ENCAPCO

December 29, 1995

Lynn Nakashima
Site Mitigation Branch, Region 2
700 Heinz Avenue, Suite 200
Berkeley, CA 94710

RE: Encapco Soil Recycling Project

Dear Ms. Nakashima:

Per our meeting of December 1, 1995, Encapco is planning to go forward with a "Non-RCRA" Soil Recycling Project.

The details of the project and schedule are as follows:

Project name:	Shellmound Street Extension No. EPW 108-95
Location:	Shellmound Street, Emeryville, California
Start Date:	January 15, 1996
Intent:	To recycle soil, producing Class II AB (Aggregate Base) material, which is to be placed on the Shellmound Site

It is our understanding that the above project meets all of the guidelines for recycling as stated within: HAZARDOUS WASTE MANAGEMENT PROGRAM MANAGEMENT MEMO, MEMO #: EO-95-010-MM

This memo gives guidance for the correct use and eligibility of recycled materials for the exclusion and exemptions provided under HSC Section 25143.2.

Enclosed please find the following documents:

1 - Amended Health and Safety Plan for the project that reflects the recycling work to be done by Encapco; and

2 - Analytical reporting results for the pre- and post-recycled soil and the structural result of the recycling effort.

11555 Dublin Boulevard • P.O. Box 2223 • Dublin, California 94568 • 510/829-9595 • Fax: 510/829-1732

As with all projects undertaken by Encapco, we look forward to working with you or others in your group. If you have any questions or comments about either our recycling process, or the project described herein, please feel free to contact me at any time prior to the start of the above activity. Additionally, as always, anytime during the operation I would be more than willing to meet you at the job-site and assist in your tour.

Sincerely,

Encapco

Ken Monlux
General Manager

Enclosures

KM/wr

cc: Jessie Schnell, DTSC, Sacramento
Susan Hugo, County of Alameda Environmental Health
Sum Arigala, Regional Water Quality Control Board
Juan Arreguin, City of Emeryville

ANALYTICAL REPORT

for

SHELLMOND STREET EXTENSION

PROJECT NO. EPW 108-95

DECEMBER 1995

Prepared By:
ENCAPCO
11555 Dublin Blvd.
P.O. Box 2223
Dublin, CA 94568

1 Introduction

Encapco, presents the following analytical review report for the recycling of metals and hydrocarbon impacted soil at the former Barbary Coast Steel Mill Site. This report has been prepared as a support document to ensure complacency with the State of California Recycling Guidelines.

This report is a cooperative effort of Encapco, The City of Emeryville Department of Public Works (EPW), MJB Pipeline and Ghilotti Brothers Construction.

The contaminated soils of concern are located primarily in the old Barbary Coast steel and Shellmond Ventures properties. The contamination have been characterized and documented in previous reports and have indicated that metals and hydrocarbons contamination are present in soil. The primary metal contaminate of concern is lead. Hydrocarbon contamination is believed to consist of diesel fuel.

The current method of dealing with California hazardous waste is to either truck it several hours to an approved landfill within the state, or haul it to an approved landfill out of state by rail car. This project involves a recycling process which utilized asphalt emulsions to permanently encapsulate the hydrocarbons and metals presented in the soils. The final emulsion/soil product, know as Emulsified Treated Base, or ETB, has beneficial structural properties which then allow it to be utilized in the roadway construction.

1.1 Project Information

Project Name:	Shellmond Street Extension
Project Location:	From the 40th street bridge to the tie in on Shellmond road, Emeryville, California
Project Manager:	City of Emeryville
Contact Person:	Juan Arreguin (510) 596-4333

1.2 The Scope of Encapco work at the project includes:

Pre Project Work:

1. Sample existing stockpile to determine baseline analytical
2. Bench Scale Testing to Demonstrate
   A. Conformance with title 22 recycling standards
   B. Structural values for the placement of the ETB at direction of EPW

FOLLOWING ARE VICINITY MAPS

SOURCE: BASE MAP FROM U.S.G.S. OAKLAND WEST, CA QUADRANGLE. 7.5 MINUTE SERIES TOPOGRAPHIC MAP. PHOTOREVISED 1980.

NORTH

0 2000 4000

SCALE FEET

REED INTERNATIONAL

FIGURE 1

EMERYVILLE, CALIFORNIA

VICINITY MAP

and Signing Plan

IN ALAMEDA COUNTY
IN EMERYVILLE AND OAKLAND FROM
THE 40TH STREET OVERHEAD TO EXISTING
SHELLMOUND STREET

To be supplemented by State of California, Department of Transportation, Standard Plans dated July, 1992
and City of Oakland Standard Plans dated 1992

FIGURE

LOCAT

Typical Details
Typical Details

ous Details
ides
Pipe Culverts

d Hardware
nd Blocks

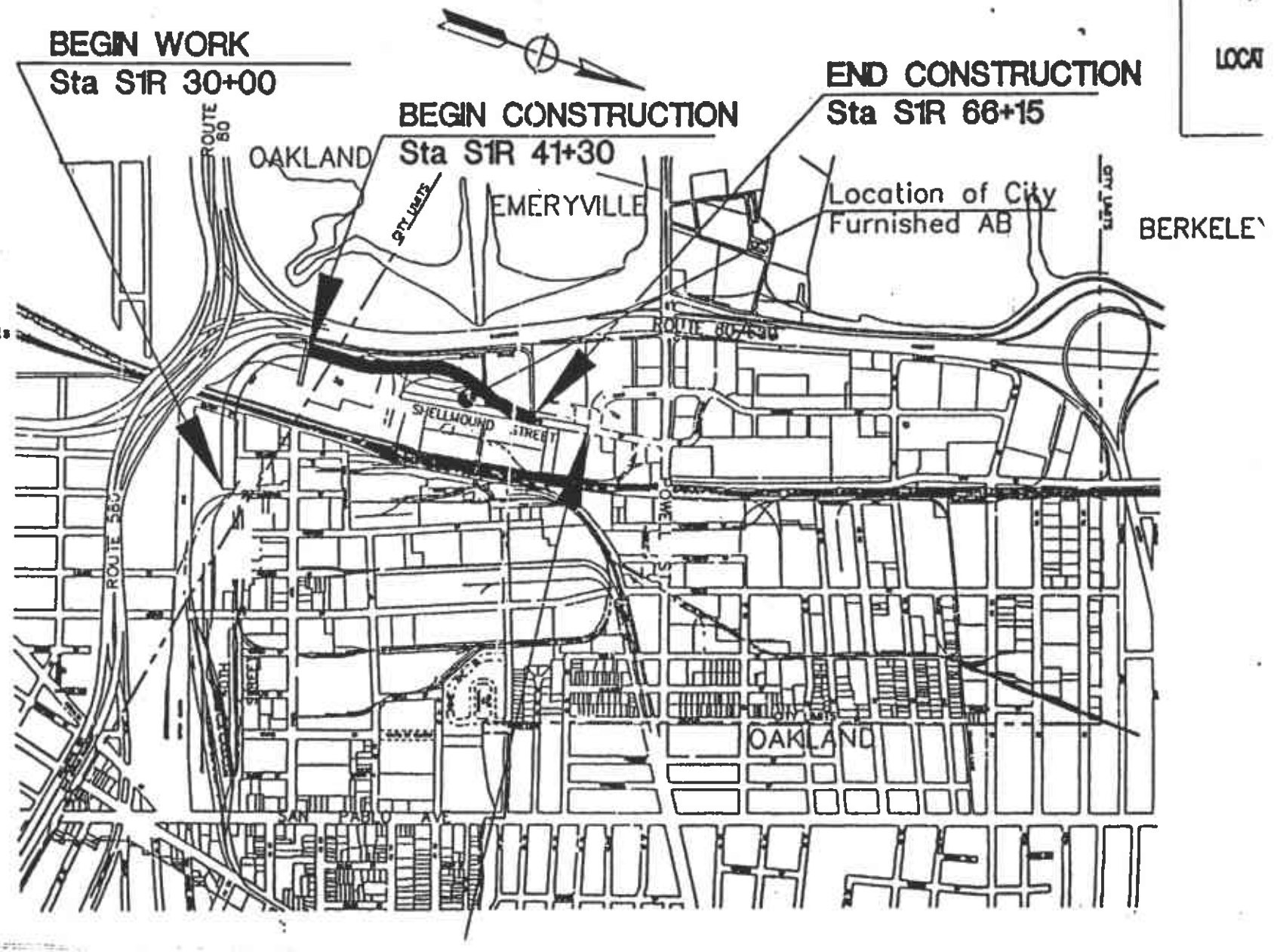
eous Details
)
Hardware)

ils, Retaining Walls and Abutments

einforced
e Joints

Details No. 1
al Installation Detail No. 2
ams – Symbol and Abbreviations
ams – Symbol and Abbreviations
ams – Service Equipment Notes
ams –
ig Diagram, Type A
ams – Pull Box Details
fication Signs

ON PROGRAM



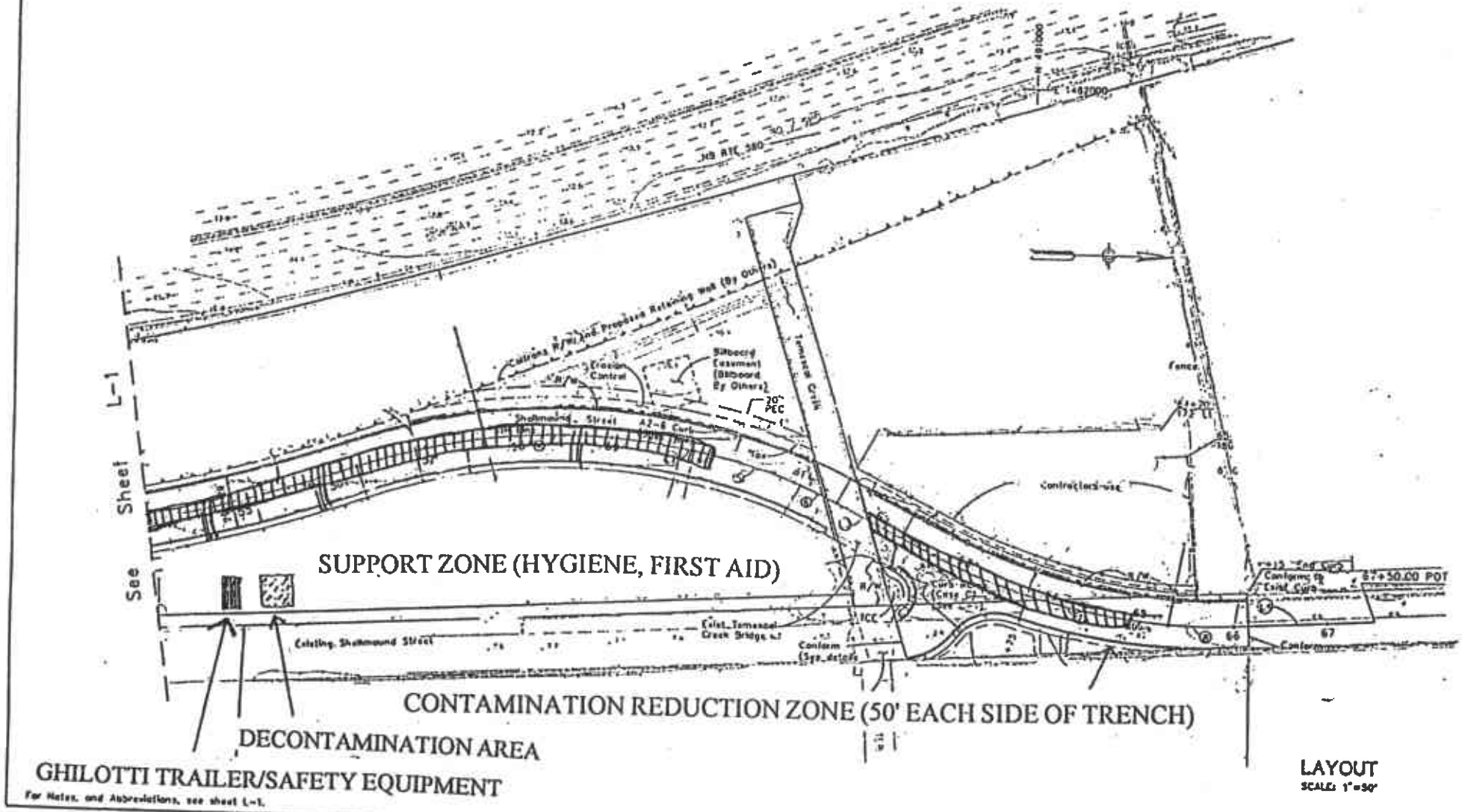


Figure 2-b
PROJECT LOCATION

3. Existing EPW Analytical Data:

3.1

Between the dates of 1987 to 1994 approximately 276 soil samples were taken on all the above mention site. These samples were evaluated for TTLC metals in accordance with SW-846 6010. Of the 276 samples, 49 (17%) showed values over 1,000.ppm for lead (please see data 1-12 of 13). Further note, of the 49 samples that showed elevated values only 4 (1.4%) of those samples were from the proposed excavation.

3.2

In addition, EPW supplied Encapco with test results from the actual excavation. Copies of these supplied results can be found in this section.

3.3

Based on the above information, Encapco did additional baseline testing on the excavated soils from both stockpiles on site. This baseline focus on TTLC and STLC for lead copper and cadmium in the excavated soil. These results can be found in this section.

TEST RESULTS 1987 TO 1994

ncentrations expressed in milligrams per kilogram, equivalent to parts per million (ppm)

pls ber	Date Sampled	Depth (ft bgs)	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Mo	Ni	Se	Ag	Tl	Sn	V	Zn
[illegible]	09/01/87	5	ND	33.9	278.8	ND	13.3	110.1	11.4	1636.0	NA	1408.0	1187	ND	ND	162.2	ND	ND	105.3	196.5	30.7	3431.0
2	09/01/87	1.5	ND	14.8	196.3	ND	17.5	354.0	32.1	3018.0	NA	906.2	5349	ND	11.7	4890.0	ND	1.4	186.1	37.1	47.8	1894.0
3	09/01/87	14	ND	4.0	99.7	ND	2.5	32.1	5.4	18.7	NA	7.5	155.8	ND	ND	34.0	ND	ND	ND	ND	30.5	46.4
6	09/01/87	9	ND	19.1	140.2	ND	10.8	236.3	8.8	339.4	NA	179.0	3181	ND	ND	75.2	ND	ND	72.2	27.7	37.6	746.2
7	09/01/87	8	ND	ND	62.5	ND	6.7	36.5	12.3	54.0	NA	295.6	397.0	ND	ND	49.3	ND	ND	163.2	ND	27.9	240
-2B	08/10/93	0.5 - 1.0	ND	22	133	ND	ND	207	15	485	NA	53	NA	0.2	NA	93	ND	ND	ND	21	34	271
		3.5 - 4.0	NA	21	96	NA	ND	52	NA	765	NA	733	NA	NA	NA	86	NA	27	1	46	48	1,060
-3B	08/10/93	0.5 - 1.0	NA	27	339	NA	ND	904	NA	747	NA	89	NA	NA	NA	132	NA	ND	ND	80	110	172
		3.5 - 4.0	NA	17	164	NA	ND	1,110	NA	656	NA	106	NA	NA	NA	122	NA	4	ND	74	127	186
-4B	08/10/93	0.0 - 0.5	NA	6	50	NA	ND	61	NA	163	NA	72	NA	NA	NA	54	NA	ND	ND	17	131	247
		3.5 - 4.0	NA	33	129	NA	ND	60	NA	283	NA	388	NA	NA	NA	110	NA	ND	ND	30	33	336
V-5	07/30/93	0.5	NA	25	409	NA	37	840	NA	1650	NA	1160	NA	NA	NA	425	NA	2	1	82	91	47,400
		4	NA	10	128	NA	ND	118	NA	340	NA	3770	NA	NA	NA	36	NA	ND	ND	26	28	578
V-6	07/28/93	0.5	NA	37	822	NA	24	586	NA	1360	NA	1910	NA	NA	NA	186	NA	3	ND	168	68	28,400
		4.5	NA	24	244	NA	3	109	NA	2820	NA	613	NA	NA	NA	118	NA	ND	ND	315	34	1,020
V-8	07/28/93	0.5	NA	28	97	NA	6	197	NA	431	NA	679	NA	NA	NA	114	NA	ND	ND	57	43	1,080
		4.5	NA	5	61	NA	ND	27	NA	13	NA	ND	NA	NA	NA	29	NA	ND	ND	ND	20	37
V-9	07/28/93	1	36	28	397	ND	24	335	42	2200	NA	1890	NA	3.1	NA	433	ND	ND	ND	102	41	5,260
		4	NA	28	186	NA	12	364	NA	1220	NA	895	NA	NA	NA	211	NA	ND	ND	104	47	2,320
V-10	07/30/93	0.5	12	44	62	ND	ND	57	66	828	NA	111	NA	ND	NA	181	ND	ND	1	92	12	164
		4	NA	7	149	NA	2	44	NA	66	NA	110	NA	NA	NA	57	NA	5	ND	ND	36	124
V-11	07/23/93	1	NA	17	85	NA	ND	185	NA	385	NA	138	NA	NA	NA	165	NA	ND	ND	35	58	345
		4	NA	20	46	NA	ND	100	NA	255	NA	226	NA	NA	NA	106	NA	ND	ND	28	53	306

METALS
BARBARY COAST STEEL PROPERTY
Emeryville, California

All concentrations expressed in milligrams per kilogram, equivalent to parts per million (ppm)

Sample Number	Date Sampled	Depth (ft bgs)	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Mo	Ni	Se	Ag	Tl	Sn	V	Zn
MW-12	07/23/93	0.5	NA	10	324	NA	4	1110	NA	258	NA	274	NA	NA	NA	67	NA	2	ND	30	108	931
		4	NA	9	206	NA	4	672	NA	206	NA	247	NA	NA	NA	79	NA	ND	ND	24	70	840
MW-13	07/23/93	1	NA	10	102	NA	13	30	NA	35	NA	22	NA	NA	NA	40	NA	ND	ND	ND	50.0	147
		4	NA	22	85	NA	6.0	19.0	NA	49	NA	42	NA	NA	NA	24.0	NA	ND	ND	ND	77.0	237
MW-14	07/30/93	0.5	NA	3	1100	NA	2.0	1050	NA	541	NA	108	NA	NA	NA	88.0	NA	6.0	ND	22.0	201.0	1,020
		4	NA	53	419	NA	ND	780	NA	388	NA	277	NA	NA	NA	214.0	NA	ND	1	41.0	122.0	534
MW-15	02/22/94	0.5	12	36	320	ND	8.0	310	25	1400	NA	550	NA	0.8	NA	340	ND	1	ND	ND	51.0	1,900
		4	ND	44	290	ND	11	520	40	2000	NA	550	NA	ND	NA	470	ND	ND	ND	270	76	700
[redacted]	[redacted]	0.5	ND	32	250	ND	2	270	36	510	NA	2400	NA	28	NA	160	ND	ND	ND	ND	32	550
		4	ND	3	48	ND	ND	4	3	18	NA	33	NA	ND	NA	13	ND	ND	ND	ND	8	30
[redacted]	07/20/93	0.5	35	21	621	ND	2	1400	43	2,290	NA	386	NA	0.7	NA	430	ND	ND	ND	88	114	1,920
		3	NA	27	244	NA	ND	719	NA	2,320	NA	615	NA	NA	NA	410	NA	ND	ND	102	60	1,250
		[redacted]	NA	43	436	NA	30	598	NA	5,770	NA	7,210	NA	NA	NA	706	NA	ND	ND	471	68	4,290
[redacted]	07/22/93	[redacted]	NA	28	499	NA	44	627	NA	1070	NA	1850	NA	NA	NA	244	NA	8	ND	85	100	8,060
		4	NA	39	248	NA	4	231	NA	695	NA	483	NA	NA	NA	251	NA	ND	ND	74	35	1,100
[redacted]	08/02/93	0.5	NA	20	511	NA	18	419	NA	1270	NA	2140	NA	NA	NA	163	NA	4	1	112	76	4,680
		4	NA	2	120	NA	ND	40	NA	33	NA	62	NA	NA	NA	60	NA	ND	ND	ND	28	1,760
SB-9	07/22/93	1	NA	71	220	NA	379	621	NA	1230	NA	14900	NA	NA	NA	210	NA	49	ND	168	79	98,000
		4.5	NA	15	212	NA	849	157	NA	272	NA	1260	NA	NA	NA	68	NA	6	ND	176	64	9,460
[redacted]	07/22/93	1	ND	41	200	ND	429	660	21	1320	NA	16800	NA	1.5	NA	214	1	47	ND	146	67	113,000
		4.5	NA	17	146	NA	7	93	NA	71	NA	342	NA	NA	NA	114	NA	ND	ND	195	46	2,780
SB-13	07/26/93	1	ND	6	87	ND	29	62	10	92	NA	888	NA	0.2	NA	35	ND	2	ND	14	32	3,420
		4	NA	34	157	NA	18	65	NA	183	NA	611	NA	NA	NA	70	NA	ND	ND	35	29	1,610

ETALS
ARBARY COAST STEEL PROPERTY
neryville, California

concentrations expressed in milligrams per kilogram, equivalent to parts per million (ppm)

ample umber	Date Sampled	Depth (ft bgs)	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Mo	Ni	Se	Ag	Tl	Sn	V	Zn
SB-14	07/26/93	1	NA	6	206	NA	14	519	NA	351	NA	757	NA	NA	NA	92	NA	2	ND	47	80	5,110
		4.5	NA	13	155	NA	7	391	NA	341	NA	1620	NA	NA	NA	129	NA	ND	ND	69	34	2,530
SB-15	07/26/93	1	11	14	274	ND	26	479	17	703	NA	1040	NA	0.6	NA	147	ND	6	ND	29	68	9,200
		4.5	NA	10	89	NA	ND	74	NA	53	NA	124	NA	NA	NA	72	NA	7	ND	ND	33	249
SB-16	07/26/93	1	NA	10	131	NA	ND	529	NA	1100	NA	271	NA	NA	NA	257	NA	4	ND	51	66	1,530
		4.5	NA	5	124	NA	ND	44	NA	82	NA	37	NA	NA	NA	47	NA	ND	ND	ND	23	144
SB-17	07/30/93	0.5	NA	3	39	NA	ND	32	NA	26	NA	38	NA	NA	NA	32	NA	ND	ND	ND	18	67
		4	NA	6	67	NA	ND	31	NA	80	NA	153	NA	NA	NA	48	NA	ND	ND	12	18	244
SB-18	07/27/93	0.5	21	14	62	ND	8	614	48	1890	NA	237	NA	1.6	NA	313	ND	ND	ND	168	71	1,070
		4	NA	8	770	NA	2	338	NA	356	NA	139	NA	NA	NA	72	NA	4	ND	27	117	727
SB-19	07/27/93	1	NA	8	579	NA	56	402	NA	763	NA	2650	NA	NA	NA	165	NA	10	ND	42	88	27,900
SB-20	07/21/93	1	NA	21	127	NA	ND	78	NA	1310	NA	2300	NA	NA	NA	80	NA	ND	ND	89	34	758
SB-21	07/21/93	1	NA	3	220	NA	ND	44	NA	35	NA	37	NA	NA	NA	36	NA	ND	ND	ND	32	54
		4	NA	14	127	NA	ND	240	NA	241	NA	431	NA	NA	NA	65	NA	ND	ND	96	51	555
SB-22	07/22/93	1	NA	5	749	NA	ND	438	NA	349	NA	105	NA	NA	NA	75	NA	ND	ND	16	124	644
		4	NA	8	159	NA	ND	173	NA	290	NA	83	NA	NA	NA	86	NA	ND	ND	28	126	404
SB-23	08/02/93	0.5	NA	2	10	NA	ND	44	NA	199	NA	28	NA	NA	NA	39	NA	ND	ND	14	46	137
		4	NA	9	77	NA	ND	58	NA	160	NA	75	NA	NA	NA	44	NA	ND	ND	16	15	196.
SB-27	07/27/93	0.5	NA	10	145	NA	ND	91	NA	155	NA	224	NA	NA	NA	79	NA	ND	ND	17	37	319
		4	NA	21	269	NA	ND	53	NA	230	NA	730	NA	NA	NA	87	NA	ND	ND	44	22	818
SB-28	07/27/93	0.5	NA	15	253	NA	ND	64	NA	172	NA	201	NA	NA	NA	82	NA	ND	ND	26	32	314
		4	NA	40	160	NA	ND	84	NA	635	NA	435	NA	NA	NA	140	NA	ND	ND	52	21	596

oncentrations expressed in milligrams per kilogram, equivalent to parts per million (ppm)

mple mber	Date Sampled	Depth (ft bgs)	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Mo	Ni	Se	Ag	Tl	Sn	V	Zn
B-29	07/27/93	0.5	NA	11	82	NA	ND	58	NA	249	NA	23	NA	NA	NA	89	NA	6	ND	31	12	60
		4	NA	71	224	NA	ND	58	NA	422	NA	753	NA	NA	NA	106	NA	ND	ND	52	54	1,450
B-30	07/20/93	[illegible]	NA	35	306	NA	16	1400	NA	1590	NA	1340	NA	NA	NA	409	NA	ND	ND	152	88	17,400
		[illegible]	NA	5	674	NA	ND	32	NA	1720	NA	4360	NA	NA	NA	132	NA	ND	ND	637	42	202
B-31	07/20/93	0.5	12	19	116	ND	2	519	26	402	NA	346	NA	1.8	NA	179	ND	ND	1	36	29	668
		4	NA	5	125	NA	ND	53	NA	45	NA	ND	NA	NA	NA	56	NA	ND	ND	ND	28	91
	07/20/93	1.5	NA	16	173	NA	ND	330	NA	396	NA	245	NA	NA	NA	117	NA	ND	ND	65	52	361
		4	NA	21	121	NA	ND	43	NA	120	NA	153	NA	NA	NA	34	NA	ND	ND	15	25	231
B-33	07/20/93	1	NA	24	121	NA	ND	168	NA	631	NA	160	NA	NA	NA	165	NA	ND	ND	103	26	351
		4	NA	47	84	NA	ND	72	NA	330	NA	320	NA	NA	NA	98	NA	ND	ND	179	27	277
B-34	07/21/93	1	62	46	12	ND	ND	494	78	3420	NA	115	NA	ND	NA	859	ND	ND	ND	247	ND	145
		3.5	NA	36	32	NA	ND	277	NA	1650	NA	100	NA	NA	NA	458	NA	ND	ND	114	ND	158
B-35	07/27/93	0.5	NA	47	60	NA	ND	321	NA	1500	NA	210	NA	NA	NA	392	NA	ND	ND	141	30	400
		4.5	NA	72	201	NA	ND	86	NA	529	NA	910	NA	NA	NA	196	NA	ND	ND	50	33	1,620
B-36	07/21/93	0.5	NA	60	29	NA	ND	294	NA	2100	NA	170	NA	NA	NA	581	NA	ND	ND	248	ND	210
		4.5	NA	93	538	NA	ND	49	NA	364	NA	2030	NA	NA	NA	130	NA	ND	ND	ND	59	606
B-37	07/21/93	0.5	NA	75	10	NA	ND	443	NA	2860	NA	129	NA	NA	NA	776	NA	ND	ND	299	ND	99
		4.5	NA	74	83	NA	ND	379	NA	2240	NA	334	NA	NA	NA	580	NA	ND	ND	262	ND	234
B-38	07/21/93	[illegible]	528	40	485	ND	ND	118	59	838	NA	5000	NA	2.8	NA	142	ND	19	ND	322	66	2200
		[illegible] 4	NA	22	1370	NA	ND	56	NA	259	NA	728	NA	NA	NA	66	NA	ND	ND	65	45	939
	07/21/93	[illegible]	NA	51	233	NA	ND	461	NA	1170	NA	1130	NA	NA	NA	406	NA	ND	ND	84	26	898
		4.5	NA	48	143	NA	ND	75	NA	416	NA	614	NA	NA	NA	97	NA	ND	ND	44	29	553

ETALS
ARBARY COAST STEEL PROPERTY
meryville, California

concentrations expressed in milligrams per kilogram, equivalent to parts per million (ppm)

Sample Number	Date Sampled	Depth (ft bgs)	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Mo	Ni	Se	Ag	Tl	Sn	V	Zn
SB-40	07/21/93	0.5	21	34	175	ND	ND	135	33	767	NA	449	NA	1.2	NA	210	ND	ND	ND	126	25	390
		4.5	NA	31	555	NA	ND	40	NA	180	NA	183	NA	NA	NA	79	NA	ND	ND	22	48	142
[redacted]			NA	10	173	NA	ND	204	NA	125	NA	189	NA	NA	NA	65	NA	ND	ND	14	70	385
			NA	57	381	NA	4	43	NA	2380	NA	3020	NA	NA	NA	118	NA	ND	ND	281	24	2140
SB-42	07/22/93	0.5	NA	55	188	NA	3	237	NA	1390	NA	1200	NA	NA	NA	353	NA	ND	ND	192	54	1270
		4	NA	31	129	NA	ND	143	NA	816	NA	605	NA	NA	NA	230	NA	ND	ND	91	29	599
43	07/22/93	1	ND	13	254	ND	ND	63	22	327	NA	186	NA	0.6	NA	111	ND	ND	ND	23	52	260
		4	NA	42	467	NA	ND	169	NA	786	NA	632	NA	NA	NA	207	NA	ND	ND	149	30	1120
SB-44	07/22/93	1	NA	8	360	NA	ND	97	NA	98	NA	70	NA	NA	NA	83	NA	ND	ND	12	54	109
		4	NA	2	105	NA	ND	23	NA	86	NA	50	NA	NA	NA	16	NA	7	ND	ND	75	66
SB-45	07/22/93	0.5	16	27	233	ND	ND	724	21	718	NA	517	NA	0.6	NA	153	ND	ND	ND	96	120	851
		4.5	NA	4	324	NA	ND	2040	NA	239	NA	41	NA	NA	NA	57	NA	3	ND	39	283	83
SB-46	07/22/93	0.5	NA	4	97	NA	ND	336	NA	29	NA	ND	NA	NA	NA	48	NA	ND	ND	ND	42	64
		4	NA	7	165	NA	ND	410	NA	59	NA	114	NA	NA	NA	25	NA	ND	ND	ND	46	127
SB-47	08/02/93	0.5	NA	7	955	NA	7	784	NA	642	NA	434	NA	NA	NA	116	NA	6	1	27	126	2,770
		4.5	NA	11	240	NA	ND	421	NA	328	NA	167	NA	NA	NA	87	NA	ND	ND	40	82	296
SB-48	07/21/93	1	ND	4	92	ND	1	33	21	39	NA	595	NA	0.2	NA	29	ND	ND	ND	ND	25	224
		4	NA	52	88	NA	ND	49	NA	298	NA	148	NA	NA	NA	112	NA	ND	ND	ND	22	439
SB-49	07/22/93	1	NA	8	320	NA	ND	126	NA	176	NA	255	NA	NA	NA	61	NA	ND	ND	17	53	230
		4	NA	15	271	NA	1	73	NA	234	NA	334	NA	NA	NA	56	NA	ND	ND	30	57	383
50	07/21/93	1	ND	5	25	ND	7	63	4	105	NA	1,310	NA	ND	NA	27	ND	ND	ND	10	17	1,300
		4	NA	10	133	NA	7	72	NA	146	NA	1,470	NA	NA	NA	45	NA	ND	ND	28	54	1,260

ll concentrations expressed in milligrams per kilogram, equivalent to parts per million (ppm)

Sample Number	Date Sampled	Depth (ft bgs)	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Mo	Ni	Se	Ag	Tl	Sn	V	Zn
SB-51	07/21/93	0.5	NA	2	35	NA	ND	12	NA	37	NA	82	NA	NA	NA	11	NA	ND	ND	94	5	119
		4	NA	9	137	NA	ND	46	NA	54	NA	76	NA	NA	NA	62	NA	ND	ND	30	31	77
SB-52	07/21/93	0.5	19	24	583	ND	ND	162	44	563	NA	6,640	NA	0.5	NA	141	ND	ND	ND	31	14	648
		4.5	NA	33	311	NA	ND	126	NA	436	NA	4,360	NA	NA	NA	108	NA	ND	ND	10	12	529
SB-53	07/21/93	1	NA	46	510	NA	4	280	NA	1070	NA	19,900	NA	NA	NA	294	NA	ND	ND	46	ND	1,420
		4	NA	42	578	NA	ND	480	NA	980	NA	34,100	NA	NA	NA	322	NA	ND	ND	ND	4	1,220
SB-54	07/21/93	0.5	NA	75	208	NA	ND	129	NA	438	NA	1,490	NA	NA	NA	79	NA	3	93	45	72	1,210
		4.5	NA	12	92	NA	ND	62	NA	16	NA	ND	NA	NA	NA	40	NA	ND	4	ND	54	38
SB-55	07/27/93	0.5	11	21	213	ND	ND	68	35	341	NA	990	NA	1.2	NA	111	ND	ND	ND	34	26	752
SB-56	07/21/93	0.5	NA	45	102	NA	ND	125	NA	999	NA	295	NA	NA	NA	242	NA	ND	ND	108	13	636
		4	NA	5	109	NA	ND	63	NA	113	NA	81	NA	NA	NA	69	NA	3	ND	16	38	290
SB-57	07/21/93	1	NA	20	124	NA	2	93	NA	447	NA	527	NA	NA	NA	158	NA	ND	ND	87	25	614
		4	NA	36	111	NA	ND	95	NA	318	NA	378	NA	NA	NA	107	NA	ND	ND	31	51	849
SB-58	08/31/93	1	NA	15	864	NA	24	568	NA	2,090	NA	2,150	NA	NA	NA	215	NA	6	ND	128	83	5,820
		7	NA	5	60	NA	ND	58	NA	63	NA	67	NA	NA	NA	94	NA	ND	ND	28	22	94
SB-59	08/31/93	1	NA	6	920	NA	5	762	NA	637	NA	410	NA	NA	NA	108	NA	7	ND	24	138	2,390
		8	NA	11	146	NA	ND	447	NA	499	NA	98	NA	NA	NA	18	NA	ND	ND	43	43	246
SB-60	08/31/93	1	NA	10	1,210	NA	5	735	NA	983	NA	486	NA	NA	NA	150	NA	8	ND	33	127	2,210
		7	NA	17	650	NA	16	838	NA	774	NA	1130	NA	NA	NA	116	NA	4	ND	69	103	6440
[redacted]			NA	10	919	NA	7	716	NA	751	NA	458	NA	NA	NA	133	NA	7	ND	36	133	2980
			NA	24	402	NA	7	1050	NA	354	NA	459	NA	NA	NA	59	NA	3	ND	37	166	2230
B-62	02/22/94	0.5	17	40	8	ND	ND	52	12	860	NA	69	NA	ND	NA	190	ND	ND	ND	ND	8	73

All concentrations expressed in milligrams per kilogram, equivalent to parts per million (ppm)

Sample Number	Date Sampled	Depth (ft bgs)	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Mo	Ni	Se	Ag	Tl	Sn	V	Zn
SB-63	02/22/94	0.5	ND	46	11	ND	ND	220	45	2100	NA	31	NA	ND	NA	820	ND	ND	ND	ND	ND	100
		4	ND	3	97	ND	ND	31	7	16	NA	16	NA	ND	NA	40	ND	ND	ND	ND	29	50
CS-2	07/26/93	U	NA	8	441	NA	6	677	NA	505	NA	419	NA	NA	NA	98	NA	4	ND	26	96	1520
CS-3	07/26/93	U	12	11	1030	ND	6	1080	16	763	NA	369	NA	1	NA	123	ND	6	ND	42	160	1920
CS-4	07/26/93	U	NA	7	945	NA	14	973	NA	579	NA	553	NA	NA	NA	110	NA	6	ND	42	148	2010
CS-5	07/26/93	U	NA	2	1140	NA	ND	2660	NA	436	NA	41	NA	NA	NA	48	NA	6	ND	15	220	276
CS-6	07/26/93	U	NA	2	1400	NA	ND	1790	NA	376	NA	94	NA	NA	NA	52	NA	7	ND	16	190	797
CS-7	07/26/93	U	NA	5	780	NA	3	953	NA	3050	NA	438	NA	NA	NA	59	NA	8	ND	20	162	1170
CS-8	07/26/93	U	NA	8	710	NA	7	642	NA	798	NA	586	NA	NA	NA	87	NA	8	ND	56	135	2020
[redacted]	08/09/93	U	ND	86	7	ND	5	624	62	3480	NA	ND	NA	ND	NA	1190	ND	13	ND	182	60	177
787-1A	01/07/87	3	ND	ND	783.0	ND	5.8	115.0	ND	958.6	75240.6	366.2	9575.7	ND	ND	334.1	ND	ND	ND	ND	ND	438.4
787-4A	01/07/87	2	ND	ND	100.3	ND	137.3	218.0	ND	609.9	45971.9	4964.2	2611.1	ND	32.7	140.0	ND	ND	ND	32.8	48.7	23052.2
787-5A	01/07/87	1	ND	ND	445.3	ND	5.6	141.5	10.3	2415	7938.4	441.3	6611.7	ND	63.2	747.4	ND	ND	17.1	ND	ND	2502.6
787-6B	01/07/87	2	ND	ND	77.4	ND	2.8	113.8	ND	262.7	49519.1	183.3	1045.0	ND	26.9	71.9	ND	ND	ND	8.9	24.8	300.2
BH-1A	02/01/87	1	NA	NA	NA	NA	27	NA	NA	NA	NA	150	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH-1B	02/01/87	3	NA	NA	NA	NA	34	NA	NA	NA	NA	1900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH-1C	02/01/87	5	NA	NA	NA	NA	53	NA	NA	NA	NA	1700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH-2A	02/01/87	1	NA	NA	NA	NA	300	NA	NA	NA	NA	13000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH-2B	02/01/87	3	NA	NA	NA	NA	64	NA	NA	NA	NA	1500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH2C	02/01/87	3	NA	NA	NA	NA	120	NA	NA	NA	NA	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-1	10/01/87	4	ND	ND	105.7	ND	8.2	1262.0	1.9	33.3	NA	15.5	10849.0	ND	ND	4.0	ND	ND	ND	ND	76.8	39.3
T-2	10/01/87	2	ND	ND	129.7	ND	15.8	2557.0	1.8	53.6	NA	38.7	22763.0	ND	ND	4.7	ND	ND	ND	ND	58.0	79.9

TALS
RBARY COAST STEEL PROPERTY
eryville, California

oncentrations expressed in milligrams per kilogram, equivalent to parts per million (ppm)

mple mber	Date Sampled	Depth (ft bgs)	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Mo	Ni	Se	Ag	Tl	Sn	V	Zn
T-3	10/01/87	2	ND	ND	230.1	ND	24.7	319.0	5.8	1861.6	NA	990.0	94995.6	ND	4.4	144.8	ND	2.5	ND	51.8	84.0	3727.1
		4	ND	15.4	201.7	ND	30.6	304.6	10.5	1160.4	NA	388.9	8151.3	ND	7.3	123.2	ND	ND	ND	65.6	53.4	1997.7
[redacted]		2	ND	ND	211.0	ND	45.7	329.0	5.0	119.3	NA	1055.7	6416.7	ND	ND	40.3	ND	2.0	ND	NO	46.7	5765.7
[redacted]		2	ND	19.1	130.2	ND	91.7	180.7	9.4	173.9	NA	2733.8	4136.0	ND	ND	50.7	ND	ND	ND	43.8	43.9	6083.4
		4	ND	ND	148.4	ND	26.7	217.0	5.5	158.0	NA	303.5	7288.9	ND	ND	28.2	ND	4.1	ND	27.0	50.7	1320.2
		6	ND	ND	113.1	ND	60.5	104.8	7.8	106.6	NA	790.0	2684.0	ND	ND	32.3	ND	ND	ND	21.8	34.0	3129.9
	10/01/87	2	ND	ND	85.5	ND	26.5	125.2	3.7	216.3	NA	2263.0	2756.5	ND	ND	32.9	ND	ND	ND	19.6	25.1	3708.8
T-7	[redacted]	2	ND	36.1	1503.9	ND	271.8	190.1	12.5	425.8	NA	3539.2	5212.5	ND	14.6	143.7	ND	2.3	ND	38.0	49.8	41010.5
T-8	10/01/87	2	ND	19.8	85.6	ND	16.7	189.8	9.1	1087.2	NA	942.2	2385.0	ND	ND	110.2	ND	ND	ND	53.3	37.6	2596.2
		4	ND	ND	189.8	ND	19.7	812.4	9.3	282.2	NA	226.1	5570.0	ND	ND	140.5	ND	ND	ND	46.6	54.4	1048.5
		6	ND	ND	155.6	ND	7	69.9	12.4	84.6	NA	41.1	732.0	ND	ND	104.3	ND	ND	ND	ND	35.1	218.5
T-9	10/01/87	2	ND	32.2	151.1	ND	25.2	430.3	13.1	1381.6	NA	136.3	6108.0	ND	ND	298.7	ND	ND	ND	53.7	45.7	307.8
T-10	10/01/87	2	ND	35.1	43	ND	26.2	210	12.9	1476	NA	781.5	1797.9	ND	ND	203.5	ND	ND	ND	72.8	46.7	418.1
T-11	10/01/87	2	ND	50.3	491.8	ND	47.10	136.4	17.1	1114	NA	1641.2	1799.5	ND	ND	212.9	ND	ND	ND	83.1	63.8	8580.0
T-12	10/01/87	2	ND	ND	132	ND	13.00	408.7	3.9	59.2	NA	208.3	2631.3	ND	ND	25.9	ND	ND	ND	12.3	35.7	2012.1
T-13	10/01/87	2	ND	ND	41.3	ND	37.40	66.8	16.4	196.5	NA	87.8	1099.2	ND	ND	41.9	ND	ND	ND	52.9	70.6	131.4
T-14	10/01/87	2	ND	ND	148.6	ND	7.73	355.9	4.6	157.3	NA	70.6	3788.3	ND	ND	22.7	ND	ND	ND	7.5	82.0	197.6
T-15	10/01/87	1.5	ND	ND	40.6	ND	6.63	428.6	2.4	201.3	NA	134.6	1221.8	ND	ND	25.3	ND	ND	ND	7.7	13.5	1184.7
T-16	10/01/87	2	ND	27.5	140.9	ND	25.40	342.5	13.4	721.3	NA	1129.1	2209.4	ND	ND	140.8	ND	2.7	ND	61.2	46.6	2650.4
T-17	10/01/87	2	ND	ND	230.9	ND	19.00	787.7	7.9	204.1	NA	216.3	8398.3	ND	ND	47.0	ND	ND	ND	37.8	37.4	1883.8
3	10/01/87	2	ND	55.5	76.8	ND	38.3	42.7	31.3	470.2	NA	359.7	886.7	ND	ND	80.9	ND	ND	ND	34.4	72.6	273.5
		6	ND	28.3	69	ND	35.2	33.4	22.3	267.7	NA	177.4	741.7	ND	ND	54.7	ND	NO	ND	16.9	67.3	183.8

ARY COAST STEEL PROPERTY
rville, California

entrations expressed in milligrams per kilogram, equivalent to parts per million (ppm)

le er	Date Sampled	Depth (ft bgs)	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Mo	Ni	Se	Ag	Tl	Sn	V	Zn
)	10/01/87	2	ND	29.6	169.4	ND	25	35.7	17.2	290.6	NA	836.8	692.3	ND	ND	63.9	ND	ND	ND	26.3	46.6	770.4
[redacted]		[redacted]	ND	39	242.6	ND	36.8	39.7	23.9	805.4	NA	[redacted]	643.6	ND	ND	62.9	ND	ND	ND	40.3	65.6	2021.2
[redacted]		[redacted]	ND	32.5	87.8	ND	37.9	75.5	23	334.7	NA	704.5	996	ND	ND	65.6	ND	ND	ND	28.6	66.7	833.1
[redacted]		2	ND	17.8	135	ND	19.3	350.2	13.8	458.5	NA	264	2137.6	ND	ND	119.4	ND	ND	ND	36.3	41.6	400.8
[redacted]		6	ND	30.4	191.9	ND	27.2	53.5	18.4	335.8	NA	1319	811.4	ND	ND	49.3	ND	ND	ND	27.8	49.3	2545.8
[redacted]		[redacted]	ND	15.8	147	ND	20.8	258.4	12.8	589.8	NA	743.7	2181.8	ND	ND	77.3	ND	ND	ND	29.7	47.4	1325.5
		[redacted]	ND	24.8	168.5	ND	32.2	684.3	14.9	260.3	NA	904.3	4092.7	ND	ND	60.5	ND	ND	ND	27.2	50.7	2533
		[redacted]	ND	23.9	124.1	ND	31.1	289.8	16.5	1256.6	NA	1045	2225.6	ND	ND	48.6	ND	ND	ND	27.7	52.5	1410.2
[redacted]	10/01/87	.2	ND	35.5	205.7	ND	26.8	167.0	15.8	1864.4	NA	1949	1920.2	ND	ND	155.3	ND	ND	ND	80.1	39.7	3065.2
1	04/10/92	3.0 - 3.5	NA	NA	NA	NA	5.9	66	NA	NA	NA	9.1	NA	NA	NA	98	NA	NA	NA	NA	NA	32
		5.5 - 6.0	NA	NA	NA	NA	11	21	NA	NA	NA	210	NA	NA	NA	20	NA	NA	NA	NA	NA	360
		5.5 - 6.0 (1)	NA	ND	NA	NA	0.53	0.8	NA	NA	NA	91	NA	NA	NA	0.6	NA	NA	NA	NA	NA	89
2	04/09/92	4.5 - 5.0	NA	NA	NA	NA	2.0	140	NA	NA	NA	21	NA	NA	NA	3.4	NA	NA	NA	NA	NA	55
		6.0 - 6.5	NA	ND	NA	NA	2.0	160	NA	NA	NA	10	NA	NA	NA	3.8	NA	NA	NA	NA	NA	20
		6.0-6.5 (1)	NA	ND	NA	NA	0.24	14	NA	NA	NA	0.18	NA	NA	NA	0.38	NA	NA	NA	NA	NA	2.9
		11.0 - 11.5	NA	NA	NA	NA	1.2	17	NA	NA	NA	5.5	NA	NA	NA	17	NA	NA	NA	NA	NA	19
3	04/09/92	2.5 - 3.0	NA	6.2	NA	NA	5.9	57	NA	NA	NA	300	NA	NA	NA	58	NA	NA	NA	NA	NA	600
		2.5 - 3.0 (1)	NA	0.5	NA	NA	1.5	3.9	NA	NA	NA	81	NA	NA	NA	6.6	NA	NA	NA	NA	NA	160
4	04/09/92	4.5 - 5.0	NA	NA	NA	NA	9.3	160	NA	NA	NA	4.3	NA	NA	NA	21	NA	NA	NA	NA	NA	59
		6.0 - 6.5	NA	NA	NA	NA	5.4	61	NA	NA	NA	43	NA	NA	NA	57	NA	NA	NA	NA	NA	290
		11.0 - 11.5	NA	1.2	NA	NA	3.9	180	NA	NA	NA	240	NA	NA	NA	11	NA	NA	NA	NA	NA	634
		11.0 - 11.5 (1	NA	ND	NA	NA	0.03	1.4	NA	NA	NA	0.4	NA	NA	NA	0.27	NA	NA	NA	NA	NA	5.1

l concentrations expressed in milligrams per kilogram, equivalent to parts per million (ppm)

Sample Number	Date Sampled	Depth (ft bgs)	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Mo	Ni	Se	Ag	Tl	Sn	V	Zn
HW-5	04/09/92	2.5 - 3.0	NA	ND	NA	NA	3.2	229	NA	NA	NA	77	NA	NA	NA	5.7	NA	NA	NA	NA	NA	58
		2.5 - 3.0 (1)	NA	ND	NA	NA	ND	1.2	NA	NA	NA	0.89	NA	NA	NA	0.13	NA	NA	NA	NA	NA	ND
		8.0 - 8.5	NA	NA	NA	NA	2.5	73	NA	NA	NA	ND	NA	NA	NA	47	NA	NA	NA	NA	NA	5
		11.0 - 11.5	NA	NA	NA	NA	5.9	96	NA	NA	NA	80	NA	NA	NA	24	NA	NA	NA	NA	NA	95
HW-6	04/10/92	4.5 - 5.0	NA	ND	NA	NA	13	5.4	NA	NA	NA	35	NA	NA	NA	11	NA	NA	NA	NA	NA	62
		9.0 - 9.5	NA	NA	NA	NA	7.4	7.0	NA	NA	NA	40	NA	NA	NA	9.6	NA	NA	NA	NA	NA	64
		11.0 - 11.5	NA	NA	NA	NA	1.8	19	NA	NA	NA	4.5	NA	NA	NA	13	NA	NA	NA	NA	NA	22
		16.0 - 16.5	NA	NA	NA	NA	1.5	12	NA	NA	NA	2.7	NA	NA	NA	12	NA	NA	NA	NA	NA	13
		19.5 - 20.0	NA	NA	NA	NA	1.5	14	NA	NA	NA	3.5	NA	NA	NA	17	NA	NA	NA	NA	NA	19
HW-7	04/10/92	4.5 - 5.0	NA	ND	NA	NA	9.8	3.4	NA	NA	NA	120	NA	NA	NA	6.6	NA	NA	NA	NA	NA	230
		9.5 - 10.0	NA	NA	NA	NA	8.2	4	NA	NA	NA	61	NA	NA	NA	13	NA	NA	NA	NA	NA	120
		13.0 - 13.5	NA	NA	NA	NA	1.7	14	NA	NA	NA	4.0	NA	NA	NA	20	NA	NA	NA	NA	NA	19
		16.0 - 16.5	NA	NA	NA	NA	1.5	14	NA	NA	NA	3.9	NA	NA	NA	16	NA	NA	NA	NA	NA	18
		21.0 - 21.5	NA	NA	NA	NA	1.8	15	NA	NA	NA	3.3	NA	NA	NA	22	NA	NA	NA	NA	NA	22
HW-8	04/10/92	2.5 - 3.0	NA	ND	NA	NA	1.9	37	NA	NA	NA	69	NA	NA	NA	8.2	NA	NA	NA	NA	NA	160
		4.5 - 5.0	NA	NA	NA	NA	6.8	14	NA	NA	NA	51	NA	NA	NA	14	NA	NA	NA	NA	NA	73
		7.0 - 7.5	NA	NA	NA	NA	7.4	6	NA	NA	NA	22	NA	NA	NA	14	NA	NA	NA	NA	NA	26
		10.0 - 10.5	NA	NA	NA	NA	1.5	27	NA	NA	NA	4.3	NA	NA	NA	19	NA	NA	NA	NA	NA	25
		16.0 - 16.5	NA	NA	NA	NA	1.1	17	NA	NA	NA	4.0	NA	NA	NA	37	NA	NA	NA	NA	NA	18
		21.5 - 22.0	NA	NA	NA	NA	1.0	13	NA	NA	NA	3.2	NA	NA	NA	26	NA	NA	NA	NA	NA	15
W-9A	04/10/92	3.0 - 3.5	NA	NA	NA	NA	5.6	13	NA	NA	NA	49	NA	NA	NA	51	NA	NA	NA	NA	NA	59
		6.0 - 6.5	NA	ND	NA	NA	8.5	5.6	NA	NA	NA	64	NA	NA	NA	13	NA	NA	NA	NA	NA	130

ɜARY COAST STEEL PROPERTY
yville, California

centrations expressed in milligrams per kilogram, equivalent to parts per million (ppm)

ple ber	Date Sampled	Depth (ft bgs)	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Mo	Ni	Se	Ag	Tl	Sn	V	Zn
-9A	04/10/92	10.0 - 10.5	NA	NA	NA	NA	1.6	21	NA	NA	NA	3.5	NA	NA	NA	20	NA	NA	NA	NA	NA	23
		15.0 - 15.5	NA	NA	NA	NA	1.5	21	NA	NA	NA	3.7	NA	NA	NA	15	NA	NA	NA	NA	NA	16
		21.0 - 21.5	NA	NA	NA	NA	1.3	20	NA	NA	NA	4.4	NA	NA	NA	23	NA	NA	NA	NA	NA	21
-10	04/10/92	4.5 - 5.0	NA	ND	NA	NA	7.3	6.1	NA	NA	NA	73	NA	NA	NA	21	NA	NA	NA	NA	NA	1100
		7.5 - 8.0	NA	NA	NA	NA	1.59	19	NA	NA	NA	12.9	NA	NA	NA	20	NA	NA	NA	NA	NA	32
-10	04/10/92	11.0 - 11.5	NA	NA	NA	NA	0.9	12	NA	NA	NA	3.4	NA	NA	NA	13	NA	NA	NA	NA	NA	15
		16.0 - 16.5	NA	NA	NA	NA	1.4	15	NA	NA	NA	4.2	NA	NA	NA	21	NA	NA	NA	NA	NA	21
		21.0 - 21.5	NA	NA	NA	NA	1.2	15	NA	NA	NA	2.8	NA	NA	NA	20	NA	NA	NA	NA	NA	19
-11	04/09/92	2.5 - 3.0 (2)	NA	86	NA	NA	105	330	NA	NA	NA	16,000	NA	NA	NA	86	NA	NA	NA	NA	NA	9.8
		6.0 - 6.5	NA	NA	NA	NA	14	35	NA	NA	NA	11	NA	NA	NA	52	NA	NA	NA	NA	NA	190
		11.0 - 11.5	NA	NA	NA	NA	2.4	161	NA	NA	NA	8.9	NA	NA	NA	4.1	NA	NA	NA	NA	NA	16
-12	04/09/92	3.0 - 3.5 (2)	NA	22	NA	NA	5.7	28	NA	NA	NA	330	NA	NA	NA	15	NA	NA	NA	NA	NA	490
		5.5 - 6.0	NA	NA	NA	NA	1.8	32	NA	NA	NA	16	NA	NA	NA	8.4	NA	NA	NA	NA	NA	43
		9.5 - 10.0	NA	NA	NA	NA	0.62	9.2	NA	NA	NA	3.1	NA	NA	NA	9.5	NA	NA	NA	NA	NA	11
-13	04/09/92	5.5 - 6.0 (2)	NA	ND	NA	NA	12	170	NA	NA	NA	12	NA	NA	NA	15	NA	NA	NA	NA	NA	16
		11.0 - 11.5	NA	NA	NA	NA	1.5	17	NA	NA	NA	2.9	NA	NA	NA	18	NA	NA	NA	NA	NA	23
-8	Apr 93	5.5	NA	NA	NA	NA	NA	2800	NA	530	NA	540	NA	NA	NA	NA	NA	NA	NA	NA	NA	1800
	Apr 93	10.5	NA	NA	NA	NA	NA	1700	NA	1200	NA	2200	NA	NA	NA	NA	NA	NA	NA	NA	NA	6900
	Apr 93	11.0	NA	NA	NA	NA	NA	110	NA	70	NA	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	220
	Apr 93	15.5	NA	NA	NA	NA	NA	430	NA	100	NA	39	NA	NA	NA	NA	NA	NA	NA	NA	NA	180
	Apr 93	23.5	NA	NA	NA	NA	NA	66	NA	26	NA	7	NA	NA	NA	NA	NA	NA	NA	NA	NA	66
	Apr 93	23.5	NA	NA	NA	NA	NA	98	NA	1200	NA	24	NA	NA	NA	NA	NA	NA	NA	NA	NA	80

TALS
RBARY COAST STEEL PROPERTY
ıeryville, California

oncentrations expressed in milligrams per kilogram, equivalent to parts per million (ppm)

ample umber	Date Sampled	Depth (ft bgs)	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Mo	Ni	Se	Ag	Tl	Sn	V	Zn
B-9	[illegible]	[illegible]	NA	NA	NA	NA	NA	38	NA	3300	NA	4900	NA	NA	NA	NA	NA	NA	NA	NA	NA	1100
	Apr 93	11.0	NA	NA	NA	NA	NA	43	NA	14	NA	6	NA	NA	NA	NA	NA	NA	NA	NA	NA	24
	Apr 93	15.5	NA	NA	NA	NA	NA	50	NA	15	NA	6	NA	NA	NA	NA	NA	NA	NA	NA	NA	54
	Apr 93	23.0	NA	NA	NA	NA	NA	56	NA	18	NA	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	53
	Apr 93	28.0	NA	NA	NA	NA	NA	60	NA	23	NA	9	NA	NA	NA	NA	NA	NA	NA	NA	NA	55
B-11	Apr 93	10.5	NA	NA	NA	NA	NA	56	NA	17	NA	7	NA	NA	NA	NA	NA	NA	NA	NA	NA	61
	Apr 93	18.0	NA	NA	NA	NA	NA	37	NA	19	NA	6	NA	NA	NA	NA	NA	NA	NA	NA	NA	39
	Apr 93	23.0	NA	NA	NA	NA	NA	49	NA	19	NA	6	NA	NA	NA	NA	NA	NA	NA	NA	NA	51
	Apr 93	28.0	NA	NA	NA	NA	NA	47	NA	19	NA	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	44
B-13	Apr 93	5.5	NA	NA	NA	NA	NA	48	NA	28	NA	32	NA	NA	NA	NA	NA	NA	NA	NA	NA	76
	Apr 93	10.5	NA	NA	NA	NA	NA	59	NA	28	NA	7	NA	NA	NA	NA	NA	NA	NA	NA	NA	62
	Apr 93	15.5	NA	NA	NA	NA	NA	46	NA	13	NA	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	35
	Apr 93	20.5	NA	NA	NA	NA	NA	42	NA	18	NA	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	48
	Apr 93	25.5	NA	NA	NA	NA	NA	38	NA	20	NA	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	50
B-14	Apr 93	8.0	NA	NA	NA	NA	NA	49	NA	15	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	40
	Apr 93	15.0	NA	NA	NA	NA	NA	42	NA	14	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	33
	Apr 93	18.5	NA	NA	NA	NA	NA	46	NA	18	NA	7	NA	NA	NA	NA	NA	NA	NA	NA	NA	44
	Apr 93	23.0	NA	NA	NA	NA	NA	41	NA	24	NA	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	46
	Apr 93	28.0	NA	NA	NA	NA	NA	55	NA	35	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	67
B-17	Apr 93	6.0	NA	NA	NA	NA	NA	3300	NA	150	NA	30	NA	NA	NA	NA	NA	NA	NA	NA	NA	40
	Apr 93	6.0	NA	NA	NA	NA	NA	1700	NA	740	NA	460	NA	NA	NA	NA	NA	NA	NA	NA	NA	1200
	Apr 93	10.5	NA	NA	NA	NA	NA	41	NA	23	NA	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	40
	Apr 93	17.0	NA	NA	NA	NA	NA	55	NA	14	NA	6	NA	NA	NA	NA	NA	NA	NA	NA	NA	35

EPW SUPPLIED TEST RESULTS

Superior Precision Analytical, Inc.
A member of ESSCON Environmental Support Service Consortium

Project 50100-004-01
Reported on December 21, 199(

ECOR
.tn: DAN MADSEN

Total Petroleum Hydrocarbons as Diesel
by EPA SW-846 Method 8015M
Diesel Range quantitated as all compounds from C10 TO C25

Laboratory Number 80283

Chronology

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
TC-1(3)	12/16/94	12/16/94	12/20/94	12/21/94	AL201.01	01
TC-2(6)	12/16/94	12/16/94	12/20/94	12/21/94	AL201.01	02
TC-1(6)	12/16/94	12/16/94	12/20/94	12/21/94	AL201.01	03
TC-2(3)	12/16/94	12/16/94	12/20/94	12/21/94	AL201.01	04

QC Samples

QC Batch #	QC Sample ID	TypeRef.	Matrix	Extract.	Analyzed
AL201.01-01	Method Blank	MB	Soil	12/20/94	12/21/94
AL201.01-02	UPS-1	MS 80315-01	Soil	12/20/94	12/21/94
AL201.01-03	UPS-1	MSD 80315-01	Soil	12/20/94	12/21/94

Diesel

100

Certified Laboratories

825 Arnold Dr., Suite 114
Martinez, California 94553

1555 Burke St., Unit I
San Francisco, California 94124
/ fax (415) 821-7123

309 S. Cloverdale St., Suite B-24
Seattle, Washington 98108
(206) 763-2992 / fax (206) 763-8429

:OR
tn: DAN MADSEN

Project 50100-004-01
Reported on December 21, 1994

Total Petroleum Hydrocarbons as Diesel
by EPA SW-846 Method 8015M
Diesel Range quantitated as all compounds from C10 TO C25

LAB ID	Sample ID	Matrix	Moisture
80283-01	TC-1(3)	Soil	-
80283-02	TC-2(6)	Soil	-
80283-03	TC-1(6)	Soil	-
80283-04	TC-2(3)	Soil	-

R E S U L T S O F A N A L Y S I S

Compound	80283-01 Conc. mg/kg	RL	80283-02 Conc. mg/kg	RL	80283-03 Conc. mg/kg	RL	80283-04 Conc. mg/kg	RL
Diesel	ND	10	1000	10	230	10	ND	10

Total Petroleum Hydrocarbons as Diesel
by EPA SW-846 Method 8015M
Diesel Range quantitated as all compounds from C10 TO C25

Quality Assurance and Control Data

Laboratory Number: 80283
Method Blank(s)

	AL201.01-01	
	Conc.	RL
	mg/kg	
Diesel	ND	10

Certified Laboratories

825 Arnold Dr., Suite 114
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Seattle, Washington 98108
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Superior Precision Analytical, Inc.

A member of ESSCON Environmental Support Service Consortium

SECOR
90 NEW MONTGOMERY ST. #620
SAN FRANCISCO, CA 94105

Date: December 23, 1994

Attn: DAN MADSEN

Laboratory Number : 80283 Project Number/Name : 50100-004-01

This report has been reviewed and

approved for release.

Senior Chemist
Account Manager

Superior Precision Analytical, Inc.
A member of ESSCON Environmental Support Service Consortium

SECOR
Attn: DAN MADSEN

Project 50100-004-01
Reported on December 21, 1994

Analysis for CAM 17 Metals
California Administration Code Title 22, Paragraph 66700 & EPA Methods SW-846 6010 & 7000 Series

Chronology

Laboratory Number 80283

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
TC-1(3)	12/16/94	12/16/94	12/19/94	12/19/94	AL191.12 AL192.10	01
TC-2(6)	12/16/94	12/16/94	12/19/94	12/19/94	AL191.12 AL192.10	02
TC-1(6)	12/16/94	12/16/94	12/19/94	12/19/94	AL191.12 AL192.10	03
TC-2(3)	12/16/94	12/16/94	12/19/94	12/19/94	AL191.12 AL192.10	04

QC Samples

QC Batch #	QC Sample ID	TypeRef.	Matrix	Extract.	Analyzed
AL192.10-01	Method Blank	MB	Soil	12/19/94	12/19/94
AL192.10-02	Laboratory Spike	LS	Soil	12/19/94	12/19/94
AL192.10-03	Laboratory Spike Duplicate	LSD	Soil	12/19/94	12/19/94
AL191.12-01	Method Blank	MB	Soil	12/19/94	12/19/94
AL191.12-02	Laboratory Spike	LS	Soil	12/19/94	12/19/94
AL191.12-03	Laboratory Spike Duplicate	LSD	Soil	12/19/94	12/19/94

TTLC

Certified Laboratories

825 Arnold Dr., Suite 114
Martinez, California 94553
(510) 228-1513 / fax (510) 228-1526

1555 Burke St., Unit I
San Francisco, California 94124
(415) 647-2081 / fax (415) 821-7123

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Seattle, Washington 98108
(206) 763-2992 / fax (206) 763-8429

Superior Precision Analytical, Inc.
A member of ESSCON Environmental Support Service Consortium

)R
Attn: DAN MADSEN

Project 50100-004-01
Reported on December 21, 1994

Analysis for CAM 17 Metals
California Administration Code Title 22, Paragraph 66700 & EPA
Methods SW-846 6010 & 7000 Series

LAB ID	Sample ID	Matrix	Moisture
80283-01	TC-1(3)	Soil	-
80283-01	TC-1(3)	Soil	-
80283-02	TC-2(6)	Soil	-
80283-02	TC-2(6)	Soil	-

R E S U L T S O F A N A L Y S I S

ompound	80283-01 Conc. mg/kg	RL	80283-02 Conc. mg/kg	RL	80283-03 Conc. mg/kg	RL	80283-04 Conc. mg/kg	RL
ercury	0.62	0.05	0.52	0.05	0.31	0.05	0.094	0.05
ntimony	14	2.5	13	2.5	12	15	ND+	5
Arsenic	17	2.5	30	2.5	18	2.5	ND	2.5
arium	240	1	140	1	180	1	46	1
eryllium	0.3	0.1	0.1	0.1	0.1	0.1	ND	0.1
admium	10	0.1	8.8	0.1	11	0.1	1.0	0.1
romium	130	0.2	180	0.2	240	0.2	370	0.2
obalt	19	1	15	1	12	1	54	1
opper	290	1	940	1	630	1	25	1
Lead	730	2	460	2	660	2	12	2
olybdenum	8	1	17	1	13	1	ND	1
ickel	190	1	140	1	130	1	960	1
Silver	6.5	0.5	6.7	0.5	8.3	0.5	4.1	0.5
Selenium	ND	3	ND+	5	ND	3	ND+	5
hallium	ND	2	ND	2	ND	2	ND	2
anadium	31	2	26	2	36	2	23	2
Zinc	2200	0.5	910	0.5	2900	0.5	66	0.5

Certified Laboratories

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Martinez, California 94553

1555 Burke St., Unit I
San Francisco, California 94124

309 S. Cloverdale St., Suite B-24
Seattle, Washington 98108

Analysis for CAM 17 Metals
California Administration Code Title 22, Paragraph 66700 & EPA
Methods SW-846 6010 & 7000 Series

Quality Assurance and Control Data

Laboratory Number: 80283
Method Blank(s)

	AL192.10-01		AL191.12-01	
	Conc.	RL	Conc.	RL
	mg/kg		mg/kg	
Mercury			ND	0.05
Antimony	ND	2.5		
Arsenic	ND	2.5		
Barium	ND	1		
Beryllium	ND	1		
Cadmium	ND	0.1		
Chromium	ND	0.2		
Cobalt	ND	1		
Copper	ND	1		
Lead	ND	2		
Molybdenum	ND	1		
Nickel	ND	1		
Silver	ND	0.5		
Selenium	ND	3		
Thallium	ND	2		
Vanadium	ND	2		
Zinc	ND	0.5		

Certified Laboratories

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Martinez, California 94553
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(415) 647-2081 / fax (415) 821-7123

309 S. Cloverdale St., Suite B-2
Seattle, Washington 98108
(206) 763-2992 / fax (206) 763-8

Total Petroleum Hydrocarbons as Diesel
by EPA SW-846 Method 8015M
Diesel Range quantitated as all compounds from C10 TO C25

Quality Assurance and Control Data

Laboratory Number: 80283

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
For Soil Matrix (mg/kg) AL201.01 02 / 03 - Sample Spiked: 80315 - 01						
Diesel	ND	200	247/247	124/124	50-150	0

Definitions:
ND = Not Detected
RL = Reporting Limit
NA = Not Analysed
RPD = Relative Percent Difference
ug/L = parts per billion (ppb)
mg/L = parts per million (ppm)

ug/kg = parts per billion (ppb)
mg/kg = parts per million (ppm)

Certified Laboratories

825 Arnold Dr., Suite 114
Martinez, California 94553
(510) 229-1517 / fax (510) 229-1526

1555 Burke St., Unit I
San Francisco, California 94124
(415) 647-2081 / fax (415) 821-7123

309 S. Cloverdale St., Suite B-24
Seattle, Washington 98108
(206) 763-2992 / fax (206) 763-[illegible]9

WESTERN ANALYTICAL LABORATORIES, INC.

13744 MONTE VISTA AVENUE
CHINO, CALIFORNIA 91710
TELEPHONE: (909) 627-3628
FAX: (909) 627-0491

DATE RECEIVED: 11/02/95
DATE REPORTED: 11/03/95
CUSTOMER: SYSTEM OPERATION SERVICES INC
ADDRESS: 2140 Shattuck Ave. 11th Floor, Berkeley, CA 94704
ATTENTION: Grace Livingston
SAMPLE I.D.: Brown Dirt/MJB
SAMPLE POINT: Project: MJB/Shilotti
SAMPLED BY: Customer
DATE & TIME SAMPLED: 11/01/95 5 pm

WAL NO.: 95110025
TCLPMETAL
5950

PARAMETER		VALUE	UNIT	DETECTION LIMIT	METHOD
ANALYSIS OF TCLP EXTRACT:		STLC			
Arsenic	<	0.04	mg/l	0.04	EPA 6010
Barium		2.72	mg/l	0.01	EPA 6010
Cadmium	<	0.01	mg/l	0.01	EPA 6010
Chromium (total)	<	0.01	mg/l	0.01	EPA 6010
Lead	<	0.04	mg/l	0.04	EPA 6010
Mercury	<	0.0002	mg/l	0.0002	EPA 7471
Selenium	<	0.07	mg/l	0.07	EPA 6010
Silver	<	0.01	mg/l	0.01	EPA 6010

Joseph P. Zimmer
Laboratory Director

WESTERN ANALYTICAL LABORATORIES, INC.

13744 MONTE VISTA AVENUE
CHINO, CALIFORNIA 91710
TELEPHONE: (909) 627-2628
FAX: (909) 627-0491

DATE RECEIVED: 11/02/95
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WAL NO.: 95110026
CUSTOMER: SYSTEM OPERATION SERVICES INC
ADDRESS: 2140 Shattuck Ave, 11th Floor, Berkeley, CA 94704
ATTENTION: Grace Livingston
SAMPLE I.D.: Black Dirt/MJB
SAMPLE POINT: Project: MJB/Shiloetti
SAMPLED BY: Customer
DATE & TIME SAMPLED: 11/01/95 5 pm

CAMMET
S950

PARAMETER		VALUE	UNIT	DETECTION LIMIT	METHOD
Antimony	<	1.6	mg/kg	1.6	EPA 6010
Arsenic		14.3	mg/kg	2.0	EPA 6010
Barium		142	mg/kg	0.8	EPA 6010
Beryllium	<	0.4	mg/kg	0.4	EPA 6010
Cadmium		9.5	mg/kg	0.4	EPA 6010
Chromium(total)		160	mg/kg	0.4	EPA 6010
Cobalt		10.3	mg/kg	0.8	EPA 6010
Copper		214	mg/kg	0.4	EPA 6010
Lead		534	mg/kg	2.0	EPA 6010
Mercury		1.61	mg/kg	0.04	EPA 7471
Molybdenum		4.1	mg/kg	0.8	EPA 6010
Nickel		95.2	mg/kg	0.8	EPA 6010
Selenium	<	4.0	mg/kg	4.0	EPA 6010
Silver	<	2.0	mg/kg	2.0	EPA 6010
Thallium		2.8	mg/kg	2.0	EPA 6010
Vanadium		67.6	mg/kg	0.8	EPA 6010
Zinc		1,600	mg/kg	0.4	EPA 6010

Joseph P. Zimmer
Laboratory Director

S80

WESTERN ANALYTICAL LABORATORIES, INC.

13744 MONTE VISTA AVENUE
CHINO, CALIFORNIA 91710
TELEPHONE: (909) 627-3628
FAX: (909) 627-0491

WAL NO.: 95110026

DATE RECEIVED: 11/02/95
DATE REPORTED: 11/03/95
CUSTOMER: SYSTEM OPERATION SERVICES INC
ADDRESS: 2140 Shattuck Ave, 11th Floor, Berkeley, CA 94704
ATTENTION: Grace Livingston
SAMPLE I.D.: Black Dirt/MJB
SAMPLE POINT: Project: MJB/Shilotti
SAMPLED BY: Customer
DATE & TIME SAMPLED: 11/01/95 5 pm

TCLPMETAL
S950

PARAMETER		VALUE	UNIT	DETECTION LIMIT	METHOD
ANALYSIS OF TCLP EXTRACT:					
Arsenic	<	0.04	mg/l	0.04	EPA 6010
Barium		4.38	mg/l	0.01	EPA 6010
Cadmium		0.03	mg/l	0.01	EPA 6010
Chromium (total)	<	0.01	mg/l	0.01	EPA 6010
Lead		0.05	mg/l	0.04	EPA 6010
Mercury	<	0.0002	mg/l	0.0002	EPA 7471
Selenium	<	0.07	mg/l	0.07	EPA 6010
Silver	<	0.01	mg/l	0.01	EPA 6010

Joseph P. Zimmer
Laboratory Director

STATE CERTIFIED LABORATORY

WESTERN ANALYTICAL LABORATORIES, INC.

13744 MONTE VISTA AVENUE
CHINO, CALIFORNIA 91710
TELEPHONE: (909) 627-2628
FAX: (909) 627-0481

DATE RECEIVED: 11/02/95
DATE REPORTED: 11/03/95
WAL NO.: 95110025
CUSTOMER: SYSTEM OPERATION SERVICES INC CAMMET
ADDRESS: 2140 Shattuck Ave, 11th Floor, Berkeley, CA 94704
ATTENTION: Grace Livingston 5950
SAMPLE I.D.: Brown Dirt/MJB
SAMPLE POINT: Project: MJB/Shilotti
SAMPLED BY: Customer
DATE & TIME SAMPLED: 11/01/95 5 pm

TTLC

PARAMETER		VALUE	UNIT	DETECTION LIMIT	METHOD
Antimony	<	1.6	mg/kg	1.6	EPA 6010
Arsenic		23.0	mg/kg	2.0	EPA 6010
Barium		220	mg/kg	0.8	EPA 6010
Beryllium	<	0.4	mg/kg	0.4	EPA 6010
Cadmium		5.8	mg/kg	0.4	EPA 6010
Chromium(total)		181	mg/kg	0.4	EPA 6010
Cobalt		11.8	mg/kg	0.8	EPA 6010
Copper		187	mg/kg	0.4	EPA 6010
Lead		231	mg/kg	2.0	EPA 6010
Mercury		1.96	mg/kg	0.04	EPA 7471
Molybdenum		8.0	mg/kg	0.8	EPA 6010
Nickel		70.4	mg/kg	0.8	EPA 6010
Selenium	<	4.0	mg/kg	4.0	EPA 6010
Silver		3.1	mg/kg	2.0	EPA 6010
Thallium		5.1	mg/kg	2.0	EPA 6010
Vanadium		59.2	mg/kg	0.8	EPA 6010
Zinc		675	mg/kg	0.4	EPA 6010

Joseph P. Zimmer
Laboratory Director

ENCPACO BASELINE RESULTS FROM STOCKPILE

ENCAPCO
PO BOX 2223
Dublin, CA 94568

Date: November 28, 1995

Attn: Bob McCarrick

Laboratory Number : 20521

Project Number/Name : 5229 SHELLMOUND EXT.

This report has been reviewed and

approved for release.

Senior Chemist
Account Manager

CAPCO
Attn: Bob McCarrick

Project 5229 SHELLMOUND EXT.
Reported on November 28, 1995

EPA SW-846 Method 6010 and/or 7000 Series Metals

Chronology

Laboratory Number 20521

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
SME-1	11/20/95	11/21/95	11/22/95	11/24/95	BK221.44	01

QC Samples

QC Batch #	QC Sample ID	Type	Ref.	Matrix	Extract.	Analyzed
BK221.44-01	Method Blank	MB		Soil	11/22/95	11/24/95
BK221.44-02	Laboratory Spike	LS		Soil	11/22/95	11/24/95
BK221.44-03	Laboratory Spike Duplicate	LSD		Soil	11/22/95	11/24/95
BK221.44-04	95-28-43QS	MS	20505-01	Soil	11/22/95	11/24/95
BK221.44-05	95-28-43QS	MSD	20505-01	Soil	11/22/95	11/24/95
BK221.44-06	95-28-43QS	DUP	20505-01	Soil	11/22/95	11/24/95

[redacted]CAPCO
Attn: Bob McCarrick

Project 5229 SHELLMOUND EXT.
Reported on November 28, 1995

EPA SW-846 Method 6010 and/or 7000 Series Metals

LAB ID	Sample ID	Matrix	Dil.Factor	Moisture
[redacted]0521-01	SME-1	Soil	1.0	-

R E S U L T S O F A N A L Y S I S

[redacted]mpound	20521-01 Conc. mg/kg	RL
[redacted]dmium (SW-846 6010)	27+	2.5
Copper (SW-846 6010)	470+	10
Lead (SW-846 6010)	1500+	25

EPA SW-846 Method 6010 and/or 7000 Series Metals

Quality Assurance and Control Data

Laboratory Number: 20521
Method Blank(s)

	BK221.44-01 Conc. mg/kg	RL
Cadmium (SW-846 6010)	ND	.25
Copper (SW-846 6010)	ND	1
Lead (SW-846 6010)	ND	2.5

EPA SW-846 Method 6010 and/or 7000 Series Metals

Quality Assurance and Control Data

Laboratory Number: 20521

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
For Soil Matrix (mg/kg) BK221.44 02 / 03 - Laboratory Control Spikes						
Cadmium (SW-846 6010)		50	49.3/49.8	99/100	75-125	1
Copper (SW-846 6010)		50	50/50.3	100/101	75-125	1
Lead (SW-846 6010)		50	48.6/48.7	97/97	75-125	0
For Soil Matrix (mg/kg) BK221.44 04 / 05 - Sample Spiked: 20505 - 01						
Cadmium (SW-846 6010)	O	50	49.2/51.7	98/103	75-125	5
Copper (SW-846 6010)	28.7	50	78.7G/96.8	100/136	75-125	31
Lead (SW-846 6010)	0.9	50	48.8/51	96/100	75-125	4

EPA SW-846 Method 6010 and/or 7000 Series Metals

Quality Assurance and Control Data

Laboratory Number: 20521
Sample Duplicates

QC Batch BK221.44-06
20505-01 Sample

	DUP	mg/kg	RPD	Limit
Cadmium (SW-846 6010)	ND	ND	0	25
Copper (SW-846 6010)	67Q	29	79	25
Lead (SW-846 6010)	ND	ND	0	25

Raised Detection Limit Due To Matrix Interferences.

The variation in spike recoveries reflects the nonhomogeneity of the sample.

The variation in duplicate results reflects the nonhomogeneity of the sample.

Definitions:

ND = Not Detected
RL = Reporting Limit
NA = Not Analysed
RPD = Relative Percent Difference
ug/L = parts per billion (ppb)
mg/L = parts per million (ppm)

ug/kg = parts per billion (ppb)
mg/kg = parts per million (ppm)

[redacted]CAPCO
Attn: Bob McCarrick

Project 5229 SHELLMOUND EXT.
Reported on November 28, 1995

EPA SW-846 Method 6010 and/or 7000 Series Metals
Extracted by STLC Method

Chronology

Laboratory Number 20521

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
[redacted]ME-1	11/20/95	11/21/95	11/27/95	11/28/95	BK273.44	01

QC Samples

QC Batch #	QC Sample ID	Type	Ref.	Matrix	Extract.	Analyzed
BK273.44-01	Method Blank	MB		Soil	11/27/95	11/28/95
BK273.44-02	Laboratory Spike	LS		Soil	11/27/95	11/28/95
BK273.44-03	Laboratory Spike Duplicate	LSD		Soil	11/27/95	11/28/95
BK273.44-04	SP1 A,B,C,D	MS	20529-01	Soil	11/27/95	11/28/95
BK273.44-05	SP1 A,B,C,D	MSD	20529-01	Soil	11/27/95	11/28/95

[redacted]CAPCO
Attn: Bob McCarrick

Project 5229 SHELLMOUND EXT.
Reported on November 28, 1995

EPA SW-846 Method 6010 and/or 7000 Series Metals
Extracted by STLC Method

LAB ID	Sample ID	Matrix	Dil.Factor	Moisture
20521-01	SME-1	Soil	1.0	-

R E S U L T S O F A N A L Y S I S

STLC

Compound	20521-01 Conc. mg/L	RL
Cadmium (SW-846 6010)	0.6	0.05
[redacted]pper (SW-846 6010)	11	0.2
[redacted]ead (SW-846 6010)	17	0.5

EPA SW-846 Method 6010 and/or 7000 Series Metals
Extracted by STLC Method

Quality Assurance and Control Data

Laboratory Number: 20521
Method Blank(s)

	BK273.44-01 Conc. mg/L	RL
Cadmium (SW-846 6010)	ND	0.05
Copper (SW-846 6010)	ND	0.2
Lead (SW-846 6010)	ND	0.5

EPA SW-846 Method 6010 and/or 7000 Series Metals
Extracted by STLC Method

Quality Assurance and Control Data

Laboratory Number: 20521

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
For Soil Matrix (mg/L)						
BK273.44 02 / 03 - Laboratory Control Spikes						
Cadmium (SW-846 6010)		10	9.5/9.5	95/95	75-125	0
Copper (SW-846 6010)		10	9.5/9.5	95/95	75-125	0
Lead (SW-846 6010)		10	9.4/9.4	94/94	75-125	0
For Soil Matrix (mg/L)						
BK273.44 04 / 05 - Sample Spiked: 20529 - 01						
Cadmium (SW-846 6010)	0	10	9.3/9.4	93/94	75-125	1
Copper (SW-846 6010)	0.76	10	10.2/10.2	94/94	75-125	0
Lead (SW-846 6010)	0.46	10	9.7/9.7	92/92	75-125	0

Definitions:
ND = Not Detected
RL = Reporting Limit
NA = Not Analysed
RPD = Relative Percent Difference
ug/L = parts per billion (ppb)
mg/L = parts per million (ppm)
ug/kg = parts per billion (ppb)
mg/kg = parts per million (ppm)

ENCAPCO
PO BOX 2223
Dublin, CA 94568

Date: November 8, 1995

Attn: STAN BACKMAN

Laboratory Number : 20467

Project Number/Name : 5229

This report has been reviewed and

approved for release.

Senior Chemist
Account Manager

[redacted]CAPCO
Attn: STAN BACKMAN

Project 5229
Reported on November 8, 1995

EPA SW-846 Method 6010 and/or 7000 Series Metals

Chronology

Laboratory Number 20467

Sample ID	Sampled	Received	Extract.	Analyzed	QC Batch	LAB #
COE-1	11/08/95	11/08/95	11/08/95	11/08/95	BK081.44	01
COE-2	11/08/95	11/08/95	11/08/95	11/08/95	BK081.44	02
COE-3	11/08/95	11/08/95	11/08/95	11/08/95	BK081.44	03
COE-4	11/08/95	11/08/95	11/08/95	11/08/95	BK081.44	04
COE-5 MW4	11/08/95	11/08/95	11/08/95	11/08/95	BK081.44	05

QC Samples

QC Batch #	QC Sample ID	TypeRef.	Matrix	Extract.	Analyzed
BK081.44-02	Method Blank	MB	Soil	11/08/95	11/08/95
BK081.44-03	Laboratory Spike	LS	Soil	11/08/95	11/08/95
BK081.44-04	Laboratory Spike Duplicate	LSD	Soil	11/08/95	11/08/95
BK081.44-05	SP-1	MS 20448-01	Soil	11/08/95	11/08/95
BK081.44-06	SP-1	MSD 20448-01	Soil	11/08/95	11/08/95

E CAPCO
Attn: STAN BACKMAN

Project 5229
Reported on November 8, 1995

EPA SW-846 Method 6010 and/or 7000 Series Metals

LAB ID	Sample ID	Matrix	Dil.Factor	Moisture
20467-01	COE-1	Soil	20.0	-
20467-02	COE-2	Soil	1.0	-
20467-03	COE-3	Soil	20.0	-
20467-04	COE-4	Soil	20.0	-

R E S U L T S O F A N A L Y S I S

Compound	20467-01 Conc. mg/kg	RL	20467-02 Conc. mg/kg	RL	20467-03 Conc. mg/kg	RL	20467-04 Conc. mg/kg	RL
Lead (SW-846 6010)	330M	50	1100M	50	1300M	50	530M	50

(1,000)

[redacted]CAPCO
Attn: STAN BACKMAN

Project 5229
Reported on November 8, 1995

EPA SW-846 Method 6010 and/or 7000 Series Metals

LAB ID	Sample ID	Matrix	Dil.Factor	Moisture
[redacted]0467-05	COE-5	Soil	1.0	-

R E S U L T S O F A N A L Y S I S

[redacted]mpound	20467-05 Conc. RL mg/kg
[redacted]ad (SW-846 6010)	40 2.5

EPA SW-846 Method 6010 and/or 7000 Series Metals

Quality Assurance and Control Data

Laboratory Number: 20467
Method Blank(s)

	BK081.44-02 Conc. PPM	 RL
Lead (SW-846 6010)	ND	2.5

EPA SW-846 Method 6010 and/or 7000 Series Metals

Quality Assurance and Control Data

Laboratory Number: 20467

Compound	Sample conc.	SPK Level	SPK Result	Recovery %	Limits %	RPD %
For Soil Matrix (mg/kg) BK081.44 03 / 04 - Laboratory Control Spikes						
Lead (SW-846 6010)		50	48.933/48.28	98/97	75-125	1
For Soil Matrix (mg/kg) BK081.44 05 / 06 - Sample Spiked: 20448 - 01						
Lead (SW-846 6010)	6.2787	50	46.063/44.43	80/76	75-125	5

The detection limit was raised due to the dilution required by high-level analytes in the sample.
MS and/or MSD recoveries were out of control limits. LCS / LCSD recoveries were within acceptable limits.

Definitions:

= Not Detected
= Reporting Limit
A = Not Analysed
PD = Relative Percent Difference
L = parts per billion (ppb)
L = parts per million (ppm)

ug/kg = parts per billion (ppb)
mg/kg = parts per million (ppm)

PRODUCTION SPECIFICATION

4. Production Specification

4.1 Processing of Material

All treated soil materials to be chemically fixated with dry reagents and asphaltic emulsion mixture with no materials exceeding established limits for STLC or other California limits for toxic chemicals in quantities exceeding concentrations set forth in Section 66699 Title 22, of the State of California Code of Regulation (CCR). Additionally, all staging and processing of material will conform to the requirements of revised health and safety plan as it relates tp exclusion zones and monitoring. Please refer to the health and safety plan for supplementary information.

The job mix formula calls for the soil to be treated with a dry reagent prior to the mixing of the asphaltic emulsion.

4.1a Central Plant Mixing

Soil and dry reagent shall be mixed in a pugmill with an adjustable gate to control the amount of soil entering the mixer. The dry reagent shall be introduced through a meter that will control the dry reagent to 10% by weight ($\pm$ 1.5%). The dry reagent soil mixture will be placed in stockpile for a minimum of 72 hours.

Water may be proportioned by weight or volume. The quantity of water added to the mixture shall be adjusted to produce optimum moisture content. The addition of water shall be made under conditions which shall permit an accurate determination of the quantity of water utilized.

4.1b Travel Mixing

Soil and dry reagent shall be mixed by a traveling mixer machine of auger type. The traveling mixer shall have provision for introducing the dry reagent and water at the time of mixing through a metering device or other approved method.

Prior to mixing in the traveling mixer, the soil shall be placed in such manner that all the material will be passed through the mixer in one mixing operation.

The rate of movement of the mixer, the amount of material mixed, and the amount of mixing shall be so regulated that a mix satisfactory to the engineer will result. The soil mixture will be placed in stockpile for a minimum of 72 hours.

4.1c Mixing Table

The soil shall be spread uniformly over a designated site preparatory to application of the dry reagent. The reagent will be distributed by volume at the direction of the engineer consistent with the job mix formula.

The soil will then be bladed into a windrow and windrow bladed back and forth across the designated site until a satisfactory mixture has been obtained. At the direction of the engineer, water may be added to mixture to aid in the mixing process. The soil mixture will be placed in stockpile for a minimum of 72 hours.

4.2 Spread and Compacting

Treated soil will be delivered to the roadbed as a uniform mixture. The mixture will be deposited on the roadbed at a quantity per linear foot, which provide the compacted thickness for the width being spread without resorting to spotting, picking up or otherwise shifting the mixture. The mixture will then be spread to the required thickness within the specified tolerances by means that will maintain the uniformity of the mixture.

Spreading may be accomplished with a Motor Grader that has the blade fixed in a position normal to the direction of travel, and is equipped with cross slope and automatic grade controls.

4.3 Motor Grader Mixing of the Emulsion

The liquid emulsion shall be delivered to the jobsite at a temperature not to exceed 140F and will be proportioned at a temperature between 110F and 140F.

The Treated Soil shall be thoroughly blended with the blade of a motor grader and uniformly spread over the site preparatory to application of the asphalt emulsion. The asphalt emulsion shall be spread by an approved pressure distributor (boot truck) in the number of application as needed to insure coverage. The material shall be bladed into a windrow and the windrow bladed back and forth across the site with a motor grader until a satisfactory mixture of uniform and unchanging appearance in the ETB has been obtained.

Where the required thickness is more than 0.60 foot or less, the mixture will be spread and compacted in one layer. Where the required thickness is more than 0.60 foot, the mixture will be placed in two or more layers of approximately equal thickness, and the maximum compacted thickness of any one layer shall not exceed 0.60 foot. Subsequent layers of mixture or other structural section materials will not be placed until the underlying lifts have cured for minimum of 72 hours or stable.

4.4 Compaction per City of Emeryvile Standards

Compaction of the spread mixture will be accomplished by the direction of engineer to achieve 90% relative. Two passes providing full coverage with pneumatic tire roller. A forward and backward pass will be considered as two passes. Traffic shall be routed during placement such that travel across or on the spread mixture will be minimum amount required for placement of the material. Care shall be exercised to insure that overworking of the material does not occur. Final dressing of the uppermost lift, if necessary, will be accomplished with a static steel wheeled roller to remove minor surface irregularities.

After compaction of the spread material, traffic will not be allowed on the material for a minimum of 72 hours or until the mixture is stable and unyielding, then, only traffic required to place subsequent layers or material will be allowed on the Emulsion Treated Base, as provided for traffic on treated bases in Section-1.02 "Weight Limitations" of the Standard Specifications.

4.5 Seal Coat

After top layer is compacted and allow to cure, a light uniform application or asphalt emulsion of the same formulation used in the production of ETB will be placed at the rate of 1/8 of a gallon per square yard. The seal shall be allowed to dry and cure.

4.6 Quality Control in the Field

Sampling: Prior to the start of production, contractor shall provide suitable sampling of the stockpiled material to establish the preconditioned moisture content.

Analytical: One grab sample per day will be taken and retained for the purpose of STLC testing (lead). At the direction of EPW, some of these samples may be subjected to testing.

Structural: Once during every 500 tons of placement a sample will be taken from the grade going to Encapco. The sampled material will be subjected to a standard method of test to determine the moisture-density in the dield placement (AASHTO T180-90).

HAZARDOUS WASTE MANAGEMENT PROGRAM

MANAGEMENT MEMO

EO-95-010-MM

HAZARDOUS WASTE MANAGEMENT PROGRAM

MANAGEMENT MEMO

RECEIVED
SEP 25 1995

MANAGEMENT MEMO #: EO-95-010-MM

TITLE: USE CONSTITUTING DISPOSAL

AFFECTED PROGRAMS: Hazardous Waste Management Program
Site Mitigation Program

ISSUE:

The Department of Toxic Substances Control (DTSC) is now developing regulations to address the "use constituting disposal" restriction as it pertains to recyclable materials that are non-RCRA hazardous wastes in section 25143.2(e)(2) of the Health and Safety Code (HSC). A "non-RCRA" waste is hazardous waste that is regulated in California but is not a Resource Conservation and Recovery Act (RCRA) waste. A RCRA hazardous waste is any waste identified as a hazardous waste in Part 261, Subchapter I, Chapter 1 of Title 40 of the Code of Federal Regulations (40 CFR). The "use constituting disposal" restriction affects the eligibility of recyclable materials for the exclusions and exemptions provided under HSC section 25143.2. The purpose of this management memo is to provide interim guidance on how to interpret "use constituting disposal," and therefore determine if a waste is subject to regulation pursuant to HSC section 25143.2(e)(2), until the regulations are adopted.

BACKGROUND:

HSC section 25143.2 addresses exclusions and exemptions for recyclable materials that are managed in a specified manner. Note that a recyclable material is defined as a hazardous waste that is capable of being recycled.[1] HSC section 25143.2 also lists conditions under which the recyclable materials must be fully regulated as hazardous wastes, regardless of the exclusions from classification as a waste and the exemptions from facility permitting requirements granted in this section. One such condition is when the materials are "used in a manner constituting disposal." This restriction is addressed separately for RCRA wastes and non-RCRA wastes.

Under California law, there is no definition for "use constituting disposal." The U.S. Environmental Protection Agency (U.S. EPA) has defined "use constituting disposal" to mean placing recyclable materials or products derived from recyclable

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[1] Ref. HSC section 25120.5.

materials on the land.[2] Under federal regulations, recyclable materials that are used in a manner constituting disposal are subject to regulation as solid wastes. At the same time, the U.S. EPA does not currently regulate products containing recyclable materials that are placed on the land if the recyclable materials have undergone a chemical reaction in producing the product so as to be physically inseparable from the product and the product meets the applicable treatment standards (or applicable prohibition levels where no treatment standards have been established) in subpart D, part 268, 40 CFR.

Since 1987, the DTSC has applied a set of criteria to recyclable materials placed on the land in determining whether or not such materials are "used in a manner constituting disposal." If these criteria are met, the recyclable materials are not regulated pursuant to HSC section 25143.2(e)(2) and may be eligible for the exclusions and exemptions under HSC section 25143.2 (b), (c) or (d). **The DTSC's criteria apply only to non-RCRA wastes.** The DTSC is currently writing regulations to address the issue of recyclable materials that are placed on the land ("use constituting disposal"). This management memo clarifies the criteria applied by the DTSC pending adoption of these regulations.

ACTION:

The following, <u>which applies only to non-RCRA wastes</u>, is the DTSC's present interpretation of the "use constituting disposal" restriction, i.e., of which recyclable materials are subject to regulation, in HSC section 25143.2(e)(2). This interpretation applies only until regulations addressing recyclable materials used in a manner constituting disposal or placed on the land are adopted.

A recyclable material that is placed on the land or used to produce a product which is placed on the land is regulated pursuant to HSC section 25143.2(e)(2) unless all applicable criteria listed below are met.

1. This criterion applies to situations where the recyclable material is used as an ingredient in the manufacture of a product. Hazardous constituents in the recyclable material whose concentrations are greater than or equal to the

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[2] Ref. 50 Federal Register 618, January 4, 1985, and 40 CFR 266.20.

regulatory Soluble Threshold Limit Concentrations (STLCs)[3] shall have chemically reacted or become physically bound so as not to leach from the product containing the recyclable material. Specifically, the hazardous constituents shall not leach out in concentrations that would exceed the applicable STLC, once the effect of dilution by other ingredients (as explained below) has been taken into account.

In order to meet this requirement, the following procedures must be used to evaluate the recyclable material and the product:

(a) Sampling and analysis:

(1) Sampling shall be conducted according to the sampling methods described in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd edition, 1986, or one of the sampling methods listed in Appendix I, Chapter 11, Division 4.5, Title 22, California Code of Regulations (22 CCR); and

(2) Analysis shall be conducted according to the Waste Extraction Test (WET), Appendix II, Chapter 11, Division 4.5, 22 CCR, or an alternative test method approved pursuant to 22 CCR section 66260.21

(b) In order to demonstrate that the hazardous constituents in the recyclable material are bound in the product so that they would not exceed the applicable STLC, even when eliminating the effect of dilution by other ingredients, the following calculations must be used.

The concentration of the hazardous constituents in the final product, as determined by the WET, must be multiplied by the dilution factor inherent in combining the recyclable material with other materials. The dilution factor is calculated by dividing the weight of the final product made with the recyclable material by the weight of the recyclable material used in the product, or

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[3] As set forth in sections 66261.24(a)(2)(A) and (a)(2)(B), Division 4.5, Title 22 of the California Code of Regulations (22 CCR).

$$\frac{\text{weight of final product}}{\text{weight of recyclable material}} = \text{dilution factor}$$

If the ingredients in the product that are not recyclable materials contain the same hazardous constituents present in the recyclable material, the hazardous constituents in the ingredients that are not recyclable materials may be subtracted from the concentration of hazardous constituents in the final product, adjusted for dilution.

The final calculation of the hazardous constituents present in the product, as determined by taking into account the effects of dilution and, where applicable, the effects of hazardous constituents in ingredients that are not recyclable materials, must be less than the applicable STLC.

The following is an example of how these calculations can be done.

A ton of spent sandblast grit, which is hazardous due to a mean soluble lead concentration of 12 mg/L, is combined with nineteen tons of other aggregate and asphalt to produce twenty tons of asphaltic concrete. The dilution factor is thus 20 (twenty tons of final product, including the recyclable material, divided by the original one ton of recyclable material). The asphaltic concrete is then subjected to the WET and yields mean results for lead of 0.05 mg/l. This number is then multiplied by the dilution factor, 20, for a result of 1.00 mg/l. The aggregate that is not a recyclable material was tested with the WET and found to have a concentration of 0.05 mg/l lead. This concentration can be subtracted from 1 mg/l to give you 0.95 mg/l. This final calculation does not exceed the STLC for lead of 5 mg/l and therefore meets the criterion.

2. A recyclable material used as a substitute for a commercial product or a product containing a recyclable material shall not contain constituents that cause the product to exhibit hazardous characteristics pursuant to Chapter 11, Division 4.5, CCR 22, other than those constituents that are also found in the same or greater concentrations in a comparable commercial product. The only exception to this requirement is if the person claiming an exclusion obtains

the DTSC's written concurrence prior to using the recyclable material that:

(a) the concentrations of hazardous constituents greater than those present in a comparable commercial product improve the quality of the product made from the recyclable material and do not increase the hazards to public health or the environment of that product; or

(b) if no comparable commercial product exists, the hazardous constituents in the recyclable material that cause the product to exhibit a characteristic of a hazardous waste are beneficial to the product and do not cause the product to pose a threat to public health or the environment.

3. The recyclable material must be used beneficially, as demonstrated by both of the following conditions:

(a) Prior to use, the recyclable material and the product containing that material must each be certified by a qualified independent engineer registered in the state of California[4] to meet the applicable standards or specifications for the intended use of the recyclable material or product of the American Society for Testing and Materials (ASTM), the American Association of State Highway and Transportation Officials (AASHTO), the American National Standards Institute (ANSI), the Uniform Building Code (UBC), or the standards of a government agency having jurisdiction over the construction applications of that recyclable material or product. A nationally recognized industry standard, other than those mentioned, may be used with the prior written approval of the DTSC.

(b) There shall be no indications of sham recycling, including, but not limited to, use of the recyclable material or a product containing a recyclable material in excess of what is necessary to accomplish its function, handling of the recyclable material in a manner inconsistent with the economic value of the

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[4] By "qualified independent engineer", we mean an engineer whose registration (e.g., civil, mechanical, structural, etc.) is appropriate for the product she/he is certifying and who is not an employee of the person claiming an exclusion or exemption pursuant to HSC 25143.2.

material, or insufficient use of the recyclable material to accomplish its function.

Non-RCRA hazardous wastes managed according to the applicable criteria above will not be regulated pursuant to HSC 25143.2(e) and may therefore qualify for the exclusions and exemptions in HSC section 25143.2 if the requirements of a specific exclusion or exemption are met and none of the other provisions of subdivision (e) apply.

Examples of recyclable materials used in products placed on the land are spent sandblast grit, contaminated soils, foundry sands, ash, and demolition wastes, which may be used, among other things, as asphalt treated road base, landfill cover material, or aggregate in Portland cement concrete or an asphaltic concrete.

Use of recyclable materials as fertilizer, soil amendment, agricultural mineral, or an auxiliary soil and plant substance, with or without combination with other materials, is not covered by this management memo and is regulated separately.[5] Used oil is also not covered by this management memo.[6]

This management memo will stay in effect until the promulgation of regulations regarding management requirements for recyclable materials that are placed on the land, i.e., used in a manner constituting disposal, or until it is replaced by a subsequent management memo or DTSC policy.

DISTRIBUTION:

Cal/EPA Access Bulletin Board System
Hazardous Waste Management Program Policy Mailing List

ATTACHMENTS: None

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[5] Ref. Article 8, Chapter 16, 22 CCR.

[6] Ref. Article 13, Chapter 6.5, Division 20 of the Health and Safety Code.

CONTACT:

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8/18/95
Date

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