.8%
29-Dec-11	W837683	11363NP93	CCC	PHOSPHORUS	5	1.28	1.25	102.4%
29-Dec-11	W837683	11363NP93	CCC	PHOSPHORUS	6	1.24	1.25	99.2%

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Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	True Value	Recovery
29-Dec-11	W837683	11363NP93	CCC	PHOSPHORUS	7	1.28	1.25	102.4%
29-Dec-11	W837683	11363NP93	CCC	PHOSPHORUS	8	1.31	1.25	104.8%
29-Dec-11	**W837685**	**11363NP93**	**LFB**	**PHOSPHORUS**	**1**	**1.3**	**1.25**	**104.0%**
21-Oct-11	W827055	11286NP91	CCC	NITROGEN_TOTAL	1	2.57	2.5	102.8%
21-Oct-11	W827055	11286NP91	CCC	NITROGEN_TOTAL	2	2.49	2.5	99.6%
21-Oct-11	W827055	11286NP91	CCC	NITROGEN_TOTAL	3	2.49	2.5	99.6%
21-Oct-11	W827055	11286NP91	CCC	NITROGEN_TOTAL	4	2.55	2.5	102.0%
21-Oct-11	W827055	11286NP91	CCC	NITROGEN_TOTAL	5	2.51	2.5	100.4%
21-Oct-11	W827055	11286NP91	CCC	NITROGEN_TOTAL	6	2.53	2.5	101.2%
21-Oct-11	W827055	11286NP91	CCC	NITROGEN_TOTAL	7	2.55	2.5	102.0%
21-Oct-11	**W827057**	**11286NP91**	**LFB**	**NITROGEN_TOTAL**	**1**	**2.68**	**2.5**	**107.2%**
18-Nov-11	W831341	11322NP53	CCC	NITROGEN_TOTAL	1	2.49	2.5	99.6%
18-Nov-11	W831341	11322NP53	CCC	NITROGEN_TOTAL	2	2.52	2.5	100.8%
18-Nov-11	W831341	11322NP53	CCC	NITROGEN_TOTAL	3	2.52	2.5	100.8%
18-Nov-11	W831341	11322NP53	CCC	NITROGEN_TOTAL	4	2.49	2.5	99.6%
18-Nov-11	W831341	11322NP53	CCC	NITROGEN_TOTAL	5	2.5	2.5	100.0%
18-Nov-11	**W831343**	**11322NP53**	**LFB**	**NITROGEN_TOTAL**	**1**	**2.49**	**2.5**	**99.6%**
5-Dec-11	W833624	11339NP19	CCC	NITROGEN_TOTAL	1	2.5	2.5	100.0%
5-Dec-11	W833624	11339NP19	CCC	NITROGEN_TOTAL	2	2.52	2.5	100.8%
5-Dec-11	W833624	11339NP19	CCC	NITROGEN_TOTAL	3	2.52	2.5	100.8%
5-Dec-11	**W833625**	**11339NP19**	**LFB**	**NITROGEN_TOTAL**	**1**	**2.59**	**2.5**	**103.6%**
5-Dec-11	W833624	11340NP54	CCC	NITROGEN_TOTAL	1	2.51	2.5	100.4%
5-Dec-11	W833624	11340NP54	CCC	NITROGEN_TOTAL	2	2.52	2.5	100.8%
5-Dec-11	W833624	11340NP54	CCC	NITROGEN_TOTAL	3	2.53	2.5	101.2%
5-Dec-11	W833624	11340NP54	CCC	NITROGEN_TOTAL	4	2.52	2.5	100.8%
5-Dec-11	W833624	11340NP54	CCC	NITROGEN_TOTAL	5	2.53	2.5	101.2%
5-Dec-11	**W833625**	**11340NP54**	**LFB**	**NITROGEN_TOTAL**	**1**	**2.62**	**2.5**	**104.8%**
29-Dec-11	W837683	11363NP93	CCC	NITROGEN_TOTAL	1	2.48	2.5	99.2%
29-Dec-11	W837683	11363NP93	CCC	NITROGEN_TOTAL	2	2.51	2.5	100.4%
29-Dec-11	W837683	11363NP93	CCC	NITROGEN_TOTAL	3	2.46	2.5	98.4%
29-Dec-11	W837683	11363NP93	CCC	NITROGEN_TOTAL	4	2.49	2.5	99.6%
29-Dec-11	W837683	11363NP93	CCC	NITROGEN_TOTAL	5	2.48	2.5	99.2%
29-Dec-11	W837683	11363NP93	CCC	NITROGEN_TOTAL	6	2.52	2.5	100.8%
29-Dec-11	W837683	11363NP93	CCC	NITROGEN_TOTAL	7	2.47	2.5	98.8%
29-Dec-11	W837683	11363NP93	CCC	NITROGEN_TOTAL	8	2.5	2.5	100.0%

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Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	True Value	Recovery
29-Dec-11	**W837685**	**11363NP93**	**LFB**	**NITROGEN_TOTAL**	**1**	**2.44**	**2.5**	**97.6%**
4-Oct-11	W823917	11279NNN94	CCC	AMMONIA_N	1	0.96	1	96.0%
4-Oct-11	W823917	11279NNN94	CCC	AMMONIA_N	2	0.944	1	94.4%
4-Oct-11	W823917	11279NNN94	CCC	AMMONIA_N	3	0.951	1	95.1%
4-Oct-11	W823917	11279NNN94	CCC	AMMONIA_N	4	0.945	1	94.5%
4-Oct-11	W823917	11279NNN94	CCC	AMMONIA_N	5	0.948	1	94.8%
4-Oct-11	**W823920**	**11279NNN94**	**LFB**	**AMMONIA_N**	**1**	**0.954**	**1**	**95.4%**
7-Oct-11	W824773	11280NNN75	CCC	AMMONIA_N	1	0.944	1	94.4%
7-Oct-11	W824773	11280NNN75	CCC	AMMONIA_N	2	0.95	1	95.0%
7-Oct-11	**W824776**	**11280NNN75**	**LFB**	**AMMONIA_N**	**1**	**0.941**	**1**	**94.1%**
11-Oct-11	W825095	11286NNN41	CCC	AMMONIA_N	1	1.03	1	103.0%
11-Oct-11	W825095	11286NNN41	CCC	AMMONIA_N	2	1.03	1	103.0%
11-Oct-11	W825095	11286NNN41	CCC	AMMONIA_N	3	1.03	1	103.0%
11-Oct-11	W825095	11286NNN41	CCC	AMMONIA_N	4	1.03	1	103.0%
11-Oct-11	W825095	11286NNN41	CCC	AMMONIA_N	5	1.03	1	103.0%
11-Oct-11	**W825098**	**11286NNN41**	**LFB**	**AMMONIA_N**	**1**	**1.02**	**1**	**102.0%**
19-Oct-11	W826372	11292NNN33	CCC	AMMONIA_N	1	0.992	1	99.2%
19-Oct-11	W826372	11292NNN33	CCC	AMMONIA_N	2	1.03	1	103.0%
19-Oct-11	W826372	11292NNN33	CCC	AMMONIA_N	3	1.02	1	102.0%
19-Oct-11	W826372	11292NNN33	CCC	AMMONIA_N	4	1.03	1	103.0%
19-Oct-11	W826372	11292NNN33	CCC	AMMONIA_N	5	1.02	1	102.0%
19-Oct-11	W826372	11292NNN33	CCC	AMMONIA_N	6	1.04	1	104.0%
19-Oct-11	**W826375**	**11292NNN33**	**LFB**	**AMMONIA_N**	**1**	**1.01**	**1**	**101.0%**
25-Oct-11	W827319	11298NNN76	CCC	AMMONIA_N	1	0.991	1	99.1%
25-Oct-11	W827319	11298NNN76	CCC	AMMONIA_N	2	0.998	1	99.8%
25-Oct-11	W827319	11298NNN76	CCC	AMMONIA_N	3	0.996	1	99.6%
25-Oct-11	W827319	11298NNN76	CCC	AMMONIA_N	4	0.996	1	99.6%
25-Oct-11	W827319	11298NNN76	CCC	AMMONIA_N	5	0.991	1	99.1%
25-Oct-11	**W827322**	**11298NNN76**	**LFB**	**AMMONIA_N**	**1**	**1.01**	**1**	**101.0%**
25-Oct-11	W827319	11299NNN93	CCC	AMMONIA_N	1	0.983	1	98.3%
25-Oct-11	W827319	11299NNN93	CCC	AMMONIA_N	2	0.978	1	97.8%
25-Oct-11	W827319	11299NNN93	CCC	AMMONIA_N	3	0.972	1	97.2%
25-Oct-11	W827319	11299NNN93	CCC	AMMONIA_N	4	0.969	1	96.9%
25-Oct-11	W827319	11299NNN93	CCC	AMMONIA_N	5	0.985	1	98.5%
25-Oct-11	**W827322**	**11299NNN93**	**LFB**	**AMMONIA_N**	**1**	**1**	**1**	**100.0%**

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Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	True Value	Recovery
1-Nov-11	W828983	11307NNN05	CCC	AMMONIA_N	1	1.02	1	102.0%
1-Nov-11	W828983	11307NNN05	CCC	AMMONIA_N	2	1.02	1	102.0%
1-Nov-11	W828983	11307NNN05	CCC	AMMONIA_N	3	1.02	1	102.0%
1-Nov-11	W828983	11307NNN05	CCC	AMMONIA_N	4	1.02	1	102.0%
1-Nov-11	**W828986**	**11307NNN05**	**LFB**	**AMMONIA_N**	**1**	**1.01**	**1**	**101.0%**
9-Nov-11	W829895	11314NNN47	CCC	AMMONIA_N	1	1.02	1	102.0%
9-Nov-11	W829895	11314NNN47	CCC	AMMONIA_N	2	0.999	1	99.9%
9-Nov-11	W829895	11314NNN47	CCC	AMMONIA_N	3	1	1	100.0%
9-Nov-11	**W829898**	**11314NNN47**	**LFB**	**AMMONIA_N**	**1**	**1.02**	**1**	**102.0%**
15-Nov-11	W830641	11321NNN07	CCC	AMMONIA_N	1	1.02	1	102.0%
15-Nov-11	W830641	11321NNN07	CCC	AMMONIA_N	2	0.996	1	99.6%
15-Nov-11	W830641	11321NNN07	CCC	AMMONIA_N	3	1	1	100.0%
15-Nov-11	W830641	11321NNN07	CCC	AMMONIA_N	4	1.01	1	101.0%
15-Nov-11	**W830644**	**11321NNN07**	**LFB**	**AMMONIA_N**	**1**	**0.995**	**1**	**99.5%**
22-Nov-11	W831576	11326NNN32	CCC	AMMONIA_N	1	1.02	1	102.0%
22-Nov-11	W831576	11326NNN32	CCC	AMMONIA_N	2	1.01	1	101.0%
22-Nov-11	W831576	11326NNN32	CCC	AMMONIA_N	3	1.01	1	101.0%
22-Nov-11	W831576	11326NNN32	CCC	AMMONIA_N	4	0.998	1	99.8%
22-Nov-11	W831576	11326NNN32	CCC	AMMONIA_N	5	0.99	1	99.0%
22-Nov-11	W831576	11326NNN32	CCC	AMMONIA_N	6	1.01	1	101.0%
22-Nov-11	**W831579**	**11326NNN32**	**LFB**	**AMMONIA_N**	**1**	**1.01**	**1**	**101.0%**
29-Nov-11	W832534	11335NNN40	CCC	AMMONIA_N	1	0.993	1	99.3%
29-Nov-11	W832534	11335NNN40	CCC	AMMONIA_N	2	0.977	1	97.7%
29-Nov-11	W832534	11335NNN40	CCC	AMMONIA_N	3	0.977	1	97.7%
29-Nov-11	W832534	11335NNN40	CCC	AMMONIA_N	4	0.971	1	97.1%
29-Nov-11	**W832537**	**11335NNN40**	**LFB**	**AMMONIA_N**	**1**	**0.995**	**1**	**99.5%**
6-Dec-11	W834125	11342NNN53	CCC	AMMONIA_N	1	0.998	1	99.8%
6-Dec-11	W834125	11342NNN53	CCC	AMMONIA_N	2	0.985	1	98.5%
6-Dec-11	W834125	11342NNN53	CCC	AMMONIA_N	3	0.99	1	99.0%
6-Dec-11	W834125	11342NNN53	CCC	AMMONIA_N	4	0.985	1	98.5%
6-Dec-11	W834125	11342NNN53	CCC	AMMONIA_N	5	0.985	1	98.5%
6-Dec-11	**W834128**	**11342NNN53**	**LFB**	**AMMONIA_N**	**1**	**1.04**	**1**	**104.0%**
13-Dec-11	W834940	11348NNN16	CCC	AMMONIA_N	1	0.988	1	98.8%
13-Dec-11	W834940	11348NNN16	CCC	AMMONIA_N	2	0.99	1	99.0%
13-Dec-11	W834940	11348NNN16	CCC	AMMONIA_N	3	0.993	1	99.3%

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Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	True Value	Recovery
13-Dec-11	W834940	11348NNN16	CCC	AMMONIA_N	4	0.991	1	99.1%
13-Dec-11	W834940	11348NNN16	CCC	AMMONIA_N	5	0.994	1	99.4%
13-Dec-11	**W835041**	**11348NNN16**	**LFB**	**AMMONIA_N**	**2**	**0.986**	**1**	**98.6%**
14-Dec-11	**W835198**	**11348NNN16**	**LFB**	**AMMONIA_N**	**1**	**1.02**	**1**	**102.0%**
21-Dec-11	W836334	11355NNN55	CCC	AMMONIA_N	1	0.995	1	99.5%
21-Dec-11	W836334	11355NNN55	CCC	AMMONIA_N	2	1.01	1	101.0%
21-Dec-11	W836334	11355NNN55	CCC	AMMONIA_N	3	1.01	1	101.0%
21-Dec-11	W836334	11355NNN55	CCC	AMMONIA_N	4	1.02	1	102.0%
21-Dec-11	W836334	11355NNN55	CCC	AMMONIA_N	5	1.02	1	102.0%
21-Dec-11	W836334	11355NNN55	CCC	AMMONIA_N	6	1.01	1	101.0%
21-Dec-11	W836334	11355NNN55	CCC	AMMONIA_N	7	1.03	1	103.0%
21-Dec-11	**W836337**	**11355NNN55**	**LFB**	**AMMONIA_N**	**1**	**0.996**	**1**	**99.6%**
27-Dec-11	W836664	11363NNN85	CCC	AMMONIA_N	1	0.97	1	97.0%
27-Dec-11	W836664	11363NNN85	CCC	AMMONIA_N	2	0.969	1	96.9%
27-Dec-11	W836664	11363NNN85	CCC	AMMONIA_N	3	0.971	1	97.1%
27-Dec-11	**W836667**	**11363NNN85**	**LFB**	**AMMONIA_N**	**1**	**1.01**	**1**	**101.0%**
4-Oct-11	W823917	11279NNN94	CCC	NITRATE_NITRITE	1	2.63	2.5	105.2%
4-Oct-11	W823917	11279NNN94	CCC	NITRATE_NITRITE	2	2.59	2.5	103.6%
4-Oct-11	W823917	11279NNN94	CCC	NITRATE_NITRITE	3	2.59	2.5	103.6%
4-Oct-11	W823917	11279NNN94	CCC	NITRATE_NITRITE	4	2.59	2.5	103.6%
4-Oct-11	W823917	11279NNN94	CCC	NITRATE_NITRITE	5	2.56	2.5	102.4%
4-Oct-11	W823918	11279NNN94	IPC	NITRATE_NITRITE	1	2.37	2.5	94.8%
4-Oct-11	**W823920**	**11279NNN94**	**LFB**	**NITRATE_NITRITE**	**1**	**1.66**	**1.6**	**103.8%**
7-Oct-11	W824773	11280NNN75	CCC	NITRATE_NITRITE	1	2.59	2.5	103.6%
7-Oct-11	W824773	11280NNN75	CCC	NITRATE_NITRITE	2	2.59	2.5	103.6%
7-Oct-11	W824774	11280NNN75	IPC	NITRATE_NITRITE	1	2.39	2.5	95.6%
7-Oct-11	**W824776**	**11280NNN75**	**LFB**	**NITRATE_NITRITE**	**1**	**1.67**	**1.6**	**104.4%**
11-Oct-11	W825095	11286NNN41	CCC	NITRATE_NITRITE	1	2.47	2.5	98.8%
11-Oct-11	W825095	11286NNN41	CCC	NITRATE_NITRITE	2	2.43	2.5	97.2%
11-Oct-11	W825095	11286NNN41	CCC	NITRATE_NITRITE	3	2.47	2.5	98.8%
11-Oct-11	W825095	11286NNN41	CCC	NITRATE_NITRITE	5	2.47	2.5	98.8%
11-Oct-11	W825095	11286NNN41	CCC	NITRATE_NITRITE	4	2.47	2.5	98.8%
11-Oct-11	W825096	11286NNN41	IPC	NITRATE_NITRITE	1	2.32	2.5	92.8%
11-Oct-11	**W825098**	**11286NNN41**	**LFB**	**NITRATE_NITRITE**	**1**	**1.62**	**1.6**	**101.3%**
19-Oct-11	W826372	11292NNN33	CCC	NITRATE_NITRITE	1	2.51	2.5	100.4%

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Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	True Value	Recovery
19-Oct-11	W826372	11292NNN33	CCC	NITRATE_NITRITE	2	2.54	2.5	101.6%
19-Oct-11	W826372	11292NNN33	CCC	NITRATE_NITRITE	3	2.51	2.5	100.4%
19-Oct-11	W826372	11292NNN33	CCC	NITRATE_NITRITE	4	2.52	2.5	100.8%
19-Oct-11	W826372	11292NNN33	CCC	NITRATE_NITRITE	5	2.51	2.5	100.4%
19-Oct-11	W826372	11292NNN33	CCC	NITRATE_NITRITE	6	2.51	2.5	100.4%
19-Oct-11	W826373	11292NNN33	IPC	NITRATE_NITRITE	1	2.31	2.5	92.4%
19-Oct-11	**W826375**	**11292NNN33**	**LFB**	**NITRATE_NITRITE**	**1**	**1.66**	**1.6**	**103.8%**
25-Oct-11	W827319	11298NNN76	CCC	NITRATE_NITRITE	1	2.5	2.5	100.0%
25-Oct-11	W827319	11298NNN76	CCC	NITRATE_NITRITE	2	2.49	2.5	99.6%
25-Oct-11	W827319	11298NNN76	CCC	NITRATE_NITRITE	3	2.49	2.5	99.6%
25-Oct-11	W827319	11298NNN76	CCC	NITRATE_NITRITE	4	2.51	2.5	100.4%
25-Oct-11	W827319	11298NNN76	CCC	NITRATE_NITRITE	5	2.49	2.5	99.6%
25-Oct-11	W827320	11298NNN76	IPC	NITRATE_NITRITE	1	2.34	2.5	93.6%
25-Oct-11	**W827322**	**11298NNN76**	**LFB**	**NITRATE_NITRITE**	**1**	**1.75**	**1.6**	**109.4%**
25-Oct-11	W827319	11299NNN93	CCC	NITRATE_NITRITE	1	2.51	2.5	100.4%
25-Oct-11	W827319	11299NNN93	CCC	NITRATE_NITRITE	2	2.52	2.5	100.8%
25-Oct-11	W827319	11299NNN93	CCC	NITRATE_NITRITE	3	2.51	2.5	100.4%
25-Oct-11	W827319	11299NNN93	CCC	NITRATE_NITRITE	4	2.5	2.5	100.0%
25-Oct-11	W827319	11299NNN93	CCC	NITRATE_NITRITE	5	2.5	2.5	100.0%
25-Oct-11	W827320	11299NNN93	IPC	NITRATE_NITRITE	1	2.33	2.5	93.2%
25-Oct-11	**W827322**	**11299NNN93**	**LFB**	**NITRATE_NITRITE**	**1**	**1.64**	**1.6**	**102.5%**
1-Nov-11	W828983	11307NNN05	CCC	NITRATE_NITRITE	1	2.53	2.5	101.2%
1-Nov-11	W828983	11307NNN05	CCC	NITRATE_NITRITE	2	2.53	2.5	101.2%
1-Nov-11	W828983	11307NNN05	CCC	NITRATE_NITRITE	3	2.54	2.5	101.6%
1-Nov-11	W828983	11307NNN05	CCC	NITRATE_NITRITE	4	2.52	2.5	100.8%
1-Nov-11	W828984	11307NNN05	IPC	NITRATE_NITRITE	1	2.3	2.5	92.0%
1-Nov-11	**W828986**	**11307NNN05**	**LFB**	**NITRATE_NITRITE**	**1**	**1.63**	**1.6**	**101.9%**
9-Nov-11	W829895	11314NNN47	CCC	NITRATE_NITRITE	1	2.55	2.5	102.0%
9-Nov-11	W829895	11314NNN47	CCC	NITRATE_NITRITE	2	2.53	2.5	101.2%
9-Nov-11	W829895	11314NNN47	CCC	NITRATE_NITRITE	3	2.54	2.5	101.6%
9-Nov-11	W829896	11314NNN47	IPC	NITRATE_NITRITE	1	2.31	2.5	92.4%
9-Nov-11	**W829898**	**11314NNN47**	**LFB**	**NITRATE_NITRITE**	**1**	**1.67**	**1.6**	**104.4%**
15-Nov-11	W830641	11321NNN07	CCC	NITRATE_NITRITE	1	2.51	2.5	100.4%
15-Nov-11	W830641	11321NNN07	CCC	NITRATE_NITRITE	2	2.5	2.5	100.0%
15-Nov-11	W830641	11321NNN07	CCC	NITRATE_NITRITE	3	2.52	2.5	100.8%

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Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	True Value	Recovery
15-Nov-11	W830641	11321NNN07	CCC	NITRATE_NITRITE	4	2.5	2.5	100.0%
15-Nov-11	W830642	11321NNN07	IPC	NITRATE_NITRITE	1	2.23	2.5	89.2%
15-Nov-11	**W830644**	**11321NNN07**	**LFB**	**NITRATE_NITRITE**	**1**	**1.67**	**1.6**	**104.4%**
22-Nov-11	W831576	11326NNN32	CCC	NITRATE_NITRITE	1	2.6	2.5	104.0%
22-Nov-11	W831576	11326NNN32	CCC	NITRATE_NITRITE	2	2.49	2.5	99.6%
22-Nov-11	W831576	11326NNN32	CCC	NITRATE_NITRITE	3	2.55	2.5	102.0%
22-Nov-11	W831576	11326NNN32	CCC	NITRATE_NITRITE	4	2.57	2.5	102.8%
22-Nov-11	W831576	11326NNN32	CCC	NITRATE_NITRITE	5	2.54	2.5	101.6%
22-Nov-11	W831576	11326NNN32	CCC	NITRATE_NITRITE	6	2.54	2.5	101.6%
22-Nov-11	**W831579**	**11326NNN32**	**LFB**	**NITRATE_NITRITE**	**1**	**1.76**	**1.6**	**110.0%**
29-Nov-11	W832534	11335NNN40	CCC	NITRATE_NITRITE	1	2.51	2.5	100.4%
29-Nov-11	W832534	11335NNN40	CCC	NITRATE_NITRITE	2	2.52	2.5	100.8%
29-Nov-11	W832534	11335NNN40	CCC	NITRATE_NITRITE	3	2.54	2.5	101.6%
29-Nov-11	W832534	11335NNN40	CCC	NITRATE_NITRITE	4	2.54	2.5	101.6%
29-Nov-11	W832535	11335NNN40	IPC	NITRATE_NITRITE	1	2.04	2.5	81.6%
29-Nov-11	**W832537**	**11335NNN40**	**LFB**	**NITRATE_NITRITE**	**1**	**1.7**	**1.6**	**106.3%**
6-Dec-11	W834125	11342NNN53	CCC	NITRATE_NITRITE	1	2.59	2.5	103.6%
6-Dec-11	W834125	11342NNN53	CCC	NITRATE_NITRITE	2	2.57	2.5	102.8%
6-Dec-11	W834125	11342NNN53	CCC	NITRATE_NITRITE	3	2.58	2.5	103.2%
6-Dec-11	W834125	11342NNN53	CCC	NITRATE_NITRITE	4	2.58	2.5	103.2%
6-Dec-11	W834125	11342NNN53	CCC	NITRATE_NITRITE	5	2.58	2.5	103.2%
6-Dec-11	W834126	11342NNN53	IPC	NITRATE_NITRITE	1	2.44	2.5	97.6%
6-Dec-11	**W834128**	**11342NNN53**	**LFB**	**NITRATE_NITRITE**	**1**	**1.71**	**1.6**	**106.9%**
13-Dec-11	W834940	11348NNN16	CCC	NITRATE_NITRITE	1	2.52	2.5	100.8%
13-Dec-11	W834940	11348NNN16	CCC	NITRATE_NITRITE	2	2.51	2.5	100.4%
13-Dec-11	W834940	11348NNN16	CCC	NITRATE_NITRITE	3	2.5	2.5	100.0%
13-Dec-11	W834940	11348NNN16	CCC	NITRATE_NITRITE	4	2.53	2.5	101.2%
13-Dec-11	W834940	11348NNN16	CCC	NITRATE_NITRITE	5	2.54	2.5	101.6%
13-Dec-11	W834941	11348NNN16	IPC	NITRATE_NITRITE	1	2.25	2.5	90.0%
13-Dec-11	**W835041**	**11348NNN16**	**LFB**	**NITRATE_NITRITE**	**1**	**1.67**	**1.6**	**104.4%**
13-Dec-11	**W835041**	**11348NNN16**	**LFB**	**NITRATE_NITRITE**	**2**	**1.7**	**1.6**	**106.3%**
14-Dec-11	**W835198**	**11348NNN16**	**LFB**	**NITRATE_NITRITE**	**1**	**1.68**	**1.6**	**105.0%**
21-Dec-11	W836334	11355NNN55	CCC	NITRATE_NITRITE	1	2.53	2.5	101.2%
21-Dec-11	W836334	11355NNN55	CCC	NITRATE_NITRITE	2	2.53	2.5	101.2%
21-Dec-11	W836334	11355NNN55	CCC	NITRATE_NITRITE	3	2.53	2.5	101.2%

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Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	True Value	Recovery
21-Dec-11	W836334	11355NNN55	CCC	NITRATE_NITRITE	4	2.53	2.5	101.2%
21-Dec-11	W836334	11355NNN55	CCC	NITRATE_NITRITE	5	2.54	2.5	101.6%
21-Dec-11	W836334	11355NNN55	CCC	NITRATE_NITRITE	6	2.53	2.5	101.2%
21-Dec-11	W836334	11355NNN55	CCC	NITRATE_NITRITE	7	2.53	2.5	101.2%
21-Dec-11	W836335	11355NNN55	IPC	NITRATE_NITRITE	1	2.35	2.5	94.0%
21-Dec-11	**W836337**	**11355NNN55**	**LFB**	**NITRATE_NITRITE**	**1**	**1.68**	**1.6**	**105.0%**
27-Dec-11	W836664	11363NNN85	CCC	NITRATE_NITRITE	1	2.52	2.5	100.8%
27-Dec-11	W836664	11363NNN85	CCC	NITRATE_NITRITE	2	2.52	2.5	100.8%
27-Dec-11	W836664	11363NNN85	CCC	NITRATE_NITRITE	3	2.53	2.5	101.2%
27-Dec-11	W836665	11363NNN85	IPC	NITRATE_NITRITE	1	2.34	2.5	93.6%
27-Dec-11	**W836667**	**11363NNN85**	**LFB**	**NITRATE_NITRITE**	**1**	**1.64**	**1.6**	**102.5%**
4-Oct-11	W823917	11279NNN94	CCC	NITRITE	1	0.515	0.5	103.0%
4-Oct-11	W823917	11279NNN94	CCC	NITRITE	2	0.51	0.5	102.0%
4-Oct-11	W823917	11279NNN94	CCC	NITRITE	3	0.512	0.5	102.4%
4-Oct-11	W823917	11279NNN94	CCC	NITRITE	4	0.513	0.5	102.6%
4-Oct-11	W823917	11279NNN94	CCC	NITRITE	5	0.511	0.5	102.2%
4-Oct-11	**W823920**	**11279NNN94**	**LFB**	**NITRITE**	**1**	**0.402**	**0.4**	**100.5%**
7-Oct-11	W824773	11280NNN75	CCC	NITRITE	1	0.507	0.5	101.4%
7-Oct-11	W824773	11280NNN75	CCC	NITRITE	2	0.513	0.5	102.6%
7-Oct-11	**W824776**	**11280NNN75**	**LFB**	**NITRITE**	**1**	**0.396**	**0.4**	**99.0%**
11-Oct-11	W825095	11286NNN41	CCC	NITRITE	1	0.499	0.5	99.8%
11-Oct-11	W825095	11286NNN41	CCC	NITRITE	2	0.501	0.5	100.2%
11-Oct-11	W825095	11286NNN41	CCC	NITRITE	3	0.506	0.5	101.2%
11-Oct-11	W825095	11286NNN41	CCC	NITRITE	4	0.502	0.5	100.4%
11-Oct-11	W825095	11286NNN41	CCC	NITRITE	5	0.505	0.5	101.0%
11-Oct-11	**W825098**	**11286NNN41**	**LFB**	**NITRITE**	**1**	**0.392**	**0.4**	**98.0%**
19-Oct-11	W826372	11292NNN33	CCC	NITRITE	1	0.506	0.5	101.2%
19-Oct-11	W826372	11292NNN33	CCC	NITRITE	2	0.513	0.5	102.6%
19-Oct-11	W826372	11292NNN33	CCC	NITRITE	3	0.509	0.5	101.8%
19-Oct-11	W826372	11292NNN33	CCC	NITRITE	4	0.507	0.5	101.4%
19-Oct-11	W826372	11292NNN33	CCC	NITRITE	5	0.509	0.5	101.8%
19-Oct-11	W826372	11292NNN33	CCC	NITRITE	6	0.505	0.5	101.0%
19-Oct-11	**W826375**	**11292NNN33**	**LFB**	**NITRITE**	**1**	**0.406**	**0.4**	**101.5%**
25-Oct-11	W827319	11298NNN76	CCC	NITRITE	1	0.507	0.5	101.4%
25-Oct-11	W827319	11298NNN76	CCC	NITRITE	2	0.508	0.5	101.6%

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Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	True Value	Recovery
25-Oct-11	W827319	11298NNN76	CCC	NITRITE	3	0.509	0.5	101.8%
25-Oct-11	W827319	11298NNN76	CCC	NITRITE	4	0.505	0.5	101.0%
25-Oct-11	W827319	11298NNN76	CCC	NITRITE	5	0.5	0.5	100.0%
25-Oct-11	**W827322**	**11298NNN76**	**LFB**	**NITRITE**	**1**	**0.399**	**0.4**	**99.8%**
25-Oct-11	W827319	11299NNN93	CCC	NITRITE	1	0.503	0.5	100.6%
25-Oct-11	W827319	11299NNN93	CCC	NITRITE	2	0.499	0.5	99.8%
25-Oct-11	W827319	11299NNN93	CCC	NITRITE	3	0.503	0.5	100.6%
25-Oct-11	W827319	11299NNN93	CCC	NITRITE	4	0.5	0.5	100.0%
25-Oct-11	W827319	11299NNN93	CCC	NITRITE	5	0.5	0.5	100.0%
25-Oct-11	**W827322**	**11299NNN93**	**LFB**	**NITRITE**	**1**	**0.394**	**0.4**	**98.5%**
1-Nov-11	W828983	11307NNN05	CCC	NITRITE	1	0.515	0.5	103.0%
1-Nov-11	W828983	11307NNN05	CCC	NITRITE	2	0.511	0.5	102.2%
1-Nov-11	W828983	11307NNN05	CCC	NITRITE	3	0.511	0.5	102.2%
1-Nov-11	W828983	11307NNN05	CCC	NITRITE	4	0.508	0.5	101.6%
1-Nov-11	**W828986**	**11307NNN05**	**LFB**	**NITRITE**	**1**	**0.399**	**0.4**	**99.8%**
9-Nov-11	W829895	11314NNN47	CCC	NITRITE	1	0.501	0.5	100.2%
9-Nov-11	W829895	11314NNN47	CCC	NITRITE	2	0.505	0.5	101.0%
9-Nov-11	W829895	11314NNN47	CCC	NITRITE	3	0.504	0.5	100.8%
9-Nov-11	**W829898**	**11314NNN47**	**LFB**	**NITRITE**	**1**	**0.399**	**0.4**	**99.8%**
15-Nov-11	W830641	11321NNN07	CCC	NITRITE	1	0.509	0.5	101.8%
15-Nov-11	W830641	11321NNN07	CCC	NITRITE	2	0.508	0.5	101.6%
15-Nov-11	W830641	11321NNN07	CCC	NITRITE	3	0.511	0.5	102.2%
15-Nov-11	W830641	11321NNN07	CCC	NITRITE	4	0.509	0.5	101.8%
15-Nov-11	**W830644**	**11321NNN07**	**LFB**	**NITRITE**	**1**	**0.402**	**0.4**	**100.5%**
22-Nov-11	W831576	11326NNN32	CCC	NITRITE	1	0.508	0.5	101.6%
22-Nov-11	W831576	11326NNN32	CCC	NITRITE	2	0.511	0.5	102.2%
22-Nov-11	W831576	11326NNN32	CCC	NITRITE	3	0.51	0.5	102.0%
22-Nov-11	W831576	11326NNN32	CCC	NITRITE	4	0.51	0.5	102.0%
22-Nov-11	W831576	11326NNN32	CCC	NITRITE	5	0.505	0.5	101.0%
22-Nov-11	W831576	11326NNN32	CCC	NITRITE	6	0.509	0.5	101.8%
22-Nov-11	**W831579**	**11326NNN32**	**LFB**	**NITRITE**	**1**	**0.405**	**0.4**	**101.3%**
29-Nov-11	W832534	11335NNN40	CCC	NITRITE	1	0.507	0.5	101.4%
29-Nov-11	W832534	11335NNN40	CCC	NITRITE	2	0.507	0.5	101.4%
29-Nov-11	W832534	11335NNN40	CCC	NITRITE	3	0.509	0.5	101.8%
29-Nov-11	W832534	11335NNN40	CCC	NITRITE	4	0.509	0.5	101.8%

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Appendix C13.A15 *continued*

Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	True Value	Recovery
29-Nov-11	**W832537**	**11335NNN40**	**LFB**	**NITRITE**	**1**	**0.404**	**0.4**	**101.0%**
6-Dec-11	W834125	11342NNN53	CCC	NITRITE	1	0.503	0.5	100.6%
6-Dec-11	W834125	11342NNN53	CCC	NITRITE	2	0.503	0.5	100.6%
6-Dec-11	W834125	11342NNN53	CCC	NITRITE	3	0.505	0.5	101.0%
6-Dec-11	W834125	11342NNN53	CCC	NITRITE	4	0.494	0.5	98.8%
6-Dec-11	W834125	11342NNN53	CCC	NITRITE	5	0.505	0.5	101.0%
6-Dec-11	**W834128**	**11342NNN53**	**LFB**	**NITRITE**	**1**	**0.392**	**0.4**	**98.0%**
13-Dec-11	W834940	11348NNN16	CCC	NITRITE	1	0.516	0.5	103.2%
13-Dec-11	W834940	11348NNN16	CCC	NITRITE	2	0.512	0.5	102.4%
13-Dec-11	W834940	11348NNN16	CCC	NITRITE	3	0.512	0.5	102.4%
13-Dec-11	W834940	11348NNN16	CCC	NITRITE	4	0.512	0.5	102.4%
13-Dec-11	W834940	11348NNN16	CCC	NITRITE	5	0.516	0.5	103.2%
13-Dec-11	**W835041**	**11348NNN16**	**LFB**	**NITRITE**	**1**	**0.409**	**0.4**	**102.3%**
13-Dec-11	**W835041**	**11348NNN16**	**LFB**	**NITRITE**	**2**	**0.416**	**0.4**	**104.0%**
14-Dec-11	**W835198**	**11348NNN16**	**LFB**	**NITRITE**	**1**	**0.401**	**0.4**	**100.3%**
21-Dec-11	W836334	11355NNN55	CCC	NITRITE	1	0.506	0.5	101.2%
21-Dec-11	W836334	11355NNN55	CCC	NITRITE	2	0.502	0.5	100.4%
21-Dec-11	W836334	11355NNN55	CCC	NITRITE	3	0.514	0.5	102.8%
21-Dec-11	W836334	11355NNN55	CCC	NITRITE	4	0.503	0.5	100.6%
21-Dec-11	W836334	11355NNN55	CCC	NITRITE	5	0.51	0.5	102.0%
21-Dec-11	W836334	11355NNN55	CCC	NITRITE	6	0.508	0.5	101.6%
21-Dec-11	W836334	11355NNN55	CCC	NITRITE	7	0.513	0.5	102.6%
21-Dec-11	**W836337**	**11355NNN55**	**LFB**	**NITRITE**	**1**	**0.396**	**0.4**	**99.0%**
27-Dec-11	W836664	11363NNN85	CCC	NITRITE	1	0.503	0.5	100.6%
27-Dec-11	W836664	11363NNN85	CCC	NITRITE	2	0.505	0.5	101.0%
27-Dec-11	W836664	11363NNN85	CCC	NITRITE	3	0.507	0.5	101.4%
27-Dec-11	**W836667**	**11363NNN85**	**LFB**	**NITRITE**	**1**	**0.397**	**0.4**	**99.3%**
26-Aug-11	W817940	11285TSS16	External Check	TSS	1	76	77.5	98.1%
26-Aug-11	W817942	11285TSS16	External Check	TSS	1	75	77.5	96.8%
26-Aug-11	W817942	11286TSS48	External Check	TSS	1	76	77.5	98.1%
26-Aug-11	W817942	11297TSS59	External Check	TSS	1	75	77.5	96.8%
26-Aug-11	W817942	11300TSS37	External Check	TSS	1	75	77.5	96.8%
26-Aug-11	W817942	11311TSS95	External Check	TSS	1	75	77.5	96.8%
26-Aug-11	W817945	11318TSS89	External Check	TSS	1	74	77.5	95.5%
26-Aug-11	W817945	11321TSS92	External Check	TSS	1	72	77.5	92.9%

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Date	ID #	Batch #	Sample Type	Analyte	Test #	Value	True Value	Recovery
26-Aug-11	W817945	11326TSS75	External Check	TSS	1	77	77.5	99.4%
26-Aug-11	W817942	11336TSS21	External Check	TSS	1	78	77.5	100.6%
26-Aug-11	W817946	11342TSS16	External Check	TSS	1	74	77.5	95.5%
26-Aug-11	W817946	11353TSS08	External Check	TSS	1	75	77.5	96.8%
26-Aug-11	W817949	11356TSS02	External Check	TSS	1	73	77.5	94.2%

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Laboratory Duplicate results for analyses of Total Phosphorus, Total Nitrogen, Ammonia-N, Nitrate_Nitrite, Nitrite, and Total Suspended Solids (TSS) as performed by the City of San Diego Water Quality Laboratory. All values are in mg/L. RPD = Relative Percent Difference.

Date	ID #	Batch #	Source	Analyte	Test #	Value	Dup. RPD
6-Oct-11	W824130	11286NP91	BAA-0	PHOSPHORUS	1	ND	n/a
6-Oct-11	W824130	11286NP91	BAA-0	PHOSPHORUS	2	ND	
14-Nov-11	W825851	11322NP53	MAR_MIC_PRP_MQ1	PHOSPHORUS	1	ND	n/a
14-Nov-11	W825851	11322NP53	MAR_MIC_PRP_MQ1	PHOSPHORUS	2	ND	
7-Nov-11	W829181	11339NP19	HGB-0	PHOSPHORUS	1	0.214	2.84%
7-Nov-11	W829181	11339NP19	HGB-0	PHOSPHORUS	2	0.208	
14-Nov-11	W829226	11340NP54	SVA-0	PHOSPHORUS	1	ND	n/a
14-Nov-11	W829226	11340NP54	SVA-0	PHOSPHORUS	2	ND	
5-Dec-11	W832603	11363NP93	87 SYS	PHOSPHORUS	1	ND	n/a
5-Dec-11	W832603	11363NP93	87 SYS	PHOSPHORUS	2	ND	
6-Oct-11	W824130	11286NP91	BAA-0	NITROGEN_TOTAL	1	ND	n/a
6-Oct-11	W824130	11286NP91	BAA-0	NITROGEN_TOTAL	2	ND	
14-Nov-11	W825851	11322NP53	MAR_MIC_PRP_MQ1	NITROGEN_TOTAL	1	ND	n/a
14-Nov-11	W825851	11322NP53	MAR_MIC_PRP_MQ1	NITROGEN_TOTAL	2	ND	
7-Nov-11	W829181	11339NP19	HGB-0	NITROGEN_TOTAL	1	0.641	1.73%
7-Nov-11	W829181	11339NP19	HGB-0	NITROGEN_TOTAL	2	0.63	
14-Nov-11	W829226	11340NP54	SVA-0	NITROGEN_TOTAL	1	ND	n/a
14-Nov-11	W829226	11340NP54	SVA-0	NITROGEN_TOTAL	2	ND	
5-Dec-11	W832603	11363NP93	87 SYS	NITROGEN_TOTAL	1	0.814	0.74%
5-Dec-11	W832603	11363NP93	87 SYS	NITROGEN_TOTAL	2	0.808	
4-Oct-11	W822973	11279NNN94	112 SYS	AMMONIA_N	1	0.043	14.00%
4-Oct-11	W822973	11279NNN94	112 SYS	AMMONIA_N	2	0.037	
6-Oct-11	W824173	11280NNN75	OTA-0	AMMONIA_N	1	ND	n/a
6-Oct-11	W824173	11280NNN75	OTA-0	AMMONIA_N	2	ND	
11-Oct-11	W824356	11286NNN41	112 SYS	AMMONIA_N	1	0.05	6.88%
11-Oct-11	W824356	11286NNN41	112 SYS	AMMONIA_N	2	0.046	
17-Oct-11	W825365	11292NNN33	110 SYS	AMMONIA_N	1	0.343	0.00%
17-Oct-11	W825365	11292NNN33	110 SYS	AMMONIA_N	2	0.343	
24-Oct-11	W826548	11298NNN76	110 SYS	AMMONIA_N	1	0.282	0.71%
24-Oct-11	W826548	11298NNN76	110 SYS	AMMONIA_N	2	0.28	
25-Oct-11	W826595	11299NNN93	112 SYS	AMMONIA_N	1	0.081	1.12%
25-Oct-11	W826595	11299NNN93	112 SYS	AMMONIA_N	2	0.08	
1-Nov-11	W827593	11307NNN05	128 SYS	AMMONIA_N	1	0.657	0.00%
1-Nov-11	W827593	11307NNN05	128 SYS	AMMONIA_N	2	0.657	
9-Nov-11	W828776	11314NNN47	12N SYS_MID	AMMONIA_N	1	0.385	0.26%
9-Nov-11	W828776	11314NNN47	12N SYS_MID	AMMONIA_N	2	0.386	
15-Nov-11	W830199	11321NNN07	128 SYS	AMMONIA_N	1	0.73	0.27%
15-Nov-11	W830199	11321NNN07	128 SYS	AMMONIA_N	2	0.728	
21-Nov-11	W830845	11326NNN32	110 SYS	AMMONIA_N	1	ND	n/a
21-Nov-11	W830845	11326NNN32	110 SYS	AMMONIA_N	2	ND	
29-Nov-11	W831795	11335NNN40	1 SYS	AMMONIA_N	1	ND	n/a
29-Nov-11	W831795	11335NNN40	1 SYS	AMMONIA_N	2	ND	

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Date	ID #	Batch #	Source	Analyte	Test #	Value	Dup. RPD
6-Dec-11	W832873	11342NNN53	128 SYS	AMMONIA_N	1	0.82	1.72%
6-Dec-11	W832873	11342NNN53	128 SYS	AMMONIA_N	2	0.806	
13-Dec-11	W834041	11348NNN16	128 SYS	AMMONIA_N	1	0.595	1.01%
13-Dec-11	W834041	11348NNN16	128 SYS	AMMONIA_N	2	0.589	
19-Dec-11	W835274	11355NNN55	110 SYS	AMMONIA_N	1	0.605	1.64%
19-Dec-11	W835274	11355NNN55	110 SYS	AMMONIA_N	2	0.615	
28-Dec-11	W836040	11363NNN85	11 SYS	AMMONIA_N	1	0.635	0.78%
28-Dec-11	W836040	11363NNN85	11 SYS	AMMONIA_N	2	0.64	
4-Oct-11	W822973	11279NNN94	112 SYS	NITRATE_NITRITE	1	3.31	0.30%
4-Oct-11	W822973	11279NNN94	112 SYS	NITRATE_NITRITE	2	3.32	
6-Oct-11	W824173	11280NNN75	OTA-0	NITRATE_NITRITE	1	ND	n/a
6-Oct-11	W824173	11280NNN75	OTA-0	NITRATE_NITRITE	2	ND	
11-Oct-11	W824356	11286NNN41	112 SYS	NITRATE_NITRITE	1	3.15	0.32%
11-Oct-11	W824356	11286NNN41	112 SYS	NITRATE_NITRITE	2	3.16	
17-Oct-11	W825365	11292NNN33	110 SYS	NITRATE_NITRITE	1	1.95	0.51%
17-Oct-11	W825365	11292NNN33	110 SYS	NITRATE_NITRITE	2	1.96	
24-Oct-11	W826548	11298NNN76	110 SYS	NITRATE_NITRITE	1	2.08	0.48%
24-Oct-11	W826548	11298NNN76	110 SYS	NITRATE_NITRITE	2	2.09	
25-Oct-11	W826595	11299NNN93	112 SYS	NITRATE_NITRITE	1	3.03	0.00%
25-Oct-11	W826595	11299NNN93	112 SYS	NITRATE_NITRITE	2	3.03	
1-Nov-11	W827593	11307NNN05	128 SYS	NITRATE_NITRITE	1	0.756	0.40%
1-Nov-11	W827593	11307NNN05	128 SYS	NITRATE_NITRITE	2	0.753	
9-Nov-11	W828776	11314NNN47	12N SYS_MID	NITRATE_NITRITE	1	1.91	0.52%
9-Nov-11	W828776	11314NNN47	12N SYS_MID	NITRATE_NITRITE	2	1.92	
15-Nov-11	W830199	11321NNN07	128 SYS	NITRATE_NITRITE	1	0.781	0.51%
15-Nov-11	W830199	11321NNN07	128 SYS	NITRATE_NITRITE	2	0.785	
21-Nov-11	W830845	11326NNN32	110 SYS	NITRATE_NITRITE	1	3.73	1.86%
21-Nov-11	W830845	11326NNN32	110 SYS	NITRATE_NITRITE	2	3.8	
29-Nov-11	W831795	11335NNN40	1 SYS	NITRATE_NITRITE	1	0.867	0.92%
29-Nov-11	W831795	11335NNN40	1 SYS	NITRATE_NITRITE	2	0.875	
6-Dec-11	W832873	11342NNN53	128 SYS	NITRATE_NITRITE	1	0.589	0.34%
6-Dec-11	W832873	11342NNN53	128 SYS	NITRATE_NITRITE	2	0.591	
13-Dec-11	W834041	11348NNN16	128 SYS	NITRATE_NITRITE	1	0.428	2.13%
13-Dec-11	W834041	11348NNN16	128 SYS	NITRATE_NITRITE	2	0.419	
19-Dec-11	W835274	11355NNN55	110 SYS	NITRATE_NITRITE	1	1.36	0.74%
19-Dec-11	W835274	11355NNN55	110 SYS	NITRATE_NITRITE	2	1.35	
28-Dec-11	W836040	11363NNN85	11 SYS	NITRATE_NITRITE	1	1.22	0.00%
28-Dec-11	W836040	11363NNN85	11 SYS	NITRATE_NITRITE	2	1.22	
4-Oct-11	W822973	11279NNN94	112 SYS	NITRITE	1	0.723	0.14%
4-Oct-11	W822973	11279NNN94	112 SYS	NITRITE	2	0.722	
6-Oct-11	W824173	11280NNN75	OTA-0	NITRITE	1	ND	n/a
6-Oct-11	W824173	11280NNN75	OTA-0	NITRITE	2	ND	
11-Oct-11	W824356	11286NNN41	112 SYS	NITRITE	1	0.639	0.47%
11-Oct-11	W824356	11286NNN41	112 SYS	NITRITE	2	0.642	
17-Oct-11	W825365	11292NNN33	110 SYS	NITRITE	1	0.033	0.00%

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Date	ID #	Batch #	Source	Analyte	Test #	Value	Dup. RPD
17-Oct-11	W825365	11292NNN33	110 SYS	NITRITE	2	0.033	
24-Oct-11	W826548	11298NNN76	110 SYS	NITRITE	1	0.279	0.00%
24-Oct-11	W826548	11298NNN76	110 SYS	NITRITE	2	0.279	
25-Oct-11	W826595	11299NNN93	112 SYS	NITRITE	1	0.624	0.32%
25-Oct-11	W826595	11299NNN93	112 SYS	NITRITE	2	0.622	
1-Nov-11	W827593	11307NNN05	128 SYS	NITRITE	1	0.03	1.37%
1-Nov-11	W827593	11307NNN05	128 SYS	NITRITE	2	0.029	
9-Nov-11	W828776	11314NNN47	12N SYS_MID	NITRITE	1	0.231	0.87%
9-Nov-11	W828776	11314NNN47	12N SYS_MID	NITRITE	2	0.229	
15-Nov-11	W830199	11321NNN07	128 SYS	NITRITE	1	0.018	3.37%
15-Nov-11	W830199	11321NNN07	128 SYS	NITRITE	2	0.018	
21-Nov-11	W830845	11326NNN32	110 SYS	NITRITE	1	0.925	0.22%
21-Nov-11	W830845	11326NNN32	110 SYS	NITRITE	2	0.923	
29-Nov-11	W831795	11335NNN40	1 SYS	NITRITE	1	ND	n/a
29-Nov-11	W831795	11335NNN40	1 SYS	NITRITE	2	ND	
6-Dec-11	W832873	11342NNN53	128 SYS	NITRITE	1	0.027	2.61%
6-Dec-11	W832873	11342NNN53	128 SYS	NITRITE	2	0.027	
13-Dec-11	W834041	11348NNN16	128 SYS	NITRITE	1	0.031	9.56%
13-Dec-11	W834041	11348NNN16	128 SYS	NITRITE	2	0.028	
19-Dec-11	W835274	11355NNN55	110 SYS	NITRITE	1	0.114	2.67%
19-Dec-11	W835274	11355NNN55	110 SYS	NITRITE	2	0.111	
28-Dec-11	W836040	11363NNN85	11 SYS	NITRITE	1	0.026	10.61%
28-Dec-11	W836040	11363NNN85	11 SYS	NITRITE	2	0.023	
12-Oct-11	W825167	11285TSS16	LAGOON BIOASSES	TSS	1	4.4	4.44%
12-Oct-11	W825167	11285TSS16	LAGOON BIOASSES	TSS	2	4.6	
6-Oct-11	W824182	11286TSS48	BIOASSESS A	TSS	1	18	5.41%
6-Oct-11	W824182	11286TSS48	BIOASSESS A	TSS	2	19	
19-Oct-11	W826362	11297TSS59	BIOASSESS C	TSS	1	< 2	n/a
19-Oct-11	W826362	11297TSS59	BIOASSESS C	TSS	2	< 2	
24-Oct-11	W827147	11297TSS59	SVW_SPC3	TSS	1	2.4	8.70%
24-Oct-11	W827147	11297TSS59	SVW_SPC3	TSS	2	2.2	
25-Oct-11	W827248	11300TSS37	HGW_FEL2	TSS	1	12.1	2.45%
25-Oct-11	W827248	11300TSS37	HGW_FEL2	TSS	2	12.4	
26-Oct-11	W827340	11300TSS37	BIOASSESS D1	TSS	1	2	0.00%
26-Oct-11	W827340	11300TSS37	BIOASSESS D1	TSS	2	2	
2-Nov-11	W829004	11311TSS95	BIOASSESS A	TSS	1	< 2	n/a
2-Nov-11	W829004	11311TSS95	BIOASSESS A	TSS	2	< 2	
8-Nov-11	W828272	11318TSS89	ELC_PRDW4_WH	TSS	1	< 2	n/a
8-Nov-11	W828272	11318TSS89	ELC_PRDW4_WH	TSS	2	< 2	
10-Nov-11	W829921	11318TSS89	LGN BIOASSESS1	TSS	1	4.4	4.65%
10-Nov-11	W829921	11318TSS89	LGN BIOASSESS1	TSS	2	4.2	
16-Nov-11	W830692	11321TSS92	LGN BIOASSESS1	TSS	1	13.2	8.70%
16-Nov-11	W830692	11321TSS92	LGN BIOASSESS1	TSS	2	14.4	
22-Nov-11	W831406	11326TSS75	LGN BIOASSESS1	TSS	1	16	7.79%
22-Nov-11	W831406	11326TSS75	LGN BIOASSESS1	TSS	2	14.8	

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Date	ID #	Batch #	Source	Analyte	Test #	Value	Dup. RPD
30-Nov-11	W831886	11336TSS21	1006 RWSYS	TSS	1	< 2	n/a
30-Nov-11	W831886	11336TSS21	1006 RWSYS	TSS	2	< 2	
6-Dec-11	W833686	11342TSS16	SVW_SNC5	TSS	1	< 2	n/a
6-Dec-11	W833686	11342TSS16	SVW_SNC5	TSS	2	< 2	
7-Dec-11	W834272	11342TSS16	BIOASSESS E	TSS	1	< 2	n/a
7-Dec-11	W834272	11342TSS16	BIOASSESS E	TSS	2	< 2	
14-Dec-11	W835115	11353TSS08	BIOASSESS D1	TSS	1	12.4	4.72%
14-Dec-11	W835115	11353TSS08	BIOASSESS D1	TSS	2	13	
21-Dec-11	W836264	11356TSS02	LGN BIOASSESS1	TSS	1	27.2	4.51%
21-Dec-11	W836264	11356TSS02	LGN BIOASSESS1	TSS	2	26	
28-Dec-11	W836900	12004TSS63	BIOASSESS A	TSS	1	2.2	0.00%
28-Dec-11	W836900	12004TSS63	BIOASSESS A	TSS	2	2.2	
3-Jan-12	W837374	12004TSS63	95 SYS	TSS	1	< 1	n/a
3-Jan-12	W837374	12004TSS63	95 SYS	TSS	2	< 1	

ND = not detected

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Field Duplicate results for analyses of Total Phosphorus, Total Nitrogen, Ammonia-N, Nitrate_Nitrite, Nitrite, and Total Suspended Solids (TSS) as performed by the City of San Diego Water Quality Laboratory. Eleven sets of field duplicates were collected over the course of the three-month monitoring period. All values are in mg/L. RPD = Relative Percent Difference.

Date	ID #	Batch #	Source	Analyte	Value	RPD
19-Oct-11	W826367	11286NP91	BIOASSESS E	PHOSPHORUS	0.132	0.00%
19-Oct-11	W827060	11286NP91	BIOASSESS E	PHOSPHORUS	0.132	
26-Oct-11	W827344	11322NP53	LAGOON BIOASSES	PHOSPHORUS	0.462	85.63%
26-Oct-11	W827345	11322NP53	LAGOON BIOASSES	PHOSPHORUS	0.185	
2-Nov-11	W829004	11322NP53	BIOASSESS A	PHOSPHORUS	0.111	15.77%
2-Nov-11	W829005	11322NP53	BIOASSESS A	PHOSPHORUS	0.13	
10-Nov-11	W829912	11339NP19	BIOASSESS C	PHOSPHORUS	ND	n/a
10-Nov-11	W829915	11339NP19	BIOASSESS C	PHOSPHORUS	ND	
16-Nov-11	W830692	11340NP54	LGN BIOASSESS1	PHOSPHORUS	0.124	6.67%
16-Nov-11	W830701	11340NP54	LGN BIOASSESS1	PHOSPHORUS	0.116	
22-Nov-11	W831398	11340NP54	BIOASSESS C	PHOSPHORUS	ND	n/a
22-Nov-11	W831399	11340NP54	BIOASSESS C	PHOSPHORUS	ND	
30-Nov-11	W832558	11340NP54	BIOASSESS C	PHOSPHORUS	ND	n/a
30-Nov-11	W832559	11340NP54	BIOASSESS C	PHOSPHORUS	ND	
7-Dec-11	W834267	11363NP93	BIOASSESS D1	PHOSPHORUS	ND	n/a
7-Dec-11	W834268	11363NP93	BIOASSESS D1	PHOSPHORUS	ND	
14-Dec-11	W835119	11363NP93	BIOASSESS E	PHOSPHORUS	0.106	0.94%
14-Dec-11	W835120	11363NP93	BIOASSESS E	PHOSPHORUS	0.107	
21-Dec-11	W836263	11363NP93	LGN BIOASSESS1	PHOSPHORUS	ND	n/a
21-Dec-11	W836264	11363NP93	LGN BIOASSESS1	PHOSPHORUS	ND	
28-Dec-11	W836899	11363NP93	BIOASSESS A	PHOSPHORUS	0.09	8.09%
28-Dec-11	W836900	11363NP93	BIOASSESS A	PHOSPHORUS	0.083	
19-Oct-11	W826367	11286NP91	BIOASSESS E	NITROGEN_TOTAL	ND	n/a
19-Oct-11	W827060	11286NP91	BIOASSESS E	NITROGEN_TOTAL	ND	
26-Oct-11	W827344	11322NP53	LAGOON BIOASSES	NITROGEN_TOTAL	0.178	n/a
26-Oct-11	W827345	11322NP53	LAGOON BIOASSES	NITROGEN_TOTAL	ND	
2-Nov-11	W829004	11322NP53	BIOASSESS A	NITROGEN_TOTAL	ND	n/a
2-Nov-11	W829005	11322NP53	BIOASSESS A	NITROGEN_TOTAL	0.161	

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Date	ID #	Batch #	Source	Analyte	Value	RPD
10-Nov-11	W829912	11339NP19	BIOASSESS C	NITROGEN_TOTAL	0.177	5.81%
10-Nov-11	W829915	11339NP19	BIOASSESS C	NITROGEN_TOTAL	0.167	
16-Nov-11	W830692	11340NP54	LGN BIOASSESS1	NITROGEN_TOTAL	0.222	5.26%
16-Nov-11	W830701	11340NP54	LGN BIOASSESS1	NITROGEN_TOTAL	0.234	
22-Nov-11	W831398	11340NP54	BIOASSESS C	NITROGEN_TOTAL	0.314	9.12%
22-Nov-11	W831399	11340NP54	BIOASSESS C	NITROGEN_TOTAL	0.344	
30-Nov-11	W832558	11340NP54	BIOASSESS C	NITROGEN_TOTAL	ND	n/a
30-Nov-11	W832559	11340NP54	BIOASSESS C	NITROGEN_TOTAL	ND	
7-Dec-11	W834267	11363NP93	BIOASSESS D1	NITROGEN_TOTAL	ND	n/a
7-Dec-11	W834268	11363NP93	BIOASSESS D1	NITROGEN_TOTAL	ND	
14-Dec-11	W835119	11363NP93	BIOASSESS E	NITROGEN_TOTAL	0.355	8.88%
14-Dec-11	W835120	11363NP93	BIOASSESS E	NITROGEN_TOTAL	0.388	
21-Dec-11	W836263	11363NP93	LGN BIOASSESS1	NITROGEN_TOTAL	ND	n/a
21-Dec-11	W836264	11363NP93	LGN BIOASSESS1	NITROGEN_TOTAL	ND	
28-Dec-11	W836899	11363NP93	BIOASSESS A	NITROGEN_TOTAL	ND	n/a
28-Dec-11	W836900	11363NP93	BIOASSESS A	NITROGEN_TOTAL	ND	
19-Oct-11	W826367	11292NNN33	BIOASSESS E	AMMONIA_N	ND	n/a
19-Oct-11	W827060	11298NNN76	BIOASSESS E	AMMONIA_N	ND	
26-Oct-11	W827344	11299NNN93	LAGOON BIOASSES	AMMONIA_N	ND	n/a
26-Oct-11	W827345	11299NNN93	LAGOON BIOASSES	AMMONIA_N	ND	
2-Nov-11	W829004	11307NNN05	BIOASSESS A	AMMONIA_N	0.0393	8.21%
2-Nov-11	W829005	11307NNN05	BIOASSESS A	AMMONIA_N	0.0362	
10-Nov-11	W829912	11314NNN47	BIOASSESS C	AMMONIA_N	ND	n/a
10-Nov-11	W829915	11314NNN47	BIOASSESS C	AMMONIA_N	ND	
16-Nov-11	W830692	11321NNN07	LGN BIOASSESS1	AMMONIA_N	0.0949	4.75%
16-Nov-11	W830701	11321NNN07	LGN BIOASSESS1	AMMONIA_N	0.0905	
22-Nov-11	W831398	11326NNN32	BIOASSESS C	AMMONIA_N	ND	n/a
22-Nov-11	W831399	11326NNN32	BIOASSESS C	AMMONIA_N	ND	
30-Nov-11	W832558	11335NNN40	BIOASSESS C	AMMONIA_N	ND	n/a
30-Nov-11	W832559	11335NNN40	BIOASSESS C	AMMONIA_N	ND	
7-Dec-11	W834267	11342NNN53	BIOASSESS D1	AMMONIA_N	ND	n/a
7-Dec-11	W834268	11342NNN53	BIOASSESS D1	AMMONIA_N	ND	
14-Dec-11	W835119	11348NNN16	BIOASSESS E	AMMONIA_N	ND	n/a

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Date	ID #	Batch #	Source	Analyte	Value	RPD
14-Dec-11	W835120	11348NNN16	BIOASSESS E	AMMONIA_N	ND	
21-Dec-11	W836263	11355NNN55	LGN BIOASSESS1	AMMONIA_N	0.157	0.64%
21-Dec-11	W836264	11355NNN55	LGN BIOASSESS1	AMMONIA_N	0.156	
28-Dec-11	W836899	11363NNN85	BIOASSESS A	AMMONIA_N	ND	n/a
28-Dec-11	W836900	11363NNN85	BIOASSESS A	AMMONIA_N	ND	
19-Oct-11	W826367	11292NNN33	BIOASSESS E	NITRATE_NITRITE	0.163	3.61%
19-Oct-11	W827060	11298NNN76	BIOASSESS E	NITRATE_NITRITE	0.169	
26-Oct-11	W827344	11299NNN93	LAGOON BIOASSES	NITRATE_NITRITE	0.233	3.05%
26-Oct-11	W827345	11299NNN93	LAGOON BIOASSES	NITRATE_NITRITE	0.226	
2-Nov-11	W829004	11307NNN05	BIOASSESS A	NITRATE_NITRITE	0.0915	0.77%
2-Nov-11	W829005	11307NNN05	BIOASSESS A	NITRATE_NITRITE	0.0908	
10-Nov-11	W829912	11314NNN47	BIOASSESS C	NITRATE_NITRITE	0.269	2.26%
10-Nov-11	W829915	11314NNN47	BIOASSESS C	NITRATE_NITRITE	0.263	
16-Nov-11	W830692	11321NNN07	LGN BIOASSESS1	NITRATE_NITRITE	0.603	3.03%
16-Nov-11	W830701	11321NNN07	LGN BIOASSESS1	NITRATE_NITRITE	0.585	
22-Nov-11	W831398	11326NNN32	BIOASSESS C	NITRATE_NITRITE	1.17	11.29%
22-Nov-11	W831399	11326NNN32	BIOASSESS C	NITRATE_NITRITE	1.31	
30-Nov-11	W832558	11335NNN40	BIOASSESS C	NITRATE_NITRITE	0.495	1.80%
30-Nov-11	W832559	11335NNN40	BIOASSESS C	NITRATE_NITRITE	0.504	
7-Dec-11	W834267	11342NNN53	BIOASSESS D1	NITRATE_NITRITE	0.106	0.95%
7-Dec-11	W834268	11342NNN53	BIOASSESS D1	NITRATE_NITRITE	0.105	
14-Dec-11	W835119	11348NNN16	BIOASSESS E	NITRATE_NITRITE	1.19	0.84%
14-Dec-11	W835120	11348NNN16	BIOASSESS E	NITRATE_NITRITE	1.18	
21-Dec-11	W836263	11355NNN55	LGN BIOASSESS1	NITRATE_NITRITE	ND	n/a
21-Dec-11	W836264	11355NNN55	LGN BIOASSESS1	NITRATE_NITRITE	ND	
28-Dec-11	W836899	11363NNN85	BIOASSESS A	NITRATE_NITRITE	ND	n/a
28-Dec-11	W836900	11363NNN85	BIOASSESS A	NITRATE_NITRITE	ND	
19-Oct-11	W826367	11292NNN33	BIOASSESS E	NITRITE	ND	n/a
19-Oct-11	W827060	11298NNN76	BIOASSESS E	NITRITE	ND	
26-Oct-11	W827344	11299NNN93	LAGOON BIOASSES	NITRITE	0.0251	5.74%
26-Oct-11	W827345	11299NNN93	LAGOON BIOASSES	NITRITE	0.0237	
2-Nov-11	W829004	11307NNN05	BIOASSESS A	NITRITE	ND	n/a
2-Nov-11	W829005	11307NNN05	BIOASSESS A	NITRITE	ND	

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Date	ID #	Batch #	Source	Analyte	Value	RPD
10-Nov-11	W829912	11314NNN47	BIOASSESS C	NITRITE	ND	n/a
10-Nov-11	W829915	11314NNN47	BIOASSESS C	NITRITE	ND	
16-Nov-11	W830692	11321NNN07	LGN BIOASSESS1	NITRITE	0.0352	4.35%
16-Nov-11	W830701	11321NNN07	LGN BIOASSESS1	NITRITE	0.0337	
22-Nov-11	W831398	11326NNN32	BIOASSESS C	NITRITE	0.0256	27.32%
22-Nov-11	W831399	11326NNN32	BIOASSESS C	NITRITE	0.0337	
30-Nov-11	W832558	11335NNN40	BIOASSESS C	NITRITE	ND	n/a
30-Nov-11	W832559	11335NNN40	BIOASSESS C	NITRITE	ND	
7-Dec-11	W834267	11342NNN53	BIOASSESS D1	NITRITE	ND	n/a
7-Dec-11	W834268	11342NNN53	BIOASSESS D1	NITRITE	ND	
14-Dec-11	W835119	11348NNN16	BIOASSESS E	NITRITE	0.0297	2.00%
14-Dec-11	W835120	11348NNN16	BIOASSESS E	NITRITE	0.0303	
21-Dec-11	W836263	11355NNN55	LGN BIOASSESS1	NITRITE	ND	n/a
21-Dec-11	W836264	11355NNN55	LGN BIOASSESS1	NITRITE	ND	
28-Dec-11	W836899	11363NNN85	BIOASSESS A	NITRITE	ND	n/a
28-Dec-11	W836900	11363NNN85	BIOASSESS A	NITRITE	ND	
19-Oct-11	W826367	11297TSS59	BIOASSESS E	TSS	5	1.98%
19-Oct-11	W827060	11297TSS59	BIOASSESS E	TSS	5.1	
26-Oct-11	W827344	11300TSS37	LAGOON BIOASSES	TSS	6.9	50.81%
26-Oct-11	W827345	11300TSS37	LAGOON BIOASSES	TSS	11.6	
2-Nov-11	W829004	11311TSS95	BIOASSESS A	TSS	< 2	n/a
2-Nov-11	W829004	11311TSS95	BIOASSESS A	TSS	< 2	
2-Nov-11	W829005	11311TSS95	BIOASSESS A	TSS	1.6	
10-Nov-11	W829912	11318TSS89	BIOASSESS C	TSS	1.8	40.00%
10-Nov-11	W829915	11318TSS89	BIOASSESS C	TSS	1.2	
16-Nov-11	W830692	11321TSS92	LGN BIOASSESS1	TSS	13.2	0.72%
16-Nov-11	W830692	11321TSS92	LGN BIOASSESS1	TSS	14.4	
16-Nov-11	W830701	11321TSS92	LGN BIOASSESS1	TSS	13.9	
22-Nov-11	W831398	11326TSS75	BIOASSESS C	TSS	3.2	37.04%
22-Nov-11	W831399	11326TSS75	BIOASSESS C	TSS	2.2	
30-Nov-11	W832558	11336TSS21	BIOASSESS C	TSS	2.4	95.65%
30-Nov-11	W832559	11336TSS21	BIOASSESS C	TSS	6.8	
7-Dec-11	W834267	11342TSS16	BIOASSESS D1	TSS	1.1	16.67%

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Date	ID #	Batch #	Source	Analyte	Value	RPD
7-Dec-11	W834268	11342TSS16	BIOASSESS D1	TSS	1.3	
14-Dec-11	W835119	11353TSS08	BIOASSESS E	TSS	8.8	4.44%
14-Dec-11	W835120	11353TSS08	BIOASSESS E	TSS	9.2	
21-Dec-11	W836264	11356TSS02	LGN BIOASSESS1	TSS	27.2	69.37%
21-Dec-11	W836264	11356TSS02	LGN BIOASSESS1	TSS	26	
21-Dec-11	W836263	11356TSS02	LGN BIOASSESS1	TSS	12.9	
28-Dec-11	W836900	12004TSS63	BIOASSESS A	TSS	2.2	4.44%
28-Dec-11	W836900	12004TSS63	BIOASSESS A	TSS	2.2	
28-Dec-11	W836899	12004TSS63	BIOASSESS A	TSS	2.3	

ND = not detected

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Appendix C13.A18

Accuracy Check results for field analyses of Dissolved Oxygen, pH, and temperature as performed by the City of San Diego Water Quality Laboratory.

				Drift	
Date	**Field Paramater**	**Reading**	**True Value**	**Percent**	**Value**
	Accuracy Check (After every monitoring day or next morning)				
6-Oct-11	DO [mg/L]	8.58	8.95	4.13%	0.37
12-Oct-11	DO [mg/L]	8.86	8.95	1.01%	0.09
19-Oct-11	DO [mg/L]	9.01	8.95	0.67%	0.06
26-Oct-11	DO [mg/L]	8.59	8.61	0.23%	0.02
2-Nov-11	DO [mg/L]	8.71	8.61	1.16%	0.10
10-Nov-11	DO [mg/L]	8.63	8.61	0.23%	0.02
16-Nov-11	DO [mg/L]	8.89	8.90	0.11%	0.01
22-Nov-11	DO [mg/L]	8.10	8.90	8.99%	0.80
30-Nov-11	DO [mg/L]	8.74	8.90	1.80%	0.16
7-Dec-11	DO [mg/L]	8.80	8.90	1.12%	0.10
14-Dec-11	DO [mg/L]	9.01	8.90	1.24%	0.11
21-Dec-11	DO [mg/L]	8.80	8.95	1.68%	0.15
28-Dec-11	DO [mg/L]	8.62	8.95	3.69%	0.33
	Accuracy Check (Every evening or next morning)				
6-Oct-11	pH	7.95	8.00	0.62%	0.05
12-Oct-11	pH	8.04	8.00	0.50%	0.04
19-Oct-11	pH	8.00	8.00	0.00%	0.00
26-Oct-11	pH	8.01	8.00	0.12%	0.01
2-Nov-11	pH	8.11	8.00	1.37%	0.11
10-Nov-11	pH	8.00	8.00	0.00%	0.00
16-Nov-11	pH	7.96	8.00	0.50%	0.04
22-Nov-11	pH	8.18	8.00	2.25%	0.18
30-Nov-11	pH	7.09	7.00	1.29%	0.09
7-Dec-11	pH	7.18	7.00	2.57%	0.18
14-Dec-11	pH	7.19	7.00	2.71%	0.19
21-Dec-11	pH	6.99	7.00	0.14%	0.01
28-Dec-11	pH	8.00	8.00	0.00%	0.00
	Accuracy Check (Once annually)				
6-Oct-11	Temp [C]	23.31	23.00	1.35%	0.31
12-Oct-11	Temp [C]	19.49	19.90	2.06%	0.41
19-Oct-11	Temp [C]	21.62	21.70	0.37%	0.08
26-Oct-11	Temp [C]	22.15	22.20	0.23%	0.05
2-Nov-11	Temp [C]	21.78	22.00	1.00%	0.22
10-Nov-11	Temp [C]	22.89	23.00	0.48%	0.11
16-Nov-11	Temp [C]	22.94	22.90	0.17%	0.04
22-Nov-11	Temp [C]	23.11	23.20	0.39%	0.09
30-Nov-11	Temp [C]	23.21	23.24	0.13%	0.03
7-Dec-11	Temp [C]	22.48	22.50	0.09%	0.02
14-Dec-11	Temp [C]	22.85	22.90	0.22%	0.05
21-Dec-11	Temp [C]	22.06	22.00	0.27%	0.06
28-Dec-11	Temp [C]	22.20	22.40	0.89%	0.20

Appendix C13.A19

PERCENT RECOVERY OF CHECK SAMPLE FOR ANALYTE ORTHO PHOSPHATE

CPI EXTERNAL CHECK SAMPLES		
SAMPLE ID	BATCH ID	% RECOVERY
P588509	11280ION17	99.0%
P588510	11280ION17	100.0%
P588730	11285ION48	97.0%
P588731	11285ION48	99.3%
P589785	11292ION31	103.0%
P589786	11292ION31	103.3%
P589787	11292ION31	102.0%
P589847	11292ION31	102.7%
P590607	11299ION14	95.0%
P590608	11299ION14	98.0%
P591566	11306ION95	97.3%
P591567	11306ION95	98.0%
P592716	11314ION67	101.3%
P592717	11314ION67	102.7%
P596530	11320ION83	104.3%
P596531	11320ION83	102.7%
P597334	11326ION65	102.7%
P597335	11326ION65	103.0%
P597861	11334ION98	103.0%
P597862	11334ION98	103.0%
P598600	11341ION97	101.0%
P598601	11341ION97	103.3%
P599803	11348ION03	104.3%
P599804	11348ION03	104.7%
P600531	11355ION83	102.3%
P600532	11355ION83	102.7%
P601415	11362ION15	102.3%
P601416	11362ION15	102.3%

LABORATORY BLANK SPIKE SAMPLES		
SAMPLE ID	BATCH ID	% RECOVERY
P588506	11280ION17	104.2%
P588508	11280ION17	105.8%
P588728	11285ION48	101.2%
P588729	11285ION48	102.2%
P589781	11292ION31	101.5%
P589782	11292ION31	101.2%
P589783	11292ION31	101.5%
P589784	11292ION31	101.5%
P589846	11292ION31	102.0%
P590605	11299ION14	98.2%
P590606	11299ION14	99.5%
P591564	11306ION95	97.0%
P591565	11306ION95	97.7%
P592714	11314ION67	95.7%
P592715	11314ION67	97.3%
P596528	11320ION83	97.3%
P596529	11320ION83	96.7%
P597332	11326ION65	95.5%
P597333	11326ION65	95.8%
P597858	11334ION98	96.0%
P597859	11334ION98	96.0%
P598598	11341ION97	95.7%
P598599	11341ION97	97.2%
P599801	11348ION03	95.5%
P599802	11348ION03	95.8%
P600529	11355ION83	94.7%
P600530	11355ION83	95.0%
P601413	11362ION15	94.3%
P601414	11362ION15	95.3%

Appendix C13.A20

QC Method Blanks				
Protocol: EPA300.0				
Analyte: Ortho Phosphate mg/L				

Sample Date	Sample ID	CONTROL TYPE	BATCH ID	QUALIFIER
6-Oct-2011	P588505	METHOD_BLANK	11280ION17	ND
6-Oct-2011	P588507	METHOD_BLANK	11280ION17	ND
12-Oct-2011	P588726	METHOD_BLANK	11285ION48	ND
12-Oct-2011	P588727	METHOD_BLANK	11285ION48	ND
19-Oct-2011	P589777	METHOD_BLANK	11292ION31	ND
19-Oct-2011	P589778	METHOD_BLANK	11292ION31	ND
19-Oct-2012	P589779	METHOD_BLANK	11292ION31	ND
19-Oct-2012	P589780	METHOD_BLANK	11292ION31	ND
19-Oct-2012	P589845	METHOD_BLANK	11292ION31	ND
26-Oct-2012	P590603	METHOD_BLANK	11299ION14	ND
26-Oct-2012	P590604	METHOD_BLANK	11299ION14	ND
2-Nov-2011	P591562	METHOD_BLANK	11306ION95	ND
2-Nov-2011	P591563	METHOD_BLANK	11306ION95	ND
10-Nov-2011	P592712	METHOD_BLANK	11314ION67	ND
10-Nov-2011	P592713	METHOD_BLANK	11314ION67	ND
16-Nov-2011	P596526	METHOD_BLANK	11320ION83	ND
16-Nov-2011	P596527	METHOD_BLANK	11320ION83	ND
22-Nov-2011	P597330	METHOD_BLANK	11326ION65	ND
22-Nov-2011	P597331	METHOD_BLANK	11326ION65	ND
30-Nov-2011	P597856	METHOD_BLANK	11334ION98	ND
30-Nov-2011	P597857	METHOD_BLANK	11334ION98	ND
7-Dec-2011	P598596	METHOD_BLANK	11341ION97	ND
7-Dec-2011	P598597	METHOD_BLANK	11341ION97	ND
14-Dec-2011	P599799	METHOD_BLANK	11348ION03	ND
14-Dec-2011	P599800	METHOD_BLANK	11348ION03	ND
21-Dec-2011	P600527	METHOD_BLANK	11355ION83	ND
21-Dec-2011	P600528	METHOD_BLANK	11355ION83	ND
28-Dec-2012	P601411	METHOD_BLANK	11362ION15	ND
28-Dec-2011	P601412	METHOD_BLANK	11362ION15	ND

Appendix C13.A21

QC-Relative Percent Difference (RPD) and Matrix Spike Percent Recovery

SAMPLE ID	SOURCE	EXTERNAL ID	BATCH ID	ANALYTE	SAMPLE DUPLICATE RPD %	SPIKE DUPLICATE RPD %	% RECOVERY SPIKE
P588456	BIOASSESS B	W824185	11280ION17	ORTHO PHOSPHATE	2.7%	0.7%	84.9%
P588036	N10-EFF		11285ION48	ORTHO PHOSPHATE	2.5%		
P588708	BIOASSESS A	W825160	11285ION48	ORTHO PHOSPHATE	4.7%	0.3%	84.1%
P588954	SB_INF_02		11292ION31	ORTHO PHOSPHATE	1.9%		
P589759	BIOASSESS A	W826361	11292ION31	ORTHO PHOSPHATE	3.7%	0.1%	87.9%
P589612	N10-EFF		11299ION14	ORTHO PHOSPHATE	0.2%		
P590592	BIOASSESS D1	W827341	11299ION14	ORTHO PHOSPHATE	5.2%	0.5%	88.6%
P590295	PLE		11306ION95	ORTHO PHOSPHATE	1.1%		
P591515	BIOASSESS D1	W829011	11306ION95	ORTHO PHOSPHATE	1.4%	0.6%	88.3%
P591198	PLE		11314ION67	ORTHO PHOSPHATE	3.1%		
P592683	BIOASSESS A	W829913	11314ION67	ORTHO PHOSPHATE	1.3%	0.3%	93.4%
P592065	N10-EFF		11320ION83	ORTHO PHOSPHATE	1.8%		
P593439	BIOASSESS A	W830694	11320ION83	ORTHO PHOSPHATE	0.8%	0.2%	93.7%
P592963	N10-EFF		11326ION65	ORTHO PHOSPHATE	0.0%		
P596993	BIOASSESS A	W831397	11326ION65	ORTHO PHOSPHATE	2.9%	0.5%	92.0%
P596885	N10-EFF		11334ION98	ORTHO PHOSPHATE	1.2%		
P597539	BIOASSESS A	W832557	11334ION98	ORTHO PHOSPHATE	1.4%	0.6%	91.9%
P597730	N10-EFF		11341ION97	ORTHO PHOSPHATE	0.8%		
P598571	BIOASSESS A	W834264	11341ION97	ORTHO PHOSPHATE	1.4%	0.4%	81.9%
P598716	N10-EFF		11348ION03	ORTHO PHOSPHATE	5.4%		
P599706	BIOASSESS A	W835112	11348ION03	ORTHO PHOSPHATE	1.5%	0.1%	94.0%
P599139	PLE		11355ION83	ORTHO PHOSPHATE	0.5%		
P600469	BIOASSESS A	W836256	11355ION83	ORTHO PHOSPHATE	1.5%	0.2%	92.2%
P600321	N10-EFF		11362ION15	ORTHO PHOSPHATE	0.7%		
P601144	BIOASSESS A	W836901	11362ION15	ORTHO PHOSPHATE	3.3%	0.2%	90.7%

Enclosure II

Investigative Order Section C14: Bioassessment Monitoring Program and Reports

Weston Solutions, Inc.

WESTON SOLUTIONS, INC.
2433 Impala Drive
Carlsbad, CA 92010
(760) 795-6900 / (760) 931-1580 FAX
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February 16, 2012

Subject: Investigative Order NO. R9-2011-0070: Stream Bioassessment and Lagoon Eutrophication Studies in Los Peñasquitos Creek Pertaining to the Discharge of Untreated Sewage on September 8, 2011.

Mr. Steve Meyer
City of San Diego
Deputy Public Utilities Director
Environmental Monitoring and Technical Service Division
2392 Kincaid Rd
San Diego CA 92101

Dear Mr. Meyer

Enclosed with this letter are the results of the Bioassessment Monitoring and Reporting task associated with the Los Peñasquitos Creek and Lagoon monitoring program initiated in response to the discharge of untreated sewage on September 8, 2011. Samples were collected approximately every other week at freshwater stream sites during the monitoring period, and there was a single sampling event to assess eutrophication in the estuarine portion of the lagoon.

All benthic macroinvertebrate samples were processed at Weston's benthic ecology laboratory in Carlsbad, CA, a laboratory qualified to conduct such analyses in accordance with procedures approved by the Surface Water Ambient Monitoring Program (SWAMP). Additional chemistry samples were sent to various analytical laboratories that are certified to perform such analyses by the United States Environmental Protection Agency (where applicable).

I certify that the data in this report is in compliance both technically and for completeness with the SWAMP approved procedures. Release of the data contained in this report has been authorized by the following signature.

William Isham
Aquatic Ecologist/Bioassessment Studies Director.

Comprehensive Supplemental Final Report for Investigative Order R9-2011-0070

Investigative Order Section C14:
Bioassessment Monitoring Program and Reports

14: Bioassessment Monitoring and Reporting

Weston Solutions, Inc. (WESTON) was contracted to perform all bioassessment monitoring and reporting as required under Section C.14 of the Investigative Order.

14 a: Monitoring and Sampling Locations

The freshwater stream bioassessment and lagoon monitoring stations were co-located with the water chemistry stations and are described in Enclosure I. Maps of the station locations are presented in Attachment C12.1 and the stations are summarized in Attachment C12.2.

14 b: Sampling Period and Frequency

Monitoring was conducted for a period of three months, beginning October 14, 2011 and ending on December 28, 2011. Attachment C14.1 presents the sampling dates and survey types. The monitoring program included six algal cover and biomass surveys, three full stream bioassessment surveys, and one eutrophication assessment in the lagoon. The algal cover surveys were to occur every other week, three of which were conducted in conjunction with the bioassessment surveys. The first algal survey began on October 14 and a schedule to conduct the five additional surveys every other week was instituted, as per the IO. This initial schedule would have had the final survey completed by December 19. Due to a series of significant rain events and the subsequent high water levels in early to mid November, surveys were postponed for nearly two weeks, and the final survey was not conducted until December 28.

14 c: Field Methods for Bioassessment Collections and Habitat Assessment

Field surveys were undertaken using protocols that sample and analyze populations of benthic macroinvertebrates (BMIs) and benthic algae. WESTON followed the sampling protocols of the Surface Water Ambient Monitoring Program (SWAMP) *Standard Operating Procedures for Collecting Benthic Macroinvertebrates and Associated Physical and Chemical Data* (Ode, 2007) for field collections. Benthic algal collections followed the SWAMP protocol *Standard Operating Procedures for Collecting Stream Algae Samples and Associated Physical Habitat and Chemistry Data for Ambient Bioassessments in California* (Fetscher et al., 2009). All field equipment was treated before and/or after sampling events for decontamination of potential invasive organisms (e.g., New Zealand mud snail).

In addition to the monthly BMI and algal sampling, three surveys were conducted solely for algal cover assessment and collection of samples for Chlorophyll-*a*, ash-free dry mass (or dry weight; AFDM), and algal biomass using the same protocol as the monthly samples.

14 d: Laboratory Methods for Benthic Macroinvertebrate and Algal Samples

Laboratory sub-sampling and taxonomic identification of BMIs was performed according to Stormwater Monitoring Coalition (SMC) protocols, using a fixed count of a minimum of 600 organisms per sample. BMI identifications were to standard taxonomic level I (Genus level for most insects, Family level for Chironomidae, and Class or Order for most non-insects) as defined by the most recent version of the *Southwestern Association of Freshwater Invertebrate Taxonomists* (SAFIT) *List of Macroinvertebrate Taxa from California and Adjacent States and Ecoregions; and Standard Taxonomic Effort* (SAFIT, 2011).

Taxonomic Quality Assurance (QA) will include the shipment of 10 percent of the sample lot (one sample) to the California Department of Fish and Game Aquatic Bioassessment Laboratory in Chico, CA.

Algal samples were analyzed for chlorophyll-*a*, ash-free dry mass (AFDM), and biomass of phytoplankton. Lagoon samples were analyzed for chlorophyll-*a* in water and sediment, dissolved nutrients (NO_2, NO_3, NH_4, SRP), total dissolved phosphorus and nitrogen, total phosphorus and nitrogen as well as domoic acid and microcystin (i.e. algal cyanotoxins). The analytical methods for each analyte and the method detection limits are presented in Attachment C14.2.

14 e: Methods for Lagoon Eutrophication Assessment

One station in the estuarine portion of Los Peñasquitos Lagoon was surveyed once in December. The survey followed the protocols identified in the *Southern California Bight 2008 Regional Marine Monitoring Survey (Bight '08) Estuarine Eutrophication Assessment Field Operations Manual Version 9* (CEC 2009).

The monitoring station was selected to conform to the physical requirements of the protocol: a relatively wide intertidal mudflat that extended for a shoreline distance of at least 90 meters. This was required to accommodate three 30-m transects oriented parallel to the shoreline. The transects were assessed for macroalgal cover using a 0.5-m quadrat divided into 49 grids, with 10 quadrat placements in each transect. Also assessed were macroalgal biomass, submerged aquatic vegetation biomass, and chemical constituents (described under 14d, above). The field survey was conducted during low tide.

14 f: Data Submission

Physical water quality and habitat measures derived from the SWAMP bioassessment procedure are presented in Attachment C14.3 and C14.4, respectively. Results from all chemistry analyses and the algal cover assessments are presented in Attachments C14.5, C14.6, and C14.7.

An electronic database of the BMI taxonomic results was created from the original taxonomic bench sheets. A taxonomic list of the macroinvertebrates present in each sample was created including the designated Tolerance Value (TV) and Functional Feeding Group (FFG) of each taxon (Attachment C14.8). Rare feeding groups such as macrophyte herbivores (mh), piercer herbivores (ph), omnivores (om), parasites (pa), and xylophages/wood-eaters (xy) were combined into a group designated "other." For some organisms identified at the Family level or above, a single TV or FFG was not assigned, because the taxa within the group have a broad range of tolerances or feeding strategies, and a single designation is not representative. Attachment C14.13 shows the BMI taxa list in ranked order of abundance.

For calculation of the BMI community-based metric values and the Index of Biotic Integrity (IBI, described below), the database was randomly reduced to a 500-organism count (Ode et al., 2005). The standard biological metrics, a brief description of what they signify, and their predicted responses to impairment are presented in Attachment C14.10 and the metric values calculated from the BMI database are presented in Attachment C14.11.

In addition to the individual metric values, a multi-metric IBI was calculated for each monitoring reach (Ode et al., 2005). The IBI is a quantitative scoring system for assessing the quality of BMI assemblages and is currently the most useful tool for reducing a complex BMI dataset to a qualitative rating for each monitoring reach.
The total IBI scores, quality ratings and metric values are presented in Attachment C14.12, and a summary of the IBI scores with a comparison to historical data collected from similar locations in Los Peñasquitos Creek is presented in Attachment C14.13.

QA/QC Procedures

SWAMP Bioassessment procedures were performed under the quality assurance plan that was developed for the SMC program (in which Weston participates) and later accepted by SWAMP for statewide use. Weston field scientists have participated in annual SMC inter-calibration exercises and audits by SCCWRP to ensure consistent and accurate application of the field procedures. Field QA/QC for sample collection procedures included the collection of one duplicate and one field blank sample for each constituent type to ensure analytical laboratory accuracy. Additionally, all field physical chemistry measures were performed with a multi-meter that is calibrated monthly (according to the manufacturer's specifications) and the calibration date is recorded on the field data sheets (Appendix C14.A1). For the lagoon eutrophication assessment, a QA checklist was provided in the protocol, was filled out in the field, and is included in Appendix C14.A2.

Analysis of chemistry samples was performed by several laboratories, including Enviromatrix Analytical, Inc., Physis Environmental Laboratories, Inc., Ecoanalysts, Inc., and the University of California Santa Cruz. All of these laboratories are appropriately certified for the analyses performed (where applicable) and all QA/QC documentation is included in the analytical reports in Appendix C14.A3.

For laboratory BMI sample processing QA/QC, 100% of the sample lot (12 samples) was checked for organism removal efficiency, with a quality objective of 95% removal. The results were recorded on the Stream Bioassessment Sorting Sheet and completed bench sheets are presented in Appendix C14.A4. Of the twelve samples collected, 11 exceeded the quality objective for organism removal and one was slightly below with a removal rate of 94.9% (no corrective action was necessary). Taxonomic QA/QC included the submission of 10% of the sample lot (one sample) to the California Department of Fish and Game Aquatic Bioassessment Laboratory for verification. A report documenting any discrepancies between the original identifications and counts and the QC results were submitted to Weston on February 10, 2012 (Appendix C14.A5). Results of the minimum quality objectives (MQO) calculations as defined in the SMC QAPP are listed below. All MQO's were met.

Summary of Taxonomic QC Minimum Quality Objectives

Metric	Objective	Actual	original	QC
Recount accuracy	≥95%	99.6%	561	563
Taxa count error rate	≤10%	5.6%	18	19
Taxa ID error rate	≤10%	5.3%		1 of 19
Individual ID error rate	≤10%	1.0%		3 of 563
Taxonomic resolution error rate	≤10%	0.4%		2 of 563

Taxonomic data was entered into a SAS database and a printout of the database was used to compare 100% of the entered data to the original taxonomic bench sheets. Any discrepancies were corrected in the database. Data tables created from the database were then checked for accuracy against the original bench sheets, including organism counts and re-calculating a subset of the metrics manually. Data tables created from the field habitat assessments were also compared with the original field sheets and any discrepancies were corrected.

14 g: Assessment of Bioassessment Data

Physical Habitat Quality

Three of the four monitoring stations possessed similar physical habitat characteristics (Attachment C14.4). These were Stations A, C, and D1, which were dominated by pools and lacked riffle habitat, had substrates dominated by fine particulates, and had moderate canopy cover. Station E, the furthest upstream station, had much more riffle habitat and gravel substrate, shallower water depth, and greater canopy cover (although the "canopy" was due primarily to freeway overpasses). All of the sites were in low gradient reaches with moderate to high levels of human influences and were susceptible to erosion in high storm flows. In general, BMI have more robust communities at sites with a complex mix of hard substrates and flow habitats, and algal growth may be inhibited by thick canopy cover/shade. The physical habitat characteristics of the four monitoring stations may have negatively influenced BMI community quality independent of water quality.

Algal Cover and Chlorophyll-*a*

Algal cover was somewhat variable at most of the stations with the exception of Station D1, which exhibited consistently low cover (0% to 3% throughout the survey period) (Attachment C14.5). Stations A and C showed similar patterns, with moderate and increasing algal cover over the course of the first two surveys in October, followed by a substantial decrease during November.

The November surveys occurred after two rain events and it's likely that the higher water flows reduced algal cover since most of the pre-storm algae present were represented by a species of *Chara* that is easily detached. Station E had consistently low algal cover through the survey period (2% to 9% cover) until the final survey, when new growths of species of *Cladophora* were observed and total cover increased to 14% of the reach.

Ash-free dry mass was highest at Station A, ranging between 32,000 and 40,000 mg/m^2, and generally increased throughout the survey period (Attachment C14.5). AFDM values were low at Station D1 during the first survey and increased substantially through November before decreasing somewhat in December. AFDM at Station C generally increased throughout the survey period, while Station E did not appear to have any temporal trend.

Chlorophyll-*a* in the water column showed a consistent pattern at all four sites, with values increasing during the October surveys, then decreasing in November to undetectable levels (Attachment C14.5). Station A generally had the highest values per survey. December results were variable, but all sites had detectable levels in at least one survey.

Chlorophyll-*a* biomass also showed an increase during the October surveys at Stations A, C, and D1 while Station E decreased slightly (Attachment C14.5). Stations A, C, and D1 then had decreased chlorophyll-*a* biomass during November, while Station E increased during November. The December surveys had values that were generally less than or similar to the October values at all sites.

Lagoon Eutrophication Assessment

The lagoon eutrophication assessment was performed at one site, Lagoon Bioassess 1, in the south arm of the lagoon (Attachment C12.1). An historical site was monitored for one year for the Bight 2008 survey that was located in the north arm of the lagoon approximately 600 meters from the site sampled in this study. The Bight study site was considered for the current study but was rejected because it was unlikely to have been impacted by the spill.

Overall, very little macroalgae occurred on the mudflat at the time of sampling, which is normal for the winter months. Algal biomass was collected using a small hand core (five per transect, combined) and was limited to very sparse strands of species of *Ulva*. The dry biomass was less than 0.1 g/m^2 (Attachment C14.6) By comparison, the Bight 2008 data provided by SCCWRP had 26.7 g/m^2 along transect 1 while algae were absent at the other two transects.

Any grid containing algae was noted. Macroalgal cover ranged from 2.0% to 3.6% with the remaining mudflat areas recorded as bare mudflat (Attachment C14.6, Attachment C14.14). By comparison, the 2008 data show macroalgal cover to be 21.6% along transects 1 while algal cover was 0% along the other two transects. The 2011 survey did not observe any vegetative wrack along the transects, while the 2008 sites showed some wrack cover along all of the transects, although the results were highly variable and ranged from 0.2% to 86.1%.

The protocol also included an assessment of submerged aquatic vegetation (SAV), with none being observed at the station. The 2008 survey showed SAV amounts to be highly variable with the dry biomass of a species of *Ruppia* to range from 0 g/m^2 to 26.5 g/m^2.

Chemical analyses for nutrients were specified in the eutrophication protocol. Water and sediment samples were collected and analyzed and the results are presented in Attachment C14.7. None of the measured constituents exceeded the San Diego Basin Plan (RWQCB, 1994) water quality benchmark standards. In comparison with the historical Bight 2008 data, results were variable. Historical data were higher for ammonia, nitrate and nitrite, and orthophosphate but were lower for benthic and suspended chlorophyll-*a*. (Note: Weston did not receive data from SCCWRP for all constituents specified in the protocol).

Analyses for algal cyanotoxins were performed for domoic acid and four congeners of microscystin that are designated LR, RR, YR, and LA. Domoic acid and microcystin LR were below the method detection limits. Trace amounts of microcystin RR were detected and microcystins YR and LA had values of 0.00687 and 0.0122, respectively.

Benthic Macroinvertebrates

Study Area BMI Community Overview

A total of 7,212 individual organisms representing 40 distinct taxa were collected in the three surveys (Attachments C14.8; C14.9). The amphipod genus *Hyalella* was the most abundant organism at all sites combined with 3,843 individuals, followed by oligochaetes (earthworms) with 836 individuals and midges in the family Chironomidae with 811 individuals. These three dominant taxa were collected at all stations in all surveys.

Diptera (true flies) and Odonata (dragonflies, damselflies) were the most diverse orders of insect throughout the study area with 18 and seven distinct taxa collected, respectively. The orders Trichoptera (caddisflies) and Coleoptera (beetles) were limited to a single taxon, and the order Plecoptera (stoneflies) was not represented.

Biological Metrics

Standard biological metrics were calculated from the BMI taxa list (Attachment C14.11). The metrics are mostly based on species composition, tolerance value (TV), and functional feeding groups (FFG). Taxa richness (i.e. diversity) was highest at Station A and was lowest at Station D1 for all three surveys, and ranged from a low of eight taxa per sample in October to a high of 25 taxa in November. Stations C and E had moderate taxon richness values. The Shannon and Margalef diversity indices were also highest at Station A although the Shannon index, which weights for numerical evenness, rated Station D1 above Stations C and E.

Most insects in the orders Ephemeroptera, Plecoptera, and Trichoptera (EPT) do not tolerate poor water quality conditions. EPT taxa were collected at all sites during at least one survey, and were the least abundant at Station D1, where a single individual of *Callibaetis* was collected (Attachment C14.11). Stations A and E had a maximum of three distinct EPT taxa per sample, including three baetid mayflies (*Baetis* sp., *Callibaetis* sp. and *Fallceon* sp.) and the caddisfly *Hydroptila*. Percent of EPT individuals ranged from 8.8% to 14.8% at Station A and from 5.0% to 11.0% at Station E. *Callibaetis* is highly tolerant (TV=9) to low levels of dissolved oxygen (Edmunds and Waltz, 1995) and was collected only during the October survey. None of the EPT taxa collected were considered sensitive EPT (TV=0-3).

Average community tolerance values were relatively consistent throughout the study area, and were mostly between 7 and 8 (Attachment C14.11). Station A however, had lower community tolerance values for the November and December surveys, with values of 5.8 and 6.3, respectively. High abundances of *Hyalella* (TV=8) was the greatest contributor to the relatively high community tolerance values. The percent of highly tolerant individuals (TV=8-10) was generally lowest at (the most downstream) Station A and highest at the (reference) Station C. There were no highly sensitive taxa (TV=0-2) collected at any of the stations.

Functional feeding group composition was relatively consistent across all stations and surveys (Attachment C14.11). Collector gatherers dominated every sample collected with percentages ranging

from 78.2% at Station E (October survey) to 95.8% at Station D (November survey). Collector gatherers feed on fine particulate organic detritus, algae, and various micro-organisms (Smith, 2001; Usinger, 1956) and are often associated with high levels of urbanization and runoff (SLSI, 2003, Lenat and Crawford, 1994). Predator taxa were collected in moderate abundance at all of the stations while most other feeding groups were generally collected in low abundances. Station E was the only station with substantial amounts of collector filterers. This was due to the abundance of the black fly *Simulium*, which prefers riffle habitat (Usinger, 1956).

Index of Biotic Integrity

In 2003, a Southern California IBI was developed to cover the region extending from southern Monterrey County to the Mexican border (Ode et al., 2005). The IBI gives a single quantified score to a site based on a multi-metric evaluation technique, and the scores may be used to compare benthic community quality and ecological response between sites in a monitoring program. Each metric value is given a score from 0 to 10, and the scores are added to give the total IBI score. Each final score is then adjusted to a 0−100 scale and classified into five rating categories, ranging from Very Poor to Very Good.

The IBI broadly identifies impairment, and the threshold of impairment was determined to be the cutoff between the Poor and Fair categories (39 points on a 0−100 point scale). Small differences in IBI scores are not significant and may be due to natural biological variability within a stream reach. Ode et al. (2005) determined that the minimum detectable difference (MDD) between scores is approximately 13 points; therefore, two site scores must be at least 13 points apart from one another to determine if one site is of significantly higher quality than the other.

All of the sites had IBI scores in the Poor and Very Poor categories and may be considered to support impaired BMI communities (Attachment C14.12; Attachment C14.15). These results are typical of urban water bodies in San Diego County, which are almost universally designated as impaired (Weston 2010). Station A, the most downstream creek station from the spill site, had the highest IBI score in two of the three surveys (November and December) and Station D1 had the lowest score in all three. Station A had the highest mean IBI score (17.2) and Stations C and E had mean scores of 13.3 and 9.5, respectively. These scores are all within the MDD of 13 points and may be considered statistically similar. The mean IBI score for Station D1 was 2.9 and more than 13 points lower than Station A. In other words, Station A had a BMI community that was significantly superior to Station D1 but Station D1 was similar to Stations C and E with one exception: Station C was significantly superior to Station D1 in the October survey only. Temporally, none of the stations showed a consistent trend for increasing or decreasing biotic integrity through the survey period and were all impaired.

For comparison with historical data, IBI scores from the San Diego County Co-Permittees Urban Runoff Monitoring Program was used (Weston 2008, Weston 2010). Two sites were considered: LPC-TWAS-1, which was located approximately 2,300 meters upstream of Station C in Carroll Canyon Creek, and LPC-MLS, which was in virtually the same location as Station E. Historically, IBI scores ranged from 3 to 26 at LPC-TWAS-1 with a mean IBI score of 17 (Attachment C14.13). At LPC-MLS, IBI scores ranged from 4 to 13 with a mean IBI score of 9. This indicates that the mean IBI score at LPC-TWAS-1 was similar to Stations A, C, and E and was superior to Station D1. LPC-MLS was within the MDD of 13 points for all of the current study sites and was therefore similar.

Summary

Three freshwater stream stations in Los Peñasquitos Creek and one in Carroll Canyon Creek were surveyed for benthic macroinvertebrates and algal indicators. Two of the stations were located upstream of the impact of the sewage spill (Stations C and E) and two were located downstream of the impact of the spill (Stations A and D1). A total of six surveys were conducted: once per month using the full SWAMP bioassessment procedure, plus three interim surveys for algal indicators only. One additional survey was conducted in the estuarine portion of Los Peñasquitos Lagoon (Station LAG1) to assess possible eutrophication impacts.

Results of the algal assessments indicated that there was a general increase in algal cover at Stations A and C during the month of October while Stations D1 and E experienced little change. Algal cover then decreased in November at all stations with an eventual increase at Stations A and E at the end of December. There were two significant rain events in November, and scouring from the storm could have affected these results. In addition, The City of San Diego Stormwater Department was performing in-stream vegetation removal at Station C, which increased flow into Station A. Algal ash-free dry weight (AFDM) was relatively consistent at Stations A, C, and E throughout the monitoring period while AFDM at Station D1 increased substantially during October and November before declining somewhat in December. Chlorophyll-*a* values (suspended and benthic) increased at all sites during October (by the greatest amount at Stations A and D1) and then decreased in November with the exception of Station E, which changed little in October and increased in November.

Results for the lagoon eutrophication assessment indicated that mudflat algal cover ranged from 2.0% to 3.6% along three separate transects. Algal biomass was <0.1g/m2 dry weight. There was no submerged aquatic vegetation observed at the station. Results for nutrients indicated that none of the measured constituent levels were above the Basin Plan water quality benchmarks. Comparison with results from the Bight 2008 study indicated that virtually all of the measured parameters were similar to the range of conditions previously seen in the lagoon.

Results of the benthic macroinvertebrate analysis showed that all four of the sites supported impaired communities that are typical of urban water bodies. All sites were dominated by highly tolerant collector taxa and specifically by the amphipod *Hyalella*. EPT taxa were limited to several taxa that are known to tolerate urban stream conditions and there were no organisms collected that are considered sensitive to impairment. Taxa richness was low to moderate across the study area, and Station A possessed the most diverse community in every survey while Station D1 exhibited the least diverse community in every survey.

Index of Biotic Integrity scores were calculated for each station and survey, as well as the mean IBI. Station A had the overall highest IBI scores (highest for two of the three surveys and the highest mean score). Station D1 consistently had the lowest IBI scores. Statistically, Station A was similar to Stations C and E, and superior to Station D1. Station C was statistically superior to Station D1, but for the October survey only. There were no observable temporal trends in the IBI scores through the monitoring period and the storm flows in November did not appear to have a significant effect on biotic integrity or BMI abundance. Comparison with results from the San Diego County Urban Runoff Monitoring program (2001-2011 surveys) indicated that the results of the current study were similar to historical BMI community conditions at Stations A, C, and E while Station D1 was of lower quality.

References

Bight'08 Coastal Ecology Committee (CEC) Wetlands Sub-Committee, 2009. *Southern California Bight 2008 Regional Marine Monitoring Survey (Bight '08) Estuarine Eutrophication Assessment Field Operations Manual Version 9*. Prepared for Commission of Southern California Coastal Water Research Project. Costa Mesa, CA. January 14, 2009.

Edmunds, G. F., Jr. and R. D. Waltz. 1995. Chapter 11. Ephemeroptera. Pp. 126-163. In An Introduction to the aquatic insects of North America. Merritt and Cummins (eds).

Fetscher, A. E., L. Busse, and P. Ode. 2009. Standard Operating Procedures for Collecting Stream Algae Samples and Associated Physical Habitat and Chemical Data for Ambient Bioassessments in California. Prepared for the Surface Water Ambient Monitoring Program (SWAMP) of the California State Water Resources Control Board. June 2009. Available at http://swamp.mpsl.mlml.calstate.edu/wp-content/uploads/2009/11/SWAMP_SOP_Algae_Field_Collection_070109.pdf

Lenat, D. and J. Crawford. 1994. "Effects of Land Use on Water Quality and Aquatic Biota of Three North Carolina Piedmont Streams." In *Hydrobiologia*. 294:185–199.

Richards, A. B. and C. Rogers. 2011. Southwest Association of Freshwater Invertebrate Taxonomists (SAFIT) List of macroinvertebrate taxa from California and adjacent states and ecoregions; and standard taxonomic effort. Available at: http://www.swrcb.ca.gov/swamp/docs/safit/ste_list.pdf. Edited by A.B. Richards and D.C. Rogers. November 2006.

Southwest Association of Freshwater Invertebrate Taxonomists (SAFIT). 2006. List of macroinvertebrate taxa from California and adjacent states and ecoregions; and standard taxonomic effort. Available at: http://www.swrcb.ca.gov/swamp/docs/safit/ste_list.pdf. Edited by A.B. Richards and D.C. Rogers. March 2011.

Ode, P.R., A.C. Rehn, and J.T. May. 2005. A quantitative tool for assessing the integrity of Southern Coastal California streams. Environmental management, 35 (1): 1-13.

Ode, P.R. 2007. Standard Operating Procedures for Collecting Benthic Macroinvertebrate Samples and Associated Physical and Chemical Data for Ambient Bioassessments in California. California State Water Resources Control Board Surface Water Ambient Monitoring Program (SWAMP) Bioassessment SOP 001. Available at: http://www.swrcb.ca.gov/swamp/docs/phab_sopr6.pdf

RWQCB (Regional Water Quality Control Board). 1994. *Water Quality Control Plan for the San Diego Basin*. Tables 2-2–2-5. September 8, 1994 amendments adopted through April 25, 2007.

SLSI (Sustainable Lands Stewardship Institute). 2003. *Biological and Physical/Habitat Assessment of Selected Sites within the San Gabriel River Watershed*. Sacramento, California.

Smith, D. 2001. *Pennaks Freshwater Invertebrates of the United States*. John Wiley & Sons, Inc., New York.

Usinger, R. 1956. *Aquatic Insects of California*. University of California Press, Berkeley, CA.

WESTON (Weston Solutions, Inc.). 2008. *San Diego County Municipal Copermittees 2008-2009 Urban Runoff Monitoring.* Prepared for the County of San Diego. January 2010.

WESTON (Weston Solutions, Inc.). 2010. *San Diego County Municipal Copermittees 2009-2010 Urban Runoff Monitoring.* Prepared for the County of San Diego. January 2011.

Comprehensive Supplemental Final Report for Investigative Order R9-2011-0070

Investigative Order Section C: Continued Monitoring Program and Reports

Attachment C14:
Bioassessment Monitoring and Reporting
Tables and Figures

Attachment C14.1

Bioassessment monitoring program schedule for Investigative Order No. R9-2011-0070.

Dates	Survey
10/14,17/2011	Algal cover
10/25-26/2011	Bioassessment + algal cover
11/16-17/2011	Bioassessment + algal cover
11/29/11	Algal cover
12/6/11	Lagoon Eutrophication
12/15-16/2011	Bioassessment + algal cover
12/28/11	Algal cover

Attachment C14.2

Analytical methods for chemistry samples collected as part of the continued monitoring program for Investigative Order No. R9-2011-0070.

Analyte	Matrix	Method	Minimum Detection Limit
Benthic Chlorophyll-a (mg/m^2)	Sediment	Winterman/Demots Mod. -Liquid	0.1
Benthic Chlorophyll-a (mg/m^2)	H_20/ Filter	SM 10200	1
Suspended Chlorophyll-a (mg/m^3)	H_20/ Filter	SM 10200	1
Ash-free dry mass (mg/m^2)	H_20/ Filter	SM 10300	0.01
Domoic Acid (µg/L)	H_20/ Filter	Wang et al. 2007; Lane et al. 2010	0.0001
Microcystin LR (µg/L)	H_20/ Filter	Mekebri et al. 2009; Kudela 2011	0.0008
Microcystin RR (µg/L)	H_20/ Filter	Mekebri et al. 2009; Kudela 2011	0.0008
Microcystin YR (µg/L)	H_20/ Filter	Mekebri et al. 2009; Kudela 2011	0.0008
Microcystin LA (µg/L)	H_20/ Filter	Mekebri et al. 2009; Kudela 2011	0.0008
Ammonia as N (mg/L)	H_20	EPA 350.1	0.048
Dissolved Nitrogen (mg/L)	H_20	353.2 (CALC)	0.081
Nitrate as N (mg/L)	H_20	EPA 353.2	0.041
Nitrite as N (mg/L)	H_20	EPA 353.2	0.01
NO2+NO3 as N (mg/L)	H_20	EPA 353.2	10
Total Nitrogen (mg/L)	H_20	353.2 (CALC)	0.084
TKN (mg/L)	H_20	EPA 351.2	0.074
TKN, Soluble (mg/L)	H_20	EPA 351.2	0.071
Dissolved Phosphorus (mg/L)	H_20	EPA 365.1	0.0014
Ortho- phosphate (mg/L)	H_20	EPA 365.3	0.00083
Total Phosphorus (mg/L)	H_20	EPA 365.1	0.0014

Attachment C14.3

All data collected in the field from stations sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data include temperature as °C, pH, specific conductance as mS/cm, dissolved oxygen (DO) as mg/L and turbidity as ntu.

Date	Station	Flow (cfs)	Water Temperature (°C)	pH	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/l)	Turbidity (ntu)
10/14/2011	A	NS	17.9	7.19	3.376	6.1	2.5
10/14/2011	C	NS	19.9	7.46	3.902	10.63	0.3
10/14/2011	D1	NS	18.0	7.15	2.964	6.38	0.1
10/17/2011	E	NS	16.2	7.51	2.972	8.42	1.2
10/25/2011	A	2.13	17.3	7.54	2.983	8.54	6.0
10/25/2011	C	0.4	17.8	8.27	3.585	14.54	4.0
10/26/2011	D1	2.14	15.9	8.26	2.961	8.66	2.9
10/26/2011	E	2.18	16.8	8.50	2.855	12.76	3.0
11/16/2011	A	9.6	16.1	6.96	2.089	6.74	2.6
11/17/2011	C	1.22	15.2	7.40	2.995	9.41	1.3
11/16/2011	D1	NS	15.6	7.18	2.275	7.32	2.2
11/17/2011	E	8.7	14.2	7.51	2.439	9.10	1.5
11/29/2011	A	NS	11.6	7.30	2.796	8.70	1.8
11/29/2011	C	NS	14.5	7.62	2.984	11.13	0.9
11/29/2011	D1	NS	14.6	7.56	2.836	8.67	1.4
11/29/2011	E	NS	15.4	7.75	2.777	10.07	1.1
12/15/2011	A	10.34	10.5	8.04	2.410	8.79	5.6
12/15/2011	C	1.04	12.1	8.10	1.689	12.77	1.6
12/16/2011	D1	NS	9.2	7.61	1.883	9.19	1.6
12/16/2011	E	7.73	8.4	7.69	1.808	9.97	0.8
12/28/2011	A	NS	7.4	7.56	3.131	10.19	1.2
12/28/2011	C	NS	11.9	7.76	3.758	10.69	0.3
12/28/2011	D1	NS	11.8	7.64	3.136	9.66	1.2
12/28/2011	E	NS	10.4	7.67	3.036	11.02	0.2

Instrument = YSI model 6920 v2

NS = not sampled

Attachment C14.4

Selected data collected in the field from stations sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data include elevation and physical habitat parameters collected during the SWAMP bioassessmnet procedure for the October 2011 survey, except where otherwise noted.

Physical Habitat Measure	A	C	D1	E
Elevation (feet above sea level)	24	29	25	30
SWAMP physical habitat attributes				
Average canopy cover (% of reach)*	45%	46%	31%	83%
Substrate complexity (0-20 scale)	6	10	8	10
Sediment deposition (0-20 scale)	4	10	11	10
Channel alteration (0-20 scale)	12	10	10	7
Bank stability-left bank	vulnerable	eroded	vulnerable	vulnerable
Bank stability-right bank	vulnerable	eroded	vulnerable	vulnerable
Gradient (% of slope)	0.1%	0.1%	0.0%	0.7%
Riffle/rapid habitat (% of reach)	0%	0%	0%	22%
Run/glide habitat (% of reach)	26%	47%	14%	66%
Pool habitat (% of reach)	74%	53%	86%	12%
Substrate composition*				
Fines (% of reach)	22%	9%	44%	14%
Sand (% of reach)	43%	24%	0%	3%
Gravel (% of reach)	2%	10%	19%	33%
Cobble (% of reach)	0%	7%	15%	7%
Boulder (% of reach)	0%	4%	2%	2%
Roots (% of reach)	8%	5%	2%	2%
Wood (% of reach)	3%	1%	0%	0%
Consolidated Sediment (% of reach)	22%	40%	18%	35%
Concrete (% of reach)	0%	0%	0%	4%

*canopy and substrate data represent mean of all surveys

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Attachment C14.5

Algal indicator data collected in the field from stations sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data include algal cover as percent of reach, ash free dry mass (AFDM) as mg/m^2, suspended chlorophyll-a as mg/m^3, and chlorophyll-a biomass as mg/m^2.

Date	Station	Algae (% cover)	Ash-Free Dry Mass (mg/m^2)	Suspended Chlorophyll-a (mg/m^3)	Benthic Chlorophyll-a Biomass (mg/m^2)	Comments
10/14/2011	A	13%	32840	4.4	51.8	Site started d/s of cattail wall. Algae was attached (chara)
10/14/2011	C	14%	8468	1.8J	18.1	All algae was attached (chara)
10/14/2011	D1	0%	2605	1.8J	12.1	
10/17/2011	E	6%	20470	1.8J	55.2	Decaying algae A-C
10/25/2011	A	26%	32286	9.8	128.2	
10/25/2011	C	32%	5278	4.4	35.6	
10/26/2011	D1	2%	12654	3.6	68.0	
10/26/2011	E	5%	25530	3.6	53.8	
11/16/2011	A	5%	33226	3.6	11.5	Rain 3 days prior to sampling event ~1.15"
11/17/2011	C	0%	8190	ND	8.8	
11/16/2011	D1	0%	15742	ND	32.9	
11/17/2011	E	2%	20017	ND	88.6	
11/29/2011	A	1%	32614	ND	11.2	
11/29/2011	C	6%	4716	ND	12.4	Veg management D/S, dead bird in reach
11/29/2011	D1	0%	37437	ND	13.4	
11/29/2011	E	9%	10941	ND	58.4	
12/15/2011	A	4%	39703	7.1	18.9	
12/15/2011	C	0%	14808	5.3	11.5	
12/16/2011	D1	3%	8010	5.3	34.1	
12/16/2011	E	5%	19578	5.3	49.5	
12/28/2011	A	22%	39729	ND	34.2	New macro tufts on bottom surface
12/28/2011	C	5%	14499	2.7	18.1	Increased Orange bacteria on HP
12/28/2011	D1	3%	19811	ND	40.5	Thick Diatom film on all hard substrates
12/28/2011	E	14%	20484	3.6	37.5	Sunlight areas have new algal growth

J = analyte detected below the reporting limit; ND = not detected

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Attachment C14.6

Algal data from the lagoon station sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070 and a comparison with Bight 2008 data. Data include macroalgal wet and dry biomass as g/m^2, macroalgal, bare mudflat, and wrack as percent cover, and Ruppia wet and dry biomass as g/m^2.

Date	Site	Transect*	Macroalgal wet biomass g/m^2	Macroalgal dry biomass g/m^2	Macroalgal cover (%)	Bare mudflat (%)	Wrack cover (%)	*Ruppia* transect avg wet biomass (g/m^2)	*Ruppia* transect avg. dry wt. (g/m^2)
12/6/2011	LAG1	1	<1	<0.1	2.0	98.0	0	0	0
12/6/2011	LAG1	2	<1	<0.1	3.6	96.4	0	0	0
12/6/2011	LAG1	3	<1	<0.1	2.2	97.8	0	0	0
12/9/2008	Bight '08 LPL	1	26.7	6.7	21.6	68.0	13.9	240.3	26.5
12/9/2008	Bight '08 LPL	2	0	0	0	13.9	86.1	80.5	9.6
12/9/2008	Bight '08 LPL	3	0	0	0	99.8	0.2	0	0

*transects consisted of ten quadrat measurements

2008 data provided by the Southern California Coastal Water Research Project (SCCWRP)

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Attachment C14.7

Chemistry data from stations sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data include Domoic acid and microcystins as µg/L, benthic chlorophyll-a as µg, suspended chlorophyll-a as mg/m^3, ammonia as N (NH_4), dissolved nitrogen, nitrate (NO_3), nitrite (NO_2), total nitrogen, total Kjeldahl nitrogen (TKN), soluble TKN, ortho-phosphate ($O\text{-}PO_4$), total phosphorus, and dissolved phosphorus.

	6-Dec-11									9-Dec-08				
	LAG1	LAG1 Dup	LAG1 T1-0	LAG1 T1-L	LAG1 T2-0	LAG1 T2-L	LAG1 T3-0	LAG1 T3-L	LAG1 all	Bight '08 LPL	Bight '08 LPL dup	Bight '08 LPL	Bight '08 LPL dup	WQB**
Domoic Acid (µg/L)	ND													
Microcystin LR (µg/L)	ND													
Microcystin RR (µg/L)	J													
Microcystin YR (µg/L)	0.00687													
Microcystin LA (µg/L)	0.0122													
Benthic Chlorophyll-a (µg)			12	25	26	3	18	34	19.7*			4.7*	9.8*	NA
Suspended Chlorophyll-a (mg/m^3)	2.7	4.4								1.1				NA
Ammonia as N (mg/L)	0.086J	0.13								1.72	1.81			NA
Dissolved Nitrogen (mg/L)	0.2	0.21												1
Nitrate as N (mg/L)	0.053J	0.050J												10
Nitrite as N (mg/L)	ND	ND								ND	ND			1
Total Nitrogen (mg/L)	0.5	0.52								0.4	0.3			1
TKN (mg/L)	0.44	0.47												NA
TKN, Soluble (mg/L)	0.14	0.16												NA
NO2+NO3 as N (mg/L)	53J	50J								0.78	0.72			10
Ortho- phosphate (mg/L)	0.036	0.043								0.18	0.19			NA
Total Phosphorus (mg/L)	0.082	0.079												0.1
Dissolved Phosphorus (mg/L)	0.046	0.05												0.1

ND = not detected; NA = not applicable; J = trace levels detected below MDL

* = mean of 6 samples

** Water quality benchmark from the San Diego Basin Plan (RWQCB, 1994)

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Attachment C14.8

Taxonomic listing of benthic macroinvertebrates collected as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data include tolerance value (TV), functional feeding group (FFG) and organism counts separated by survey.

Taxon	TV	FFG	Site A			Site C			Site D			Site E		
			Oct	Nov	Dec	Oct	Nov	Dec	Oct	Nov	Dec	Oct	Nov	Dec
PHYLUM ARTHROPODA														
Insecta														
Ephemeroptera (mayflies)														
Baetidae														
Baetis sp	5	cg		2	9			1				8		5
Callibaetis sp	9	cg	43			1			1					
Fallceon sp	4	cg	1	59	81		5	12				58	24	31
Odonata (dragonflies, damselflies)														
Aeshnidae	5	p	3	3		1			6	2				
Anax junius	8	p								1				
Coenagrionidae	9	p	4	2	3	56	23	4	3	5	1	1	1	2
Argia sp	7	p				2	9	2				6	4	4
Enallagma sp				1										
Ischnura sp	9	p		2	2	5	1	4	1		1			
Libellulidae														
Brechmorhoga mendax	9	p					1							
Libellula sp	9	p					2							
Paltothemis lineatipes	9	p				8								
Hemiptera (true bugs)														
Corixidae	8	p	5	9	3	4			46	4	10	3	18	35
Trichocorixa sp	8	p		5	2			4	2	3	6	1	1	4
Trichoptera (caddisflies)														
Hydroptilidae														
Hydroptila sp	6	ph	1	3			1					3	1	1
Coleoptera (beetles)														
Hydrophilidae														
Laccobius sp	5	mh		1										

Attachment C14.8 *continued*

Taxon	TV	FFG	Site A			Site C			Site D			Site E		
			Oct	Nov	Dec	Oct	Nov	Dec	Oct	Nov	Dec	Oct	Nov	Dec
Diptera (true flies)														
Brachycera			1											
Ceratopogonidae	6	p	3		1	1								
Bezzia/Palpomyia sp	6	p	4	4	6	1		3			1			1
Ceratopogon sp	6	p		5										
Culicoides sp	6	p			1									
Dasyhelea sp	6	cg	1	3										
Chironomidae	6	cg	139	169	46	18	12	17	88	88	110	14	25	86
Culicidae	8	cg	1											
Anopheles sp	8	cg				1								
Dolichopodidae	4	p			1			1						
Muscidae	6	p		3	1	1		2					2	
Psychodidae														
Pericoma/Telmatoscopus sp	4	cg	1	12	2									1
Simuliidae														
Simulium sp	6	cf		4	3			9				125	40	17
Stratiomyidae														
Caloparyphus/Euparyphus sp	8	cg		2	3		3	1					1	
Myxosargus sp	8	cg	1		1	1								
Nemotelus sp	8	cg		9	7	1	2	2						
Stratiomys sp	8	cg		1										
Tipulidae														
Limonia sp	6	sh		5										
Molophilus sp	4	sh		7	2									3
Ormosia sp	3	cg								1				
Tipula sp	4	om											1	
Malacostraca														
Amphipoda (scuds)														
Hyalellidae														
Hyalella sp	8	cg	222	75	206	456	526	402	253	239	287	369	442	361

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Attachment C14.8 *continued*

Taxon	TV	FFG	Site A			Site C			Site D			Site E		
			Oct	Nov	Dec	Oct	Nov	Dec	Oct	Nov	Dec	Oct	Nov	Dec
Decapoda (crayfish)														
Cambaridae	8	sh	15	1	7	5	5	6	3	3	12	1	6	3
Procambarus clarki	8	sh				1	1					1		
Ostracoda (seed shrimp)	8	cg	68	9	10	7	3	2	123	171	134	4		6
PHYLUM PLATYHELMINTHES														
Turbelleria (flatworms)	4	p			1							3	3	1
PHYLUM CNIDARIA														
Hydrozoa (hydroids)														
Hydroida														
Hydridae														
Hydra sp	5	p												1
PHYLUM NEMERTEA														
Enopla (tongueworms)														
Hoplonemertea														
Tetrastemmatidae														
Prostoma sp	8	p			1			1				1	1	2
PHYLUM ANNELIDA														
Oligochaeta (earthworms)	5	cg	40	187	174	9	8	13	106	112	53	39	36	59
PHYLUM MOLLUSCA														
Gastropoda (snails)														
Pulmonata														
Physidae														
Physa sp	8	sc	10	16	16	18	11	4		5	2		3	2
Planorbidae								1					1	
Menetus sp	6	sc												1

TV=Tolerance Value: range is 0-10; 0 is intolerant to impairment, 10 is highly tolerant to impairment.
FG=Functional Feeding Group: cg=collector gatherer, cf=collector filterer, mh=macrophyte herbivore, om=omnivore, p=predator, ph=piercer herbivore, sc=scraper, sh=shredder.

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Attachment C14.9

Ranked abundance of benthic macroinvertebrates collected as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data include organism counts separated by survey and total counts by organism and station.

Site	A			C			D			E			
Survey	25-Oct	16-Nov	15-Dec	25-Oct	16-Nov	15-Dec	26-Oct	16-Nov	16-Dec	26-Oct	17-Nov	16-Dec	Total
Hyalella sp	222	75	206	456	526	402	253	239	287	369	442	361	3838
Oligochaeta	40	187	174	9	8	13	106	112	53	39	36	59	836
Chironomidae	139	169	46	18	12	17	88	88	110	14	25	86	812
Ostracoda	68	9	10	7	3	2	123	171	134	4		6	537
Fallceon sp	1	59	81		5	12				58	24	31	271
Simulium sp		4	3			9				125	40	17	198
Corixidae	5	9	3	4			46	4	10	3	18	35	137
Coenagrionidae	4	2	3	56	23	4	3	5	1	1	1	2	105
Physa sp	10	16	16	18	11	4		5	2		3	2	87
Cambaridae	15	1	7	5	5	6	3	3	12	1	6	3	67
Callibaetis sp	43			1			1						45
Trichocorixa sp		5	2			4	2	3	6	1	1	4	28
Argia sp				2	9	2				6	4	4	27
Baetis sp		2	9			1				8		5	25
Nemotelus sp		9	7	1	2	2							21
Bezzia/Palpomyia sp	4	4	6	1		3			1			1	20
Pericoma/Telmatoscopus sp	1	12	2									1	16
Ischnura sp		2	2	5	1	4	1		1				16
Molophilus sp		7	2									3	12
Aeschnidae	3			1			6						10
Caloparyphus/ Euparyphus		2	3		3	1					1		10
Hydroptila sp	1	3			1					3	1	1	10
Muscidae		3	1	1		2					2		9
Turbellaria			1							3	3	1	8
Paltothemis lineatipes				8									8
Prostoma sp			1			1				1	1	2	6
Aeshnidae		3						2					5
Ceratopogon sp		5											5
Limonia sp		5											5
Ceratopogonidae	3		1	1									5

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Attachment C14.9 *continued*

Site	A			C			D			E			
Survey	25-Oct	16-Nov	15-Dec	25-Oct	16-Nov	15-Dec	26-Oct	16-Nov	16-Dec	26-Oct	17-Nov	16-Dec	Total
Dasyhelea sp	1	3											4
Myxosargus sp	1		1	1									3
Procambarus clarki				1	1					1			3
Dolichopodidae			1			1							2
Libellula sp					2								2
Planorbidae						1					1		2
Brachycera	1												1
Menetus sp												1	1
Culicoides sp			1										1
Hydra sp												1	1
Anax junius								1					1
Anopheles sp				1									1
Culicidae	1												1
Brechmorhoga mendax					1								1
Enallagma sp		1											1
Laccobius sp		1											1
Ormosia sp								1					1
Stratiomys sp		1											1
Tipula sp											1		1
Total	563	599	589	597	613	491	632	634	617	637	610	626	7208

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Attachment C.14.10
Bioassessment metrics used to characterize benthic invertebrate communities.

BMI Metric	Description	Response to Impairment
Richness Measures		
Taxa Richness	Total number of individual taxa	Decrease
Coleopteran Taxa*	Number of taxa in the insect order Coleoptera (beetles)	Decrease
EPT Taxa*	Number of taxa in the Ephemeroptera (mayfly), Plecoptera (stonefly) and Trichoptera (caddisfly) insect orders	Decrease
Dipteran Taxa	Number of taxa in the insect order Diptera (true flies)	Increase
Non-Insect Taxa	Number of non-insect taxa	Increase
Predator Taxa*	Number of taxa in the predator feeding group	Decrease
Composition Measures		
EPT Index	Percent composition of mayfly, stonefly, and caddisfly larvae	Decrease
Sensitive EPT Index	Percent composition of mayfly, stonefly, and caddisfly larvae with tolerance values between 0 and 3	Decrease
Shannon Diversity Index	General measure of sample diversity that incorporates richness and evenness (Shannon and Weaver 1963)	Decrease
Margalef Diversity	Measure of sample diversity weighted for richness	Decrease
Tolerance/Intolerance Measures		
Tolerance Value	Value between 0 and 10 of individuals designated as pollution tolerant (higher values) or intolerant (lower values)	Increase
Dominant Taxon	Percent composition of the single most abundant taxon	Increase
Percent Chironomidae	Percent composition of the tolerant dipteran family Chironomidae	Increase
Percent Intolerant Organisms*	Percent of organisms in sample that are highly intolerant to impairment as indicated by a tolerance value of 0, 1 or 2	Decrease
Percent Tolerant Organisms	Percent of organisms in sample that are highly tolerant to impairment as indicated by a tolerance value of 8, 9 or 10	Increase
Percent Tolerant Taxa*	Percent of taxa in sample that are highly tolerant to impairment as indicated by a tolerance value of 8, 9 or 10	Increase
Percent Non-insect Organisms	Percent of organisms in sample that are not in the Class Insecta	Increase
Percent Non-insect Taxa*	Percent of taxa in sample that are not in the Class Insecta	Increase
Functional Feeding Groups (FFG)		
Percent Collector-Gatherers*	Percent of macrobenthos that collect or gather fine particulate matter	Increase
Percent Collector-Filterers*	Percent of macrobenthos that filter fine particulate matter	Increase
Percent Scrapers	Percent of macrobenthos that graze upon periphyton	Increase
Percent Predators	Percent of macrobenthos that feed on other organisms	Variable
Percent Shredders	Percent of macrobenthos that shreds coarse particulate matter	Decrease
Percent Other	Percent of macrobenthos that are parasites, macrophyte herbivores, piercer herbivores, omnivores, and xylophages	Variable
Abundance		
Estimated Abundance	Estimated number of organisms in entire sample	Variable

*indicates metrics used to calculate the Index of Biotic Integrity
Source: modified from SDRWQCB 1999

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Attachment C14.11

Bioassessment metric values for benthic macroinvertebrate samples collected as partof the continued monitoring program for Investigative Order No. R9-2011-0070. Data include biological metrics calculated from 500 randomly selected organisms per sample.

Station:	A	C	D1	E	A	C	D1	E	A	C	D1	E
Date:	25-Oct	25-Oct	26-Oct	26-Oct	16-Nov	17-Nov	16-Nov	17-Nov	15-Dec	15-Dec	16-Dec	16-Dec
Taxa Richness	18	16	8	12	25	14	11	16	22	19	9	20
Ephemeropteran Taxa	2	0	1	3	2	1	0	1	2	2	0	2
Plecopteran Taxa	0	0	0	0	0	0	0	0	0	0	0	0
Trichopteran Taxa	1	0	0	1	1	1	0	0	0	0	0	1
EPT Taxa	2	0	1	3	3	2	0	1	2	2	0	3
Dipteran Taxa	7	6	1	2	12	3	2	5	11	7	2	5
Non Insect Taxa	5	5	4	5	5	5	5	7	7	7	5	9
% EPT	8.8%	0.0%	0.2%	11.0%	11.4%	1.0%	0.0%	4.6%	14.8%	2.6%	0.0%	5.0%
% Sensitive EPT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Shannon Diversity	1.7	1.0	1.6	1.4	2.0	0.8	1.5	1.2	1.8	0.9	1.5	1.5
Margalef Diversity	2.7	2.9	1.4	1.9	4.2	2.4	1.8	2.6	3.9	3.1	1.6	3.2
Tolerance Value	7.34	7.99	7.23	6.93	5.81	7.91	7.23	7.38	6.30	7.69	7.37	7.16
% Dominant Taxon	40.4%	77.0%	40.6%	57.8%	32.2%	85.0%	38.6%	71.4%	35.6%	81.9%	45.4%	60.2%
% Chironomidae	24.0%	2.6%	13.2%	2.6%	28.6%	2.4%	12.2%	4.0%	8.8%	3.5%	17.2%	12.8%
% Intolerant individuals	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% Tolerant individuals	66.4%	94.6%	69.8%	59.4%	20.0%	94.0%	70.0%	77.0%	44.2%	87.6%	73.2%	68.0%
% Collector Gatherer	93.0%	83.2%	90.4%	78.2%	88.8%	90.8%	95.8%	85.8%	92.4%	91.6%	94.2%	89.0%
% Collector Filterer	0.0%	0.0%	0.0%	19.0%	0.8%	0.0%	0.0%	6.8%	0.2%	1.8%	0.0%	2.4%
% Predator	3.4%	13.4%	9.0%	2.2%	5.6%	6.2%	2.8%	5.4%	4.0%	4.3%	3.2%	7.4%
% Shredder	2.2%	0.8%	0.6%	0.0%	2.2%	1.0%	0.4%	1.0%	1.6%	1.2%	2.2%	0.6%
% Scraper	1.2%	2.6%	0.0%	0.0%	1.8%	1.8%	1.0%	0.8%	1.8%	1.0%	0.4%	0.4%
% Other	0.2%	0.0%	0.0%	0.6%	0.8%	0.2%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%
Estimated Total Abundance	52	181	160	97	55	93	320	92	54	45	234	95

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Attachment C14.12

Index of biotic integrity (IBI) scores for benthic macroinvertebrate samples collected as part of the continued monitoring program for Investigative Order No. R9-2011-0070. Data include total IBI scores (0-70 scale raw scores and 0-100 scale adjusted scores), IBI rating, metric values and metric scores.

					% CF+CG		% Non-Insect Taxa		% Tolerant Taxa		Number Coleoptera Taxa		Number Predator Taxa		% Intolerant Individuals		Number EPT Taxa	
Date	Station	Total IBI Score (0-70 Scale)	Total IBI Score (0-100 Scale)	IBI Rating	Metric value	IBI score	Metric value	IBI score	Metric value	IBI score	Metric value	IBI score	Metric value	IBI score	Metric value	IBI score	Metric value	IBI score
25-Oct	A	9	13	Very Poor	93%	1	29%	5	53%	0	0	0	5	2	0%	0	3	1
25-Oct	C	12	17	Very Poor	83%	4	31%	4	63%	0	0	0	7	4	0%	0	0	0
26-Oct	D1	2	3	Very Poor	90%	2	50%	0	63%	0	0	0	2	0	0%	0	1	0
26-Oct	E	6	9	Very Poor	97%	0	42%	2	33%	2	0	0	4	1	0%	0	3	1
16-Nov	A	16	23	Poor	90%	2	20%	7	40%	0	1	2	7	4	0%	0	3	1
17-Nov	C	7	10	Very Poor	91%	2	36%	3	64%	0	0	0	4	1	0%	0	2	1
16-Nov	D1	3	4	Very Poor	96%	1	45%	1	64%	0	0	0	4	1	0%	0	0	0
17-Nov	E	5	7	Very Poor	93%	1	44%	1	44%	0	0	0	6	3	0%	0	1	0
15-Dec	A	11	16	Very Poor	93%	1	32%	4	45%	0	0	0	8	5	0%	0	2	1
15-Dec	C	9	13	Very Poor	93%	1	37%	3	47%	0	0	0	7	4	0%	0	2	1
[illegible]																		

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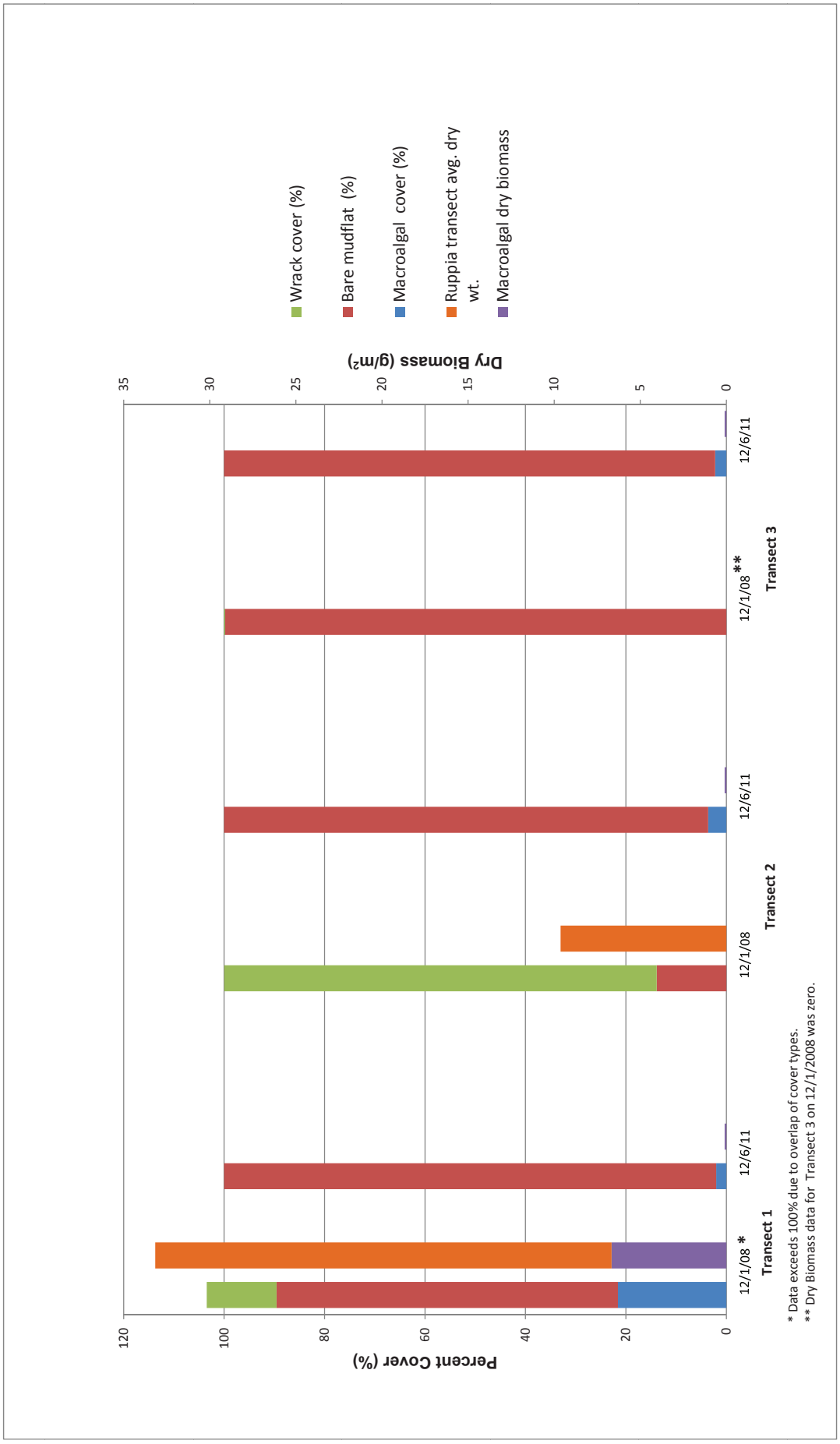
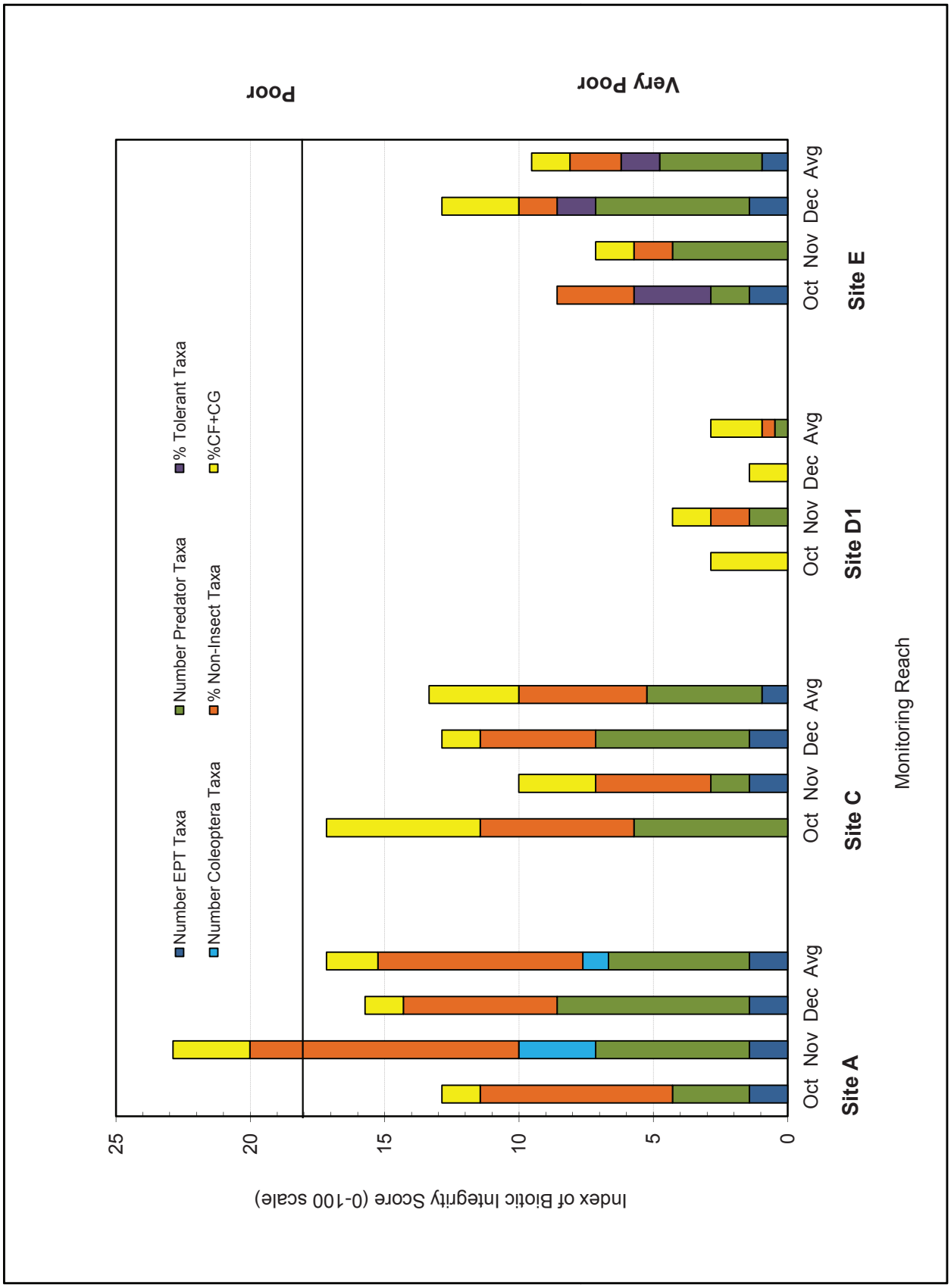
Attachment C14.13

Index of Biotic Integrity Scores for samples collected as part of the continued monitoring program for Investigative Order No. R9-2011-0070, with historical data collected as part of the San Diego County Co-permittees Urban Runoff monitoring program.

Site	Survey	IBI Score (0-100 scale)	Mean IBI Score
A	10/25/11	13	17
	11/16/11	23	
	12/15/11	16	
C	10/25/11	17	13
	11/16/11	10	
	12/15/11	13	
D1	10/25/11	3	3
	11/16/11	4	
	12/15/11	1	
E	10/25/11	9	10
	11/16/11	7	
	12/15/11	13	
Historical data			
LPC-MLS (comparable with Station E)	10/1/06	13	9
	5/1/07	6	
	5/1/08	13	
	5/1/11	4	
LPC-TWAS-1 (approximately 2,300 meters upstream of Station C)	5/1/01	23	17
	10/1/01	16	
	5/1/02	3	
	10/1/02	20	
	5/1/03	23	
	10/1/03	20	
	5/1/04	19	
	10/1/04	26	
	5/1/05	13	
	10/1/05	21	
	5/1/06	16	
	5/8/08	4	
	5/13/11	13	



Attachment C14.14
Comparison of algal data along transects at the lagoon station sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070.



Attachment C14.15
Comparison of Index of Biotic Integrity (IBI) scores across creek stations sampled as part of the continued monitoring program for Investigative Order No. R9-2011-0070.

Comprehensive Supplemental Final Report for Investigative Order R9-2011-0070

Investigative Order Section C: Continued Monitoring Program and Reports

Bioassessment Monitoring and Reporting
Appendix C14.A
QA/QC Documentation

Appendix C14.A1

Algae Only Surveys

Los Penasquitos Sewage Spill Macroalgal Cover Assessment

Date 28 Dec 2011 Crew RD/MM

Time 0915 Site I.D. BIOASSES A

Cond: 31.31 mS	D.O: 10.19	Temp: 7.57	Salinity: 1.64 ppt	Turb: 1.2	pH: 8.56

		LEFT BANK	LEFT CENTER	CENTER	RIGHT CENTER	RIGHT BANK	Wetted Width
A	DEPTH	0	75	92	104	0	9.6
A	P/A	P/A				~~HR~~	
A-B	DEPTH	0	84	90	110	8	10.2
A-B	P/A	A					~~10.2~~
B	DEPTH	0	45	30	23	66	13.4
B	P/A	A	A	P ~~Hard~~	A	A	
B-C	DEPTH	34	14	52	60	0	8.5
B-C	P/A			P			
C	DEPTH	0	35	38	25	0	7.4
C	P/A	A					
C-D	DEPTH	0	42	27	34	6	8.5
C-D	P/A	A					
D	DEPTH	4	34	38	21	0	7.8
D	P/A	A					
D-E	DEPTH	0	44	38	30	0	9.3
D-E	P/A	A					
E	DEPTH	0	35	54	58	14	9.7
E	P/A	A	P	A			
E-F	DEPTH	0	47	21	32	0	11.3
E-F	P/A	A	P	P	P	A	
F	DEPTH	0	44	37	24	14	22.5
F	P/A	A	P	A	P	A	
F-G	DEPTH	17	36	50	51	20	28
F-G	P/A	A	A	P	P	A	
G	DEPTH	0	54	62	68	7	26.5
G	P/A	A	A	P	P	A	
G-H	DEPTH	12	64	72	80	40	28
G-H	P/A	A	P	A	A	A	

Appendix C14.A1 *continued*

Project Code = LPC

SWAMP Stream Habitat Characterization Form — FULL VERSION — Revision Date: February 3rd, 2011

REACH DOCUMENTATION

Standard Reach Length (wetted width ≤ 10 m) = 150 m Distance between transects = 15 m
Alternate Reach Length (wetted width >10 m) = 250 m Distance between transects = 25 m

Project Name: LPC Sewage Spill	Date: 10/25/2011 Time: 0830
Stream Name: Los Penasquitos Creek	Site Name/ Description: ~300m D/S of Lagoon Pkwy
Site Code: BIO A	Crew Members: DO/MM building P. Lot
Latitude (actual – decimal degrees): °N 32.90909	datum: NAD83 other:
Longitude (actual – decimal degrees): °W -117.23226	GPS Device:

AMBIENT WATER QUALITY MEASUREMENTS

turbidity and silica are optional; calibration date required

Temp (Deg C)	17.31°C	pH	7.54	Alkalinity (mg/L)	grab	Turbidity (ntu)	0.0 NTU
		cal. date				cal. date	10/24/11
Dissolved O^2 (mg/L)	8.94 mg/L	Specific Conduct (uS/cm)	2838	Salinity (ppt)	1.56ppt	Silica (mg/L)	
cal. date		cal. date		cal. date		cal. date	

REACH LENGTH

Actual Length (m) *(see reach length guidelines at top of form)*	100 m
Explanation:	Deep - Non wadeable

DISCHARGE MEASUREMENTS

1st measurement = left bank (looking downstream)

check if discharge measurements not possible (explain in field notes section) ☐

VELOCITY AREA METHOD (preferred)

cal. date: 10/24/11 Transect Width (m): 4.5 m

	Distance from Left Bank (cm)	Depth (cm)	Velocity (ft/sec)		Distance from Left Bank (cm)	Depth (cm)	Velocity (ft/sec)
1	0	0	0	11			
2	50	15	0.23	12			
3	100	19	0.41	13			
4	150	26	0.39	14			
5	200	27	0.24	15			
6	250	25	0.18	16			
7	300	29	0.18	17			
8	350	18	0.16	18			
9	400	6	0.05	19			
10	450	0	0.0	20			

BUOYANT OBJECT METHOD (use ONLY if velocity area method not possible)

	Float 1	Float 2	Float 3
Distance (m)			
Float Time (sec)			

Float Reach Cross Section

width (m) depth(cm)	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

NOTABLE FIELD CONDITIONS (check one box per topic)

Evidence of recent rainfall (enough to increase surface runoff)	NO	X	minimal		>10% flow increase	
Evidence of fires in reach or immediately upstream (<500 m)	NO	X	< 1 year		< 5 years	
Dominant landuse/ landcover in area surrounding reach	Agriculture		Forest		Rangeland	
	Urban/ Industrial	X	Suburb/Town		Other	

ADDITIONAL COBBLE EMBEDDEDNESS MEASURES

(carry over from transect forms if needed to attain target count of 25; measure in %)

1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	

no cobbles in reach

Appendix C14.A2

Primary Producer Assessment Field Data Sheet: Macroalgae Transect

Station ID: LPL-SS-1	Field Team Name(s): DO/MM
Site Name: De Penasquitos Lagoon	
Transect Number: 1	
Date: 12.10.2011	Start Time: 1105 End Time: 1205
Start Latitude: 32.93254	Start Longitude: -117.25961
End Latitude: 32.93230	End Longitude: -117.25943
PVC Latitude:	PVC Longitude:

Site Observations

Days since last rainfall in deployment period: 15	Tide gate position: Open / Closed / (N/A)
Weather: Clear / Partly Cloudy / Overcast / Rainy / Foggy	Ocean Inlet: Open / Restricted / Closed / N/A
Time low tide: ~1314 Time high tide:	Direction of Tide: Ebb / Flood / Slack / N/A
Photo oceanward:	Photo landward:
Vertical zonation of macroalgae? Y/N Describe: Sparsly and Random	
Comments: Very Sparse filamentous ulva, <1% of each	

Macroalgal Transect - Distance from PVC (at oceanward end):

Quadrat	1	2	3	4	5	6	7	8	9	10
Distance (m)	2.2m	3.0	4.3	0.4	7.3	9.3	14.5	18.0	25.5	27.3
Mat Thick (mm)	0	0	0	0	0	0	0	0	<1mm	<1mm
Estimated?	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N
Condition	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd
Bare	49	49	49	49	49	49	49	49	41	47
Ulva intestinalis (string-like)									8	2
Ulva lactuca (sheet-like)										
Ceramium										
Gracilaria										
Filamentous algae										
Ruppia (spp.)										
Macrocystis Wrack: Y / N	N	N	N	N	N	N	N	N	N	N
Phyllospadix Wrack: Y / N										
Decayed and Unidentifiable										
Other 1:										
Other 2:										
Total:										
Biomass (Y/N)	N	N	N	N	N	N	N	N	N	N

Field Lead Signature:_____

Very <1% Sparse

~ 2-1. (DMM

Appendix C14.A2 *continued*

Primary Producer Assessment Field Data Sheet: Macroalgae Transect

Station ID: LPL-SS-1		Field Team Name(s): DO/MM	
Site Name: Los Penasquitos Lagoon			
Transect Number: 2			
Date: 12.6.11		Start Time: 1220	End Time: 1250
Start Latitude: 32.93166		Start Longitude: -117.25901	
End Latitude: 32.93141		End Longitude: -117.25864	
PVC Latitude:		PVC Longitude:	

Site Observations

Days since last rainfall in deployment period:		Tide gate position: Open / Closed / (N/A)	
Weather: (Clear) / Partly Cloudy / Overcast / Rainy / Foggy		Ocean Inlet: (Open) / Restricted / Closed / N/A	
Time low tide: 1314	Time high tide:	Direction of Tide: (Ebb) / Flood / Slack / N/A	
Photo oceanward: Yes		Photo landward: Yes	
Vertical zonation of macroalgae? Y/(N) Describe: Random + Sparse macroalgae			
Comments: No real algae mats. Appears to be new growth, with single small strands not measurable thickness			

Macroalgal Transect - Distance from PVC (at oceanward end):

Quadrat	1	2	3	4	5	6	7	8	9	10
Distance (m)	2.2	3.0	4.3	6.4	7.3	9.3	12.5	15.6	25.5	39.3
Mat Thick (mm)	0	0	0	<1mm	0	<1mm	<1mm	<1mm	<1mm	<1mm
Estimated?	Y/(N)	Y / (N)	Y / (N)	(Y) / N	Y / (N)	(Y) / N	(Y) / N	(Y) / N	(Y) / N	(Y) / N
Condition	(Frsh) / Int / Des/ Dd	(Frsh) / Int / Des/ Dd	(Frsh) / Int / Des/ Dd	(Frsh) / Int / Des/ Dd	(Frsh) / Int / Des/ Dd	(Frsh) / Int / Des/ Dd	(Frsh) / Int / Des/ Dd	(Frsh) / Int / Des/ Dd	(Frsh) / Int / Des/ Dd	(Frsh) / Int / Des/ Dd
Bare	49	49	49	47	49	48	43	45	47	46
Ulva intestinalis (string-like)				2	1	1	6	4	2	3
Ulva lactuca (sheet-like)										
Ceramium										
Gracilaria										
Filamentous algae										
Ruppia (spp.)										
Macrocystis Wrack: Y / N										
Phyllospadix Wrack: Y / N										
Decayed and Unidentifiable										
Other 1:										
Other 2:										
Total:										
Biomass (Y/N)	N	N	N	N	N	Y	N	N	N	Y

Field Lead Signature: _____

DRAFT-93

Appendix C14.A2 *continued*

Primary Producer Assessment Field Data Sheet: Macroalgae Transect

Station ID: LPL SS-1	Field Team Name(s):
Site Name: Los Penasquitos lagoon	
Transect Number: 3	
Date: 12-6-11	Start Time: 1300 / End Time:
Start Latitude: 32.931226	Start Longitude: -117.258109
End Latitude: 32.931094	End Longitude: -117.25852
PVC Latitude:	PVC Longitude:

Site Observations

Days since last rainfall in deployment period:	Tide gate position: Open / Closed / N/A
Weather: Clear / Partly Cloudy / Overcast / Rainy / Foggy	Ocean Inlet: Open / Restricted / Closed / N/A
Time low tide: / Time high tide:	Direction of Tide: Ebb / Flood / Slack / N/A
Photo oceanward:	Photo landward:
Vertical zonation of macroalgae? Y/N Describe: some algae wrack line just below veg line, some sparse algae on mud flats	
Comments: Not enough volume to sample	

Macroalgal Transect - Distance from PVC (at oceanward end):

Quadrat	1	2	3	4	5	6	7	8	9	10
Distance (m)	2.7	3.0	4.2	6.4	7.3	9.3	13.5	16.6	25.5	27.3
Mat Thick (mm)	<1mm	<1mm	<1mm	Ø	Ø	Ø	Ø	<1mm	<1mm	<1mm
Estimated?	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N
Condition	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd
Bare	48	46	47	49	49	49	49	48	47	44
Ulva intestinalis (string-like)	1	3	2	Ø	Ø	Ø	Ø	1	2	5
Ulva lactuca (sheet-like)										
Ceramium										
Gracilaria										
Filamentous algae										
Ruppia (spp.)										
Macrocystis Wrack: Y / N	Y	N	N	N	Y	Ø	N	N	Y	N
Phyllospadix Wrack: Y / N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Decayed and Unidentifiable										
Other 1:										
Other 2:										
Total:										
Biomass (Y/N)	N	N	N	N	N	N	N	N	N	N

Insufficient

Field Lead Signature:_____

Appendix C14.A2 *continued*

Primary Producer Assessment Field Data Sheet: Sediment and Water Column Sampling

Station ID: LPL-SS-1		Field Team Name(s): DO/MM	
Site Name: Los Penasquitos Lagoon			
Transect Number: 1			
Date: 12.10.2011		Start Time: 1330	End Time:
Oceanward Latitude: 32.932521		Landward Latitude: 32.93328	
Oceanward Longitude: -117.254681		Landward Longitude: -117.25955	

Site Observations

Days since last rainfall in deployment period:		Tide gate position: Open / Closed / N/A	
Weather: Clear / Partly Cloudy / Overcast / Rainy / Foggy		Ocean Inlet: Open / Restricted / Closed / N/A	
Time low tide: 1314	Time high tide:	Direction of Tide: Ebb / Flood / Slack / N/A	
Oceanward Water Temp (°C): 13.81°C	Oceaward Salinity (ppt): 15.6 ppt	Landward Water Temp (°C): 13.87°C	Landward Salinity (ppt): 15 ppt
Comments:			

Water Column Sampling – Oceanward End Only

Rep	Sample ID	Distance from PVC	Chl *a* Vol. Filtered (mL)	NO_2 NO_3 NH_4 SRP	TDN/ TDP	TN/ TP	Domoic Acid Vol. Filtered (mL)	Microsystin Vol. Filtered (mL)
1	LPL-SS		250mL	1345	1345	1345	250mL	250mL
2	LPL-SS		250mL	↓	↓	↓	—	—
FB	LPL-SS-FB		250mL	↓	↓	↓	—	—

Sediment Sampling

Location	Sample ID	# plugs:	Remove algae?	Sediment Description
Oceanward 1410	LPL-SS-T1-O	10	No	Average Grain Size: Med-Fine Sand Color: Tan/Brown
Landward 1400	LPL-SS-T1-L	10	No	Average Grain Size: Med-Fine Sand Color: Tan/Brown

Floating Macroalgae

Quadrat	Oceanward – Facing Ocean	Oceanward – Facing Land	Landward – Facing Ocean	Landward – Facing Land
Mat Thickness (mm)	Est: Y/N	Est: Y/N	Est: Y/N	Est: Y/N
Condition	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd
Absent		No Floating macroalgae		
Ulva intestinalis				
Ulva lactuca				
Macrocystis spp.				
Duck weed				
Filamentous algae				
Other 1:				
Other 2:				
Total:				
Biomass (Y/N)				
Comments on location of floating algae	None			

Field Lead Signature: _____ DRAFT-92

Appendix C14.A2 *continued*

Primary Producer Assessment Field Data Sheet: Sediment and Water Column Sampling

Station ID: LPL-SS		Field Team Name(s): DO/MM	
Site Name: Los Penasquitos Lagoon			
Transect Number: 2			
Date: 12.6.11		Start Time: 1410	End Time: 1420
Oceanward Latitude: 32.93163		Landward Latitude: 32,93139	
Oceanward Longitude: -117.25909		Landward Longitude: -117,26891	

Site Observations

Days since last rainfall in deployment period:		Tide gate position: Open / Closed / N/A	
Weather: Clear / Partly Cloudy / Overcast / Rainy / Foggy		Ocean Inlet: Open / Restricted / Closed / N/A	
Time low tide:	Time high tide:	Direction of Tide: Ebb / Flood / Slack / N/A	
Oceanward Water Temp (°C): 13.97°C	Oceaward Salinity (ppt): 10.85 ppt	Landward Water Temp (°C): 12.81 C	Landward Salinity (ppt): 6.78 ppt
Comments:			

Water Column Sampling – Oceanward End Only

Rep	Sample ID	Distance from PVC	Chl *a* Vol. Filtered (mL)	NO_2 NO_3 NH_4 SRP	TDN/ TDP	TN/ TP	Domoic Acid Vol. Filtered (mL)	Microsystin Vol. Filtered (mL)
1								
2								
FB								

Sediment Sampling

Location	Sample ID	# plugs:	Remove algae?	Sediment Description
Oceanward 1410	LPL-SS-T2-O	10	N	Average Grain Size: Med-Fine Sand Color: Tan/Brown
Landward 1410	LPL-SS-T2-L	10	N	Average Grain Size: Med-Fine Sand Color: Tan/Brown

Floating Macroalgae

Quadrat	Oceanward – Facing Ocean	Oceanward – Facing Land	Landward – Facing Ocean	Landward – Facing Land
Mat Thickness (mm)	Est: Y/N	Est: Y/N	Est: Y/N	Est: Y/N
Condition	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd
Absent		No Floating Macro Algae		
Ulva intestinalis				
Ulva lactuca				
Macrocystis spp.				
Duck weed				
Filamentous algae				
Other 1:				
Other 2:				
Total:				
Biomass (Y/N)				
Comments on location of floating algae	None			

Field Lead Signature: DRAFT-92

Appendix C14.A2 *continued*

Primary Producer Assessment Field Data Sheet: Sediment and Water Column Sampling

Station ID: LPL-SS		Field Team Name(s): Damon Owen	
Site Name: Los Penasquitos Lagoon		Melissa Mathis	
Transect Number: 3			
Date: 12 6 11		Start Time: 1420	End Time: 1430
Oceanward Latitude: 32.93124		Landward Latitude: 32.93101	
Oceanward Longitude: -117.25880		Landward Longitude: -117.25061	

Site Observations

Days since last rainfall in deployment period:		Tide gate position: Open / Closed / N/A	
Weather: Clear / Partly Cloudy / Overcast / Rainy / Foggy		Ocean Inlet: Open / Restricted / Closed / N/A	
Time low tide:	Time high tide:	Direction of Tide: Ebb / Flood / Slack / N/A	
Oceanward Water Temp (°C): 13.15 °C	Oceaward Salinity (ppt): 5.15 ppt	Landward Water Temp (°C): 12.99 °C	Landward Salinity (ppt): 5.09 ppt
Comments:			

Water Column Sampling – Oceanward End Only

Rep	Sample ID	Distance from PVC	Chl *a* Vol. Filtered (mL)	NO_2 NO_3 NH_4 SRP	TDN/ TDP	TN/ TP	Domoic Acid Vol. Filtered (mL)	Microsystin Vol. Filtered (mL)
1								
2								
FB								

Sediment Sampling

Location	Sample ID	# plugs:	Remove algae?	Sediment Description
Oceanward 1420	LPL-SS-T3-O	10	No	Average Grain Size: Med - Fine Sand Color: Tan - Brown
Landward 1420	LPL-SS-T3-L	10	No	Average Grain Size: Med - Fine Sand Color: Brown

Floating Macroalgae

Quadrat	Oceanward – Facing Ocean	Oceanward – Facing Land	Landward – Facing Ocean	Landward – Facing Land
Mat Thickness (mm)	Est: Y/N	Est: Y/N	Est: Y/N	Est: Y/N
Condition	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd
Absent				
Ulva intestinalis				
Ulva lactuca				
Macrocystis spp.				
Duck weed				
Filamentous algae				
Other 1:				
Other 2:				
Total:				
Biomass (Y/N)				
Comments on location of floating algae	No Floating Macroalgae			

Field Lead Signature: _____

Appendix C14.A2 *continued*

Primary Producer Community Assessment Field Data Sheet: SAV Transect

Station ID: LPL-SS-1		Field Team Name(s): DO/MM	
Site Name:			
Transect Number: 1			
Date: 12.6.11		Start Time: 1500	End Time:
Start Latitude:		Start Longitude:	
End Latitude:		End Longitude:	
PVC Latitude:		PVC Longitude:	

Site Observations

Days since last rainfall in deployment period:		Tide gate position: Open / Closed / N/A
Weather: Clear / Partly Cloudy / Overcast / Rainy / Foggy		Ocean Inlet Condition: Open / Restricted / Closed / N/A
Time low tide:	Time high tide:	Direction of Tide: Ebb / Flood / Slack / N/A
Total channel width:		Maximum Channel Depth:
Right hand photo:		Left hand photo:
Comments: No SAV's present, no floating algae		

Floating Macroalgae Transect

Quadrat	1	2	3	4	5
Distance from Bank (m)					
Water Depth (m)					
Mat Thickness (mm)					
Condition	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd	Frsh / Int / Des/ Dd
Absent					
Ulva intestinalis					
Ulva lactuca					
Filamentous algae					
Other 1:					
Other 2:					
Total:					
Biomass (Y/N)	N	N	N		

Brackish Water Submerged Aquatic Vegetation Transect

Quadrat	1	2	3	4	5
Distance from Bank (m)					
Water Depth (m)					
Condition (circle one)	Frsh / Int / Des/ Dead	Frsh / Int / Des/ Dead	Frsh / Int / Des/ Dead	Frsh / Int / Des/ Dead	Frsh / Int / Des/ Dead
Estimated Percent Cover					
Bare					
Chara spp.					
Ruppia spp.					
Other:					
Other:					
Total:	**100%**	**100%**	**100%**	**100%**	**100%**
Biomass (Y/N)					

Condition Designations:

Frsh : Fresh	**Int :** Intermediate	**Des:** Desiccated	**Dd or Dead :** Dead

Field Lead Signature:_____

Appendix C14.A2 *continued*

Q/A Checklist for Primary Producer and Freshwater Loading Assessment

Estuary: Los Penasquitos Lagoon **Organization:** Carroll Canyon Arm **12/16/2011**

- [x] **Conduct three (3) macroalgae transects**
  - N/A ☐ Ten (10) percent cover estimates at each transect (30 total)
  - N/A ☐ Five (5) macroalgae biomass samples from transect at each transect (15 total)
  - ☐ Four (4) floating macroalgae percent cover estimates; two (2) at the oceanward size and two (2) at the landward side of each tranect (12 total)
  - N/A ☐ Four (4) floating macroalgae biomass samples; two (2) at the oceanward size and two (2) at the landward side of each tranect (12 total)
  - ☑ Two (2) sediment composites with a minimum of 10 sediment plugs each from the oceanward and landward sides of the macroalgae transects (6 total)
  - ☑ Water column sampling from one of the transect sites
    - ☑ Duplicate chlorophyll a filters plus one field blank (3 filters total)
    - ☐ Duplicate domoic acid filters plus one field blank (when applicable)
    - ☐ Duplicate microcystin filters plus one field blank (when applicable)
    - ☑ Duplicate TN/TP bottles plus one field blank (3 bottles total)
    - ☑ Duplicate TDN/TDP bottles plus one field blank (3 bottles total)
    - ☐ Duplicate dissolved nutrient bottles plus one field blank (3 bottles total)
  - ☑ Measure temperature and salinity at each transect site
- ☐ **Conduct three (3) submerged aquatic vegetation transects (if applicable)**
  - ☑ Five (5) (if channel is >50 m) or three (3) (if channel is <50m) percent cover estimates at each transect (15 or 9 total)
  - N/A ☐ Five (5) (if channel is >50 m) or three (3) (if channel is <50m) SAV biomass samples from transect at each transect (15 or 9 total)
  - N/A ☐ Five (5) (if channel is >50 m) or three (3) (if channel is <50m) floating macroalgae percent cover estimates; two (2) at the oceanward size and two (2) at the landward side of each tranect (15 or 9 total)
  - N/A ☐ Five (5) (if channel is >50 m) or three (3) (if channel is <50m) floating macroalgae biomass samples
  - ☐ Measure temperature and salinity at each transect site
- ☐ **Conduct assessment of freshwater loading**
  - ☐ Capture flow information with flow meter
  - ☐ Collect TN/TP sample from channel thalweg
- ☑ **Fill in all data sheets and forms:**
  - ☑ Macroalgae Transect Data Sheet
  - ☑ Sediment and Water Column Sampling Data Sheet
  - ☑ SAV Transect Data Sheet
  - N/A ☐ Freshwater Loading Data Sheet
  - N/A ☐ Chain of Custody Form

Appendix C14.A3

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

November 22, 2011

Bill Isham
Weston Solutions, Inc.
2433 Impala Drive
Carlsbad, CA 92010-

Project Name: Los Penesquitos Creek Sewage Spill
Physis Project ID: 1110012-001

Dear Bill,

Enclosed are the analytical results for samples submitted to PHYSIS Environmental Laboratories, Inc. (PHYSIS) on 10/26/2011. A total of 8 samples were received for analysis in accordance with the attached chain of custody (COC). Per the COC, the samples were analyzed for:

Conventionals
Chlorophyll-a (Filter) by SM 10200 H (mg/m²)
Chlorophyll-a (Filter) by SM 10200 H (mg/m^3)
Algal Biomass Determination by Ash-free Dry Weight by SM 10300 C or D

Analytical results in this report apply only to samples submitted to PHYSIS in accordance with the COC and are intended to be considered in their entirety.

Please feel free to contact me at any time with any questions. PHYSIS appreciates the opportunity to provide you with our analytical and support services.

Regards,

Kurt Kline
Extension x 205
(707) 318-1590 cell
kurtkline@physislabs.com

Appendix C14.A3 *continued*

CDPH California Department of PublicHealth

CALIFORNIA STATE

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM BRANCH

CERTIFICATE OF ENVIRONMENTAL ACCREDITATION

Is hereby granted to

Physis Environmental, Inc.

1904 E. Wright Circle

Anaheim, CA 92806

Scope of the certificate is limited to the
"Fields of Testing"
which accompany this Certificate.

Continued accredited status depends on successful completion of on-site, proficiency testing studies, and payment of applicable fees.

This Certificate is granted in accordance with provisions of Section 100825, et seq. of the Health and Safety Code.

Certificate No.: **2769**

Expiration Date: **4/30/2013**

Effective Date: **5/1/2011**

George C. Kulasingam

George C. Kulasingam, Ph.D., Chief
Environmental Laboratory Accreditation Program Branch

Richmond, California
subject to forfeiture or revocation

PHYSIS
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ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

ABBREVIATIONS and ACRONYMS

QM	Quality Manual
QA	Quality Assurance
QC	Quality Control
MDL	method detection limit
RL	reporting limit
R1	project sample
R2	project sample replicate
MS1	matrix spike
MS2	matrix spike replicate
B1	procedural blank
B2	procedural blank replicate
BS1	blank spike
BS2	blank spike replicate
LCS1	laboratory control spike
LCS2	laboratory control spike replicate
LCM1	laboratory control material
LCM2	laboratory control material replicate
CRM1	certified reference material
CRM2	certified reference material replicate
RPD	relative percent difference
LMW	low molecular weight
HMW	high molecular weight

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Innovative Solutions for Nature

QUALITY ASSURANCE SUMMARY

LABORATORY BATCH: Physis' QM defines a laboratory batch as a group of 20 or fewer project samples of similar matrix, processed together under the same conditions and with the same reagents. QC samples are associated with each batch and are used to assess the validity of the sample analyses.

PROCEDURAL BLANK: Laboratory contamination introduced during method use was assessed through the analysis of procedural blanks at a minimum frequency of one per batch. Physis' QM requires that all procedural blanks be below 10 times the MDL and all detectable constituents in the procedural blanks be flagged in the project sample results with a B qualifier.

ACCURACY: Accuracy of analytical measurements is the degree of closeness based on percent recovery calculations between measured values and the actual or true value and includes a combination of reproducibility error and systematic bias due to sampling and analytical operations. Accuracy of the project data was indicated by analysis of MS, BS, LCS, LCM, CRM, and/or surrogate spikes on a minimum frequency of one per batch. Physis' QM requires that 95% of the target compounds greater than 10 times the MDL be within the specified acceptance limits.

PRECISION: Precision is the agreement among a set of replicate measurements without assumption of knowledge of the true value and is based on RPD calculations between repeated values. Precision of the project data was determined by analysis of replicate MS1/MS2, BS1/BS2, LCS1/LCS2, LCM1/LCM2, CRM1/CRM2, surrogate spikes and/or replicate project sample analysis (R1/R2) on a minimum frequency of one per batch. Physis' QM requires that for 95% of the compounds greater than 10 times the MDL, the percent RPD should be within the specified acceptance range.

MATRIX SPIKES: MS samples were employed to assess the effect a particular project sample matrix has on the accuracy of a measurement. It is prepared by adding a known amount of the target analyte(s) to an aliquot of the project sample. Matrix spikes indicate the bias of analytical measurements due to chemical interferences inherent in the sample matrix. If the matrix spike recovery does not fall within the specified acceptance limits, it may be an indication of sample matrix interference in the specific project sample used for the MS. Intrinsic target analyte concentration in the specific project sample can also significantly impact MS recovery.

BLANK SPIKES: BS demonstrates performance of the preparation and analytical methods on a clean matrix void of potential matrix related interferences. The BS is performed in laboratory deionized water, making these recoveries a better indicator of the efficiency of the laboratory method per se.

CERTIFIED REFERENCE MATERIALS: CRMs are pre-homogenized materials of various matrices for which analytical information has been determined and certified by a recognized authority. These are used to provide a quantitative assessment of the accuracy of a preparation and analytical method. CRMs are analyzed to provide evidence that the laboratory method produces results that are comparable to those obtained by an independent organization.

SURROGATES: Where CRMs are unavailable, target analyte recovery can be assessed by monitoring added surrogate compounds/elements. A surrogate is a pure analyte unlikely to be found in any project sample and most often used with organic analytical procedures. Percent recovery is calculated for each surrogate and is used to monitor method performance within each discrete sample and is indicative of the procedure's ability to recover the actual analytes of interest.

HOLDING TIME: Method recommended holding times are the length of time a project sample can be stored

Appendix C14.A3 *continued*

under specific conditions after collection and prior to analysis without significantly affecting the analyte's concentration. Holding times can be extended if preservation techniques are employed to reduce biodegradation, volatilization, oxidation, sorption, precipitation, and other physical and chemical processes. Physis' QM requires that all samples analyzed beyond the method recommended holding time be flagged in the sample results with an H qualifier.

TOTAL/DISSOLVED FRACTION: In some instances, the results for the dissolved fraction may be higher than the total fraction for a particular analyte (e.g. trace metals). This is typically caused by the analytical variation for each result and indicates that the target analyte is primarily in the dissolved phase, within the sample.

PHYSIS QUALIFIER CODES

CODE	*DEFINITION*
*	see Case Narrative
ND	analyte not detected at or above the MDL
B	analyte was detected in the procedural blank greater than 10 times the MDL
E	analyte concentration exceeds the upper limit of the linear calibration range, reported value is estimated
H	sample received and/or analyzed past the recommended holding time
J	analyte was detected at a concentration below the RL and above the MDL, reported value is estimated
N	insufficient sample, analysis could not be performed
M	analyte was outside the specified recovery and/or RPD acceptance limits due to matrix interference. The associated B/BS were within limits, therefore the sample data was reported without further clarification
SH	analyte concentration in the project sample exceeded the spike concentration, therefore MS recovery and/or RPD acceptance limits do not apply
SL	analyte results for R1 and/or R2 were lower than 10 times the MDL, therefore RPD acceptance limits do not apply
NH	project sample was heterogeneous and sample homogeneity could not be readily achieved using routine laboratory practices, therefore RPD was outside the specified acceptance limits
R	Physis' QM allows for 5% of the target compounds greater than 10 times the MDL to be outside the specified acceptance limits for precision and/or accuracy. This is often due to random error and does not indicate any significant problems with the analysis of these project samples

ANALYTICAL REPORT

PHYSIS
TERRA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

Appendix C14.A3 *continued*

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature
1904 E. Wright Circle, Anaheim CA 92806 main: (714) 602-5320 fax: (714) 602-5321 www.physislabs.com info@physislabs.com CA ELAP #2769

Conventionals — ANALYTICAL REPORT

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	BATCH ID	PREPARED	ANALYZED	METHOD	QA CODE
Physis Sample ID: 9823-R1	**BIOASSESS A**					**Biologic**	**Sampled: 14-Oct-11**	**9:15**	**Received: 09-Nov-11**	
Ash-Free Dry Weight	NA	32840	0.01	0.05	mg/m2	C-5014	11/10/2011	11/10/2011	SM 10300 C D	
Chlorophyll-a	NA	4.4	1	2	mg/m3	C-5019	11/11/2011	11/11/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	51.8	1	2	mg/m2	C-5015	11/10/2011	11/10/2011	SM 10200 H	
Physis Sample ID: 9824-R1	**BIOASSESS C**					**Biologic**	**Sampled: 14-Oct-11**	**12:00**	**Received: 09-Nov-11**	
Ash-Free Dry Weight	NA	8468	0.01	0.05	mg/m2	C-5014	11/10/2011	11/10/2011	SM 10300 C D	
Chlorophyll-a	NA	1.8	1	2	mg/m3	C-5019	11/11/2011	11/11/2011	SM 10200 H	J
Chlorophyll-a (Biomass)	NA	18.1	1	2	mg/m2	C-5015	11/10/2011	11/10/2011	SM 10200 H	
Physis Sample ID: 9825-R1	**BIOASSESS D**					**Biologic**	**Sampled: 14-Oct-11**	**11:00**	**Received: 09-Nov-11**	
Ash-Free Dry Weight	NA	2605	0.01	0.05	mg/m2	C-5014	11/10/2011	11/10/2011	SM 10300 C D	
Chlorophyll-a	NA	1.8	1	2	mg/m3	C-5019	11/11/2011	11/11/2011	SM 10200 H	J
Chlorophyll-a (Biomass)	NA	12.1	1	2	mg/m2	C-5015	11/10/2011	11/10/2011	SM 10200 H	
Physis Sample ID: 9826-R1	**BIOASSESS E**					**Biologic**	**Sampled: 17-Oct-11**	**9:30**	**Received: 09-Nov-11**	
Ash-Free Dry Weight	NA	20470	0.01	0.05	mg/m2	C-5014	11/10/2011	11/10/2011	SM 10300 C D	
Chlorophyll-a	NA	1.8	1	2	mg/m3	C-5019	11/11/2011	11/11/2011	SM 10200 H	J
Chlorophyll-a (Biomass)	NA	55.2	1	2	mg/m2	C-5015	11/10/2011	11/10/2011	SM 10200 H	
Physis Sample ID: 9827-R1	**BIOASSESS A**					**Biologic**	**Sampled: 25-Oct-11**	**8:30**	**Received: 09-Nov-11**	
Ash-Free Dry Weight	NA	32286	0.01	0.05	mg/m2	C-5014	11/10/2011	11/10/2011	SM 10300 C D	
Chlorophyll-a	NA	9.8	1	2	mg/m3	C-5019	11/11/2011	11/11/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	128.2	1	2	mg/m2	C-5015	11/10/2011	11/10/2011	SM 10200 H	
Physis Sample ID: 9828-R1	**BIOASSESS C**					**Biologic**	**Sampled: 25-Oct-11**	**12:30**	**Received: 09-Nov-11**	
Ash-Free Dry Weight	NA	5278	0.01	0.05	mg/m2	C-5014	11/10/2011	11/10/2011	SM 10300 C D	
Chlorophyll-a	NA	4.4	1	2	mg/m3	C-5019	11/11/2011	11/11/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	35.6	1	2	mg/m2	C-5015	11/10/2011	11/10/2011	SM 10200 H	
Physis Sample ID: 9829-R1	**BIOASSESS D**					**Biologic**	**Sampled: 26-Oct-11**	**8:30**	**Received: 09-Nov-11**	

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PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature
1904 E. Wright Circle, Anaheim CA 92806 main: (714) 602-5320 fax: (714) 602-5321 www.physislabs.com info@physislabs.com CA ELAP #2769

Conventionals — ANALYTICAL REPORT

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	BATCH ID	PREPARED	ANALYZED	METHOD	QA CODE
Ash-Free Dry Weight	NA	12654	0.01	0.05	mg/m2	C-5014	11/10/2011	11/10/2011	SM 10300 C D	
Chlorophyll-a	NA	3.6	1	2	mg/m3	C-5019	11/11/2011	11/11/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	68	1	2	mg/m2	C-5015	11/10/2011	11/10/2011	SM 10200 H	
Physis Sample ID: 9830-R1	**BIOASSESS E**					**Biologic**	**Sampled: 26-Oct-11 11:15**		**Received: 09-Nov-11**	
Ash-Free Dry Weight	NA	25530.16	0.01	0.05	mg/m2	C-5014	11/10/2011	11/10/2011	SM 10300 C D	
Chlorophyll-a	NA	3.6	1	2	mg/m3	C-5019	11/11/2011	11/11/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	53.8	1	2	mg/m2	C-5015	11/10/2011	11/10/2011	SM 10200 H	

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QUALITY CONTROL REPORT

PHYSIS
TERRA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

May 8, 2013
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Appendix C14.A3 *continued*

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

1904 E. Wright Circle, Anaheim CA 92806 main: (714) 602-5320 fax: (714) 602-5321 www.physislabs.com info@physislabs.com CA ELAP #2769

Conventionals QUALITY CONTROL REPORT

Analyte	Batch ID	Result	MDL	RL	Units	Spike Level	Source Result	% Recovery	Acceptance Limits	Limit Pass/Fail	RPD	RPD LIMIT	Limit Pass/Fail	QA Code
Fraction: NA		**QAQC**	**Procedural Blank**											
Lab Blank **9822-B1**			**DI Water**											
Chlorophyll-a	C-5019	ND	1	2	mg/m3									
Prepared: 11-Nov-11														
Analyzed: 11-Nov-11														
Chlorophyll-a (Biomass)	C-5015	ND	1	2	mg/m2									
Prepared: 10-Nov-11														
Analyzed: 10-Nov-11														

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CHAIN OF CUSTODY

PHYSIS
TERRA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

Appendix C14.A3 *continued*

11100012-001

WESTON SOLUTIONS

2433 Impala Drive • Carlsbad, CA 92010 • (760) 795-6900, FAX 931-1580
428 Thirteenth St., Ste B, 6th Floor • Oakland, CA 94612 • (510) 788-3800, FAX 891-9710

CHAIN OF CUSTODY

32652

DATE 11.8.2011 PAGE 1 OF 1

PROJECT NAME / SURVEY / PROJECT NUMBER: Los Penasquitos Creek Sewage Spill
PROJECT MANAGER / CONTACT: Bill Isham
CLIENT: Weston Solutions
ADDRESS: See above
PHONE / FAX / EMAIL:

SITE ID (Location)	SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE / VOLUME	TOTAL NUMBER OF CONTAINER	ANALYSIS/TEST REQUESTED: Chlorophyll a (Biomass)	AFDM	Chlorophyll a (water column)	PRESERVED HOW	FOR WESTON USE ONLY: SAMPLE TEMP. (°C) UPON RECEIPT	FOR WESTON USE ONLY: WESTON LAB ID
Los Penasquitos Crk	Bioassess A	10.14.11	0915	BIO	Filter	3	X	X	X	Frozen		
Carrol Canyon	Bioassess C	10.14.11	1200	BIO	Filter	3						
LPC	Bioassess D	10.14.11	1100									
↓	Bioassess E	10.17.11	0930									
	Bioassess A	10.25.11	0830									
Carrol Canyon	Bioassess C	10.25.11	1230									
LPC	Bioassess D	10.26.11	0830									
↓	Bioassess E	10.26.11	1115									

Sample Matrix Codes: FW= fresh water GW=ground water SLT=salt water SW=storm water WW=waste water SED=sediment A=air BIO=biologic SS=soil T=tissue O=other (specify) _____
Container Code: G=glass P=plastic B=bags O=other Filter
Shipped By: ☐ Courier ☐ UPS ☒ FedEx ☐ USPS ☐ Client drop off ☐ Other _____
Turnaround Time: ☐ 2-day ☐ 5-day ☐ 7-day ☐ 10-day ☐ 14-day ☒ Standard ☐ Other _____
Reporting Requirements: ☐ PDF ☐ EDD ☐ Hard Copy ☒ Email ☐ Other _____

SAMPLED BY: PRINT: Melissa Mathis SIGNATURE: MMathis

COMMENTS / SPECIAL INSTRUCTIONS:
Chl a (biomass) report in mg/m²
Chl a (water column) report in mg/m³

RELINQUISHED BY				RECEIVED BY			
Print Name	Signature	Firm	Date/Time	Print Name	Signature	Firm	Date/Time
1. Melissa Mathis	MMathis	Weston	11.8.11/0930	Richard Hunken		Physis	11/9/11 7:55
2.							
3.							
4.							
5.							
6.							

WHITE – return to originator • YELLOW – lab • PINK – retained by originator

Appendix C14.A3 *continued*

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.

PHYSIS PROJECT ID
111002-001

SAMPLE RECEIPT SUMMARY

CLIENT: WESTON | Date Received: 11/9/11 | Received By: RGH | Inspected By: EV

COURIER
☐ PHYSIS ☐ CLIENT ☑ FEDEX ☐ UPS
☐ OTHER: _____

COOLER
☑ COOLER ☐ BOX total # 1
☐ OTHER: _____

TEMPERATURE
9 °C ☐ WET ICE ☑ BLUE ICE
☐ DRY ICE ☐ NONE

SAMPLE INTEGRITY UPON RECEIPT

1. COC(s) included and completely filled out..... **YES**
2. All sample containers arrived intact..... **YES**
3. All samples listed on COC(s) are present..... **YES**
4. Information on containers consistent with information on COC(s)..... **YES**
5. Correct containers and volume for all analyses indicated..... **YES**
6. All samples received within method holding time..... **YES**
7. Correct preservation used for all analyses indicated..... **YES**

NOTES

Reset Form

1904 E. Wright Circle, Anaheim CA 92806 (714) 602-5320 main / (714) 602-5321 fax

Print Form

PDF processed with CutePDF evaluation edition www.CutePDF.com

Appendix C14.A3 *continued*

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

December 14, 2011

Bill Isham
Weston Solutions, Inc.
2433 Impala Drive
Carlsbad, CA 92010-

Project Name: LPC bioassessment
Physis Project ID: 1110012-002

Dear Bill,

Enclosed are the analytical results for samples submitted to PHYSIS Environmental Laboratories, Inc. (PHYSIS) on 11/29/2011. A total of 8 samples were received for analysis in accordance with the attached chain of custody (COC). Per the COC, the samples were analyzed for:

Conventionals
Chlorophyll-a (Filter) by SM 10200 H (mg/m²)
Chlorophyll-a (Filter) by SM 10200 H (mg/m^3)
Algal Biomass Determination by Ash-free Dry Weight by SM 10300 C or D

Analytical results in this report apply only to samples submitted to PHYSIS in accordance with the COC and are intended to be considered in their entirety.

Please feel free to contact me at any time with any questions. PHYSIS appreciates the opportunity to provide you with our analytical and support services.

Regards,

Kurt Kline
Extension x 205
(707) 318-1590 cell
kurtkline@physislabs.com

Appendix C14.A3 *continued*

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

ABBREVIATIONS and ACRONYMS

QM	Quality Manual
QA	Quality Assurance
QC	Quality Control
MDL	method detection limit
RL	reporting limit
R1	project sample
R2	project sample replicate
MS1	matrix spike
MS2	matrix spike replicate
B1	procedural blank
B2	procedural blank replicate
BS1	blank spike
BS2	blank spike replicate
LCS1	laboratory control spike
LCS2	laboratory control spike replicate
LCM1	laboratory control material
LCM2	laboratory control material replicate
CRM1	certified reference material
CRM2	certified reference material replicate
RPD	relative percent difference
LMW	low molecular weight
HMW	high molecular weight

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

QUALITY ASSURANCE SUMMARY

LABORATORY BATCH: Physis' QM defines a laboratory batch as a group of 20 or fewer project samples of similar matrix, processed together under the same conditions and with the same reagents. QC samples are associated with each batch and are used to assess the validity of the sample analyses.

PROCEDURAL BLANK: Laboratory contamination introduced during method use was assessed through the analysis of procedural blanks at a minimum frequency of one per batch. Physis' QM requires that all procedural blanks be below 10 times the MDL and all detectable constituents in the procedural blanks be flagged in the project sample results with a B qualifier.

ACCURACY: Accuracy of analytical measurements is the degree of closeness based on percent recovery calculations between measured values and the actual or true value and includes a combination of reproducibility error and systematic bias due to sampling and analytical operations. Accuracy of the project data was indicated by analysis of MS, BS, LCS, LCM, CRM, and/or surrogate spikes on a minimum frequency of one per batch. Physis' QM requires that 95% of the target compounds greater than 10 times the MDL be within the specified acceptance limits.

PRECISION: Precision is the agreement among a set of replicate measurements without assumption of knowledge of the true value and is based on RPD calculations between repeated values. Precision of the project data was determined by analysis of replicate MS1/MS2, BS1/BS2, LCS1/LCS2, LCM1/LCM2, CRM1/CRM2, surrogate spikes and/or replicate project sample analysis (R1/R2) on a minimum frequency of one per batch. Physis' QM requires that for 95% of the compounds greater than 10 times the MDL, the percent RPD should be within the specified acceptance range.

MATRIX SPIKES: MS samples were employed to assess the effect a particular project sample matrix has on the accuracy of a measurement. It is prepared by adding a known amount of the target analyte(s) to an aliquot of the project sample. Matrix spikes indicate the bias of analytical measurements due to chemical interferences inherent in the sample matrix. If the matrix spike recovery does not fall within the specified acceptance limits, it may be an indication of sample matrix interference in the specific project sample used for the MS. Intrinsic target analyte concentration in the specific project sample can also significantly impact MS recovery.

BLANK SPIKES: BS demonstrates performance of the preparation and analytical methods on a clean matrix void of potential matrix related interferences. The BS is performed in laboratory deionized water, making these recoveries a better indicator of the efficiency of the laboratory method per se.

CERTIFIED REFERENCE MATERIALS: CRMs are pre-homogenized materials of various matrices for which analytical information has been determined and certified by a recognized authority. These are used to provide a quantitative assessment of the accuracy of a preparation and analytical method. CRMs are analyzed to provide evidence that the laboratory method produces results that are comparable to those obtained by an independent organization.

SURROGATES: Where CRMs are unavailable, target analyte recovery can be assessed by monitoring added surrogate compounds/elements. A surrogate is a pure analyte unlikely to be found in any project sample and most often used with organic analytical procedures. Percent recovery is calculated for each surrogate and is used to monitor method performance within each discrete sample and is indicative of the procedure's ability to recover the actual analytes of interest.

HOLDING TIME: Method recommended holding times are the length of time a project sample can be stored

Appendix C14.A3 *continued*

under specific conditions after collection and prior to analysis without significantly affecting the analyte's concentration. Holding times can be extended if preservation techniques are employed to reduce biodegradation, volatilization, oxidation, sorption, precipitation, and other physical and chemical processes. Physis' QM requires that all samples analyzed beyond the method recommended holding time be flagged in the sample results with an H qualifier.

TOTAL/DISSOLVED FRACTION: In some instances, the results for the dissolved fraction may be higher than the total fraction for a particular analyte (e.g. trace metals). This is typically caused by the analytical variation for each result and indicates that the target analyte is primarily in the dissolved phase, within the sample.

PHYSIS QUALIFIER CODES

CODE	*DEFINITION*
*	see Case Narrative
ND	analyte not detected at or above the MDL
B	analyte was detected in the procedural blank greater than 10 times the MDL
E	analyte concentration exceeds the upper limit of the linear calibration range, reported value is estimated
H	sample received and/or analyzed past the recommended holding time
J	analyte was detected at a concentration below the RL and above the MDL, reported value is estimated
N	insufficient sample, analysis could not be performed
M	analyte was outside the specified recovery and/or RPD acceptance limits due to matrix interference. The associated B/BS were within limits, therefore the sample data was reported without further clarification
SH	analyte concentration in the project sample exceeded the spike concentration, therefore MS recovery and/or RPD acceptance limits do not apply
SL	analyte results for R1 and/or R2 were lower than 10 times the MDL, therefore RPD acceptance limits do not apply
NH	project sample was heterogeneous and sample homogeneity could not be readily achieved using routine laboratory practices, therefore RPD was outside the specified acceptance limits
R	Physis' QM allows for 5% of the target compounds greater than 10 times the MDL to be outside the specified acceptance limits for precision and/or accuracy. This is often due to random error and does not indicate any significant problems with the analysis of these project samples

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ANALYTICAL REPORT

PHYSIS
TERRA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

May 8, 2013
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Appendix C14.A3 *continued*

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature
1904 E. Wright Circle, Anaheim CA 92806 main: (714) 602-5320 fax: (714) 602-5321 www.physislabs.com info@physislabs.com CA ELAP #2769

Conventionals — ANALYTICAL REPORT

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	BATCH ID	PREPARED	ANALYZED	METHOD	QA CODE
Physis Sample ID: 10598-R1	**LPC BIOASSESS A**					**Biologic**	**Sampled: 16-Nov-11 9:45**		**Received: 01-Dec-11**	
Ash-Free Dry Weight	NA	33226	0.01	0.05	mg/m2	C-5050	12/6/2011	12/6/2011	SM 10300 C D	
Chlorophyll-a	NA	3.6	1	2	mg/m3	C-5056	12/12/2011	12/12/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	11.5	1	2	mg/m2	C-5056	12/12/2011	12/12/2011	SM 10200 H	
Physis Sample ID: 10599-R1	**LPC BIOASSESS D**					**Biologic**	**Sampled: 16-Nov-11 13:00**		**Received: 01-Dec-11**	
Ash-Free Dry Weight	NA	15742	0.01	0.05	mg/m2	C-5050	12/6/2011	12/6/2011	SM 10300 C D	
Chlorophyll-a	NA	ND	1	2	mg/m3	C-5056	12/12/2011	12/12/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	32.9	1	2	mg/m2	C-5056	12/12/2011	12/12/2011	SM 10200 H	
Physis Sample ID: 10600-R1	**CARROL CANYON CRK BIOASSESS C**					**Biologic**	**Sampled: 17-Nov-11 9:30**		**Received: 01-Dec-11**	
Ash-Free Dry Weight	NA	8190	0.01	0.05	mg/m2	C-5050	12/6/2011	12/6/2011	SM 10300 C D	
Chlorophyll-a	NA	ND	1	2	mg/m3	C-5056	12/12/2011	12/12/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	8.8	1	2	mg/m2	C-5056	12/12/2011	12/12/2011	SM 10200 H	
Physis Sample ID: 10601-R1	**LPC BIOASSESS E**					**Biologic**	**Sampled: 17-Nov-11 12:30**		**Received: 01-Dec-11**	
Ash-Free Dry Weight	NA	20017	0.01	0.05	mg/m2	C-5050	12/6/2011	12/6/2011	SM 10300 C D	
Chlorophyll-a	NA	ND	1	2	mg/m3	C-5056	12/12/2011	12/12/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	88.6	1	2	mg/m2	C-5056	12/12/2011	12/12/2011	SM 10200 H	
Physis Sample ID: 10602-R1	**LPC BIOASSESS A**					**Biologic**	**Sampled: 29-Nov-11 9:30**		**Received: 01-Dec-11**	
Ash-Free Dry Weight	NA	32614	0.01	0.05	mg/m2	C-5050	12/6/2011	12/6/2011	SM 10300 C D	
Chlorophyll-a	NA	ND	1	2	mg/m3	C-5056	12/12/2011	12/12/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	11.2	1	2	mg/m2	C-5056	12/12/2011	12/12/2011	SM 10200 H	
Physis Sample ID: 10603-R1	**LPC BIOASSESS D**					**Biologic**	**Sampled: 29-Nov-11 12:30**		**Received: 01-Dec-11**	
Ash-Free Dry Weight	NA	37437	0.01	0.05	mg/m2	C-5050	12/6/2011	12/6/2011	SM 10300 C D	
Chlorophyll-a	NA	ND	1	2	mg/m3	C-5056	12/12/2011	12/12/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	13.4	1	2	mg/m2	C-5056	12/12/2011	12/12/2011	SM 10200 H	
Physis Sample ID: 10604-R1	**CARROL CANYON CRK BIOASSESS C**					**Biologic**	**Sampled: 29-Nov-11 10:30**		**Received: 01-Dec-11**	

Physis Project ID: 1110012-002 **Client: Weston Solutions, Inc.** **Project: LPC bioassessment**

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PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature
1904 E. Wright Circle, Anaheim CA 92806 main: (714) 602-5320 fax: (714) 602-5321 www.physislabs.com info@physislabs.com CA ELAP #2769

Conventionals ANALYTICAL REPORT

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	BATCH ID	PREPARED	ANALYZED	METHOD	QA CODE
Ash-Free Dry Weight	NA	4716	0.01	0.05	mg/m2	C-5050	12/6/2011	12/6/2011	SM 10300 C D	
Chlorophyll-a	NA	ND	1	2	mg/m3	C-5056	12/12/2011	12/12/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	12.4	1	2	mg/m2	C-5056	12/12/2011	12/12/2011	SM 10200 H	
Physis Sample ID: 10605-R1	**LPC BIOASSESS E**					**Biologic**	**Sampled: 29-Nov-11 13:30**		**Received: 01-Dec-11**	
Ash-Free Dry Weight	NA	10941	0.01	0.05	mg/m2	C-5050	12/6/2011	12/6/2011	SM 10300 C D	
Chlorophyll-a	NA	ND	1	2	mg/m3	C-5056	12/12/2011	12/12/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	58.4	1	2	mg/m2	C-5056	12/12/2011	12/12/2011	SM 10200 H	

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QUALITY CONTROL REPORT

PHYSIS
TERRA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

May 8, 2013
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Appendix C14.A3 *continued*

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

1904 E. Wright Circle, Anaheim CA 92806 main: (714) 602-5320 fax: (714) 602-5321 www.physislabs.com info@physislabs.com CA ELAP #2769

Conventionals QUALITY CONTROL REPORT

Analyte	Batch ID	Result	MDL	RL	Units	Spike Level	Source Result	% Recovery	Acceptance Limits	Limit Pass/Fail	RPD	RPD LIMIT	Limit Pass/Fail	QA Code
Fraction: NA			**QAQC**	**Procedural Blank**										
Lab Blank **10596-B1**				**DI Water**										
Chlorophyll-a	C-5056	ND	1	2	mg/m3									
Prepared: 12-Dec-11														
Analyzed: 12-Dec-11														
Chlorophyll-a (Biomass)	C-5056	ND	1	2	mg/m2									
Prepared: 12-Dec-11														
Analyzed: 12-Dec-11														

May 8, 2013
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CHAIN OF CUSTODY

PHYSIS
TERRA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

Appendix C14.A3 *continued*

WESTON SOLUTIONS

☒ 2433 Impala Drive • Carlsbad, CA 92010 • (760) 795-6900, FAX 931-1580
☐ 428 Thirteenth St., Ste B, 6th Floor • Oakland, CA 94612 • (510) 788-3800, FAX 891-9710

CHAIN OF CUSTODY

32688

DATE 11.30.2011 PAGE 1 OF ____

PROJECT NAME / SURVEY / PROJECT NUMBER: Los Peñesquitos Sewage Spill
PROJECT MANAGER / CONTACT: Bill Isham
CLIENT: Weston Solutions
ADDRESS: See above
PHONE / FAX / EMAIL: "

SITE ID (Location)	SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE / VOLUME	TOTAL NUMBER OF CONTAINER	ANALYSIS/TEST REQUESTED: Chlorophyll a (Water Column)	Chlorophyll a (Biomass)	AFDM	PRESERVED HOW	SAMPLE TEMP. (°C) UPON RECEIPT	FOR WESTON USE ONLY: WESTON LAB ID
Los Peñesquitos @	Bioassess A	11.16.11	0945	BIO	Filter	3	X	X	X	Frozen		
↓	Bioassess D	↓	1300									
Carrol Canyon Crk	Bioassess C	11.17.11	0930									
LPC	Bioassess E	↓	1230									
LPC	Bioassess A	11.29.11	0930									
LPC	Bioassess D		1230									
Carrol Canyon Creek	Bioassess C		1030									
LPC	Bioassess E		1330									

Sample Matrix Codes: FW= fresh water GW=ground water SLT=salt water SW=storm water WW=waste water SED=sediment A=air BIO=biologic SS=soil T=tissue O=other (specify) _____

Container Code: G=glass P=plastic B=bags O=other Filter

Shipped By: ☐ Courier ☐ UPS ☐ FedEx ☐ USPS ☐ Client drop off ☐ Other _____

Turnaround Time: ☐ 2-day ☐ 5-day ☐ 7-day ☐ 10-day ☐ 14-day ☒ Standard ☐ Other _____

Reporting Requirements: ☒ PDF ☐ EDD ☐ Hard Copy ☒ Email ☐ Other _____

SAMPLED BY: PRINT Melissa Mathis **SIGNATURE** M Mathis

COMMENTS / SPECIAL INSTRUCTIONS
Chlorophyll a Watercolumn reported in mg/m³
Chlorophyll a Biomass reported in mg/m²

RELINQUISHED BY

	Print Name	Signature	Firm	Date/Time
1.	Melissa Mathis	M Mathis	Weston	11.30.11/1300
2.				
3.				
4.				
5.				
6.				

RECEIVED BY

Print Name	Signature	Firm	Date/Time
Eduardo Vaki	Eduardo Vaki	PHYSIS	12/1/11 9:30

WHITE – return to originator • YELLOW – lab • PINK – retained by originator

Appendix C14.A3 *continued*

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.

PHYSIS PROJECT ID
1110012-002

SAMPLE RECEIPT SUMMARY

CLIENT: WESTON | Date Received: 12/1/11 | Received By: EV | Inspected By: EV

COURIER
☐ PHYSIS ☐ CLIENT ☑ FEDEX ☐ UPS
start ____ end ____ ☐ OTHER: ____

COOLER
☑ COOLER ☐ BOX total # 1
☐ OTHER: ____

TEMPERATURE
8.1 °C ☐ WET ICE ☑ BLUE ICE ☐ DRY ICE ☐ NONE

SAMPLE INTEGRITY UPON RECEIPT

1. COC(s) included and completely filled out..... ***YES***
2. All sample containers arrived intact..... ***YES***
3. All samples listed on COC(s) are present..... ***YES***
4. Information on containers consistent with information on COC(s)..... ***YES***
5. Correct containers and volume for all analyses indicated..... ***YES***
6. All samples received within method holding time..... ***YES***
7. Correct preservation used for all analyses indicated..... ***YES***

NOTES

Reset Form

1904 E. Wright Circle, Anaheim CA 92806 (714) 602-5320 main / (714) 602-5321 fax

Print Form

PDF processed with CutePDF evaluation edition www.CutePDF.com

Appendix C14.A3 *continued*

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

December 27, 2011

Bill Isham
Weston Solutions, Inc.
2433 Impala Drive
Carlsbad, CA 92010-

Project Name: Los Penesquitos Sewage Spill
Physis Project ID: 1110012-003

Dear Bill,

Enclosed are the analytical results for samples submitted to PHYSIS Environmental Laboratories, Inc. (PHYSIS) on 12/16/2011. A total of 7 samples were received for analysis in accordance with the attached chain of custody (COC). Per the COC, the samples were analyzed for:

Conventionals
Chlorophyll-a (Filter) by SM 10200 H (mg/m3)
Chlorophyll-a (Filter) by SM 10200 H (mg/m²)
Algal Biomass Determination by Ash-free Dry Weight by SM 10300 C or D

Analytical results in this report apply only to samples submitted to PHYSIS in accordance with the COC and are intended to be considered in their entirety.

Please feel free to contact me at any time with any questions. PHYSIS appreciates the opportunity to provide you with our analytical and support services.

Regards,

Kurt Kline
Extension x 205
(707) 318-1590 cell
kurtkline@physislabs.com

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

ABBREVIATIONS and ACRONYMS

QM	Quality Manual
QA	Quality Assurance
QC	Quality Control
MDL	method detection limit
RL	reporting limit
R1	project sample
R2	project sample replicate
MS1	matrix spike
MS2	matrix spike replicate
B1	procedural blank
B2	procedural blank replicate
BS1	blank spike
BS2	blank spike replicate
LCS1	laboratory control spike
LCS2	laboratory control spike replicate
LCM1	laboratory control material
LCM2	laboratory control material replicate
CRM1	certified reference material
CRM2	certified reference material replicate
RPD	relative percent difference
LMW	low molecular weight
HMW	high molecular weight

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

QUALITY ASSURANCE SUMMARY

LABORATORY BATCH: Physis' QM defines a laboratory batch as a group of 20 or fewer project samples of similar matrix, processed together under the same conditions and with the same reagents. QC samples are associated with each batch and are used to assess the validity of the sample analyses.

PROCEDURAL BLANK: Laboratory contamination introduced during method use was assessed through the analysis of procedural blanks at a minimum frequency of one per batch. Physis' QM requires that all procedural blanks be below 10 times the MDL and all detectable constituents in the procedural blanks be flagged in the project sample results with a B qualifier.

ACCURACY: Accuracy of analytical measurements is the degree of closeness based on percent recovery calculations between measured values and the actual or true value and includes a combination of reproducibility error and systematic bias due to sampling and analytical operations. Accuracy of the project data was indicated by analysis of MS, BS, LCS, LCM, CRM, and/or surrogate spikes on a minimum frequency of one per batch. Physis' QM requires that 95% of the target compounds greater than 10 times the MDL be within the specified acceptance limits.

PRECISION: Precision is the agreement among a set of replicate measurements without assumption of knowledge of the true value and is based on RPD calculations between repeated values. Precision of the project data was determined by analysis of replicate MS1/MS2, BS1/BS2, LCS1/LCS2, LCM1/LCM2, CRM1/CRM2, surrogate spikes and/or replicate project sample analysis (R1/R2) on a minimum frequency of one per batch. Physis' QM requires that for 95% of the compounds greater than 10 times the MDL, the percent RPD should be within the specified acceptance range.

MATRIX SPIKES: MS samples were employed to assess the effect a particular project sample matrix has on the accuracy of a measurement. It is prepared by adding a known amount of the target analyte(s) to an aliquot of the project sample. Matrix spikes indicate the bias of analytical measurements due to chemical interferences inherent in the sample matrix. If the matrix spike recovery does not fall within the specified acceptance limits, it may be an indication of sample matrix interference in the specific project sample used for the MS. Intrinsic target analyte concentration in the specific project sample can also significantly impact MS recovery.

BLANK SPIKES: BS demonstrates performance of the preparation and analytical methods on a clean matrix void of potential matrix related interferences. The BS is performed in laboratory deionized water, making these recoveries a better indicator of the efficiency of the laboratory method per se.

CERTIFIED REFERENCE MATERIALS: CRMs are pre-homogenized materials of various matrices for which analytical information has been determined and certified by a recognized authority. These are used to provide a quantitative assessment of the accuracy of a preparation and analytical method. CRMs are analyzed to provide evidence that the laboratory method produces results that are comparable to those obtained by an independent organization.

SURROGATES: Where CRMs are unavailable, target analyte recovery can be assessed by monitoring added surrogate compounds/elements. A surrogate is a pure analyte unlikely to be found in any project sample and most often used with organic analytical procedures. Percent recovery is calculated for each surrogate and is used to monitor method performance within each discrete sample and is indicative of the procedure's ability to recover the actual analytes of interest.

HOLDING TIME: Method recommended holding times are the length of time a project sample can be stored

Appendix C14.A3 *continued*

under specific conditions after collection and prior to analysis without significantly affecting the analyte's concentration. Holding times can be extended if preservation techniques are employed to reduce biodegradation, volatilization, oxidation, sorption, precipitation, and other physical and chemical processes. Physis' QM requires that all samples analyzed beyond the method recommended holding time be flagged in the sample results with an H qualifier.

TOTAL/DISSOLVED FRACTION: In some instances, the results for the dissolved fraction may be higher than the total fraction for a particular analyte (e.g. trace metals). This is typically caused by the analytical variation for each result and indicates that the target analyte is primarily in the dissolved phase, within the sample.

PHYSIS QUALIFIER CODES

CODE	*DEFINITION*
*	see Case Narrative
ND	analyte not detected at or above the MDL
B	analyte was detected in the procedural blank greater than 10 times the MDL
E	analyte concentration exceeds the upper limit of the linear calibration range, reported value is estimated
H	sample received and/or analyzed past the recommended holding time
J	analyte was detected at a concentration below the RL and above the MDL, reported value is estimated
N	insufficient sample, analysis could not be performed
M	analyte was outside the specified recovery and/or RPD acceptance limits due to matrix interference. The associated B/BS were within limits, therefore the sample data was reported without further clarification
SH	analyte concentration in the project sample exceeded the spike concentration, therefore MS recovery and/or RPD acceptance limits do not apply
SL	analyte results for R1 and/or R2 were lower than 10 times the MDL, therefore RPD acceptance limits do not apply
NH	project sample was heterogeneous and sample homogeneity could not be readily achieved using routine laboratory practices, therefore RPD was outside the specified acceptance limits
R	Physis' QM allows for 5% of the target compounds greater than 10 times the MDL to be outside the specified acceptance limits for precision and/or accuracy. This is often due to random error and does not indicate any significant problems with the analysis of these project samples

ANALYTICAL REPORT

PHYSIS
TERRA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

Appendix C14.A3 *continued*

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature
1904 E. Wright Circle, Anaheim CA 92806 main: (714) 602-5320 fax: (714) 602-5321 www.physislabs.com info@physislabs.com CA ELAP #2769

Conventionals — ANALYTICAL REPORT

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	BATCH ID	PREPARED	ANALYZED	METHOD	QA CODE
Physis Sample ID: 10966-R1	**LPL-SS**					**Biologic**	**Sampled: 06-Dec-11**	**13:45**	**Received: 20-Dec-11**	
Chlorophyll-a	NA	2.7	1	2	mg/m3	C-5073	12/22/2011	12/22/2011	SM 10200 H	
Physis Sample ID: 10967-R1	**LPL-SS-Dup**					**Biologic**	**Sampled: 06-Dec-11**	**13:45**	**Received: 20-Dec-11**	
Chlorophyll-a	NA	4.4	1	2	mg/m3	C-5073	12/22/2011	12/22/2011	SM 10200 H	
Physis Sample ID: 10968-R1	**LPL-SS-FB**					**Biologic**	**Sampled: 06-Dec-11**	**13:45**	**Received: 20-Dec-11**	
Chlorophyll-a	NA	4.4	1	2	mg/m3	C-5073	12/22/2011	12/22/2011	SM 10200 H	
Physis Sample ID: 10969-R1	**Bioassess-A**					**Biologic**	**Sampled: 15-Dec-11**	**9:15**	**Received: 20-Dec-11**	
Ash-Free Dry Weight	NA	39703	0.01	0.05	mg/m2	C-5070	12/20/2011	12/22/2011	SM 10300 C D	
Chlorophyll-a	NA	7.1	1	2	mg/m3	C-5073	12/22/2011	12/22/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	18.9	1	2	mg/m2	C-5073	12/22/2011	12/22/2011	SM 10200 H	
Physis Sample ID: 10970-R1	**Bioassess-C**					**Biologic**	**Sampled: 15-Dec-11**	**12:30**	**Received: 20-Dec-11**	
Ash-Free Dry Weight	NA	14808	0.01	0.05	mg/m2	C-5070	12/20/2011	12/22/2011	SM 10300 C D	
Chlorophyll-a	NA	5.3	1	2	mg/m3	C-5073	12/22/2011	12/22/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	11.5	1	2	mg/m2	C-5073	12/22/2011	12/22/2011	SM 10200 H	
Physis Sample ID: 10971-R1	**Bioassess-D**					**Biologic**	**Sampled: 16-Dec-11**	**12:00**	**Received: 20-Dec-11**	
Ash-Free Dry Weight	NA	8010	0.01	0.05	mg/m2	C-5070	12/20/2011	12/22/2011	SM 10300 C D	
Chlorophyll-a	NA	5.3	1	2	mg/m3	C-5073	12/22/2011	12/22/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	34.1	1	2	mg/m2	C-5073	12/22/2011	12/22/2011	SM 10200 H	
Physis Sample ID: 10972-R1	**Bioassess-E**					**Biologic**	**Sampled: 16-Dec-11**	**9:00**	**Received: 20-Dec-11**	
Ash-Free Dry Weight	NA	19578	0.01	0.05	mg/m2	C-5070	12/20/2011	12/22/2011	SM 10300 C D	
Chlorophyll-a	NA	5.3	1	2	mg/m3	C-5073	12/22/2011	12/22/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	49.5	1	2	mg/m2	C-5073	12/22/2011	12/22/2011	SM 10200 H	

May 8, 2013
Agenda Item No.8
Supporting Document No. 5

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QUALITY CONTROL REPORT

PHYSIS
TERRA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

Appendix C14.A3 *continued*

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

1904 E. Wright Circle, Anaheim CA 92806 main: (714) 602-5320 fax: (714) 602-5321 www.physislabs.com info@physislabs.com CA ELAP #2769

Conventionals QUALITY CONTROL REPORT

Analyte	Batch ID	Result	MDL	RL	Units	Spike Level	Source Result	% Recovery	Acceptance Limits	Limit Pass/Fail	RPD	RPD LIMIT	Limit Pass/Fail	QA Code
Fraction: NA		**QAQC**	**Procedural Blank**											
Lab Blank **10965-B1**			**DI Water**											
Chlorophyll-a	C-5073	ND	1	2	mg/m3									
Prepared: 22-Dec-11														
Analyzed: 22-Dec-11														
Chlorophyll-a (Biomass)	C-5073	ND	1	2	mg/m2									
Prepared: 22-Dec-11														
Analyzed: 22-Dec-11														

May 8, 2013
Agenda Item No.8
Supporting Document No. 5

CHAIN OF CUSTODY

PHYSIS
TERRA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

Appendix C14.A3 *continued*

WESTON SOLUTIONS

☒ 2433 Impala Drive • Carlsbad, CA 92010 • (760) 795-6900, FAX 931-1580
☐ 428 Thirteenth St., Ste B, 6th Floor • Oakland, CA 94612 • (510) 788-3800, FAX 891-9710

CHAIN OF CUSTODY

32703

DATE 12.19.2011 PAGE 1 OF 1

PROJECT NAME / SURVEY / PROJECT NUMBER: Los Penesquitos Sewage Spill
PROJECT MANAGER / CONTACT: Bill Isham
CLIENT: Weston solutions
ADDRESS: see above
PHONE / FAX / EMAIL:

SITE ID (Location)	SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE / VOLUME	TOTAL NUMBER OF CONTAINER	ANALYSIS/TEST REQUESTED: Chl-a Watercolum	Chl-a Biomass	AFDM	PRESERVED HOW	SAMPLE TEMP. (°C) UPON RECEIPT	WESTON LAB ID
Los Pen Lagoon	LPL-SS	12/6/11	1345	BIO	Filter	1	X			FROZEN		
↓	LPL-SS-Dup	↓	↓	↓	↓	↓	X			↓		
	LPL-SS-FB	↓	↓				X					
Los Pen Creek	Bioassess-A	12/15/11	0915				X	X	X			
Carrol Canyon	Bioassess-C	↓	1230				↓	↓	↓			
Los Pen. Crk	Bioassess-D	12/16/11	1200									
↓	Bioassess-E	↓	0900	↓	↓	↓	↓	↓	↓	↓		

Sample Matrix Codes: FW=fresh water GW=ground water SLT=salt water SW=storm water WW=waste water SED=sediment A=air BIO=biologic SS=soil T=tissue O=other (specify) _____
Container Code: G=glass P=plastic B=bags O=other Filter
Shipped By: ☐ Courier ☐ UPS ☒ FedEx ☐ USPS ☐ Client drop off ☐ Other _____
Turnaround Time: ☐ 2-day ☐ 5-day ☐ 7-day ☐ 10-day ☐ 14-day ☒ Standard ☐ Other _____
Reporting Requirements: ☐ PDF ☒ EDD ☐ Hard Copy ☒ Email ☐ Other _____

SAMPLED BY: PRINT: Melissa Mathis SIGNATURE: M Mathis

COMMENTS / SPECIAL INSTRUCTIONS:
chl-a Watercolum report in mg/m3
chl-a Biomass report in mg/m2

RELINQUISHED BY				RECEIVED BY			
Print Name	Signature	Firm	Date/Time	Print Name	Signature	Firm	Date/Time
1. M Mathis	Weston	Melissa Mathis	12/19/1030	Richard Hanken		Physis	12/20/11 7:27
2.							
3.							
4.							
5.							
6.							

WHITE – return to originator • YELLOW – lab • PINK – retained by originator

Appendix C14.A3 *continued*

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.

PHYSIS PROJECT ID
1110012-003

SAMPLE RECEIPT SUMMARY

CLIENT: Weston | Date Received: 12/20/11 | Received By: RGH | Inspected By: RGH

COURIER
☐ PHYSIS ☐ CLIENT ☑ FEDEX ☐ UPS
start ____ end ____ ☐ OTHER: ____

COOLER
☑ COOLER ☐ BOX total # 1
☐ OTHER: ____

TEMPERATURE
5 °C ☐ WET ICE ☑ BLUE ICE ☐ DRY ICE ☐ NONE

SAMPLE INTEGRITY UPON RECEIPT

1. COC(s) included and completely filled out..... *YES*
2. All sample containers arrived intact..... *YES*
3. All samples listed on COC(s) are present..... *YES*
4. Information on containers consistent with information on COC(s)..... *YES*
5. Correct containers and volume for all analyses indicated..... *YES*
6. All samples received within method holding time..... *YES*
7. Correct preservation used for all analyses indicated..... *YES*

NOTES

Reset Form

1904 E. Wright Circle, Anaheim CA 92806 (714) 602-5320 main / (714) 602-5321 fax

Print Form

PDF processed with CutePDF evaluation edition www.CutePDF.com

Appendix C14.A3 *continued*

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

January 05, 2012

Bill Isham
Weston Solutions, Inc.
2433 Impala Drive
Carlsbad, CA 92010-

Project Name: Los Penesquitos Creek Sewage Spill
Physis Project ID: 1110012-004

Dear Bill,

Enclosed are the analytical results for samples submitted to PHYSIS Environmental Laboratories, Inc. (PHYSIS) on 12/29/2011. A total of 4 samples were received for analysis in accordance with the attached chain of custody (COC). Per the COC, the samples were analyzed for:

Conventionals
Chlorophyll-a (Filter) by SM 10200 H (mg/m3)
Chlorophyll-a (Filter) by SM 10200 H (mg/m^2)
Algal Biomass Determination by Ash-free Dry Weight by SM 10300 C or D

Analytical results in this report apply only to samples submitted to PHYSIS in accordance with the COC and are intended to be considered in their entirety.

Please feel free to contact me at any time with any questions. PHYSIS appreciates the opportunity to provide you with our analytical and support services.

Regards,

Kurt Kline
Extension x 205
(707) 318-1590 cell
kurtkline@physislabs.com

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

ABBREVIATIONS and ACRONYMS

QM	Quality Manual
QA	Quality Assurance
QC	Quality Control
MDL	method detection limit
RL	reporting limit
R1	project sample
R2	project sample replicate
MS1	matrix spike
MS2	matrix spike replicate
B1	procedural blank
B2	procedural blank replicate
BS1	blank spike
BS2	blank spike replicate
LCS1	laboratory control spike
LCS2	laboratory control spike replicate
LCM1	laboratory control material
LCM2	laboratory control material replicate
CRM1	certified reference material
CRM2	certified reference material replicate
RPD	relative percent difference
LMW	low molecular weight
HMW	high molecular weight

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

QUALITY ASSURANCE SUMMARY

LABORATORY BATCH: Physis' QM defines a laboratory batch as a group of 20 or fewer project samples of similar matrix, processed together under the same conditions and with the same reagents. QC samples are associated with each batch and are used to assess the validity of the sample analyses.

PROCEDURAL BLANK: Laboratory contamination introduced during method use was assessed through the analysis of procedural blanks at a minimum frequency of one per batch. Physis' QM requires that all procedural blanks be below 10 times the MDL and all detectable constituents in the procedural blanks be flagged in the project sample results with a B qualifier.

ACCURACY: Accuracy of analytical measurements is the degree of closeness based on percent recovery calculations between measured values and the actual or true value and includes a combination of reproducibility error and systematic bias due to sampling and analytical operations. Accuracy of the project data was indicated by analysis of MS, BS, LCS, LCM, CRM, and/or surrogate spikes on a minimum frequency of one per batch. Physis' QM requires that 95% of the target compounds greater than 10 times the MDL be within the specified acceptance limits.

PRECISION: Precision is the agreement among a set of replicate measurements without assumption of knowledge of the true value and is based on RPD calculations between repeated values. Precision of the project data was determined by analysis of replicate MS1/MS2, BS1/BS2, LCS1/LCS2, LCM1/LCM2, CRM1/CRM2, surrogate spikes and/or replicate project sample analysis (R1/R2) on a minimum frequency of one per batch. Physis' QM requires that for 95% of the compounds greater than 10 times the MDL, the percent RPD should be within the specified acceptance range.

MATRIX SPIKES: MS samples were employed to assess the effect a particular project sample matrix has on the accuracy of a measurement. It is prepared by adding a known amount of the target analyte(s) to an aliquot of the project sample. Matrix spikes indicate the bias of analytical measurements due to chemical interferences inherent in the sample matrix. If the matrix spike recovery does not fall within the specified acceptance limits, it may be an indication of sample matrix interference in the specific project sample used for the MS. Intrinsic target analyte concentration in the specific project sample can also significantly impact MS recovery.

BLANK SPIKES: BS demonstrates performance of the preparation and analytical methods on a clean matrix void of potential matrix related interferences. The BS is performed in laboratory deionized water, making these recoveries a better indicator of the efficiency of the laboratory method per se.

CERTIFIED REFERENCE MATERIALS: CRMs are pre-homogenized materials of various matrices for which analytical information has been determined and certified by a recognized authority. These are used to provide a quantitative assessment of the accuracy of a preparation and analytical method. CRMs are analyzed to provide evidence that the laboratory method produces results that are comparable to those obtained by an independent organization.

SURROGATES: Where CRMs are unavailable, target analyte recovery can be assessed by monitoring added surrogate compounds/elements. A surrogate is a pure analyte unlikely to be found in any project sample and most often used with organic analytical procedures. Percent recovery is calculated for each surrogate and is used to monitor method performance within each discrete sample and is indicative of the procedure's ability to recover the actual analytes of interest.

HOLDING TIME: Method recommended holding times are the length of time a project sample can be stored

Appendix C14.A3 *continued*

under specific conditions after collection and prior to analysis without significantly affecting the analyte's concentration. Holding times can be extended if preservation techniques are employed to reduce biodegradation, volatilization, oxidation, sorption, precipitation, and other physical and chemical processes. Physis' QM requires that all samples analyzed beyond the method recommended holding time be flagged in the sample results with an H qualifier.

TOTAL/DISSOLVED FRACTION: In some instances, the results for the dissolved fraction may be higher than the total fraction for a particular analyte (e.g. trace metals). This is typically caused by the analytical variation for each result and indicates that the target analyte is primarily in the dissolved phase, within the sample.

PHYSIS QUALIFIER CODES

CODE	DEFINITION
*	see Case Narrative
ND	analyte not detected at or above the MDL
B	analyte was detected in the procedural blank greater than 10 times the MDL
E	analyte concentration exceeds the upper limit of the linear calibration range, reported value is estimated
H	sample received and/or analyzed past the recommended holding time
J	analyte was detected at a concentration below the RL and above the MDL, reported value is estimated
N	insufficient sample, analysis could not be performed
M	analyte was outside the specified recovery and/or RPD acceptance limits due to matrix interference. The associated B/BS were within limits, therefore the sample data was reported without further clarification
SH	analyte concentration in the project sample exceeded the spike concentration, therefore MS recovery and/or RPD acceptance limits do not apply
SL	analyte results for R1 and/or R2 were lower than 10 times the MDL, therefore RPD acceptance limits do not apply
NH	project sample was heterogeneous and sample homogeneity could not be readily achieved using routine laboratory practices, therefore RPD was outside the specified acceptance limits
R	Physis' QM allows for 5% of the target compounds greater than 10 times the MDL to be outside the specified acceptance limits for precision and/or accuracy. This is often due to random error and does not indicate any significant problems with the analysis of these project samples

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ANALYTICAL REPORT

PHYSIS
TERRA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

May 8, 2013
Agenda Item No.8
Supporting Document No. 5

Appendix C14.A3 *continued*

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature
1904 E. Wright Circle, Anaheim CA 92806 main: (714) 602-5320 fax: (714) 602-5321 www.physislabs.com info@physislabs.com CA ELAP #2769

Conventionals — ANALYTICAL REPORT

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	BATCH ID	PREPARED	ANALYZED	METHOD	QA CODE
Physis Sample ID: 11139-R1	**Bioassess A**					**Biologic**	**Sampled: 28-Dec-11 9:15**		**Received: 30-Dec-11**	
Ash-Free Dry Weight	NA	39729	0.01	0.05	mg/m2	C-5080	12/30/2011	1/4/2012	SM 10300 C D	
Chlorophyll-a	NA	ND	1	2	mg/m3	C-5079	12/30/2011	12/30/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	34.2	1	2	mg/m2	C-5079	12/30/2011	12/30/2011	SM 10200 H	
Physis Sample ID: 11140-R1	**Bioassess C**					**Biologic**	**Sampled: 28-Dec-11 10:45**		**Received: 30-Dec-11**	
Ash-Free Dry Weight	NA	14499	0.01	0.05	mg/m2	C-5080	12/30/2011	1/4/2012	SM 10300 C D	
Chlorophyll-a	NA	2.7	1	2	mg/m3	C-5079	12/30/2011	12/30/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	18.1	1	2	mg/m2	C-5079	12/30/2011	12/30/2011	SM 10200 H	
Physis Sample ID: 11141-R1	**Bioassess D**					**Biologic**	**Sampled: 28-Dec-11 12:15**		**Received: 30-Dec-11**	
Ash-Free Dry Weight	NA	19811	0.01	0.05	mg/m2	C-5080	12/30/2011	1/4/2012	SM 10300 C D	
Chlorophyll-a	NA	ND	1	2	mg/m3	C-5079	12/30/2011	12/30/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	40.5	1	2	mg/m2	C-5079	12/30/2011	12/30/2011	SM 10200 H	
Physis Sample ID: 11142-R1	**Bioassess E**					**Biologic**	**Sampled: 28-Dec-11 13:15**		**Received: 30-Dec-11**	
Ash-Free Dry Weight	NA	20484	0.01	0.05	mg/m2	C-5080	12/30/2011	1/4/2012	SM 10300 C D	
Chlorophyll-a	NA	3.6	1	2	mg/m3	C-5079	12/30/2011	12/30/2011	SM 10200 H	
Chlorophyll-a (Biomass)	NA	37.5	1	2	mg/m2	C-5079	12/30/2011	12/30/2011	SM 10200 H	

May 8, 2013
Agenda Item No.8
Supporting Document No. 5

Y:\EMTS\32.Reports\WasteWater\Special\Penasquitos\IO\201202FinalResp\Appendix C14_A.pdf

QUALITY CONTROL REPORT

PHYSIS
TERRA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

May 8, 2013
Agenda Item No.8
Supporting Document No. 5

Appendix C14.A3 *continued*

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

1904 E. Wright Circle, Anaheim CA 92806 main: (714) 602-5320 fax: (714) 602-5321 www.physislabs.com info@physislabs.com CA ELAP #2769

Conventionals QUALITY CONTROL REPORT

Analyte	Batch ID	Result	MDL	RL	Units	Spike Level	Source Result	% Recovery	Acceptance Limits	Limit Pass/Fail	RPD	RPD LIMIT	Limit Pass/Fail	QA Code
Fraction: NA		**QAQC**	**Procedural Blank**											
Lab Blank **11138-B1**			**DI Water**											
Chlorophyll-a	C-5079	ND	1	2	mg/m3									
Prepared: 30-Dec-11														
Analyzed: 30-Dec-11														
Chlorophyll-a (Biomass)	C-5079	ND	1	2	mg/m2									
Prepared: 30-Dec-11														
Analyzed: 30-Dec-11														

May 8, 2013
Agenda Item No.8
Supporting Document No. 5

CHAIN OF CUSTODY

PHYSIS
TERRA AURA
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

Appendix C14.A3 *continued*

WESTON SOLUTIONS

☒ 2433 Impala Drive • Carlsbad, CA 92010 • (760) 795-6900, FAX 931-1580
☐ 428 Thirteenth St., Ste B, 6th Floor • Oakland, CA 94612 • (510) 788-3800, FAX 891-9710

CHAIN OF CUSTODY

32704

DATE 12.29.2011 PAGE 1 OF 1

PROJECT NAME / SURVEY / PROJECT NUMBER: Los Peñesquitos Creek Sewage Spill
PROJECT MANAGER / CONTACT: Bill Isham
CLIENT: Weston Solutions
ADDRESS: See above
PHONE / FAX / EMAIL: u

SITE ID (Location)	SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE / VOLUME	TOTAL NUMBER OF CONTAINER	ANALYSIS/TEST REQUESTED: Chl a (Water Column)	Chl a (Biomass)	AFDM	PRESERVED HOW	SAMPLE TEMP. (°C) UPON RECEIPT	FOR WESTON USE ONLY: WESTON LAB ID
Los Peñesquitos Cr	Bioassess A	12.29.11	0915	BIO	Filter	1	X	X	X	Frozen		
Carrol Canyon Cr	Bioassess C	↓	1045	↓	↓	↓	↓	↓	↓	↓		
Los Peñesquitos Cr	Bioassess D		1215									
↓	Bioassess E		1345									

Sample Matrix Codes: FW=fresh water GW=ground water SLT=salt water SW=storm water WW=waste water SED=sediment A=air (BIO)=biologic SS=soil T=tissue O=other (specify) _____
Container Code: G=glass P=plastic B=bags X O=other Filter
Shipped By: ☐ Courier ☐ UPS ☒ FedEx ☐ USPS ☐ Client drop off ☐ Other _____
Turnaround Time: ☐ 2-day ☒ 5-day ☐ 7-day ☐ 10-day ☐ 14-day ☐ Standard ☐ Other _____
Reporting Requirements: ☐ PDF ☒ EDD ☐ Hard Copy ☒ Email ☐ Other _____

SAMPLED BY: PRINT: Melissa Mathis SIGNATURE: MMathis

COMMENTS / SPECIAL INSTRUCTIONS
Report Chl a watercolumn in mg/m3
Report Chl a Biomass in mg/m2
5 DAY RUSH TAT

RELINQUISHED BY				RECEIVED BY			
Print Name	Signature	Firm	Date/Time	Print Name	Signature	Firm	Date/Time
1.				Richard Hawken		MySIS	12/30/11 7:35
2.							
3.							
4.							
5.							
6.							

WHITE – return to originator • YELLOW – lab • PINK – retained by originator

Appendix C14.A3 *continued*

PHYSIS
TERRA FAUNA FLORA AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.

PHYSIS PROJECT ID
1110012-004

SAMPLE RECEIPT SUMMARY

CLIENT: Weston | Date Received: 12/30/11 | Received By: RGH | Inspected By: RGH

COURIER
☐ PHYSIS ☐ CLIENT ☑ FEDEX ☐ UPS
start ___ end ___ ☐ OTHER: _____

COOLER
☑ COOLER ☐ BOX total # 1
☐ OTHER: _____

TEMPERATURE
6 °C ☐ WET ICE ☑ BLUE ICE
☐ DRY ICE ☐ NONE

SAMPLE INTEGRITY UPON RECEIPT

1. COC(s) included and completely filled out..... ***NO; see notes below***
2. All sample containers arrived intact..... ***YES***
3. All samples listed on COC(s) are present..... ***YES***
4. Information on containers consistent with information on COC(s)..... ***YES***
5. Correct containers and volume for all analyses indicated..... ***YES***
6. All samples received within method holding time..... ***YES***
7. Correct preservation used for all analyses indicated..... ***YES***

NOTES

COC's relinquished by wasn't signed.

Reset Form

1904 E. Wright Circle, Anaheim CA 92806 (714) 602-5320 main / (714) 602-5321 fax

Print Form

PDF processed with CutePDF evaluation edition www.CutePDF.com

Appendix C14.A3 *continued*

Kurt Kline

From: Mathis, Melissa [Melissa.Mathis@WestonSolutions.com]
Sent: Thursday, January 19, 2012 2:41 PM
To: Kurt Kline
Cc: Isham, William
Subject: Los Penesquitos Report Error
Attachments: Physis Weston LPC 1110012-004 REPORT.pdf

Hello Kurt,

I'm emailing in regards to an error I made on the Los Penesquitos Sewage Spill COC, dated 12.29.2011. I wrote on the COC that samples were collected on 12.29.11, but they were actually collected on 12.28.2011. The same date, 12.28.2011, should also have appeared on all of the sample labels as well. I would like to have the report (Jan 05, 2012) revised to reflect the correct date. I apologize for any inconvenience.

Thanks,

Melissa Mathis
Project Scientist
Weston Solutions, Inc.
2433 Impala Drive
Carlsbad CA 92010
office: (760) 795-6938
cell: (760) 908-5734
melissa.mathis@westonsolutions.com

CONFIDENTIALITY: This email and attachments may contain information which is confidential and proprietary. Disclosure or use of any such confidential or proprietary information without the written permission of Weston Solutions, Inc. is strictly prohibited. If you received this email in error, please notify the sender by return e-mail and delete this email from your system. Thank you.

Appendix C14.A3 *continued*

EnviroMatrix Analytical, Inc.

27 December 2011

Weston Solutions, Inc-Carlsbad
Attn: Bill Isham
2433 Impala Drive
Carlsbad, California 92008

EMA Log#: 11L0143

Project Name: Los Penesquitos Sewage Spill

Enclosed with this letter are the test results performed by subcontract laboratory for the following analyses:

- Chlorophyll A & B

The samples were received by EnviroMatrix Analytical, Inc. intact and with chain-of-custody documentation. The test results and pertinent quality assurance/quality control data are listed on the attached tables.

I certify that this data report is in compliance both technically and for completeness. Release of the data contained in this hard copy data report has been authorized by the following signature.

Dan Verdon
Laboratory Director

4340 Viewridge Avenue, Suite A • San Diego, California 92123 • (858) 560-7717 • Fax (858) 560-7763
Analytical Chemistry Laboratory

Appendix C14.A3 *continued*

Enviromatrix Los Penesquitos Chlorophyll 2011
C:\Documents and Settings\lidick.EMA\Local Settings\Temporary Internet Files\OLK9A\2011 Enviromatrix Los Penesquitos Chlorophyll (pin5914)

EcoAnalysts, Inc.
University of Idaho Analytical Sciences Laboratory

EcoA#	Sample ID	Collection Date	Collecton Time	Matrix	Analyte	Report Result	Units	Detect Limit	Analysis Method	Results_ Commnt
5914.1-1	LPL-SS-T1-O	6-Dec-11	1400	Solid - Wet Weight	Chlorophyll A	12	µg	0.1	Winterman/DeMots Mod. - Liquid	
5914.1-1	LPL-SS-T1-O	6-Dec-11	1400	Solid - Wet Weight	Chlorophyll B	< 0.1	µg	0.1	Winterman/DeMots Mod. - Liquid	
5914.1-1	LPL-SS-T1-O	6-Dec-11	1400	Solid - Wet Weight	Chlorophyll A & B	12	µg	0.1	Winterman/DeMots Mod. - Liquid	
5914.1-1	LPL-SS-T1-O	6-Dec-11	1400	Solid - Wet Weight	Sample Volume	67.4	g	—	Winterman/DeMots Mod. - Liquid	
5914.1-2	LPL-SS-T1-L	6-Dec-11	1400	Solid - Wet Weight	Chlorophyll A	25	µg	0.1	Winterman/DeMots Mod. - Liquid	
5914.1-2	LPL-SS-T1-L	6-Dec-11	1400	Solid - Wet Weight	Chlorophyll B	< 0.1	µg	0.1	Winterman/DeMots Mod. - Liquid	
5914.1-2	LPL-SS-T1-L	6-Dec-11	1400	Solid - Wet Weight	Chlorophyll A & B	25	µg	0.1	Winterman/DeMots Mod. - Liquid	
5914.1-2	LPL-SS-T1-L	6-Dec-11	1400	Solid - Wet Weight	Sample Volume	54.6	g	—	Winterman/DeMots Mod. - Liquid	
5914.1-3	LPL-SS-T2-O	6-Dec-11	1400	Solid - Wet Weight	Chlorophyll A	26	µg	0.1	Winterman/DeMots Mod. - Liquid	
5914.1-3	LPL-SS-T2-O	6-Dec-11	1400	Solid - Wet Weight	Chlorophyll B	< 0.1	µg	0.1	Winterman/DeMots Mod. - Liquid	
5914.1-3	LPL-SS-T2-O	6-Dec-11	1400	Solid - Wet Weight	Chlorophyll A & B	26	µg	0.1	Winterman/DeMots Mod. - Liquid	
5914.1-3	LPL-SS-T2-O	6-Dec-11	1400	Solid - Wet Weight	Sample Volume	54.1	g	—	Winterman/DeMots Mod. - Liquid	
5914.1-4	LPL-SS-T2-L	6-Dec-11	1400	Solid - Wet Weight	Chlorophyll A	3.1	µg	0.1	Winterman/DeMots Mod. - Liquid	
5914.1-4	LPL-SS-T2-L	6-Dec-11	1400	Solid - Wet Weight	Chlorophyll B	0.27	µg	0.1	Winterman/DeMots Mod. - Liquid	
5914.1-4	LPL-SS-T2-L	6-Dec-11	1400	Solid - Wet Weight	Chlorophyll A & B	3.3	µg	0.1	Winterman/DeMots Mod. - Liquid	
5914.1-4	LPL-SS-T2-L	6-Dec-11	1400	Solid - Wet Weight	Sample Volume	66.4	g	—	Winterman/DeMots Mod. - Liquid	
5914.1-5	LPL-SS-T3-O	6-Dec-11	1400	Solid - Wet Weight	Chlorophyll A	17	µg	0.1	Winterman/DeMots Mod. - Liquid	
5914.1-5	LPL-SS-T3-O	6-Dec-11	1400	Solid - Wet Weight	Chlorophyll B	0.43	µg	0.1	Winterman/DeMots Mod. - Liquid	
5914.1-5	LPL-SS-T3-O	6-Dec-11	1400	Solid - Wet Weight	Chlorophyll A & B	18	µg	0.1	Winterman/DeMots Mod. - Liquid	
5914.1-5	LPL-SS-T3-O	6-Dec-11	1400	Solid - Wet Weight	Sample Volume	59.7	g	—	Winterman/DeMots Mod. - Liquid	
5914.1-6	LPL-SS-T3-L	6-Dec-11	1400	Solid - Wet Weight	Chlorophyll A	34	µg	0.1	Winterman/DeMots Mod. - Liquid	
5914.1-6	LPL-SS-T3-L	6-Dec-11	1400	Solid - Wet Weight	Chlorophyll B	0.38	µg	0.1	Winterman/DeMots Mod. - Liquid	
5914.1-6	LPL-SS-T3-L	6-Dec-11	1400	Solid - Wet Weight	Chlorophyll A & B	34	µg	0.1	Winterman/DeMots Mod. - Liquid	
5914.1-6	LPL-SS-T3-L	6-Dec-11	1400	Solid - Wet Weight	Sample Volume	57.8	g	—	Winterman/DeMots Mod. - Liquid	

Appendix C14.A3 *continued*

ASL ID
E1103788
E1103788
E1103788
E1103788
E1103789
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E1103790
E1103790
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E1103793
E1103793
E1103793
E1103793

Appendix C14.A3 *continued*

2433 Impala Drive • Carlsbad, CA 92010 • (760) 795-6900, FAX 931-1580
428 Thirteenth St., Ste B, 6th Floor • Oakland, CA 94612 • (510) 788-3800, FAX 891-9710

CHAIN OF CUSTODY

32553

DATE 12/6/2011 PAGE 1 OF 1

PROJECT NAME / SURVEY / PROJECT NUMBER: Los Penasquitos Sewage Spill 1LL0143
PROJECT MANAGER / CONTACT: Bill Isham
CLIENT: Weston Solutions
ADDRESS: See above
PHONE / FAX / EMAIL: "

SITE ID (Location)	SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE / VOLUME	TOTAL NUMBER OF CONTAINER	ANALYSIS/TEST REQUESTED: Chlorophyll a	PRESERVED HOW	SAMPLE TEMP. (°C) UPON RECEIPT	FOR WESTON USE ONLY: WESTON LAB ID
	LPL-SS-T1-O ✓	12.6.11	1400	SED	4oz G	1	X	Ice		
	LPL-SS-T1-L ✓		1400							
	LPL-SS-T2-O ✓		1410							
	LPL-SS-T2-L ✓		1410							
	LPL-SS-T3-O ✓		1420							
	LPL-SS-T3-L ✓		1420							

DEC 6'11 14:33

Sample Matrix Codes: FW= fresh water GW=ground water SLT=salt water SW=storm water WW=waste water SED=sediment A=air BIO=biologic SS=soil T=tissue O=other (specify) _____
Container Code: G=glass P=plastic B=bags O=other _____
Shipped By: ☐ Courier ☐ UPS ☐ FedEx ☐ USPS ☒ Client drop off ☐ Other _____
Turnaround Time: ☐ 2-day ☐ 5-day ☐ 7-day ☐ 10-day ☐ 14-day ☒ Standard ☐ Other _____
Reporting Requirements: ☒ PDF ☒ EDD ☐ Hard Copy ☒ e-mail ☐ Other _____

SAMPLED BY: PRINT / SIGNATURE
Damon Owen
Melissa Mathis 7°C on ice

COMMENTS / SPECIAL INSTRUCTIONS
Volume sampled: 53 cm^3 each sample
(5.3 cm^2 × 10 plugs × 1 cm depth sampled)

RELINQUISHED BY: Print Name	Signature	Firm	Date/Time	RECEIVED BY: Print Name	Signature	Firm	Date/Time
1. Damon Owen		Weston	12 6.11/1430	R Isham		Weston	6Dec11/1430
2. Bill Isham		Weston	6Dec11/1500	Brad Donohue		EMA	12/6/11 1500
3.				J Reynolds		Eco Analysts	12/7/11
4.							
5.							
6.							

WHITE – return to originator • YELLOW – lab • PINK – retained by originator

Appendix C14.A3 *continued*

SUBCONTRACT ORDER

EnviroMatrix Analytical, Inc.

11L0143

SENDING LABORATORY:

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123
Phone: (858) 560-7717
Fax: (858) 560-7763
Project Manager: Jennifer Beyer

RECEIVING LABORATORY:

EcoAnalysts, Inc.
1420 S. Blaine St. Ste. 14
Moscow, ID 83843
Phone :(208) 882-2588
Fax: -

PLEASE SEND REPORTS TO:
jbeyer@enviromatrixinc.com;
lluick@enviromatrixinc.com;
reports@enviromatrixinc.com.
Use comments as sample ID on report.

Analysis	Due STND	Expires	Laboratory ID	Comments
Sample ID: 11L0143-01	**Water**	**Sampled:12/06/11 14:00**		
Chlorophyll A & B	~~12/15/11 16:00~~	12/30/11 14:00		LPL-SS-T1-O
Containers Supplied:				
4 oz. jar (A)				
Sample ID: 11L0143-02	**Water**	**Sampled:12/06/11 14:00**		
Chlorophyll A & B	~~12/15/11 16:00~~	12/30/11 14:00		LPL-SS-T1-L
Containers Supplied:				
4 oz. jar (A)				
Sample ID: 11L0143-03	**Water**	**Sampled:12/06/11 14:10**		
Chlorophyll A & B	~~12/15/11 16:00~~	12/30/11 14:10		LPL-SS-T2-O
Containers Supplied:				
4 oz. jar (A)				
Sample ID: 11L0143-04	**Water**	**Sampled:12/06/11 14:10**		
Chlorophyll A & B	~~12/15/11 16:00~~	12/30/11 14:10		LPL-SS-T2-L
Containers Supplied:				
4 oz. jar (A)				
Sample ID: 11L0143-05	**Water**	**Sampled:12/06/11 14:20**		
Chlorophyll A & B	~~12/15/11 16:00~~	12/30/11 14:20		LPL-SS-T3-O
Containers Supplied:				
4 oz. jar (A)				
Sample ID: 11L0143-06	**Water**	**Sampled:12/06/11 14:20**		
Chlorophyll A & B	~~12/15/11 16:00~~	12/30/11 14:20		LPL-SS-T3-L
Containers Supplied:				
4 oz. jar (A)				

Ref:
Dep:

Date: 06Dec11
Wgt: 16.0 LBS
DV: 0.00

SHIPPING: 78.77
SPECIAL: 13.94
HANDLING: 0.00
TOTAL: 92.71

Svcs: STANDARD OVERNIGHT
TRCK: 7124 6892 3852

Released By 12/6/11 Date

Received By

Released By Date Received By Date

Page 1 of 1

Appendix C14.A3 *continued*

WESTON SOLUTIONS

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CHAIN OF CUSTODY

32553

DATE 12/6/2011 PAGE 1 OF 1

PROJECT NAME / SURVEY / PROJECT NUMBER: Los Penasquitos Sewage Spill 11L0143
PROJECT MANAGER / CONTACT: Bill Isham
CLIENT: Weston Solutions
ADDRESS: See above
PHONE / FAX / EMAIL: "

SITE ID (Location)	SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE / VOLUME	TOTAL NUMBER OF CONTAINER	ANALYSIS/TEST REQUESTED: Chlorophyll a	PRESERVED HOW	SAMPLE TEMP. (°C) UPON RECEIPT	FOR WESTON USE ONLY: WESTON LAB ID
	LPL-SS-T1-O	12.6.11	1400	SED	4oz-G	1	X	ice		
	LPL-SS-T1-L	↓	1400	↓	↓	↓	↓	↓		
	LPL-SS-T2-O		1410							
	LPL-SS-T2-L		1410							
	LPL-SS-T3-O		1420							
	LPL-SS-T3-L		1420							DEC 6'11 14:30

Sample Matrix Codes: FW= fresh water GW=ground water SLT=salt water SW=storm water WW=waste water SED=sediment A=air BIO=biologic SS=soil T=tissue O=other (specify) _____
Container Code: G=glass P=plastic B=bags O=other _____
Shipped By: ☐ Courier ☐ UPS ☐ FedEx ☐ USPS ☒ Client drop off ☐ Other _____
Turnaround Time: ☐ 2-day ☐ 5-day ☐ 7-day ☐ 10-day ☐ 14-day ☒ Standard ☐ Other _____
Reporting Requirements: ☐ PDF ☒ EDD ☐ Hard Copy ☒ e-mail ☐ Other _____

SAMPLED BY: PRINT Damon Owen / Melissa Mathis SIGNATURE 2°C on ice

COMMENTS / SPECIAL INSTRUCTIONS: Volume sampled: 53 cm³ each sample (5.3 cm² x 10 plugs x 1 cm depth sampled)

RELINQUISHED BY				RECEIVED BY			
Print Name	Signature	Firm	Date/Time	Print Name	Signature	Firm	Date/Time
1. Damon Owen		Weston 12	6.11/1430	B Isham		Weston 6Dec11	1430
2. Bill Isham		Weston 6Dec11	1500	Brad Donohue		EMA	12/6/11 1500
3.							
4.							
5.							
6.							

WHITE – return to originator • YELLOW – lab • PINK – retained by originator

Appendix C14.A3 *continued*

Weck Laboratories, Inc.
Analytical Laboratory Service - Since 1964

CERTIFICATE OF ANALYSIS

Client:	Weston Solutions, Inc. 2433 Impala Drive Carlsbad, CA 92010	**Report Date:**	01/10/12 11:17
		Received Date:	12/07/11 12:00
		Turn Around:	Normal
Attention:	David Renfrew	**Work Order #:**	1L07033
Phone:	(760) 795-6903		
Fax:	(760) 931-1580	**Client Project:**	Los Penasquitos Sewage Spill

NELAP #04229CA ELAP#1132 NEVADA #CA211 HAWAII LACSD #10143

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. Weck Laboratories, Inc. certifies that the test results meet all NELAC requirements unless noted in the case narrative. This analytical report is confidential and is only intended for the use of Weck Laboratories, Inc. and its client. This report contains the Chain of Custody document, which is an integral part of it, and can only be reproduced in full with the authorization of Weck Laboratories, Inc.

Dear David Renfrew :

Enclosed are the results of analyses for samples received 12/07/11 12:00 with the Chain of Custody document. The samples were received in good condition, at 1.7 °C and on ice. All analysis met the method criteria except as noted below or in the report with data qualifiers.

Case Narrative:

Reviewed by:

Hai Van Nguyen
Project Manager

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634
The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety
www.wecklabs.com

Appendix C14.A3 *continued*

Weck Laboratories, Inc.
Analytical Laboratory Service - Since 1964

Weston Solutions, Inc.
2433 Impala Drive
Carlsbad CA, 92010

Report ID: 1L07033
Project ID: Los Penasquitos Sewage Spill

Date Received: 12/07/11 12:00
Date Reported: 01/10/12 11:17

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Sample Comments	Lab ID	Matrix	Date Sampled
LPL-SS-FB	Damon Owen/Meli		1L07033-01	Water	12/06/11 13:45
LPL-SS	Damon Owen/Meli		1L07033-02	Water	12/06/11 13:30
LPL-SS-DUP	Damon Owen/Meli		1L07033-03	Water	12/06/11 13:30

ANALYSES

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634
The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety
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Appendix C14.A3 *continued*

Weck Laboratories, Inc.
Analytical Laboratory Service - Since 1964

Weston Solutions, Inc.
2433 Impala Drive
Carlsbad CA, 92010

Report ID: 1L07033
Project ID: Los Penasquitos Sewage Spill

Date Received: 12/07/11 12:00
Date Reported: 01/10/12 11:17

1L07033-01 LPL-SS-FB

Sampled: 12/06/11 13:45 **Sampled By:** Damon Owen/Melissa Mathis **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: [CALC] Batch: [CALC] Prepared: 12/14/11 10:00 Analyzed: 12/20/11 17:17 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
Dissolved Nitrogen	ND	0.081	0.20	mg/l	1	
Nitrogen, Total	ND	0.084	0.20	mg/l	1	

Method: EPA 353.2 Batch: W1L0272 Prepared: 12/07/11 10:58 Analyzed: 12/07/11 13:59 Analyst: sml

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
Nitrate as N	ND	0.041	0.10	mg/l	1	
Nitrite as N	ND	0.010	0.10	mg/l	1	
NO2+NO3 as N	**29**	10	100	ug/l	1	J

Method: EPA 365.3 Batch: W1L0309 Prepared: 12/08/11 08:43 Analyzed: 12/08/11 09:06 Analyst: abt

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
o-Phosphate as P	ND	0.00083	0.010	mg/l	1	

Method: EPA 351.2 Batch: W1L0373 Prepared: 12/12/11 10:00 Analyzed: 12/19/11 17:17 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
TKN	**0.095**	0.074	0.10	mg/l	1	J

Method: EPA 365.1 Batch: W1L0408 Prepared: 12/09/11 18:37 Analyzed: 12/12/11 12:18 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
Phosphorus as P, Total	**0.0014**	0.0014	0.010	mg/l	1	J

Method: EPA 350.1 Batch: W1L0539 Prepared: 12/13/11 16:03 Analyzed: 12/15/11 21:00 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
Ammonia as N	ND	0.048	0.10	mg/l	1	

Method: EPA 351.2 Batch: W1L0566 Prepared: 12/14/11 10:00 Analyzed: 12/20/11 17:17 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
TKN, Soluble	ND	0.071	0.10	mg/l	1	

Method: EPA 365.1 Batch: W1L0714 Prepared: 12/16/11 14:12 Analyzed: 12/19/11 15:00 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
Phosphorus, Dissolved	ND	0.0014	0.010	mg/l	1	

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Appendix C14.A3 *continued*

Weck Laboratories, Inc.
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Weston Solutions, Inc.
2433 Impala Drive
Carlsbad CA, 92010

Report ID: 1L07033
Project ID: Los Penasquitos Sewage Spill

Date Received: 12/07/11 12:00
Date Reported: 01/10/12 11:17

1L07033-02 LPL-SS

Sampled: 12/06/11 13:30 **Sampled By:** Damon Owen/Melissa Mathis **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: [CALC] Batch: [CALC] Prepared: 12/14/11 10:00 Analyzed: 12/20/11 17:18 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
Dissolved Nitrogen	**0.20**	0.081	0.20	mg/l	1	
Nitrogen, Total	**0.50**	0.084	0.20	mg/l	1	

Method: EPA 353.2 Batch: W1L0272 Prepared: 12/07/11 10:58 Analyzed: 12/07/11 14:42 Analyst: sml

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
Nitrate as N	**0.053**	0.041	0.10	mg/l	1	J
Nitrite as N	ND	0.010	0.10	mg/l	1	
NO2+NO3 as N	**53**	10	100	ug/l	1	J

Method: EPA 365.3 Batch: W1L0309 Prepared: 12/08/11 08:43 Analyzed: 12/08/11 09:06 Analyst: abt

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
o-Phosphate as P	**0.036**	0.00083	0.010	mg/l	1	

Method: EPA 351.2 Batch: W1L0373 Prepared: 12/12/11 10:00 Analyzed: 12/19/11 17:21 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
TKN	**0.44**	0.074	0.10	mg/l	1	

Method: EPA 365.1 Batch: W1L0408 Prepared: 12/09/11 18:37 Analyzed: 12/12/11 12:25 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
Phosphorus as P, Total	**0.082**	0.0014	0.010	mg/l	1	

Method: EPA 350.1 Batch: W1L0539 Prepared: 12/13/11 16:03 Analyzed: 12/15/11 21:04 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
Ammonia as N	**0.086**	0.048	0.10	mg/l	1	J

Method: EPA 351.2 Batch: W1L0566 Prepared: 12/14/11 10:00 Analyzed: 12/20/11 17:18 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
TKN, Soluble	**0.14**	0.071	0.10	mg/l	1	

Method: EPA 365.1 Batch: W1L0714 Prepared: 12/16/11 14:12 Analyzed: 12/19/11 15:14 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
Phosphorus, Dissolved	**0.046**	0.0014	0.010	mg/l	1	

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Appendix C14.A3 *continued*

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Report ID: 1L07033
Project ID: Los Penasquitos Sewage Spill

Date Received: 12/07/11 12:00
Date Reported: 01/10/12 11:17

1L07033-03 LPL-SS-DUP

Sampled: 12/06/11 13:30 **Sampled By:** Damon Owen/Melissa Mathis **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: [CALC] Batch: [CALC] Prepared: 12/14/11 10:00 Analyzed: 12/20/11 17:20 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
Dissolved Nitrogen	**0.21**	0.081	0.20	mg/l	1	
Nitrogen, Total	**0.52**	0.084	0.20	mg/l	1	

Method: EPA 353.2 Batch: W1L0272 Prepared: 12/07/11 10:58 Analyzed: 12/07/11 14:44 Analyst: sml

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
Nitrate as N	**0.050**	0.041	0.10	mg/l	1	J
Nitrite as N	ND	0.010	0.10	mg/l	1	
NO2+NO3 as N	**50**	10	100	ug/l	1	J

Method: EPA 365.3 Batch: W1L0309 Prepared: 12/08/11 08:43 Analyzed: 12/08/11 09:06 Analyst: abt

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
o-Phosphate as P	**0.043**	0.00083	0.010	mg/l	1	

Method: EPA 351.2 Batch: W1L0373 Prepared: 12/12/11 10:00 Analyzed: 12/19/11 17:22 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
TKN	**0.47**	0.074	0.10	mg/l	1	

Method: EPA 365.1 Batch: W1L0408 Prepared: 12/09/11 18:37 Analyzed: 12/12/11 12:27 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
Phosphorus as P, Total	**0.079**	0.0014	0.010	mg/l	1	

Method: EPA 350.1 Batch: W1L0539 Prepared: 12/13/11 16:03 Analyzed: 12/15/11 21:08 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
Ammonia as N	**0.13**	0.048	0.10	mg/l	1	

Method: EPA 351.2 Batch: W1L0566 Prepared: 12/14/11 10:00 Analyzed: 12/20/11 17:20 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
TKN, Soluble	**0.16**	0.071	0.10	mg/l	1	

Method: EPA 365.1 Batch: W1L0714 Prepared: 12/16/11 14:12 Analyzed: 12/19/11 15:03 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dilution	Qualifier
Phosphorus, Dissolved	**0.050**	0.0014	0.010	mg/l	1	

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Appendix C14.A3 *continued*

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Report ID: 1L07033
Project ID: Los Penasquitos Sewage Spill

Date Received: 12/07/11 12:00
Date Reported: 01/10/12 11:17

QUALITY CONTROL SECTION

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Weck Laboratories, Inc.
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Weston Solutions, Inc.
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Carlsbad CA, 92010

Report ID: 1L07033
Project ID: Los Penasquitos Sewage Spill

Date Received: 12/07/11 12:00
Date Reported: 01/10/12 11:17

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods - Quality Control

Batch W1L0272 - EPA 353.2

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W1L0272-BLK1)				Analyzed: 12/07/11 13:50						
Nitrate as N	ND	0.10	mg/l					NR		
Nitrite as N	ND	0.10	mg/l					NR		
NO2+NO3 as N	27.0	100	ug/l					NR		J
LCS (W1L0272-BS1)				Analyzed: 12/07/11 13:48						
Nitrate as N	1.00	0.10	mg/l	1.00		100	90-110	NR		
Nitrite as N	1.07	0.10	mg/l	1.00		107	90-110	NR		
NO2+NO3 as N	1000	100	ug/l	1000		100	90-110	NR		
Matrix Spike (W1L0272-MS1)	**Source: 1L06055-01**			Analyzed: 12/07/11 13:54						
Nitrate as N	2.23	0.10	mg/l	2.00	0.198	102	90-110	NR		
Nitrite as N	1.09	0.10	mg/l	1.00	ND	109	90-110	NR		
NO2+NO3 as N	2230	100	ug/l	2000	198	102	90-110	NR		
Matrix Spike (W1L0272-MS2)	**Source: 1L07033-01**			Analyzed: 12/07/11 14:01						
Nitrate as N	1.99	0.10	mg/l	2.00	ND	99	90-110	NR		
Nitrite as N	0.972	0.10	mg/l	1.00	ND	97	90-110	NR		
NO2+NO3 as N	1990	100	ug/l	2000	29.0	98	90-110	NR		
Matrix Spike Dup (W1L0272-MSD1)	**Source: 1L06055-01**			Analyzed: 12/07/11 13:56						
Nitrate as N	2.20	0.10	mg/l	2.00	0.198	100	90-110	2	20	
Nitrite as N	1.06	0.10	mg/l	1.00	ND	106	90-110	3	20	
NO2+NO3 as N	2200	100	ug/l	2000	198	100	90-110	2	20	
Matrix Spike Dup (W1L0272-MSD2)	**Source: 1L07033-01**			Analyzed: 12/07/11 14:03						
Nitrate as N	1.98	0.10	mg/l	2.00	ND	99	90-110	0.3	20	
Nitrite as N	0.984	0.10	mg/l	1.00	ND	98	90-110	1	20	
NO2+NO3 as N	1980	100	ug/l	2000	29.0	98	90-110	0.3	20	

Batch W1L0309 - EPA 365.3

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W1L0309-BLK1)				Analyzed: 12/08/11 09:06						
o-Phosphate as P	ND	0.010	mg/l							
LCS (W1L0309-BS1)				Analyzed: 12/08/11 09:06						
o-Phosphate as P	0.201	0.010	mg/l	0.200		100	85-115	NR		
Matrix Spike (W1L0309-MS1)	**Source: 1L07033-01**			Analyzed: 12/08/11 09:06						
o-Phosphate as P	0.203	0.010	mg/l	0.200	ND	102	80-120	NR		
Matrix Spike Dup (W1L0309-MSD1)	**Source: 1L07033-01**			Analyzed: 12/08/11 09:06						
o-Phosphate as P	0.208	0.010	mg/l	0.200	ND	104	80-120	2	20	

Batch W1L0373 - EPA 351.2

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Appendix C14.A3 *continued*

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Report ID: 1L07033
Project ID: Los Penasquitos Sewage Spill

Date Received: 12/07/11 12:00
Date Reported: 01/10/12 11:17

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods - Quality Control

Batch W1L0373 - EPA 351.2

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W1L0373-BLK1)				Analyzed: 12/19/11 17:15						
TKN	ND	0.10	mg/l					NR		
LCS (W1L0373-BS1)				Analyzed: 12/19/11 17:16						
TKN	1.03	0.10	mg/l	1.00		103	90-110	NR		
Matrix Spike (W1L0373-MS1)	**Source: 1L07033-01**			Analyzed: 12/19/11 17:18						
TKN	1.14	0.10	mg/l	1.00	0.0952	104	90-110	NR		
Matrix Spike (W1L0373-MS2)	**Source: 1L07046-01**			Analyzed: 12/19/11 17:24						
TKN	1.72	0.10	mg/l	1.00	0.646	107	90-110	NR		
Matrix Spike Dup (W1L0373-MSD1)	**Source: 1L07033-01**			Analyzed: 12/19/11 17:20						
TKN	1.07	0.10	mg/l	1.00	0.0952	98	90-110	6	15	
Matrix Spike Dup (W1L0373-MSD2)	**Source: 1L07046-01**			Analyzed: 12/19/11 17:26						
TKN	1.68	0.10	mg/l	1.00	0.646	104	90-110	2	15	

Batch W1L0408 - EPA 365.1

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W1L0408-BLK1)				Analyzed: 12/12/11 12:07						
Phosphorus as P, Total	ND	0.010	mg/l					NR		
LCS (W1L0408-BS1)				Analyzed: 12/12/11 12:08						
Phosphorus as P, Total	0.0500	0.010	mg/l	0.0500		100	90-110	NR		
Matrix Spike (W1L0408-MS1)	**Source: 1L07033-01**			Analyzed: 12/12/11 12:20						
Phosphorus as P, Total	0.0509	0.010	mg/l	0.0500	0.00142	99	90-110	NR		
Matrix Spike Dup (W1L0408-MSD1)	**Source: 1L07033-01**			Analyzed: 12/12/11 12:24						
Phosphorus as P, Total	0.0504	0.010	mg/l	0.0500	0.00142	98	90-110	1	10	

Batch W1L0539 - EPA 350.1

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W1L0539-BLK1)				Analyzed: 12/15/11 20:45						
Ammonia as N	ND	0.10	mg/l					NR		
LCS (W1L0539-BS1)				Analyzed: 12/15/11 20:46						
Ammonia as N	1.03	0.10	mg/l	1.00		103	90-110	NR		
Matrix Spike (W1L0539-MS1)	**Source: 1L07033-01**			Analyzed: 12/15/11 21:02						
Ammonia as N	1.02	0.10	mg/l	1.00	ND	102	90-110	NR		
Matrix Spike (W1L0539-MS2)	**Source: 1L07033-02**			Analyzed: 12/15/11 21:05						

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Appendix C14.A3 *continued*

Weck Laboratories, Inc.
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Report ID: 1L07033
Project ID: Los Penasquitos Sewage Spill

Date Received: 12/07/11 12:00
Date Reported: 01/10/12 11:17

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods - Quality Control

Batch W1L0539 - EPA 350.1

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Matrix Spike (W1L0539-MS2)	**Source: 1L07033-02**			Analyzed: 12/15/11 21:05						
Ammonia as N	1.06	0.10	mg/l	1.00	0.0855	97	90-110	NR		
Matrix Spike Dup (W1L0539-MSD1)	**Source: 1L07033-01**			Analyzed: 12/15/11 21:03						
Ammonia as N	1.02	0.10	mg/l	1.00	ND	102	90-110	NR	15	
Matrix Spike Dup (W1L0539-MSD2)	**Source: 1L07033-02**			Analyzed: 12/15/11 21:06						
Ammonia as N	1.07	0.10	mg/l	1.00	0.0855	98	90-110	0.9	15	

Batch W1L0566 - EPA 351.2

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W1L0566-BLK1)				Analyzed: 12/20/11 17:15						
TKN, Soluble	ND	0.10	mg/l					NR		
LCS (W1L0566-BS1)				Analyzed: 12/20/11 17:16						
TKN, Soluble	1.01	0.10	mg/l				90-110	NR		

Batch W1L0714 - EPA 365.1

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W1L0714-BLK1)				Analyzed: 12/19/11 14:57						
Phosphorus, Dissolved	ND	0.010	mg/l					NR		
LCS (W1L0714-BS1)				Analyzed: 12/19/11 14:58						
Phosphorus, Dissolved	0.0495	0.010	mg/l	0.0500		99	90-110	NR		

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Weck Laboratories, Inc.
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Weston Solutions, Inc.
2433 Impala Drive
Carlsbad CA, 92010

Report ID: 1L07033
Project ID: Los Penasquitos Sewage Spill

Date Received: 12/07/11 12:00
Date Reported: 01/10/12 11:17

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
ND	NOT DETECTED at or above the Reporting Limit. If J-value reported, then NOT DETECTED at or above the Method Detection Limit (MDL)
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Sub	Subcontracted analysis, original report available upon request
MDL	Method Detection Limit
MDA	Minimum Detectable Activity
MRL	Method Reporting Limit

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California Department of Health Services.

The Reporting Limit (RL) is referenced as the Laboratory's Practical Quantitation Limit (PQL) or the Detection Limit for Reporting Purposes (DLR).

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

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Appendix C14.A3 *continued*

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CHAIN OF CUSTODY

1307033

32671

DATE 6 DEC 2011 PAGE 1 OF 1

PROJECT NAME / SURVEY / PROJECT NUMBER	Los Peñasquitos Sewage Spill
PROJECT MANAGER / CONTACT	Bill Isham
CLIENT	Weston
ADDRESS	See Above
PHONE / FAX / EMAIL	" "

SITE ID (Location)	SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE / VOLUME	TOTAL NUMBER OF CONTAINER	ANALYSIS/TEST REQUESTED: Nitrate	Nitrite	Ammonia	Ortho phosphate (SM4500) *	Total Diss. Nitrogen *	Total Diss. Phosphorus *	Total N	Total P	PRESERVED HOW	FOR WESTON USE ONLY: SAMPLE TEMP. (°C) UPON RECEIPT	WESTON LAB ID
LPL-SS-FB	LPL-SS-FB	12.6.11	1345	FW	P/500ml 250ml	9	X	X	X	X	X	X	X	X	Ice/H_2SO_4		
LPL-SS	LPL-SS	↓	1330	SLT	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
LPL-SS	LPL-SS-DUP	↓	1330	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		

Sample Matrix Codes: FW= fresh water GW=ground water (SLT=salt water) SW=storm water WW=waste water SED=sediment A=air BIC=biologic SS=soil T=tissue O=other (specify) _____

Container Code: G=glass P=plastic B=bags ☐ O=other _____

Shipped By: ☐ Courier ☐ UPS ☐ FedEx ☐ USPS ☐ Client drop off ☐ Other _____

Turnaround Time: ☐ 2-day ☐ 5-day ☐ 7-day ☐ 10-day ☐ 14-day ☐ Standard ☐ Other _____

Reporting Requirements: ☐ PDF ☐ EDD ☐ Hard Copy ☐ Email ☐ Other _____

SAMPLED BY: PRINT: Damon Owen, Melissa Mathis SIGNATURE: D O

COMMENTS / SPECIAL INSTRUCTIONS: Ortho-P, Tot. Diss. N, Tot. Diss P filtered in field

RELINQUISHED BY				RECEIVED BY			
Print Name	Signature	Firm	Date/Time	Print Name	Signature	Firm	Date/Time
1. Damon Owen		Weston	12.7.11/1023	Claudio Romero		Weck	12.7.11
2. Claudio Romero		Weck	12.7.11/11:57	~~Abby Stephanie Cocca~~	Stephanie Cocca	Weck	12.7.11 12:00
3.							
4.							
5.							
6.							

WHITE – return to originator • YELLOW – lab • PINK – retained by originator

Appendix C14.A3 *continued*

Domoic Acid DATA REPORT

REQUESTOR Bill Isham, Weston Solutions Inc.
RUN BY: R Kudela
ANALYSIS: Domoic Acid particulate (GFF) sample

METHOD
LC/MS, AGILENT 6130
GRADIENT ELUTION, Agilent ZORBAX 2.1x50 C18

DATA

SAMPLE	Date Received	Date Analyzed	pDA (ng/L)	dDA (µg/L)
Los Penaquitos Lagoon (WESTON-LPL-95)	12/8/11	12/9/11	< 5	NR
Blank			< MDL	NR
Matrix Spike (% Recovery)			99	NR

QA/QC

MDL = 1 ng/L (based on provided volume of 250 mL)
RL= 5 ng/L (5x MDL)
Percent Recovery based on standard addition to sample matrix
STD CURVE
R2: 0.999
SLOPE: 2.57E-4
STD: CRM DA-f

METHOD

Sample processed according to methods described in Wang et al. 2007, Lane et al. 2010. The whole filter was sonicated (on ice) in 10% MeOH, syringe-filtered, and analyzed by LC/MS using an Agilent 6130 instrument equipped with a Agilent ZORBAX C18 column. MDL based on 7x replicate analysis of 3 ng/mL standards (on column). Matrix Spike recovery and blanks included for every 10 samples. Pre-analysis cleanup followed Wang et al. 2007 using Agilent Bond-Elut SPE cartridges.

Wang, Z, KL King, JS Ramsdell, GJ Doucette. 2007. Determination of domoic acid in seawater and phytoplankton by liquid chromatography-tandem mass spectrometry. Journal of Chromatography A, 1163: 169-176.

Lane, JQ, CM Roddam, GW Langlois, and RM Kudela 2010. Application of Solid Phase Adsorption Toxin Tracking (SPATT) for field detection of domoic acid and saxitoxin in coastal California, *Limnology and Oceanography Methods,* 8:645-660.

Appendix C14.A3 *continued*

MICROCYSTIN DATA REPORT

REQUESTOR Bill Isham, Weston Solutions Inc.
RUN BY: R Kudela
ANALYSIS: MCY-LR, RR, YR, LA particulate (GFF) sample

METHOD
LC/MS, AGILENT 6130
GRADIENT ELUTION, PHENOMENEX KINETIX 100X2.10 C18
MC-995, MCLR

DATA

SAMPLE	Date Received	Date Analyzed	MCY-LR (ug/L)	MCY-RR (ug/L)	MCY-YR (ug/L)	MCY-LA (ug/L)
Los Penaquitos Lagoon (WESTON-LPL-95)	12/8/11	12/11/11	< 8E-4	(9E-4)	6.87E-3	1.22E-2
Blank			< MDL	<MDL	<MDL	<MDL
Matrix Spike (% Recovery)			98	88	101	99

QA/QC

MDL = 8E-4 µg/L (based on provided volume of 250 mL)
RL= 4E-3 µg/L (5x MDL)
Percent Recovery based on standard addition to sample matrix
STD CURVE
R2: 0.997, 0.997, 0.999, 0.982
SLOPE: 3.19E-4, 6.12E-5, 4.2E-4, 4.12E-4
STDS: OEKANAL SZE8246X

METHOD

Sample processed according to methods described in Mekebri et al. 2009, Kudela 2011. The whole filter was sonicated (on ice) in 10% MeOH, syringe-filtered, and analyzed by LC/MS using an Agilent 6130 instrument equipped with a Phenomex Kinetix C18 column. MDL based on 7x replicate analysis of 1 ug/L standards (on column). Matrix Spike recovery and blanks included for every 10 samples.

Mekebri, A, GJ Biondina, DB Crane. 2009. Method validation for microcystins in water and tissue by enhanced liquid chromatography tandem mass spectrometry. Journal of Chromatography A, 1216: 3147-3155.

Kudela, RM. 2011. Characterization and Deployment of Solid Phase Adsorption Toxin Tracking (SPATT) resin for monitoring of microcystins in fresh and salt water. Harmful Algae, doi: 10.1016/j.hal.2011.08.006.

Appendix C14.A4

Approved by:_____
Date:_____

Stream Bioassessment Sorting Sheet

I. Sample Identification

Project Title **Los Penasquitos Sewage Spill** Survey **October 2011**
Station A Replicate _____
Date Collected 25 Oct 2011
Sample Sed. Vol. (mL) 300ml No./Type Contr. **1 QT** Sampler _____

II. Sorting (600 animals)

Sort Fraction 25/25 Sorted By TVG Date(s) Sorted 10-31-11
Total Sort Time 5h # Animals Sorted 556 Animals Remaining _____
Animals/Grid (optional) _____
Comments 11/3/25-174, 11/3/25-210, 11/3/25-172

Distribution of Sorted Material Est. total abundance 567÷11= 51.5/ft²

	# of Vials	# of Jars	Contents of Jars
Ephemeroptera	1		
Trichoptera	1		
Chironomidae	1		
Diptera	1		
Other Insects	1		
Mollusca	1		
Crustacea	1		
Other phyla	1		
Extra Animals			

III. Sorting QA/QC

Sort Criteria 100% %
QA/QC By BJS Pass/Fail Pass Date 11/8/2011
QA/QC Time 1¼ hr Re-Sort Time _____ Re-Sort Date _____
No. of Animals QA/QC _____ Removal rate 97.3%
No. of Animals Re-Sort _____

IV. Sample Qualification Comments (Circle One)

1. Preservation: (GOOD) FAIR POOR

2. Single Major Component:
   Shellhash Tubes Wood Algae Seeds Animals
   Fibers Coarse Sand (Fine Sand) Pea Gravel (Organic Material)
   Sewage Debris Macrodetritus Other: _____

Appendix C14.A4 *continued*

Approved by:_____
Date:_____

Stream Bioassessment Sorting Sheet

I. Sample Identification

Project Title **Los Penasquitos Sewage Spill** Survey **October 2011**
Station C Replicate _____
Date Collected 25 Oct 2011
Sample Sed. Vol. (mL) 300 ml No./Type Contr. **1 QT** Sampler _____

II. Sorting (600 animals)

Sort Fraction 7.5/25 Sorted By TG Date(s) Sorted 11-1-11
Total Sort Time 4 hr. # Animals Sorted 602 Animals Remaining _____
Animals/Grid (optional) _____
Comments 2.5/25 - 203, 2.5/25 - 204, 2.5/25 - 195

Distribution of Sorted Material Est. total abundance 1990 ÷ 11 = 181/ft²

	# of Vials	# of Jars	Contents of Jars
Ephemeroptera	1		
Trichoptera	–		
Chironomidae	1		
Diptera	1		
Other Insects	1		
Mollusca	1		
Crustacea	1	1	
Other phyla	1		
Extra Animals			

III. Sorting QA/QC

Sort Criteria 100% %
QA/QC By BTS Pass/Fail barely Pass Date 11/8/2011
QA/QC Time ½ hr Re-Sort Time _____ Re-Sort Date _____
No. of Animals QA/QC 28 Removal rate 95.3%
No. of Animals Re-Sort _____

IV. Sample Qualification Comments (Circle One)

1. Preservation: (GOOD) FAIR POOR

2. Single Major Component:
Shellhash Tubes Wood Algae Seeds Animals
Fibers Coarse Sand (Fine Sand) Pea Gravel (Organic Material)
Sewage Debris Macrodetritus Other: _____

Appendix C14.A4 *continued*

WESTON SOLUTIONS

Approved by: _____
Date: _____

Stream Bioassessment Sorting Sheet

I. Sample Identification

Project Title **Los Penasquitos Sewage Spill** Survey **October 2011**
Station D Replicate _____
Date Collected 26 Oct 2011
Sample Sed. Vol. (mL) 300mL No./Type Contr. **1 QT** Sampler _____

II. Sorting (600 animals)

Sort Fraction 9/25 Sorted By TVG Date(s) Sorted 11-2-11
Total Sort Time 4 Hr. # Animals Sorted 623 Animals Remaining _____
Animals/Grid (optional) _____
Comments 3/25 -213, 3/25 -220, 3/25 -191

Distribution of Sorted Material Est. total abundance 1,755 ÷ 11 = 160/ft²

	# of Vials	# of Jars	Contents of Jars
Ephemeroptera	1		
Trichoptera	—		
Chironomidae	1		
Diptera	—		
Other Insects	1		
Mollusca	—		
Crustacea	1		
Other phyla	1		
Extra Animals			

III. Sorting QA/QC

Sort Criteria 100% %
QA/QC By BTaylor Pass/Fail Pass Date 11/8/2011
QA/QC Time 4 Hr Re-Sort Time _____ Re-Sort Date _____
No. of Animals QA/QC 14 Removal rate 97.7 %
No. of Animals Re-Sort _____

IV. Sample Qualification Comments (Circle One)

1. Preservation: (GOOD) FAIR POOR

2. Single Major Component:
Shellhash Tubes Wood Algae Seeds Animals
Fibers Coarse Sand (Fine Sand) Pea Gravel (Organic Material)
Sewage Debris Macrodetritus Other: _____

Appendix C14.A4 *continued*

Approved by:_____
Date:_____

Stream Bioassessment Sorting Sheet

I. Sample Identification

Project Title **Los Penasquitos Sewage Spill** Survey **October 2011**
Station E Replicate _____
Date Collected 26 Oct 2011
Sample Sed. Vol. (mL) 250mL No./Type Contr. **1 QT** Sampler _____

II. Sorting (600 animals)

Sort Fraction 15/25 Sorted By TVT Date(s) Sorted 11-3-11
Total Sort Time 4 hr. # Animals Sorted 639 Animals Remaining _____
Animals/Grid (optional) _____
Comments 5/25-220, 5/25-204, 5/25-217

Distribution of Sorted Material Est. total abundance 1062÷11 = 97/ft²

	# of Vials	# of Jars	Contents of Jars
Ephemeroptera	1		
Trichoptera	1		
Chironomidae	1		
Diptera	1		
Other Insects	1		
Mollusca	—		
Crustacea	1		
Other phyla	1		
Extra Animals			

III. Sorting QA/QC

Sort Criteria 100% % barely
QA/QC By BESH Pass/Fail Fail Date 11/8/2011
QA/QC Time 3/4 hr Re-Sort Time _____ Re-Sort Date _____
No. of Animals QA/QC 32 Removal rate 94.9%
No. of Animals Re-Sort _____

IV. Sample Qualification Comments (Circle One)

1. Preservation: (GOOD) FAIR POOR

2. Single Major Component:
Shellhash Tubes Wood Algae Seeds Animals
Fibers Coarse Sand (Fine Sand) Pea Gravel (Organic Material)
Sewage Debris Macrodetritus Other: _____

Appendix C14.A4 *continued*

WESTON SOLUTIONS

Approved by: _____
Date: _____

Stream Bioassessment Sorting Sheet

I. Sample Identification

Project Title **Los Penasquitos Sewage Spill** Survey ~~October~~ November 2011
Station A Replicate _____
Date Collected 16 Nov 2011
Sample Sed. Vol. (mL) 300 No./Type Contr. **1 QT** Sampler _____

II. Sorting (600 animals)

Sort Fraction 100% Sorted By TVT Date(s) Sorted 11-24/25-11
Total Sort Time 7 hr. # Animals Sorted 601 Animals Remaining _____
Animals/Grid (optional) _____
Comments 599 ÷ 11

Distribution of Sorted Material Est. total abundance 55/ft²

	# of Vials	# of Jars	Contents of Jars
Ephemeroptera	1		
Trichoptera	1		
Chironomidae	1		
Diptera	1		
Other Insects	1		
Mollusca	1		
Crustacea	1		
Other phyla	1		
Extra Animals			

III. Sorting QA/QC

Sort Criteria 100 %
QA/QC By BJS Pass/Fail ~~Reject~~ Pass Date 11/29/11
QA/QC Time 1 hr Re-Sort Time _____ Re-Sort Date _____
No. of Animals QA/QC 21 Removal rate 96.5%
No. of Animals Re-Sort _____

IV. Sample Qualification Comments (Circle One)

1. Preservation: (GOOD) FAIR POOR

2. Single Major Component:
   Shellhash Tubes Wood Algae Seeds Animals
   Fibers Coarse Sand (Fine Sand) Pea Gravel (Organic Material)
   Sewage Debris Macrodetritus Other: _____

Appendix C14.A4 *continued*

Approved by: _____
Date: _____

Stream Bioassessment Sorting Sheet

I. Sample Identification

Project Title: Los Penasquitos Sewage Spill Survey: ~~October~~ November 2011
Station: C Replicate: _____
Date Collected: 17 Nov 2011
Sample Sed. Vol. (mL): 280 ml No./Type Contr.: 1 QT Sampler: _____

II. Sorting (600 animals)

Sort Fraction: 15/25 Sorted By: TVG Date(s) Sorted: 11-21-11
Total Sort Time: 5 hr. # Animals Sorted: 609 Animals Remaining: _____
Animals/Grid (optional): _____
Comments: 5/25-209, 5/25-191, 5/25-210 613

Distribution of Sorted Material Est. total abundance: 1022 ÷ 11 = 93/ft²

	# of Vials	# of Jars	Contents of Jars
Ephemeroptera	1		
Trichoptera	1		
Chironomidae	1		
Diptera	1		
Other Insects	1		
Mollusca	1		
Crustacea	1	1	
Other phyla	1		
Extra Animals			

III. Sorting QA/QC

Sort Criteria: 100 %
QA/QC By: BTSL Pass/Fail: Pass Date: 11/29/11
QA/QC Time: 2/3 hr Re-Sort Time: _____ Re-Sort Date: _____
No. of Animals QA/QC: 9 Removal rate: 98.5%
No. of Animals Re-Sort: _____

IV. Sample Qualification Comments (Circle One)

1. Preservation: (GOOD) FAIR POOR

2. Single Major Component:
   Shellhash Tubes Wood Algae Seeds Animals
   Fibers Coarse Sand (Fine Sand) Pea Gravel (Organic Material)
   Sewage Debris Macrodetritus Other: _____

Appendix C14.A4 *continued*

WESTON SOLUTIONS

Approved by:_____
Date:_____

Stream Bioassessment Sorting Sheet

I. Sample Identification

Project Title **Los Penasquitos Sewage Spill** Survey **October 2011**
Station D Replicate _____
Date Collected 16 Nov 2011
Sample Sed. Vol. (mL) 350ml No./Type Contr. **1 QT** Sampler _____

II. Sorting (600 animals)

Sort Fraction 4.5/25 Sorted By TVG Date(s) Sorted 11-27/28-11
Total Sort Time 4 hr. # Animals Sorted 615 Animals Remaining _____
Animals/Grid (optional) _____
Comments 1.5/25 - 202, 1.5/25 - 205, 1.5/25 - 208. 634

Distribution of Sorted Material Est. total abundance 3522 ÷ 11 = 320/ft²

	# of Vials	# of Jars	Contents of Jars
Ephemeroptera	~		
Trichoptera	~		
Chironomidae	1		
Diptera	1		
Other Insects	1		
Mollusca	1		
Crustacea	1		
Other phyla	1		
Extra Animals			

III. Sorting QA/QC

Sort Criteria 100 %
QA/QC By BTSL Pass/Fail Pass Date 11/30/11
QA/QC Time 1/2 hr Re-Sort Time _____ Re-Sort Date _____
No. of Animals QA/QC 12 Removal rate 98.1%
No. of Animals Re-Sort _____

IV. Sample Qualification Comments (Circle One)

1. Preservation: (GOOD) FAIR POOR

2. Single Major Component:
Shellhash Tubes Wood Algae Seeds Animals
Fibers Coarse Sand (Fine Sand) Pea Gravel (Organic Material)
Sewage Debris Macrodetritus Other:_____

Appendix C14.A4 *continued*

WESTON SOLUTIONS

Approved by: _____
Date: _____

Stream Bioassessment Sorting Sheet

I. Sample Identification

Project Title **Los Penasquitos Sewage Spill** Survey **October 2011**
Station E Replicate _____
Date Collected 17 Nov 2011
Sample Sed. Vol. (mL) 350 No./Type Contr. **1 QT** Sampler _____

II. Sorting (600 animals)

Sort Fraction 15/25 Sorted By TV Date(s) Sorted 11-28-11
Total Sort Time 5h. # Animals Sorted 609 Animals Remaining _____
Animals/Grid (optional) _____
Comments 5/25-199, 5/25-202, 5/25-205 610

Distribution of Sorted Material Est. total abundance 1017 ÷ 11 = 92/ft²

	# of Vials	# of Jars	Contents of Jars
Ephemeroptera	1		
Trichoptera	1		
Chironomidae	1		
Diptera	1		
Other Insects	1		
Mollusca	1		
Crustacea	1		
Other phyla	1		
Extra Animals			

III. Sorting QA/QC

Sort Criteria 100 %
QA/QC By BTSh Pass/Fail Pass Date 11/30/11
QA/QC Time 3/4 hr Re-Sort Time _____ Re-Sort Date _____
No. of Animals QA/QC 18 Removal rate 97.0%
No. of Animals Re-Sort _____

IV. Sample Qualification Comments (Circle One)

1. Preservation: (GOOD) FAIR POOR

2. Single Major Component:
Shellhash Tubes Wood Algae Seeds Animals
Fibers Coarse Sand (Fine Sand) Pea Gravel (Organic Material)
Sewage Debris Macrodetritus Other: _____

Appendix C14.A4 *continued*

WESTON SOLUTIONS

Approved by: _____
Date: _____

Stream Bioassessment Sorting Sheet

I. Sample Identification

Project Title **Los Penasquitos Sewage Spill** Survey ~~October~~ December 2011
Station A Replicate _____
Date Collected 15 Dec 2011
Sample Sed. Vol. (mL) 250 mL No./Type Contr. **1 QT** Sampler _____

II. Sorting (600 animals)

Sort Fraction 100% Sorted By TVG Date(s) Sorted 12-16-11
Total Sort Time 5 hr. # Animals Sorted 590 Animals Remaining _____
Animals/Grid (optional) _____
Comments 589

Distribution of Sorted Material Est. total abundance 54/ft²

	# of Vials	# of Jars	Contents of Jars
Ephemeroptera	1		
Trichoptera	—		
Chironomidae	1		
Diptera	1		
Other Insects	1		
Mollusca	1		
Crustacea	1		
Other phyla	1		
Extra Animals			

III. Sorting QA/QC

Sort Criteria 100 %
QA/QC By EZ Pass/Fail Pass Date 12/20/11
QA/QC Time ½ hr Re-Sort Time _____ Re-Sort Date _____
No. of Animals QA/QC 16 Removal rate 97-6%
No. of Animals Re-Sort _____

IV. Sample Qualification Comments (Circle One)

1. Preservation: (GOOD) FAIR POOR

2. Single Major Component:
Shellhash Tubes Wood Algae Seeds Animals
Fibers Coarse Sand (Fine Sand) Pea Gravel (Organic Material)
Sewage Debris Macrodetritus Other: _____

Appendix C14.A4 *continued*

WESTON SOLUTIONS

Approved by: _____
Date: _____

Stream Bioassessment Sorting Sheet

I. Sample Identification

Project Title **Los Penasquitos Sewage Spill** Survey **October 2011**
Station C Replicate _____
Date Collected 15 Dec 11
Sample Sed. Vol. (mL) 250 mL No./Type Contr. **1 QT** Sampler _____

II. Sorting (600 animals)

Sort Fraction 100% Sorted By JVG Date(s) Sorted 12-16-11
Total Sort Time 5 hr. # Animals Sorted 500 Animals Remaining _____
Animals/Grid (optional) _____
Comments 491

Distribution of Sorted Material Est. total abundance 45/ft²

	# of Vials	# of Jars	Contents of Jars
Ephemeroptera	1		
Trichoptera	—		
Chironomidae	1		
Diptera	1		
Other Insects	1		
Mollusca	1		
Crustacea	1		
Other phyla	1		
Extra Animals			

III. Sorting QA/QC

Sort Criteria 100 %
QA/QC By BJ Pass/Fail ~Pass Date 12/19/11
QA/QC Time 1/3 hr Re-Sort Time _____ Re-Sort Date _____
No. of Animals QA/QC 22 Removal rate 95.5%
No. of Animals Re-Sort _____

IV. Sample Qualification Comments (Circle One)

1. Preservation: (GOOD) FAIR POOR

2. Single Major Component:
   Shellhash Tubes Wood Algae Seeds Animals
   Fibers Coarse Sand (Fine Sand) Pea Gravel (Organic Material)
   Sewage Debris Macrodetritus Other: _____

Appendix C14.A4 *continued*

WESTON SOLUTIONS

Approved by:_____
Date:_____

Stream Bioassessment Sorting Sheet

I. Sample Identification

Project Title **Los Penasquitos Sewage Spill** Survey **October 2011**
Station D Replicate _____
Date Collected 16 Dec 2011
Sample Sed. Vol. (mL) 300mL No./Type Contr. **1 QT** Sampler _____

II. Sorting (600 animals)

Sort Fraction 6/25 Sorted By TVG Date(s) Sorted 12-18-11
Total Sort Time 4 hr. # Animals Sorted 600 Animals Remaining 23
Animals/Grid (optional) _____
Comments 3/25-194, 3/25-23, 3/25-193 617

Distribution of Sorted Material Est. total abundance 2571÷11 = 234/ft²

	# of Vials	# of Jars	Contents of Jars
Ephemeroptera	—		
Trichoptera	—		
Chironomidae	1		
Diptera	1		
Other Insects	1		
Mollusca	1		
Crustacea	1		
Other phyla	1		
Extra Animals			

III. Sorting QA/QC

Sort Criteria 100 %
QA/QC By RI Pass/Fail Pass Date 12/19/11
QA/QC Time ½ hr Re-Sort Time _____ Re-Sort Date _____
No. of Animals QA/QC 12 Removal rate 98.0%
No. of Animals Re-Sort _____

IV. Sample Qualification Comments (Circle One)

1. Preservation: (GOOD) FAIR POOR

2. Single Major Component:
Shellhash Tubes Wood Algae Seeds Animals
Fibers Coarse Sand Fine Sand Pea Gravel (Organic Material)
Sewage Debris Macrodetritus Other:_____

Appendix C14.A4 *continued*

WESTON SOLUTIONS

Approved by: _____
Date: _____

Stream Bioassessment Sorting Sheet

I. Sample Identification

Project Title **Los Penasquitos Sewage Spill** Survey **October 2011**
Station E Replicate _____
Date Collected 16 Dec 2011
Sample Sed. Vol. (mL) 400mL No./Type Contr. **1 QT** Sampler _____

II. Sorting (600 animals)

Sort Fraction 15/25 Sorted By JVJ Date(s) Sorted 12-18-11
Total Sort Time 5.5h # Animals Sorted 600 Animals Remaining 22
Animals/Grid (optional) _____
Comments 5/25-203, 5/25-211, 5/25-186 627

Distribution of Sorted Material Est. total abundance 1045 ÷ 11 = 95/ft²

	# of Vials	# of Jars	Contents of Jars
Ephemeroptera	1		
Trichoptera	1		
Chironomidae	1		
Diptera	1		
Other Insects	1		
Mollusca	1		
Crustacea	1		
Other phyla	1		
Extra Animals			

III. Sorting QA/QC

Sort Criteria 100 %
QA/QC By RST Pass/Fail sorta almost fail Date 12/19/11
QA/QC Time 2.5h Re-Sort Time _____ Re-Sort Date _____
No. of Animals QA/QC 26 Removal rate 95.8%
No. of Animals Re-Sort _____

IV. Sample Qualification Comments (Circle One)

1. Preservation: (GOOD) FAIR POOR

2. Single Major Component:
Shellhash Tubes Wood Algae Seeds Animals
Fibers Coarse Sand Fine Sand Pea Gravel (Organic Material)
Sewage Debris Macrodetritus Other: _____

Appendix C14.A5

STATE OF CALIFORNIA - THE RESOURCES AGENCY

DEPARTMENT OF FISH AND GAME
AQUATIC BIOASSESSMENT LABORATORY-CHICO
CALIFORNIA STATE UNIVERSITY, CHICO
CHICO, CA 95929-0555
530-898-4792

February 9, 2012

Bill Isham
Weston Solutions
2433 Impala Drive
Carlsbad, CA 92008

Dear Bill,

Attached are the results of my QC analysis of 1 sample submitted from the Los Penasquitos Creek project. The results are presented in five summary tables. This QC analysis was performed in accordance to the Southwest Association of Freshwater Invertebrate Taxonomists (SAFIT)'s Standard Taxonomic Effort Document (STE) 1 March 2011 version (Richards and Rogers, 2011).

A *Fallceon* was found in the *Callibaetis* vial. I suspect this was a simple sorting error, but the structure of the gills will serve to separate the two taxa. All gills are simple in *Fallceon*, but *Callibaetis* has at least one compound gill with flaps (Waltz and Burian, 2008).

The specimen originally determined as Muscidae and accompanied by the note, "maybe left at Brachycera?" is, in my opinion, best left at Brachycera. I personally do not feel comfortable taking the specimen to family.

The vial of *Bezzia/Palpomyia* contained four specimens of that taxon and one which wasn't. It was a slightly aberrant specimen, but I suspect it is *Ceratopogon* given the presence of the scleritized suture on the ventral surface of the head (Courtney and Merritt, 2008).

I welcome any questions or comments you may have concerning this report.

Sincerely,

Austin Brady Richards
Aquatic Bioassessment Laboratory–Chico
California State University, Chico
Chico, CA 95929-0555
arichards@csuchico.edu
(530) 898-4792

Appendix C14.A5 *continued*

Literature Cited

Courtney, G. W., and R. W. Merritt. 2008. Chapter 22: Aquatic Diptera. Part One. Larvae of Aquatic Diptera. [pp. 687-722]. In: R. W. Merritt, K. W. Cummins and M. B. Berg (editors), An introduction to the aquatic insects of North America, fourth edition, xvi + 1158 pp. + 39 color plates. Kendall/Hunt Publishing Company, Dubuque, Iowa.

Waltz, R. D., and S. K. Burian. 2008. Chapter 11: Ephemeroptera. [pp. 181-236]. In: R. W. Merritt, K. W. Cummins and M. B. Berg (editors), An introduction to the aquatic insects of North America, fourth edition, xvi + 1158 pp. + 39 color plates. Kendall/Hunt Publishing Company, Dubuque, Iowa.

Richards, A. B., and D. C. Rogers. 2011. Southwest Association of Freshwater Invertebrate Taxonomists (SAFIT) List of Freshwater Macroinvertebrate Taxa from California and Adjacent States including Standard Taxonomic Effort Levels. Version: 1 March 2011. SAFIT. Retrieved 1 September 2011 from: http://safit.org/ste.html

Appendix C14.A5 *continued*

Comparative Taxonomic Listing of all Submitted Samples

Samples submitted by Weston Solutions for Project: Los Penasquitos Creek

Report prepared by Brady Richards, CDFG ABL-Chico, 2/9/2012

Taxonomist	Sample no.	Vial no.	Original ID	Original Count	Stage	ABL Count	ABL ID
Bill Isham	SGUT-504						
				0	x	0	
		1	Callibaetis	45	L	1	Fallceon
		1	Callibaetis	45	L	43	Callibaetis
		2	Aeshnidae	3	L	3	Aeshnidae
		3	Coenagrionidae	4	L	4	Coenagrionidae
		4	Hydroptila	1	L	1	Hydroptila
		5	Corixidae	5	L	5	Corixidae
		6	Bezzia/Palpomyia	5	L	4	Bezzia/Palpomyia
		6	Bezzia/Palpomyia	5	L	1	Ceratopogonidae
		7	Ceratopogonidae	2	P	2	Ceratopogonidae
		8	Dasyhelea	1	L	1	Dasyhelea
		9	Muscidae	1	L	1	Brachycera
		10	Myxosargus	1	L	1	Myxosargus
		11	Pericoma/Telmatoscopus	1	L	1	Pericoma/Telmatoscopus
		12	Physa	10	X	10	Physa
		13	Ostracoda	67	X	68	Ostracoda
		14	Hyalella	221	X	222	Hyalella
		15	Cambaridae	15	X	15	Cambaridae
		16	Oligochaeta	40	X	40	Oligochaeta
		17	Chironomidae	138	L	139	Chironomidae
		18	Culicidae	1	P	1	Culicidae

Appendix C14.A5 *continued*

Listing of Enumeration Discrepancies

Samples submitted by Weston Solutions for Project: Los Penasquitos Creek

Report prepared by Brady Richards, CDFG ABL-Chico, 2/9/2012

	Sample #	Vial #	Original	# Counted Original	# Counted QC	Difference (Original - QC)
Minor Counting Discrepancies						
	SGUT-504	1	Callibaetis	45	44	1
		13	Ostracoda	67	68	-1
		14	Hyalella	221	222	-1
		17	Chironomidae	138	139	-1

Appendix C14.A5 *continued*

Listing of Taxonomic Discrepancies

Samples submitted by Weston Solutions for Project: Los Penasquitos Creek

Report prepared by Brady Richards, CDFG ABL-Chico, 2/9/2012

Sample #	Vial #	Original ID	Final ID QC Final ID	Taxonomic level of dispute	# Organisms	Comments
SGUT-504						
Disputed ID						
	1	Callibaetis	Fallceon	Genus	1	
	9	Muscidae	Brachycera	Suborder	1	This disputed ID also represents a difference in taxonomic precision.
Original ID not in Master Taxa List						
	6	Bezzia/Palpomyia	Ceratopogonidae		1	

Appendix C14.A5 *continued*

Summary of Taxonomic and Enumeration Discrepancies

Samples submitted by Weston Solutions for Project: Los Penasquitos Creek

Report prepared by Brady Richards, CDFG ABL-Chico, 2/9/2012

		Taxonomic Discrepancies						Counting Discrepancies			
				Taxonomic Precision Relative to QC							
Sample	**Total Taxa**	**Disputed ID**		**More precise**		**Less Precise**		Major		Minor	
		*f**	*n***	*f*	*n*	*f*	*n*	*f*	*d****	*f*	*d*
SGUT-504	19	2	2	-	-	-	-	-	-	4	4

* = the frequency of occurence of the discrepancy, in number of samples
** = the number of organisms affected (by QC Lab counts) *n*
*** = the sum total of (absolute value of) differences in counts *d*

Appendix C14.A5 *continued*

QC Report - Disputed ID's only

Samples submitted by Weston Solutions for Project: Los Penasquitos Creek
Report prepared by Brady Richards, CDFG ABL-Chico, 2/9/2012

Sample #	*Vial #.*	*Original ID*	*QC ID*	*comments*
SGUT-504	1	Callibaetis	Fallceon	
	9	Muscidae	Brachycera	This disputed ID also represents a difference in taxonomic precision.