Mitchell

San Mateo Irrigated Lands Group

Monitoring Program Report, 2012;

Conditional Waiver, Order No. R9-2011-0020

December 30, 2112

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gathered andevaluated 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"

John Adriany
Principal Scientist
ChemMetrics
john.adriany@yahoo.com

A copy of this document will be retained in the discharger's records and a copy shall be submitted to the Regional Board along with the monitoring results. The discharger shall also retain a copy of the monitoring results for his/her records. An Annual Monitoring Report will be submitted to Regional Board for approval by the Executive Officer.

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1.0 PROJECT PERSONNEL

Project Personnel

If there are any changes regarding project personnel the Regional Board will be notified and this document will be updated

Title	Name (Affiliation)	Phone Number
Operation Manager	John Adriany	619-851-4795
Primary Field Sampler	John Adriany	619-851-4795
Laboratory Manager	Dan Verdon	858-560-7717
Laboratory	Enviromatrix Inc.	858–560-7717
Laboratory QA/QC officer		

2.0 INTRODUCTION

This report presents results from monitoring efforts that were undertaken by **San Mateo Irrigated Lands Group** for compliance with the Conditional Waiver, Order No R9-2011-0020. Samples for laboratory analyses, and field assessments were collected during a December 15, 2012. The first major rainstorm of December preceded the sampling event with 1.24 inches of rainfall was recorded in Temecula in December 13, 2012.

By December 31, 2012, each monitoring group must submit a monitoring report to the San Diego Regional Water Quality Board. Conditional Waiver No. 4 governs discharges

from agricultural and nursery operations and mandates the monitoring of stormwater/irrigation runoff.

A Monitoring and Reporting Program Plan, MRPP was approved by the San Diego Regional Water Control Board on March 16, 2012.

The purpose of this Monitoring and Reporting Program (MRP) plan is to characterize the watershed in proximity to participating properties. This characterization by any single group is by necessity fragmentary. Participating properties are a small fraction of the properties contributing storm water to the monitoring point.

3.0 Monitoring Location

The location of the project area in relation to rivers with documented impairment is presented in the following figure.

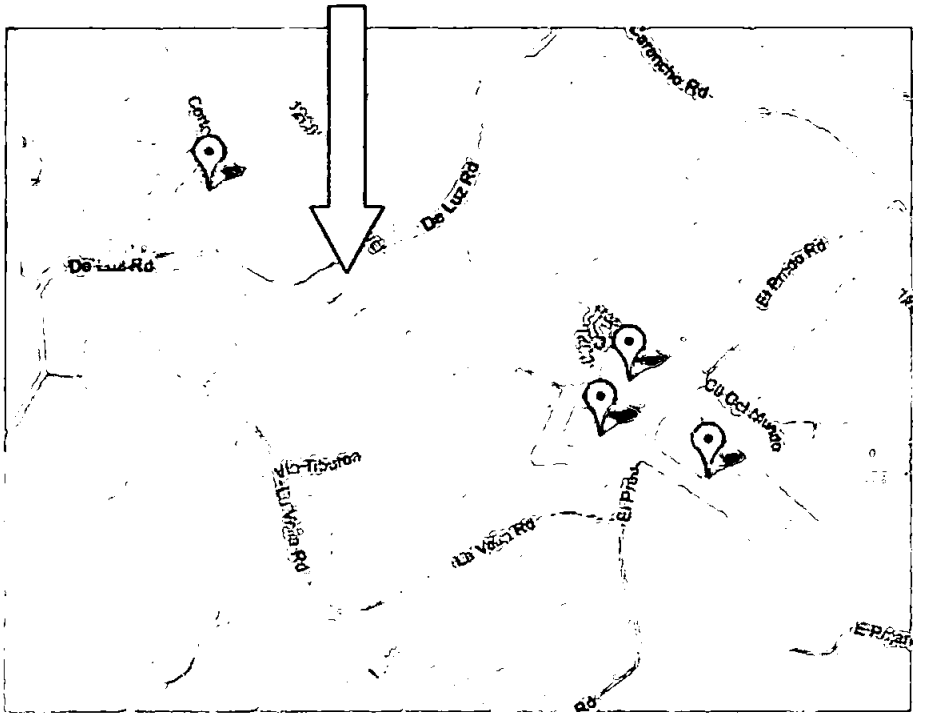
The project area is depicted by the red dot while impacted rivers are denoted as red lines. Impaired rivers are more than 2 miles distant from the project area.

Impaired rivers/streams and estuary in the vicinity

Waterbody Name	Waterbody ID	Location	Waterbody Type	Size	Units	State TMDL Development Status
[illegible] Creek	CAR902210002001092413544 2		Rivers and Streams	13.5872	Miles	
[illegible]	CAR902830002001102511250 9		Rivers and Streams	8.3	Miles	
[illegible] Creek	CAR902320002001092415213 6		Rivers and Streams	12	Miles	
[illegible] Creek	CAR902220001998080310233 3		Rivers and Streams	5.01928	Miles	
[illegible] Creek	CAR902220001999111713233 3		Rivers and Streams	1.5	Miles	
[illegible] Lagoon	CAE902110001999020915592 4		Estuary	27.9095	square miles	
[illegible] Lagoon	CAR902220002001100114105 0		Rivers and Streams	18	Miles	
Temecula Creek	CAR902510002001102511132 3		Rivers and Streams	44.1067	Miles	

Documented impairments in the watershed are attributable to inorganic constituents. These constituents could come from agricultural activities.

Cause of Impairment	Number of Causes Reported
Iron	4
Total Dissolved Solids (TDS)	4
Manganese	3
Nitrogen	3
Phosphorus	3
Sulfates	2
Eutrophication	1



Sampling location relative to participant properties.

Grab samples for laboratory assessment were collected from **a sampling site located at** 33° 29.488'N 117° 14.795'W on December 15, 2012, while field assessments were performed at locations identified in the following table.

4.0 Monitoring Results

Samples for laboratory analyses, and field assessments were collected during a December 15, 2012. The first major rainstorm of December preceded the sampling event with 1.24 inches of rainfall was recorded in Temecula on December 13, 2012.

4.1 FIELD ASSESSMENT

Five water quality parameters were measured on site on December 15, 2012. A YSI Pro Plus Quatro, 4M was employed to determine pH, ORP, conductivity, and dissolved oxygen and a LaMotte 2020 WE to determine turbidity.

Coordinates		33° 29.495'N 117° 14.789'W	33° 29.488'N 117° 14.795'W	33° 29.499'N 117° 14.781'W	33° 29.492'N 117° 14.790'W
Time		11:42:50	11:43:58	11:46:04	11:49:26
water temperature	degrees C	11	11	11	11
pH		8.09	8.09	8.07	8.06
ORP	mV	131.5	140.6	162.6	206
Conductivity	mS	1.72	1.72	1.73	1.74
DO	mg/L	10.43	10.12	9.41	9.68
Turbidity	NTU	2.52	2.79	3.09	2.66

Field measured pH ranged from 8.06 to 8.09. A great majority of aquatic organisms live between pH values of 6.8 and 8.5. Oxidation reduction potential, ORP, indicates the electron concentration among electro-active solutes. The form and bioavailability of nutrients are affected by the electron balance in aqueous solutions. Conductivity ranged tightly between 1.72 and 1.74 milliSiemens. Conductivity is proportional to the concentrations of total dissolved solids and major ions, and its measurement is influenced by the amount of electrical charge on each ion, ion mobility and temperature of the water. Water suitable for irrigation generally has a TDS less than 2.0 mS Dissolved Oxygen ranged from 9.41 to 10.43. At 11 degrees centigrade water can only solvate 11 mg/L of oxygen. Dissolved oxygen concentrations below 4 milligrams per liter

(mg/l) are considered to be unhealthy for many aquatic community inhabitants. Turbidity ranged from 2.52 to 3.09 Nephelometric Turbidity Units (NTU). Turbidity is an indicator of sediment load and water clarity, values of 5 NTU are considered low and indicating waters are visually clear and free of suspended materials.

4.2 LABORATORY ASSESSMENT

Samples were collected from the site on December 15, 2012. Sample containers were provided by Enviromatrix Inc., a CA ELAP certified laboratory #2564. A chain of custody is appended to this report. The results from QAQC samples along with the results of the regular laboratory samples are also appended.

Analyte	sample name	date sampled	time sampled	Result	units
Nitrate as N	DLC-12A	12/15/2012	14:37	<0.05	mg/L
Nitrite as N	DLC-12A	12/15/2012	14:37	<0.05	mg/L
Ammonium as N	DLC-12B	12/15/2012	14:42	<0.10	mg/L
NitrogenTotal Kjedahl (TKN)	DLC-12B	12/15/2012	14:42	**1.4**	mg/L
Total Organic Carbon (TOC)	DLC-12C	12/15/2012	14:58	**3.9**	mg/L
Dissolved Organic Carbon (DOC)	DLC-12D	12/15/2012	15:05	**3.7**	mg/L
Orthophosphate/Soluble reactive Phosphorus (SRP)	DLC-12A	12/15/2012	14:37	**0.07**	mg/L
Total-Phosphorous (TP)	DLC-12B	12/15/2012	14:42	**0.12**	mg/L
Chloride	DLC-12A	12/15/2012	14:37	**270**	mg/L
Sulfate	DLC-12A	12/15/2012	14:37	**392**	mg/L
Total Dissolved Solids (TDS)	DLC-12A	12/15/2012	14:37	**1130**	mg/L
Total Suspended Solids (TSS)	DLC-12A	12/15/2012	14:37	<20	mg/L

5.0 Discussion of Water Quality Results

5.1 Nutrients

Nitrate levels were less than 0.05 mg/L, the laboratory reporting limit. Natural levels of nitrate in surface waters seldom exceed 0.1 mg/l as N, but waters influenced by human activity normally contain up to 5 mg/l as N with levels over 5 mg/l as N indicating pollution by animal or human waste or fertilizer runoff. National drinking water standards for nitrates are 10 mg/l as N.

Nitrite levels were less than 0.05 mg/L, the laboratory reporting limit. No standards have been set for nitrite because it is quickly transformed by microbes into nitrate. The level of nitrate must be no greater than 10 milligrams per liter (mg/L) or 10 parts per million (ppm) of Nitrogen from NO_3,or 45 mg/L (45ppm) of NO_3 for drinking water.

Ammonia levels as nitrogen were less than 0.1 mg/L, the laboratory reporting limit. The level of ammonia that results in "unacceptable" effects on freshwater organisms depends on water temperature and pH. At the pH measured ammonia levels greater than 3 mg/L may create negative impacts.

The Total Kjeldahl Nitrogen method, TKN, was determined as 1.4 mg/L. TKN tests for the presence of nitrogen in the tri-negative valence state. The subtraction of ammonia nitrogen from TKN gives "organic nitrogen". Organic nitrogen consists mainly of protein substances and their byproducts. Organic nitrogen is typically formed within the water column by phytoplankton and bacteria and cycled within the food chain. Concentrations of TKN are affected by both point and non-point sources.

Ortho phosphate or soluble reactive phosphate was determined at 0.070 mg/L. Phosphorus is an essential nutrient for living organisms and is often the limiting nutrient for algal growth. No specific standards exist for freshwater, however to prevent eutrophication phosphates should not exceed 0.025 mg/L (25 parts per billion) in lakes,

0.05 mg/L (50 ppb) where streams enter lakes, and 0.1 mg/L (100 ppb) in streams that do not flow into lakes.

Total Phosphorous was determined at 0.120 mg/L. Total Phosphorus is the sum of reactive, condensed and organic phosphorous. The level is close to the orthophosphate level. .

5.2 Anions, Dissolved and Total Solids

Chloride was determined at 270 mg/L, while sulfate was found at 392 mg/L. The EPA National Recommended Aquatic Life Chronic Criteria for chloride is 230 mg/L. Total dissolved solids were determined at 1130 mg/L. Fresh water is classified by TDSs levels less than 1500 mg/L. Typical stream TDS levels range from 50-250 mg/L. Total Suspended Solids were not detected at 20 mg/L.

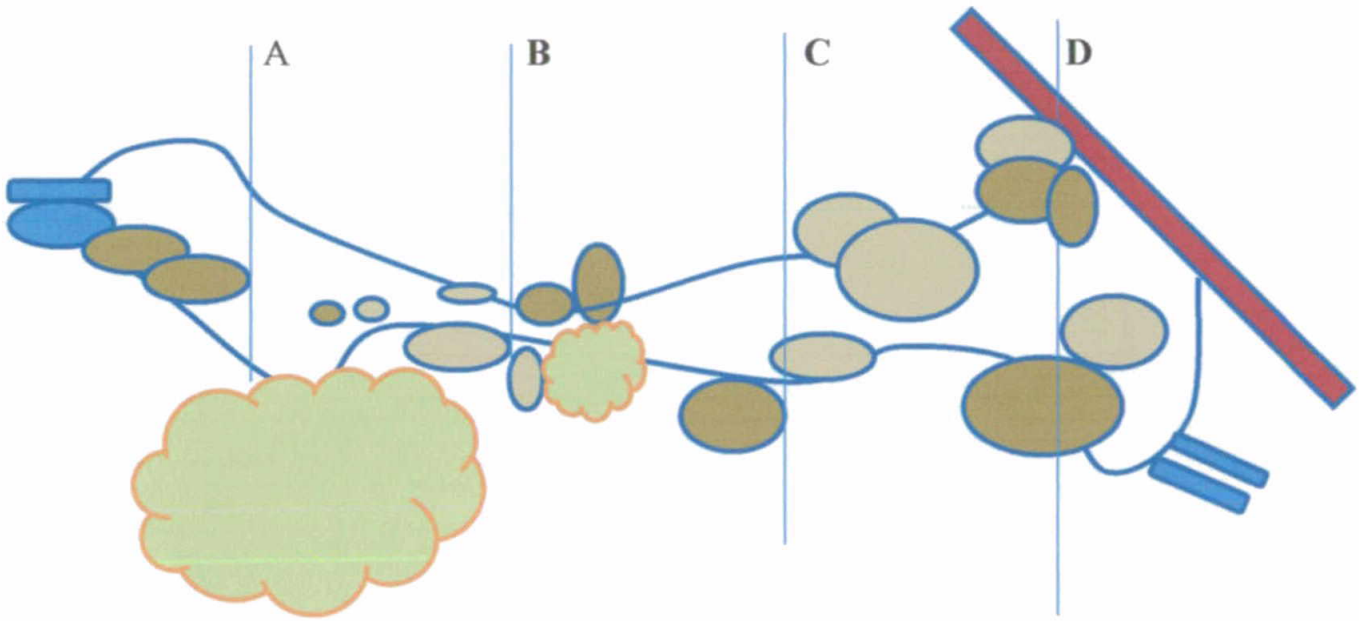
5.2 Dissolved and Total Organic Carbon

Dissolved organic carbon (DOC) was determined at 3.7 mg/L in the december sample. DOC in undisturbed watersheds generally ranges from approximately 1 to 20 mg/L. Sources of (DOC) can come from outside of the stream, soils and vegetation of the catchment, stormwater runoff of silage or compost, and or from biota instream (e.g., algae and macrophytes). DOC is an important component of the carbon cycle and energy balance in streams, a primary food source in the aquatic food web system.

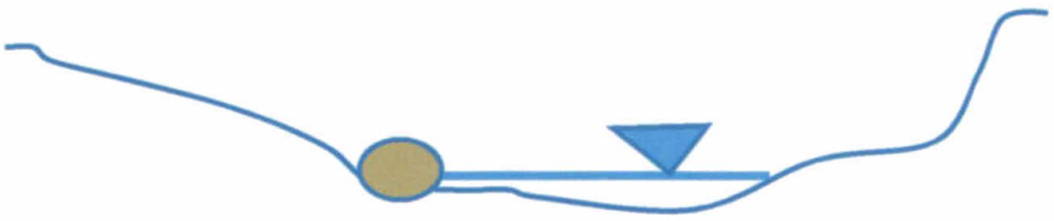
Total organic carbon (TOC) was determined at 3.9 mg/L in the december sample. In surface waters, total organic carbon concentrations are generally less than 10 mg/L. Total organic carbon consists of dissolved (DOC) and particulate organic carbon (POC) and is therefore affected by pronounced fluctuations in suspended solids in riverine systems. The total organic carbon in water can be a useful indication of the degree of pollution as an indicator of algal biomass.

6.0 PHYSICAL HABITAT EVALUATION

Physical habitat of the stream segment was evaluated via the California Stream Bioassessment Procedure, (California Fish and Game Aquatic Assessment Laboratory 1999). Field sheets were completed are appended.



Stream Layout



Stream Layout Transect B

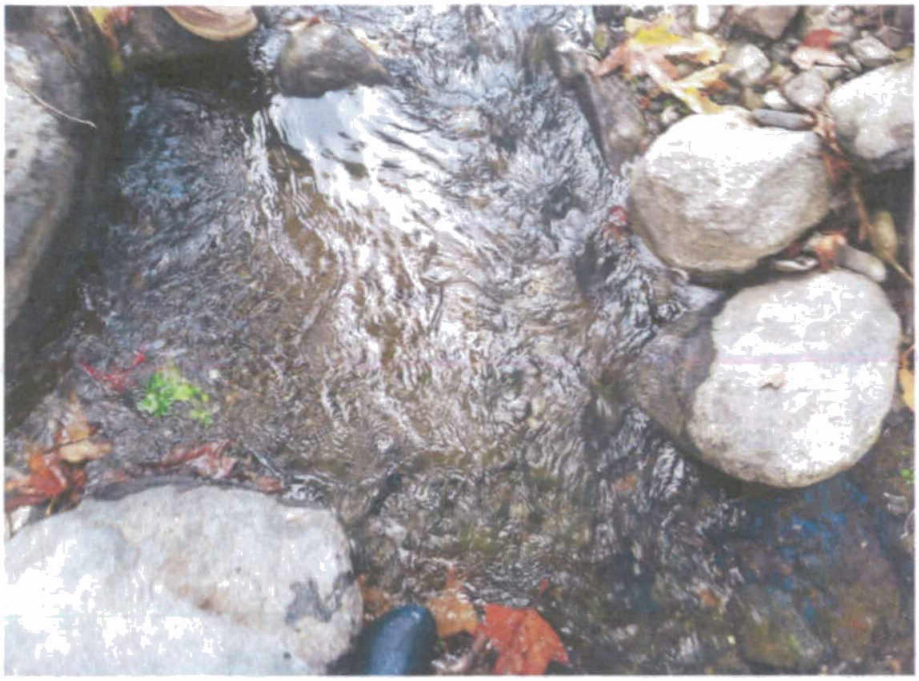


Photo 1; Transect C

Photo2; Transect D looking downstream

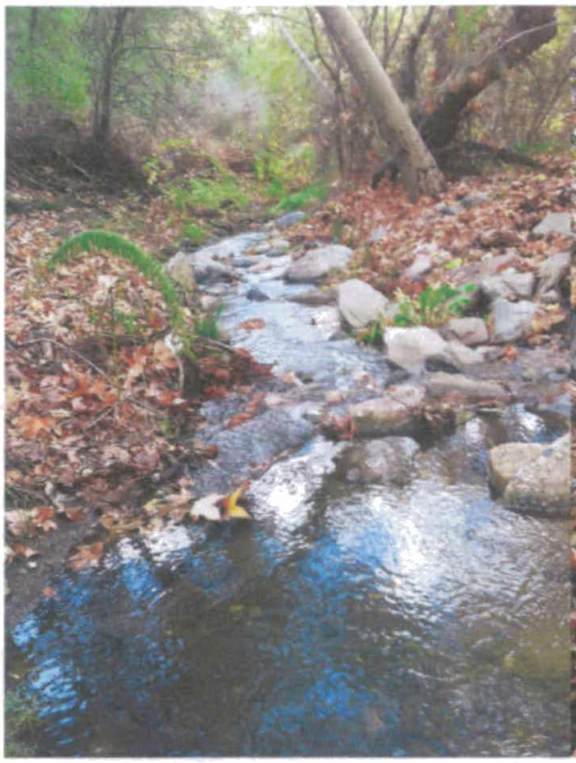


Photo3; Downstream of Transect D

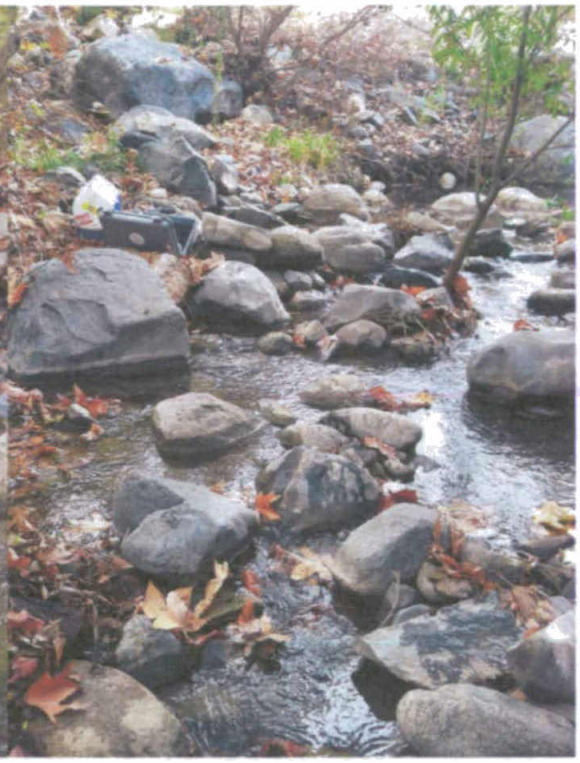


Photo4; Upstream of Transect D

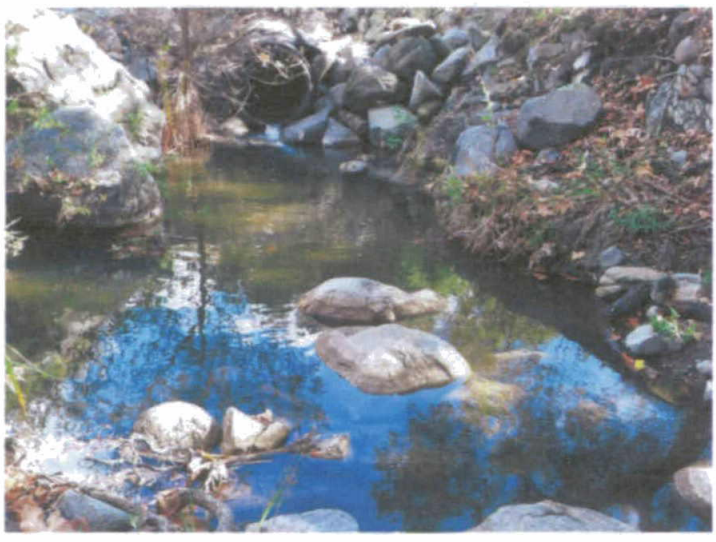


Photo 5; Upstream of Transect B

Photo 6; Looking Northward of Transect C

Photo 7; Looking Northward of Transect D

The De Luz Stream is a perennial stream. Observations summarized herein were collected a few days following a median sized rainfall event (1.24 inches on 12/13/2012). It is an engineered stream with nonnative cobble as embankment. The evaluated reach had culverts carrying all flow into the area. A backflow pool was created by 3 ton sized boulder rip rap at the head of the reach. Photo 5 depicts this pool and the culvert supplying the reach. Photos 1 through 4 depict

faster stream flow. Instantaneous flow was estimated as 1 foot/second in the fastest moving zone. The depth in the zone is less than 18 inches. The stream varies in width from 5 feet wetted bank to wetted bank. Downfall is depicted in Photo 2. Bankfull width is greater than 40 feet at an elevation of six feet above current water level. Further downstream the stream deeply incises the valley floor. Two additional culverts bring flow from the north side of De Luz Road.

7.0 Algal Biomass Indicators

Total algal biomass can be an important indicator of nutrient loading to surface waters. Algal biomass in algal cultures was evaluated by measuring total suspended solids TSS (dry weight) and by Particulate Organic Carbon. TSS was determined at less than the reporting limit of 20 mg/L. Particulate organic carbon was evaluated as total organic carbon minus the dissolved organic carbon was 0.2 mg/L.

The seemingly low levels of algal biomass agree with the low nutrient levels in water samples. As primary producers, algae are the most directly responsive of the common bio-indicators to nutrients, and can be very valuable for assessing nutrient impairment. There is no coordinated statewide program for algal bio-assessment nor has there been sufficient investment in developing the full infrastructure needed for adding algae to SWAMP monitoring. An assessment of algal taxonomic composition was consequently not undertaken.

8.0 CONCLUSION

Water quality was assessed in the De Luz Creek near the intersection of De Luz Road and Via Raquel following a storm event. Nutrient impacts were not document in the collected chemical testing or in the assessment of stream habitat. Despite 303(d) listing, Impacts from iron and manganese were also undocumented. Water quality was very nearly brackish. High levels of sulfate and chloride were present causing levels of TDS to exceed basin water quality objectives. High TDS and sulfate levels are regional watershed problems.

APPENDIX A - CHAIN OF CUSTODY

CHAIN-OF-CUSTODY RECORD

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

EMA LOG #: 12-0513

EMA DATE/TIME STAMP DEC 17'12 10.53.

Client: SAN MATEO IRRIGATED LANDS GROUP
Address: 3022 ELLIOTT ST
SAN DIEGO 92106
Attn: JOHN ADRIANY Phone: 619 851-4795
Sampled by: JA Fax:
Billing Address: 3022 ELLIOTT ST
SAN DIEGO, CA 92106
Project: PO #:

EMA ID #	Client Sample ID	2012 Sample Date	Sample Time	Sample Matrix	Container(s) #	Container(s) Type*
1	DLC - 12A	12/05	14:37	W	11	?
2	DLC - 12B	"	14:42	W	1	P
3	DLC - 12C	"	14:58	W	1	G
4	DLC - 12D	"	15:05	W	2	G
5						
6						
7						
8						
9						
10						

REQUESTED ANALYSIS

418.1 (TRPH)	Oil & Grease 413.1__ 413.2__ 1664__	TPH (8015B) Gas__ Diesel__	TPH-Extended 8015B__ ASTM D2887__	602 / 8021 B BTXE__ MTBE__	601 / 8021 B (Volatile Organics)	EPA 8021 B Aromatics__ Halogenated__	608 / 8081 (Pesticides)	608 / 8082 (PCB's)	624 / 8260 (Volatile Organics)	625 / 8270 (Semi Volatile Organics)	TTLC Metals (CAC Title 22)	STLC Metals (CAC Title 22)	TCLP (RCRA) Metals__ Organics__	Cd Cr Cu Pb Ni Ag Zn	pH EC TSS	NO_3^-, NO_2, SO_4^{2-}, Cl^-, F	TDS, TSS, Ortho PO_4	NH_3, P, TKN	DOC	TOC		
																X	X	X	X	X		

*Container Types: B=Brass Tube; V=VOA; G=Glass; P=Plastic; O=Other (list)

Tamper-Proof Seals Intact: Yes No N/A Correct Containers: Yes No
Sample(s): Cold Ambient Warm VOAs w/ZHS: Yes No N/A
All Samples Properly Preserved: Yes No N/A
Disposal: N/C (aqueous) *EMA (@$5.00/sample) Return Hold
Turnaround Time: 24 hr 48 hr* 3 day 4 day 5 day Normal
Comments:

	RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature		DEC 17/12 1035	
Print	JOHN ADRIANY		DAVID Nguyen
Company:	CHEMMETRICS		EMA
Signature			
Print			
Company:			
Signature			
Print			
Company:			

* EMA reserves the right to return samples that do not match our waste profile.

White - EMA Canary - Accounting Pink - Client (w/Report) Goldenrod - Client (Relinquish Sample)

New client, Paid W/C.; waiting on pricing. DN 12-17-12

3°C

APPENDIX B – LABORATORY RESULTS

EnviroMatrix Analytical, Inc.

28 December 2012

San Mateo Irrigated Lands Group
Attn: John Adriany
3022 Elliott St.
San Diego, CA 92106 92106

EMA Log #: 12L0513

Project Name: San Mateo Irrigated Lands Group

Enclosed are the results of analyses for samples received by the laboratory on 12/17/12 10:35. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

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

Client Name: San Mateo Irrigated Lands Group
Project Name: San Mateo Irrigated Lands Group

EMA Log #: 12L0513

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DLC-12A	12L0513-01	Water	12/15/12 14:37	12/17/12 10:35
DLC-12B	12L0513-02	Water	12/15/12 14:42	12/17/12 10:35
DLC-12C	12L0513-03	Water	12/15/12 14:58	12/17/12 10:35
DLC-12D	12L0513-04	Water	12/15/12 15:05	12/17/12 10:35

NOTE: The TOC/DOC analyses were performed by a sub-contract laboratory, results to follow in a separate report.

Client Name: San Mateo Irrigated Lands Group
Project Name: San Mateo Irrigated Lands Group

EMA Log #: 12L0513

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
DLC-12A (12L0513-01) Water Sampled: 12/15/12 14:37 Received: 12/17/12 10:35									
Chloride	**270**	0.05	mg/l	1	2121750	12/17/12	12/17/12	SM4500 Cl C	
Nitrate as N	ND	0.05	"	"	2122837	12/28/12	12/28/12	SM4500 NO3 E	W-02
Nitrite as N	ND	0.05	"	"	2122203	12/17/12	12/17/12	SM4500 NO2 B	
Orthophosphate as P	**0.07**	0.05	"	"	2121751	12/17/12	12/17/12	SM4500 P E	
Total Dissolved Solids	**1130**	20.0	"	"	2121921	12/19/12	12/20/12	SM2540 C	
Total Suspended Solids	ND	20.0	"	"	2122407	12/20/12	12/26/12	SM2540 D	
Sulfate as SO4	**392**	50.0	"	10	2122650	12/26/12	12/27/12	SM4500 SO4 E	
DLC-12B (12L0513-02) Water Sampled: 12/15/12 14:42 Received: 12/17/12 10:35									
Ammonia as N	ND	0.10	mg/l	1	2121746	12/18/12	12/18/12	SM4500 NH3 B,C	
Total Kjeldahl Nitrogen	**1.4**	0.5	"	"	2122727	12/27/12	12/28/12	SM4500 N C	
Phosphorus, Total	**0.12**	0.05	"	"	2121835	12/18/12	12/18/12	SM4500 P B, E	

Client Name: San Mateo Irrigated Lands Group
Project Name: San Mateo Irrigated Lands Group

EMA Log #: 12L0513

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2121746										
Blank (2121746-BLK1)				Prepared & Analyzed: 12/17/12						
Ammonia as N	ND	0.10	mg/l							
LCS (2121746-BS1)				Prepared & Analyzed: 12/17/12						
Ammonia as N	0.77	0.10	mg/l	0.820		94	80-120			
LCS Dup (2121746-BSD1)				Prepared & Analyzed: 12/17/12						
Ammonia as N	0.74	0.10	mg/l	0.820		90	80-120	4	20	
Duplicate (2121746-DUP1)		Source: 12L0438-01		Prepared & Analyzed: 12/17/12						
Ammonia as N	0.13	0.10	mg/l		0.12			11	20	
Matrix Spike (2121746-MS1)		Source: 12L0438-01		Prepared & Analyzed: 12/17/12						
Ammonia as N	0.88	0.10	mg/l	0.820	0.12	93	80-120			
Matrix Spike Dup (2121746-MSD1)		Source: 12L0438-01		Prepared & Analyzed: 12/17/12						
Ammonia as N	0.92	0.10	mg/l	0.820	0.12	98	80-120	4	20	
Batch 2121750										
Blank (2121750-BLK1)				Prepared & Analyzed: 12/17/12						
Chloride	ND	0.05	mg/l							
LCS (2121750-BS1)				Prepared & Analyzed: 12/17/12						
Chloride	200	0.05	mg/l	200		100	80-120			
LCS Dup (2121750-BSD1)				Prepared & Analyzed: 12/17/12						
Chloride	200	0.05	mg/l	200		100	80-120	0	20	

Client Name: San Mateo Irrigated Lands Group
Project Name: San Mateo Irrigated Lands Group

EMA Log #: 12L0513

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2121750										
Duplicate (2121750-DUP1)		**Source: 12L0513-01**		Prepared & Analyzed: 12/17/12						
Chloride	270	0.05	mg/l		270			0	20	
Matrix Spike (2121750-MS1)		**Source: 12L0513-01**		Prepared & Analyzed: 12/17/12						
Chloride	440	0.05	mg/l	200	270	85	80-120			
Matrix Spike Dup (2121750-MSD1)		**Source: 12L0513-01**		Prepared & Analyzed: 12/17/12						
Chloride	440	0.05	mg/l	200	270	85	80-120	0	20	
Batch 2121751										
Blank (2121751-BLK1)				Prepared & Analyzed: 12/17/12						
Orthophosphate as P	ND	0.05	mg/l							
LCS (2121751-BS1)				Prepared & Analyzed: 12/17/12						
Orthophosphate as P	0.47	0.05	mg/l	0.500		93	80-120			
LCS Dup (2121751-BSD1)				Prepared & Analyzed: 12/17/12						
Orthophosphate as P	0.48	0.05	mg/l	0.500		95	80-120	2	20	
Duplicate (2121751-DUP1)		**Source: 12L0513-01**		Prepared & Analyzed: 12/17/12						
Orthophosphate as P	0.07	0.05	mg/l		0.07			2	20	
Matrix Spike (2121751-MS1)		**Source: 12L0513-01**		Prepared & Analyzed: 12/17/12						
Orthophosphate as P	0.54	0.05	mg/l	0.500	0.07	96	80-120			
Matrix Spike Dup (2121751-MSD1)		**Source: 12L0513-01**		Prepared & Analyzed: 12/17/12						
Orthophosphate as P	0.61	0.05	mg/l	0.500	0.07	109	80-120	12	20	

Client Name: San Mateo Irrigated Lands Group
Project Name: San Mateo Irrigated Lands Group

EMA Log #: 12L0513

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2121751										
Reference (2121751-SRM1)				Prepared & Analyzed: 12/17/12						
Orthophosphate as P	1.61	0.05	mg/l	1.64		98	86.6-114.6			
Batch 2121835										
Blank (2121835-BLK1)				Prepared & Analyzed: 12/18/12						
Phosphorus, Total	ND	0.05	mg/l							
LCS (2121835-BS1)				Prepared & Analyzed: 12/18/12						
Phosphorus, Total	0.52	0.05	mg/l	0.500		105	80-120			
LCS Dup (2121835-BSD1)				Prepared & Analyzed: 12/18/12						
Phosphorus, Total	0.51	0.05	mg/l	0.500		102	80-120	3	20	
Duplicate (2121835-DUP1)		Source: 12L0351-01		Prepared & Analyzed: 12/18/12						
Phosphorus, Total	0.10	0.05	mg/l		0.10			1	20	
Matrix Spike (2121835-MS1)		Source: 12L0351-01		Prepared & Analyzed: 12/18/12						
Phosphorus, Total	0.58	0.05	mg/l	0.500	0.10	95	80-120			
Matrix Spike Dup (2121835-MSD1)		Source: 12L0351-01		Prepared & Analyzed: 12/18/12						
Phosphorus, Total	0.57	0.05	mg/l	0.500	0.10	95	80-120	0.5	20	
Batch 2121921										
Blank (2121921-BLK1)				Prepared: 12/19/12 Analyzed: 12/20/12						
Total Dissolved Solids	ND	20.0	mg/l							

Client Name: San Mateo Irrigated Lands Group
Project Name: San Mateo Irrigated Lands Group

EMA Log #: 12L0513

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2121921										
Duplicate (2121921-DUP1)		**Source: 12L0577-01**		Prepared: 12/19/12 Analyzed: 12/20/12						
Total Dissolved Solids	1010	20.0	mg/l		1000			0.8	20	
Reference (2121921-SRM1)				Prepared: 12/19/12 Analyzed: 12/20/12						
Total Dissolved Solids	388	20.0	mg/l	381		102	76.1-124.1			
Batch 2122203										
Blank (2122203-BLK1)				Prepared & Analyzed: 12/17/12						
Nitrite as N	ND	0.05	mg/l							
LCS (2122203-BS1)				Prepared & Analyzed: 12/17/12						
Nitrite as N	0.08	0.05	mg/l	0.100		81	80-120			
LCS Dup (2122203-BSD1)				Prepared & Analyzed: 12/17/12						
Nitrite as N	0.08	0.05	mg/l	0.100		80	80-120	1	20	
Duplicate (2122203-DUP1)		**Source: 12L0523-10**		Prepared & Analyzed: 12/17/12						
Nitrite as N	ND	0.05	mg/l		ND				20	
Matrix Spike (2122203-MS1)		**Source: 12L0523-10**		Prepared & Analyzed: 12/17/12						
Nitrite as N	0.09	0.05	mg/l	0.100	ND	88	80-120			
Matrix Spike Dup (2122203-MSD1)		**Source: 12L0523-10**		Prepared & Analyzed: 12/17/12						
Nitrite as N	0.08	0.05	mg/l	0.100	ND	85	80-120	3	20	
Batch 2122407										
Blank (2122407-BLK1)				Prepared: 12/20/12 Analyzed: 12/26/12						
Total Suspended Solids	ND	20.0	mg/l							

Client Name: San Mateo Irrigated Lands Group
Project Name: San Mateo Irrigated Lands Group

EMA Log #: 12L0513

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2122407										
Duplicate (2122407-DUP1)		**Source: 12L0513-01**		Prepared: 12/20/12	Analyzed: 12/26/12					
Total Suspended Solids	2.0	20.0	mg/l		2.0			0	20	
Reference (2122407-SRM1)				Prepared: 12/20/12	Analyzed: 12/26/12					
Total Suspended Solids	100	20.0	mg/l	100		100	82.9-110			
Batch 2122650										
Blank (2122650-BLK1)				Prepared: 12/26/12	Analyzed: 12/27/12					
Sulfate as SO4	ND	5.0	mg/l							
LCS (2122650-BS1)				Prepared: 12/26/12	Analyzed: 12/27/12					
Sulfate as SO4	10.3	5.0	mg/l	10.0		103	80-120			
LCS Dup (2122650-BSD1)				Prepared: 12/26/12	Analyzed: 12/27/12					
Sulfate as SO4	9.7	5.0	mg/l	10.0		97	80-120	6	20	
Duplicate (2122650-DUP1)		**Source: 12L0386-01**		Prepared: 12/26/12	Analyzed: 12/27/12					
Sulfate as SO4	19.9	5.0	mg/l		20.0			0.9	20	
Matrix Spike (2122650-MS1)		**Source: 12L0386-01**		Prepared: 12/26/12	Analyzed: 12/27/12					
Sulfate as SO4	30.5	5.0	mg/l	10.0	20.0	105	80-120			
Matrix Spike Dup (2122650-MSD1)		**Source: 12L0386-01**		Prepared: 12/26/12	Analyzed: 12/27/12					
Sulfate as SO4	29.8	5.0	mg/l	10.0	20.0	98	80-120	2	20	
Batch 2122727										
Blank (2122727-BLK1)				Prepared: 12/27/12	Analyzed: 12/28/12					
Total Kjeldahl Nitrogen	ND	0.5	mg/l							

Client Name: San Mateo Irrigated Lands Group
Project Name: San Mateo Irrigated Lands Group

EMA Log #: 12L0513

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2122727										
LCS (2122727-BS1)				Prepared: 12/27/12 Analyzed: 12/28/12						
Total Kjeldahl Nitrogen	3.4	0.5	mg/l	4.10		83	80-120			
LCS Dup (2122727-BSD1)				Prepared: 12/27/12 Analyzed: 12/28/12						
Total Kjeldahl Nitrogen	3.4	0.5	mg/l	4.10		83	80-120	0.3	20	
Duplicate (2122727-DUP1)		Source: 12L0513-02		Prepared: 12/27/12 Analyzed: 12/28/12						
Total Kjeldahl Nitrogen	1.4	0.5	mg/l		1.4			1	20	
Matrix Spike (2122727-MS1)		Source: 12L0513-02		Prepared: 12/27/12 Analyzed: 12/28/12						
Total Kjeldahl Nitrogen	4.7	0.5	mg/l	4.10	1.4	80	80-120			
Matrix Spike Dup (2122727-MSD1)		Source: 12L0513-02		Prepared: 12/27/12 Analyzed: 12/28/12						
Total Kjeldahl Nitrogen	4.9	0.5	mg/l	4.10	1.4	85	80-120	4	20	
Batch 2122837										
Blank (2122837-BLK1)				Prepared & Analyzed: 12/28/12						
Nitrate as N	ND	0.05	mg/l							
LCS (2122837-BS1)				Prepared & Analyzed: 12/28/12						
Nitrate as N	0.49	0.05	mg/l	0.500		99	80-120			
LCS Dup (2122837-BSD1)				Prepared & Analyzed: 12/28/12						
Nitrate as N	0.50	0.05	mg/l	0.500		101	80-120	2	20	
Duplicate (2122837-DUP1)		Source: 12L0476-07		Prepared & Analyzed: 12/28/12						
Nitrate as N	ND	0.05	mg/l		ND				20	

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.

Client Name: San Mateo Irrigated Lands Group
Project Name: San Mateo Irrigated Lands Group

EMA Log #: 12L0513

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2122837										
Matrix Spike (2122837-MS1)		**Source: 12L0476-07**		Prepared & Analyzed: 12/28/12						
Nitrate as N	0.55	0.05	mg/l	0.500	ND	110	80-120			
Matrix Spike Dup (2122837-MSD1)		**Source: 12L0476-07**		Prepared & Analyzed: 12/28/12						
Nitrate as N	0.58	0.05	mg/l	0.500	ND	115	80-120	4	20	

Client Name: San Mateo Irrigated Lands Group	**EMA Log #: 12L0513**
Project Name: San Mateo Irrigated Lands Group	

Notes and Definitions

W-02	The sample for nitrate analysis was preserved with H2SO4 after the nitrite portion of the analysis was completed to extend the holding time for the sample. Nitrate results are corrected for the nitrite contribution per the method.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

EnviroMatrix Analytical, Inc.

26 December 2012

San Mateo Irrigated Lands Group
Attn: John Adriany
3022 Elliot Street
San Diego, California, 92106

EMA Log #: 12L0513

Project Name: No Project

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

- TOC – Liquid by SM5310B

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

Clinical Laboratory of San Bernardino, Inc.

19 December 2012 Clinical Lab No.: 12L1323

Louis Luick
EnviroMatrix Analytical, Inc.
4340 Viewridge., Ste. A
San Diego, CA 92123

Project Name: Water Analysis
Sub Project: 12L0513

Enclosed are the results of the analyses for samples received at the laboratory on 12/18/12 . Samples were received within temperature range, in correct containers and preservation.

Analyses were performed pursuant to client's chain of custody, within hold times, utilizing EPA or other ELAP approved methodologies.

I certify that the results are within compliance both technically and for completeness. Analytical results are attached to this letter. Please call if any additional information and or assistance are needed.

Thank you for choosing Clinical Laboratory of San Bernardino for your analytical needs.

Sincerely,

Stephen Kavousy

Stephen Kavousy
Project Manager

Clinical Laboratory of San Bernardino, Inc.

EnviroMatrix Analytical, Inc.	Project: Water Analysis	Work Order: 12L1323
4340 Viewridge., Ste. A	Sub Project: 12L0513	Received: 12/18/12 12:25
San Diego CA, 92123	Project Manager: Louis Luick	Reported: 12/19/12

DLC-12C **12L1323-01 (Water)** **Sample Date:** 12/15/12 14:58 **Sampler:** Not Listed

Analyte	Method	Result	Units	Rep. Limit	MCL	Prepared	Analyzed	Batch	Qualifier
General Chemical Analyses									
Dissolved Organic Carbon	SM 5310BM	3.7	mg/L	0.30		12/18/12	12/19/12	1251075	HT-01

Clinical Laboratory of San Bernardino, Inc.

EnviroMatrix Analytical, Inc.	Project: Water Analysis	Work Order: 12L1323
4340 Viewridge., Ste. A	Sub Project: 12L0513	Received: 12/18/12 12:25
San Diego CA, 92123	Project Manager: Louis Luick	Reported: 12/19/12

DLC-12C **12L1323-02 (Water)** **Sample Date:** 12/15/12 15:05 **Sampler:** Not Listed

Analyte	Method	Result	Units	Rep. Limit	MCL	Prepared	Analyzed	Batch	Qualifier
General Chemical Analyses									
Total Organic Carbon	SM 5310B	3.9	mg/L	0.30		12/18/12	12/19/12	1251075	

Clinical Laboratory of San Bernardino, Inc.

EnviroMatrix Analytical, Inc.	Project: Water Analysis	Work Order: 12L1323
4340 Viewridge., Ste. A	Sub Project: 12L0513	Received: 12/18/12 12:25
San Diego CA, 92123	Project Manager: Louis Luick	Reported: 12/19/12

General Chemical Analyses - Quality Control

Clinical Laboratory of San Bernardino

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1251075										
Blank (1251075-BLK1)				Prepared & Analyzed: 12/18/12						
Dissolved Organic Carbon	ND	0.30	mg/L							
Total Organic Carbon	ND	0.30	mg/L							
Blank (1251075-BLK2)				Prepared: 12/18/12 Analyzed: 12/19/12						
Total Organic Carbon	ND	0.30	mg/L							
LCS (1251075-BS1)				Prepared & Analyzed: 12/18/12						
Total Organic Carbon	1.99	0.30	mg/L	2.0		100	80-120			
LCS (1251075-BS2)				Prepared: 12/18/12 Analyzed: 12/19/12						
Total Organic Carbon	2.00	0.30	mg/L	2.0		100	80-120			
Matrix Spike (1251075-MS1)		Source: 12L1208-01		Prepared: 12/18/12 Analyzed: 12/19/12						
Total Organic Carbon	2.37	0.30	mg/L	2.0	0.347	101	80-120			
Matrix Spike Dup (1251075-MSD1)		Source: 12L1208-01		Prepared: 12/18/12 Analyzed: 12/19/12						
Total Organic Carbon	2.34	0.30	mg/L	2.0	0.347	100	80-120	1	20	

HT-01 Analysis performed outside of recommended hold time.

ND Analyte NOT DETECTED at or above the reporting limit

SUBCONTRACT ORDER

EnviroMatrix Analytical, Inc.

12L0513

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:

Clinical Lab of San Bernardino, Inc.
21881 Barton Rd
Grand Terrace, CA 92313
Phone :(909) 825-7693
Fax: (909) 825-7696

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

5 day TAT

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: 12L0513-03	**Water**	**Sampled: 12/15/12 14:58**		
DOC - Liquid by SM5310 B	~~12/26/12 16:00~~	01/12/13 14:58		DLC-12C
Containers Supplied:				
125 ml amber - unpreserv				
Sample ID: 12L0513-04	**Water**	**Sampled: 12/15/12 15:05**		
TOC-Liquid by SM5310B	~~12/26/12 16:00~~	01/12/13 15:05		DLC-12C
Containers Supplied:				
Voa Vial - HCl (A)	Voa Vial - HCl (B)			

David Nguyen 12-17-12

Released By | Date | Received By | Date

APPENDIX C – FIELD SHEETS

CALIFORNIA DEPARTMENT OF FISH AND GAME
AQUATIC BIOASSESSMENT LABORATORY

WATER POLLUTION CONTROL LABORATORY
REVISION DATE-- MAY 1999

PHYSICAL HABITAT QUALITY
(California Stream Bioassessment Procedure)

WATERSHED/ STREAM: De Luz Creek
COMPANY/ AGENCY: SMILG
SITE DESCRIPTION: DeLuz Road @ Via Raquel

DATE/ TIME: 12/15/2012; 1311 hrs
SAMPLE ID NUMBER: DLC-12A

Circle the appropriate score for all 20 habitat parameters. Record the total score on the front page of the CBW. 122

Parameters to be evaluated within the sampling reach

HABITAT PARAMETER	CONDITION CATEGORY			
	OPTIMAL	**SUBOPTIMAL**	**MARGINAL**	**POOR**
1. Epifaunal Substrate/ Available Cover	Greater than 70% (50% for low gradient streams) of substrate favorable for epifaunal colonization and fish cover; most favorable is a mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% (30-50% for low gradient streams) mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% (10-30% for low gradient streams) mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% (10% for low gradient streams) stable habitat; lack of habitat is obvious; substrate unstable or lacking.
	20 19 18 17 16	15 14 (13) 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
	20 19 18 17 16	15 14 13 12 11	(10) 9 8 7 6	5 4 3 2 1 0
3. Velocity/ Depth Regimes *(deep<0.5 m, slow<0.3 m/s)*	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow).	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow-deep).
	20 19 18 17 16	15 (14) 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
	20 (19) 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
	20 19 18 17 16	15 14 13 (12) 11	10 9 8 7 6	5 4 3 2 1 0

Parameters to be evaluated in an area longer than the sampling reach

HABITAT PARAMETER	CONDITION CATEGORY			
	OPTIMAL	SUBOPTIMAL	MARGINAL	POOR
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
	20 19 18 17 16	15 14 13 12 11	10 9 8 (7) 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
	20 19 18 17 (16)	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left of right side by facing downstream	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
Left Bank	10 9	8 7 6	(5) 4 3	2 1 0
Right Bank	10 9	8 7 6	(5) 4 3	2 1 0
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Left Bank	10 (9)	8 7 6	5 4 3	2 1 0
Right Bank	10 (9)	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities haveimpacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
Left Bank	10 (9)	8 7 6	5 4 3	2 1 0
Right Bank	10 9	8 7 6	5 (4) 3	2 1 0