UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Appendix 3
Administrative Order on Consent
U.S. EPA Docket No. 95-01

LORENTZ BARREL AND DRUM SUPERFUND SITE

ESTIMATE OF TOTAL CLEAN UP COSTS AND PREMIUM JUSTIFICATION[1]

September 15, 1994

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[1]Price per barrel calculations based on EPA's July 29, 1994 Waste-In List.

I. SUMMARY OF ESTIMATED TOTAL CLEAN UP COSTS

Federal	
EPA past and future costs	$10,852,265
State	
State of California past and future costs	5,190,309
Value of Settlements with Potentially Responsible Parties (PRPs)	
Shallow Groundwater Task Force past and future costs	6,588,029
Removal Group past and future costs	1,599,312
Future Settlements with PRPs	
Operable Unit 1 Operation & Maintenance	968,468
	$25,198,383

Clean up Activity	EPA Costs	State Costs	PRP Costs	Future Settle-ment	TOTAL
Operable Unit 2 (Shallow Groundwater)	$434,848	$108,653	$6,588,029	0	$7,131,530
Structures, Sump, and Debris Removal	$31,959	$13,378	$1,599,312	0	$1,644,649
Operable Unit 1 (Final Remedy)	$10,385,458	$5,068,278		$968,468 (O&M)	$16,422,204
TOTAL	**$10,852,265**	**$5,190,309**	**$8,187,341**	**$968,468**	**$25,198,383**

II. ESTIMATED CLEAN UP COSTS

Estimated EPA Costs for Operable Unit 2

A. EPA Oversight Costs	
Past Costs (through 12/31/93)[1]	359,867
Estimated Future Costs	
Oversight at $4,206/yr., 28.5 years[2]	63,172
Six 5-year reviews at $4,630/yr.[3]	11,809
TOTAL	**$ 434,848**

Notes and Assumptions

1. Past costs through December 31, 1993 are summarized in the Itemized Cost Summary Report for Site ID number 9-X8, dated June 28, 1994 (Attachment 2).

2. Based on EPA oversight costs for the period of May 1992 to April 1993, EPA estimates 3 hours/month for Remedial Project Manager (RPM) oversight of OU-2, at $33/hour (payroll cost listed for a senior RPM at the end of FY-93), and 10 hours/year for an EPA Office of Regional Counsel (ORC) attorney, at $39/hour (payroll cost listed for a senior attorney at the end of FY-93). Indirect costs are estimated at $73/hour based on the most recent indirect rate listed in the June 28, 1994 Itemized Cost Summary Report (Attachment 2). An independent auditor determines the indirect rate for each EPA regional office. The $73/hour figure in the July 28, 1994 Itemized Cost Summary Report was calculated based on the 1988 indirect cost total for Region 9.

Annual RPM total = 36 hours x $33 =	$1,188
Annual indirect costs = 36 hours x $73 =	2,628
Annual ORC total = 10 hours x $39 =	390
Annual Total Oversight Costs =	$4,206

Since operation and maintenance (O & M) is projected to last for 30 years, the number of years estimated for oversight is 28.5 (1.5 years of oversight are included in past costs). The total present worth of annual O & M cost was calculated using a 5% annual interest rate for 28.5 years.

3. For each 5-year review, EPA estimates an additional 40 hours/year for the RPM, at $33/hour, and an additional 10 hours/year for ORC at $39/hour. Indirect costs are estimated at $73/hour.

RPM total, 5-yr review year = 40 hours x $33 =	$1,320
Indirect costs, 5-yr review year = 40 hours x $73 =	2,920
ORC total, 5-yr review year = 10 hours x $39 =	390
Total Oversight Costs, 5-Year Review Year =	$4,630

The total present worth of the six 5-year reviews was calculated using a 5% annual interest rate for each of the six years.

Estimated EPA Costs for Structures, Sumps, and Debris Removal Action

A.	EPA Oversight Costs	
	Past Costs (through 12/31/93)[1]	17,484
	Estimated Future Costs[2]	14,475
	TOTAL	**$ 31,959**

Notes and Assumptions

1. Past costs through December 31, 1993 are summarized in the Itemized Cost Summary Report for Site ID number 9-4N, dated June 28, 1994 (Attachment 2).

2. For the period January 1994 through April 1994, EPA estimates 5 hours/week for RPM oversight; for the period of May 1994 through September 1994, EPA estimates 2 hours/week for RPM oversight. Both periods are estimated at $33/hour (payroll cost listed for a senior RPM at the end of FY-93). For the period January 1994 through September 1994, EPA estimates 5 hours/month for an EPA ORC attorney, at $39/hour (payroll cost listed for a senior attorney at the end of FY-93). Indirect costs are estimated at $73/hour based on the current Itemized Cost Summary Report (Attachment 2).

RPM total, 1/94 through 4/94 = 80 hours x $33 =	$2,640
RPM total, 5/94 through 9/94 = 40 hours x $33 =	1,320
Indirect costs = (80 + 40) hours x $73 =	8,760
ORC total = 45 hours x $39 =	1,755
Total Oversight Costs =	$14,475

Estimated EPA Costs for Operable Unit 1 (Final Remedy)

A.	Estimated Capital Costs[1]	$ 1,001,522
C.	EPA Past Costs[2]	8,580,329
D.	Estimated EPA Future Enforcement Costs[3]	657,488
E.	Estimated EPA Oversight Costs	
	Oversight of Remedial Design/Remedial Action[4]	69,654
	Oversight at $4,206/yr., 30 years[5]	64,656
	Six 5-year reviews at $4,630/yr.[6]	11,809
	TOTAL	**$10,385,458**

Notes and Assumptions

1. EPA's August 26, 1993 Record of Decision (ROD) for Operable Unit 1 (OU-1) contains this estimate of capital costs for OU-1 (Attachment 3, Summary of Estimated Costs for the Selected Remedy).

2. Past costs through December 31, 1993 are summarized in the Itemized Cost Summary Report for Site ID number 9-89, dated June 28, 1994 (Attachment 2).

3. For the period of January 1994 to January 1996, EPA estimates 28 hours/week for an RPM at $33/hour (payroll cost listed for a senior RPM at the end of FY-93), 30 hours/week for an EPA ORC attorney at $39/hour (payroll cost listed for a senior attorney at the end of FY-93), and 28 hours/week each for two EPA Office of Enforcement and Compliance Assurance (OECA) attorneys at $39/hour (payroll cost listed for a senior attorney at the end of FY-93). These estimates assume that the RPM and OECA attorneys will each be spending 70% of their time on OU-1 enforcement activities; the ORC attorney, 75%. Indirect costs are estimated at $73/hour based on the current Itemized Cost Summary Report (Attachment 2).

RPM total, 1/94 through 1/96 = 2912 hours x $33 =	$ 96,096
Indirect costs = 2912 hours x $73 =	212,576
ORC total = 3120 hours x $39 =	121,680
OECA total = (2912 x 2) hours x $39 =	227,136
Total Future Enforcement Costs =	$657,488

4. For an 18-month period, EPA estimates 8 hours/week for 1) RPM review of Fund-lead remedial design (RD) or oversight of PRP-lead RD, and 2) RPM oversight of Fund-lead or PRP-lead remedial action (RA), at $33/hour (payroll cost listed for a senior RPM at the end of FY-93), and 5 hours/month for an EPA Office of Regional Counsel (ORC) attorney at $39/hour (payroll cost listed for a senior attorney at the end of FY-93). Indirect costs are estimated at $73/hour.

RPM total = 624 hours x $33 =	$20,592
Indirect costs = 624 hours x $73 =	45,552
ORC total = 90 hours x $39 =	3,510
Total RD Review/Oversight Costs =	$69,654

5. Based on EPA oversight costs for the period of May 1992 to April 1993 for OU-2, EPA estimates 3 hours/month for RPM oversight of OU-1, at $33/hour (payroll cost listed for a senior RPM at the end of FY-93), and 10 hours/year for an EPA ORC attorney, at $39/hour (payroll cost listed for a senior attorney at the end of FY-93). Indirect costs are estimated at $73/hour.

Annual RPM total = 36 hours x $33 =	$1,188
Annual indirect costs = 36 hours x $73 =	2,628
Annual ORC total = 10 hours x $39 =	390
Annual Total Oversight Costs =	$4,206

The total present worth of annual O & M cost was calculated using a 5% annual interest rate for 30 years.

6. For each 5-year review, EPA estimates an additional 40 hours/year for the RPM, at $33/hour, and an additional 10 hours/year for ORC at $39/hour. Indirect costs are estimated at $73/hour.

RPM total, 5-yr review year = 40 hours x $33 =	$1,320
Indirect costs, 5-yr review year = 40 hours x $73 =	2,920
ORC total, 5-yr review year = 10 hours x $39 =	390
Total Oversight Costs, 5-Year Review Year =	$4,630

The total present worth of the six 5-year reviews was calculated using a 5% annual interest rate for each of the six years.

Estimated PRP Costs for Operable Unit 2

A.	Capital Costs[1]	$ 2,312,000
B.	Operation & Maintenance	
	First 2 years O & M [2]	520,364
	Estimated Future O & M, 1994 - 2022 (28 years), $250,000/yr.[3]	3,724,525
C.	Estimate of PRP project management costs[4]	31,140
	TOTAL	**$ 6,588,029**

Notes and Assumptions

1. The capital cost amount was provided by Sarah Flanagan, counsel for the Lorentz Shallow Groundwater Task Force (Task Force), the potentially responsible party (PRP) group performing the Operable Unit 2 (OU-2) work pursuant to a July 6, 1990 consent decree. This approximate amount represents actual expenses incurred by the Task Force for design and construction of OU-2, and is close to the $2,022,000 amount estimated in EPA's September 22, 1988 OU-2 Record of Decision (ROD). The Task Force's letter describing OU-2 costs is attached as Attachment 4, and an EPA memorandum regarding a telephone call between EPA ORC and counsel for the Task Force regarding OU-2 costs is attached as Attachment 5.

2. The Task Force stated that O & M costs from May 1992 to March 1994 were $477,000 (Attachments 4 and 5). Using this figure, which represented 22 months, EPA derived a monthly figure and estimated annual costs of $260,182 for the first two years.

3. The Task Force estimated future O & M at $200,000 to $250,000 a year (Attachment 4). This figure is close to the $198,000 annual O & M figure estimated in EPA's OU-2 ROD. While it is unknown how many years of groundwater remediation will be necessary in order to meet the requirements of the 1988 OU-2 ROD, this estimate uses a 30 years period based on EPA's conclusion in the 1993 OU-1 ROD that the intermediate and deep aquifers should be monitored for shallow groundwater contaminant

migration for 30 years or until concentrations of VOCs in the shallow groundwater no longer pose a threat to the deeper aquifers. The total present worth of annual O & M cost, from May 1994 to May 2022, was calculated using a 5% annual interest rate for 28 years.

4. The Task Force stated that its capital cost total and its total for the first two years of O & M do not include in-house technical services provided by two of its member companies: Romic (Steve Henshaw) and DuPont (Michael Parr). The Task Force did not provide any estimate of the value of their services. Faced with a choice of not including any amount for these service or developing its own, EPA chose to generate an estimate based on the amount of time the EPA Remedial Project Manager (RPM) during the period in question estimated for each individual. EPA based its hourly pay rate on the RPM's hourly payroll cost at the end of FY-92, since no salary information was provided by the Task Force.

   EPA estimates for S. Henshaw 10 hours/week for 23 months, from the July 1990 consent decree entry through the May 1992 start of O & M, at $30/hour. For M. Parr, EPA estimates 2 hours/week for 12 months, from the July 1990 consent decree entry to the July 1991 remedial design completion, and 2 hours/month for 11 months, from remedial design completion through the May 1992 start of O & M, both periods at $30 hour.

Total for S. Henshaw = 920 hours x $30/hour =	$27,600
Total for M. Parr = (96 + 22) hours x $30/hour =	3,540
Total for S. Henshaw and M. Parr =	$31,140

Estimated PRP Costs for Structures, Sumps, and Debris Removal Action

A.	Estimated Total Removal Costs[1]	$ 1,599,312
	TOTAL	**$ 1,599,312**

Notes and Assumptions

1. The removal action total cost figure was provided by Bruce Klafter, counsel for the Removal Action Group, the PRP group performing the Structures, Sumps, and Debris Removal Action pursuant to an October 7, 1992 Administrative Order on Consent. The Removal Action Group's estimate included both the actual amount expended by the Removal Action Group through mid-February 1994, $656,312, and an estimate of $918,000 to complete the removal action. After EPA received this estimate, the RPM was informed by the Removal Action Group's project coordinator, Jennifer Hughes, that site paving costs would likely be higher than estimated; accordingly, the RPM modified the Removal Action Group's estimate to reflect a possible additional cost of $25,000. The Removal Action Group's letter describing removal action costs is attached as Attachment 6.

Estimated Future Settlement Costs for Operable Unit 1 (Final Remedy)	
A. Operation & Maintenance Estimated Total Present Worth of Annual O & M (30 years)[2]	968,468
TOTAL	**$ 968,468**

Notes and Assumptions

1. The OU-1 ROD contains this estimate of O & M for OU-1 (Attachment 3, Summary of Estimated Costs for the Selected Remedy). The total present worth of annual O & M cost was calculated using a 5% annual interest rate for 30 years.

Estimated State of California Costs

See Attachment 1 for the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) estimate of State clean up costs.

III. PREMIUM JUSTIFICATION

De minimis settlements with EPA involve paying money in exchange for an agreement from EPA not to sue a party for the clean up costs. When de minimis settlements occur prior to or during the clean up of a Superfund site, total clean up costs are not known and are, therefore, estimated. In order to protect EPA against the risk that the clean up will cost more than estimated, or that further clean up will be required because the selected clean up remedy does not clean up the site as expected, EPA requires a premium payment from parties in exchange for EPA assuming financial and future clean up risks. The term "premium payment" refers to a risk apportionment device, similar to an insurance premium, under which the risk taken by EPA is offset by a premium in excess of the cost projected to complete the clean up. In this de minimis settlement for the Lorentz Barrel and Drum Superfund site, the settlement with EPA and the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) involves paying money in exchange for an agreement from both EPA and DTSC not to sue a party for the clean up costs, except as provided in the Administrative Order on Consent.

Cost Overruns

OSWER Directive 9834.7-1D, "Streamlined Approach for Settlements with De Minimis Waste Contributors under CERCLA Section 122(g)(1)(A)," provides that EPA may assign a premium of 100% if offering a covenant not to sue without a remedy cost reopener. This guidance also recommends adjusting premium amounts to reflect other concerns, and specifically states that site conditions may justify a lower premium. Although the factors below indicate some of the potential for Operable Unit 1 remedy cost overruns, OU-1 remedial action costs are relatively small in proportion to the estimated total clean up cost for the site: $2 million of an estimated total cost of $25 million, which amounts to 6% of the estimated total cost. Accordingly, site conditions justify a premium less than 100% for cost overruns.

A premium of 50% is assigned to the basic price per barrel to protect EPA and DTSC against cost overruns on the Operable Unit 1 remedial action. Operable Unit 2 is not considered here because future work on OU-2 will be performed by the Lorentz Shallow Groundwater Task Force, a group of PRPs, pursuant to a consent decree with EPA.

This premium was developed based on the following considerations:

1. The costs estimated in the August 26, 1993 Record of Decision for OU-1 were derived with a level of accuracy of -30/50% pursuant to EPA guidance.

2. Although SVE is effective in removing VOCs in homogeneous soil, it may be less effective in the heterogeneous soils at the Lorentz Site. Reduced SVE efficiency may result in a longer period of treatment or a greater level of effort than estimated.

3. Poorly-identified former agricultural wells and the original San Jose State University (SJSU) Stadium well are conduits that may pose major problems. Some wells may be inaccessible under residential structures. The condition of these conduits and lack of well construction details may make removal especially difficult.

Remedy Failure

OSWER Directive 9835.6, "Guidance on Premium Payments in CERCLA Settlements," states that two general factors should be considered in determining the amount of premium for future liability (in the event of remedy failure): "the likelihood that future remediation will be required and the cost of such remediation." The factors below indicate that it is not highly likely that future remediation will be required based on the standard technologies used in the OU-1. Since it is possible

that SVE may not remove VOCs from the principal threat soil at the site, the cost of such future remediation, if required, is discussed below.

With respect to Operable Unit 2, no remedy failure premium is necessary because the construction and operation and maintenance costs estimated for the most expensive alternatives considered in the 1988 Record of Decision are only slightly greater than the 1988 estimated costs for the selected remedy, and the estimated operation and maintenance costs of these alternatives are approximately equal to the current annual costs for the OU-2 remedy. In the event that the selected OU-2 remedial action fails, the costs associated with further work would not differ significantly from the costs estimated in this document.

A premium of 50% is assigned to the basic price per barrel to protect EPA in the event of a failure of the remedy selected for Operable Unit 1. As stated above, OU-1 costs are relatively small in proportion to the estimated total clean up cost for the site. Accordingly, a 50% premium provides sufficient protection in the event that further response action will be necessary in addition to the work specified in the Record of Decision.

This premium was developed based on the following considerations:

Likelihood that future remediation will be required:

1. Capping is a proven technology using asphaltic-concrete and common construction techniques. Maintenance of the cap also uses common construction practices. Repairs for erosion, cracking, and deterioration can be easily accomplished.

2. Installation and operation of the SVE system can be accomplished using readily obtainable technology and materials. SVE is already being employed at other cleanup sites.

3. SVE may not effectively remove VOC's in the heterogeneous soils at the site.

The costs of future remediation if required in the event of SVE failure:

1. Principal threat soil, if allowed to remain in place, could impact the groundwater. In order to consider the worst case scenario from a cost perspective, the most expensive alternative in the 1993 Record of Decision, excavation and off-site disposal, was evaluated. The excavation and off-site disposal alternative would reduce the likelihood of VOC migration into the groundwater by excavating 9,700 tons of principal threat soil. However, this alternative would also excavate 55,300 tons of other contaminated soil, an

unnecessary action since the selected remedy caps such soil. If future remediation is required because of SVE failure, it is likely that it would be necessary to only excavate and dispose of 9,700 tons of soil, an amount equal to 15% of the 65,000 tons described under the excavation and disposal alternative. Using this figure of 15% of the soil estimated in this alternative to derive an estimate of the cost of excavating and disposing of only the principal threat soil, a figure of $1,294,221 is obtained. This estimate represents a figure 66% of the estimated OU-1 remedial action cost of $1,969,990.

IV. DETERMINING PRICE PER BARREL FOR DE MINIMIS PARTIES

Basic Price per Barrel

Total Estimated Costs for Lorentz Site Clean Up *divided by* Total Number of Barrels on Waste-in List[1] = Price Per Barrel

$25,198,383 / 2,578,440 = $9.77 per barrel

Price per Barrel with Premium

Total premium amount: 50% premium for cost overruns
+ 50% premium for remedy failure
100% premium

(Price per barrel) plus (price per barrel multiplied by 100 percent premium):
($9.77) + ($9.77 x 100%) = **$19.54 per barrel**

V. DETERMINING STATE AND EPA PERCENTAGES OF COMBINED STATE AND EPA COSTS

Total Estimated State Past and Future Lorentz Site Costs	$ 5,190,309
Total Estimated EPA Past and Future Lorentz Site Costs	$10,852,265
	$16,042,574

State percentage of $16,042,574 = (5,190,309/16,042,574 = .3235) = **32%**

EPA percentage of $16,042,574 = (10,852,265/16,042,574 = .6764) = **68%**

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[1]Based on EPA's July 29, 1994 Waste-In List.

VI. NUMBER OF BARRELS SENT TO THE SITE BY PRIOR SETTLORS WHO ARE DE MINIMIS PARTIES, MULTIPLIED BY STATE PRICE PER BARREL[1]

Number of Barrels Attributed to Prior Settlors Who Are De Minimis Parties

Removal Action Group	53,867
Lorentz Shallow Groundwater Task Force	45,836
	99,703

State price per barrel

Total Estimated State Past and Future Lorentz Site Clean Up Costs *divided by* Total Number of Barrels on Waste-in List = Price Per Barrel

$5,190,309 / 2,578,440 = $2.01 per barrel

State price per barrel with 100% premium

$2.01 + $2.01 = **$4.02**

Number of Barrels Sent to the Site by Prior Settlors in Who Are De Minimis Parties, Multiplied by State Price Per Barrel

99,703 barrels x $4.02 = **$400,806**

Attachments (available upon request)[2]

1. California Environmental Protection Agency, Department of Toxic Substances Control estimate of State clean up costs for the Lorentz Barrel and Drum Superfund site, dated July 1, 1994.

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[1]Based on EPA's July 29, 1994 Waste-In List. Prior settlors are the parties who have entered into agreements with EPA and have undertaken clean up work at the Lorentz Site. Such clean up work is estimated in value to significantly exceed the per barrel assessment of this settlement.

[2]To obtain a copy of these attachments, please call the Superfund De Minimis Hotline at 1-800-890-4219.

2. U.S. EPA Itemized Cost Summary Reports for the Lorentz Barrel and Drum Superfund site, dated June 28, 1994.

3. Summary of Estimated Costs for the Selected Remedy extracted from EPA's August 26, 1993 Record of Decision (ROD) for Operable Unit 1.

4. March 21, 1994 letter from Sarah Flanagan, counsel for the Lorentz Shallow Groundwater Task Force (Task Force), describing Operable Unit 2 costs.

5. EPA memorandum dated July 18, 1994 from Marcia Preston, ORC, regarding a telephone call with and counsel for the Task Force regarding Operable Unit 2 costs.

6. March 3, 1994 letter from Bruce Klafter, counsel for the Removal Action Group, describing removal action costs.

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To: Darrin Swartz-Larson
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From: Barbara Cook, Branch Chief
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Barbara Cook

Date: July 1, 1994

Subject: Lorentz Barrel & Drum Cost Documentation

Attached are DTSC's estimated cost documents for the Lorentz Barrel and Drum site. Please contact me directly at (510) 540-3843 if you have any questions regarding this information.

cc: Susan Bertken
Senior Staff Attorney
DTSC, OLC

Attachments

ESTIMATED STATE OF CALIFORNIA COSTS FOR OPERABLE UNIT 2

State of California Department of Toxic Substance Control (DTSC) Oversight Cost.

Past (through 12/31/93)	$42,453
Future	
Regular oversight at $3430/yr., 28.5	51,517
Six 5-year reviews at $5278/yr.	14,683
TOTAL	$108,653

Notes and Assumptions

Past: Summary by Activity dated June 6, 1994. See Attachment 1. This cost was calculated based on an analysis of the Summary by Activity for the applicable time periods and work performed by DTSC staff.

Future, Regular oversight: DTSC estimates 2 hours/month for project manager (PM) oversight of OU-2 at $33/hour (assumed an Associate Waste Management Engineer level) and 4 hours/year for Office of Legal Counsel attorney (OLC) at $47/hour (assumed a Senior Staff Counsel level). Indirect overhead rate is estimated to be 250%.

Annual PM total = 24 hours * $33 = $792
Annual OLC total = 4 hours * $47 = $188
Annual direct charges = $792 + 188 = $980
Annual indirect charges = $980 * 2.5 = $2450
Annual Total Oversight costs = $3430

Since O & M is estimated for a 30-year period, the number of years estimated for regular oversight is 28.5 (1.5 years of oversight are included in past costs). The total present worth of annual O & M cost was calculated using a 5 % annual interest rate for 28.5 years.

Future, Six 5-Year Reviews: DTSC estimates an additional 40 hours/year for PM 5-year reviews, at $33/hour and an additional 4 hours/year for Office of Legal Counsel attorney (OLC) at $47/hour. Indirect overhead rate is estimated to be 250%.

Annual PM total = 40 hours * $33 = $1320
Annual OLC total = 4 hours * $47 = $ 188
Annual direct charges = $1320 + 188 = $1508
Annual indirect charges = $1508 * 2.5 = $3770
Annual Total Oversight Costs, 5-Year Review Year = $5278

The total present worth of six 5 - year reviews was calculated using a 5 % annual interest rate of each of the six years.

ESTIMATED STATE OF CALIFORNIA COSTS FOR
STRUCTURE, SUMPS AND DEBRIS REMOVAL

State of California Department of Toxic Substances Control (DTSC) Oversight Cost.

Past (through 12/31/93)	$8,758
Future	4,620
TOTAL	$13,378

Notes and Assumption

Past: Summary By Activity dated June 6, 1994. See Attachment 1. This cost was calculated based on an analysis of the Summary of Activity of applicable time periods and work performed by DTSC staff.

Future: DTSC estimates 40 hours for PM oversight at $33/hour (assumed an Associate Waste Management Engineer level). Indirect overheard rate is estimated to be 250%.

PM direct labor charges = 40 hours * $33 = $1320
Indirect charges = $1320 * 2.5 = $3300
Total Oversight Costs = $4620

ESTIMATED STATE OF CALIFORNIA COSTS FOR OU - 1 (FINAL REMEDY)

A.	DTSC Past Costs	$4,602,171
B.	DTSC/AG Future Enforcement Costs	326,624
C.	DTSC Oversight Costs	
	RD Review & RA	72,072
	Regular oversight at $3430/yr., 30 years	52,728
	Six 5-year reviews at $5278/yr.	14,683
	TOTAL	$5,068,278

Notes and Assumptions

A. Past: Summary by Activity dated June 6, 1994. See Attachment 1. This cost was calculated based on an analysis of the Summary of Activity of applicable time periods and work performed by DTSC staff.

B. For the period of 1/94 to 1/96, DTSC estimates 8 hours/week each for a PM at $33/hour(assumed an Associate Waste Management Engineer), an Attorney General attorney and an OLC attorney both at $47/hour (assumed an Associate Waste Management Engineer and Senior Staff Counsel levels respectively), and 6 hours/week for an Associate Government Program Analyst (AGPA) at $25/hour. Indirect rate is estimated to be 250%.

PM total, 1/94 through 1/96 = 832 hours * $33 = $27,456
OLC total, 1/94 through 1/96 = 832 hours * $47 = $39,104
AGPA total, 1/94 through 1/96 = 624 hours * $25 = $15,600
Total direct charges = $82,160
Total indirect charges = $205,400
AG total, 1/94 through 1/96 = 832 hours * $47 = 39,104
Total oversight charges = $326,624

C. RD review/oversight: For 18-month period, DTSC estimates 8 hours/week, at $33/hour.

PM total = 624 hours * $33 = $20,592
Total direct charges = $20,592
Total indirect charges = $51,480
Total oversight charges = $72,072

Future, Regular Oversight: DTSC estimates 2 hours/month for project manager (PM) oversight for OU-1 at $33/hour (assumed an Associate Waste Management Engineer level) and 4 hours/year for Office of Legal Counsel attorney (OLC) at $47/hour (assumed Senior Staff Counsel level). Indirect overhead rate

is estimated to be 250%.

Annual PM total = 24 hours * $33 = $792
Annual OLC total = 4 hours * $47 = $188
Annual direct charges = $792 + 188 = $980
Annual indirect charges = $980 * 2.5 = $2450
Annual total oversight charges = $3430

The total present worth of annual O & M cost calculated using a 5 % annual interest rate of 30 years.

Future, Six 5-Year Reviews: DTSC estimates an additional 40 hours/year for PM 5-Year reviews, at $33/hour and an additional 4 hours of OLC attorney at $47/hour. Indirect rate is estimated to be 250%.

Annual PM total = 40 hours * $33 = $1320
Annual OLC total = 4 hours * $47 = $ 188
Annual total direct charges = $1508
Annual indirect charges = $1508 * 2.5 = $3770
Annual total oversight costs, 5-Year Review Year = $5278

The total present worth of the six 5-year reviews was calculated using a 5 % annual interest rate for each of the 6 years.

A200061.WK1

LORENTZ BARREL & DRUM
Project 200061
Summary by Activity
July 1, 1985 thru December 31, 1993

June 6, 1994 (disk #57)
Compiled by: Barbara Frazer
Data source: Employees names, hours, direct labor costs, and classifications--Labor Distribution by PCA.
Indirect costs, bond interest, and Administrative charges--Cost Analysis Workpapers.

EMPLOYEE	PERIOD	CLASSIFICATION	TIMESHEET HOURS	DIRECT LABOR CHARGES
85/86 EXPENDITURES (ARMS)				
M DeGuzman	7/85	Public Health Chemist I	16.0	282.19
C Smith	7/85	Junior Chemist	10.0	154.49
GS Silvia	7/85	Public Health Chemist I	16.0	268.81
S Gill	7/85	Public Health Chemist I	120.0	2,203.37
E Koehler	7/85	Waste Management Engineer	20.0	360.18
WS Lum	8/85	Public Health Chemist III	40.0	882.88
GS Silvia	8/85	Public Health Chemist I	16.0	268.81
PA Schiro	8/85	Public Health Chemist I	60.0	1,074.79
CM Dingman	8/85	Public Health Chemist II	24.0	524.48
SB Gill	12/85	Public Health Chemist I	48.0	1,049.50
MV DeGuzman	12/85	Public Health Chemist I	8.0	166.63
EK Koehler	12/85	Waste Management Engineer	8.0	171.33
SG Belluomini	12/85	Associate Engineering Geologist	1.0	27.40
JS Hsu	4/86	Public Health Chemist II	4.0	104.98
		Total Direct Labor Charges	391.0	7,539.84
		Overhead Charges		9,144.32
		Total 85/86 Charges	391.0	16,684.16

85/86 OVERHEAD CALCULATIONS

FUND	DIRECT LABOR CHARGES	OVERHEAD RATE	OVERHEAD CHARGES
HWCA 014	3,286.27	1.2128	3,985.59
HSA 455	4,226.17	1.2128	5,125.50
BOND 710	27.40	1.2128	33.23
FED TRUST 890	0.00	1.2128	0.00
TOTAL	7,539.84		9,144.32

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LORENTZ BARREL & DRUM
Project 200061
Summary by Activity
July 1, 1985 thru December 31, 1993

June 6, 1994 (disk #57)
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Data source: Employees names, hours, direct labor costs, and classifications--Labor Distribution by PCA.
Indirect costs, bond interest, and Administrative charges--Cost Analysis Workpapers.

EMPLOYEE	PERIOD	CLASSIFICATION	TIMESHEET HOURS	DIRECT LABOR CHARGES
86/87 EXPENDITURES (ARMS)				
AM Burrow	7/86	Senior Waste Management Engineer	32.0	485.44
AM Burrow	8/86	Senior Waste Management Engineer	11.0	333.74
AM Burrow	9/86	Senior Waste Management Engineer	13.0	394.66
AM Burrow	10/86	Senior Waste Management Engineer	44.0	1,335.77
AM Burrow	11/86	Senior Waste Management Engineer	48.0	1,457.21
JR Del Rosario	11/86	Waste Management Engineer	40.0	620.16
BP Bufton	11/86	Associate Hazardous Materials Specialist	12.0	233.85
AM Burrow	12/86	Senior Waste Management Engineer	52.0	1,578.64
JT Del Rosario	12/86	Waste Management Engineer	32.0	645.98
BP Bufton	12/86	Associate Hazardous Materials Specialist	3.0	58.46
SL Cross	12/86	Staff Services Analyst	1.0	16.65
AM Burrow	1/87	Senior Waste Management Engineer	48.0	1,526.60
JT Del Rosario	1/87	Waste Management Engineer	58.0	1,082.09
AM Burrow	2/87	Senior Waste Management Engineer	26.0	826.91
JT Del Rosario	2/87	Waste Management Engineer	28.0	551.76
SG Belluomini	2/87	Associate Engineering Geologist	74.0	2,179.59
JA Whiten	2/87	Information Officer	4.0	78.51
SG Belluomini	3/87	Associate Engineering Geologist	145.0	3,982.08
AM Burrow	3/87	Senior Waste Management Engineer	20.0	607.17
JT Del Rosario	3/87	Waste Management Engineer	56.0	997.29
AM Burrow	4/87	Senior Waste Management Engineer	20.0	607.17
SG Belluomini	4/87	Associate Engineering Geologist	116.5	3,230.60
JT Del Rosario	4/87	Waste Management Engineer	40.0	712.35
BP Bufton	4/87	Associate Hazardous Materials Specialist	18.0	350.78
JA Whiten	4/87	Information Officer	15.0	281.01
SL Cross	5/87	Staff Services Analyst	4.0	69.75
SG Belluomini	5/87	Associate Engineering Geologist	116.0	3,217.51
JT Del Rosario	5/87	Waste Management Engineer	61.0	1,138.06
BP Bufton	5/87	Associate Hazardous Materials Specialist	37.0	755.37
C Liao	5/87	Staff Toxicologist	1.0	34.55
MJ Wade	5/87	Staff Toxicologist	13.0	419.89
JJ Wong	5/87	Staff Toxicologist	3.0	97.36
JA Whiten	5/87	Information Officer	9.0	176.64
SL Cross	6/87	Staff Services Analyst	2.0	34.88
PC Payne	6/87	Associate Industrial Hygienist	1.0	22.76
SG Belluomini	6/87	Associate Engineering Geologist	108.0	3,059.27

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LORENTZ BARREL & DRUM
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EMPLOYEE	PERIOD	CLASSIFICATION	TIMESHEET HOURS	DIRECT LABOR CHARGES
AM Burrow	6/87	Senior Waste Management Engineer	30.0	954.23
JT Del Rosario	6/87	Waste Management Engineer	64.0	1,194.26
BP Bufton	6/87	Associate Hazardous Materials Specialist	16.0	326.70
JJ Wong	6/87	Staff Toxicologist	26.0	843.84
C Liao	6/87	Staff Toxicologist	35.0	1,225.56
MJ Wade	6/87	Staff Toxicologist	44.0	1,536.16
JA Whiten	6/87	Information Officer	20.0	392.60
		Total Direct Labor Charges	1546.5	39,673.86
		Overhead Charges		44,434.73
		Contract Charges (455)		61,738.02
		Total 86/87 Charges	1546.5	145,846.61

86/87 OVERHEAD CALCULATIONS

FUND	DIRECT LABOR CHARGES	OVERHEAD RATE	OVERHEAD CHARGES
HWCA 014	5,108.88	1.1200	5,721.95
HSA 455	0.00	1.1200	0.00
BOND 710	34,564.98	1.1200	38,712.78
TOTAL	39,673.86		44,434.73