

5090
Ser 1842.2/5032
12 May 1995

California Regional Water Quality Control Board
San Francisco Bay Region
Attn: Ms. Gina Kathuria
2101 Webster Street, Suite 500
Oakland, California 94612

Subj: INSTALLATION RESTORATION PROGRAM (IRP), NAVAL FUEL DEPOT,
POINT MOLATE (NFDPM), CA; BIOREMEDIATION PAD

Ref: (a) RWQCB ltr dtd May 4, 1995 File No: 2119-1057 (GK)

Encl: (1) PRC ltr dtd May 10, 1995; NFD Point Molate, Response to RWQCB Comments
on the Bioremediation Pad Design

Dear Ms. Kathuria:

Enclosure (1) is forwarded in response to the RWQCB's ref (a) letter. The response addresses the RWQCB concerns on the Bioremediation Pad Design and documents the compliance to Title 23, Chapter 15. If you have any questions, the point of contact is the undersigned RPM at (415) 244-2552.

Sincerely,

Original signed by:

DEAN SAKAKIHARA
Remedial Project Manager

Copy to (w/encl):

California Department of Toxic Substances Control (Attn: Randy Adams)
Naval Fuel Depot, Point Molate (Attn: LT Ron Black)
Fleet Industrial Supply Center, Oakland (Attn: R. Hegarty, Code 714)

Blind copy (w/o encl) to:

18, 1842, 1842.1, 1842.2
LT. M. Blumenberg (w/ encl)
Admin Record (3 copies)
Chron, green
File: NFD Point Molate



May 10, 1995

Mr. Lou Ocampo
Department of the Navy
Engineering Field Activity West
Naval Facilities Engineering Command
900 Commodore Drive, Building 208
San Bruno, CA 94066-2402

CLEAN Contract Number N62474-88-D-5086
Contract Task Order (CTO) 0248

Subject: Naval Fuel Depot (NFD) Point Molate, Response to California Regional Water Quality Control Board (RWQCB) Comments on the Bioremediation Pad Design

Dear Lou:

This letter responds to RWQCB comments on the bioremediation pad design presented in a letter to the Navy dated May 4, 1995. Following are point-by-point responses to RWQCB comments.

Comment 1. In the design description there is no "work space" provided for vehicles to maneuver on the high density polyethylene (HDPE) liner. Commonly, approximately 6 inches of sand ("work space") is placed on top of the liner so as to reduce abrasion of the liner from vehicles driving on top of it. Please add the 6 inch sand layer to the biopad design.

Response: A 6-inch thick sand layer has been placed on the HDPE liner.

Comment 2. The biopad is designed to have collected leachate pumped and treated in the existing wastewater treatment plant on an as needed basis. The additional flow and waste load to the wastewater treatment plant will require an amendment to the existing National Pollutant Discharge Elimination System (NPDES) permit or dispose/treat the leachate in another manner (for example, store in baker tanks and treat elsewhere).

Response: The construction contractor has been instructed to provide a baker tank to store leachate that accumulates in the biopad leachate collection area. The leachate will be treated and disposed of off-site when the baker tank becomes filled.

Comment 3. The biopad design does include a cover to avoid contact between contaminated soil and stormwater, but then stormwater is diverted to the berms where it will be treated. It is not necessary to treat stormwater that has not come in contact with the contaminated soil on the biopad. The RWQCB staff recommends covering both the biopad and the berms so as to avoid treating clean stormwater.

Response: To the extent possible, the liner cover will be placed on the biopad such that stormwater will not contact soil and will be drained outside of the pad.

Mr. Lou Ocampo
May 10, 1995
Page 2

Comment 4. The detection monitoring system suggested is inadequate. The monitoring wells recommended by the Navy are already impacted by contamination from base activities. An alternative leak detection monitoring system needs to be in place.

Response: As agreed during a conference call between the Navy and RWQCB on May 2, 1995, groundwater will be monitored at wells MW11-20, MW11-22, and MW11-23 biannually for total anions, biological oxygen demand (BOD), and semivolatile organic compounds (SVOCs). These analytes were chosen since they will provide an indication of whether chemicals produced or added during soil bioremediation have been released from the biopad. Groundwater samples were collected from these wells before placing soil on the pad. Chemical data obtained from these samples will serve as a benchmark for evaluating biannual sampling analytical data.

Comment 5. In the 100 percent design, there is not enough information regarding bioremediation processes that will take place on the biopad. Please describe: (1) the biological and chemical aspects of the bioremediation, (2) the operation and maintenance components of the biopad in terms of soil management to minimize dust, exposure to the workers and the environment and air emissions (please check with the Air Board for permit requirements), (3) how would you monitor the bioremediation for its effectiveness, and (4) how the treated soil will be tested to determine its end use.

Response: Excavated soils will be allowed to dry on the pad until a 30 to 40 percent moisture content is reached. At this point, nutrients will be mixed in the soil to encourage bioremediation of petroleum contaminants. Soil will likely remain on the pad for 4 to 12 months. Performance of the soil treatment process will be monitored during this period to determine the need for additional nutrients and soil mixing (aeration). This information is provided in Section 5.3 of the 100 percent design basis report.

As stated in the response to agency comments on the 100 percent design, excavated soils will be treated to levels accepted by RWQCB under a separate construction contract. This will allow for characterizing excavated soil prior to determining treatment requirements. Further details regarding treatment criteria and operational procedures will be contained in future construction (soil treatment) documents. These documents will be submitted approximately 3 months after completing extraction trench construction.

PRC evaluated Bay Area Air Quality Management District (BAAQMD) emission requirements and their applicability to excavated spoils. Based on this evaluation, the biopad appears to meet the substantive requirements of BAAQMD regulations. Documentation supporting this conclusion is attached.

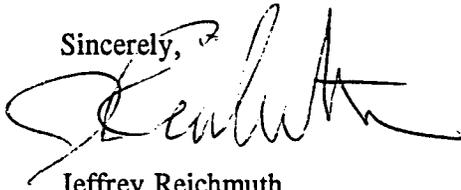
Comment 6. In the 100 percent design, there is no information as to how long the biopad will be used or when and how the biopad will be closed after its use. Please provide this information.

Mr. Lou Ocampo
May 10, 1995
Page 3

Response: Soil will likely remain on the pad for a period of 4 to 12 months after placement; the exact duration will depend on the end use of the soil and associated treatment requirements. These factors will be evaluated in greater detail in future design documents (see response to Comment 5). Upon concurrence with state regulatory agencies, the biopad may be used for treatment of contaminated soil excavated under future removal or remedial actions. A closure plan will be submitted to the state agencies for review before treatment pad closure.

Please call me at (303) 295-1101 if you have questions or comments regarding this matter.

Sincerely,



Jeffrey Reichmuth
Project Manager

Attachment

cc: Mr. David West, PRC

BAAQMD COMPLIANCE SUPPORT DOCUMENTATION



Environmental Management, Inc.

CALCULATION / WORK SHEET

SHEET _____ OF _____

PROJECT: POINT MEDIATE		COMPONENT/SYSTEM BIOPAD	
PREPARED BY: [Signature]		EPAQMD RITE EVALUATION	
DATE: 11/20/95	CHECKED BY:	DATE:	

OBJECTIVE: DETERMINE NEED FOR AIR PERMIT BASED ON EPAQMD REG'S & SITE DATA

CALCS/EVAL:

- REG 6, RULE 40 TPA AGRATION OF CONTAMINATED SOIL, TP 6-40-113 STATES THAT NON-VOLATILE HYDROCARBONS ARE EXEMPT FROM PERMIT/RULE TRITE. THE EXEMPTION APPLIES TO HYDROCARBONS W/ BOILING POINTS ABOVE 302 °F.
- FUELS AT TPA ARE DIESEL AND TRUNKET. ALSO, ISOLATED TOLUENE, XYLENE, & ETHYLBENZE HTS IN TPA. BASED ON CHEMICAL COMPOSITION OF DIESEL (ATTACHMENT A), BOILING POINT DATA (ATTACHMENT B), & REG 6 (ATTACHMENT C), CONTAMINATED SOILS SHOULD BE EXEMPT FROM PERMIT TRITE.
- FOLLOWING SHEETS PROVIDE SUPPORT FOR THIS CONCLUSION.



PROJECT:		COMPONENT/SYSTEM	
PREPARED BY:	DATE:	CHECKED BY:	DATE:

DECEL EVALUATIONS

ALKANES: LIGHTEST COMPONENT IS NONANE

NONANE BP = 202°F (> 202°F)

THUS, ALL ALKANES IN DECEL ARE EXEMPT.

AROMATICS: THEY ARE PRIMARY VOLATILES AT SITE. AS SEEN IN ATTACHMENT A, BTEX CO. 2%. SINCE WE HAVE BTEX DATA IN TPA CHARACTERIZATION REPORT, WE WILL EVALUATE ON THAT BASIS.

BTEX DETECTIONS SUMMARY

	TPL DETECTION FREQUENCY	SB11-21	SB11-22	SB11-20
BENZENE	0 of 21	ND	ND	ND
XYLENES	3 of 21	7 J	20	750
TOLUENE	1 of 21	2 J	ND	ND
ETHYLBENZENE	2 of 21	3 J	ND	300

BORINGS SB11-27 & SB11-20 ARE LOCATED MORE THAN 150- FEET FROM TRENCH AND SO THIS SOIL WILL NOT BE EXCAVATED. ALSO, BORINGS DRILLED NEARER TO TRENCH AND IN GENERAL AREA OF TRENCH SHOWED NO BTEX (SB11-13 & SB11-14). ESTIMATED DETECTIONS OF XYL, TOL, & EB AT SB11-21 ARE LOW.



Environmental Management, Inc.

CALCULATION / WORK SHEET

SHEET _____ OF _____

PROJECT:		COMPONENT/SYSTEM	
PREPARED BY:	DATE:	CHECKED BY:	DATE:

OVERALL, BORINGS ALONG TRENCH ALIGNMENT SHOW NO TETEX CONTAMINATION (EXCEPT SE11-21 AT LOW ESTIMATED VALUES). MORE THAN LIKELY SOIL SAMPLES FROM EXCAVATE STALLS WILL SHOW NON DETECT TAP TETEX. SO, ASSUME ONLY ALKANE HYDROCARBONS IN SOL.

ATTACHMENT A

APPENDIX J

CHEMICAL COMPOSITION OF DIESEL FUEL

Compound	Number of Carbons	Concentration (Weight/Percent)	Reference
<u>Straight Chain Alkanes</u>			
n-Nonane	9	0.1	6,7
n-Decane	10	0.5 - 2	1,2,6,7
n-Undecane	11	0.98 - 9	1,2,6,7
n-Dodecane	12	0.96 - 11	1,2,6,7
n-Tridecane	13	1.1 - 10	1,2,6,7
n-Tetradecane	14	1.1 - 9	1,2,6,7
n-Pentadecane	15	1.0 - 7	1,2,6,7
n-Hexadecane	16	1.2 - 6	1,2,6,7
n-Heptadecane	17	1.2 - 6	1,2,6,7
n-Octadecane	18	0.82 - 5	1,2,6,7
n-Nonadecane	19	0.53 - 4	1,2,6,7
n-Eicosane	20	0.23 - 3	1,2,6,7
n-Heneicosane	21	1	1,2,7
n-Docosane	22	< 0.2	1,2,7
<u>Branched Alkanes</u>			
2-Methylheptadecane	18		7
2,6,10,14-Tetramethylpentadecane	19		1
2,6,10,14-Tetramethylpentadecane	20		1
<u>Alkyl Benzenes</u>			
Benzene	6		7
Toluene	7		7
o-Xylene	8		7
m-Xylene	8		7
p-Ethyltoluene	9		7
o-Ethyltoluene	9		7
m-Ethyltoluene	9		7
Isopropylbenzene	9		7
1,2,3-Trimethylbenzene	9		7
1,2,4-Trimethylbenzene	9		7
1,3,5-Trimethylbenzene	9		7
1,2,3,5-Tetramethylbenzene	10		7
1,2,4,5-Tetramethylbenzene	10		7
Pentamethylbenzene	11		7
Hexamethylbenzene	12		7

FIG. 16 - 1

PHYSICAL CONSTANTS OF HYDROCARBONS(27)

No.	Compound	Formula	1. Molecular weight	2. Boiling point, °F 14.696 psia	Vapor pressure, psia 100 °F	3. Freezing point, °F 14.696 psia	Critical constants		
							Pressure, psia	Temperature, °F	Volume, ft ³ /lb
1	Methane	CH ₄	16.043	-258.74(28)	(5000.)	-298.45 ^d	667.8	-118.68	0.0688
2	Ethane	C ₂ H ₆	30.070	-127.44	(800.)	-297.04 ^d	707.8	90.10	0.0788
3	Propane	C ₃ H ₈	44.097	-43.73	188.0	-305.82 ^d	616.3	206.01	0.0737
4	<i>n</i> -Butane	C ₄ H ₁₀	58.124	31.12	51.54	-217.05	550.7	306.82	0.0703
5	Isobutane	C ₄ H ₁₀	58.124	10.74	72.39	-255.28	529.1	274.96	0.0724
6	<i>n</i> -Pentane	C ₅ H ₁₂	72.151	98.91	15.575	-201.51	488.6	385.6	0.0674
7	Isopentane	C ₅ H ₁₂	72.151	82.11	20.444	-255.82	490.4	369.03	0.0679
8	Neopentane	C ₅ H ₁₂	72.151	49.10	36.66	2.21	464.0	321.06	0.0673
9	<i>n</i> -Hexane	C ₆ H ₁₄	86.178	155.73	4.960	-139.58	436.9	453.6	0.0687
10	2-Methylpentane	C ₆ H ₁₄	86.178	140.47	6.769	-244.59	436.6	436.74	0.0682
11	3-Methylpentane	C ₆ H ₁₄	86.178	145.89	6.103	—	453.1	448.2	0.0682
12	Neohexane	C ₆ H ₁₄	86.178	121.51	9.859	-147.77	446.9	420.04	0.0668
13	2,3-Dimethylbutane	C ₆ H ₁₄	86.178	136.36	7.406	-199.37	453.5	440.20	0.0665
14	<i>n</i> -Heptane	C ₇ H ₁₆	100.205	209.16	1.6201	-131.05	396.8	512.7	0.0690
15	2-Methylhexane	C ₇ H ₁₆	100.205	194.09	2.2719	-180.89	396.5	494.89	0.0673
16	3-Methylhexane	C ₇ H ₁₆	100.205	197.33	2.1310	—	408.1	503.67	0.0648
17	3-Ethylpentane	C ₇ H ₁₆	100.205	200.28	2.0130	-181.48	419.3	513.36	0.0665
18	2,2-Dimethylpentane	C ₇ H ₁₆	100.205	174.54	3.494	-190.86	402.2	477.12	0.0665
19	2,4-Dimethylpentane	C ₇ H ₁₆	100.205	176.88	3.293	-182.63	397.0	475.84	0.0668
20	3,3-Dimethylpentane	C ₇ H ₁₆	100.205	186.91	2.774	-210.03	427.1	505.74	0.0682
21	Triptane	C ₇ H ₁₆	100.205	177.58	3.375	-12.84	428.4	496.33	0.0636
22	<i>n</i> -Octane	C ₈ H ₁₈	114.232	258.21	0.5370	-70.17	360.6	564.10	0.0690
23	Diisobutyl	C ₈ H ₁₈	114.232	228.40	1.1017	-132.18	360.6	530.31	0.0676
24	Isooctane	C ₈ H ₁₈	114.232	210.63	1.7089	-181.28	372.5	519.33	0.0657
25	<i>n</i> -Nonane	C ₉ H ₂₀	128.259	303.48	0.1796	-64.28	331.8	610.54	0.0684
26	<i>n</i> -Decane	C ₁₀ H ₂₂	142.286	345.49	0.0609	-21.35	304.4	651.6	0.0679
27	Cyclopentane	C ₅ H ₁₀	70.135	120.65	9.914	-138.96	653.0	481.2	0.0594
28	Methylcyclopentane	C ₆ H ₁₂	84.162	161.26	4.503	-224.43	549.0	499.24	0.0607
29	Cyclohexane	C ₆ H ₁₂	84.162	177.31	3.266	43.80	590.9	536.6	0.0589
30	Methylcyclohexane	C ₇ H ₁₄	98.189	213.67	1.6093	-195.86	503.6	570.15	0.0601
31	Ethene (Ethylene)	C ₂ H ₄	28.054	-154.79(29)	—	-272.47 ^d	731.1	48.56	0.0748
32	Propene (Propylene)	C ₃ H ₆	42.081	-53.90	227.6	-301.45 ^d	667.2	197.06	0.0689
33	1-Butene (Butylene)	C ₄ H ₈	56.108	20.79	62.10	-301.63 ^d	583.5	295.48	0.0688
34	<i>cis</i> -2-Butene	C ₄ H ₈	56.108	38.70	45.95	-218.04	612.1	324.37	0.0668
35	<i>trans</i> -2-Butene	C ₄ H ₈	56.108	33.58	49.94	-157.99	587.0	311.86	0.0679
36	Isobutene	C ₄ H ₈	56.108	19.56	63.64	-220.63	580.0	292.55	0.0682
37	1-Pentene	C ₅ H ₁₀	70.135	85.93	19.117	-265.40	511.8	376.93	0.0676
38	1,2-Butadiene	C ₄ H ₆	54.092	51.53	36.5	-213.14	(653.0)	(340.)	(0.0649)
39	1,3-Butadiene	C ₄ H ₆	54.092	24.06	59.40(45)	-164.04	628.0	305.	0.0655
40	Isoprene	C ₅ H ₈	68.119	93.33	16.68	-230.71	(558.4)	(412.)	(0.0650)
41	Acetylene	C ₂ H ₂	26.038	-120.78 ^e	—	-113.4 ^d	890.4	95.32	0.0695
42	Benzene	C ₆ H ₆	78.114	176.16	3.225	41.96	710.4	552.22	0.0525
43	Toluene	C ₇ H ₈	92.141	231.13	1.0330	-138.98	595.5	605.57	0.0549
44	Ethylbenzene	C ₈ H ₁₀	106.168	277.16	0.3716	-138.96	523.4	651.29	0.0565
45	<i>o</i> -Xylene	C ₈ H ₁₀	106.168	291.97	0.2643	-13.32	541.6	674.92	0.0557
46	<i>m</i> -Xylene	C ₈ H ₁₀	106.168	282.42	0.3265	-54.17	512.9	651.02	0.0567
47	<i>p</i> -Xylene	C ₈ H ₁₀	106.168	281.05	0.3424	55.87	509.2	649.54	0.0570
48	Styrene	C ₈ H ₈	104.152	293.25	0.238	-23.10	580.0	706.0	0.0541
49	Isopropylbenzene	C ₉ H ₁₂	120.195	306.34	0.188	-140.86	465.4	676.3	0.0572
50	Methyl Alcohol	CH ₄ O	32.042	148.17	4.631	-143.79	1174.	463.08	0.0589
51	Ethyl Alcohol	C ₂ H ₆ O	46.069	172.92	2.3125	-173.4	925.8	465.39	0.0580
52	Carbon Monoxide	CO	28.010	-312.68	—	-337.00 ^d	507.5(33)	-220.41(33)	0.0532(33)
53	Carbon Dioxide	CO ₂	44.010	-109.32 ^e	—	-69.77 ^d	1071.(33)	87.87(33)	0.0342(33)
54	Hydrogen Sulfide	H ₂ S	34.076	-76.56	387.1(44)	-121.58 ^d	1036.	212.6	0.0460
55	Sulfur Dioxide	SO ₂	64.059	13.96	85.48(44)	-103.81 ^d	1145.	315.8	0.0304
56	Ammonia	NH ₃	17.031	-27.99(30)	211.9(44).	-107.88 ^d	1636.	270.4	0.0681
57	Air	N ₂ + O ₂	28.964	-317.8(36)	—	—	546.9(2)	-221.4(2)	0.0517(3)
58	Hydrogen	H ₂	2.016	-423.17 ^v	—	-434.81 ^{d,v}	188.1	-399.9	0.5164
59	Oxygen	O ₂	31.999	-297.332 ^v	—	-361.820 ^{d,v}	736.9	-181.2(33)	0.0367
60	Nitrogen	N ₂	28.013	-320.44(31)	—	-346.00 ^d	493.0	-232.7	0.0516
61	Chlorine	Cl ₂	70.906	-29.25	154.9(44)	-149.73 ^d	1118.	291.	0.0280
62	Water	H ₂ O	18.015	212.00 ^v	0.9495	32.00	3207.9	705.5	0.0509
63	Helium	He	4.003	-452.07(32)	—	—	32,990(32)	-450.308(32)	0.2300(32)
64	Hydrogen Chloride	HCl	36.461	-121.00	906.3(44)	-173.52 ^d	1205.	124.8	0.0356

REGULATION 8
ORGANIC COMPOUNDS
RULE 40
AERATION OF CONTAMINATED SOIL
AND
REMOVAL OF UNDERGROUND STORAGE TANKS
(Adopted July 16, 1986)

8-40-100 GENERAL

- 8-40-101 **Description:** The purpose of this Rule is to limit the emission of organic compounds from soil that has been contaminated by organic chemical or petroleum chemical leaks or spills; to describe an acceptable soil aeration procedure; and to describe an acceptable procedure for controlling emissions from underground storage tanks during removal or replacement. (Amended February 15, 1989)
- 8-40-110 **Exemption, Storage Piles:** Calculations of aeration volume under Section 8-40-204 shall not include storage piles that are covered per Section 8-40-303; nor shall they include active storage piles.
- 8-40-111 **Exemption, Excavated Hole:** The exposed surfaces of an excavated hole shall not be included in calculations of aerated volume under Section 8-40-204.
- 8-40-112 **Exemption, Sampling:** Contaminated soil exposed for the sole purpose of sampling shall not be considered to be aerated. Removal of soil for sampling shall not qualify a pile as "active."
- 8-40-113 **Exemption, Non-volatile Hydrocarbons:** The requirements of all sections of this Rule shall not apply if the soil is contaminated solely by a known organic chemical or petroleum liquid, and that chemical or liquid has an initial boiling point of 302°F or higher, provided that the soil is not heated. (Amended February 15, 1989)
- 8-40-114 **Exemption, Soil Excavation During Pipeline Leak Repairs:** The requirements of Section 8-40-402 shall not apply if soil is being excavated in order to repair leaking pipelines and if no more than 5 cubic yards are generated, and provided the requirements in Section 8-40-404 are satisfied. (Adopted February 15, 1989)
- 8-40-115 **Exemption, Soil Excavation Unrelated to Underground Storage Tank Activities:** The requirements of Section 8-40-402 shall not apply where contaminated soil is discovered during excavations unrelated to underground storage tank activities, and provided the requirements in Section 8-40-405 are satisfied. (Adopted February 15, 1989)

8-40-200 DEFINITIONS

- 8-40-201 **Active Storage Pile:** A pile of contaminated soil to which soil is currently being added or from which soil is currently being removed. Activity must have occurred or be anticipated to occur within one hour to be current.
- 8-40-202 **Aeration:** Exposure of excavated contaminated soil to the air.
- 8-40-203 **Aeration Depth:** The smaller of the following: the actual average depth of contaminated soil; or 0.15 meters (0.5 feet) multiplied by the daily frequency with which soil is turned. (Amended February 15, 1989)
- 8-40-204 **Aeration Volume:** The volume of soil being aerated shall be calculated as follows: the exposed surface area (in square feet or square meters) shall be multiplied by the aeration depth. The exposed surface area includes the pile of excavated soil unless the pile is covered per Section 8-40-303. (Amended February 15, 1989)
- 8-40-205 **Contaminated Soil:** Soil which has an organic content, as measured using the procedure in Section 8-40-602, exceeding 50 ppm(wt).

- 8-40-206 **Organic Compound:** Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate.
- 8-40-207 **Organic Content:** The concentration of organic compounds measured in the composite sample collected and analyzed using the procedures in Sections 8-40-601 and 8-40-602.
- 8-40-208 **Vapor Free:** The process of purging gases from a tank using dry ice to replace organic vapors with an inert atmosphere.
- 8-40-209 **Ventilation:** The process of purging gases from a tank by blowing or drawing another gas through the tank.
- 8-40-210 **Emergency Removal or Replacement or Excavation:** A removal or replacement of a tank or an excavation of soil carried out pursuant to an order of a state or local government agency issued because the contaminated soil poses an imminent threat to public health and safety. (Adopted February 15, 1989)

8-40-300 **STANDARDS**

- 8-40-301 **Uncontrolled Aeration:** A person shall not aerate contaminated soil at a rate in excess of that specified in Table 1 for the degree of organic content. The limitations in Table 1 apply to the entire facility, and indicate the volume of contaminated soil that may be added, on any one day, to soil that is already aerating.

Table 1
Allowable Rate of Uncontrolled Aeration

ORGANIC CONTENT ppm(weight)	RATE OF UNCONTROLLED AERATION	
	Cubic meters/day	Cubic yards/day
<50	Exempt	Exempt
50 - 99	459.0	600
100 - 499	91.8	120
500 - 999	45.9	60
1000 - 1999	22.9	30
2000 - 2999	11.5	15
3000 - 3999	7.6	10
4000 - 4999	5.7	8
> 5000	0.08	0.1

(Amended February 15, 1989)

- 8-40-302 **Controlled Aeration:** Soil may be aerated at rates exceeding the limitations of 8-40-301 provided emissions of organic compounds to the atmosphere are reduced by at least 90% by weight.
- 8-40-303 **Storage Piles:** Contaminated soil which is not being aerated shall be covered except when soil is being added or removed. Any uncovered contaminated soil will be considered to be aerated. The soil may be covered with a layer of uncontaminated soil no less than six inches deep; or it may be covered with a tarp or other covering, provided no head space where vapors may accumulate is formed and provided the covering is in good condition and is secured adequately so as to minimize emissions to the atmosphere. (Amended February 15, 1989)
- 8-40-310 **Underground Storage Tanks - Removal or Replacement:** Any person wishing to permanently remove or replace an underground storage tank which previously contained organic compounds shall follow the following procedure:
310.1 All piping shall be drained or flushed into the tank or other container.

310.2 All liquids and sludges shall be removed, to the extent possible, from the tank. A hand pump shall be used to remove the bottom few inches of product if necessary.

310.3 Vapors shall be removed from the tank using one of the following three methods:

3.1 The tank may be filled with water, displacing vapors and hydrocarbon liquids. Water used for this purpose must be collected and/or disposed of in a manner approved by the APCO.

3.2 Vapor freeing.

3.3 Ventilation.

(Amended February 15, 1989)

8-40-311 **Vapor Freeing:** No person shall vapor free a tank containing more than 0.001 gallons of liquid organic compounds per gallon of tank capacity unless emissions of organic compounds to the atmosphere are reduced by at least 90%.

8-40-312 **Ventilation:** No person shall ventilate a tank containing more than 0.001 gallons of liquid organic compounds per gallon of tank capacity unless emissions of organic compounds to the atmosphere are reduced by at least 90%.

8-40-400 ADMINISTRATIVE REQUIREMENTS

8-40-401 **Reporting, Removal or Replacement of Tanks:** The person responsible for the removal or replacement of tanks which are subject to the provisions of Sections 8-40-310 shall provide written notice to the APCO of intention to remove or replace tanks. The written notice shall be postmarked at least 5 days prior to commencement of such removal or replacement. In the case of emergency removal or replacement of tanks, notice shall be provided as early as possible prior to the commencement of such emergency removal or replacement, to be followed by written verification. The written notice of intention shall include:

401.1 Names and addresses of persons performing and responsible for the tank removal or replacement

401.2 Location of site at which tank removal or replacement will occur

401.3 Scheduled starting date of tank removal or replacement. The scheduled starting date may be delayed for no more than 5 working days, provided the APCO is notified by telephone as early as possible prior to the new starting date.

401.4 Procedures to be employed to meet the requirements of Sections 8-40-310.

401.5 If applicable, name, title and authority of the state or local government representative who has ordered a tank removal or replacement which is subject to emergency procedures.

(Adopted, February 15, 1989)

8-40-402 **Reporting, Excavation of Soil:** The person responsible for the excavation of soil subject to the provisions of Sections 8-40-301 or 302 shall provide written notice to the APCO of intention to excavate. The written notice shall be postmarked at least 5 days prior to commencement of such excavation. In the case of emergency excavations, notice shall be provided as early as possible prior to the commencement of such emergency excavation, to be followed by written verification. Written notice of intention to excavate may be submitted to the APCO at the same time written notice of intention to remove or replace tanks is submitted provided that such notification precedes the commencement of either tank removal or replacement or soil excavation by at least 5 days as indicated by postmark. The written notice of intention shall include:

402.1 Names and addresses of persons performing and responsible for excavation.

402.2 Location of site at which excavation will occur.

- 402.3 Scheduled starting date of excavation. The scheduled starting date may be delayed for no more than 5 working days, provided the APCO is notified by telephone as early as possible prior to the new starting date.
- 402.4 Procedures to be employed to meet the requirements of Sections 8-40-301 or 302.
- 402.5 If applicable, name, title and authority of the state or local government representative who has ordered an excavation which is subject to emergency procedures. (Adopted February 15, 1989)
- 8-40-403 **Reporting, Aeration of Contaminated Soil:** The person responsible for aeration of any contaminated soil shall provide the District, by telephone, with the following information. This shall be provided no less than 24 hours prior to the spreading or heating of any contaminated soil. The District shall again be notified within 24 hours of a change in one or more of the following parameters.
- 403.1 Estimated total quantity of soil to be aerated.
- 403.2 Estimated quantity of soil to be aerated per day.
- 403.3 Estimated average degree of contamination, or total organic content of soil.
- 403.4 Chemical composition of contaminating organic compounds (i.e., gasoline, methylene chloride, etc.).
- 403.5 A description of the basis on which these estimates were derived (soil analysis test reports, etc.). (Amended, Renumbered February 15, 1989)
- 8-40-404 **Reporting, Soil Excavation During Pipeline Leak Repairs:** The person responsible for the excavation of no more than 5 cubic yards of soil generated by a pipeline leak repair shall provide written notice to the APCO as early as possible, but not later than 10 working days, after excavation is completed. The written notice shall include:
- 404.1 Names and addresses of persons performing and responsible for excavation.
- 404.2 Location of site at which excavation occurred.
- 404.3 Date of excavation.
- 404.4 Quantity of soil excavated.
- 404.5 Estimated average degree of contamination, or total organic content of soil. (Adopted February 15, 1989)
- 8-40-405 **Reporting, Soil Excavations Unrelated to Underground Storage Tank Activities:** The person responsible for soil excavations unrelated to underground storage tank activities where contaminated soil is discovered shall provide notice as early as possible upon detection of such contaminated soil, to be followed by written verification. The written verification shall include:
- 405.1 Names and addresses of persons performing and responsible for excavation.
- 405.2 Location of site at which excavation occurred.
- 405.3 Date of excavation.
- 405.4 Quantity of soil excavated.
- 405.5 Estimated average degree of contamination, or total organic content of soil. (Adopted February 15, 1989)
- 8-40-600 **MANUAL OF PROCEDURES**
- 8-40-601 **Soil Sampling:** One composite sample shall be collected and analyzed for every 50 cubic yards of excavated contaminated soil to be aerated. At least one composite sample shall be collected from each inactive, uncovered storage pile within 24 hours of excavation. Samples are not required if the soil is uncontaminated.
- 601.1 Each composite sample shall consist of four separate soil samples taken using the procedures described below. The soil samples shall remain separate until they are combined in the laboratory just prior to analysis.

601.2 Each 50 cubic yard pile for which a composite sample is required shall be considered to have four equal sectors. One sample shall be taken from the center of each sector. Samples shall be taken from at least three inches below the surface of the pile. Samples shall be taken using one of the following methods:

1.1 Samples shall be taken using a driven-tube type sampler, capped and sealed with inert materials, and extruded in the lab in order to reduce the loss of volatile materials; or

1.2 Samples shall be taken using a clean brass tube (at least three inches long) driven into the soil with a suitable instrument. The ends of the brass tube shall then be covered with aluminum foil, then plastic end caps, and finally wrapped with a suitable tape. The samples shall then be immediately placed on ice, or dry ice, for transport to a laboratory.

(Amended February 15, 1989)

8-40-602 Measurement of Organic Content: Organic content of soil shall be determined by the Regional Water Quality Control Board's Revised Analytical Methods, Attachment 2, 11/8/85, any other method approved by the APCO, or EPA Reference Method 8010 or 8015.

(Amended February 15, 1989)

8-40-603 Determination of Emissions: Emissions of organic compounds as specified in Sections 8-40-302, 8-40-311 and 8-40-312, shall be measured as prescribed in the Manual of Procedures, Volume IV, ST-7.

(Amended February 15, 1989)