

Table I-11: Rule 1176 Survey - Refinery 3

Component ID	Type	Date	PPM	Back-grnd.	JB Emis. (lb/yr)	MHC Emis. (lb/yr)	Rechk Date	PPM	Back-grnd.	JB Emis. (lb/yr)	MHC Emis. (lb/yr)	Comments
4-1-03-99	MHC	4/12/96	80	6		3.21	4/19/96	300	3		7.28	
408 A	MHC	4/12/96	100	5		3.72	4/19/96	30	3		1.77	
1*54	JB	4/12/96	0	5	0.08		4/19/96	0	3	0.08		
408	MHC	4/12/96	0	5		0.08	4/19/96	0	3		0.08	
2-3-05-102	MHC	4/12/96	0	5		0.08	4/19/96	250	3		6.53	
2-3-05-107	MHC	4/12/96	0	5		0.08	4/19/96	50	3		2.46	
1*53	JB	4/12/96	0	5	0.08		4/19/96	25	3	1.57		
4-1-05-104	MHC	4/12/96	0	5		0.08	4/19/96	0	3		0.08	
4-1-05-104A	MHC	4/12/96	0	5		0.08	4/19/96	0	3		0.08	
2-3-05-303	MHC	4/12/96	0	5		0.08	4/19/96	50	4		2.43	
2-2-05-105	MHC	4/12/96	0	4		0.08	4/19/96	0	2		0.08	
205	MHC	4/12/96	50	4		2.43	4/19/96	0	2.5		0.08	
2-2-05-106	MHC	4/12/96	0	4		0.08	4/19/96	0	3		0.08	
2-2-05-106A	MHC	4/12/96	0	4		0.08	4/19/96	0	4		0.08	
2-2-05-107	MHC	4/12/96	0	4		0.08	4/19/96	0	4		0.08	
2-2-05-107A	MHC	4/12/96	0	4		0.08	4/19/96	0	4		0.08	
AA-3	MHC	4/12/96	0	4		0.08	4/19/96	0	3		0.08	Open draining visible
Total (Regular Flow)					0.16	10.29				1.65	21.24	

Notes:

- Emissions from Regular flow Junction Box (JB) and Manhole Cover (MHC) were calculated using the 1995 EPA correlation equation for "Others".
- Junction box vents have loop seals and are subject to Rule 1173, Rule 1176 and BWNESHAP
- All manholes are sealed with caulking which are replaced every 3 months as needed.
- Visual inspection of manholes quarterly for NESHAP compliance.

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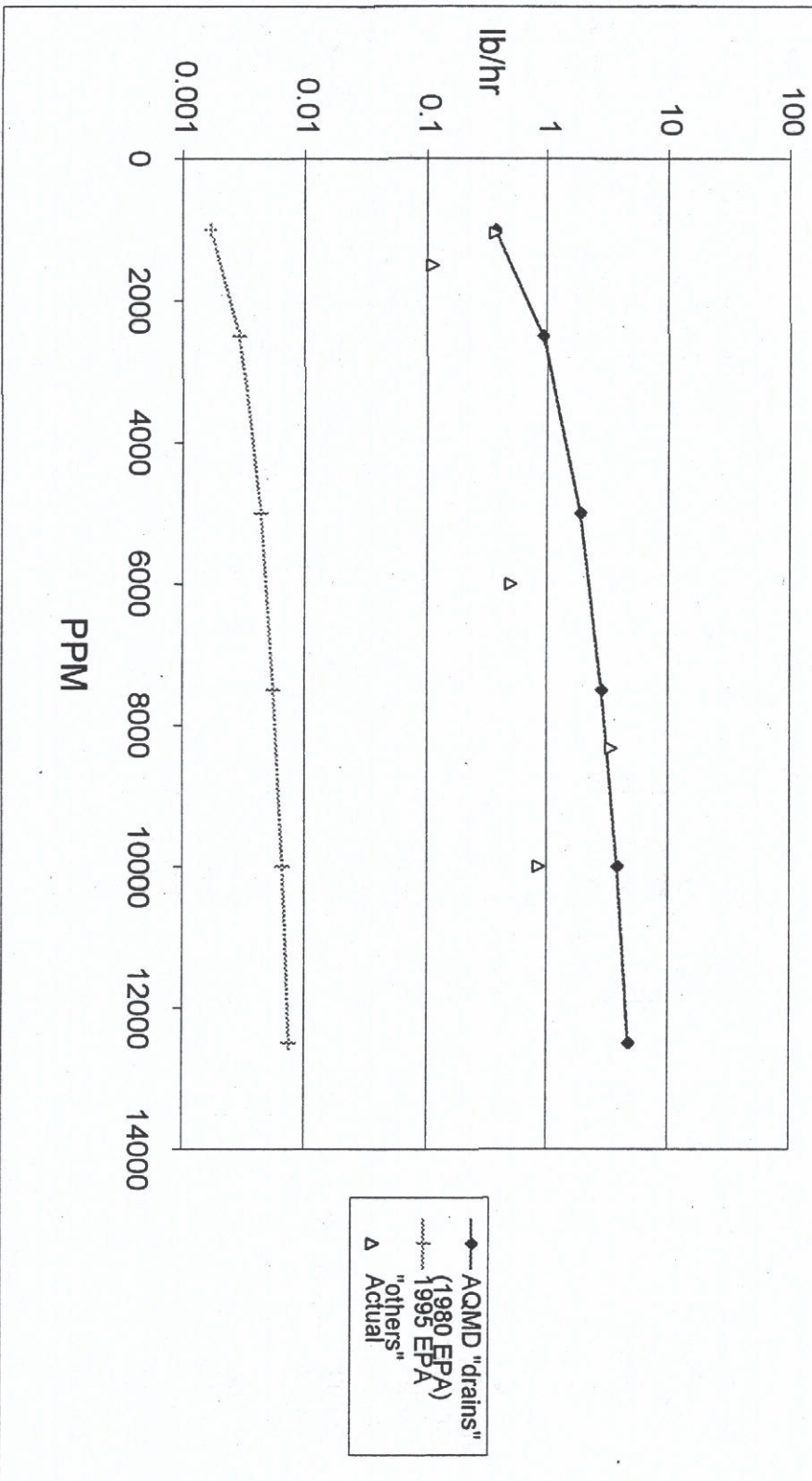
Table I-12: Rule 1176 Survey - Refinery 11

Component ID	Type	Date	PPM	Back- grnd.	JB Emis. (lb/yr)	MHC Emis. (lb/yr)	Rechk Date	PPM	Back- grnd.	JB Emis. (lb/yr)	MHC Emis. (lb/yr)	Comments
HCOD	JB	4/11/96	5	5	0.08		4/18/96	5	5	0.08		Tank Area
W/VR												
LCOD Rain	JB	4/11/96	5	5	0.08		4/18/96	5	5	0.08		CRD Area
Crude Pkg. W	MHC	4/11/96	100	5		3.72	4/18/96	5	5		0.08	CRD Area
Crude Pkg. E	MHC	4/11/96	100	5		3.72	4/18/96	5	5		0.08	CRD Area
Crude Pkg. W	MHC	4/11/96	5	5		0.08	4/18/96	5	5		0.08	CRD Area
Crude Pkg. E	MHC	4/11/96	5	5		0.08	4/18/96	5	5		0.08	CRD Area
LCOD Crude Unit	JB	4/11/96	75	5	3.11		4/18/96	10	5	0.66		CRD Area
LCOD Crude Unit	JB	4/11/96	30	10	1.49		4/18/96	200	5	5.68		CRD Area
LCOD ON	MHC	4/11/96	75	10		2.97	4/18/96	50	5		2.39	CRD Area
HCOD	JB	4/11/96	N/A	N/A			4/18/96	N/A	N/A			S. of DCU
LCOD Near Sep. #6	MHC	4/11/96	5	5		0.08	4/18/96	5	5		0.08	Hard Piped
LCOD VR	JB	4/11/96	N/A	N/A			4/18/96	N/A	N/A			Near Sep #7
LCOD HGU #2	JB	4/11/96	N/A	N/A			4/18/96	N/A	N/A			For HGU #2
With 5 Manholes	MHC	4/11/96	5	5		0.08	4/18/96	5	5		0.08	Same
2	MHC	4/11/96	5	5		0.08	4/18/96	5	5		0.08	Same
3	MHC	4/11/96	5	5		0.08	4/18/96	5	5		0.08	Same
4	MHC	4/11/96	5	5		0.08	4/18/96	5	5		0.08	Same
5	MHC	4/11/96	5	5		0.08	4/18/96	5	5		0.08	Same
Total (Regular Flow)					4.75	11.04			75.00	6.49	3.18	

Notes:

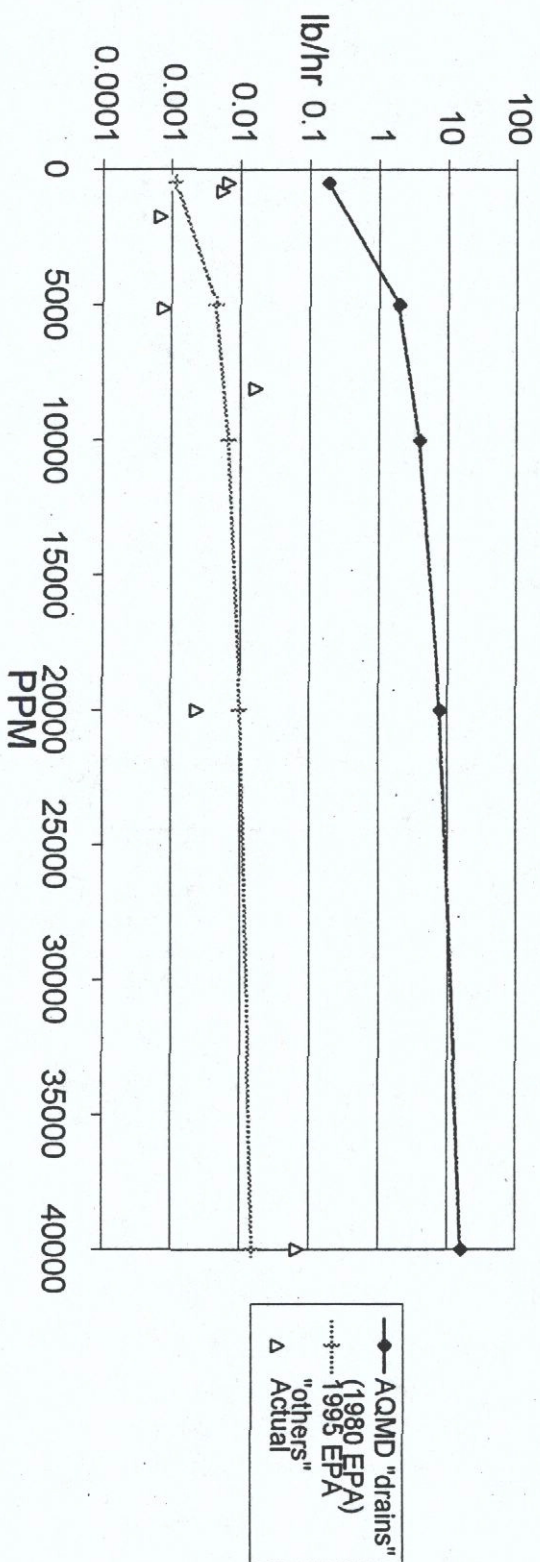
- Emissions from Regular flow Junction Box (JB) and Manhole Cover (MHC) were calculated using the 1995 EPA correlation equation for "Others".
- The OVA readings were taken from components which are part of the storm drain system. The wastewater system is hardpiped.

**Figure I-1: Emission Correlation for "Positive Flow"
Vents & Openings**



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**Figure I-2: Emission Correlation for "Regular Flow"
Vents & Openings**



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Rule 1176 Cost-Effectiveness Calculations

Appendix II

Table II-1: Cost Effectiveness Calculations for All Drains

DISCOUNTED CASH FLOW (DCF) METHOD	
COST OF CONTROL = Present Value / Emissions Reduced Over the Equipment Life	
Present Value = $C + A \cdot PVF(n, r-i)$	A = annual operating & maint. cost
where: C = upfront capital outlay,	r = market interest rate
n = economic life of the project,	i = inflation rate, and
$PVF = \text{present value factor } 1, \text{ calculated from the formula in the table}$	
(e.g. if n = 10 years, (r-i) = 4%, ; $PVF = 8.11$)	
Total No. of Refinery drains in the District (Based on 1994 Emission Fee Billing Reports)	
No. of controlled drains from 3 Refineries	18,292
Remaining no. of Refinery drains to be controlled	6,676
Emission inventory for Refinery drains (Based on the 1994 EFB data), in tons/day	11,616
Emissions from controlled drains from 3 Refineries, in tons/day	2.27
Remaining uncontrolled Refinery drain emissions, in tons/day	0.80
No. of drains from other sources in the District	1.47
Default zero emission from each drain, in lb/yr	305
Total emissions from drains - other sources, in tons/day	28.87
Total emissions from drains - all sources, in tons/day	0.012
Assumed control efficiency of water seal, in percent	1.49
Estimated drain emissions controlled, in tons/day	65.0
Current I & M program (Monthly Inspections):	0.97
No. of inspections required for the total drain population @ 12 insp./yr	223,164
No. of inspections per operator (Assume 100 inspections/day, 5 days/wk, 48 wks/yr)	24,000
No. of operators required for current I & M program	9.30
Annual cost of operator (including salary and benefits)	\$ 50,000
Annual cost of OVA operation	\$ 2,500
Annual cost of current I & M program	\$ 488,171
Future I & M program requirements (Semi-annual inspections):	
No. of inspections required for the total drain population of 18,292 @ 2 insp./yr	36,584
No. of inspections per operator (Assume 100 inspections/day, 5 days/wk, 48 wks/yr)	24,000
No. of operators required for future I & M program	1.52
Annual cost of operator (including salary and benefits)	\$ 50,000
Annual cost of OVA operation per operator	\$ 2,500
Annual cost of future I & M program	\$ 80,028
Annual savings in operation and maintenance costs	\$ (408,144)
Present Value (PV) = $C + A \cdot PVF(n, r-i)$	
Capital cost for each drain (Based on actual cost of \$360/drain incurred by a refinery)	\$ 400
Capital cost of control for all remaining uncontrolled drains	\$ 4,788,400
Equipment Life (n) = 10 years, Real interest (r-i) = 4%, therefore $PVF = 8.11$	
Present Value	\$ 1,458,354
Cost Effectiveness (\$/ton reduced)	\$ 414

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Table II-2: Cost Effectiveness Calculations for Junction Boxes with Positive Flow Using Flameless Thermal Oxidizer

No. of JBs with positive flow in the District	18
No. of additional JBs to be controlled due to flow variations	5
No. of JBs from Refinery 3 requiring additional controls	4
Total No. of JBs in the District requiring controls	27
Ave. Emissions for each positive flow JB, in lb/yr	37,789
Total emissions inventory, in tons/yr	340.10
Total emission inventory, in tons/day	0.93
Control Efficiency of flameless thermal oxidizers, in percent	95
Total controlled emissions	0.89
Capital cost of a 5-scfm flameless thermal oxidizer (includes oxidizer, electric heater, power controller & panel, knockout pot, air eductor, and all instrumentation)	\$ 55,000
Capital cost of Furne blower	5,000
Sales Tax (8%)	4,800
Freight	1,500
Total Purchased Equipment Cost (PEC)	66,300
Total Capital Cost = 1.81 PEC (from Table 4.2-6, Capital Cost for Thermal Incinerators, EPA Handbook: Control Technologies for HAPs, June 1991)	106,743
Total capital cost for all JBs requiring control	2,882,061
Annual operating and maintenance costs for each thermal oxidizer:	
Cost of electricity for Oxidizer (3kW), blower (1kW), and control panel (1kW) (5kWh total, \$0.10/kWh, 50% average usage)	\$ 2,190
Maintenance cost	1,000
Source test cost (Annual Performance test)	3,000
Total operating & maintenance costs per unit	\$ 6,190
Total cost of annual operation and maintenance for all JBs requiring controls	\$ 167,130
Cost of I & M program	none
Present Value (PV) = $C + A \cdot PVF(n, r-i)$	
Equipment Life (n) = 10 years, Real interest (r-i) = 4%, therefore $PVF = 8.11$	
Present value	\$ 4,237,485
Cost Effectiveness (\$/ton reduced)	\$ 1,312

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Table II-3: Cost Effectiveness Calculations for Junction Boxes with Positive Flow Using Activated Carbon

No. of JBS with positive flow in the District	18
No. of additional JBS to be controlled due to flow variations	5
No. of JBS from Refinery 3 requiring additional controls	0
Total No. of JBS in the District requiring controls	23
Ave. Emissions for each JB with positive flow (lb/yr)	37,789
Ave. Emissions for each positive flow JB (lb/day)	103.53
Wt. of Carbon Required for one day emissions (Assume 15% wt. adsorption capacity)	690
Recommended weight/size of carbon canister (lbs)	2,000
Estimated Life of a 2000-lb canister (days)	2.9
Initial cost of a 2000-lb canister (including vessels)	\$ 4,000
Total capital cost for all JBS requiring controls	\$ 92,000
Replacement cost per lb carbon (Based on a manufacturer's carbon reactivation charge of \$0.65/lb plus estimated labor cost of \$0.35/lb)	\$ 1.00
Adsorption capacity of a 2000 lb carbon canister (lb)	300
Annual replacement weight of carbon for each positive flow JB (lb)	249,927
Operating cost for each JB	\$ 249,927
Operating cost for all JBS requiring controls	\$ 5,748,315
Total no. of inspections/yr (based on monitoring frequency of once every 2 days/ carbon)	4,198
No. of inspections/operator @ 100 insp/day, 5days/wk, 48 wks/yr	24,000
Cost of I & M program/yr (Based on \$50,000/operator & \$2,500 OVA maint./operator)	\$ 8,182
Total Annual Operating and Maintenance cost	\$ 5,757,497
Present Value (PV) = $C + A \cdot PVF(n, r)$ Capital cost for the initial carbon canisters Equipment Life (n) = 10 years, Real interest (r) = 4%, therefore $PVF1 =$	\$ 92,000
Present value	\$ 8.11
Annual emissions from JBS with positive flow, in tons/day	\$ 46,785,300
Control efficiency of carbon, in percent	0.93
Annual controlled emissions	95
Cost Effectiveness (\$/ton reduced)	0.89
	\$ 14,480

Table II-4: Cost Effectiveness Calculations for Junction Boxes with Regular Flow and All Manhole Covers

	Junction Box (Reg. Flow)	Manhole Covers
DISCOUNTED CASH FLOW (DCF) METHOD		
COST OF CONTROL = Present Value / Emissions Reduced		
Over the Equipment Life		
Present Value = $C + A \cdot PVF(n, r)$		
where: C = upfront capital outlay, A = annual op/mnt. cost		
n = economic life of the project, r = market interest rate		
i = inflation rate, and		
PVF1 = present value factor 1, calculated from the formula in the table		
(e.g. if n = 10 years, (r) = 4%, $PVF1 = 8.11$)		
Total no. of components in the District	158	1,410
Total emissions, in tons/day	0.004	1.85
Assumed control efficiency of water seal for JBS and plugs for MHCS	65.0	65.0
Estimated emissions controlled, in ton/day	0.003	1.203
Future I & M program requirements (Semi-annual inspections):		
No. of inspections required @ 2 insp/yr	316	2,820
No. of inspections per operator	24,000	24,000
(Assume 100 inspections/day, 5 days/wk, 48 wks/yr)		
No. of operators required for future I & M program	0.01	0.12
Annual cost of operator (including salary and benefits)	\$ 50,000	\$ 50,000
Annual cost of OVA operation per operator	\$ 2,500	\$ 2,500
Annual cost of future I & M program	\$ 691	\$ 6,169
Present Value (PV) = $C + A \cdot PVF(n, r)$ Capital cost for each unit	\$ 400	\$ 400
(Based on actual cost of \$360/unit incurred by a refinery)		
Total Capital cost of control	\$ 63,200	\$ 64,000
Equipment Life (n) = 10 years, Real interest (r) = 4%, therefore $PVF1 =$	\$ 8.11	\$ 8.11
Present Value	\$ 68,806	\$ 614,029
Cost Effectiveness (\$/ton reduced)	\$ 7,250	\$ 140

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Table II-5: Summary of Cost Effectiveness Calculations for Drains, Junction Boxes & Manhole Covers

SCENARIO 1: Using Flameless Oxidizer for Positive Flow Junction Box	All Drains	Junction Box (Positive Flow)	Junction Box (Regular Flow)	All Manhole Covers	Total
Control Options	Water seal / Cap / Plug / Source Reduction	Flameless Oxidizer	Water seal / Cap / Plug / Source Reduction	Plug / Gasket / Caulk	
Emission Inventory (tons/day)	1.49	0.93	0.004	1.85	4.27
Control Efficiency, in percent	65	95	65	65	
Emission Reduction (tons/day)	0.97	0.89	0.003	1.20	3.06
Capital & Installation Costs	4,768,400	2,882,061	63,200	564,000	8,277,661
Annual Op'g. & Maint. Costs*	(408,144)	167,130	691	6,169	(234,154)
Present Value (10 yr. lifetime)	1,458,354	4,237,485	68,806	614,029	6,378,674
Cost Effectiveness (\$ / Ton Reduced)	\$ 414	\$ 1,312	\$ 7,250	\$ 140	\$ 572

SCENARIO 2: Using Activated Carbon for Positive Flow Junction Box	All Drains	Junction Box (Positive Flow)	Junction Box (Regular Flow)	All Manhole Covers	Total
Control Options	Water seal / Cap / Plug / Source Reduction	Activated Carbon	Water seal / Cap / Plug / Source Reduction	Plug / Gasket / Caulk	
Emission Inventory (tons/day)	1.49	0.93	0.004	1.85	4.27
Control Efficiency, in percent	65	95	65	65	
Emission Reduction (tons/day)	0.97	0.89	0.003	1.20	3.06
Capital & Installation Costs	4,768,400	92,000	63,200	564,000	5,487,600
Annual Op'g. & Maint. Costs*	(408,144)	5,748,315	691	6,169	5,347,031
Present Value (10 yr. lifetime)	1,458,354	46,785,300	68,806	614,029	48,926,489
Cost Effectiveness (\$ / Ton Reduced)	\$ 414	\$ 14,480	\$ 7,250	\$ 140	\$ 4,386

Note: * Annual operating & maintenance costs for all drains show a reduction due to lesser monitoring frequency.

Table II-6: Summary of Incremental Cost Effectiveness of Control Options

SCENARIO 1:	Option 1	Diff. of Option 1 & 2	Option 2	Diff. of Option 2 & 3	Option 3	Option 4
Using Flameless Oxidizer for Positive Flow Junction Box	Drains Only		Drains & JBs	Option 2 & 3	Drains, JBs & MHCs	Enclosed Drainage System
Emission Inventory (tons/day)	1.49	0.94	2.42	1.85	4.27	4.27
Emission Reduction (tons/day)	0.97	0.89	1.85	1.20	3.06	4.27
Present Value (10 yr. lifetime)	1,458,354	4,306,291	5,764,646	614,029	6,378,674	Not Cost Eff.
Cost Effectiveness (\$ / Ton Reduced)	\$ 414	\$ 852	\$ 572	\$ 572	Not Cost Eff.	
Incremental Cost Effectiveness (\$ / Ton Reduced)		\$ 1,329	\$ 140			

Option 1: Controlling Drains Only
Option 2: Controlling Drains & Junction Boxes
Option 3: Controlling Drains, Junction Boxes & Manhole Covers
Option 4: Enclosing the drainage system totally. This was not evaluated in detail because of cost and technical infeasibility.

SCENARIO 2:	Option 1	Diff. of Option 1 & 2	Option 2	Diff. of Option 2 & 3	Option 3	Option 4
Using Activated Carbon for Positive Flow Junction Box	Drains Only		Drains & JBs	Option 2 & 3	Drains, JBs & MHCs	Enclosed Drainage System
Emission Inventory (tons/day)	1.49	0.94	2.42	1.85	4.27	4.27
Emission Reduction (tons/day)	0.97	0.89	1.85	1.20	3.06	4.27
Present Value (10 yr. lifetime)	1,458,354	46,854,106	48,312,460	614,029	48,926,489	Not Cost Eff.
Cost Effectiveness (\$ / Ton Reduced)	\$ 414	\$ 7,139	\$ 4,386	Not Cost Eff.		
Incremental Cost Effectiveness (\$ / Ton Reduced)		\$ 14,459	\$ 140			

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Table II-7: Annual Cost Savings Due to Reduced Monitoring

Facility	No.	Current Monitoring		Future Monitoring		Annual Savings
		Frequency	Annual Cost	Frequency	Annual Cost	
Bulk Terminals ¹	32	Monthly	57,800	None	0	\$ 57,800
Chemical Plants ²	61	Monthly	109,800	Quarterly	36,600	73,200
Refinery ³						
Drains ³	3,184	Monthly	83,676	Semi-Annual	13,946	69,730
APC Device S. Tests ⁴	15	Semi-Annual	90,000	Annual	12,000	78,000
Total			173,676		25,946	147,730

Notes:

- There are at least 32 Bulk Terminals which are definitely subject to the monitoring requirements of the current rule. It is assumed that there are 10 drains per terminal and that it will cost \$150 per visit to monitor each site.
- There are 61 Chemical Plants covered by the current rule. It is assumed that there are 5 drains per chemical plant and that it will cost \$150 per visit to monitor each site.
- Cost of inspection per drain was calculated based on the following assumptions:
 - No. of inspections per operator per year = 24,000
 - Annual Cost of operator (Salary & Benefits) = \$50,000
 - Annual cost of OVA operation = \$2,500
 - Therefore cost of monitoring for each drain is \$2.19.
- There are 15 APC Devices in Refinery 3 which require semi-annual performance tests by the current rule. Based on available data, it is assumed that 11 APC Devices will only require monitoring and no more performance tests. The remaining four APC Devices will still require annual performance test. It is assumed that the cost of each performance test is \$3,000.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ADDENDUM TO STAFF REPORT

FINAL
SOCIOECONOMIC IMPACT ASSESSMENT

PROPOSED AMENDED RULE 1176
VOC Emissions From Wastewater Systems

SEPTEMBER 1996

Prepared by: Francis Goh
Program Supervisor/Senior
Project Coordinator

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Socioeconomic Assessment

The proposed amendments to Rule 1176 (VOC Emissions from Wastewater Systems) are intended to further reduce VOC emissions from all components of wastewater systems and better achieve compliance with existing performance standards in Rule 1176. The amendments include clarification of rule language, added definitions, improved inspection and maintenance requirements, and revisions to the frequency of monitoring and source testing. In addition, the proposed amendments will subject junction box vents and manhole covers to the existing excess emissions standard of 500 parts per million (ppm) VOCs. Lastly, bulk loading terminals will no longer be subject to this rule under the proposed amendments.

Affected Industries

The proposed amendments will impact petroleum refineries (SIC 29), chemical plants (SIC 28) and bulk loading terminals (SIC 517). Oil production fields (SIC 1311) and industrial facilities engaged in the production and distribution of natural gas, crude petroleum or petroleum products (SICs 492, 461) would also be subject to the proposed amendments, however, it is expected that these facilities are already in compliance with the proposed amendments and will not incur any significant compliance costs. Based on the AQMD's permitting database, there are 12 refineries and 61 chemical plants that could potentially be affected by the proposed amendments. An estimated 13,500 drains, junction boxes and manhole covers at these facilities could be subject to control requirements in the proposed amendments.

Under the current Rule 1176, bulk loading terminals that handle gasoline (about 30 percent of the 141 bulk loading terminals listed in the AQMD's permitting database) are exempt from the rule. The proposed amendments would extend this exemption to all bulk loading terminals.

Range of Costs and Cost-Effectiveness

The proposed amendments require the control of VOC emissions from drains, junction box vents and manhole covers. Applicable control equipment includes, among other controls, water seals, plugs, and emissions control devices such as a carbon adsorber, a thermal oxidizer, or other combustion device, a condensation unit, a flameless incineration unit, or a catalytic oxidation unit. This analysis considered the most and least expensive control options in an effort to estimate the potential range of compliance costs. The most costly control option would be the installation of carbon adsorbers at all positive flow junction boxes. The least costly control option assumes the use of flameless thermal oxidizers. Potential control technologies whose costs fall within the range of the above two options were not specifically analyzed. The costs of inspection, maintenance and sealing or plugging of drains and manhole covers were considered to apply equally to facilities choosing carbon adsorbers or thermal oxidizers.

The total capital cost, with carbon adsorbers at all positive flow junction boxes, was estimated at \$5.5 million. The total capital cost, with installation of flameless thermal oxidizers at junction boxes, is approximately \$8.3 million. Cost savings which would result from the reduced inspections and monitoring required for

¹ All figures are in terms of 1996 dollars unless otherwise noted.

controlled drains were considered as part of the operating and maintenance costs. As a result, the annual operating and maintenance costs range from a net cost savings of approximately \$234,000 per year for facilities using thermal oxidizers to approximately \$5.4 million per year for facilities using carbon adsorbers.

The total annualized compliance costs (levelized cash-flow method) for all affected sources was derived by assuming a 4 percent real interest rate and a 10 year equipment life. The resulting cost estimates range from approximately \$789,000 per year (thermal oxidizers) to approximately \$6.03 million per year (carbon adsorbers). It should be noted that the proposed amendments will also result in a cost savings to bulk terminals as a result of their exemption from the rule requirements. The savings to such facilities was considered minimal and, therefore, was not included in this analysis.

The cost-effectiveness of the proposed amendments ranges from approximately \$572 per ton of VOC reduced (thermal oxidizers) to approximately \$4,386 per ton (carbon adsorbers). Table 1 compares the estimated average cost-effectiveness of Proposed Rule 1176 with AQMD source-specific rules and other regulations and indicates that the proposed amendments are within the range of previously adopted rules.

Table 1
Cost-Effectiveness Comparison of
Proposed Amended Rule 1176

Rule	Description	Cost-Effectiveness (1996 \$/ton)
461	Gasoline Transfer & Dispensing	1,540
1136	Wood Products Coatings	1,610 - 3,020
1153	Commercial Bakery Ovens	1,900 - 2,500
1176	Wastewater Systems	572 - 4,386
1610	Old Vehicle Scrapping (VOC)	6,280

Impacts on Employment and the Local Economy

Potential impacts of the proposed amendments were analyzed using the AQMD's Socioeconomic REMI model (1993). The analysis indicated a potential employment impact resulting from compliance by use of thermal oxidizers of approximately seven jobs forgone per year, on average between 1997 and 2010. It is estimated that the use of carbon adsorbers could result in approximately 50 jobs on average forgone per year between the same years.

Alternatives, Emission Reduction Potential, and Necessity of Rule Amendment

The 1994 Air Quality Management Plan (AQMP) analyzed and ranked all control measures by their cost-effectiveness. The proposed amendments to Rule 1176 replaces control measure FUG-02--Emissions from Active Draining of Liquid Products, which relates to wastewater systems, in the 1994 AQMP. The 1994 AQMP discussion of control measures and their cost-effectiveness is incorporated herein by reference as though set forth in full.

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The proposed amendments are intended to better achieve compliance with existing performance standards, and to make these standards applicable to junction boxes and manhole covers. The emission reduction potential and the necessity of the proposed amendments are discussed in the Staff Report.

Rule Adoption Relative to the Cost-Effectiveness Schedule

On October 14, 1994, the AQMD Governing Board adopted a resolution that requires staff to address whether proposed rules being considered for adoption are being presented in order of cost-effectiveness as defined in the 1994 AQMP. The proposed amendments to Rule 1176 replaces control measure FUG-02, as set forth in the 1994 AQMP. The 1994 AQMP ranked FUG-02 seventeenth in order of cost-effectiveness and scheduled this measure for adoption in 1993. Thus, Proposed Amended Rule 1176 is being considered for adoption in accordance with the ranking of control measures by cost-effectiveness. The estimated cost-effectiveness of FUG-02 falls within the range of cost-effectiveness of the proposed amendments.

Incremental Cost-Effectiveness

Pursuant to Health and Safety Code, Section 40920.6, an incremental cost-effectiveness analysis was performed for the various control requirements in the proposed rule. Incremental cost-effectiveness was calculated for three control options in each scenario. The analysis shows that the incremental cost-effectiveness ranges from \$78/ton when controlling for emissions from manhole covers, to \$14,459/ton when controlling for emissions from positive-flow junction boxes using activated carbon (please refer to the Staff Report for a detailed description and calculation of various incremental control options evaluated).

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Supplemental Environmental Assessment for:

Proposed Amended Rule 1176 - Volatile Organic Compound (VOC) Emissions from Wastewater Separators

August 1, 1996

Deputy Executive Officer
Barry R. Wallerstein, D.Env.

Director of Planning
Chung S. Liu, D.Env.

Planning Manager
Cindy S. Greenwald, J.D.

AUTHOR:

TARA TISORULOS - AIR QUALITY SPECIALIST

REVIEWED BY:

WILLIAM WONG - SENIOR DEPUTY DISTRICT COUNSEL
STEVE SMITH, PH.D. - PROGRAM SUPERVISOR
MOHSEN NAZEMI - SENIOR ENGINEERING MANAGER

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