

**TUB LAKE / SUNSET PARK
SITE HAZARD ASSESSMENT REPORT**

The Tub Lake/Sunset Park Site is located in the City of SeaTac one mile directly north of the Seattle-Tacoma International Airport. It consists of a 50-acre wetlands, a road maintenance facility for King County Department of Public Works, and the southern portion of a King County Parks and Recreation facility including baseball and soccer fields.

Tub Lake is a classic bog and marshlands. The water table is shallow in the area and Tub Lake receives surface runoff from the north via a small trench or ditch. Water in the trench includes runoff from the county road maintenance facility, the park facility, and other areas upland. Groundwater flow is to the south-southwest and the headwaters of Miller Creek supposedly originate in Tub Lake. Miller Creek in its lower reaches is a salmon-bearing stream (coho).

The site has a history of dumping; actual quantities are unknown. Between 1941 and 1945 the area was used as a dumping area for waste oil and bilge oil from ships. Bilge oil from ships was pumped into tank trucks and hauled to the site from Seattle and there discharged by opening drain valves and dumping oily waste cargo. Oil drums were also observed at the site, but these drums were removed after their contents were dumped at the north end of the site. It has also been reported that old cars were seen dumped into Tub Lake, this was either not observed or Ecology could not find evidence that it had happened when we did the SHA.

Presently, the Port of Seattle owns the southern part of the site, that is, Tub Lake and the wetlands that surround it. In the 1970s the Port bought up the residences that were in the area, removed the residences and fenced the lake and its surroundings. (This area is in the landing pathway for the SeaTac airport.) When the houses were removed, disturbance areas were left and some of the housing sites were still not revegetated in the early 1990s. It should also be noted that there is no evidence that heating tanks were removed when the houses were destroyed. The fence has areas where the public has gained entrance to the lake and the area is used for recreation. We did find one of the gates unlocked when we sampled the site for the SHA.

On the northeast side of the site, King County Public Works has a maintenance facility for their road equipment. The facility had removed two leaking underground storage tanks within the last two years and were starting the cleanup of the tank removal site at the time of the SHA. They were only cleaning up the contamination related to the underground storage tanks and not the heavy oils oozing into the area from an unknown source (probably the old waste and bilge oil dump).

Just north of the Public Works Maintenance facility, the King County Parks and Recreation Department has an office for Sunset Park and facilities that include soccer and baseball fields and other amenities for the children in the area. Leaking underground storage tanks have also been removed from the office area of the Park, but this was done after the SHA was completed. All of these facilities will eventually be turned over to the City of SeaTac to be their park.

SITE CONTAMINATION HISTORY

In 1991, it was decided to perform an SHA (Site Hazard Assessment) on the site after heavy subsurface contamination was found while removing two leaking underground storage tanks at the public works facility. The pit formed when removing the tanks showed two layers of heavy oil (one at three feet that was 2.5 inches thick and another at about 5 feet that was 3 inches thick.) Gasoline vapors were strong. Previous reports had provided other evidences of contamination. In 1983 the site had been evaluated in a report by Seattle-King County Department of Health (Abandoned Landfill Study in King County, April 30, 1983) and 50 sampling holes dug were found to contain waste oil including diesel and Bunker C; there was also a high level of methane that was considered explosive and dangerous. It was estimated that the area of contamination was 2-3 acres and 10-12 feet deep and most of it was under the playing fields.

In early 1963, Craig Baker of Ecology observed that oil on the water in the drainage ditch that flowed southwest from 18th Avenue South to Tub Lake was actually a Bunker C type of oil. The oil was seeping out from under the paved area of the Public Works facility. Ecology recommended that a weir skimmer system should be installed to collect the oil from the water as it passed through the ditch. (This system appears to be inadequately designed and poorly maintained since Ecology found contaminants in the ditch downstream from the weir during the SHA investigation.)

Another complaint was filed in 1979 when strong petroleum odors occurred in the office building at the King County Public Works Maintenance Facility. Crowley Environmental Services drilled 14 test wells that revealed two layers of heavy oil. The first layer was about three feet deep and approximately 2 1/2 inches thick. The second layer was found at a depth of 5 1/2 feet and was approximately three inches thick. It was discovered that a sewer pipe had broken and petroleum products were infiltrating from the ground and entering the building. Crowley installed a new underground sanitary line and the odor problem was alleviated. Waste oil was also collected from two manholes just east of the Maintenance Facility. A recovery well that was installed pumped out approximately 100 gallons of waste oil.

SAMPLING

Prior to SHA sampling, the LUST (Leaking Underground Storage Tanks) staff, who were overseeing the removal of underground tank removal by Sandland Construction Company, sampled the pit (see Figure 1 for sampling sites) and found Total Petroleum Hydrocarbons, Benzene, Toluene, and Ethyl Benzene in excess of MTCA cleanup levels. (See Table 1.) This information is included in this report since the contaminants were used in the SHA scoring. I do not have triangulations or exact descriptions of the sampling points; the map (Figure 1) for the King County Public Works Maintenance Facility indicates where these sampling points are. These are all in the general area of Sample S-3 from the SHA sampling.

In November 1990, DOE's Site Hazard Assessment Team sampled the site. (See Figure 2 for sampling points.) All soil and sediment samples were sampled for chlorinated and non-chlorinated VOAs, PCBs, WTPH-HCID, and Metals 6. The water samples were analyzed for hardness, VOAs, Hydrocarbon Identification, and Metals 6. The following samples were taken:

SHA Soil Sample Locations

Sample # S-2 Drainage Ditch. Sediment was collected 4 feet south of the oil/water separator in the bed of the ditch.

Sample S-3 Public works Maintenance Yard. Soils were sampled at the open hole where heavy oil from the two layers were still seeping into the excavation.

Sample S-4 Playing Fields. Soils were sampled at the edge of the playing field, adjacent to the mounds of dirt, and 10 feet from the gate in the fence that allows admittance from the public works property. A "divot" of playing field grass was removed, the sample taken and the "divot" replaced.

Sample S-5 Southwest Impoundment. Sediments were sampled on the southern side of the impoundment on the southwest side of the site within the fenced area.

Surface Water Sample Locations

Sample SW-1 Tub Lake. Water sample from the north side of the lake at the site where the ditch carrying the runoff water enters the lake.

Sample SW-2 Southwest Impoundment. Water sample from the south side of the impoundment.

Sample SW-3 Public Works Maintenance Yard Excavation. Sample of the water found in the open hole in the public works maintenance yard (in the excavation).

Sample SW-4 Pond. A sample of water from the pond northwest of Tub Lake. Taken from the west bank, off the pile of concrete that was dumped there.

RESULTS

Sampling results showed that Cadmium and Lead exceeded MCTA Cleanup Levels in three samples: S-2, S-5, and SW-4 (See Table 2). One of the samples, S-2 (the ditch), had Cadmium levels at 2.37 ppm (Cleanup, Method A = 2.0 ppm), and Lead at 615 ppm (Cleanup, Method A = 250 ppm). Tetrachloroethylene and Ethylbenzene were also found in the ditch at less than MTCA Cleanup Standards indicating the possibility that up-gradient sources are greater than MTCA. There was also evidence of PCBs in the ditch and in the Public Works Maintenance Yard, though they were also not at cleanup levels. This could be evidence of a source in the soils containing greater concentrations than was evidenced in the sediments of the ditch and maintenance yard.

Sample S-5, the Southwest Impoundment, had a Cadmium level of 4.5 ppm (MTCA Cleanup, Method A = 2.0) and the surface water sample (SW - 4) from the small pond to the northwest of Tub Lake, had a lead level of 7.8 ppm; cleanup levels are 5.0 ppm for surface water. A historic aerial photograph shows a road built into the impoundment. Illegal dumping could have taken place since there is a higher level of Cadmium. This area needs more sampling.

The presence of the PCBs and heavy metals in conjunction with the oils lends credence to the rumors that this area was used as a dumping ground in WWII for PCBs and oily wastes. It poses a threat to the environment. Whether or not a threat to human health exists requires further study than that which this SHA is able to provide.

The site was scored and it ranked a 2 in the WARM Ranking in the February 1992 listing. There is no one factor that seemed to drive the score. All pathways appeared to be of equal influence.

TUB LAKE/SUNSET PARK
 SAMPLE SITE S-3 SOILS
 (mg/kg or ppm)

Contaminant	Sample					
	#1	#2	#3	#4	#5	#6
Total TPH	<u>9,300</u>	<u>28,000</u>	<u>4,700</u>	<u>84,000</u>	<u>3,300</u>	<u>120</u>

Contaminant	Sample						
	#7	#8	#9 (Oil)	#10	#11	A-1	A-2
Total TPH	2,300	3,600		2,900		NT	3,200
Benzene					<0.05	<u>0.89</u>	<u>0.11</u>
Toluene					<0.05	<u>58</u>	<u>0.75</u>
Ethyl Benzene					0.10	<u>52</u>	1.6
Xylenes					0.49	310	6.4
Lead			39				

METHOD A CLEANUP LEVELS
 SOIL (mg/kg or ppm)

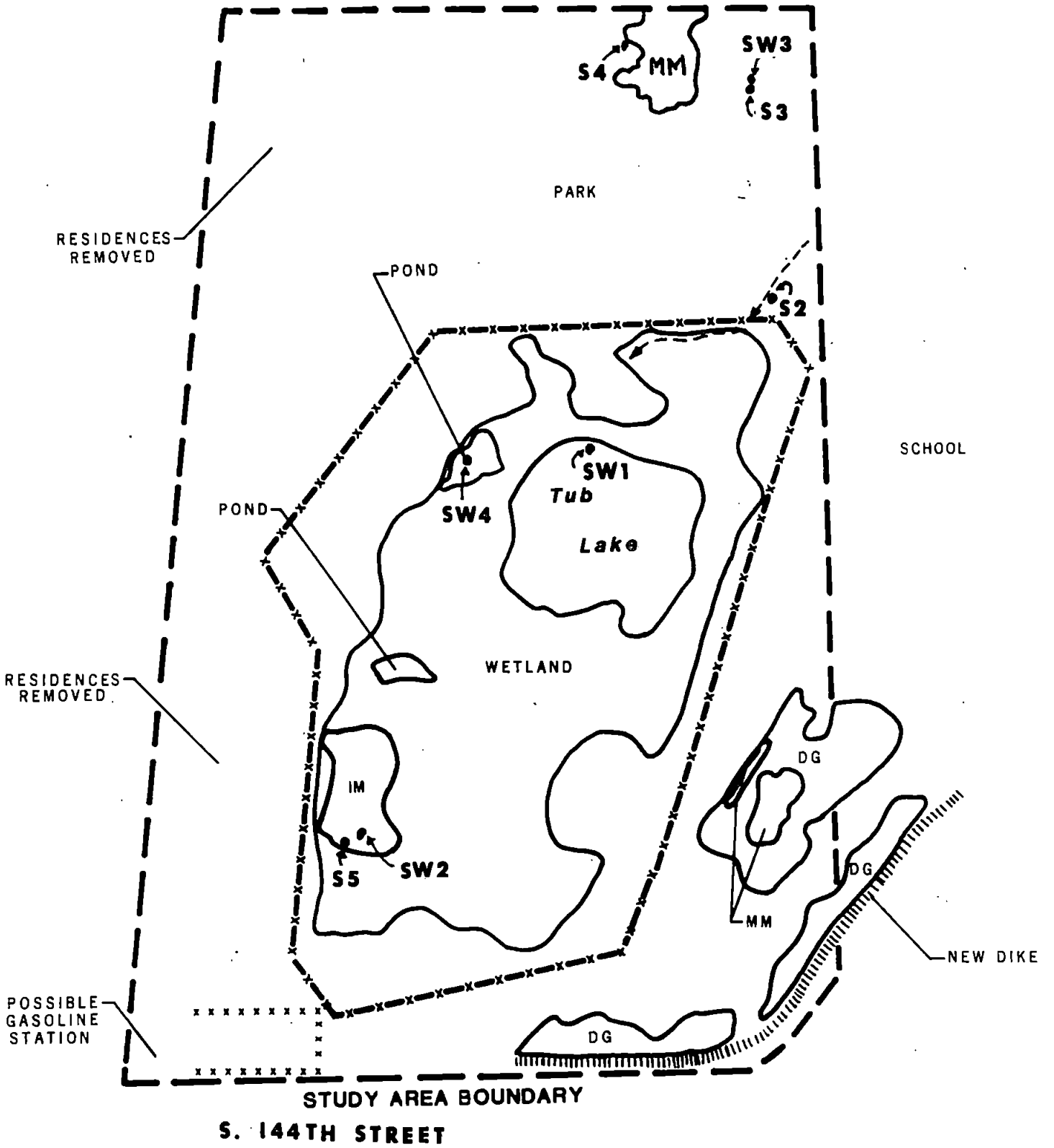
Total TPH	100.0 mg/kg
Benzene	0.5 mg/kg
Toluene	40.0 mg/kg
Ethylbenzene	20.0 mg/kg
Xylenes	20.0 mg/kg
Lead	250.0 mg/kg

TUB LAKE/SUNSET PARK
SOIL SAMPLES (MG/KG OR PPM)

	S-2	S-3	S-4	5-5	MCTA METHOD A	MCTA METHOD B
Cadmium	<u>2.37</u>	0.83P	0.20 U	<u>4.5</u>	2.0	- -
Chromium	48.6E	28.9E	29.0E	18.8 E	100.0	- -
Copper	143	16.4	15.6	57.3	- -	2,960
Lead	<u>615E</u>	18.3E	3.5PE	81.5 E	250.0	
Nickel	48.7	28.6	24.6	21.2		1,600
Zinc	675E	31.9E	34.9E	345 E		16,000
Methylene Chloride	0.004UJ	0.015UJ	0.002UJ	0.02 UJ	0.5	
Acetone	0.0095J	U	0.0037J	0.0073 NJ		8,000
Tetrachloroethene	0.0018J	U	U	0.0073 NJ	0.5	
Ethyl benzene	0.0021UJ	0.063	U	U	20.0	
Benzene	U	0.023J	U	U	0.5	
Toluene	U	0.046	U	0.0087 J	40.0	
Total Xylene	U	1.2	.014J	U	20.0	
2-Butanone	U	U	U	0.033		4,000
PCB - 1260	0.017	0.0042J	U	U	1.0	
PCB - 1254	U	0.012	U	U	1.0	

TUB LAKE/SUNSET PART
SURFACE WATER SAMPLES (ug/l or ppb)

	SW - 1	SW - 2	SW - 3	SW - 4	MCTA METHOD A	MCTA METHOD B
Cadmium	2.0	2.0 UN	3.8 PN	2.0 UN	5.0	
Copper	3.0 U	3.0 U	3.8 P	9.6 P		2,660
Lead	1.2	10 U	4.7	<u>7.8</u>	5.0	
Nickel	10 U	10 U	22 P	10 U		1,100
Zinc	10 P	22	838	110		11,000
Acetone	6 UJ		12		40.0	
Toluene	1 UJ					8,000



TUB LAKE / SUNSET PARK

WASHINGTON RANKING METHOD

ROUTE SCORES SUMMARY AND RANKING CALCULATION SHEET

Site name: Tub Lake/Sunset Park Region: Northwest

City, county: SeaTac, King

This site was () ranked, () re-ranked on ~~August 12, 1992~~ ^{February 25th 1992}, based on quintile values from 256 assessed/scored sites.

Pathway	Route Score(s)	Quintile Group number(s)	Priority scores:
SW-HH	<u>19.7</u>	<u>3</u>	$\frac{H^2 + 2M + L}{8} = \frac{9 + 6 + 2}{8} = 2.1 = 3$
Air-HH	<u>10.3</u>	<u>2</u>	
GW-HH	<u>37.9</u>	<u>3</u>	
Sed-HH	_____	_____	
SW-En	<u>32.6</u>	<u>3</u>	$\frac{H^2 + 2L}{7} = \frac{16 + 6}{7} = 3.1 = 4$
Air-En	<u>22.3</u>	<u>4</u>	
Sed-En	_____	_____	

Use the matrix presented to the right, along with the two priority scores, to determine the site ranking. N/A refers to where there is no applicable pathway.

Human Health	Environment				
	5	4	3	2	1 N/A
5	1	1	1	1	1
4	1	2	2	2	3
3	1	2	3	4	4
2	2	3	4	4	5
1	2	3	4	5	5
N/A	3	4	5	5	N/A

DRAFT / FINAL

Matrix ("bin") Ranking: 2, or _____ No Further Action

CONFIDENCE LEVEL: The relative position of this site within this bin is:

- _____ almost into the next higher bin.
- _____ right in the middle, unlikely to ever change.
- almost into the next lower bin.

WORKSHEET 1
SUMMARY SCORE SHEET

Site Name/Location (City, County, Section/Township/Range):

TUB LAKE / SUNSET PARK
Seatac, King County

SW 1/4 of Section 11, T23N, R4E

Site Description (Include management areas, compounds of concern, and quantities):

Tub Lake is a bog and marshland that receives surface runoff from the north via a small ditch (includes runoff from the county road maintenance facility and a parks and recreation facility). It is in the area of an Airport Relocation Program and all homes within the site boundary were purchased by the Port of Seattle and removed. There are still underground heating oil tanks on the site. Between 1941 and 1945, the area was used as dumping area for waste oil, primarily from ship building activities. Bilge oil and oily waste cargo were also dumped. Also reported that old cars were dumped at the site. Specific areas where dumping occurred is unknown.

Management areas...contaminated soil, ground water and surface water.

Compounds of Concern...Cadmium, Zinc, Lead, Xylene, PCBs, and TPH as both gasoline and diesel.

Quantities... Unknown

Special Considerations (Include limitations in site file data or data which cannot be accommodated in the model, but which are important in evaluating the risk associated with the site, or any other factor(s) over-riding a decision of no further action for the site): The area, with the exception of the playing fields at Sunset Park, is fenced and unavailable to public entry at this time.

ROUTE SCORES:

Surface Water/Human Health: 19.7 Surface Water/Environ.: 32.6

Air/Human Health: 10.3 Air/Environmental: 22.3

Ground Water/Human Health: 37.9

OVERALL RANK: 2

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WORKSHEET 2
ROUTE DOCUMENTATION

1. SURFACE WATER ROUTE

List substances to be considered for scoring: Source: 1
Zinc, PCBs, Nickel, Lead, Copper, Toluene, Benzene,
Cadmium, Chromium, Xylene, PCBs and TPHs (as gasoline
and diesel).

Explain basis for choice of substance(s) to be used in scoring.
Laboratory results.

List management units to be considered in scoring: Source: 1
Surface water, Tub Lake, excavation from peat at the
south end and the "pit" left by the tank removal in
the public works maintenance yard.

Explain basis for choice of unit used in scoring. Source: 1
Laboratory results and literature.

2. AIR ROUTE

List substances to be considered for scoring: Source: 1
TPH both gasoline and diesel

Explain basis for choice of substance(s) to be used in scoring.
Literature search indicated a release to air

List management units to be considered in scoring: Source: 1
Air

Explain basis for choice of unit used in scoring.
Literature search and data from a program by E&E

WORKSHEET 2 (CONTINUED)
ROUTE DOCUMENTATION

3. GROUND WATER ROUTE

List substances to be considered for scoring:

Source: 1

Zinc, PCBs, Nickel, Lead, Copper, Toluene, Benzene
Cadmium, Chromium, Xylene, PCBs and TPHs (both as
gasoline and diesel).

Explain basis for choice of substance(s) to be used in scoring.

Laboratory results

List management units to be considered in scoring:

Source: 1

Contaminated soils

Explain basis for choice of unit used in scoring.

Laboratory results.

WORKSHEET 3
SUBSTANCE CHARACTERISTICS WORKSHEET
FOR MULTIPLE UNIT/SUBSTANCE SITES

Combination 1 Combination 2 Combination 3

Unit: NOT APPLICABLE

Substance:

SURFACE WATER ROUTE

Human Toxicity Value:

Environ. Toxicity Value:

Containment Value:

Surface Water Human
Subscore:

Surface Water Environ.
Subscore:

AIR ROUTE

Human Toxicity/Mobility
Value:

Environ. Toxicity/
Mobility Value:

Containment Value:

Air Human Subscore:

Air Environ. Subscore:

GROUND WATER ROUTE

Human Toxicity/
Mobility Value:

Containment Value:

Ground Water Subscore:

**WORKSHEET 4
SURFACE WATER ROUTE**

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

Substance	Drinking Water Standard		Chronic Toxicity		Acute Toxicity		Carcinogenicity		
	(ug/l)	Val.	(mg/kg/day)	Val.	(mg/kg-bw)	Val.	WOE	PF*	Val.
1.TPH (gasoline)	5	8	- - -	ND	3306(rat)	3	B2	1.1	5
2.TPH (diesel)	20	6	0.004	3	490(rat)	5	-	-	0
3.Zinc	4000	2	0.2	1	- - -	ND	-	-	0
4.Lead	5	8	- - -	ND	- - -	ND	B2	-	0
5.PCBs	0.5	10	- - -	ND	1315(rat)	3	B2	7.7	6
6.									

*Potency Factor

Source: 3
Highest Value: 10
+2 Bonus Points? 2
Final Toxicity Value 12

1.2 Environmental Toxicity

Substance	Acute Criteria	Non-human Mammalian		Source: <u>2</u>	Value: <u>8</u>
	(ug/l)	Acute Toxicity	Value		
1.TPH (gasoline)	2				
2.TPH (diesel)	2				
3.Zinc	4				
4.Lead	6				
5.PCBs	8				
6.					

1.3 Substance Quantity

Source: 2 Value: 3

Explain basis: Actual total quantity unknown, materials were dumped from 1940s to the 1960s.
Known contamination is found in the runoff ditch from Public Works and the Park Offices(30 yds. x 1 yd x 6 inches = 4.8 yds3)

WORKSHEET 4 (CONTINUED)
SURFACE WATER ROUTE

2.0 MIGRATION POTENTIAL

- 2.1 Containment Source: 2 Value: 5
Explain basis: None, it was used as a dump. an old landfill. Unmaintained cover, no run-on/run-off control system.
- 2.2 Surface Soil Permeability: very low, peat Source: 2 Value: 7
- 2.3 Total Annual Precipitation: 33.8 inches Source: 4 Value: 3
- 2.4 Max. 2-Yr/24-hour Precipitation: 2.0 inches Source: 2 Value: 2
- 2.5 Flood Plain: NO Source: 1 Value: 0
- 2.6 Terrain Slope: < 3 % Source: 2 Value: 2

3.0 TARGETS

- 3.1 Distance to Surface Water: on site Source: 1 Value: 10
- 3.2 Population Served within 2 miles: √pop.= 0 Source: 1 Value: 0
- 3.3 Area Irrigated within 2 miles: 0.75√no. acres= 0 Source: 1 Value: 0
- 3.4 Distance to Nearest Fishery Resource: 2,500 feet Source: 5 Value: 5
- 3.5 Distance to, and Name(s) of, Nearest Sensitive Environment(s) Miller Creek outflow from the site, Tub Lake and its wetlands on site, and estuarine wetlands about 10.000 feet from the site. Source: 5 Value: 12

4.0 RELEASE

Explain basis for scoring a release to surface water: Literature and lab results Source: 1 Value: 5

**WORKSHEET 5
AIR ROUTE**

1.0 SUBSTANCE CHARACTERISTICS

1.1 Introduction (WARM Scoring Manual) - Please review before scoring

1.2 Human Toxicity

Substance	Air Standard		Chronic Toxicity		Acute Toxicity		Carcinogenicity		
	(ug/m ³)	Val.	(mg/kg/day)	Val.	(mg/kg-bw)	Val.	WOE	PF*	Val.
1.TPH(gasoline)	0.12	10	- - -	0	31947(rat)	3	A	0.029	5
2.TPH(diesel)	166.5	4	- - -	0	- - -	0	-	-	0
3.									
4.									
5.									
6.									

*Potency Factor Source: _____
Highest Value: 10
+2 Bonus Points? _____
Final Toxicity Value: 10

1.3 Mobility (Use numbers to refer to above listed substances)

1.3.1 Gaseous Mobility
Vapor Pressure(s): 1= 4 ; 2= 3 ; 3= _____ Source: 2
4= _____ ; 5= _____ ; 6= _____ Value: 4

1.3.2 Particulate Mobility
Soil type: _____ Source: _____
Erodibility: _____ Value: _____
Climatic Factor: _____

1.4 Final Human Health Toxicity/Mobility Matrix Value: 20

1.5 Environmental Toxicity/Mobility

Substance	Non-human Mammalian			
	Acute Toxicity	Value	Mobility	Value
1.TPH(gasoline)	31947(rat)	3	4	6
2.				
3.				
4.				
5.				
6.				

Environmental Toxicity/Mobility Matrix Source: 2 Value: 6

WORKSHEET 5 (CONTINUED)
AIR ROUTE

1.6 Substance Quantity: Unknown, but have contaminated Source: 1 Value: 7
Explain basis: soils in the ditch (30yds x 1yd x 6in
= 4.8 yds³) And playing fields 100yds x 166yds x 6in
= 1,656 yds³)

2.0 MIGRATION POTENTIAL

2.1 Containment: It is a former landfill with Source: 1 Value: 6
uncontaminated soil cover >6 inches with no
(or non-functional) vapor recovery system.

3.0 TARGETS

3.1 Nearest Population: 1000 feet Source: 1 Value: 8

3.2 Distance to, and Name(s) of, Nearest Sensitive
Environment(s) Tub Lake wetlands on site and Source: 1 Value: 7
Miller Creek on property that serves as the outlet
from the Tub Creek Bog.

3.3 Population within 0.5 miles: √population= 100 Source: 1 Value: 10

4.0 RELEASE

Explain basis for scoring a release to air: _____ Source: 1 Value: 0

**WORKSHEET 6
GROUND WATER ROUTE**

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

Substance	Drinking Water Standard		Chronic Toxicity		Acute Toxicity		Carcinogenicity		
	(ug/l)	Val.	(mg/kg/day)	Val.	(mg/kg-bw)	Val.	WOE	PF*	Val.
1.TPH(gasoline)	5	8	- - -	ND	3306(rat)	3	A	0.029	5
2.TPH(diesel)	20	6	0.004	3	490(rat)	3	-	-	0
3.Total Xylenes	10,000	2	2	1	50(hmn)	10	-	-	0
4.Zinc	4,000	2	0.2	1	- -	ND	-	-	0
5.Cadmium	5	8	0.0005	5	225(rat)	5	B1	-	ND
6.Lead	5	8	- - -	ND	- -	ND	B2	-	ND
7.PCBs	0.5	10	- - -	ND	1315(rat)	3	B2	7.7	6

*Potency Factor Source: _____
Highest Value: 10
+2 Bonus Points? 2
Final Toxicity Value 12

1.2 Mobility (Use numbers to refer to above listed substances)
Cations/Anions 4)= 3, 5)= 3, and 6)= 3 Source: 2 Value: 3

OR

Solubility(mg/l) 1)= 3, 2)= 1, 3)= 2, and 7)= 0

1.3 Substance Quantity Source: 2 Value: 5
Explain basis: Literature and laboratory data shows two layers of tar or petroleum products under the playing fields. Contamination to a depth of 6 feet. (200 ft x 300 ft x 6 ft = 13,200 yds³)

2.0 MIGRATION POTENTIAL

2.1 Containment Source: 2 Value: 10
Explain basis: None, unless peat and the acidity ties up metals and other substances. Discharged lake and ditches.

2.2 Net Precipitation: 19.2 inches Source: 3 Value: 2

2.3 Subsurface Hydraulic Conductivity: < 10⁻³ Source: 2 Value: 4

2.4 Vertical Depth to Ground Water: 4 feet Source: 1 Value: 8

WORKSHEET 6 (CONTINUED)
GROUND WATER ROUTE

3.0 TARGETS

3.1 Ground Water Usage: Not used but usable Source: 1 Value: 2

3.2 Distance to Nearest Drinking Water Well: 2000 ft Source: 1 Value: 3

3.3 Population Served within 2 Miles: √population=100 Source: 1 Value: 10

3.4 Area Irrigated by (Groundwater) Wells
within 2 miles: 0.75√no.acres= 0 Source: 1 Value: 0

4.0 RELEASE

Explain basis for scoring a release to ground water: Source: 1 Value: 0

SOURCES USED IN SCORING

1. Washington State Department of Ecology, Site Hazard Assessment Data Collection Summary Sheets for the Washington Ranking Method. January 1992
2. Science Applications International Corporation (SAIC). Toxicology Database For Use in WARM Scoring. June 1991.
3. SAIC and Parametrix. Washington Ranking Method Scoring Manual, Hazardous Waste Investigations and Cleanup Program. April 1990.
4. Washington State University and the USDA. Washington Climate for King, Kitsap, Mason and Pierce Counties.
- 5.
- 6.
- 7.
- 8.
- 9.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
TOXICS CLEANUP PROGRAM

SITE HAZARD ASSESSMENT DATA COLLECTION SUMMARY SHEETS
FOR
WASHINGTON RANKING METHOD

Site Name: Tub Lake / Sunset Park

Location: SW 1/4 Sec. 16, T23N, R4E, 13831 18th Ave, S.
Seattle, Wash.

Site owner/operator: King County, Div. of Roads and
Engineering, Dept of Public Works.

Address: 956 King County Ad. Bldg., 500 Fourth Avenue,
Seattle, Wa. 98104

Any other known PLP(s): Seattle Parks Dept., King Co Parks
Dept., Dept. of Navy

Address: _____

Site Number: PIC(1A1Q)

Date(s) of field site hazard assessment: November 13, 1991

Samples or field measurements: X soil

X surface water

X air

X ground water

(Attach copies of pertinent sampling and analytical data, as well as all other supporting documentation.)

Photographs: _____

Weather: Cloudy, Mild, No wind

Lead inspector: Judith M. Aitken

Other inspectors: Ching Pi Wang and Brian Sato

Signature: _____

rev. 7/24/91

PART I: Hazardous Substances

NOTE: Page numbers by "route" (e.g. SW-2, A-13) shown in parentheses throughout this checklist refer to the WARM Scoring Manual. WK- numbers refer to pages of the new scoring sheets (not those in the scoring manual). These are presented in Appendix D.

A. Hazardous substances

List specific hazardous substances, known or suspected (check k or s), currently, or that have been previously (check c or p), at the site property (WK-2, 3). Give an estimate, if available, of the quantity (not concentration) of each:

<u>Hazardous Substance</u>	<u>K</u>	<u>S</u>	<u>C</u>	<u>P</u>	<u>Quantity</u>	<u>Units</u>
1. <u>TPH as gasoline</u>	<u>k,c</u>				<u>UNK</u>	<u> </u>
2. <u>TPH as diesel</u>	<u>k,c</u>				<u>UNK</u>	<u> </u>
3. <u>Xylene</u>	<u>k,c</u>				<u>UNK</u>	<u> </u>
4. <u>Zinc</u>	<u>k,c</u>				<u>UNK</u>	<u> </u>
5. <u>Cadmium</u>	<u>k,c</u>				<u>UNK</u>	<u> </u>
6. <u>Lead</u>	<u>k,c</u>				<u>UNK</u>	<u> </u>

Additional? No (list on attachment)

By which routes are these available (WK- 2, 3)?

<u>Number(from above)</u>	<u>Surface Water</u>	<u>Air</u>	<u>Groundwater</u>
1. <u>TPH (gasoline)</u>	<u>X</u>	<u> </u>	<u>X</u>
2. <u>TPH (diesel)</u>	<u>X</u>	<u> </u>	<u> </u>
3. <u>Total Xylenes</u>	<u> </u>	<u> </u>	<u>X</u>
4. <u>Zinc</u>	<u> </u>	<u> </u>	<u>X</u>
5. <u>Cadmium</u>	<u> </u>	<u> </u>	<u>X</u>
6. <u>Lead</u>	<u>X</u>	<u> </u>	<u>X</u>

B. SOURCES

Check those known or observed (WK-3):

- drums or other containers
 - electrical transformers
 - above ground tanks
 - below ground tanks
 - ponds, pits, or other impoundments
 - pipelines (other than water, sewer, or gas)
 - floor drains
 - exterior drains for rainwater, surface waters, spills, etc.
 - other? Identify: _____
-
-

C. INDICATORS

Check those known or observed:

- discolored soils
 - disturbed soils
 - discolored standing water
 - unusual or noxious odors
 - sick or dead vegetation
 - groundwater monitoring wells
 - other? Identify: _____
-
-
-

If any are checked in B or C, explain details including exact locations (identify location on a map or drawing).

Additional information: Old cars were also observed being dumped into Tub Lake in the '40s and 50s.

PART II: Releases

A. KNOWN OR SUSPECTED RELEASES

List those hazardous substances identified (by number) in I.A. which are known, or suspected, to have been released (WK-2,3):

<u>Substance (#)</u>	<u>Quant.Released</u>	<u>Units</u>	<u>Medium released to</u>
<u>1</u>	<u>UKN</u>	<u></u>	<u>Soil, SW, GW</u>
<u>2</u>	<u>UKN</u>	<u></u>	<u>SW</u>
<u>3</u>	<u>UKN</u>	<u></u>	<u>Soil, GW</u>
<u>4</u>	<u>UKN</u>	<u></u>	<u>Soil, SW, GW</u>
<u>5</u>	<u>UKN</u>	<u></u>	<u>Soil, GW</u>
<u>6</u>	<u>UKN</u>	<u></u>	<u>Soil, GW, SW</u>

Additional information/reference? At one time broken underground sanitation line acted as vent for gas vapors from petroleum. Sanitation line replaced. Vapor analyzed at 5% LEL. Observed and investigated by Crowley Environmental Services. _____

B. SOURCES AND IMPACTS (Pages SW-5,6; A-9,10; GW-6,7)

List those hazardous substances identified (by number) in II.A. and identify the source and impact:

<u>Substance No.</u>	<u>Source</u>	<u>Impacts/affects To</u>	<u>Area</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Additional information/reference? _____

III. Migration Potential

A. CONTAINMENT--LANDFILLS (SW-7; A-12; GW-8,9)

Present? Yes How many? Historical, several

Check those that apply:

1. An engineered, maintained run-on/run-off control system
2. An engineered/maintained cover without ponding
3. Unmaintained run-on/runoff control system or cover
4. No run-on/runoff control or no cover
5. Uncontaminated soil cover greater than 6" thick
6. Uncontaminated soil cover less than 6" thick
7. Contaminated soil used as cover
8. A functioning vapor collection system
9. Mixing or agitation used
10. No liner
11. Single clay or compacted soil liner (permeability _____ cm/sec)
12. Single synthetic liner (permeability _____ cm/sec)
13. Double liner system (permeability _____ cm/sec)
14. Leachate collection system, maintained and functioning
15. Leachate collection system, unknown condition or not functioning
16. Liquid wastes may have been disposed of
17. Liquid wastes were disposed of in landfill
18. Reliable evidence no liquid wastes were disposed

Additional comments: Bunker oil, waste oil and bilge wastes were dumped. Evidence of leaked or dumped leaded gas.

B. CONTAINMENT--SURFACE IMPOUNDMENTS

(SW-7,8; A-13;
GW-10,11)

Present No How many? _____

Check those that apply:

1. _____ The dike is apparently sound
2. _____ The dike is regularly inspected and maintained
3. _____ There is evidence of failure, erosion, slumping, or release of contents
4. _____ Two feet of freeboard maintained automatically
5. _____ The freeboard is manually controlled so that there is at least 2 feet of freeboard
6. _____ Evidence of insufficient freeboard (<2 ft.)
7. _____ A maintained cover
8. _____ Unmaintained cover, no cover
9. _____ No liner
10. _____ Single synthetic liner
11. _____ Single clay or compacted soil liner
12. _____ Double liner
13. _____ Working leak detection system
14. _____ Evidence of loss of fluid (other than by evaporation)

Additional
comments: _____

C. CONTAINMENT--DRUMS AND SMALL CONTAINERS

(SW-9; A-11;
GW-11)

Present Not at present _____ How many? _____

Check those that apply:

1. No functional containment
2. There is secondary containment capacity for the total volume of containers
3. There is secondary containment with capacity for at least 110% of volume of the largest container
4. The secondary containment is less than 110% of the volume of the largest container
5. The containers are stored in single, or double layers on pallets, or in racks
6. The containers are stored in an unstable manner
7. Some containers are open or have visible liquid
8. Some containers are leaking
9. Containers are protected from weather
10. Containers showing deterioration
11. Containment surface is impervious
12. Containment surface has cracks or semi-permeable
13. No base material/permeable base such as gravel/base materials unknown
13. Containment is regularly inspected and maintained
14. Evidence of containment failure

Additional
comments: _____

D. CONTAINMENT--STORAGE TANKS (SW-9; A-11; GW-11)

Present? yes How many? 4

Check those that apply:

1. Secondary containment with a capacity of 110% of the volume of the tanks
2. Secondary containment at least 50% of the volume of all tanks
3. Containment system with capacity for at least 10% of volume of containers or tanks
4. No containment, or less than 10% capacity
5. Tank volumes maintained
6. Automatic controls used for volume maintenance
7. Tanks are covered
8. Uncovered tanks have aeration, mixing, or heating of tank contents
9. Containers sealed, protected
10. Containers sealed, not protected
11. Containers deteriorated
12. Containers leaking
13. Record the #s of above which apply only to above ground tank _____
14. Record the #s of above which apply only to below ground tanks 2
15. Record the #s of above which apply to both above and below ground tanks: _____

Additional comments One 10,000 gallon diesel fuel tank, one 10,000 gallon gasoline tank, plus "several" fuel tanks buried at King County Parks and Recreation facility (This includes one 500 gallon fuel tank abandoned. Also between 35 and 40 buried fuel tanks at the sites of the removed houses.

E. CONTAINMENT--WASTE PILES (SW-10; A-13; GW-12,13)

Present? No _____ How many? _____

Check those that apply:

1. _____ Waste pile is outside, no protecting structure
2. _____ Waste pile is outside, in open structure with roof
3. _____ Waste pile is outside, with partial or unmaintained cover
4. _____ Waste pile is outdoors, with maintained cover
5. _____ No cover is present
6. _____ Waste pile is fully enclosed, intact building
7. _____ There is an engineered run-on/run-off control
8. _____ The run-on/run-off is maintained
9. _____ Run-on/runoff control present, unknown condition
10. _____ No run-on/runoff control system present, or unknown if present
11. _____ Liner or base present; _____ Not present.
12. _____ Single clay or compacted soil liner
13. _____ Single synthetic liner
14. _____ Double liner
15. _____ Maintained, functioning leachate collection system
16. _____ Leachate collection system; _____ Unknown condition; or _____ Not functioning.

Additional
comments _____

F. CONTAINMENT--SPILLS, DISCHARGES, AND CONTAMINATED SOIL
(SW-10,11; A-13,14; GW-13)

Check those that apply:

1. Spill, discharge, or contaminated soil only in the subsurface at the site--including dry wells, drain fields, leaking underground storage tanks
2. Soil contamination that has been covered partially excavated and filled with at least 6 inches of clean soil
3. Soil contamination that has been covered or partially excavated and filled with less than 6 inches of clean soil
4. Uncontaminated soil cover >2 feet thick
5. No cover; or Cover <2 feet, but > 6" thick
6. Spill, discharge, or contaminated soil present at the surface in an area with maintained run-on/run-off control
7. Spill, discharge, or contaminated soil present at the surface in an area with unmaintained run-on/run-off controls?
8. Spill, discharge, or contaminated soil present at the surface with no run-on/run-off control or unknown controls?
9. Contaminated soil has been disturbed or excavated and stored above grade
10. A functioning vapor recovery system
11. No vapor recovery system

Additional comments Soils contaminated to a depth of 3-6 feet.

G. CONTAINMENT--SITE CHARACTERISTICS
(SW-11,12; A-6; GW-14; WK-5,6,8)

1. How would you evaluate the site soils? Circle predominant textural class.

_____ Sand, gravel, sandy gravel, well-graded sand, well-graded gravel, gravelly sand, gravelly sand loam, silty sandy loam?

_____ Poorly-graded sands with fines, silt-sand mixtures, loam, silt loam, sandy silt loam, clayey sand, clay sand loam?

_____ Clayey sands, sand-clay mixtures, clayey gravels, clay-sand-gravel mixtures, inorganic silts, clayey silt loam, silty clay loam, porous rock outcrop, sandy silty clay, sandy clay loam?

X Clay (organic and inorganic), clay loam, rock outcrop, peat, peaty clay?

Is the above based on personal observation, lab analysis, or professional judgement by a soil expert? (circle)

2. Total annual precipitation = 33.8 in./yr (SW-12; WK-5)

3. Max. 2-yr/24-hr precip. = 2.0 inches (SW-14; WK-5)

4. Net precipitation (see 2.2, GW-13) = 19.2 in. (WK-9)

5. Is the site not in a flood plain? yes (SW-14; WK-5)

Is the site in a 500 year flood plain? no

Is the site in a 100 year flood plain? no

6. What is the terrain slope to the nearest surface water?
<3 % (SW-14,15; WK-6)

7. What is the subsurface hydraulic conductivity?
< 10⁻³ cm/sec (GW-14; WK-9)

8. What is the vertical depth from the deepest point of known contamination to ground water? 4 feet
(GW-15; WK-9)

Additional
comments: _____

IV. Targets

A. DISTANCE TO SURFACE WATER (SW-16; WK-6)

1. What surface water(s) (lake, stream, river, pond, bay, etc.) is/are within 10,000 feet (downgradient) of the site?

<u>Name</u>	<u>Dist.-ft.</u>	<u>Obs.</u>	<u>Meas.</u>
<u>Tub lake</u>	<u>Part of site</u>	_____	_____
<u>Unnamed Impound.</u>	<u>S. of Tub L.</u>	_____	_____
<u>Miller Creek</u>	<u>Leaves Tub L.</u>	_____	_____
<u>Small ponds</u>	<u>On the site</u>	<u>w/in 50 acres</u>	_____
_____	_____	_____	_____
_____	_____	_____	_____

None? _____ .Comments _____

2. What drinking water intakes are within 2 miles of the site? (all lake intakes, river intakes downstream only) (SW-12; WK-6)

None? yes _____

<u>Source</u>	<u>Location</u>	<u>Pop. Served</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

3. How much acreage (anywhere) is irrigated by surface water intakes (downstream only) or wells (anywhere) within 2 miles of the site? (SW-16; GW-18; WK-6,9)

None? yes _____

SURFACE WATER: Acres _____ (1600 acres max.)

Source(s) _____;

GROUNDWATER: Acres _____ (4500 acres max.)

Source(s) _____

4. What is the distance to the nearest fishery resource (total of overland distance plus downgradient distance)? (SW-17; WK-6)

Over 10,000 feet? _____ Distance if less than 10,000 feet? _____ ft. The outflow from Tub Lake.

5. What are the names of, and the distances to, the nearest sensitive environments (total of overland distances plus downgradient distances)? (SW-18; A-15; WK-6)

Over 10,000 feet? _____ Names and distances if less than 10,000 feet: Miller Creek is the outflow stream from Tub Lake.

6. Is the aquifer a federally-designated sole source aquifer? no (GW-16; WK-9)

7. Is the ground water used for: (GW-16; WK-9)

- _____ private supply
- _____ public supply
- _____ irrigation of human food crops or livestock
- _____ non-food (human) vegetation
- _____ not used due to natural contaminants
- X _____ ground water not used, but usable

8. Distance to nearest drinking water well? 2000 feet (GW-17; WK-9)

9. Is there an alternate source available to groundwater for private or public water supply? (WK-9) Yes,
Public Supply

10. Population served by drinking water wells within 2 miles? 100 (GW-17; WK-9)

11. Distance to the nearest population? 1164 feet (A-15, 16; WK-8)

12. Population within one-half mile radius? 600 (A-16; WK-8)

Additional comments: There are 25 domestic wells in the area and six of these are King County Water District Wells.



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Northwest Regional Office, 3190 - 160th Ave S.E. • Bellevue, Washington 98008-5452 • (206) 649-7000
July 23, 1992

Mr. Bud Parker
King County Parks Division
2040 84th Avenue SE
Mercer Island, WA 98040

Dear Mr. Parker:

RE: Sunset Park/Tub Lake Dump, Proposed North SeaTac Park
Phases I & II

On 7/17/92 I contacted you to inquire about your investigatory and remediation plans for the above site prior to park conversion. You relayed that the only plans were for cleanup of the ditch area. I reiterated again (see phone conversation 2/14/92) that the Department had concerns about the high-TPH, heavy oil contamination near the county shops (possibly containing PCBs and heavy metals) and that the evidence of a historic road into and lead contamination in the southwest impoundment could be indicative of chemical waste dumping in this area. Both of these areas, in addition to the ditch, need further assessment in a remedial investigation, as described in WAC 173-340-350.

You described that someone in Ecology told you that it was appropriate to "just cover" these areas, but you could not remember who. You stated that it is becoming obvious to you, at this time, that you need a "detailed inventory of Ecology's thoughts". As we discussed, Ching Pi Wang and his staff will be available in August to discuss the cleanup at this site. He would like a copy of the workplan for cleanup, when it is ready, for Ecology's perusal. Ecology will then make a decision on whether the site should go through the formal MTCA process under order or consent decree. I explained the grant dollars available to local government, and the names and numbers of grant officers in Olympia.

Per your request, I am sending you copies of the pertinent documentation out of our files with reference to the issues that we talked about.

Should you have any questions, I can be contacted at 649-7058. Ching-Pi Wang may be contacted at 649-7134.

Sincerely,

Gail Colburn
Site Assessment Unit Supervisor
Toxics Cleanup Program

Attachments

cc: Ching-Pi Wang, Site Management Unit Supervisor
Mike Gallagher, Section Manager
Judy Aitken, Site Assessor