

Aliso 8-1
Creek

MEMORANDUM

240

Date: November 10, 1994
From: Allan Bacon
To: Planning Files
Subject: ALISO CREEK AMBIENT SAMPLING ON 8/2/94

On August 2, 1994, Aliso Creek was sampled to obtain ambient data. Aliso Creek had never been sampled so staff attempted to find sample locations that represented actual conditions as well as were accessible for repeated sampling. The sampling was performed in conjunction with U.S. Fish and Wildlife efforts to collect invertebrate samples. Samples were analyzed for total and fecal coliform, general nutrients, standard minerals, and total recoverable petroleum hydrocarbons (TRPH).

As background, Aliso Creek is located within the Chino Hills State Park, which is west of Highway 71 and north of the 91 Freeway. The park drainage is Aliso Creek. Aliso Creek is unique in that it may be one of the last "natural" creeks in southern California. It receives no urban or agricultural runoff, and has no permitted discharges. The only problem known is an oil spill that occurred in March, 1994. In the park is one oil field that is still operational, and in this case a broken line spilled oil into a tributary which drained to Aliso Creek.

Ambient Sampling Results

The water in Aliso Creek is very highly mineralized. The TDS was in the 3000 mg/l range, and electrical conductivity was in the 3500 uS/cm range. In several locations the creek goes subsurface, either as ground water or through underground tunnels. In this area of the region, the geology features a gypsum rock which is an anhydrous calcium sulfate (CaSO_4) mineral. The water dissolves the gypsum releasing calcium cations (Ca^{2+}) and sulfate anions (SO_4^{2-}), thus increasing the sulfate, calcium, TDS and electrical conductivity.

The riparian habitat seemed relatively undisturbed. It was thick in most places. Arroy Chub (as identified by U.S. Fish and Wildlife staff) and small frogs (1 inch) were prevalent in all sample locations. This area is known to be home to the candidate species the southwestern pond turtle, but no turtles were seen during our sampling. The state park is often used by horse back riders, but there was no evidence that they had been in the creek. There was evidence that cattle were in the stream and we saw five head of cattle in the park (cattle are not supposed to be in the park).

Sample Results

A1--Aliso Creek Downstream of unnamed tributary

This sample was taken near the MWD line numbered 785-50. This sample location was chosen because it was just downstream of the unnamed tributary that carried the oil into Aliso Creek. The location has heavy riparian habitat. The riparian habitat consists of young trees (<2 inch diameter) and brush. The substrate was primarily sand and gravel, with no large rocks.

At this location four secondary drinking water standards were violated. Iron was measured at 0.5 mg/l, exceeding the 0.3 mg/l objective. Sulfate was measured at 1990 mg/l, exceeding the 500 mg/l objective. TDS was measured at 2930 mg/l, exceeding the 1000 mg/l objective. Electrical conductivity was measured at 3510 mg/l, exceeding the 1600 mg/l objective.

A3--Aliso Creek Just upstream of unnamed tributary.

This sample was also taken near the MWD water line 785-50. This location was just upstream of the confluence with the unnamed tributary. The sample was taken at a road crossing. The road is parallel to the main road and intercepts the main road just north of the location and south of Aliso Creek. This location was sampled at the request of U.S. Fish and Wildlife. This was taken as a control in order to determine adverse impacts of the oil spill at A1. The substrate and riparian area was similar to that in A1.

At this location four secondary drinking water standards were violated. Iron was measured at 1.6 mg/l, exceeding the 0.3 mg/l objective. Sulfate was measured at 1770 mg/l, exceeding the 500 mg/l objective. TDS was measured at 2300 mg/l, exceeding the 1000 mg/l objective. Electrical conductivity was measured at 3240 mg/l, exceeding the 1600 mg/l objective.

A2--Aliso Creek further upstream

This sample was taken near MWD water line 876-90. This location was well upstream of the oil spill. It was not in the hills, and a sample even further upstream might be valuable. The creek has cut down the channel to heights up to ten feet in this location. The riparian habitat was of brush and large trees. The substrate was primarily mud and silt, with very little rock and sand.

At this location one primary drinking water objective was violated. The total coliform was measured at 300 mpn/100ml, exceeding the primary drinking water objective of 100 mpn/100ml. In addition, four secondary drinking water objectives were

violated. Iron was measured at 0.6 mg/l, exceeding the 0.3 mg/l objective. Sulfate was measured at 2040 mg/l, exceeding the 500 mg/l objective. TDS was measured at 2880 mg/l, exceeding the 1000 mg/l objective. Electrical conductivity was measured at 3570 mg/l, exceeding the 1600 mg/l objective.

Recommendations

Because this location is unique in the region and possibly in Southern California, I think it is a resource that should be watched closely. It can be a tool to compare how natural streams, in this area, function over time. Annual sampling protocol should be established including several summer and winter creek locations as well as the constituents to be monitored. I recommend general nutrients, standard minerals and bacteria be measured yearly with occasional monitoring for other constituents of concern. For the winter locations I recommend sampling a few lower elevations that are generally dry during the summer in order to get a better idea of the minerals that are dissolved during subsurface travel versus those dissolved during surface travel.

In addition, because of the consistently high constituent values that exceeded several drinking water standards, and intensive sampling for drinking water should be conducted. The samples should include several samples in the year as well as video recording of the stream and all inputs. If the constituents continue to exceed the drinking water objectives by the same margin throughout the year, exempting Aliso Creek from the MUN designation might be warranted.

ALISO CREEK 8/2/94

A2-UPSTREAM A3-MIDDLE STREAM A1-DOWNSTREAM

Constituent

TOTAL COLIFORM	300	*****	*****
FECAL COLIFORM	300	*****	*****
TRPH	0	0	0
AMMONIA	0.3	0	0.2
TKN, NITROGEN	1	1	0.9
NITRITE	0	0	0
NITRATE	0.9	0.6	0.9
TOTAL PHOSPHORUS	0.19	0.11	0.07
ORTHOPHOSPHATE	0.11	0.03	0.06
ALKALINITY	374	333	300
BICARBONATE	457	406	366
BORON	0.8	0.9	0.8
CALCIUM	328	348	332
CARBONATE	0	0	0
CHLORIDE	181	206	201
ELECTRIC CONDUCTIVITY	3240	3570	3510
FLOURIDE	1.2	1.1	1.2
IRON	1.6	0.6	0.5
MAGNESIUM	192	223	224
PH	7.89	7.75	7.64
POTASSIUM	7.1	6.5	6.7
SODIUM	269	296	299
HYDROXIDE	0	0	0
SULFATE	1770	2040	1990
TDS	2300	2880	2930
TOTAL ANIONS	49.5	55	53.1
TOTAL CATIONS	44.1	48.8	48.2
HARDNESS	1600	1850	1730

*****-Sample spilled during transport, no analysis run

Note: 0 (zero) is used in place of ND (non-detect) in order to have actual numbers for statistical data.

H₂O → Appeared and disappeared
① Several locations along the stream
Arroyo Chub ~~Do not appear~~ Tree Frogs
very Prevalent in Creek
No Pond Turtles seen

* Few will be taking Sediment
Samples @ a later, would like
to tag to take pictures (More following)

Down Stream of Tributary - Lots
of oil in Creek, on rocks etc.

Locations -

A1 - Down stream of oil spill tributary
- Time = 11:00 (Turbofan)

near Tributary is just South of Power Lines

- Lots of oil on side - settled on Bottom

DH = 7-8

Temp = 28°C

@ 785 + 50

- Flow ~ 1/2 cfs

A2 - well - upstream of tributary - should be very Natural

Time = 2:15

- @ Long Cylinder owned by MWD # 876+EO

Well upstream of Oil spill location

A5 - Just upstream of Confluence

- Road Crossing - Below Power lines

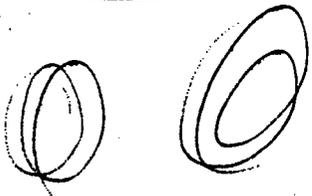
2:45

- on Rd that is Post MWD Pipe,

turn left

- Highly Eutrophic, Retentive

A3 - is Just upstream of oil spill Location



Very Clear in Most location

Anaerobic soil conditions, Very dense

Riparian habitat,

Applied P & Ch Laboratory

4066 E. Mission Blvd., Pomona, CA 91766

Tel: (909) 622-5148 Fax: (909) 622-3199

APCL Analytical Report

nan 01/19/94

Planning - Allen

Submitted to: CRWQCB: Santa Ana Region Attention: Nancy Olson-Martin 2010 Iowa Avenue, Suite 100 Riverside, CA 92507 Tel: (909)782-4130 Fax: (909)781-6288

Service ID #: 801-943494 Received : 08/02/94 Collected by: Dennis A. B. Tested : 08/02-08/94 Collected on: 08/02/94 Reported : 08/15/94 Sample description: Water Project: Aliso Creek

Analysis of Water

801-943494 Page 1 of 1

Table with columns: Component Analyzed, Method, Unit, PQL, Concentration (A-1, A-2, A-3). Rows include Total Coliform, Fecal Coliform, TRPH, Ammonia, Nitrogen, Nitrite, Phosphorus, Alkalinity, Bicarbonate, Boron, Calcium, Carbonate, Chloride, Electric conductivity, Fluoride, Iron, Magnesium, pH, Potassium, Sodium, Hydroxide, Sulfate, Solids, Total Anions, Total Cations, Hardness by Titration, Phosphorus, Orthophosphate, Nitrate.

PQL : Practical Quantitation Limit
SM : Standard Methods for Examination of Water and Waste Water, 17th edition.
N.D. : Not Detected or less than the quantitation limit.
* Sample leaked out during shipment, not possible to run analysis.

Respectfully submitted,
Jack Y. Zhang, Ph.D.,
Director
Applied P & Ch Laboratory

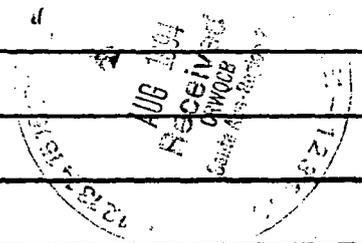




LABORATORY <i>APCC</i>	PROJECT MANAGER <i>Nancy Olsen - Martin</i>
	PHONE NUMBER <i>(909) 878 2-4130</i>

PROJECT NAME: <i>Aliso Creek</i>	SAMPLERS: (Signature) <i>Dennis Allen Becon</i>
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SAMPLE NUMBER	LOCATION DESCRIPTION	DATE	TIME	SAMPLE TYPE			SOLID	NO. OF CNTNRS	TESTS REQUIRED
				WATER		AIR			
				Comp.	Grab.				
<i>A-1</i>	<i>Down stream of Sp. 11</i>	<i>8/2/94</i>	<i>11:00</i>		<i>X</i>			<i>4</i>	<i>Bact + Nutrients STD. Minerals TRP</i>
<i>A-2</i>	<i>Well upstream / headwater</i>	<i>8/2/94</i>	<i>2:15</i>		<i>X</i>			<i>4</i>	<i>132426</i>
<i>A-3</i>	<i>upstream @ head</i>	<i>8/2/94</i>	<i>2:45</i>		<i>X</i>			<i>4</i>	



Relinquished by: (Signature) <i>Dennis Allen Becon</i>	Received by: (Signature) <i>[Signature]</i>	Date/Time <i>8-2-94 4:29</i>
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Relinquished by: (Signature)	Received by: (Signature)	Date/Time
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Relinquished by: (Signature)	Received by Mobile Laboratory for field analysis: (Signature)	Date/Time
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Dispatched by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time
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Method of Shipment:

Special Instructions: *# 3194*

TASK CODE

ESTIMATED COST

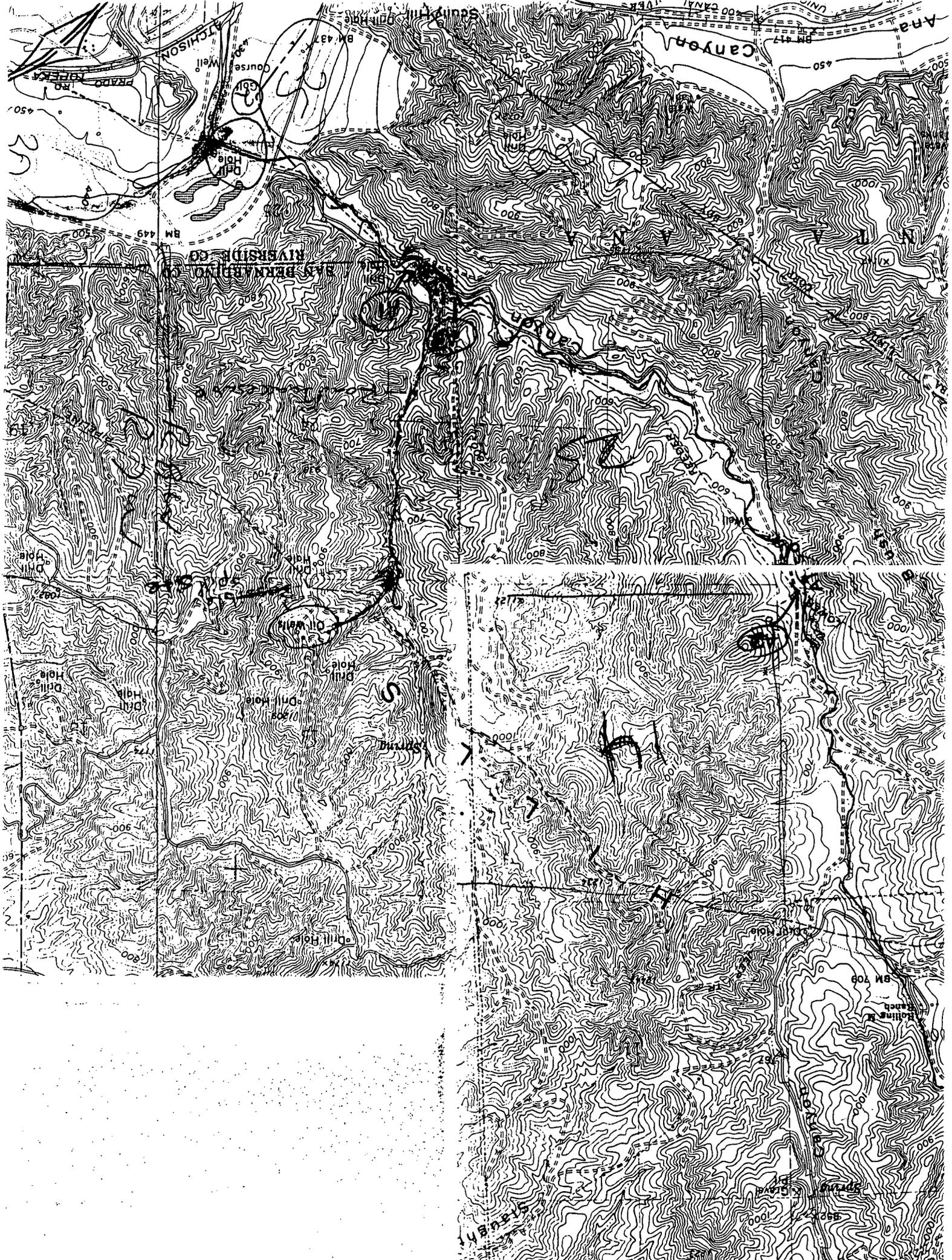
Aliso Creek

6/17/93

On June 17, 1993 Aliso Creek was sampled for minerals, nutrients, metals and pesticides. This creek is located in the middle of Chino Hills State Park and is a tributary to the Santa Ana River. RWQCB Staff was accompanied by a researcher from Cal Poly Pomona, Bobby Goodman. A large population of Southwestern Pond Turtles inhabits this creek which are currently the focus of research. The presence of Pond Turtles was confirmed through the use of telemetry. Additionally, a pond turtle was released into the creek during the trip.

The results of the grab sample show no significant problems, except for the presence of lead. The ISWP objectives for lead are based on hardness and is 99.5 ug/l for this creek, the grab sample lead concentration was 145 ug/l. This objective was calculated using a hardness value of 1,495 mg/l, which is relatively high for a waterbody of this type. TDS is also relatively high at 2,580 mg/l. No pesticides were detected in this waterbody and nutrients were not high in this waterbody. More sampling is needed to determine whether lead is found in this creek in high concentrations.

Pictures of the waterbody are attached.



ANAS CANON
UNION
BM 417
450
500

WILCHISON
Course
Well
Drill Hole
PRADO RIVER
450

RIVERSIDE CO
BM 449
500

Drill Hole
1000

S

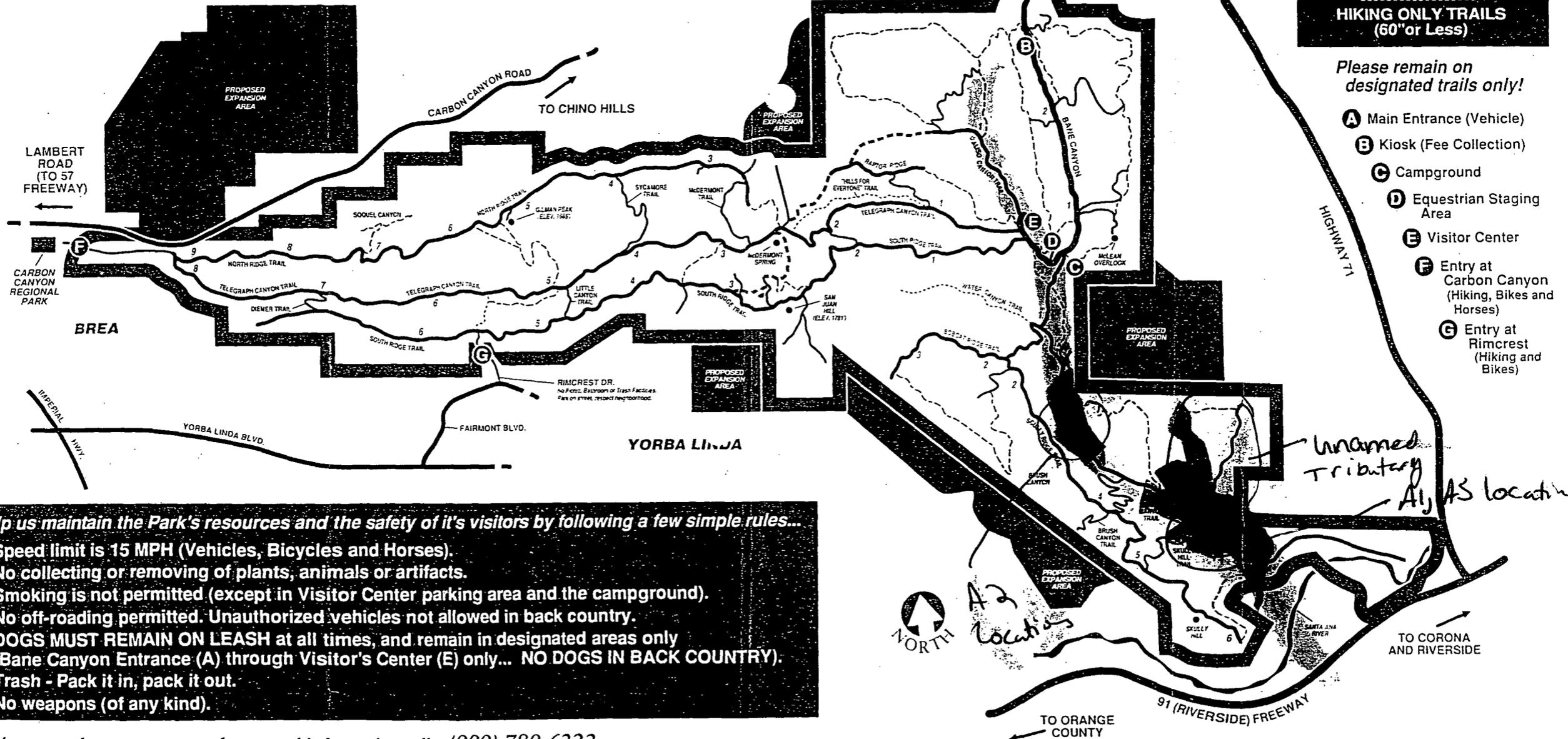
N

Drill Hole
1000

CHINO HILLS STATE PARK

INTERIM TRAIL MAP

■ Hours: 8 A.M. to Sunset ■ Day-use Fees: \$5 per Vehicle, \$1 per Dog



WIDE DIRT ROADS
HIKING, HORSE & BIKE

■■■■■■■■■■
HIKING, HORSE & BIKE
TRAILS (60" or More)

HIKING & HORSE ONLY
TRAILS (60" or More)

.....
HIKING ONLY TRAILS
(60" or Less)

Please remain on designated trails only!

- A** Main Entrance (Vehicle)
- B** Kiosk (Fee Collection)
- C** Campground
- D** Equestrian Staging Area
- E** Visitor Center
- F** Entry at Carbon Canyon (Hiking, Bikes and Horses)
- G** Entry at Rimcrest (Hiking and Bikes)

Help us maintain the Park's resources and the safety of it's visitors by following a few simple rules...

- Speed limit is 15 MPH (Vehicles, Bicycles and Horses).
- No collecting or removing of plants, animals or artifacts.
- Smoking is not permitted (except in Visitor Center parking area and the campground).
- No off-roading permitted. Unauthorized vehicles not allowed in back country.
- **DOGS MUST REMAIN ON LEASH** at all times, and remain in designated areas only (Bane Canyon Entrance (A) through Visitor's Center (E) only... **NO DOGS IN BACK COUNTRY**).
- Trash - Pack it in, pack it out.
- No weapons (of any kind).

In the event of an emergency or for general information call... (909) 780-6222

Handwritten notes on the map:

- Unamed Tributary
- A1, A5 location
- A2 location

nan 777

APCL Analytical Report

Submitted to:

CRWQCB: Santa Ana Region
 Attention: Nancy Olson-Martin
 2010 Iowa Avenue, Suite 100
 Riverside, CA 92507
 Tel: (909)782-4130 Fax: (909)781-6288

Service ID #: 801-933090

Received : 06/17/93

Collected by: Michelle Courtier

Tested : 06/17-30/93

Collected on: 06/17/93

Reported : 06/30/93

Sample description:

Water Grab Sample from Aliso CK - Middle
 Project: Basin Planning Task Code: 401

Analysis of Water

801-933090 Page 1 of 2

Component Analyzed	Method	Unit	MDL	Concentration
				Aliso CK-Middle 93-3090-1
Standard Minerals				
Alkalinity	310.1	mg/L	1	341
Bicarbonate	SM2330B	mg/L	1	416
Boron	212.3	mg/L	0.1	1.1
Calcium, Ca	211.1	mg/L	0.010	327
Carbonate	SM2330B	mg/L	1	N.D.
Chloride Cl ⁻	325.3	mg/L	1	185
Free, Fluoride F ⁻	340.2	mg/L	0.1	1.1
Hardness (Ca and Mg) by Titration	130.1	mgCaCO ₃ /L	1	1,495
Hydroxide	SM2330B	mg/L	1	N.D.
Iron, by AAS	236.1	mg/L	0.01	0.11
Magnesium, Mg	242.1	mg/L	0.001	184
Potassium, K	258.1	mg/L	0.004	11.1
Sodium, Na	273.1	mg/L	0.002	142
Sulfate (SO ₄ ⁻)	375.4	mg/L	1	1,382
Total Anions	Calc.	meq/L		37.96
Total Cations	Calc.	meq/L		34.01
Total Dissolved Solids (TDS)	160.1	mg/L	10	2,580
pH	150.1	pH unit	±0.01	8.08
Nutrients				
Total Kjeldahl Nitrogen (TKN)	351.3	mg/L	0.02	0.38
Ammonia Nitrogen (N-NH ₃)	350.2	mg/L	0.02	0.31
Organic Nitrogen	Calc	mg/L	0.02	0.07
Nitrate Nitrogen (N-NO ₃ ⁻)	353.3	mg/L	0.01	0.23
Nitrite Nitrogen (N-NO ₂ ⁻)	354.1	mg/L	0.01	N.D.
Total Phosphorus, Phosphorus	365.2/365.3	mg/L	0.01	0.1
Orthophosphate, Phosphorus	365.2	mg/L	0.01	0.05
13 Priority Pollutant Metals				
Antimony, Sb	7040	mg/L	0.0002	N.D.
Arsenic	7061	mg/L	0.0003	N.D.
Beryllium, Be	7090	mg/L	0.004	N.D.
Cadmium, Cd	7130	mg/L	0.002	N.D.
Chromium, Total	7190	mg/L	0.013	N.D.
Copper, Cu	7210	mg/L	0.004	0.017

APCL Analytical Report

Analysis of Water

801-933090 Page 2 of 2

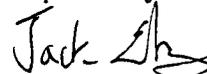
Component Analyzed	Method	Unit	MDL	Concentration
				Aliso CK-Middle 93-3090-1
Lead	7420	mg/L	0.03	0.145
Mercury, Hg	7470	mg/L	0.001	N.D.
Nickel, Ni	7520	mg/L	0.02	N.D.
Selenium, Se	7741	mg/L	0.0002	N.D.
Silver, Ag	7760	mg/L	0.005	N.D.
Thallium, Tl	7840	mg/L	0.1	N.D.
Zinc, Zn	7950	mg/L	0.003	0.020
Organochlorine Pesticides & PCBs				
Aldrin	608	µg/L	0.1	N.D.
α-BHC	608	µg/L	0.03	N.D.
β-BHC	608	µg/L	0.3	N.D.
δ-BHC	608	µg/L	0.05	N.D.
γ-BHC (Lindane)	608	µg/L	0.1	N.D.
Chlordane	608	µg/L	0.1	N.D.
4,4'-DDD	608	µg/L	0.2	N.D.
4,4'-DDE	608	µg/L	0.1	N.D.
4,4'-DDT	608	µg/L	0.2	N.D.
Dieldrin	608	µg/L	0.2	N.D.
Endosulfan I	608	µg/L	0.09	N.D.
Endosulfant II	608	µg/L	0.2	N.D.
Endosulfan Sulfate	608	µg/L	1	N.D.
Endrin	608	µg/L	0.04	N.D.
Endrin aldehyde	608	µg/L	1	N.D.
Heptachlor	608	µg/L	0.1	N.D.
Heptachlor epoxide	608	µg/L	0.09	N.D.
Toxaphene	608	µg/L	1	N.D.
Methoxychlor	608	µg/L	1	N.D.
Aroclor 1016	608	µg/L	0.2	N.D.
Aroclor 1221	608	µg/L	0.2	N.D.
Aroclor 1232	608	µg/L	0.2	N.D.
Aroclor 1242	608	µg/L	0.2	N.D.
Aroclor 1248	608	µg/L	0.2	N.D.
Aroclor 1254	608	µg/L	0.2	N.D.
Aroclor 1260	608	µg/L	0.2	N.D.

MDL : Method Detection Limit

SM : Standard Methods for Examination of Water and Waste Water, 17th edition.

N.D. : Not Detected in this analysis, or less than the method detection limit.

Respectfully submitted,


Jack, Y. Zhang, Ph. D.,
Director



LABORATORY <i>APCL</i>	PROJECT MANAGER <i>Michelle Courtier</i>
SECTION <i>Planning</i>	PHONE NUMBER <i>782-4962</i>
PROJECT NAME <i>Basin Planning - ALISO CK</i>	SAMPLERS: (Signature) <i>Michelle Courtier</i>

SAMPLE NUMBER	LOCATION DESCRIPTION	DATE	TIME	SAMPLE TYPE			SOLID	NO. OF CNTNRS	TESTS REQUIRED
				WATER		AIR			
				Comp.	Grab.				
<i>1</i> ✓	<i>ALISO CK - Middle</i>	<i>6/17</i>	<i>11:30</i>		<i>X</i>			<i>4</i>	<i>608, Metals, Nutrients, Minerals, Std.</i>

Relinquished by: (Signature) <i>Michelle Courtier</i>	Received by: (Signature) <i>Denise Navan</i>	Date/Time <i>6-17-93 3:15</i>
Relinquished by: (Signature) <i>Denise Navan</i>	Received by: (Signature)	Date/Time <i>6-17-93 5:25</i>
Relinquished by: (Signature)	Received by Mobile Laboratory for field analysis: (Signature)	Date/Time
Dispatched by: (Signature)	Date/Time	Received for Laboratory by: <i>[Signature]</i>
Method of Shipment:		Date/Time <i>6/17/93 5:55 PM</i>
Special Instructions:		TASK CODE <i>401</i>

ESTIMATED COST



LABORATORY <p style="text-align:center">APCL</p>	PROJECT MANAGER <p style="text-align:center">Michelle Courtier</p>
SECTION <p style="text-align:center">Planning</p>	PHONE NUMBER <p style="text-align:center">782-4962</p>
PROJECT NAME <p style="text-align:center">Basin Planning - Aliso CK</p>	SAMPLERS: (Signature) <p style="text-align:center"><i>Michelle Courtier</i></p>

SAMPLE NUMBER	LOCATION DESCRIPTION	DATE	TIME	SAMPLE TYPE			SOLID	NO. OF CNTNRS	TESTS REQUIRED
				WATER		AIR			
				Comp.	Grab.				
1	Aliso CK - Middle	6/17	11:30		X			4	608, [Ⓢ] Metals, Nutrients, ^{Std.} Minerals

Relinquished by: (Signature) <i>Michelle Courtier</i>		Received by: (Signature) <i>Denise Hansen</i>		Date/Time 6-17-93	Date/Time 3:15	
Relinquished by: (Signature)		Received by: (Signature)		Date/Time	Date/Time	
Relinquished by: (Signature)		Received by Mobile Laboratory for field analysis: (Signature)		Date/Time	Date/Time	
Dispatched by: (Signature)	Date/Time	Received for Laboratory by:		Date/Time	Date/Time	
Method of Shipment:						
Special Instructions:						
					TASK CODE	401
ESTIMATED COST						

Aliso Creek (midair)

6/17/93



