Table B-1. Examples of Characteristic Hazardous Waste Generated at the Tesoro Alaska Refinery, Associated Waste Codes, and Hazardous Constituents

Waste Description	Code(s)	Annual Quantity[1]	Hazardous Constituent
Miscellaneous equipment cleaning debris	D001 D018	1,200 lbs	Ignitable Benzene
Desalter Sludge from intermittent vessel cleaning	D001 D018	34,000 lbs	Ignitable Benzene
Petroleum hydrocarbon waste from intermittent tank cleaning	D001 D018	8,200 lbs	Ignitable Benzene
Crushed fluorescent bulbs & mercury containing equipment	D009	900 lbs	Mercury

[1]Annual quantities for less-than-90-day waste collection averaged over the past three years.

Table B-2. 1980 Analytical Results: Waste Stream and Impoundment Wastes

Method	Parameter	API Separator	Tank 11	Impoundment Pit #2
EPA Method 624 (ppm)[1]	Benzene	6	1600	700
	Toluene	3	5200	1300
	Ethylbenzene	3	1200	220
EPA Method 625 (ppm)[1]	Naphthalene	240	130	400
	Fluorene	45	29	140
	Anthracene	110	89	300
	Fluoranthene	ND	11	ND
	Benzo(a)anthracene	16	ND	ND
	Phenol	0.068	0.56	0.002
	2,4-Dimethylphenol	0.5	1.3	2.7
Metals (ug/g)	Antimony	0.18	0.015	0.062
	Arsenic	4.1	0.24	0.02
	Beryllium	0.13	0.023	0.001
	Cadmium	1.2	0.23	0.29
	Chromium	12	1.4	1.9
	Copper	53	7.1	12
	Lead	82	6.4	16
	Mercury	8	0.28	0.14
	Nickel	27	1.4	5
	Selenium	0.08	0.02	0.02
	Silver	1.3	0.07	0.11
	Thallium	0.04	0.04	0.04
	Zinc	790	110	130

[1] Only organic analytes detected above the analytical detection limit in one or more samples are listed.
ND Not detected.

Table B-3. 1984 EP Toxicity Extraction and Ignitability Testing Results: Impoundment Wastes

Method	Parameter	Result	Regulatory Limit
EPA Method 1010	Ignitibility	>145° F	140° F
EP Toxicity (mg/L):			
EPA 206.3	Arsenic	<0.002	5.0
EPA 208.1	Barium	1.94	100.0
EPA 213.1	Cadmium	<0.002	1.0
EPA 218.1	Chromium	<0.001	5.0
EPA 239.1	Lead	<0.008	5.0
EPA 245.1	Mercury	<0.0002	0.2
EPA 270.3	Selenium	<0.002	1.0
EPA 272.1	Silver	<0.028	5.0

Table B-4. Post-Closure Weekly Inspection Form

Post-Closure Weekly Inspection Form

Surface Impoundments Area

Inspector's Name _____

Date Inspected: _____

Reviewed by: _____

Equipment or Feature	Specific	Observation	Needs Correction (Yes or No)
Debris and Refuse	Unobstructed drainage, no refuse on caps		
Caps	Erosion, settling, and subsidence; lack of shrubby vegetation; access; slope displacement; frost heaving		

Table B-5. Surface Impoundment Post-Closure Inspection Schedule

Component	Specific Feature	Type of Problem / Deterioration	Frequency
Security	Fences	Corrosion, chain-link damage	Weekly
	Signs	Illegible	
Impoundment cap	Vegetative growth	No growth, growth of tree or shrub seedlings	Each spring and fall; after major events[2] as necessary; after snap thaws each spring and fall
	Erosion	Rilling, slippage	
	Drainage control	Blockage, rilling	
	Frost heaving	Displacement[1]	
	Settlement	Low spots, standing water	
Monitoring wells	Well identification	Illegible or missing sign/tag	Each sampling event
	Locks	Missing or damaged	
	Casing damage	Cracks, loose fit	
	Casing slippage	Well no longer plumb, obstructed	
	Well silted	Slow recharge, non-representative sample	
	Well screen encrusted	Slow recharge	
	Turbid purge or sample water	Silted well or damaged well screen	

[1] Subsidence or other displacement of the impoundment cap will be identified through visual inspection. Formation of low spots in the cap may be indicated by accumulation of water or other changes in water flow over the cap.

[2] A major event is defined as a rainfall precipitation event that produces run-off capable of rilling or otherwise eroding the surface impoundments or a significant seismic event.

Table B-6. Post-Closure 30-Year Cost Estimate Summary

Item	Cost	Details Provided
Corrective Action	$1,189,140	Table B-6a
Surface Impoundment Maintenance	$178,770	Table B-6b
Corrective Action, Compliance, & Closure Monitoring and Reporting	$738,030	Table B-6c
Final Engineering Inspection	$1,250	Footnote 1
Total Post Closure Cost Estimate	**$2,107,190**	

Note:

[1] Engineering costs estimated at $125/hr. for 10 hours.

Table B-6a. Corrective Action Detail

Item	Unit	Unit Cost	Annual Quantity	Annual Cost	Years	Total Cost
Corrective Action						
Operator	Hr	$85	250	$21,250	30	$637,500
Maintenance labor/material	Ea	$2,000	1	$2,000	30	$60,000
Electricity	Ea	$15,413	1	$15,413	30	$462,390
Closure						
Well Abandonment	Ea	$875	22	$19,250	One Time	$19,250
SI Stripout	Ea	$10,000	1	$10,000	One Time	$10,000
Total						**$1,189,140**

Table B-6b. Maintenance Detail

Item	Unit	Unit Cost	Annual Quantity	Annual Cost	Years	Total Cost
Site Maintenance						
Fence Repair	LF	$12	20[1]	$240	30	$7,200
Drainage Repair	LF	$7	500	$3,500	30	$105,000
Cap Maintenance						
Reseeding[2]	Acre	$2,500	1	$2,500	Every 5 years	$15,000
Soil Filling and Smoothing[2]	CY	$25	40	$1,000	Every 5 years	$6,000
Mowing	Month	$200	5[3]	$1,000	30	$30,000
Monitoring Well Maintenance						
Well Installation[4]	Ea	$3,300	0.08[5]	$264	30	$7,920
Mobilization	Ea	$1,000	0.08[5]	$80	30	$2,400
Protective Casing Replacement	Ea	$175	1	$175	30	$5,250
Total						**$178,770**

Note:

[1] Assumes 20-feet of the existing fence will require repair or replacement per year.

[2] Assumes reseeding/soil filling required every five years

[3] Assumes mowing required May through September

[4] Assumes drilling and construction costs $60.00 per foot and 55-foot wells

[5] Assumes two replacements required in 25 years

Table B-6c. Monitoring Costs

Item	Unit	Unit Cost	Annual Quantity	Annual Cost	Years[1]	Total Cost
Correction Action Analyses	Total	$8,280	1	$8,280	25	$207,000
Corrective Action Sampling & Reporting	Total	$18,150	1	$18,150	25	$453,750
Compliance Analyses	Total	$615	1	$615	5	$3,075
Compliance Sampling & Reporting	Total	$9,210	1	$9,210	5	$46,050
Closure Analyses	Total	$8,430	1	$8,430	1	$8,430
Closure Sampling & Reporting	Total	$19,725	1	$19,725	1	$19,725
Total						**$738,030**

Note:
[1] Assumes the site will be under Corrective Action for 25 years, then Compliance Monitoring for 5 years, before closure sampling and reporting.