

DEPARTMENT OF TRANSPORTATION

P.O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 286-4444
TTY (510) 286-4454

Alameda County

APR 08 2003



*Flex your power!
Be energy efficient!*

Environmental Health

April 1, 2003

Mr. Don Hwang
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: Vacant Parcel, located at the intersection of 6th and Castro Streets in Oakland, CA

24607

Dear Mr. Hwang:

On July 18, 2002, our office submitted a letter that presented an evaluation of recent investigation data and requested a determination from Alameda County Health Care Services Agency (ACHCSA) of further requirements for the subject site. It has been over eight months and we have not received a response. As you are aware, California is facing a budget crisis that is forcing Caltrans to implement measures to generate and/or save money, including sale of excess properties. In order to determine the value of the subject property, we must be informed of any further requirements of the ACHCSA. Therefore, we request a determination of site cleanup standards and any further action required by ACHCSA. Please direct any questions you may have regarding this site to Jill Pollock at (510) 286-5638.

Sincerely,

Christopher R. Wilson
for

CELIA McCUAIG
District Branch Chief
Office of Environmental Engineering

cc: CMccuaig/GCrisostomo/file

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JUL 22 2002

Mr. Don Hwang
Alameda County Environmental Health Department
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: Vacant Parcel, located at the intersection of 6th and Castro Streets in Oakland, CA

94607

Dear Mr. Hwang:

On December 5, 2001, the Alameda County Health Care Services Agency (ACHCSA) sent our office a letter (see Attachment 1) requesting further study at the subject site. During the same period of time, the Port of Oakland (PO) was evaluating the 6th and Castro parcel as well as two other parcels located along 6th street adjacent to the 6th and Castro parcel for purchase. The PO contracted IRIS Environmental to conduct a site investigation of these three parcels (see Attachment 2 for parcel and boring locations). Shortly after the fieldwork for this investigation was completed, the PO chose to purchase an alternate location and terminated work on the subject investigation. This letter has been prepared to summarize the PO investigation and provide ACHCSA with an evaluation of the analytical data.

INVESTIGATION

The PO investigation was conducted in November of 2001, and consisted of the advancement of between 5 and 9 borings at each parcel to depths varying between 4 to 10.5 feet below ground surface. Approximately 5 samples were collected from each borehole at depths of approximately 0, 2, 4, 7, and 10 feet below ground surface, except in borings where refusal was encountered (see Attachment 3 for sample depths). Five grab groundwater samples were collected at each parcel, except for Parcel Interstate Block B where only three samples were collected. Generally, discrete soil and groundwater samples were analyzed for the following: total petroleum hydrocarbons as gasoline (TPH-g), total petroleum hydrocarbons as diesel (TPH-d), total petroleum hydrocarbons as motor oil (TPH-mo), benzene; toluene; ethylbenzene; xylenes (BTEX), and metals. Discrete soil samples collected at depths of 4 feet below ground surface or deeper and groundwater samples were also analyzed for volatile organic compounds (VOCs). In addition, discrete samples from each borehole were also composited and analyzed for organochlorine pesticides (OCPs), polychlorinated biphenyls (PCBs), and semivolatile organic compounds (SVOCs). Analytical results are discussed below by parcel; see Attachment 3 for all analytical data.

RESULTS

The 6th and Castro parcel had no analytical detections in the soil that exceeded regulatory criteria. Total lead concentrations were detected in four samples at concentrations ranging from 57 to 100 mg/kg, which exceeded 10 times the soluble threshold limit concentration (STLC) of 5 mg/L. However, no Waste Extraction Testing (WET) was performed on any samples collected during the PO investigation. TPH-gas was not detected in any soil sample. TPH-mo ranged in soil from non-detect to 340 mg/kg and TPH-d ranged from non detect to 44 mg/kg. A statistical analysis was performed for TPH-mo and TPH-d to

determine average concentrations in order to evaluate petroleum contamination. At present, no regulatory criteria exist for petroleum hydrocarbons. For each block, the Bootstrap Method was used to determine the 95 percent upper confidence level of the mean (See Attachment 4). This is the value that, when calculated repeatedly for randomly drawn subsets of site data, equals or exceeds the true mean 95% of the time. For soil from Parcel 6th and Castro, the 95% UCLs of the mean for TPH-d and TPH-mo were 73.1 and 12.1 mg/kg, respectively. OAK-6C-1, OAK-6C-2, and OAK-6C-3, the three northeasterly borings each had groundwater detections in excess of the California Maximum Contaminant Level (MCL) for at least one metal. OAK-6C-1 and OAK-6C-3 had chromium detections of 54 and 53 µg/l, respectively, which exceed the MCL of 50 µg/l. OAK-6C-2 also exceeded the MCL for chromium with a detection of 290 µg/l. In addition groundwater at OAK-6C-2 had concentrations of cadmium (7.3 µg/l), nickel (330 µg/l), and lead (36 mg/l) that exceeded the cadmium and nickel MCLs of 5 µg/l and 100 µg/l, respectively, and the lead action level of 15 µg/l. No other analyte was detected in groundwater above regulatory criteria. TPH-g, TPH-mo, and TPH-d were not detected in the groundwater samples above the laboratory reporting limit.

Parcel Interstate Block A (Parcel A) had two soil detections, lead at 1400 and 400 mg/kg, that equaled or exceeded regulatory criteria (the total threshold limit concentration of 1000 mg/kg and residential Preliminary Remediation Goal [PRG] of 400 mg/kg). TPH-g was only detected in one soil sample, the surface sample from OAK1BA-9 at 1.4 mg/kg. Concentrations in soil of TPH-mo ranged from non-detect to 340 mg/kg and concentrations of TPH-d ranged from non-detect to 200 mg.kg. For Parcel A, the 95% UCLs of the mean for TPH-d and TPH-mo were 31 and 67.4 mg/kg, respectively. The SVOC, bis (2-ethylhexyl) phthalate, was detected in composite samples in Parcel A as well as samples from Parcels B. Bis (2-ethylhexyl) phthalate is a common laboratory chemical and it is likely that its detection in soil samples for this project are a result of laboratory contamination. Groundwater collected from boring OAK-1BA-1 was the only groundwater sample to have detections exceeding MCLs. 1,2-Dichloroethane (1,2-DCA) detected at 36 µg/l and 1,2-dichloropopane (1,2-DCP) detected at 5.1 µg/l exceeded their respective MCLs of 0.5 µg/l and 5 µg/l. TPH-mo and TPH-d were not detected above the laboratory reporting limit. TPH-gas was detected in three samples ranging from 56 to 320 µg/l. Concentrations of BTEX detected in all samples were below MCLs. It should be noted that the table includes two samples labeled OAK-1BA-7; it is Caltrans assumption that one of these two borings was collected from OAK-1BA-8 and was mislabeled. Because the PO stopped funding their investigation, Caltrans has not been able to confirm this assumption.

Parcel Interstate Block B (Parcel B) had no soil detections above regulatory criteria. TPH-gasoline was not detected above the laboratory reporting limit in any sample. Concentrations in soil of TPH-mo ranged from non-detect to 770 mg/kg and concentrations of TPH-d ranged from non-detect to 100 mg/kg. The 95% UCLs of the mean for TPH-mo and TPH-d in soil were 105 and 18 mg/kg, respectively. Groundwater collected from borings OAK-1BB-2 and OAK-1BB-7 had detections above regulatory criteria: Trichloroethene (TCE) was detected at 33 µg/l from OAK-1BB-2, which exceeds the MCL of 5 µg/l; chromium was detected at 51 µg/l from OAK-1BB-7, which exceeds the MCL of 50 µg/l. TPH-mo was not detected above the laboratory reporting limit. TPH-gas was detected in the groundwater sample OAK1BB-2 at a concentration of 51 µg/l; however BTEX was not detected above MCLs in any groundwater sample. TPH-d was detected in groundwater from OAK-1BB-3 and OAK-1BB-7 at concentrations of 210 and 290 µg/l, respectively.

CONCLUSIONS

Previous data from Caltrans' quarterly groundwater monitoring at the 6th and Castro parcel has suggested that a petroleum hydrocarbon plume exists around Monitoring Well 2 (MW2), which is located in the

southwest corner of the parcel, between OAK-6C-4 and OAK-6C-5. However, no TPH-g, TPH-mo, or TPH-d was detected in groundwater from any of the five borings collected at the 6th and Castro parcel. In addition, detections of BTEX compounds in groundwater were extremely low, with the highest being 2.1 µg/l of toluene and 2.03 µg/l of total xylenes detected from OAK-6C-4; no other volatile organic compounds were detected in groundwater or soil. Soil collected from this parcel had no detections of TPH-g, and very low average (95% UCL of the mean) concentrations of TPH-d and TPH-mo, 73.1 and 12.1 mg/kg, respectively. Low concentrations of a few metals were found in groundwater from the three northeasterly borings; these detected concentrations barely exceed primary drinking water standards

Based on monitoring well data from quarterly groundwater monitoring at the 6th and Castro Parcel, groundwater has had a consistent southerly flow. Therefore groundwater from the borings collected in the northerly portion of Parcel A (OAK1BA-1, OAK-1BA-2, and OAK-1BA-3) is most likely to be impacted from contamination present from the 6th and Castro parcel. Of these three borings, only one, (OAK-1BA-1) had detections of TPH-g and VOCs. TPH-g was detected at 56 µg/l, 3 orders of magnitude less than that detected from MW2 in the last quarter of monitoring (65,000 µg/l in March of 2001). TPH-g was detected at 85 µg/l and 320 µg/l in groundwater from borings OAK-1BA-7 and OAK-1BA-9, respectively. The distance of these borings from the 6th and Castro parcel is great and, consequently, the TPH-g detected in these borings is likely the result of a different source of contamination. Toluene, ethylbenzene, and xylenes (TEX) were detected in all water samples collected from Parcel A, but at concentrations three to four orders of magnitude lower than those detected in MW2. Maximum concentrations of TEX were 3.5, 0.56, and 3.4 µg/l, respectively, for Parcel A. TEX concentrations detected in MW2 on March 5, 2001, were 4,100 µg/l, 3,100 µg/l, and 18,400 µg/l, respectively. Concentrations of TEX detected in Parcel A are well below their respective MCLs of 150 µg/l, 700 µg/l, and 1750 µg/l. No benzene was detected in groundwater above the 0.5 µg/l reporting limit in Parcel A which shows dissipation in concentration from MW2, which averaged 720 µg/l of benzene for seven quarters. Only two other VOCs were detected in groundwater from Parcel A: Boring OAK-1BA-1 contained 36 µg/l of 1,2-DCA and 5.1 µg/l of 1,2-DCP, these constituents were detected above their respective MCLs of 0.5 µg/l and 5 µg/l. The concentration of 1,2-DCA is significant, two orders of magnitude greater than the MCL, whereas the concentration of 1,2-DCP is only 0.1 µg/l above the MCL and is not deemed significant.

Parcel B is located west of Parcel 6th and Castro, but analytical results are discussed in this letter report due to its close proximity and potential for fluctuations in groundwater flow direction. Of the three borings where groundwater samples were collected, OAK-1BB-3 is closest to Parcel 6th and Castro. TPH-g was detected in groundwater from only one boring, OAK-1BB-2, at a concentration of 51, µg/l, which, like those concentrations of TPH-g detected in Parcel A, is 4 orders of magnitude less than concentrations detected in Parcel 6th and Castro. The two detected concentrations of TPH-d (210 µg/l and 290 µg/l) were detected in the two furthest borings from Parcel 6th and Castro at concentrations an order of magnitude less Parcel 6th and Castro. No TPH-mo was detected in groundwater samples from Parcel B. Of the BTEX compounds, only toluene and xylenes were detected in Parcel B, and they were detected well below MCLs, at concentrations four orders of magnitude lower than those detected at Parcel 6th and Castro. The most significant detection found at Parcel B, is the 33 µg/l of TCE detected in OAK-1BB-2, which is an order of magnitude higher than the MCL of 5 µg/l and higher than the TCE concentrations detected in MW2.

Based on the PO investigation, petroleum hydrocarbon contamination at the 6th and Castro site appears to have diminished considerably. Natural attenuation has likely occurred at the site, as microorganisms readily degrade petroleum hydrocarbons. Given this new information, is the ACHCSA still interested in

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Mr. Hwang
July 18, 2002

monitoring groundwater at the 6th and Castro site? If so, Caltrans requests that the ACHCSA provide more relevant regulatory standards to use as a datum for comparison, given the inappropriateness of using drinking water standards. Please direct any questions you may have regarding this site to Jill Pollock at (510) 286-5638.

Sincerely,



CELIA McCUAIG
District Branch Chief
Office of Environmental Engineering

c: CM/file

ATTACHMENT 1

ACHCSA Letter

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY

DAVID J. KEARS, Agency Director



ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

December 5, 2001

Jill Pollock
State of California-Business, Transportation, Housing Agency
Dept. of Transportation
Office of Environmental Engineering
Box 23660
Oakland, CA 94623-0660

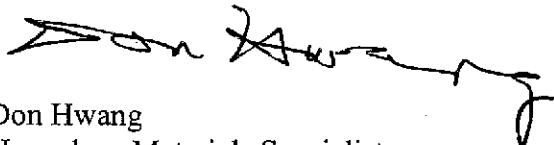
Dear Ms. Pollock:

Subject: Vacant Parcel, 6th St. and Castro St., Oakland, CA
RO0000250

"1st Quarter 2001, 7th Quarterly Groundwater Monitoring Report" by PSI dated July 26, 2001 and "Site Investigation Workplan" by Environmental Resources Management dated August 6, 2001 were reviewed. The contaminant concentrations found in the groundwater samples collected on March 5, 2001 increased compared to prior sampling results. Monitoring well MW-2's concentrations were 65,000 ug/l Total Petroleum Hydrocarbons-Gasoline (TPH-G), 6,500 ug/l TPH-Diesel (TPH-D), <400 ug/l Total Petroleum Hydrocarbons-Motor Oil (TPH-MO), 730 ug/l Benzene, 4,100 ug/l Toluene, 3,100 ug/l Ethylbenzene, and 18,400 ug/l Xylene (BTEX), <50 ug/l Methyl Tertiary-Butyl Ether (MTBE), 4,720 ug/l Volatile Organic Compounds (VOCs), and <20 ug/l lead. Monitoring well MW-2's VOC concentrations were 200 ug/l n-Butylbenzene, <13 ug/l 1,2-Dichloroethane, <13 ug/l 1,2-Dichloropropane, 100 ug/l Isopropylbenzene, 34 ug/l p-Isopropyltoluene, 1,200 ug/l Naphthalene, 370 ug/l n-Propylbenzene, <13 ug/l Trichloroethene, 2,300 ug/l 1,2,4-Trimethylbenzene, and 700 ug/l 1,3,5-Trimethylbenzene. TPH-D was not found previously. No samples were analyzed for Oil & Grease. Previous quarters found Oil & Grease concentrations at a minimum of 4,400 ug/l. Therefore, resume analyses for Oil & Grease. Concentrations found in monitoring wells MW-1 and MW-3 were below detection limits for all contaminants.

The workplan proposes grab groundwater sampling on the 6th St. side of the parcel to determine where to locate additional monitoring wells. For soil and groundwater samples from the monitoring wells, include analyses for BTEX. Additionally, for the groundwater samples include VOCs and Oil & Grease. If Oil & Grease analyses cannot be performed, then explain. Please state whether you agree with these changes. If you have any questions, you may call me at 510/567-6746.

Sincerely,



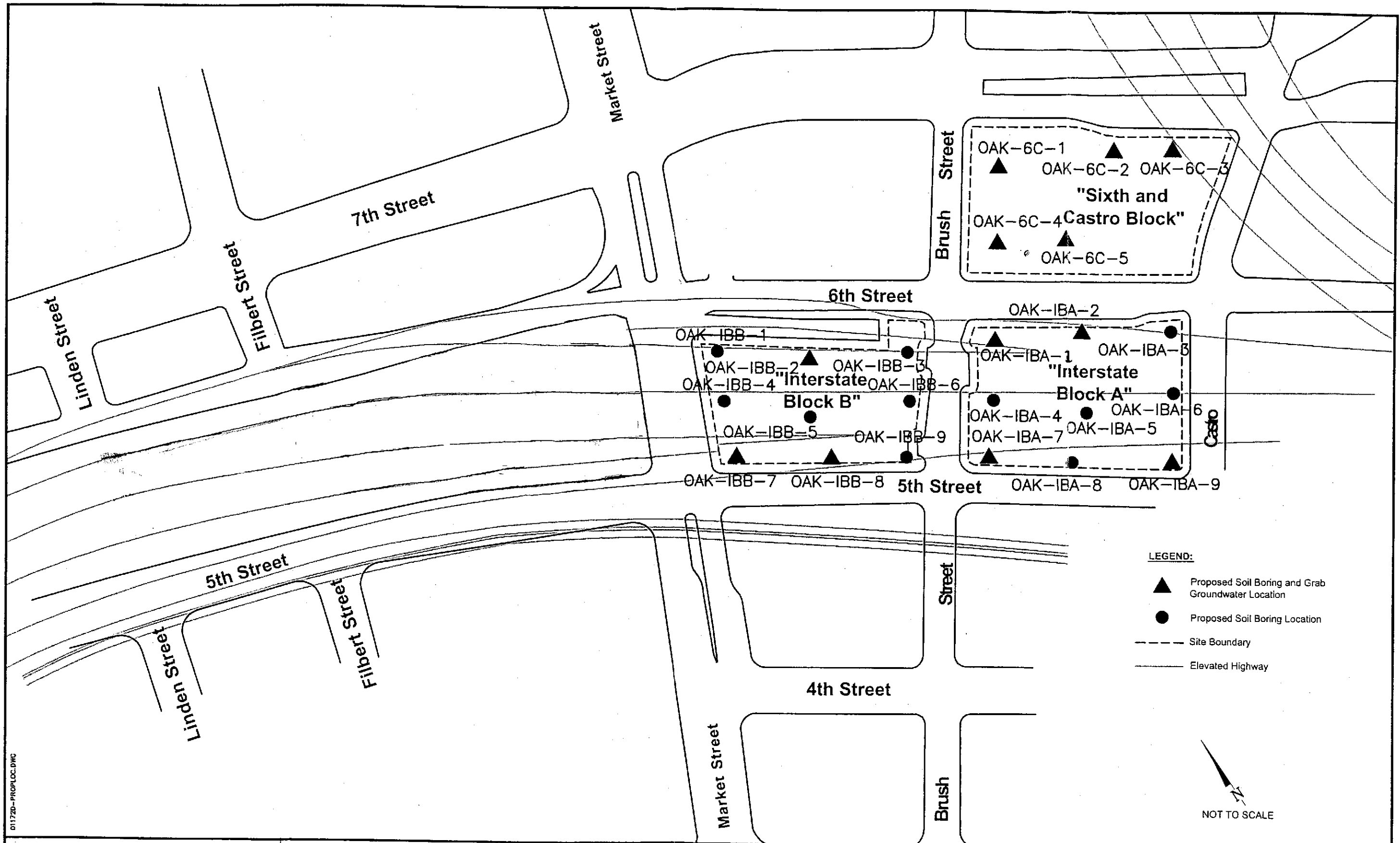
Don Hwang
Hazardous Materials Specialist

C: John Cavanaugh, Michael Blanchard, Environmental Resources Management,
1777 Botelho Dr., Walnut Creek, CA 94596

file

ATTACHMENT 2

PARCEL AND BORING LOCATION MAP



01172B-PROPLOC.DWG

IRIS ENVIRONMENTAL
 1615 Broadway, Suite 1003, Oakland, California 94612

Proposed Soil Boring Locations
 CalTrans Properties
 Port of Oakland
 Oakland, California

Figure
2

Drafter: MAS Date: 8/24/01 Contract Number: 00-172B Approved: Revised:

ATTACHMENT 2

ATTACHMENT 3

ANALYTICAL DATA

Port of Oakland Investigation Nov. 2001
6th & Castro Block

Discrete Soil mg/kg

SAMPLE	DEPTH	TPH-g	TPH-d	TPH-mo	BTEX	VOCs	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
OAK-6C-1	0-0.5	nd	44	290	0.008 (x)		nd	2.2	81	0.26	1.9	30	5	23	<u>68</u>	.015	nd	36	nd	nd	nd	23	120
	2-2.5	nd	1.6	5.2	nd		nd	5.6	150	0.66	1.7	46	11	27	7.8	0.064	nd	72	nd	nd	nd	45	48
	4-4.5	nd	nd	nd	nd	nd	nd	2.2	48	0.51	1.2	49	19	15	3.6	0.064	nd	40	nd	nd	nd	31	31
	7-7.5	nd	1.1	nd	nd	nd	nd	1.5	34	0.3	0.84	30	5.5	6	2	0.027	nd	32	nd	nd	nd	23	16
	10-10.5	nd	nd	nd	nd	nd	nd	1.7	36	0.3	0.87	40	6	8.9	2.8	0.025	nd	37	nd	nd	nd	25	19
OAK-6C-2	0-0.5	nd	44	340	nd		nd	3	110	0.37	1	34	7.3	16	37	0.094	nd	47	nd	nd	nd	19	39
	2-2.5	nd	nd	nd	nd		nd	1.2	69	0.23	0.6	24	3.4	5.7	2.4	0.24	nd	17	nd	nd	nd	18	14
	4-4.5	nd	nd	6.2	nd	nd	nd	0.95	39	0.18	0.46	21	2.2	4.5	1.5	0.018	nd	14	nd	nd	nd	14	11
	7-7.5	nd	nd	nd	nd	nd	nd	1.7	43	0.33	0.92	30	4.9	7.1	2.2	nd	nd	34	nd	nd	nd	24	18
	10-10.5	nd	nd	nd	nd	nd	nd	1.2	41	0.23	0.75	28	4.2	5.7	1.9	0.073	nd	28	nd	nd	nd	19	16
OAK-6C-3	0-0.5	nd	24	150	0.007 (t), 0.008 (x)		nd	2.4	57	0.28	0.98	28	5.7	15	35	0.1	nd	32	nd	nd	nd	19	52
	2-2.5	nd	5	16	6.6 (t)		nd	2.3	77	0.19	0.66	15	3.1	17	<u>57</u>	0.33	nd	14	nd	nd	nd	14	71
	4-4.5	nd	nd	nd	nd	nd	nd	1.4	34	0.2	0.54	22	1.9	4.6	2.5	nd	nd	15	0.34	nd	0.22	14	11
	7-7.5	nd	nd	nd	nd	nd	nd	1.6	57	0.32	0.86	53	2.4	8.3	2.7	0.044	nd	31	nd	nd	nd	23	17
	10-10.5	nd	nd	nd	nd	nd	nd	2	49	0.29	0.98	35	5.2	6	2.1	0.017	nd	34	nd	nd	nd	26	17
OAK-6C-4	0-0.5	nd	4.1	23	nd		nd	2.4	49	0.27	1.1	28	6.2	11	19	0.056	nd	32	nd	nd	nd	21	43
	2-2.5	nd	nd	nd	nd		nd	3	37	0.29	1.2	28	7.6	6.2	6	0.26	nd	35	nd	nd	nd	24	31
	4-4.5	nd	6.6	17	nd	nd	nd	2.8	32	0.26	1.3	23	6.6	9.3	19	0.05	nd	33	nd	nd	nd	20	50
	7-7.5	nd	37	120	nd	nd	nd	2.2	77	0.24	1	25	4.1	21	<u>100</u>	0.11	nd	23	nd	nd	nd	20	110
	10-10.5	nd	4.8	15	nd	nd	nd	1.2	49	0.32	0.87	37	7.3	9.4	2.8	0.096	nd	35	nd	nd	nd	25	20
OAK-6C-5	0-0.5	nd	8.4	72	nd		nd	1.9	62	0.19	1.2	21	5.2	13	<u>74</u>	0.02	nd	20	nd	nd	nd	23	50
	2-2.5	nd	nd	nd	nd		nd	0.94	28	0.14	0.63	16	4.2	3.8	1.5	nd	nd	12	nd	nd	nd	13	8.5
	4-4.5	nd	nd	nd	nd	nd	nd	2.2	53	0.33	1.4	42	7.5	9.4	3.1	nd	nd	38	nd	nd	nd	28	19
	7-7.5	nd	nd	nd	nd	nd	nd	1.6	47	0.21	1.2	34	5.8	6.3	2	nd	nd	32	nd	nd	nd	22	18
	10-10.5	nd	nd	nd	nd	nd	nd	1.7	38	0.17	0.91	28	4.6	5.5	1.8	nd	nd	27	nd	nd	nd	17	17

depth in feet below ground surface

Composite Soil mg/kg

SAMPLE	DEPTH	OCPs	PCBs	SVOCs
OAK-6C-1	comp	nd	nd	nd
OAK-6C-2	comp	nd	0.075 A-1254 0.071 A-1260	nd
OAK-6C-3	comp	nd	nd	nd
OAK-6C-4	comp	nd	nd	nd
OAK-6C-5	comp	nd	nd	nd

Water ug/l

SAMPLE	TPH-g	TPH-d	TPH-mo	BTEX	VOCs	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
OAK-6C-1	nd	nd	nd	1.0 (t), 0.86 (x)	nd	nd	nd	170	nd	nd	54	nd	nd	9	nd	23	76	nd	nd	nd	30	41
OAK-6C-2	nd			1.6 (t), 2.07 (x)	nd	nd	15	410	2.6	7.3	290	51	43	36	nd	nd	330	nd	nd	nd	180	170
OAK-6C-3	nd	nd	nd	0.88 (t), 0.64 (x)	nd	nd	nd	120	nd	nd	53	nd	nd	4.5	nd	nd	53	nd	nd	nd	33	31
OAK-6C-4	nd	nd	nd	2.1 (t), 2.03 (x)	nd	nd	nd	80	nd	nd	nd	nd	nd	nd	nd	29	nd	nd	nd	nd	nd	nd
OAK-6C-5	nd	nd	nd	1.6 (t), 1 (x)	nd	nd	nd	210	nd	nd	39	nd	nd	3.9	nd	nd	57	nd	nd	nd	32	27

(t) = toluene (e) = ethylbenzene (x) = total xylenes nd = not detected above laboratory detection limit underlined text = total concentration exceeds 10 times the STLC **bolded text** = exceeds CA MCL, action level, or TTLC

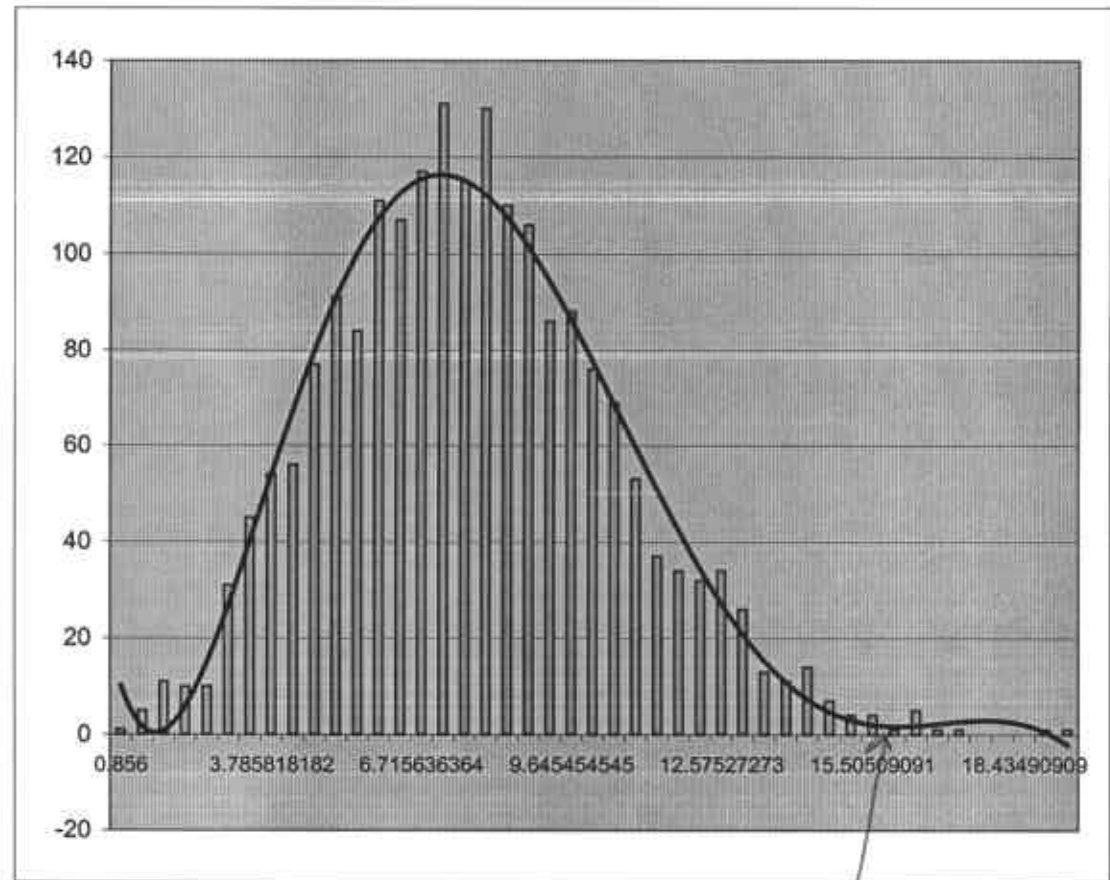
ATTACHMENT 4

STATISTICAL EVALUATION OF PETROLEUM
HYDROCARBONS (TPH-d & TPH-mo)
USING THE BOOTSTRAP METHOD

Iterations: 2000
 No. of Samples: 25

Interstate Block 6th and Castro
 TPH-d

	Bin	Frequency
44	0.856	1
1.6	1.274545	5
0.5	1.693091	11
1.1	2.111636	10
0.5	2.530182	10
44	2.948727	31
0.5	3.367273	45
0.5	3.785818	54
0.5	4.204364	56
24	4.622909	77
5	5.041455	91
0.5	5.46	84
0.5	5.878545	111
0.5	6.297091	107
4.1	6.715636	117
0.5	7.134182	131
6.6	7.552727	115
37	7.971273	130
4.8	8.389818	110
8.4	8.808364	106
0.5	9.226909	86
0.5	9.645455	88
0.5	10.064	76
0.5	10.48255	69
	10.90109	53
	11.31964	37
	11.73818	34
	12.15673	32
	12.57527	34
	12.99382	26
	13.41236	13
	13.83091	11
	14.24945	14
	14.668	7
	15.08655	4
	15.50509	4
	15.92364	1
	16.34218	5



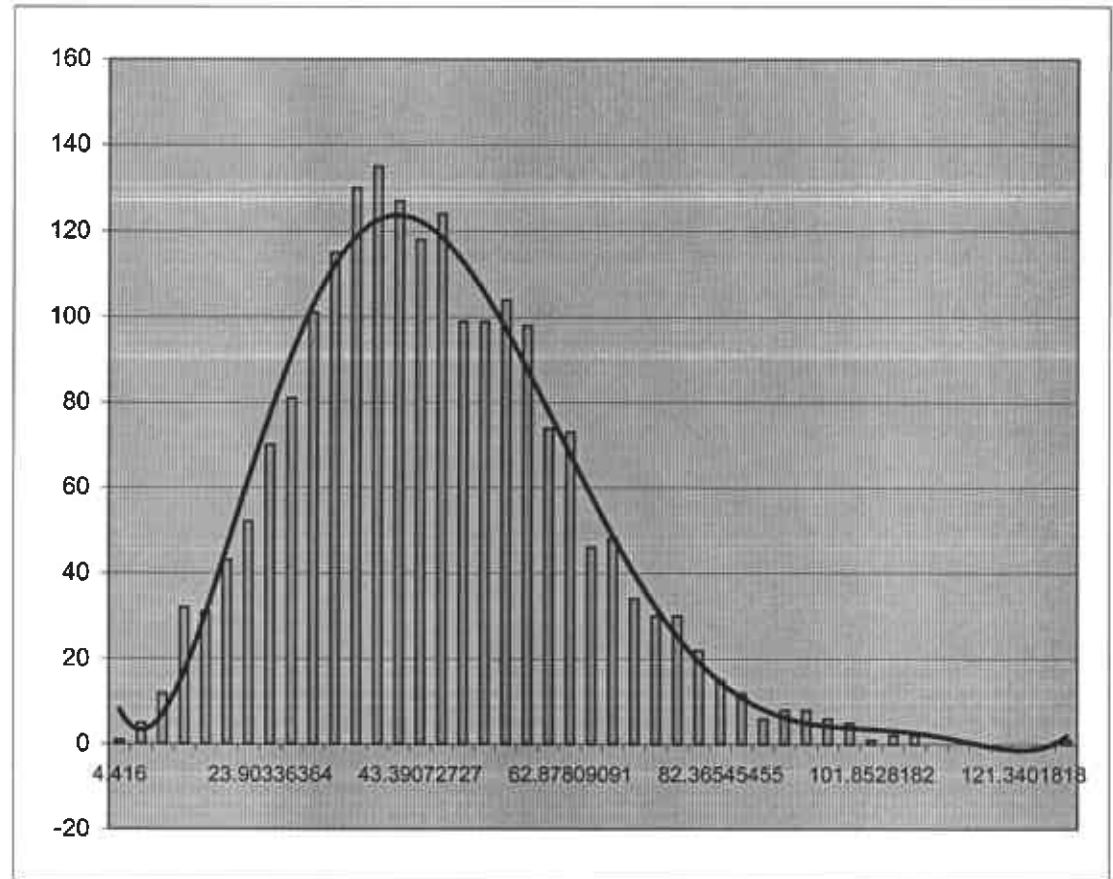
Average = 7.505082
 Standard Deviation = 2.767554
 95% UCL of the mean = 12.07155
 90% UCL of the mean = 11.04755

this plot is a plot of the Range of Estimated averages

Iterations: 2000
 No. of Samples: 25

Interstate Block 6th and Castro
 TPH-mo

	Bin	Frequency
290		
5.2	4.416	1
2.5	7.199909	5
2.5	9.983818	12
2.5	12.76773	32
340	15.55164	31
2.5	18.33555	43
6.2	21.11945	52
2.5	23.90336	70
2.5	26.68727	81
150	29.47118	101
16	32.25509	115
2.5	35.039	130
2.5	37.82291	135
2.5	40.60682	127
23	43.39073	118
2.5	46.17464	124
17	48.95855	99
120	51.74245	99
15	54.52636	104
72	57.31027	98
2.5	60.09418	74
2.5	62.87809	73
2.5	65.662	46
2.5	68.44591	48
	71.22982	34
	74.01373	30
	76.79764	30
	79.58155	22
	82.36545	15
	85.14936	12
	87.93327	6
	90.71718	8
	93.50109	8
	96.285	6
	99.06891	5
	101.8528	1
	104.6367	2
	107.4206	2

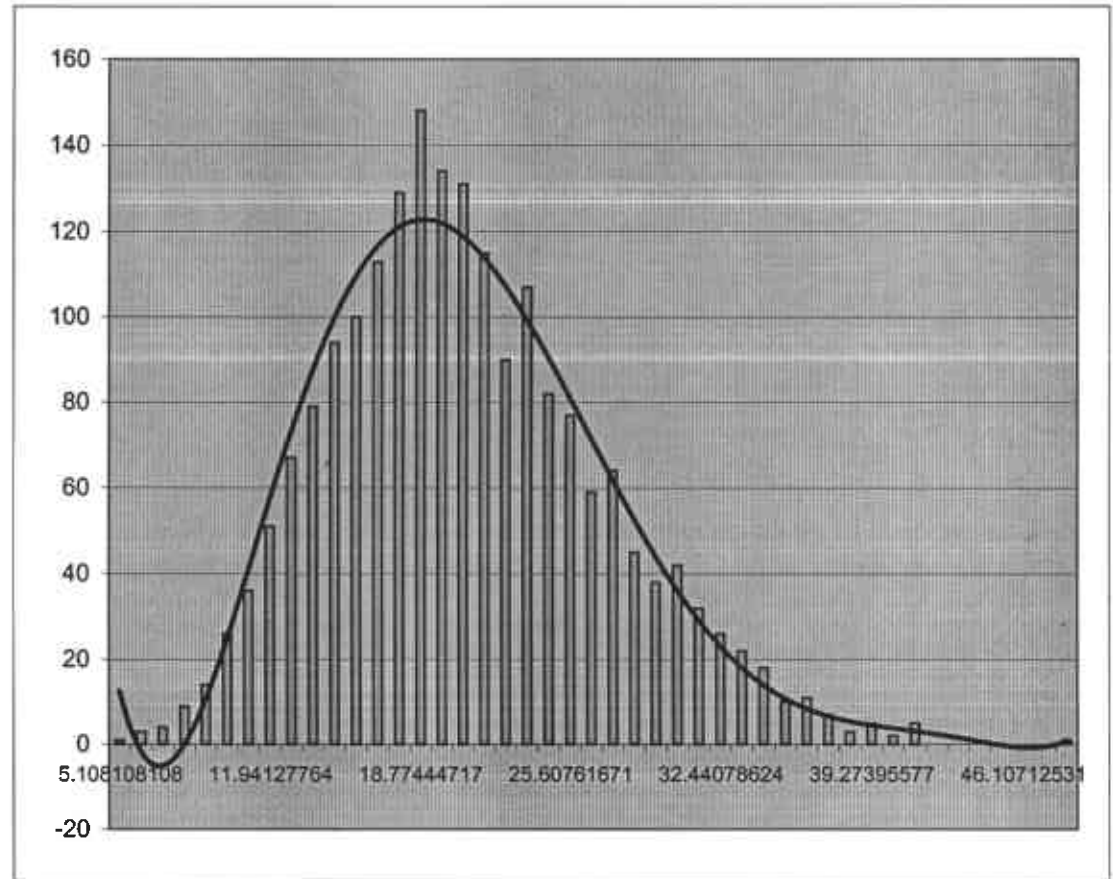


Average = 43.8024
 Standard Deviation = 17.77272
 95% UCL of the mean = 73.12738
 90% UCL of the mean = 66.55148

Iterations: 2000
 No. of Samples: 37

Interstate Block A
 TPH-d

	Bin	Frequency
22		
0.5	5.108108	1
0.5	6.084275	3
0.5	7.060442	4
0.5	8.036609	9
5.7	9.012776	14
0.5	9.988943	26
0.5	10.96511	36
0.5	11.94128	51
0.5	12.91744	67
67	13.89361	79
90	14.86978	94
1.4	15.84595	100
0.5	16.82211	113
1.2	17.79828	129
19	18.77445	148
0.5	19.75061	134
0.5	20.72678	131
4.8	21.70295	115
6.8	22.67912	90
0.5	23.65528	107
24	24.63145	82
0.5	25.60762	77
1.2	26.58378	59
44	27.55995	64
68	28.53612	45
0.5	29.51229	38
37	30.48845	42
200	31.46462	32
59	32.44079	26
0.5	33.41695	22
15	34.39312	18
16	35.36929	10
26	36.34545	11
14	37.32162	7
16	38.29779	3
0.5	39.27396	5
	40.25012	2
	41.22629	5

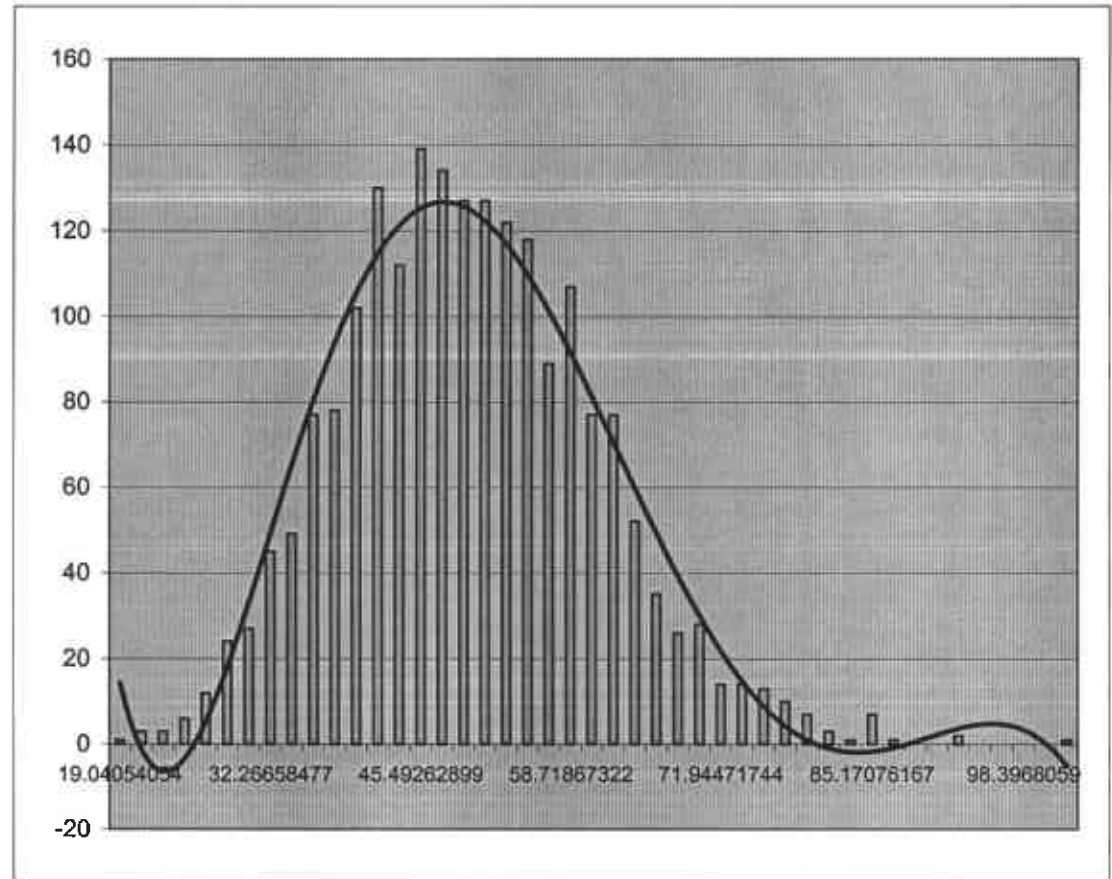


Average = 20.38387
 Standard Deviation = 6.26249
 95% UCL of the mean = 30.71698
 90% UCL of the mean = 28.39986

Iterations: 2000
 No. of Samples: 37

Interstate Block A
 TPH-mo

	Bin	Frequency
73		
2.5	19.04054	1
2.5	20.92998	3
2.5	22.81941	3
2.5	24.70885	6
21	26.59828	12
2.5	28.48771	24
2.5	30.37715	27
2.5	32.26658	45
2.5	34.15602	49
180	36.04545	77
51	37.93489	78
2.5	39.82432	102
2.5	41.71376	130
2.5	43.60319	112
76	45.49263	139
2.5	47.38206	134
2.5	49.2715	127
18	51.16093	127
24	53.05037	122
2.5	54.9398	118
78	56.82924	89
2.5	58.71867	107
2.5	60.60811	77
110	62.49754	77
140	64.38698	52
2.5	66.27641	35
120	68.16585	26
340	70.05528	28
170	71.94472	14
2.5	73.83415	14
50	75.72359	13
65	77.61302	10
73	79.50246	7
22	81.39189	3
150	83.28133	1
2.5	85.17076	7
	87.0602	1
	88.94963	0



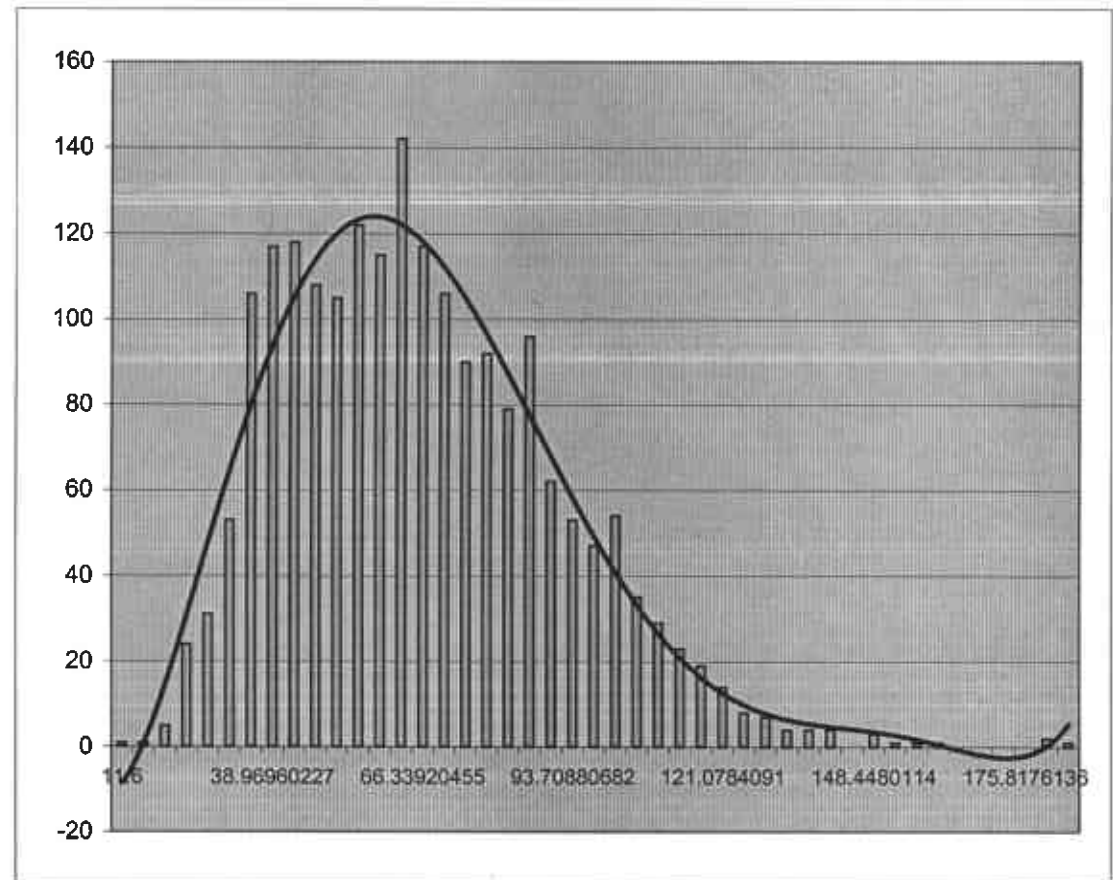
Average = 48.84927
 Standard Deviation = 11.2472

95% UCL of the mean = 67.40714
 90% UCL of the mean = 63.24568

Iterations: 2000
 No. of Samples: 32

Interstate Block B
 TPH-mo

	Bin	Frequency
770		
6.2	11.6	1
2.5	15.50994	1
78	19.41989	5
96	23.32983	24
2.5	27.23977	31
2.5	31.14972	53
2.5	35.05966	106
170	38.9696	117
2.5	42.87955	118
2.5	46.78949	108
2.5	50.69943	105
2.5	54.60938	122
92	58.51932	115
84	62.42926	142
110	66.3392	117
77	70.24915	106
110	74.15909	90
2.5	78.06903	92
7	81.97898	79
49	85.88892	96
2.5	89.79886	62
2.5	93.70881	53
2.5	97.61875	47
2.5	101.5287	54
2.5	105.4386	35
2.5	109.3486	29
82	113.2585	23
2.5	117.1685	19
210	121.0784	14
24	124.9884	8
2.5	128.8983	7
	132.8082	4
	136.7182	4
	140.6281	4
	144.5381	0
	148.448	3
	152.358	1
	156.2679	1

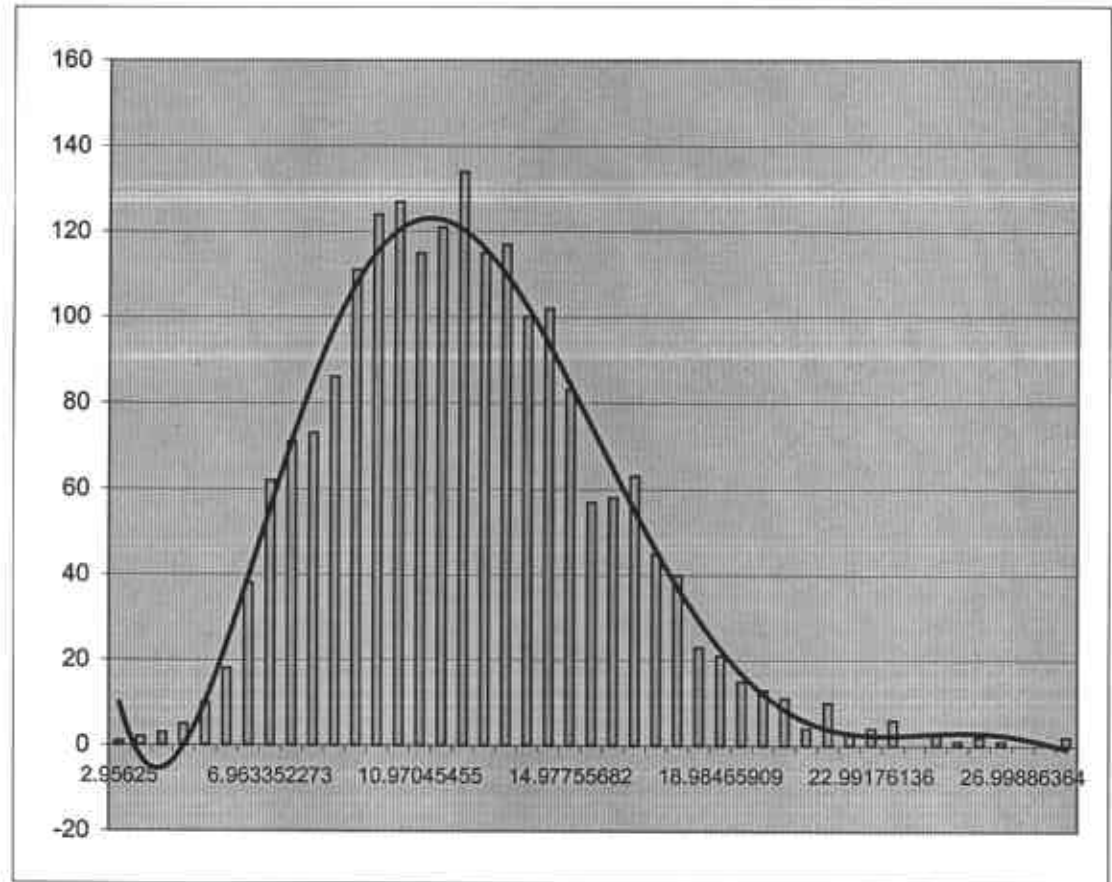


Average = 64.03419
 Standard Deviation = 24.79622
 95% UCL of the mean = 104.9479
 90% UCL of the mean = 95.77335

Iterations: 2000
 No. of Samples: 32

Interstate Block B
 TPH-d

	Bin	Frequency
100	2.95625	1
3.6	3.528693	2
0.5	4.101136	3
16	4.67358	5
18	5.246023	10
0.5	5.818466	18
0.5	6.390909	38
0.5	6.963352	62
29	7.535795	71
0.5	8.108239	73
0.5	8.680682	86
0.5	9.253125	111
20	9.825568	124
22	10.39801	127
29	10.97045	115
21	11.5429	121
22	12.11534	134
0.5	12.68778	115
4.1	13.26023	117
11	13.83267	100
0.5	14.40511	102
0.5	14.97756	83
0.5	15.55	57
0.5	16.12244	58
0.5	16.69489	63
0.5	17.26733	45
11	17.83977	40
0.5	18.41222	23
61	18.98466	21
4.9	19.5571	15
0.5	20.12955	13
	20.70199	11
	21.27443	4
	21.84688	10
	22.41932	3
	22.99176	4
	23.5642	6
	24.13665	0



Average = 11.96721
 Standard Deviation = 3.646586
 95% UCL of the mean = 17.98408
 90% UCL of the mean = 16.63484